Appendix A

Traffic Analysis

MEMORANDUM

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To: **Steve Fournier** Copies to:

From: **Lilly Chen**

Date: **July 20, 2017**

Ref: **Town of Innisfil – 7th Line from 20th Sideroad to Lake Simcoe Class EA**
Traffic Analysis

File: **217024**

This Traffic analysis is prepared in conjunction with a Municipal Class Environmental Assessment for 7th Line from 20th Sideroad to the east end of the road.

In 2013, the Town completed a Transportation Master Plan. The 2013 Transportation Master Plan identified major road and intersection improvement needs for the Town's road network, including urbanization of the subject section of 7th Line between 20th Sideroad and St Johns Road, and improvements to the intersection of 7th Line with St Johns Road. However, to fulfill the requirements of this EA, more detailed road and intersection improvement needs to the section of 7th Line are to be identified.

The overall purpose of the **Traffic Analysis** is to assess the transportation needs of the subject length of road under 2017 existing conditions and future traffic projections for the horizon years of 2022 (representing a 5 year horizon), 2027 (10 year horizon) and 2037 (20 year horizon). This analysis will be completed to address the project problem and/or opportunity statement and to evaluate alternative solutions to arrive at a preferred solution. Further to arriving at a preferred solution, an evaluation of alternative designs to arrive at a preferred design in conjunction with Phases 1, 2 and 3 of the Class EA will be completed.

1. Existing Traffic Volumes

Intersection turning movement count data was collected on Tuesday, June 6, 2017 for the following intersections:

- 7th Line & 20th Sideroad
- 7th Line & Fox Hill Street
- 7th Line & Webster Blvd
- 7th Line & Quarry Drive
- 7th Line & Wingrove Avenue
- 7th Line & St Johns Road

The County of Simcoe provided historic AADT data for all County Roads. Part of County Road 39 (20th Sideroad) is within the study limits. The following locations and years are relevant to the study:

- County Road 39 between County Road 21 and 4th Line, 2007, 2010, 2013 and 2016

A review of the traffic volumes in the area indicates:

- An annual growth rate of 6.5% per annum from 2017 to 2016 on County Road 39 between County Road 21 and 4th Line;
- Am peak hour occurs between 7:30 and 9:00;

- PM peak hour occurs between 16:00 and 18:00; and
- PM peak hour traffic volumes are higher than the AM peak hour traffic volumes.

The corresponding 2017 peak hour traffic volumes are shown in Figure 1. While it is recognized that there are a number of private commercial access points along the section of 7th Line, most are relatively minor and thus need not be explicitly addressed from an operational perspective.

With respect to pedestrian traffic, crossing volumes were observed during the traffic counts. The highest peak hour pedestrian volumes are in the order of 6 persons crossing 7th Line at Webster Boulevard. Pedestrian traffic is in the order of 0 to 4 persons crossing 7th Line at the other intersections.

2. Speed Limit & Existing 2017 Lane Configuration

The speed limits are as follows:
- 7th Line west of the rail way crossing 80 km/h, east of the rail way crossing 50 km/h;
- 20th Sideroad 80 km/h; and
- Fox Hill Street, Webster Boulevard, Quarry Drive, Wingrove Avenue, St Johns Road 50 km/h assumed.

7th Line is two lane road provides a single lane per direction. The intersection of 7th Line with 20th Sideroad is a signalized 4-leg intersection. Each approach has an exclusive left turn lane and a through-right shared lane.

The intersection of 7th Line with Webster Boulevard is also a signalized 4-leg intersection. An exclusive left turn lane and a through-right shared lane are assumed on Webster Boulevard. A single shared lane is on the 7th Line approaches.

The intersection of 7th Line with St Johns Road is also a 4-leg intersection with stop control on 7th Line. The intersection has a single shared lane on each approach with no exclusive left/right turn lanes/tapers provided.

The intersections of 7th Line at Fox Hill Street, Quarry Drive, and Wingrove Avenue are all "T" intersections with stop control on the minor streets. Each approach has a single shared lane with no exclusive left/right turn lanes/tapers provided.

3. Existing Intersection Operations in 2017

Based on the existing intersection lane configurations and control, analyses of the area intersections were conducted for the existing peak hour traffic volumes. The methodology applied was consistent with the 2010 *Highway Capacity Manual* method for unsignalized and signalized intersections as employed in the software program Synchro 8.

Table 1 summarizes the results of the analysis with level of service (LOS), estimated delays (measured in seconds) and volume to capacity (v/c) ratio provided. Level of service A, corresponding to minimal delays, is the best whereas level of service F, corresponding to high delays, is generally considered poor conditions. When volume is less than capacity, v/c ratio is less than 1. Otherwise, v/c ratio equals to 1 or more than 1, which means volume reaches capacity or is more than capacity.

For unsignalized intersections, the level of service corresponds to the minor street lane groups given that the major street movements proceed relatively unimpeded. For signalized intersections, the results pertain to the average intersection delay and assume optimal signal timing and phasing to achieve the most efficient overall network operations through signal coordination. If the actual situations are under expectations, adjustments to the signal timing and/or phasing can be readily implemented. Level of service definitions and the corresponding detailed worksheets are included in Appendix A-1.

Table 1 – 2017 Intersection Operations (Existing)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
7th Line & 20th Sideroad	all	signal	13.2	B		23.4	C	
	EBL		13.4	B	0.02	12.4	B	0.02
	EBT-R		14.2	B	0.17	18.0	B	0.64
	WBL		10.3	B	0.36	11.1	B	0.21
	WBT-R		9.4	A	0.28	9.0	A	0.15
	NBL		18.3	B	0.04	17.4	B	0.03
	NBT-R		18.4	B	0.31	37.4	D	0.87
	SBL		18.6	B	0.03	27.4	C	0.09
	SBT-R		17.7	B	0.27	16.9	B	0.31
7th Line & Fox Hill St	EBL	free	0	A	-	7.6	A	0.01
	SB	stop	11.6	B	0.00	9.3	A	0.01
7th Line & Webster Blvd	all	signal	12.2	B		13.7	B	
	EB		8.5	A	0.25	13.0	B	0.77
	WB		8.3	A	0.19	5.2	A	0.07
	NBL		18.6	B	0.27	20.0	C	0.20
	NBT-R		11.3	B	0.08	16.1	B	0.10
	SBL		11.6	B	0.02	16.6	B	0.05
	SBT-R		14.8	B	0.62	17.9	B	0.41
7th Line & Quarry Dr.	NB	stop	9.6	A	0.10	10.1	B	0.06
	WBL	free	7.4	A	0.01	7.6	A	0.02
7th Line & Wingrove Ave.	NB	stop	9.4	A	0.02	9.7	A	0.02
	WBL	free	0	A	-	7.5	A	0.00
7th Line & St Johns Road	NBL	free	7.7	A	0.01	7.8	A	0.01
	EB	stop	11.1	B	0.09	12.3	B	0.20
	WB		10.6	B	0.03	9.7	A	0.02
	SBL	free	7.4	A	0.00	7.5	A	0.01

As per the analyses, acceptable levels of service (D or better) occur at all intersections and their lane groups under existing conditions and thus no improvements related to intersection operations are required at this time on the basis of the intersection operational analysis.

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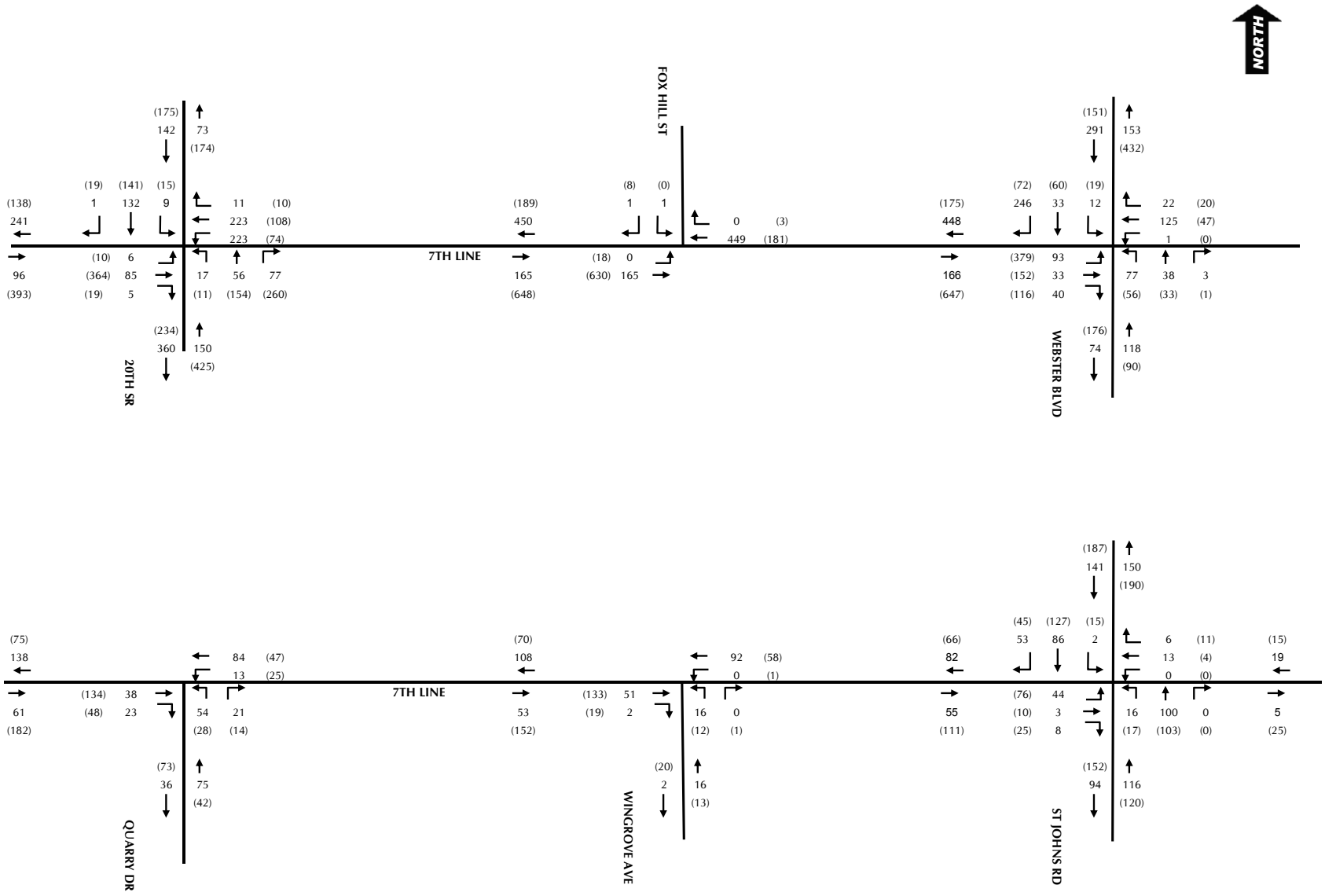
APPENDIX A

Traffic Counts



100(100) AM(PM)Peak Hour

Figure 1

Existing 2017 Traffic Volumes

7th Line EA Traffic Analysis

Town of Innisfil

Ainley Group CONSULTING ENGINEERS PLANNERS

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Morning Peak Diagram

Specified Period
From: 6:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

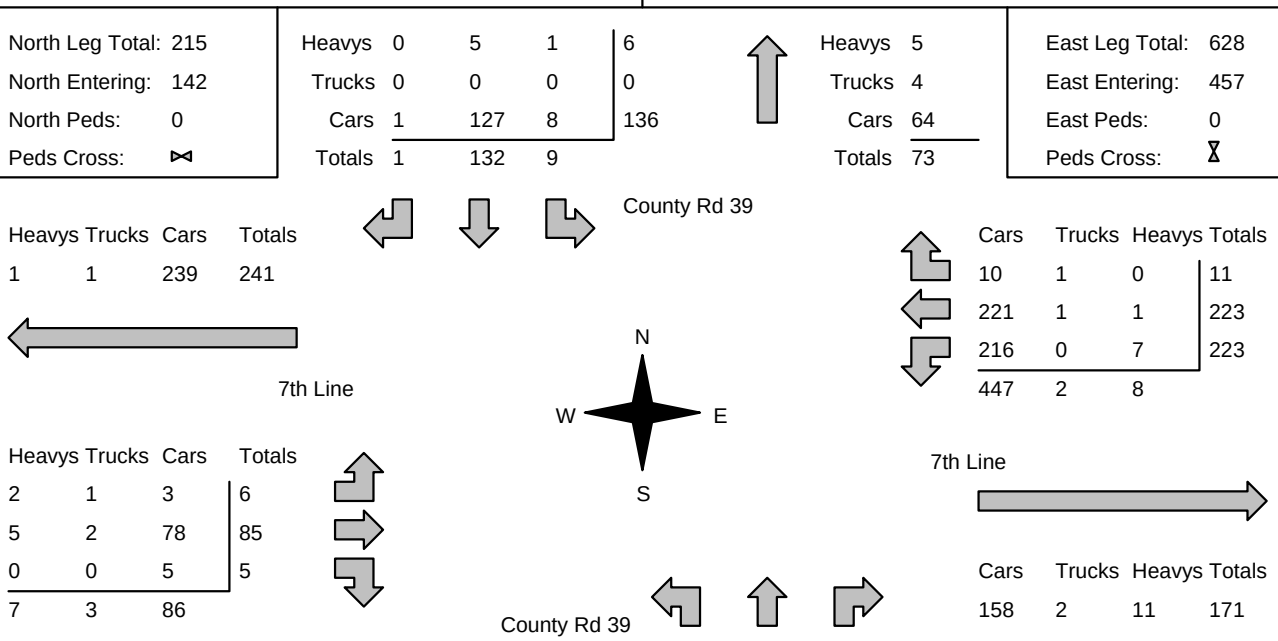
Municipality: Innisfil
Site #: 1712100001
Intersection: 7th Line & County Rd 39
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: 7th Line runs W/E



Comments

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Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Innisfil
Site #: 1712100001
Intersection: 7th Line & County Rd 39
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

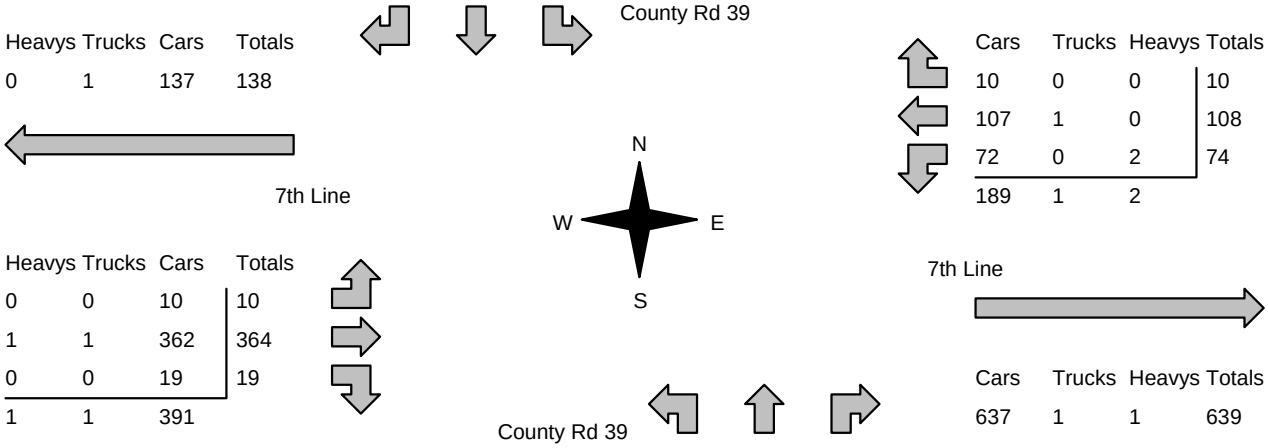
Major Road: 7th Line runs W/E

North Leg Total: 349
North Entering: 175
North Peds: 0
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	19	141	15	175
Totals	19	141	15	

Heavys	1
Trucks	1
Cars	172
Totals	174

East Leg Total: 831
East Entering: 192
East Peds: 0
Peds Cross: ⧖



Heavys	Trucks	Cars	Totals
0	1	137	138

Cars	Trucks	Heavys	Totals
10	0	0	10
107	1	0	108
72	0	2	74
189	1	2	

Heavys	Trucks	Cars	Totals
0	0	10	10
1	1	362	364
0	0	19	19
1	1	391	

Cars	Trucks	Heavys	Totals
637	1	1	639

Peds Cross: ⧖
West Peds: 0
West Entering: 393
West Leg Total: 531

Cars	232
Trucks	0
Heavys	2
Totals	234

Cars	11	152	260	423
Trucks	0	1	0	1
Heavys	0	1	0	1
Totals	11	154	260	

Peds Cross: ⋈
South Peds: 0
South Entering: 425
South Leg Total: 659

Comments

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Total Count Diagram

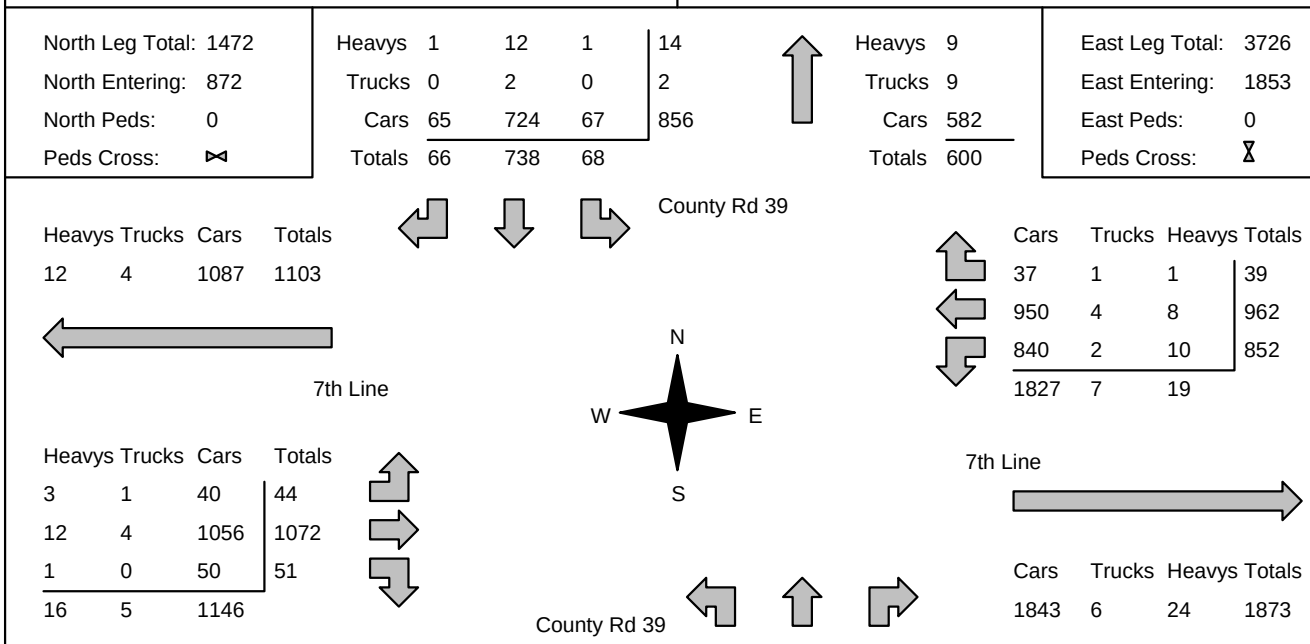
Municipality: Innisfil
Site #: 1712100001
Intersection: 7th Line & County Rd 39
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: 7th Line runs W/E



Comments

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Traffic Count Summary

Intersection: 7th Line & County Rd 39 | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
6:00:00	*0*	*0*	*0*	*0*	*0*	*0*
7:00:00	*5*	*138*	*10*	*153*	*0*	*198*
8:00:00	*9*	*145*	*3*	*157*	*0*	*265*
9:00:00	*13*	*108*	*7*	*128*	*0*	*285*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*19*	*120*	*17*	*156*	*0*	*511*
18:00:00	*13*	*123*	*16*	*152*	*0*	*568*
19:00:00	*9*	*104*	*13*	*126*	*0*	*370*
Totals:	68	738	66	872	0	2197

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*7*	*20*	*18*	*45*	*0*
8:00:00	*12*	*40*	*56*	*108*	*0*
9:00:00	*20*	*68*	*69*	*157*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*12*	*149*	*194*	*355*	*0*
18:00:00	*13*	*150*	*253*	*416*	*0*
19:00:00	*11*	*90*	*143*	*244*	*0*
S Totals:	75	517	733	1325	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
6:00:00	*0*	*0*	*0*	*0*	*0*	*0*
7:00:00	*231*	*175*	*1*	*407*	*0*	*432*
8:00:00	*232*	*228*	*11*	*471*	*0*	*528*
9:00:00	*177*	*198*	*7*	*382*	*0*	*496*
16:00:00	*0*	*0*	*0*	*0*	*0*	*0*
17:00:00	*82*	*111*	*2*	*195*	*0*	*492*
18:00:00	*77*	*111*	*10*	*198*	*0*	*600*
19:00:00	*53*	*139*	*8*	*200*	*0*	*472*
Totals:	852	962	39	1853	0	3020

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*25*	*0*	*25*	*0*
8:00:00	*1*	*51*	*5*	*57*	*0*
9:00:00	*7*	*102*	*5*	*114*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*13*	*275*	*9*	*297*	*0*
18:00:00	*15*	*368*	*19*	*402*	*0*
19:00:00	*8*	*251*	*13*	*272*	*0*
W Totals:	44	1072	51	1167	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*150*	*166*	*141*	*0*	*180*	*176*	*124*

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Count Date: 6-Jun-17 Site #: 1712100001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	32	32	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	3	3	69	37	6	4	0	0	0	0	0	0	0	0	1	1	0	0	0	0
6:45:00	3	0	103	34	9	3	0	0	1	1	0	0	0	0	1	0	0	0	0	0
7:00:00	5	2	136	33	10	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
7:15:00	7	2	175	39	11	1	0	0	1	0	0	0	0	0	3	2	0	0	0	0
7:30:00	9	2	207	32	12	1	0	0	2	1	0	0	0	0	3	0	0	0	0	0
7:45:00	12	3	242	35	13	1	0	0	2	0	0	0	0	0	3	0	0	0	0	0
8:00:00	14	2	276	34	13	0	0	0	2	0	0	0	0	0	5	2	0	0	0	0
8:15:00	15	1	303	27	13	0	0	0	2	0	0	0	0	0	7	2	0	0	0	0
8:30:00	17	2	334	31	13	0	0	0	2	0	0	0	1	1	8	1	0	0	0	0
8:45:00	20	3	359	25	14	1	0	0	2	0	0	0	1	0	10	2	0	0	0	0
9:00:00	26	6	377	18	20	6	0	0	2	0	0	0	1	0	12	2	0	0	0	0
9:15:00	26	0	377	0	20	0	0	0	2	0	0	0	1	0	12	0	0	0	0	0
16:00:00	26	0	377	0	20	0	0	0	2	0	0	0	1	0	12	0	0	0	0	0
16:15:00	31	5	414	37	24	4	0	0	2	0	0	0	1	0	12	0	0	0	0	0
16:30:00	35	4	446	32	28	4	0	0	2	0	0	0	1	0	12	0	1	1	0	0
16:45:00	40	5	471	25	32	4	0	0	2	0	0	0	1	0	12	0	1	0	0	0
17:00:00	45	5	497	26	36	4	0	0	2	0	0	0	1	0	12	0	1	0	0	0
17:15:00	51	6	531	34	39	3	0	0	2	0	0	0	1	0	12	0	1	0	0	0
17:30:00	55	4	568	37	47	8	0	0	2	0	0	0	1	0	12	0	1	0	0	0
17:45:00	55	0	612	44	51	4	0	0	2	0	0	0	1	0	12	0	1	0	0	0
18:00:00	58	3	620	8	52	1	0	0	2	0	0	0	1	0	12	0	1	0	0	0
18:15:00	62	4	654	34	56	4	0	0	2	0	0	0	1	0	12	0	1	0	0	0
18:30:00	64	2	684	30	58	2	0	0	2	0	0	0	1	0	12	0	1	0	0	0
18:45:00	65	1	706	22	59	1	0	0	2	0	0	0	1	0	12	0	1	0	0	0
19:00:00	67	2	724	18	65	6	0	0	2	0	0	0	1	0	12	0	1	0	0	0
19:15:00	67	0	724	0	65	0	0	0	2	0	0	0	1	0	12	0	1	0	0	0
19:15:15	67	0	724	0	65	0	0	0	2	0	0	0	1	0	12	0	1	0	0	0

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Traffic Monitoring & Data Analysis

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Count Date: 6-Jun-17 Site #: 1712100001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	53	53	41	41	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30:00	109	56	83	42	1	1	0	0	1	0	0	0	0	0	2	2	0	0	0	0
6:45:00	167	58	138	55	1	0	1	1	1	0	0	0	0	0	2	0	0	0	0	0
7:00:00	230	63	172	34	1	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0
7:15:00	299	69	216	44	1	0	1	0	2	1	0	0	0	0	2	0	0	0	0	0
7:30:00	349	50	275	59	4	3	1	0	2	0	0	0	0	0	3	1	0	0	0	0
7:45:00	408	59	341	66	9	5	1	0	2	0	1	1	2	2	3	0	0	0	0	0
8:00:00	459	51	396	55	11	2	1	0	3	1	1	0	3	1	4	1	0	0	0	0
8:15:00	514	55	451	55	12	1	1	0	3	0	1	0	6	3	4	0	0	0	0	0
8:30:00	565	51	496	45	14	2	1	0	3	0	1	0	7	1	4	0	0	0	0	0
8:45:00	597	32	549	53	15	1	2	1	3	0	1	0	7	0	4	0	1	1	0	0
9:00:00	631	34	594	45	17	2	2	0	3	0	1	0	7	0	4	0	1	0	0	0
9:15:00	631	0	594	0	17	0	2	0	3	0	1	0	7	0	4	0	1	0	0	0
16:00:00	631	0	594	0	17	0	2	0	3	0	1	0	7	0	4	0	1	0	0	0
16:15:00	654	23	621	27	17	0	2	0	3	0	1	0	8	1	6	2	1	0	0	0
16:30:00	678	24	643	22	17	0	2	0	3	0	1	0	8	0	6	0	1	0	0	0
16:45:00	694	16	678	35	17	0	2	0	3	0	1	0	8	0	7	1	1	0	0	0
17:00:00	711	17	702	24	19	2	2	0	3	0	1	0	9	1	7	0	1	0	0	0
17:15:00	726	15	735	33	21	2	2	0	3	0	1	0	10	1	7	0	1	0	0	0
17:30:00	743	17	767	32	27	6	2	0	3	0	1	0	10	0	7	0	1	0	0	0
17:45:00	766	23	785	18	27	0	2	0	4	1	1	0	10	0	7	0	1	0	0	0
18:00:00	787	21	812	27	29	2	2	0	4	0	1	0	10	0	7	0	1	0	0	0
18:15:00	805	18	852	40	29	0	2	0	4	0	1	0	10	0	8	1	1	0	0	0
18:30:00	814	9	892	40	31	2	2	0	4	0	1	0	10	0	8	0	1	0	0	0
18:45:00	830	16	924	32	33	2	2	0	4	0	1	0	10	0	8	0	1	0	0	0
19:00:00	840	10	950	26	37	4	2	0	4	0	1	0	10	0	8	0	1	0	0	0
19:15:00	840	0	950	0	37	0	2	0	4	0	1	0	10	0	8	0	1	0	0	0
19:15:15	840	0	950	0	37	0	2	0	4	0	1	0	10	0	8	0	1	0	0	0

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Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	1	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	3	3	6	5	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	5	2	11	5	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	7	2	20	9	18	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	7	0	29	9	25	7	0	0	0	0	0	0	0	0	0	0	2	2	0	0
7:30:00	13	6	37	8	34	9	0	0	1	1	0	0	0	0	0	0	2	0	0	0
7:45:00	17	4	46	9	48	14	0	0	1	0	0	0	0	0	3	3	2	0	0	0
8:00:00	19	2	56	10	68	20	0	0	1	0	0	0	0	0	3	0	6	4	0	0
8:15:00	25	6	76	20	86	18	0	0	1	0	0	0	0	0	3	0	7	1	0	0
8:30:00	30	5	88	12	106	20	0	0	3	2	0	0	0	0	3	0	7	0	0	0
8:45:00	36	6	97	9	114	8	0	0	5	2	1	1	0	0	4	1	9	2	0	0
9:00:00	38	2	118	21	132	18	0	0	6	1	1	0	1	1	4	0	10	1	0	0
9:15:00	38	0	118	0	132	0	0	0	6	0	1	0	1	0	4	0	10	0	0	0
16:00:00	38	0	118	0	132	0	0	0	6	0	1	0	1	0	4	0	10	0	0	0
16:15:00	43	5	167	49	172	40	0	0	6	0	1	0	3	2	4	0	10	0	0	0
16:30:00	45	2	195	28	226	54	0	0	6	0	2	1	3	0	4	0	10	0	0	0
16:45:00	47	2	225	30	267	41	0	0	6	0	2	0	3	0	4	0	11	1	0	0
17:00:00	48	1	265	40	324	57	0	0	7	1	2	0	3	0	5	1	11	0	0	0
17:15:00	50	2	301	36	391	67	0	0	7	0	2	0	3	0	5	0	11	0	0	0
17:30:00	58	8	338	37	458	67	0	0	7	0	2	0	3	0	5	0	11	0	0	0
17:45:00	58	0	377	39	527	69	0	0	7	0	2	0	3	0	5	0	11	0	0	0
18:00:00	61	3	415	38	577	50	0	0	7	0	2	0	3	0	5	0	11	0	0	0
18:15:00	66	5	448	33	619	42	0	0	7	0	2	0	3	0	5	0	11	0	0	0
18:30:00	70	4	475	27	658	39	0	0	7	0	2	0	3	0	5	0	11	0	0	0
18:45:00	71	1	489	14	688	30	0	0	7	0	2	0	3	0	5	0	11	0	0	0
19:00:00	72	1	505	16	720	32	0	0	7	0	2	0	3	0	5	0	11	0	0	0
19:15:00	72	0	505	0	720	0	0	0	7	0	2	0	3	0	5	0	11	0	0	0
19:15:15	72	0	505	0	720	0	0	0	7	0	2	0	3	0	5	0	11	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	15	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	33	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	1	0	43	10	3	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:45:00	1	0	57	14	4	1	0	0	1	1	0	0	0	0	2	1	0	0	0	0
8:00:00	1	0	73	16	5	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0
8:15:00	3	2	95	22	5	0	0	0	2	1	0	0	0	0	3	1	0	0	0	0
8:30:00	4	1	121	26	8	3	1	1	2	0	0	0	2	2	6	3	0	0	0	0
8:45:00	4	0	144	23	8	0	1	0	2	0	0	0	2	0	6	0	0	0	0	0
9:00:00	5	1	169	25	10	2	1	0	2	0	0	0	2	0	7	1	0	0	0	0
9:15:00	5	0	169	0	10	0	1	0	2	0	0	0	2	0	7	0	0	0	0	0
16:00:00	5	0	169	0	10	0	1	0	2	0	0	0	2	0	7	0	0	0	0	0
16:15:00	7	2	219	50	12	2	1	0	2	0	0	0	2	0	8	1	0	0	0	0
16:30:00	11	4	273	54	13	1	1	0	2	0	0	0	2	0	9	1	1	1	0	0
16:45:00	17	6	352	79	14	1	1	0	2	0	0	0	2	0	10	1	1	0	0	0
17:00:00	18	1	440	88	18	4	1	0	2	0	0	0	2	0	11	1	1	0	0	0
17:15:00	22	4	530	90	24	6	1	0	2	0	0	0	2	0	11	0	1	0	0	0
17:30:00	24	2	626	96	30	6	1	0	3	1	0	0	2	0	11	0	1	0	0	0
17:45:00	27	3	714	88	33	3	1	0	3	0	0	0	2	0	11	0	1	0	0	0
18:00:00	33	6	806	92	37	4	1	0	4	1	0	0	2	0	11	0	1	0	0	0
18:15:00	36	3	875	69	42	5	1	0	4	0	0	0	2	0	11	0	1	0	0	0
18:30:00	37	1	950	75	47	5	1	0	4	0	0	0	2	0	11	0	1	0	0	0
18:45:00	38	1	1003	53	47	0	1	0	4	0	0	0	3	1	12	1	1	0	0	0
19:00:00	40	2	1056	53	50	3	1	0	4	0	0	0	3	0	12	0	1	0	0	0
19:15:00	40	0	1056	0	50	0	1	0	4	0	0	0	3	0	12	0	1	0	0	0
19:15:15	40	0	1056	0	50	0	1	0	4	0	0	0	3	0	12	0	1	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

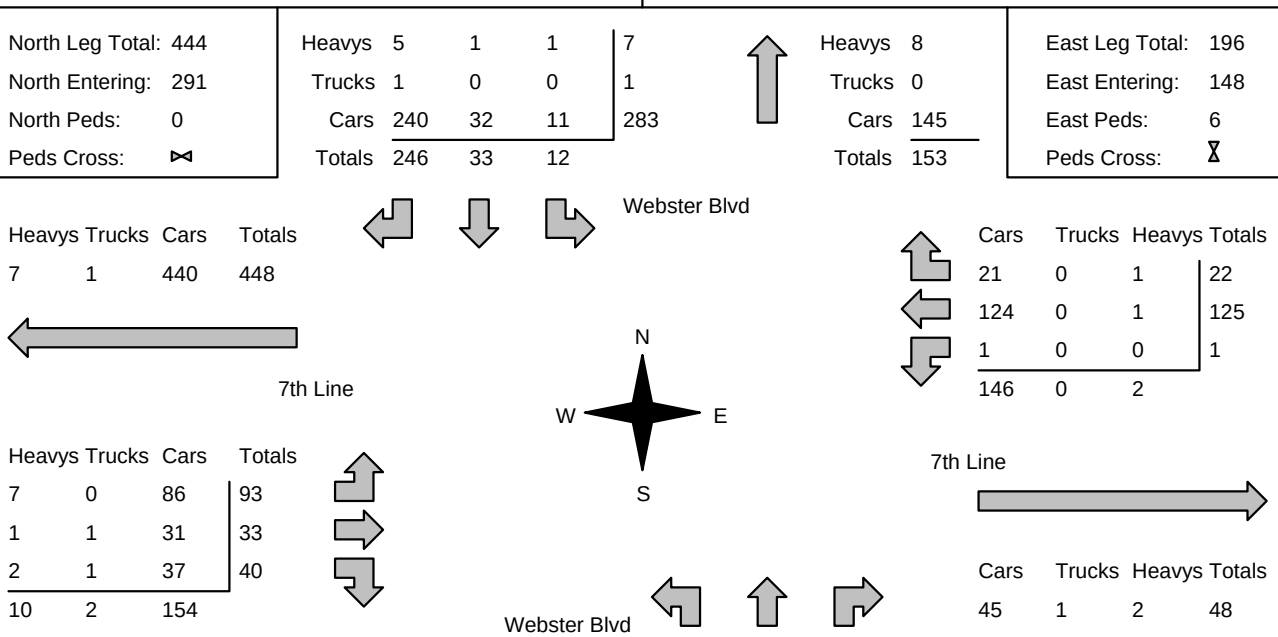
Municipality: Innisfil
Site #: 1712100002
Intersection: 7th Line & Webster Blvd
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: 7th Line runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

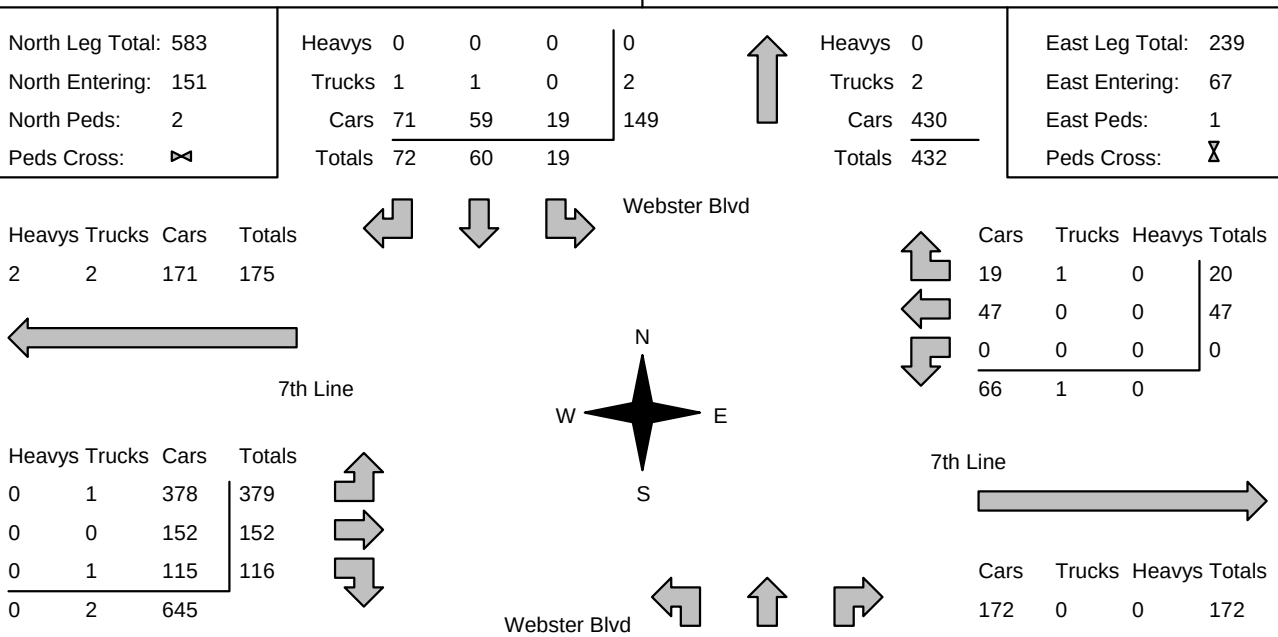
Municipality: Innisfil
Site #: 1712100002
Intersection: 7th Line & Webster Blvd
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: 7th Line runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

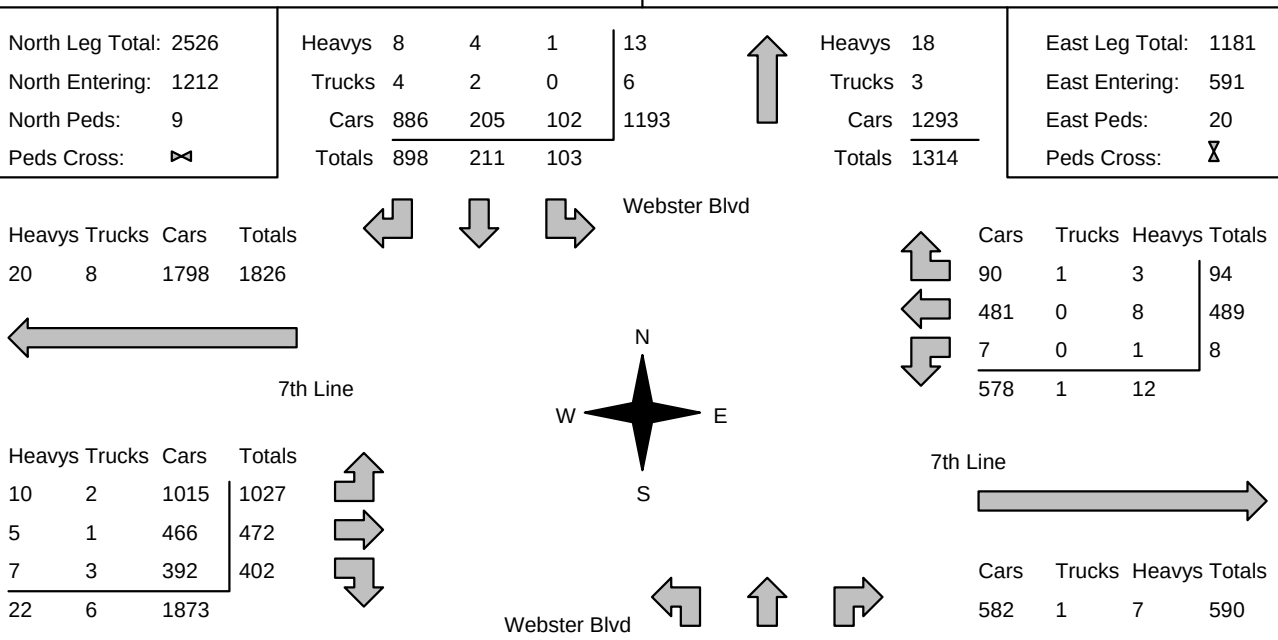
Municipality: Innisfil
Site #: 1712100002
Intersection: 7th Line & Webster Blvd
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: 7th Line runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: 7th Line & Webster Blvd | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*3*	*5*	*221*	*229*	*0*
8:00:00	*7*	*14*	*241*	*262*	*0*
9:00:00	*13*	*46*	*199*	*258*	*7*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*25*	*53*	*76*	*154*	*0*
18:00:00	*19*	*60*	*72*	*151*	*2*
19:00:00	*36*	*33*	*89*	*158*	*0*
Totals:	103	211	898	1212	9

North/South Total Approaches: *1859*

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*85*	*6*	*0*	*91*	*0*
8:00:00	*108*	*34*	*2*	*144*	*0*
9:00:00	*70*	*52*	*3*	*125*	*3*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*61*	*44*	*3*	*108*	*1*
18:00:00	*56*	*33*	*1*	*90*	*0*
19:00:00	*59*	*24*	*6*	*89*	*0*
S Totals:	439	193	15	647	4

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*1*	*95*	*3*	*99*	*0*
8:00:00	*0*	*114*	*8*	*122*	*2*
9:00:00	*3*	*114*	*23*	*140*	*11*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*2*	*65*	*19*	*86*	*2*
18:00:00	*0*	*47*	*20*	*67*	*1*
19:00:00	*2*	*54*	*21*	*77*	*4*
Totals:	8	489	94	591	20

East/West Total Approaches: *2492*

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*17*	*18*	*15*	*50*	*0*
8:00:00	*59*	*28*	*29*	*116*	*0*
9:00:00	*72*	*46*	*60*	*178*	*3*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*285*	*115*	*89*	*489*	*0*
18:00:00	*379*	*152*	*116*	*647*	*1*
19:00:00	*215*	*113*	*93*	*421*	*0*
W Totals:	1027	472	402	1901	4

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*94*	*151*	*149*	*0*	*141*	*137*	*132*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	0	0	49	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	1	0	1	1	102	53	0	0	0	0	1	1	0	0	0	0	0	0	0	0
6:45:00	1	0	4	3	155	53	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:00:00	3	2	5	1	220	65	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:15:00	4	1	6	1	280	60	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:30:00	4	0	7	1	331	51	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:45:00	8	4	12	5	395	64	0	0	0	0	2	1	0	0	0	0	2	2	0	0
8:00:00	10	2	19	7	456	61	0	0	0	0	2	0	0	0	0	0	4	2	0	0
8:15:00	14	4	27	8	519	63	0	0	0	0	2	0	0	0	0	0	5	1	0	0
8:30:00	15	1	39	12	571	52	0	0	0	0	2	0	1	1	1	1	5	0	0	0
8:45:00	18	3	51	12	611	40	0	0	0	0	2	0	1	0	1	0	5	0	0	0
9:00:00	22	4	63	12	653	42	0	0	0	0	2	0	1	0	2	1	6	1	7	7
9:15:00	22	0	63	0	653	0	0	0	0	0	2	0	1	0	2	0	6	0	7	0
16:00:00	22	0	63	0	653	0	0	0	0	0	2	0	1	0	2	0	6	0	7	0
16:15:00	28	6	72	9	673	20	0	0	0	0	2	0	1	0	2	0	7	1	7	0
16:30:00	33	5	86	14	696	23	0	0	0	0	2	0	1	0	3	1	7	0	7	0
16:45:00	38	5	95	9	712	16	0	0	0	0	2	0	1	0	3	0	8	1	7	0
17:00:00	47	9	113	18	727	15	0	0	1	1	2	0	1	0	4	1	8	0	7	0
17:15:00	54	7	126	13	745	18	0	0	1	0	2	0	1	0	4	0	8	0	7	0
17:30:00	60	6	137	11	765	20	0	0	2	1	2	0	1	0	4	0	8	0	7	0
17:45:00	64	4	155	18	780	15	0	0	2	0	3	1	1	0	4	0	8	0	9	2
18:00:00	66	2	172	17	798	18	0	0	2	0	3	0	1	0	4	0	8	0	9	0
18:15:00	73	7	182	10	823	25	0	0	2	0	3	0	1	0	4	0	8	0	9	0
18:30:00	81	8	191	9	851	28	0	0	2	0	4	1	1	0	4	0	8	0	9	0
18:45:00	91	10	198	7	875	24	0	0	2	0	4	0	1	0	4	0	8	0	9	0
19:00:00	102	11	205	7	886	11	0	0	2	0	4	0	1	0	4	0	8	0	9	0
19:15:00	102	0	205	0	886	0	0	0	2	0	4	0	1	0	4	0	8	0	9	0
19:15:15	102	0	205	0	886	0	0	0	2	0	4	0	1	0	4	0	8	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	28	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	49	21	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
6:45:00	1	1	78	29	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
7:00:00	1	0	94	16	3	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
7:15:00	1	0	123	29	3	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0
7:30:00	1	0	150	27	3	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0
7:45:00	1	0	184	34	5	2	0	0	0	0	0	0	0	0	2	0	1	0	1	1
8:00:00	1	0	207	23	10	5	0	0	0	0	0	0	0	0	2	0	1	0	2	1
8:15:00	2	1	244	37	15	5	0	0	0	0	0	0	0	0	2	0	1	0	5	3
8:30:00	2	0	274	30	24	9	0	0	0	0	0	0	0	0	3	1	2	1	6	1
8:45:00	3	1	298	24	28	4	0	0	0	0	0	0	0	0	3	0	2	0	8	2
9:00:00	3	0	320	22	32	4	0	0	0	0	0	0	1	1	3	0	2	0	13	5
9:15:00	3	0	320	0	32	0	0	0	0	0	0	0	1	0	3	0	2	0	13	0
16:00:00	3	0	320	0	32	0	0	0	0	0	0	0	1	0	3	0	2	0	13	0
16:15:00	4	1	331	11	36	4	0	0	0	0	0	0	1	0	5	2	2	0	14	1
16:30:00	5	1	343	12	44	8	0	0	0	0	0	0	1	0	5	0	3	1	14	0
16:45:00	5	0	369	26	48	4	0	0	0	0	0	0	1	0	5	0	3	0	14	0
17:00:00	5	0	381	12	50	2	0	0	0	0	0	0	1	0	7	2	3	0	15	1
17:15:00	5	0	393	12	53	3	0	0	0	0	0	0	1	0	7	0	3	0	15	0
17:30:00	5	0	405	12	56	3	0	0	0	0	0	0	1	0	7	0	3	0	15	0
17:45:00	5	0	414	9	61	5	0	0	0	0	1	1	1	0	7	0	3	0	15	0
18:00:00	5	0	428	14	69	8	0	0	0	0	1	0	1	0	7	0	3	0	16	1
18:15:00	5	0	442	14	78	9	0	0	0	0	1	0	1	0	8	1	3	0	16	0
18:30:00	5	0	455	13	84	6	0	0	0	0	1	0	1	0	8	0	3	0	18	2
18:45:00	5	0	467	12	88	4	0	0	0	0	1	0	1	0	8	0	3	0	18	0
19:00:00	7	2	481	14	90	2	0	0	0	0	1	0	1	0	8	0	3	0	20	2
19:15:00	7	0	481	0	90	0	0	0	0	0	1	0	1	0	8	0	3	0	20	0
19:15:15	7	0	481	0	90	0	0	0	0	0	1	0	1	0	8	0	3	0	20	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	20	20	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	44	24	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	66	22	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	84	18	6	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	111	27	11	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	143	32	22	11	2	2	1	0	0	0	0	0	0	0	1	1	0	0	0	0
7:45:00	168	25	27	5	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
8:00:00	192	24	39	12	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
8:15:00	209	17	58	19	4	2	1	0	0	0	0	0	1	1	1	0	0	0	1	1
8:30:00	219	10	60	2	5	1	1	0	0	0	0	0	1	0	1	0	0	0	1	0
8:45:00	242	23	67	7	5	0	2	1	0	0	0	0	1	0	4	3	0	0	1	0
9:00:00	260	18	87	20	5	0	2	0	0	0	0	0	1	0	5	1	0	0	3	2
9:15:00	260	0	87	0	5	0	2	0	0	0	0	0	1	0	5	0	0	0	3	0
16:00:00	260	0	87	0	5	0	2	0	0	0	0	0	1	0	5	0	0	0	3	0
16:15:00	284	24	105	18	7	2	3	1	0	0	0	0	2	1	5	0	1	1	3	0
16:30:00	298	14	113	8	7	0	3	0	0	0	0	0	2	0	5	0	1	0	3	0
16:45:00	309	11	124	11	7	0	3	0	0	0	0	0	2	0	5	0	1	0	3	0
17:00:00	319	10	131	7	7	0	3	0	0	0	0	0	2	0	5	0	1	0	4	1
17:15:00	332	13	137	6	7	0	3	0	0	0	0	0	3	1	5	0	1	0	4	0
17:30:00	348	16	144	7	8	1	3	0	0	0	0	0	4	1	5	0	1	0	4	0
17:45:00	356	8	156	12	8	0	4	1	0	0	0	0	4	0	5	0	1	0	4	0
18:00:00	372	16	164	8	8	0	4	0	0	0	0	0	4	0	5	0	1	0	4	0
18:15:00	389	17	171	7	9	1	4	0	0	0	0	0	4	0	5	0	1	0	4	0
18:30:00	401	12	178	7	10	1	4	0	0	0	0	0	4	0	5	0	1	0	4	0
18:45:00	415	14	182	4	12	2	4	0	0	0	0	0	4	0	5	0	1	0	4	0
19:00:00	431	16	188	6	14	2	4	0	0	0	0	0	4	0	5	0	1	0	4	0
19:15:00	431	0	188	0	14	0	4	0	0	0	0	0	4	0	5	0	1	0	4	0
19:15:15	431	0	188	0	14	0	4	0	0	0	0	0	4	0	5	0	1	0	4	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	4	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	7	6	7	3	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	12	5	9	2	11	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	17	5	18	9	15	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	22	5	28	10	18	3	0	0	0	0	0	0	0	0	0	0	2	2	0	0
7:30:00	34	12	32	4	25	7	0	0	0	0	0	0	0	0	0	0	3	1	0	0
7:45:00	49	15	37	5	35	10	0	0	0	0	1	1	1	1	0	0	3	0	0	0
8:00:00	71	22	46	9	40	5	0	0	0	0	1	0	5	4	0	0	3	0	0	0
8:15:00	92	21	54	8	53	13	0	0	1	1	1	0	5	0	0	0	4	1	0	0
8:30:00	120	28	63	9	62	9	0	0	1	0	1	0	7	2	1	1	5	1	0	0
8:45:00	127	7	76	13	78	16	0	0	1	0	2	1	8	1	2	1	5	0	1	1
9:00:00	139	12	89	13	96	18	0	0	1	0	2	0	9	1	2	0	6	1	3	2
9:15:00	139	0	89	0	96	0	0	0	1	0	2	0	9	0	2	0	6	0	3	0
16:00:00	139	0	89	0	96	0	0	0	1	0	2	0	9	0	2	0	6	0	3	0
16:15:00	198	59	114	25	106	10	0	0	1	0	2	0	9	0	3	1	6	0	3	0
16:30:00	272	74	134	20	131	25	1	1	1	0	2	0	9	0	3	0	6	0	3	0
16:45:00	344	72	165	31	154	23	1	0	1	0	2	0	9	0	4	1	7	1	3	0
17:00:00	422	78	202	37	184	30	1	0	1	0	2	0	10	1	4	0	7	0	3	0
17:15:00	513	91	248	46	209	25	1	0	1	0	2	0	10	0	4	0	7	0	3	0
17:30:00	607	94	295	47	239	30	2	1	1	0	3	1	10	0	4	0	7	0	3	0
17:45:00	705	98	327	32	270	31	2	0	1	0	3	0	10	0	4	0	7	0	4	1
18:00:00	800	95	354	27	299	29	2	0	1	0	3	0	10	0	4	0	7	0	4	0
18:15:00	862	62	382	28	325	26	2	0	1	0	3	0	10	0	4	0	7	0	4	0
18:30:00	925	63	410	28	353	28	2	0	1	0	3	0	10	0	4	0	7	0	4	0
18:45:00	969	44	435	25	375	22	2	0	1	0	3	0	10	0	5	1	7	0	4	0
19:00:00	1015	46	466	31	392	17	2	0	1	0	3	0	10	0	5	0	7	0	4	0
19:15:00	1015	0	466	0	392	0	2	0	1	0	3	0	10	0	5	0	7	0	4	0
19:15:15	1015	0	466	0	392	0	2	0	1	0	3	0	10	0	5	0	7	0	4	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

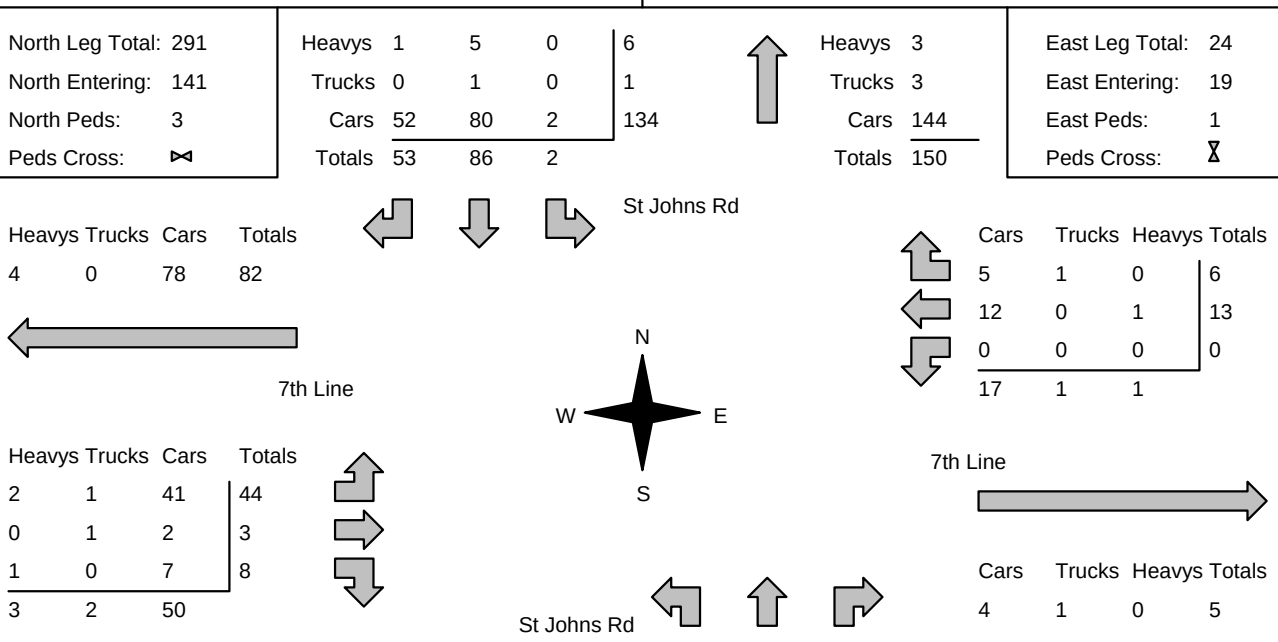
Municipality: Innisfil
Site #: 1712100003
Intersection: St Johns Rd & 7th Line
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: St Johns Rd runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Innisfil
Site #: 1712100003
Intersection: St Johns Rd & 7th Line
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: St Johns Rd runs N/S

North Leg Total: 377
North Entering: 187
North Peds: 4
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	1	4	0	5
Cars	44	123	15	182
Totals	45	127	15	

Heavys	2
Trucks	0
Cars	188
Totals	190

East Leg Total: 40
East Entering: 15
East Peds: 2
Peds Cross: ⧖

St Johns Rd

Heavys	Trucks	Cars	Totals
2	1	63	66

7th Line

Cars	Trucks	Heavys	Totals
11	0	0	11
4	0	0	4
0	0	0	0
15	0	0	

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	75	76
1	0	9	10
0	0	25	25
2	0	109	

7th Line

Cars	Trucks	Heavys	Totals
24	0	1	25

St Johns Rd

Peds Cross: ⧖
West Peds: 1
West Entering: 111
West Leg Total: 177

Cars	148			
Trucks	4			
Heavys	0			
Totals	152			

Cars	15	102	0	117
Trucks	0	0	0	0
Heavys	2	1	0	3
Totals	17	103	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 120
South Leg Total: 272

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

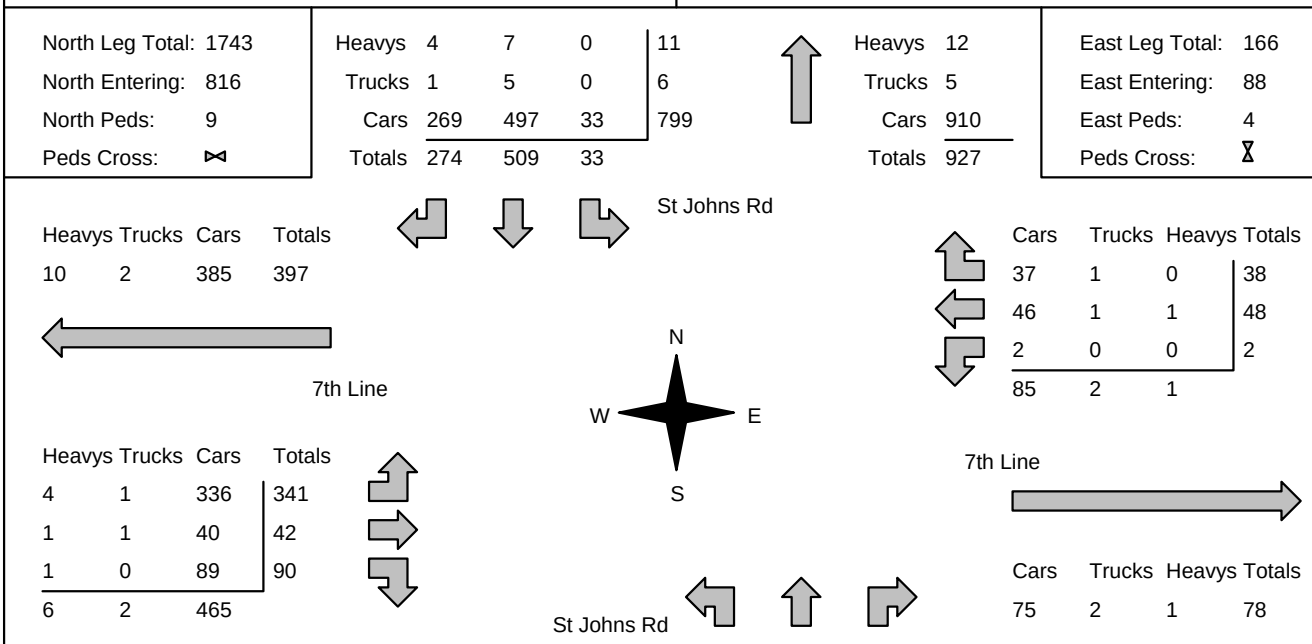
Municipality: Innisfil
Site #: 1712100003
Intersection: St Johns Rd & 7th Line
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: St Johns Rd runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: St Johns Rd & 7th Line | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*1*	*36*	*44*	*81*	*0*
8:00:00	*3*	*59*	*48*	*110*	*1*
9:00:00	*2*	*86*	*53*	*141*	*3*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*15*	*127*	*45*	*187*	*4*
18:00:00	*7*	*104*	*51*	*162*	*0*
19:00:00	*5*	*97*	*33*	*135*	*1*
Totals:	33	509	274	816	9

North/South Total Approaches: 1442

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*7*	*33*	*0*	*40*	*0*
8:00:00	*14*	*86*	*0*	*100*	*0*
9:00:00	*16*	*100*	*0*	*116*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*17*	*103*	*0*	*120*	*0*
18:00:00	*8*	*108*	*2*	*118*	*2*
19:00:00	*13*	*118*	*1*	*132*	*0*
S Totals:	75	548	3	626	2

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*1*	*7*	*5*	*13*	*1*
8:00:00	*0*	*10*	*5*	*15*	*0*
9:00:00	*0*	*13*	*6*	*19*	*1*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*4*	*11*	*15*	*2*
18:00:00	*0*	*5*	*8*	*13*	*0*
19:00:00	*1*	*9*	*3*	*13*	*0*
Totals:	2	48	38	88	4

East/West Total Approaches: 561

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*14*	*3*	*3*	*20*	*1*
8:00:00	*34*	*3*	*9*	*46*	*2*
9:00:00	*44*	*3*	*8*	*55*	*4*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*76*	*10*	*25*	*111*	*1*
18:00:00	*85*	*16*	*22*	*123*	*0*
19:00:00	*88*	*7*	*23*	*118*	*0*
W Totals:	341	42	90	473	8

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*22*	*45*	*60*	*0*	*90*	*103*	*99*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	9	9	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	16	7	23	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	27	11	34	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	1	1	36	9	44	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	1	53	17	55	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	3	1	62	9	63	8	0	0	0	0	0	0	0	0	0	0	2	2	1	1
7:45:00	4	1	74	12	77	14	0	0	0	0	0	0	0	0	1	1	2	0	1	0
8:00:00	4	0	94	20	90	13	0	0	0	0	0	0	0	0	1	0	2	0	1	0
8:15:00	4	0	112	18	103	13	0	0	0	0	0	0	0	0	1	0	2	0	2	1
8:30:00	4	0	133	21	122	19	0	0	0	0	0	0	0	0	3	2	2	0	2	0
8:45:00	5	1	154	21	132	10	0	0	1	1	0	0	0	0	4	1	2	0	4	2
9:00:00	6	1	174	20	142	10	0	0	1	0	0	0	0	0	6	2	3	1	4	0
9:15:00	6	0	174	0	142	0	0	0	1	0	0	0	0	0	6	0	3	0	4	0
16:00:00	6	0	174	0	142	0	0	0	1	0	0	0	0	0	6	0	3	0	4	0
16:15:00	7	1	202	28	151	9	0	0	3	2	0	0	0	0	6	0	3	0	4	0
16:30:00	10	3	236	34	162	11	0	0	5	2	0	0	0	0	6	0	3	0	4	0
16:45:00	15	5	265	29	177	15	0	0	5	0	0	0	0	0	6	0	3	0	6	2
17:00:00	21	6	297	32	186	9	0	0	5	0	1	1	0	0	6	0	3	0	8	2
17:15:00	22	1	318	21	199	13	0	0	5	0	1	0	0	0	7	1	3	0	8	0
17:30:00	24	2	351	33	209	10	0	0	5	0	1	0	0	0	7	0	3	0	8	0
17:45:00	25	1	367	16	220	11	0	0	5	0	1	0	0	0	7	0	3	0	8	0
18:00:00	28	3	400	33	236	16	0	0	5	0	1	0	0	0	7	0	4	1	8	0
18:15:00	29	1	424	24	246	10	0	0	5	0	1	0	0	0	7	0	4	0	8	0
18:30:00	30	1	444	20	256	10	0	0	5	0	1	0	0	0	7	0	4	0	8	0
18:45:00	33	3	469	25	260	4	0	0	5	0	1	0	0	0	7	0	4	0	9	1
19:00:00	33	0	497	28	269	9	0	0	5	0	1	0	0	0	7	0	4	0	9	0
19:15:00	33	0	497	0	269	0	0	0	5	0	1	0	0	0	7	0	4	0	9	0
19:15:15	33	0	497	0	269	0	0	0	5	0	1	0	0	0	7	0	4	0	9	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	1	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	1	0	6	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	1	0	7	1	5	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15:00	1	0	10	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30:00	1	0	14	4	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	1	0	15	1	8	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	1	0	17	2	10	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15:00	1	0	21	4	11	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1
8:30:00	1	0	24	3	11	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0
8:45:00	1	0	27	3	14	3	0	0	0	0	0	0	0	0	1	0	0	0	2	0
9:00:00	1	0	29	2	15	1	0	0	0	0	1	1	0	0	1	0	0	0	2	0
9:15:00	1	0	29	0	15	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0
16:00:00	1	0	29	0	15	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0
16:15:00	1	0	30	1	19	4	0	0	0	0	1	0	0	0	1	0	0	0	2	0
16:30:00	1	0	32	2	22	3	0	0	0	0	1	0	0	0	1	0	0	0	3	1
16:45:00	1	0	33	1	23	1	0	0	0	0	1	0	0	0	1	0	0	0	3	0
17:00:00	1	0	33	0	26	3	0	0	0	0	1	0	0	0	1	0	0	0	4	1
17:15:00	1	0	34	1	30	4	0	0	0	0	1	0	0	0	1	0	0	0	4	0
17:30:00	1	0	35	1	32	2	0	0	0	0	1	0	0	0	1	0	0	0	4	0
17:45:00	1	0	36	1	33	1	0	0	1	1	1	0	0	0	1	0	0	0	4	0
18:00:00	1	0	37	1	34	1	0	0	1	0	1	0	0	0	1	0	0	0	4	0
18:15:00	1	0	39	2	35	1	0	0	1	0	1	0	0	0	1	0	0	0	4	0
18:30:00	2	1	41	2	35	0	0	0	1	0	1	0	0	0	1	0	0	0	4	0
18:45:00	2	0	43	2	37	2	0	0	1	0	1	0	0	0	1	0	0	0	4	0
19:00:00	2	0	46	3	37	0	0	0	1	0	1	0	0	0	1	0	0	0	4	0
19:15:00	2	0	46	0	37	0	0	0	1	0	1	0	0	0	1	0	0	0	4	0
19:15:15	2	0	46	0	37	0	0	0	1	0	1	0	0	0	1	0	0	0	4	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	2	2	3	3	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30:00	4	2	10	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6:45:00	7	3	21	11	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:00:00	7	0	32	11	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:15:00	10	3	44	12	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0
7:30:00	13	3	72	28	0	0	0	0	1	0	0	0	1	0	2	2	0	0	0	0
7:45:00	17	4	90	18	0	0	0	0	2	1	0	0	1	0	2	0	0	0	0	0
8:00:00	20	3	113	23	0	0	0	0	2	0	0	0	1	0	4	2	0	0	0	0
8:15:00	25	5	135	22	0	0	0	0	2	0	0	0	1	0	4	0	0	0	0	0
8:30:00	31	6	155	20	0	0	0	0	2	0	0	0	2	1	4	0	0	0	0	0
8:45:00	33	2	176	21	0	0	0	0	2	0	0	0	2	0	4	0	0	0	0	0
9:00:00	34	1	211	35	0	0	0	0	3	1	0	0	3	1	5	1	0	0	0	0
9:15:00	34	0	211	0	0	0	0	0	3	0	0	0	3	0	5	0	0	0	0	0
16:00:00	34	0	211	0	0	0	0	0	3	0	0	0	3	0	5	0	0	0	0	0
16:15:00	38	4	237	26	0	0	0	0	3	0	0	0	4	1	6	1	0	0	0	0
16:30:00	42	4	259	22	0	0	0	0	3	0	0	0	5	1	6	0	0	0	0	0
16:45:00	46	4	290	31	0	0	0	0	3	0	0	0	5	0	6	0	0	0	0	0
17:00:00	49	3	313	23	0	0	0	0	3	0	0	0	5	0	6	0	0	0	0	0
17:15:00	50	1	338	25	0	0	0	0	3	0	0	0	5	0	6	0	0	0	2	2
17:30:00	53	3	356	18	1	1	0	0	3	0	0	0	5	0	6	0	0	0	2	0
17:45:00	53	0	386	30	1	0	0	0	3	0	1	1	5	0	7	1	0	0	2	0
18:00:00	57	4	419	33	1	0	0	0	3	0	1	0	5	0	8	1	0	0	2	0
18:15:00	64	7	453	34	1	0	0	0	3	0	1	0	5	0	8	0	0	0	2	0
18:30:00	65	1	479	26	1	0	0	0	3	0	1	0	5	0	8	0	0	0	2	0
18:45:00	66	1	508	29	2	1	0	0	3	0	1	0	5	0	8	0	0	0	2	0
19:00:00	70	4	537	29	2	0	0	0	3	0	1	0	5	0	8	0	0	0	2	0
19:15:00	70	0	537	0	2	0	0	0	3	0	1	0	5	0	8	0	0	0	2	0
19:15:15	70	0	537	0	2	0	0	0	3	0	1	0	5	0	8	0	0	0	2	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	5	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	5	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	8	3	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	14	6	3	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15:00	21	7	3	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30:00	25	4	4	1	8	4	0	0	0	0	0	0	1	1	0	0	0	0	1	0
7:45:00	35	10	4	0	10	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0
8:00:00	47	12	6	2	12	2	0	0	0	0	0	0	1	0	0	0	0	0	3	2
8:15:00	54	7	6	0	14	2	0	0	1	1	0	0	2	1	0	0	0	0	6	3
8:30:00	61	7	7	1	16	2	1	1	1	0	0	0	2	0	0	0	0	0	7	1
8:45:00	70	9	8	1	18	2	1	0	1	0	0	0	3	1	0	0	1	1	7	0
9:00:00	88	18	8	0	19	1	1	0	1	0	0	0	3	0	0	0	1	0	7	0
9:15:00	88	0	8	0	19	0	1	0	1	0	0	0	3	0	0	0	1	0	7	0
16:00:00	88	0	8	0	19	0	1	0	1	0	0	0	3	0	0	0	1	0	7	0
16:15:00	112	24	10	2	26	7	1	0	1	0	0	0	3	0	1	1	1	0	7	0
16:30:00	121	9	10	0	32	6	1	0	1	0	0	0	3	0	1	0	1	0	7	0
16:45:00	138	17	15	5	41	9	1	0	1	0	0	0	4	1	1	0	1	0	8	1
17:00:00	163	25	17	2	44	3	1	0	1	0	0	0	4	0	1	0	1	0	8	0
17:15:00	181	18	25	8	57	13	1	0	1	0	0	0	4	0	1	0	1	0	8	0
17:30:00	207	26	28	3	60	3	1	0	1	0	0	0	4	0	1	0	1	0	8	0
17:45:00	225	18	31	3	65	5	1	0	1	0	0	0	4	0	1	0	1	0	8	0
18:00:00	248	23	33	2	66	1	1	0	1	0	0	0	4	0	1	0	1	0	8	0
18:15:00	273	25	34	1	75	9	1	0	1	0	0	0	4	0	1	0	1	0	8	0
18:30:00	295	22	36	2	79	4	1	0	1	0	0	0	4	0	1	0	1	0	8	0
18:45:00	315	20	38	2	85	6	1	0	1	0	0	0	4	0	1	0	1	0	8	0
19:00:00	336	21	40	2	89	4	1	0	1	0	0	0	4	0	1	0	1	0	8	0
19:15:00	336	0	40	0	89	0	1	0	1	0	0	0	4	0	1	0	1	0	8	0
19:15:15	336	0	40	0	89	0	1	0	1	0	0	0	4	0	1	0	1	0	8	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Innisfil
Site #: 1712100004
Intersection: 7th Line & Fox Hill St
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

North Leg Total: 2
North Entering: 2
North Peds: 0
Peds Cross: ⋈

Heavys	0	0	0
Trucks	0	0	0
Cars	1	1	2
Totals	1	1	

Heavys	0
Trucks	0
Cars	0
Totals	0

East Leg Total: 615
East Entering: 449
East Peds: 0
Peds Cross: ⧖

Fox Hill St

Heavys	Trucks	Cars	Totals
8	1	441	450

7th Line

Heavys	Trucks	Cars	Totals
0	0	0	0
10	2	153	165
10	2	153	

Cars	Trucks	Heavys	Totals
0	0	0	0
440	1	8	449
440	1	8	

N
W E
S

7th Line

Cars	Trucks	Heavys	Totals
154	2	10	166

Peds Cross: ⧖
West Peds: 0
West Entering: 165
West Leg Total: 615

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Innisfil
Site #: 1712100004
Intersection: 7th Line & Fox Hill St
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

North Leg Total: 29
North Entering: 8
North Peds: 0
Peds Cross: ⋈

Heavys	0	0	0
Trucks	0	0	0
Cars	8	0	8
Totals	8	0	

Heavys	0
Trucks	0
Cars	21
Totals	21

East Leg Total: 814
East Entering: 184
East Peds: 0
Peds Cross: ⧖

Fox Hill St

Heavys	Trucks	Cars	Totals
1	1	187	189

Cars	Trucks	Heavys	Totals
3	0	0	3
179	1	1	181
182	1	1	

7th Line

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	18	18
0	2	628	630
0	2	646	

7th Line

Cars	Trucks	Heavys	Totals
628	2	0	630

Peds Cross: ⧖
West Peds: 0
West Entering: 648
West Leg Total: 837

Comments

Accu-Traffic Inc.

Total Count Diagram

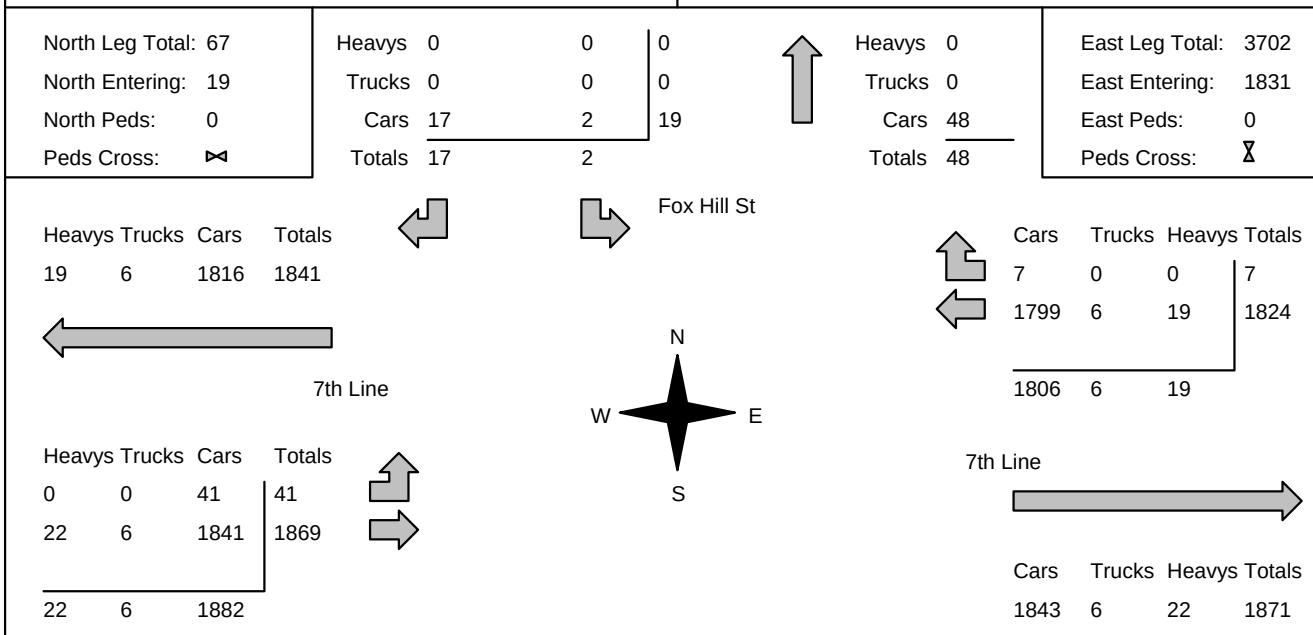
Municipality: Innisfil
Site #: 1712100004
Intersection: 7th Line & Fox Hill St
TFR File #: 1
Count date: 6-Jun-17

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E



Peds Cross:
West Peds: 0
West Entering: 1910
West Leg Total: 3751

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: 7th Line & Fox Hill St | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*0*	*1*	*1*	*0*
8:00:00	*1*	*0*	*1*	*2*	*0*
9:00:00	*0*	*0*	*1*	*1*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*4*	*4*	*0*
18:00:00	*0*	*0*	*8*	*8*	*0*
19:00:00	*1*	*0*	*2*	*3*	*0*
Totals:	2	0	17	19	0

North/South Total Approaches: 19

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*0*	*0*	*0*
19:00:00	*0*	*0*	*0*	*0*	*0*
S Totals:	0	0	0	0	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*404*	*1*	*405*	*0*
8:00:00	*0*	*462*	*1*	*463*	*0*
9:00:00	*0*	*382*	*1*	*383*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*195*	*1*	*196*	*0*
18:00:00	*0*	*181*	*3*	*184*	*0*
19:00:00	*0*	*200*	*0*	*200*	*0*
Totals:	0	1824	7	1831	0

East/West Total Approaches: 3741

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*1*	*50*	*0*	*51*	*0*
8:00:00	*0*	*113*	*0*	*113*	*0*
9:00:00	*2*	*179*	*0*	*181*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*16*	*484*	*0*	*500*	*0*
18:00:00	*18*	*630*	*0*	*648*	*0*
19:00:00	*4*	*413*	*0*	*417*	*0*
W Totals:	41	1869	0	1910	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*1*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100004

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	1	0	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	1	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	1	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	1	0	0	0	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	1	0	0	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	1	0	0	0	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	1	0	0	0	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	2	1	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	2	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	2	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	2	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100004

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	96	96	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	194	98	0	0	0	0	2	1	0	0	0	0	1	1	0	0	0	0
6:45:00	0	0	303	109	1	1	0	0	3	1	0	0	0	0	1	0	0	0	0	0
7:00:00	0	0	400	97	1	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0
7:15:00	0	0	514	114	2	1	0	0	3	0	0	0	0	0	1	0	0	0	0	0
7:30:00	0	0	624	110	2	0	0	0	3	0	0	0	0	0	2	1	0	0	0	0
7:45:00	0	0	748	124	2	0	0	0	4	1	0	0	0	0	4	2	0	0	0	0
8:00:00	0	0	856	108	2	0	0	0	4	0	0	0	0	0	6	2	0	0	0	0
8:15:00	0	0	972	116	2	0	0	0	4	0	0	0	0	0	9	3	0	0	0	0
8:30:00	0	0	1064	92	2	0	0	0	4	0	0	0	0	0	10	1	0	0	0	0
8:45:00	0	0	1151	87	2	0	0	0	5	1	0	0	0	0	10	0	0	0	0	0
9:00:00	0	0	1232	81	3	1	0	0	5	0	0	0	0	0	11	1	0	0	0	0
9:15:00	0	0	1232	0	3	0	0	0	5	0	0	0	0	0	11	0	0	0	0	0
16:00:00	0	0	1232	0	3	0	0	0	5	0	0	0	0	0	11	0	0	0	0	0
16:15:00	0	0	1285	53	3	0	0	0	5	0	0	0	0	0	14	3	0	0	0	0
16:30:00	0	0	1333	48	3	0	0	0	5	0	0	0	0	0	14	0	0	0	0	0
16:45:00	0	0	1383	50	4	1	0	0	5	0	0	0	0	0	15	1	0	0	0	0
17:00:00	0	0	1421	38	4	0	0	0	5	0	0	0	0	0	17	2	0	0	0	0
17:15:00	0	0	1468	47	4	0	0	0	5	0	0	0	0	0	18	1	0	0	0	0
17:30:00	0	0	1522	54	4	0	0	0	5	0	0	0	0	0	18	0	0	0	0	0
17:45:00	0	0	1554	32	6	2	0	0	6	1	0	0	0	0	18	0	0	0	0	0
18:00:00	0	0	1600	46	7	1	0	0	6	0	0	0	0	0	18	0	0	0	0	0
18:15:00	0	0	1658	58	7	0	0	0	6	0	0	0	0	0	19	1	0	0	0	0
18:30:00	0	0	1710	52	7	0	0	0	6	0	0	0	0	0	19	0	0	0	0	0
18:45:00	0	0	1759	49	7	0	0	0	6	0	0	0	0	0	19	0	0	0	0	0
19:00:00	0	0	1799	40	7	0	0	0	6	0	0	0	0	0	19	0	0	0	0	0
19:15:00	0	0	1799	0	7	0	0	0	6	0	0	0	0	0	19	0	0	0	0	0
19:15:15	0	0	1799	0	7	0	0	0	6	0	0	0	0	0	19	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100004

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100004

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	1	0	19	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	1	0	31	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	1	0	50	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	0	68	18	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
7:30:00	1	0	90	22	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0
7:45:00	1	0	117	27	0	0	0	0	1	1	0	0	0	0	4	1	0	0	0	0
8:00:00	1	0	154	37	0	0	0	0	1	0	0	0	0	0	8	4	0	0	0	0
8:15:00	1	0	196	42	0	0	0	0	2	1	0	0	0	0	9	1	0	0	0	0
8:30:00	1	0	243	47	0	0	0	0	2	0	0	0	0	0	13	4	0	0	0	0
8:45:00	1	0	278	35	0	0	0	0	3	1	0	0	0	0	15	2	0	0	0	0
9:00:00	3	2	322	44	0	0	0	0	3	0	0	0	0	0	17	2	0	0	0	0
9:15:00	3	0	322	0	0	0	0	0	3	0	0	0	0	0	17	0	0	0	0	0
16:00:00	3	0	322	0	0	0	0	0	3	0	0	0	0	0	17	0	0	0	0	0
16:15:00	6	3	414	92	0	0	0	0	3	0	0	0	0	0	18	1	0	0	0	0
16:30:00	8	2	531	117	0	0	0	0	4	1	0	0	0	0	18	0	0	0	0	0
16:45:00	14	6	653	122	0	0	0	0	4	0	0	0	0	0	20	2	0	0	0	0
17:00:00	19	5	801	148	0	0	0	0	4	0	0	0	0	0	21	1	0	0	0	0
17:15:00	24	5	960	159	0	0	0	0	4	0	0	0	0	0	21	0	0	0	0	0
17:30:00	31	7	1124	164	0	0	0	0	5	1	0	0	0	0	21	0	0	0	0	0
17:45:00	33	2	1282	158	0	0	0	0	5	0	0	0	0	0	21	0	0	0	0	0
18:00:00	37	4	1429	147	0	0	0	0	6	1	0	0	0	0	21	0	0	0	0	0
18:15:00	39	2	1544	115	0	0	0	0	6	0	0	0	0	0	21	0	0	0	0	0
18:30:00	41	2	1662	118	0	0	0	0	6	0	0	0	0	0	21	0	0	0	0	0
18:45:00	41	0	1751	89	0	0	0	0	6	0	0	0	0	0	22	1	0	0	0	0
19:00:00	41	0	1841	90	0	0	0	0	6	0	0	0	0	0	22	0	0	0	0	0
19:15:00	41	0	1841	0	0	0	0	0	6	0	0	0	0	0	22	0	0	0	0	0
19:15:15	41	0	1841	0	0	0	0	0	6	0	0	0	0	0	22	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Innisfil
Site #: 1712100005
Intersection: 7th Line & Wingrove Ave
TFR File #: 1
Count date: 6-Jun-17

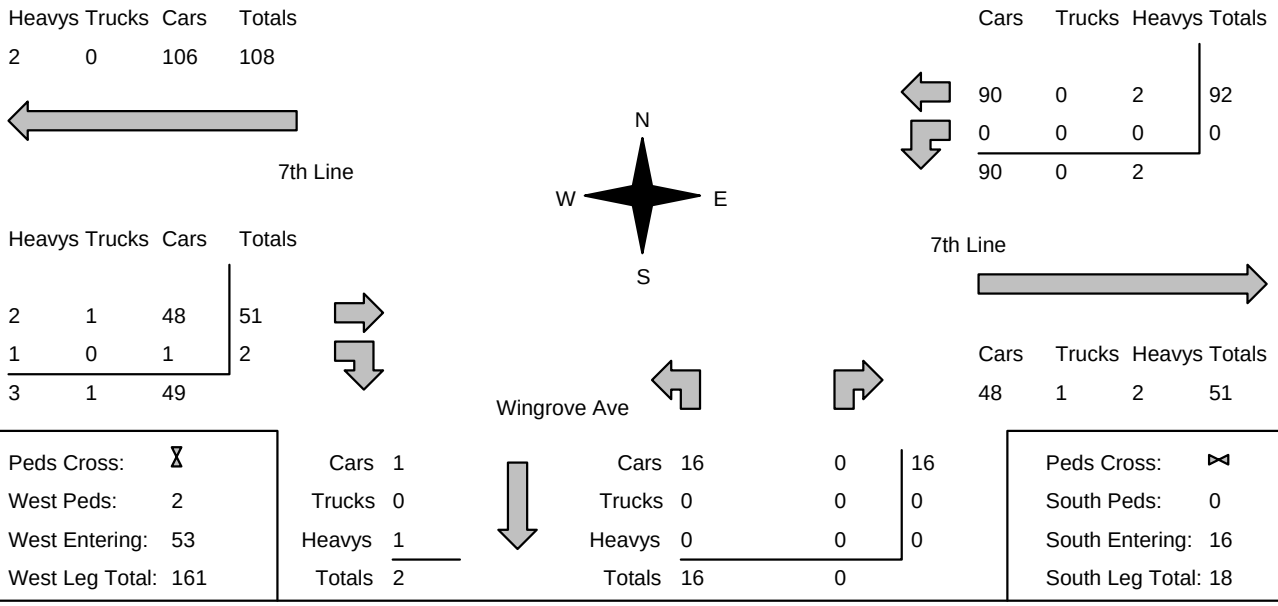
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

East Leg Total: 143
East Entering: 92
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 2
West Entering: 53
West Leg Total: 161

Cars 1
Trucks 0
Heavys 1
Totals 2

Cars 16 0 16
Trucks 0 0 0
Heavys 0 0 0
Totals 16 0

Peds Cross: ⋈
South Peds: 0
South Entering: 16
South Leg Total: 18

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Innisfil
Site #: 1712100005
Intersection: 7th Line & Wingrove Ave
TFR File #: 1
Count date: 6-Jun-17

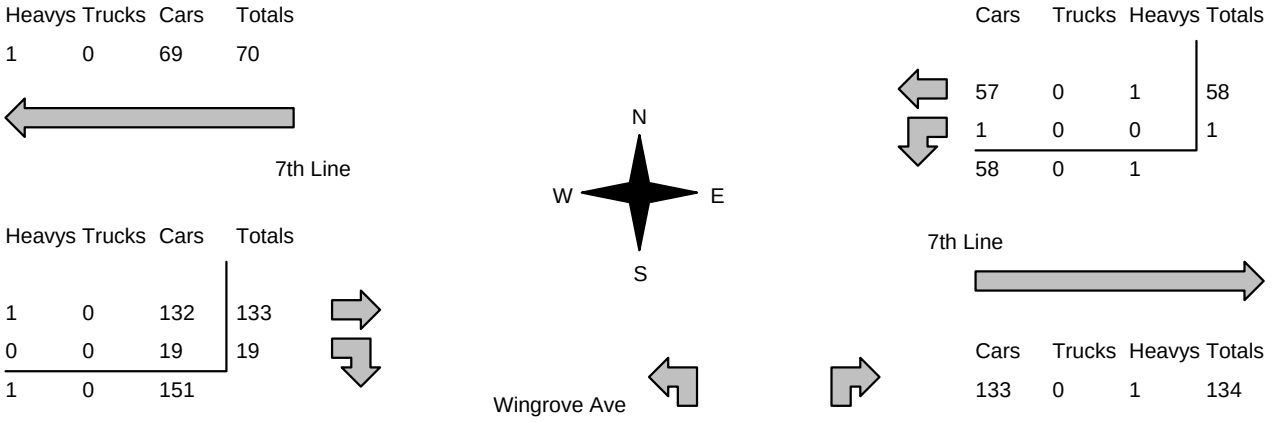
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

East Leg Total: 193
East Entering: 59
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 152
West Leg Total: 222

Cars 20
Trucks 0
Heavys 0
Totals 20

Cars 12 1 13
Trucks 0 0 0
Heavys 0 0 0
Totals 12 1

Peds Cross: ⋈
South Peds: 2
South Entering: 13
South Leg Total: 33

Comments

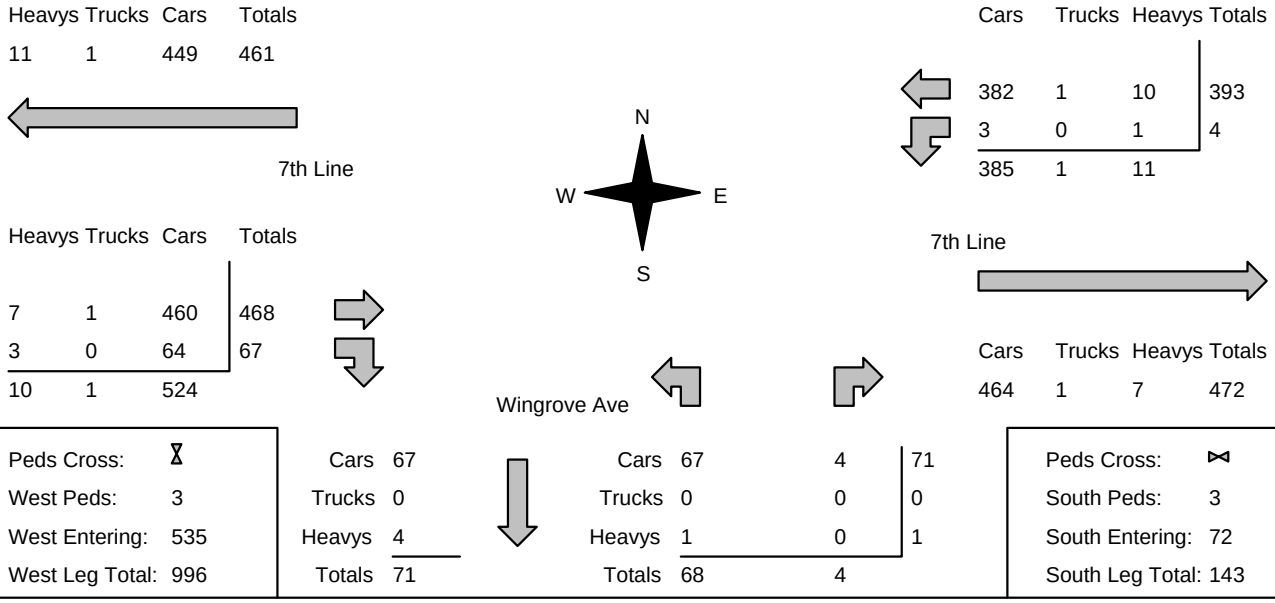
Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

Municipality: Innisfil **Site #:** 1712100005 **Intersection:** 7th Line & Wingrove Ave **TFR File #:** 1 **Count date:** 6-Jun-17	**Weather conditions:** **Person counted:** **Person prepared:** **Person checked:**
**** Non-Signalized Intersection ****	**Major Road:** 7th Line runs W/E

East Leg Total: 869
East Entering: 397
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 3
West Entering: 535
West Leg Total: 996

Cars 67
Trucks 0
Heavys 4
Totals 71

Cars 67 4 71
Trucks 0 0 0
Heavys 1 0 1
Totals 68 4

Peds Cross: ⋈
South Peds: 3
South Entering: 72
South Leg Total: 143

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: 7th Line & Wingrove Ave | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*0*	*0*	*0*
19:00:00	*0*	*0*	*0*	*0*	*0*
Totals:	0	0	0	0	0

North/South Total Approaches: 72

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*10*	*0*	*0*	*10*	*0*
8:00:00	*13*	*0*	*0*	*13*	*0*
9:00:00	*15*	*0*	*0*	*15*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*15*	*0*	*0*	*15*	*1*
18:00:00	*6*	*0*	*2*	*8*	*2*
19:00:00	*9*	*0*	*2*	*11*	*0*
S Totals:	68	0	4	72	3

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*57*	*0*	*57*	*0*
8:00:00	*1*	*75*	*0*	*76*	*0*
9:00:00	*0*	*83*	*0*	*83*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*63*	*0*	*63*	*0*
18:00:00	*2*	*61*	*0*	*63*	*0*
19:00:00	*1*	*54*	*0*	*55*	*0*
Totals:	4	393	0	397	0

East/West Total Approaches: 932

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*20*	*0*	*20*	*0*
8:00:00	*0*	*46*	*1*	*47*	*2*
9:00:00	*0*	*54*	*4*	*58*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*111*	*17*	*128*	*0*
18:00:00	*0*	*121*	*22*	*143*	*0*
19:00:00	*0*	*116*	*23*	*139*	*1*
W Totals:	0	468	67	535	3

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*10*	*15*	*15*	*0*	*15*	*6*	*10*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100005

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100005

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	46	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	57	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	75	18	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
7:30:00	0	0	90	15	0	0	0	0	0	0	0	0	1	0	2	2	0	0	0	0
7:45:00	0	0	112	22	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
8:00:00	0	0	130	18	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
8:15:00	0	0	154	24	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
8:30:00	0	0	180	26	0	0	0	0	0	0	0	0	1	0	4	2	0	0	0	0
8:45:00	0	0	195	15	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	0
9:00:00	0	0	209	14	0	0	0	0	0	0	0	0	1	0	6	2	0	0	0	0
9:15:00	0	0	209	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0	0	0
16:00:00	0	0	209	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0	0	0
16:15:00	0	0	223	14	0	0	0	0	0	0	0	0	1	0	7	1	0	0	0	0
16:30:00	0	0	238	15	0	0	0	0	0	0	0	0	1	0	8	1	0	0	0	0
16:45:00	0	0	258	20	0	0	0	0	0	0	0	0	1	0	8	0	0	0	0	0
17:00:00	0	0	269	11	0	0	0	0	0	0	0	0	1	0	9	1	0	0	0	0
17:15:00	1	1	283	14	0	0	0	0	0	0	0	0	1	0	9	0	0	0	0	0
17:30:00	1	0	295	12	0	0	0	0	0	0	0	0	1	0	9	0	0	0	0	0
17:45:00	2	1	307	12	0	0	0	0	1	1	0	0	1	0	9	0	0	0	0	0
18:00:00	2	0	328	21	0	0	0	0	1	0	0	0	1	0	10	1	0	0	0	0
18:15:00	2	0	348	20	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0
18:30:00	2	0	361	13	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0
18:45:00	3	1	369	8	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0
19:00:00	3	0	382	13	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0
19:15:00	3	0	382	0	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0
19:15:15	3	0	382	0	0	0	0	0	1	0	0	0	1	0	10	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100005

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	15	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	20	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	27	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	31	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	34	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	38	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	40	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
16:30:00	43	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
16:45:00	48	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
17:00:00	52	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
17:15:00	54	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1
17:30:00	55	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0
17:45:00	57	2	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1
18:00:00	58	1	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	3	0
18:15:00	59	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0
18:30:00	62	3	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0	3	0
18:45:00	64	2	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0
19:00:00	67	3	0	0	4	1	0	0	0	0	0	0	1	0	0	0	0	0	3	0
19:15:00	67	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0
19:15:15	67	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100005

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	20	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	28	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	37	9	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:45:00	0	0	49	12	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1
8:00:00	0	0	65	16	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1
8:15:00	0	0	74	9	1	0	0	0	1	1	0	0	0	0	2	1	0	0	2	0
8:30:00	0	0	85	11	1	0	0	0	1	0	0	0	0	0	3	1	1	1	2	0
8:45:00	0	0	95	10	2	1	0	0	1	0	0	0	0	0	5	2	1	0	2	0
9:00:00	0	0	114	19	3	1	0	0	1	0	0	0	0	0	5	0	2	1	2	0
9:15:00	0	0	114	0	3	0	0	0	1	0	0	0	0	0	5	0	2	0	2	0
16:00:00	0	0	114	0	3	0	0	0	1	0	0	0	0	0	5	0	2	0	2	0
16:15:00	0	0	145	31	6	3	0	0	1	0	0	0	0	0	6	1	3	1	2	0
16:30:00	0	0	162	17	10	4	0	0	1	0	0	0	0	0	6	0	3	0	2	0
16:45:00	0	0	191	29	12	2	0	0	1	0	0	0	0	0	7	1	3	0	2	0
17:00:00	0	0	223	32	19	7	0	0	1	0	0	0	0	0	7	0	3	0	2	0
17:15:00	0	0	262	39	24	5	0	0	1	0	0	0	0	0	7	0	3	0	2	0
17:30:00	0	0	294	32	29	5	0	0	1	0	0	0	0	0	7	0	3	0	2	0
17:45:00	0	0	320	26	37	8	0	0	1	0	0	0	0	0	7	0	3	0	2	0
18:00:00	0	0	344	24	41	4	0	0	1	0	0	0	0	0	7	0	3	0	2	0
18:15:00	0	0	378	34	43	2	0	0	1	0	0	0	0	0	7	0	3	0	2	0
18:30:00	0	0	405	27	49	6	0	0	1	0	0	0	0	0	7	0	3	0	2	0
18:45:00	0	0	432	27	56	7	0	0	1	0	0	0	0	0	7	0	3	0	3	1
19:00:00	0	0	460	28	64	8	0	0	1	0	0	0	0	0	7	0	3	0	3	0
19:15:00	0	0	460	0	64	0	0	0	1	0	0	0	0	0	7	0	3	0	3	0
19:15:15	0	0	460	0	64	0	0	0	1	0	0	0	0	0	7	0	3	0	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period	One Hour Peak
From: 6:00:00	**From:** 8:00:00
To: 9:00:00	**To:** 9:00:00

Municipality: Innisfil
Site #: 1712100006
Intersection: 7th Line & Quarry Dr
TFR File #: 1
Count date: 6-Jun-17

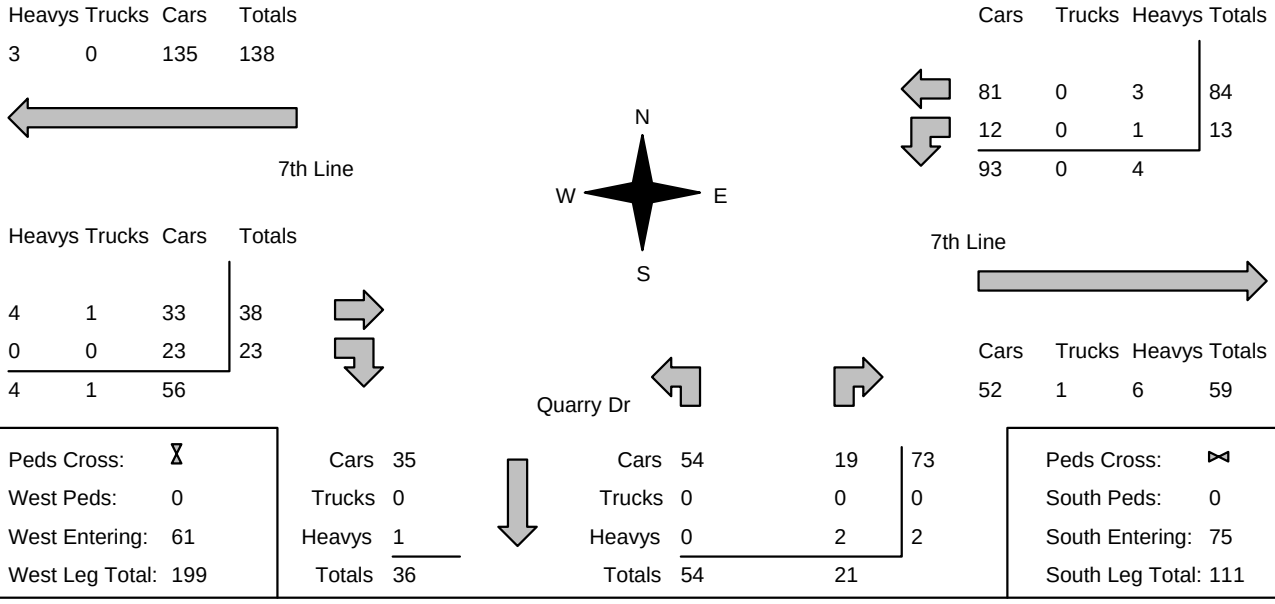
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

East Leg Total: 156
East Entering: 97
East Peds: 0
Peds Cross: ⧖



West	North	East	South
Peds Cross: ⧖	Cars 35	Cars 54 19 73	Peds Cross: ⋈
West Peds: 0	Trucks 0	Trucks 0 0 0	South Peds: 0
West Entering: 61	Heavys 1	Heavys 0 2 2	South Entering: 75
West Leg Total: 199	Totals 36	Totals 54 21	South Leg Total: 111

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Innisfil
Site #: 1712100006
Intersection: 7th Line & Quarry Dr
TFR File #: 1
Count date: 6-Jun-17

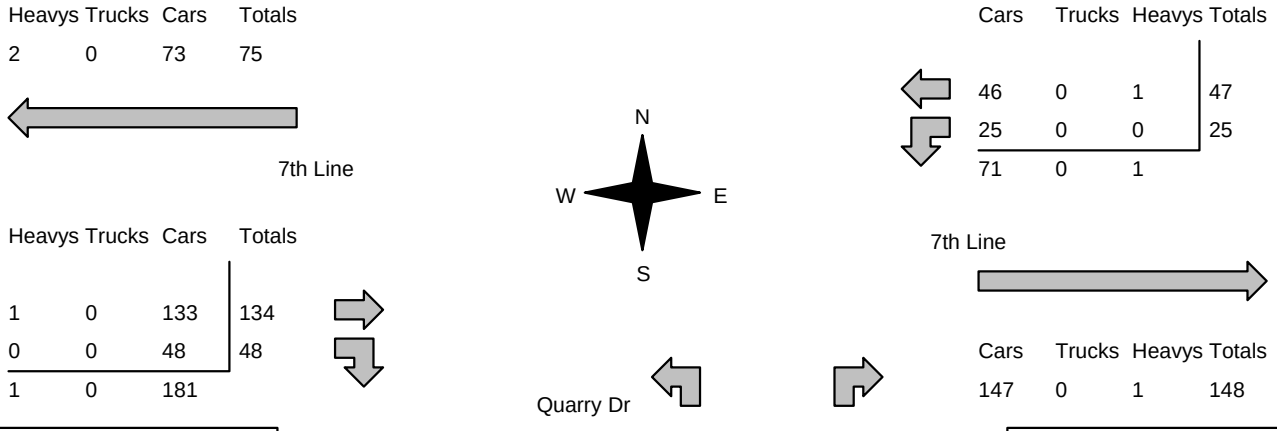
Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: 7th Line runs W/E

East Leg Total: 220
East Entering: 72
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 182
West Leg Total: 257

Cars 73
Trucks 0
Heavys 0
Totals 73

Cars 27 14 41
Trucks 0 0 0
Heavys 1 0 1
Totals 28 14

Peds Cross: ⋈
South Peds: 1
South Entering: 42
South Leg Total: 115

Comments

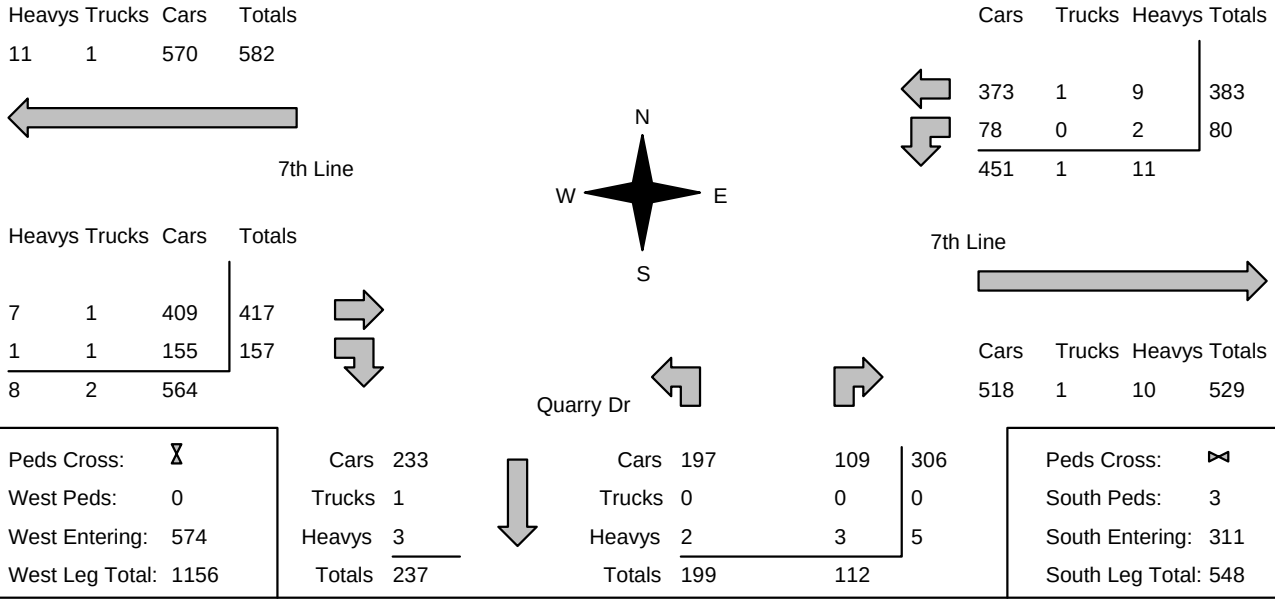
Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

Municipality: Innisfil **Site #:** 1712100006 **Intersection:** 7th Line & Quarry Dr **TFR File #:** 1 **Count date:** 6-Jun-17	**Weather conditions:** **Person counted:** **Person prepared:** **Person checked:**
**** Non-Signalized Intersection ****	**Major Road:** 7th Line runs W/E

East Leg Total: 992
East Entering: 463
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 574
West Leg Total: 1156

Cars 233
Trucks 1
Heavys 3
Totals 237

Cars 197 109 306
Trucks 0 0 0
Heavys 2 3 5
Totals 199 112

Peds Cross: ⋈
South Peds: 3
South Entering: 311
South Leg Total: 548

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: 7th Line & Quarry Dr | **Count Date:** 6-Jun-17 | **Municipality:** Innisfil

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*0*	*0*	*0*
19:00:00	*0*	*0*	*0*	*0*	*0*
Totals:	0	0	0	0	0

North/South Total Approaches: 311

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*25*	*0*	*9*	*34*	*2*
8:00:00	*40*	*0*	*19*	*59*	*0*
9:00:00	*54*	*0*	*21*	*75*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*27*	*0*	*21*	*48*	*0*
18:00:00	*25*	*0*	*19*	*44*	*1*
19:00:00	*28*	*0*	*23*	*51*	*0*
S Totals:	199	0	112	311	3

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*2*	*68*	*0*	*70*	*0*
8:00:00	*5*	*82*	*0*	*87*	*0*
9:00:00	*13*	*84*	*0*	*97*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*18*	*59*	*0*	*77*	*0*
18:00:00	*27*	*42*	*0*	*69*	*0*
19:00:00	*15*	*48*	*0*	*63*	*0*
Totals:	80	383	0	463	0

East/West Total Approaches: 1037

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
6:00:00	*0*	*0*	*0*	*0*	*0*
7:00:00	*0*	*11*	*2*	*13*	*0*
8:00:00	*0*	*26*	*10*	*36*	*0*
9:00:00	*0*	*38*	*23*	*61*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*106*	*40*	*146*	*0*
18:00:00	*0*	*121*	*43*	*164*	*0*
19:00:00	*0*	*115*	*39*	*154*	*0*
W Totals:	0	417	157	574	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*6:00*	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*19:00*
Crossing Values:	*0*	*25*	*40*	*54*	*0*	*27*	*25*	*28*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100006

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100006

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	1	0	35	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	1	0	55	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	2	1	68	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	4	2	87	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	4	0	104	17	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
7:45:00	5	1	130	26	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
8:00:00	6	1	149	19	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
8:15:00	9	3	173	24	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
8:30:00	11	2	201	28	0	0	0	0	0	0	0	0	1	0	3	2	0	0	0	0
8:45:00	15	4	215	14	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
9:00:00	18	3	230	15	0	0	0	0	0	0	0	0	2	1	4	1	0	0	0	0
9:15:00	18	0	230	0	0	0	0	0	0	0	0	0	2	0	4	0	0	0	0	0
16:00:00	18	0	230	0	0	0	0	0	0	0	0	0	2	0	4	0	0	0	0	0
16:15:00	22	4	242	12	0	0	0	0	0	0	0	0	2	0	6	2	0	0	0	0
16:30:00	26	4	255	13	0	0	0	0	0	0	0	0	2	0	7	1	0	0	0	0
16:45:00	32	6	274	19	0	0	0	0	0	0	0	0	2	0	7	0	0	0	0	0
17:00:00	36	4	285	11	0	0	0	0	0	0	0	0	2	0	8	1	0	0	0	0
17:15:00	45	9	291	6	0	0	0	0	0	0	0	0	2	0	8	0	0	0	0	0
17:30:00	51	6	301	10	0	0	0	0	0	0	0	0	2	0	8	0	0	0	0	0
17:45:00	56	5	310	9	0	0	0	0	1	1	0	0	2	0	8	0	0	0	0	0
18:00:00	63	7	326	16	0	0	0	0	1	0	0	0	2	0	8	0	0	0	0	0
18:15:00	69	6	341	15	0	0	0	0	1	0	0	0	2	0	9	1	0	0	0	0
18:30:00	73	4	351	10	0	0	0	0	1	0	0	0	2	0	9	0	0	0	0	0
18:45:00	75	2	360	9	0	0	0	0	1	0	0	0	2	0	9	0	0	0	0	0
19:00:00	78	3	373	13	0	0	0	0	1	0	0	0	2	0	9	0	0	0	0	0
19:15:00	78	0	373	0	0	0	0	0	1	0	0	0	2	0	9	0	0	0	0	0
19:15:15	78	0	373	0	0	0	0	0	1	0	0	0	2	0	9	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100006

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	9	9	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	14	5	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	21	7	0	0	9	5	0	0	0	0	0	0	0	0	0	0	0	0	2	2
7:00:00	25	4	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15:00	36	11	0	0	13	4	0	0	0	0	0	0	1	1	0	0	0	0	2	0
7:30:00	45	9	0	0	14	1	0	0	0	0	0	0	1	0	0	0	1	1	2	0
7:45:00	55	10	0	0	21	7	0	0	0	0	0	0	1	0	0	0	1	0	2	0
8:00:00	64	9	0	0	27	6	0	0	0	0	0	0	1	0	0	0	1	0	2	0
8:15:00	83	19	0	0	33	6	0	0	0	0	0	0	1	0	0	0	2	1	2	0
8:30:00	93	10	0	0	36	3	0	0	0	0	0	0	1	0	0	0	2	0	2	0
8:45:00	108	15	0	0	40	4	0	0	0	0	0	0	1	0	0	0	3	1	2	0
9:00:00	118	10	0	0	46	6	0	0	0	0	0	0	1	0	0	0	3	0	2	0
9:15:00	118	0	0	0	46	0	0	0	0	0	0	0	1	0	0	0	3	0	2	0
16:00:00	118	0	0	0	46	0	0	0	0	0	0	0	1	0	0	0	3	0	2	0
16:15:00	122	4	0	0	51	5	0	0	0	0	0	0	1	0	0	0	3	0	2	0
16:30:00	130	8	0	0	54	3	0	0	0	0	0	0	1	0	0	0	3	0	2	0
16:45:00	141	11	0	0	58	4	0	0	0	0	0	0	1	0	0	0	3	0	2	0
17:00:00	144	3	0	0	67	9	0	0	0	0	0	0	2	1	0	0	3	0	2	0
17:15:00	153	9	0	0	67	0	0	0	0	0	0	0	2	0	0	0	3	0	3	1
17:30:00	157	4	0	0	68	1	0	0	0	0	0	0	2	0	0	0	3	0	3	0
17:45:00	163	6	0	0	74	6	0	0	0	0	0	0	2	0	0	0	3	0	3	0
18:00:00	169	6	0	0	86	12	0	0	0	0	0	0	2	0	0	0	3	0	3	0
18:15:00	177	8	0	0	94	8	0	0	0	0	0	0	2	0	0	0	3	0	3	0
18:30:00	186	9	0	0	102	8	0	0	0	0	0	0	2	0	0	0	3	0	3	0
18:45:00	192	6	0	0	106	4	0	0	0	0	0	0	2	0	0	0	3	0	3	0
19:00:00	197	5	0	0	109	3	0	0	0	0	0	0	2	0	0	0	3	0	3	0
19:15:00	197	0	0	0	109	0	0	0	0	0	0	0	2	0	0	0	3	0	3	0
19:15:15	197	0	0	0	109	0	0	0	0	0	0	0	2	0	0	0	3	0	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 6-Jun-17 Site #: 1712100006

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	0	0	11	7	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	15	4	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	22	7	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	29	7	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	37	8	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	42	5	18	6	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	50	8	22	4	0	0	1	0	0	0	0	0	2	2	0	0	0	0
8:45:00	0	0	56	6	32	10	0	0	1	0	0	0	0	0	3	1	0	0	0	0
9:00:00	0	0	70	14	35	3	0	0	1	0	0	0	0	0	4	1	0	0	0	0
9:15:00	0	0	70	0	35	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0
16:00:00	0	0	70	0	35	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0
16:15:00	0	0	98	28	40	5	0	0	1	0	1	1	0	0	6	2	1	1	0	0
16:30:00	0	0	116	18	47	7	0	0	1	0	1	0	0	0	6	0	1	0	0	0
16:45:00	0	0	143	27	60	13	0	0	1	0	1	0	0	0	7	1	1	0	0	0
17:00:00	0	0	173	30	73	13	0	0	1	0	1	0	0	0	7	0	1	0	0	0
17:15:00	0	0	217	44	82	9	0	0	1	0	1	0	0	0	7	0	1	0	0	0
17:30:00	0	0	249	32	95	13	0	0	1	0	1	0	0	0	7	0	1	0	0	0
17:45:00	0	0	278	29	102	7	0	0	1	0	1	0	0	0	7	0	1	0	0	0
18:00:00	0	0	294	16	116	14	0	0	1	0	1	0	0	0	7	0	1	0	0	0
18:15:00	0	0	321	27	127	11	0	0	1	0	1	0	0	0	7	0	1	0	0	0
18:30:00	0	0	347	26	137	10	0	0	1	0	1	0	0	0	7	0	1	0	0	0
18:45:00	0	0	376	29	144	7	0	0	1	0	1	0	0	0	7	0	1	0	0	0
19:00:00	0	0	409	33	155	11	0	0	1	0	1	0	0	0	7	0	1	0	0	0
19:15:00	0	0	409	0	155	0	0	0	1	0	1	0	0	0	7	0	1	0	0	0
19:15:15	0	0	409	0	155	0	0	0	1	0	1	0	0	0	7	0	1	0	0	0

APPENDIX A-1

Operational Analyses – Existing Road System

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	85	5	223	223	11	17	56	77	9	132	1
Future Volume (veh/h)	6	85	5	223	223	11	17	56	77	9	132	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1766	1900	1845	1874	1900	1900	1771	1900	1712	1827	1900
Adj Flow Rate, veh/h	7	92	5	242	242	12	18	61	84	10	143	1
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	50	8	8	3	1	1	0	9	9	11	4	4
Cap, veh/h	375	554	30	674	858	43	407	195	268	368	522	4
Arrive On Green	0.33	0.33	0.33	0.10	0.48	0.48	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	762	1660	90	1757	1771	88	1264	676	931	1138	1812	13
Grp Volume(v), veh/h	7	0	97	242	0	254	18	0	145	10	0	144
Grp Sat Flow(s),veh/h/ln	762	0	1750	1757	0	1859	1264	0	1607	1138	0	1825
Q Serve(g_s), s	0.4	0.0	2.3	5.1	0.0	4.9	0.7	0.0	4.2	0.4	0.0	3.6
Cycle Q Clear(g_c), s	0.4	0.0	2.3	5.1	0.0	4.9	4.3	0.0	4.2	4.6	0.0	3.6
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.58	1.00		0.01
Lane Grp Cap(c), veh/h	375	0	584	674	0	901	407	0	463	368	0	525
V/C Ratio(X)	0.02	0.00	0.17	0.36	0.00	0.28	0.04	0.00	0.31	0.03	0.00	0.27
Avail Cap(c_a), veh/h	378	0	592	674	0	908	407	0	463	368	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	14.0	10.0	0.0	9.2	18.1	0.0	16.7	18.5	0.0	16.4
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.3	0.0	0.2	0.2	0.0	1.8	0.1	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.2	2.4	0.0	2.5	0.3	0.0	2.1	0.1	0.0	2.0
LnGrp Delay(d),s/veh	13.4	0.0	14.2	10.3	0.0	9.4	18.3	0.0	18.4	18.6	0.0	17.7
LnGrp LOS	B		B	B		A	B		B	B		B
Approach Vol, veh/h		104			496			163			154	
Approach Delay, s/veh		14.1			9.8			18.4			17.8	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	9.0	26.7		24.0		35.7
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	6.0	* 20		* 17		* 29
Max Q Clear Time (g_c+I1), s		6.3	7.1	4.3		6.6		6.9
Green Ext Time (p_c), s		0.6	0.0	1.0		0.5		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	33	40	1	125	22	77	38	3	12	33	246
Future Volume (veh/h)	93	33	40	1	125	22	77	38	3	12	33	246
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1766	1900	1900	1870	1900	1881	1900	1900	1759	1861	1900
Adj Flow Rate, veh/h	101	36	43	1	136	24	84	41	3	13	36	267
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	1	1	1	1	0	0	8	3	3
Cap, veh/h	428	153	143	81	679	119	299	515	38	512	56	414
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	692	349	327	2	1548	271	1077	1748	128	1269	190	1406
Grp Volume(v), veh/h	180	0	0	161	0	0	84	0	44	13	0	303
Grp Sat Flow(s),veh/h/ln	1367	0	0	1821	0	0	1077	0	1876	1269	0	1595
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.8	0.3	0.0	7.4
Cycle Q Clear(g_c), s	3.2	0.0	0.0	2.4	0.0	0.0	10.7	0.0	0.8	1.1	0.0	7.4
Prop In Lane	0.56		0.24	0.01		0.15	1.00		0.07	1.00		0.88
Lane Grp Cap(c), veh/h	725	0	0	879	0	0	299	0	552	512	0	470
V/C Ratio(X)	0.25	0.00	0.00	0.18	0.00	0.00	0.28	0.00	0.08	0.03	0.00	0.65
Avail Cap(c_a), veh/h	733	0	0	891	0	0	413	0	751	647	0	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.9	0.0	0.0	7.8	0.0	0.0	18.5	0.0	11.5	11.9	0.0	13.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.1	0.0	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.2	0.0	0.0	1.0	0.0	0.4	0.1	0.0	3.5
LnGrp Delay(d),s/veh	8.1	0.0	0.0	7.9	0.0	0.0	19.0	0.0	11.5	11.9	0.0	15.3
LnGrp LOS	A			A			B		B	B		B
Approach Vol, veh/h		180			161			128			316	
Approach Delay, s/veh		8.1			7.9			16.4			15.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		19.2		25.7		19.2		25.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		18.0		20.0		18.0		20.0
Max Q Clear Time (g_c+I1), s		12.7		5.2		9.4		4.4
Green Ext Time (p_c), s		0.3		1.1		1.2		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	165	449	0	1	1
Future Vol, veh/h	0	165	449	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	7	2	2	0	0
Mvmt Flow	0	179	488	0	1	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	488	0	-	0	667	488
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1075	-	-	-	427	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	857	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1075	-	-	-	427	584
Mov Cap-2 Maneuver	-	-	-	-	512	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	857	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1075	-	-	-	546
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	23	13	84	54	21
Future Vol, veh/h	38	23	13	84	54	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	13	0	8	4	0	10
Mvmt Flow	41	25	14	91	59	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	173	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	-	-	4.18	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1498	-	822	991
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	911	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1498	-	814	991
Mov Cap-2 Maneuver	-	-	-	-	814	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1498	-
HCM Lane V/C Ratio	0.095	-	-	0.009	-
HCM Control Delay (s)	9.6	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	2	0	92	16	0
Future Vol, veh/h	51	2	0	92	16	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	50	0	2	0	0
Mvmt Flow	55	2	0	100	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	57	0	158	56
Stage 1	-	-	-	-	56	-
Stage 2	-	-	-	-	102	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1560	-	838	1016
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1560	-	836	1016
Mov Cap-2 Maneuver	-	-	-	-	836	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	1560	-
HCM Lane V/C Ratio	0.021	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	3	8	0	13	6	16	100	0	2	86	53
Future Vol, veh/h	44	3	8	0	13	6	16	100	0	2	86	53
Conflicting Peds, #/hr	3	0	0	0	0	3	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	33	13	2	8	17	13	2	2	0	7	2
Mvmt Flow	48	3	9	0	14	7	17	109	0	2	93	58

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	287	274	126	276	303	113	155	0	0	110	0	0
Stage 1	130	130	-	144	144	-	-	-	-	-	-	-
Stage 2	157	144	-	132	159	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.83	6.33	7.12	6.58	6.37	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.297	3.417	3.518	4.072	3.453	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	655	584	896	676	600	901	1361	-	-	1493	-	-
Stage 1	862	733	-	859	766	-	-	-	-	-	-	-
Stage 2	834	722	-	871	755	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	627	573	893	659	589	898	1356	-	-	1492	-	-
Mov Cap-2 Maneuver	627	573	-	659	589	-	-	-	-	-	-	-
Stage 1	848	730	-	847	755	-	-	-	-	-	-	-
Stage 2	800	712	-	858	752	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	10.6	1.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1356	-	-	652	661	1492	-	-
HCM Lane V/C Ratio	0.013	-	-	0.092	0.031	0.001	-	-
HCM Control Delay (s)	7.7	0	-	11.1	10.6	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	364	19	74	108	10	11	154	260	15	141	19
Future Volume (veh/h)	10	364	19	74	108	10	11	154	260	15	141	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1845	1883	1900	1900	1893	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	396	21	80	117	11	12	167	283	16	153	21
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	1	1	3	1	1	0	1	1	0	0	0
Cap, veh/h	570	615	33	387	783	74	408	191	324	174	494	68
Arrive On Green	0.35	0.35	0.35	0.06	0.46	0.46	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1282	1772	94	1757	1695	159	1230	632	1072	955	1636	225
Grp Volume(v), veh/h	11	0	417	80	0	128	12	0	450	16	0	174
Grp Sat Flow(s),veh/h/ln	1282	0	1866	1757	0	1855	1230	0	1704	955	0	1860
Q Serve(g_s), s	0.3	0.0	10.8	1.5	0.0	2.3	0.4	0.0	14.4	0.9	0.0	4.1
Cycle Q Clear(g_c), s	0.3	0.0	10.8	1.5	0.0	2.3	4.6	0.0	14.4	15.4	0.0	4.1
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.63	1.00		0.12
Lane Grp Cap(c), veh/h	570	0	648	387	0	857	408	0	515	174	0	562
V/C Ratio(X)	0.02	0.00	0.64	0.21	0.00	0.15	0.03	0.00	0.87	0.09	0.00	0.31
Avail Cap(c_a), veh/h	570	0	648	460	0	934	408	0	515	174	0	562
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	15.8	10.9	0.0	9.0	17.2	0.0	19.1	26.4	0.0	15.5
Incr Delay (d2), s/veh	0.0	0.0	2.2	0.3	0.0	0.1	0.1	0.0	18.4	1.0	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.0	0.7	0.0	1.2	0.2	0.0	9.4	0.3	0.0	2.3
LnGrp Delay(d),s/veh	12.4	0.0	18.0	11.1	0.0	9.0	17.4	0.0	37.4	27.4	0.0	16.9
LnGrp LOS	B		B	B		A	B		D	C		B
Approach Vol, veh/h		428			208			462			190	
Approach Delay, s/veh		17.9			9.8			36.9			17.8	
Approach LOS		B			A			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.2	6.6	26.8		24.2		33.4
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	6.0	* 20		* 17		* 29
Max Q Clear Time (g_c+I1), s		16.4	3.5	12.8		17.4		4.3
Green Ext Time (p_c), s		0.3	0.1	3.0		0.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	379	152	116	0	47	20	56	33	1	19	60	72
Future Volume (veh/h)	379	152	116	0	47	20	56	33	1	19	60	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1897	1900	1900	1872	1900	1810	1900	1900	1900	1873	1900
Adj Flow Rate, veh/h	412	165	126	0	51	22	61	36	1	21	65	78
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	5	0	0	0	2	2
Cap, veh/h	581	190	143	0	685	295	305	376	10	408	159	190
Arrive On Green	0.55	0.55	0.55	0.00	0.55	0.55	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	843	344	259	0	1241	535	1203	1840	51	1390	775	930
Grp Volume(v), veh/h	703	0	0	0	0	73	61	0	37	21	0	143
Grp Sat Flow(s),veh/h/ln	1446	0	0	0	0	1776	1203	0	1891	1390	0	1706
Q Serve(g_s), s	20.3	0.0	0.0	0.0	0.0	0.9	2.3	0.0	0.8	0.6	0.0	3.6
Cycle Q Clear(g_c), s	21.3	0.0	0.0	0.0	0.0	0.9	5.9	0.0	0.8	1.4	0.0	3.6
Prop In Lane	0.59		0.18	0.00		0.30	1.00		0.03	1.00		0.55
Lane Grp Cap(c), veh/h	914	0	0	0	0	980	305	0	387	408	0	349
V/C Ratio(X)	0.77	0.00	0.00	0.00	0.00	0.07	0.20	0.00	0.10	0.05	0.00	0.41
Avail Cap(c_a), veh/h	1059	0	0	0	0	1153	449	0	614	575	0	554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	0.0	0.0	0.0	5.2	19.6	0.0	15.9	16.5	0.0	17.0
Incr Delay (d2), s/veh	3.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	0.0	0.0	0.0	0.0	0.5	0.8	0.0	0.4	0.2	0.0	1.7
LnGrp Delay(d),s/veh	13.1	0.0	0.0	0.0	0.0	5.2	19.9	0.0	16.0	16.5	0.0	17.8
LnGrp LOS	B					A	B		B	B		B
Approach Vol, veh/h		703			73			98			164	
Approach Delay, s/veh		13.1			5.2			18.4			17.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.1		33.2		16.1		33.2
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		16.0		32.0		16.0		32.0
Max Q Clear Time (g_c+I1), s		7.9		23.3		5.6		2.9
Green Ext Time (p_c), s		0.2		3.9		0.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	630	181	3	0	8
Future Vol, veh/h	18	630	181	3	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	20	685	197	3	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	200	0	-	0	924	199
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1384	-	-	-	302	847
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1384	-	-	-	295	847
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1384	-	-	-	847
HCM Lane V/C Ratio	0.014	-	-	-	0.01
HCM Control Delay (s)	7.6	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	134	48	25	47	28	14
Future Vol, veh/h	134	48	25	47	28	14
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	4	0
Mvmt Flow	146	52	27	51	30	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	278	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1385	-	708	876
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	914	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1384	-	693	875
Mov Cap-2 Maneuver	-	-	-	-	693	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	914	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	745	-	-	1384	-
HCM Lane V/C Ratio	0.061	-	-	0.02	-
HCM Control Delay (s)	10.1	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	19	1	58	12	1
Future Vol, veh/h	133	19	1	58	12	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	50	0	2	0	0
Mvmt Flow	145	21	1	63	13	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	223	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1422	-	770	893
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	963	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1420	-	768	891
Mov Cap-2 Maneuver	-	-	-	-	768	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	963	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	776	-	-	1420	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	10	25	0	4	11	17	103	0	15	127	45
Future Vol, veh/h	76	10	25	0	4	11	17	103	0	15	127	45
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	10	0	2	0	0	12	1	2	0	3	2
Mvmt Flow	83	11	27	0	4	12	18	112	0	16	138	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	356	346	164	364	370	118	188	0	0	114	0	0
Stage 1	196	196	-	150	150	-	-	-	-	-	-	-
Stage 2	160	150	-	214	220	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.6	6.2	7.12	6.5	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.09	3.3	3.518	4	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	601	564	886	592	563	939	1328	-	-	1488	-	-
Stage 1	808	724	-	853	777	-	-	-	-	-	-	-
Stage 2	845	758	-	788	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	576	548	885	553	547	934	1327	-	-	1485	-	-
Mov Cap-2 Maneuver	576	548	-	553	547	-	-	-	-	-	-	-
Stage 1	796	715	-	839	765	-	-	-	-	-	-	-
Stage 2	815	746	-	743	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	9.7	1.1	0.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1327	-	-	622	786	1485	-	-
HCM Lane V/C Ratio	0.014	-	-	0.194	0.021	0.011	-	-
HCM Control Delay (s)	7.8	0	-	12.2	9.7	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	-	-

2027 Traffic Volumes

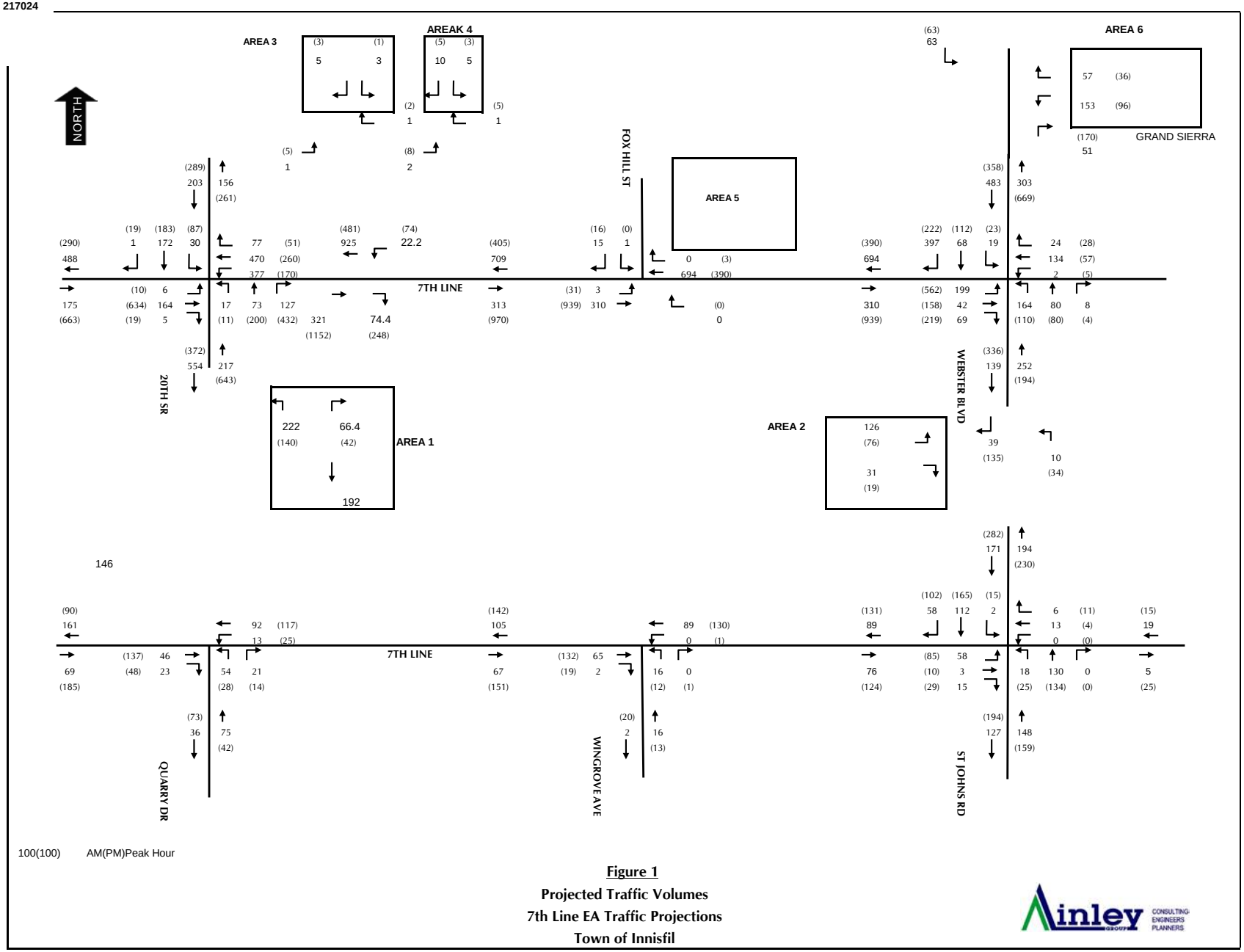


Figure 1
Projected Traffic Volumes
7th Line EA Traffic Projections
Town of Innisfil

Operational Analysis 2027 Traffic
Existing Road System

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	164	5	377	470	77	17	73	127	30	172	1
Future Volume (veh/h)	6	164	5	377	470	77	17	73	127	30	172	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1763	1900	1845	1861	1900	1900	1774	1900	1712	1827	1900
Adj Flow Rate, veh/h	6	171	5	393	490	80	18	76	132	31	179	1
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	50	8	8	3	1	1	0	9	9	11	4	4
Cap, veh/h	219	509	15	554	699	114	448	204	354	378	634	4
Arrive On Green	0.30	0.30	0.30	0.10	0.45	0.45	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	570	1704	50	1757	1561	255	1223	583	1012	1074	1815	10
Grp Volume(v), veh/h	6	0	176	393	0	570	18	0	208	31	0	180
Grp Sat Flow(s),veh/h/ln	570	0	1754	1757	0	1816	1223	0	1595	1074	0	1826
Q Serve(g_s), s	0.6	0.0	5.2	7.0	0.0	16.9	0.7	0.0	6.5	1.5	0.0	4.8
Cycle Q Clear(g_c), s	7.5	0.0	5.2	7.0	0.0	16.9	5.5	0.0	6.5	8.0	0.0	4.8
Prop In Lane	1.00		0.03	1.00		0.14	1.00		0.63	1.00		0.01
Lane Grp Cap(c), veh/h	219	0	524	554	0	813	448	0	557	378	0	638
V/C Ratio(X)	0.03	0.00	0.34	0.71	0.00	0.70	0.04	0.00	0.37	0.08	0.00	0.28
Avail Cap(c_a), veh/h	244	0	602	554	0	894	448	0	557	378	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	18.3	17.0	0.0	14.9	17.7	0.0	16.3	19.3	0.0	15.7
Incr Delay (d2), s/veh	0.1	0.0	0.4	4.2	0.0	2.2	0.2	0.0	1.9	0.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.6	5.3	0.0	8.9	0.3	0.0	3.1	0.5	0.0	2.6
LnGrp Delay(d),s/veh	22.0	0.0	18.7	21.2	0.0	17.1	17.9	0.0	18.2	19.7	0.0	16.8
LnGrp LOS	C		B	C		B	B		B	B		B
Approach Vol, veh/h		182			963			226			211	
Approach Delay, s/veh		18.8			18.8			18.2			17.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		30.2	10.0	26.8		30.2		36.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 23	7.0	* 23		* 23		* 33
Max Q Clear Time (g_c+I1), s		8.5	9.0	9.5		10.0		18.9
Green Ext Time (p_c), s		1.0	0.0	1.8		0.9		7.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	42	69	2	134	24	164	80	8	19	68	397
Future Volume (veh/h)	199	42	69	2	134	24	164	80	8	19	68	397
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1764	1900	1900	1870	1900	1881	1900	1900	1759	1860	1900
Adj Flow Rate, veh/h	207	44	72	2	140	25	171	83	8	20	71	414
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	1	1	1	1	0	0	8	3	3
Cap, veh/h	388	86	106	65	542	96	305	747	72	626	103	601
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	808	246	302	4	1543	272	914	1705	164	1221	235	1372
Grp Volume(v), veh/h	323	0	0	167	0	0	171	0	91	20	0	485
Grp Sat Flow(s),veh/h/ln	1356	0	0	1820	0	0	914	0	1870	1221	0	1607
Q Serve(g_s), s	7.1	0.0	0.0	0.0	0.0	0.0	10.6	0.0	1.6	0.6	0.0	13.9
Cycle Q Clear(g_c), s	10.9	0.0	0.0	3.7	0.0	0.0	24.4	0.0	1.6	2.2	0.0	13.9
Prop In Lane	0.64		0.22	0.01		0.15	1.00		0.09	1.00		0.85
Lane Grp Cap(c), veh/h	580	0	0	703	0	0	305	0	819	626	0	704
V/C Ratio(X)	0.56	0.00	0.00	0.24	0.00	0.00	0.56	0.00	0.11	0.03	0.00	0.69
Avail Cap(c_a), veh/h	646	0	0	797	0	0	305	0	819	626	0	704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	0.0	13.2	0.0	0.0	22.7	0.0	9.5	10.1	0.0	12.9
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.2	0.0	0.0	2.3	0.0	0.1	0.0	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	1.9	0.0	0.0	2.9	0.0	0.8	0.2	0.0	6.6
LnGrp Delay(d),s/veh	16.1	0.0	0.0	13.4	0.0	0.0	25.0	0.0	9.5	10.1	0.0	15.7
LnGrp LOS	B			B			C		A	B		B
Approach Vol, veh/h		323			167			262			505	
Approach Delay, s/veh		16.1			13.4			19.6			15.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.0		26.0		31.0		26.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		25.0		23.0		25.0		23.0
Max Q Clear Time (g_c+I1), s		26.4		12.9		15.9		5.7
Green Ext Time (p_c), s		0.0		1.8		2.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	310	694	0	1	15
Future Vol, veh/h	3	310	694	0	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	7	2	2	0	0
Mvmt Flow	3	323	723	0	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	723	0	-	0	1052	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	879	-	-	-	253	430
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	879	-	-	-	252	430
Mov Cap-2 Maneuver	-	-	-	-	372	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	879	-	-	-	426
HCM Lane V/C Ratio	0.004	-	-	-	0.039
HCM Control Delay (s)	9.1	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	23	13	92	54	21
Future Vol, veh/h	46	23	13	92	54	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	13	0	8	4	0	10
Mvmt Flow	48	24	14	96	56	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	72	0	184	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.18	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1491	-	810	983
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1491	-	802	983
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	846	-	-	1491	-
HCM Lane V/C Ratio	0.092	-	-	0.009	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	65	2	0	92	16	0
Future Vol, veh/h	65	2	0	92	16	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	50	0	2	0	0
Mvmt Flow	68	2	0	96	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	70	0	167	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1544	-	828	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	826	1000
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	929	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	826	-	-	1544	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	58	3	15	0	13	6	18	130	0	2	112	58
Future Vol, veh/h	58	3	15	0	13	6	18	130	0	2	112	58
Conflicting Peds, #/hr	3	0	0	0	0	3	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	7	33	13	2	8	17	13	2	2	0	7	2
Mvmt Flow	60	3	16	0	14	6	19	135	0	2	117	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	341	329	151	335	359	139	181	0	0	136	0	0
Stage 1	155	155	-	174	174	-	-	-	-	-	-	-
Stage 2	186	174	-	161	185	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.83	6.33	7.12	6.58	6.37	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.297	3.417	3.518	4.072	3.453	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	604	543	867	619	558	871	1331	-	-	1461	-	-
Stage 1	836	714	-	828	744	-	-	-	-	-	-	-
Stage 2	804	700	-	841	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	577	532	864	597	546	868	1326	-	-	1460	-	-
Mov Cap-2 Maneuver	577	532	-	597	546	-	-	-	-	-	-	-
Stage 1	821	710	-	815	732	-	-	-	-	-	-	-
Stage 2	770	689	-	821	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	11	0.9	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1326	-	-	615	618	1460	-	-
HCM Lane V/C Ratio	0.014	-	-	0.129	0.032	0.001	-	-
HCM Control Delay (s)	7.8	0	-	11.7	11	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	634	19	170	260	51	11	200	432	87	183	19
Future Volume (veh/h)	10	634	19	170	260	51	11	200	432	87	183	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1845	1884	1900	1900	1894	1900	1900	1900	1900
Adj Flow Rate, veh/h	10	660	20	177	271	53	11	208	450	91	191	20
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	3	1	1	0	1	1	0	0	0
Cap, veh/h	476	644	20	237	727	142	406	184	398	96	582	61
Arrive On Green	0.35	0.35	0.35	0.08	0.47	0.47	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1073	1817	55	1757	1532	300	1189	534	1156	788	1692	177
Grp Volume(v), veh/h	10	0	680	177	0	324	11	0	658	91	0	211
Grp Sat Flow(s),veh/h/ln	1073	0	1872	1757	0	1831	1189	0	1690	788	0	1869
Q Serve(g_s), s	0.5	0.0	26.6	4.5	0.0	8.5	0.5	0.0	25.8	0.0	0.0	6.3
Cycle Q Clear(g_c), s	0.5	0.0	26.6	4.5	0.0	8.5	6.8	0.0	25.8	25.8	0.0	6.3
Prop In Lane	1.00		0.03	1.00		0.16	1.00		0.68	1.00		0.09
Lane Grp Cap(c), veh/h	476	0	664	237	0	869	406	0	581	96	0	643
V/C Ratio(X)	0.02	0.00	1.02	0.75	0.00	0.37	0.03	0.00	1.13	0.95	0.00	0.33
Avail Cap(c_a), veh/h	476	0	664	237	0	869	406	0	581	96	0	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	24.2	17.6	0.0	12.6	20.7	0.0	24.6	37.5	0.0	18.2
Incr Delay (d2), s/veh	0.0	0.0	41.2	12.3	0.0	0.3	0.1	0.0	79.2	78.5	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	21.2	3.0	0.0	4.3	0.2	0.0	24.7	4.0	0.0	3.5
LnGrp Delay(d),s/veh	15.8	0.0	65.4	29.9	0.0	12.8	20.8	0.0	103.8	116.0	0.0	19.6
LnGrp LOS	B		F	C		B	C		F	F		B
Approach Vol, veh/h		690			501			669			302	
Approach Delay, s/veh		64.7			18.9			102.5			48.6	
Approach LOS		E			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		32.6	9.0	33.4		32.6		42.4
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 26	6.0	* 27		* 26		* 36
Max Q Clear Time (g_c+I1), s		27.8	6.5	28.6		27.8		10.5
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	63.5
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	562	158	219	5	57	28	110	80	4	23	112	222
Future Volume (veh/h)	562	158	219	5	57	28	110	80	4	23	112	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1896	1900	1900	1871	1900	1810	1900	1900	1900	1875	1900
Adj Flow Rate, veh/h	585	165	228	5	59	29	115	83	4	24	117	231
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	5	0	0	0	2	2
Cap, veh/h	628	162	224	71	770	366	102	425	20	330	133	263
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	879	248	343	56	1177	559	999	1798	87	1329	563	1112
Grp Volume(v), veh/h	978	0	0	93	0	0	115	0	87	24	0	348
Grp Sat Flow(s),veh/h/ln	1470	0	0	1792	0	0	999	0	1884	1329	0	1676
Q Serve(g_s), s	69.9	0.0	0.0	0.0	0.0	0.0	4.0	0.0	4.1	1.6	0.0	22.0
Cycle Q Clear(g_c), s	72.0	0.0	0.0	2.1	0.0	0.0	26.0	0.0	4.1	5.7	0.0	22.0
Prop In Lane	0.60		0.23	0.05		0.31	1.00		0.05	1.00		0.66
Lane Grp Cap(c), veh/h	1015	0	0	1207	0	0	102	0	445	330	0	396
V/C Ratio(X)	0.96	0.00	0.00	0.08	0.00	0.00	1.13	0.00	0.20	0.07	0.00	0.88
Avail Cap(c_a), veh/h	1015	0	0	1207	0	0	102	0	445	330	0	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	0.0	6.9	0.0	0.0	54.3	0.0	33.6	35.9	0.0	40.5
Incr Delay (d2), s/veh	20.0	0.0	0.0	0.0	0.0	0.0	129.0	0.0	0.2	0.1	0.0	19.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.3	0.0	0.0	1.0	0.0	0.0	6.7	0.0	2.2	0.6	0.0	12.3
LnGrp Delay(d),s/veh	39.3	0.0	0.0	7.0	0.0	0.0	183.3	0.0	33.8	36.0	0.0	60.1
LnGrp LOS	D			A			F		C	D		E
Approach Vol, veh/h		978			93			202			372	
Approach Delay, s/veh		39.3			7.0			118.9			58.5	
Approach LOS		D			A			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		78.0		32.0		78.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		26.0		72.0		26.0		72.0
Max Q Clear Time (g_c+I1), s		28.0		74.0		24.0		4.1
Green Ext Time (p_c), s		0.0		0.0		0.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	51.6
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	939	390	3	0	16
Future Vol, veh/h	31	939	390	3	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	32	978	406	3	0	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	409	0	-	0	1450	408
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	1042	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1161	-	-	-	146	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	343	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1161	-	-	-	137	648
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	343	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1161	-	-	-	648
HCM Lane V/C Ratio	0.028	-	-	-	0.026
HCM Control Delay (s)	8.2	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	137	48	25	117	28	14
Future Vol, veh/h	137	48	25	117	28	14
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	4	0
Mvmt Flow	143	50	26	122	29	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	194	0	343	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	174	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1391	-	649	880
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1390	-	635	879
Mov Cap-2 Maneuver	-	-	-	-	635	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	-	-	1390	-
HCM Lane V/C Ratio	0.063	-	-	0.019	-
HCM Control Delay (s)	10.5	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	19	1	130	12	1
Future Vol, veh/h	133	19	1	130	12	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	50	0	2	0	0
Mvmt Flow	139	20	1	135	13	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	161	0	288	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	137	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1430	-	707	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	705	899
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1428	-
HCM Lane V/C Ratio	0.019	-	-	0.001	-
HCM Control Delay (s)	10.1	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	85	10	29	0	4	11	25	134	0	15	165	102
Future Vol, veh/h	85	10	29	0	4	11	25	134	0	15	165	102
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	10	0	2	0	0	12	1	2	0	3	2
Mvmt Flow	89	10	30	0	4	11	26	140	0	16	172	106

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	462	452	226	471	505	146	279	0	0	142	0	0
Stage 1	258	258	-	194	194	-	-	-	-	-	-	-
Stage 2	204	194	-	277	311	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.6	6.2	7.12	6.5	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.09	3.3	3.518	4	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	512	491	818	503	473	906	1228	-	-	1453	-	-
Stage 1	749	680	-	808	744	-	-	-	-	-	-	-
Stage 2	800	725	-	729	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	486	472	817	463	455	901	1227	-	-	1451	-	-
Mov Cap-2 Maneuver	486	472	-	463	455	-	-	-	-	-	-	-
Stage 1	731	670	-	788	725	-	-	-	-	-	-	-
Stage 2	765	707	-	682	653	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	10.2	1.3	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1227	-	-	535	714	1451	-	-
HCM Lane V/C Ratio	0.021	-	-	0.241	0.022	0.011	-	-
HCM Control Delay (s)	8	0	-	13.9	10.2	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.1	0	-	-

Operational Analysis - 2027 Traffic
Improved Road

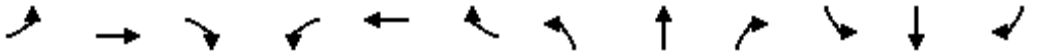
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	164	5	377	470	77	17	73	127	30	172	1
Future Volume (veh/h)	6	164	5	377	470	77	17	73	127	30	172	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1763	1900	1845	1861	1900	1900	1743	1792	1712	1827	1900
Adj Flow Rate, veh/h	6	171	5	393	490	80	18	76	132	31	179	1
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	50	8	8	3	1	1	0	9	6	11	4	4
Cap, veh/h	219	509	15	554	699	114	448	609	532	451	634	4
Arrive On Green	0.30	0.30	0.30	0.10	0.45	0.45	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	570	1704	50	1757	1561	255	1223	1743	1524	1074	1815	10
Grp Volume(v), veh/h	6	0	176	393	0	570	18	76	132	31	0	180
Grp Sat Flow(s),veh/h/ln	570	0	1754	1757	0	1816	1223	1743	1524	1074	0	1826
Q Serve(g_s), s	0.6	0.0	5.2	7.0	0.0	16.9	0.7	2.0	4.1	1.4	0.0	4.8
Cycle Q Clear(g_c), s	7.5	0.0	5.2	7.0	0.0	16.9	5.5	2.0	4.1	3.3	0.0	4.8
Prop In Lane	1.00		0.03	1.00		0.14	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	219	0	524	554	0	813	448	609	532	451	0	638
V/C Ratio(X)	0.03	0.00	0.34	0.71	0.00	0.70	0.04	0.12	0.25	0.07	0.00	0.28
Avail Cap(c_a), veh/h	244	0	602	554	0	894	448	609	532	451	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	18.3	17.0	0.0	14.9	17.7	14.8	15.5	16.0	0.0	15.7
Incr Delay (d2), s/veh	0.1	0.0	0.4	4.2	0.0	2.2	0.2	0.4	1.1	0.3	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.6	4.0	0.0	8.9	0.3	1.0	1.9	0.4	0.0	2.6
LnGrp Delay(d),s/veh	22.0	0.0	18.7	21.2	0.0	17.1	17.9	15.3	16.6	16.3	0.0	16.8
LnGrp LOS	C		B	C		B	B	B	B	B		B
Approach Vol, veh/h		182			963			226			211	
Approach Delay, s/veh		18.8			18.8			16.3			16.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		30.2	10.0	26.8		30.2		36.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 23	7.0	* 23		* 23		* 33
Max Q Clear Time (g_c+I1), s		7.5	9.0	9.5		6.8		18.9
Green Ext Time (p_c), s		0.9	0.0	1.8		1.0		7.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	42	69	2	134	24	164	80	8	19	68	397
Future Volume (veh/h)	199	42	69	2	134	24	164	80	8	19	68	397
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1772	1900	1900	1870	1900	1881	1900	1900	1759	1845	1863
Adj Flow Rate, veh/h	207	44	72	2	140	25	171	83	8	20	71	414
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	6	6	0	1	1	1	0	0	8	3	2
Cap, veh/h	560	252	412	629	643	115	430	570	55	516	617	525
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1147	605	990	1295	1545	276	912	1705	164	1219	1845	1569
Grp Volume(v), veh/h	207	0	116	2	0	165	171	0	91	20	71	414
Grp Sat Flow(s),veh/h/ln	1147	0	1596	1295	0	1821	912	0	1869	1219	1845	1569
Q Serve(g_s), s	6.8	0.0	2.2	0.0	0.0	2.8	7.7	0.0	1.6	0.6	1.3	11.5
Cycle Q Clear(g_c), s	9.6	0.0	2.2	2.2	0.0	2.8	9.0	0.0	1.6	2.2	1.3	11.5
Prop In Lane	1.00		0.62	1.00		0.15	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	560	0	664	629	0	758	430	0	625	516	617	525
V/C Ratio(X)	0.37	0.00	0.17	0.00	0.00	0.22	0.40	0.00	0.15	0.04	0.12	0.79
Avail Cap(c_a), veh/h	655	0	796	737	0	909	580	0	933	716	920	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	8.8	9.6	0.0	9.0	14.2	0.0	11.2	12.0	11.1	14.5
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.0	0.0	0.1	0.6	0.0	0.1	0.0	0.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	1.0	0.0	0.0	1.4	2.0	0.0	0.9	0.2	0.7	5.4
LnGrp Delay(d),s/veh	12.5	0.0	9.0	9.6	0.0	9.2	14.8	0.0	11.3	12.0	11.2	17.7
LnGrp LOS	B		A	A		A	B		B	B	B	B
Approach Vol, veh/h		323			167			262			505	
Approach Delay, s/veh		11.2			9.2			13.6			16.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.1		26.0		22.1		26.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		24.0		24.0		24.0		24.0
Max Q Clear Time (g_c+I1), s		11.0		11.6		13.5		4.8
Green Ext Time (p_c), s		1.5		1.5		2.0		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	310	694	0	1	15
Future Vol, veh/h	3	310	694	0	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	7	2	2	0	0
Mvmt Flow	3	323	723	0	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	723	0	-	0	1052	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	879	-	-	-	253	430
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	879	-	-	-	252	430
Mov Cap-2 Maneuver	-	-	-	-	372	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	879	-	-	-	426
HCM Lane V/C Ratio	0.004	-	-	-	0.039
HCM Control Delay (s)	9.1	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	23	13	92	54	21
Future Vol, veh/h	46	23	13	92	54	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	13	0	8	4	0	10
Mvmt Flow	48	24	14	96	56	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	72	0	184	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.18	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1491	-	810	983
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1491	-	802	983
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	846	-	-	1491	-
HCM Lane V/C Ratio	0.092	-	-	0.009	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	65	2	0	92	16	0
Future Vol, veh/h	65	2	0	92	16	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	50	0	2	0	0
Mvmt Flow	68	2	0	96	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	70	0	167	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1544	-	828	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	826	1000
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	929	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	826	-	-	1544	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	58	3	15	0	13	6	18	130	0	2	112	58
Future Vol, veh/h	58	3	15	0	13	6	18	130	0	2	112	58
Conflicting Peds, #/hr	3	0	0	0	0	3	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	7	33	13	2	8	17	13	2	2	0	7	2
Mvmt Flow	60	3	16	0	14	6	19	135	0	2	117	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	341	329	151	335	359	139	181	0	0	136	0	0
Stage 1	155	155	-	174	174	-	-	-	-	-	-	-
Stage 2	186	174	-	161	185	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.83	6.33	7.12	6.58	6.37	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.83	-	6.12	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.297	3.417	3.518	4.072	3.453	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	604	543	867	619	558	871	1331	-	-	1461	-	-
Stage 1	836	714	-	828	744	-	-	-	-	-	-	-
Stage 2	804	700	-	841	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	577	532	864	597	546	868	1326	-	-	1460	-	-
Mov Cap-2 Maneuver	577	532	-	597	546	-	-	-	-	-	-	-
Stage 1	821	710	-	815	732	-	-	-	-	-	-	-
Stage 2	770	689	-	821	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	11	0.9	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1326	-	-	615	618	1460	-	-
HCM Lane V/C Ratio	0.014	-	-	0.129	0.032	0.001	-	-
HCM Control Delay (s)	7.8	0	-	11.7	11	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	634	19	170	260	51	11	200	432	87	183	19
Future Volume (veh/h)	10	634	19	170	260	51	11	200	432	87	183	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1845	1884	1900	1900	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	10	660	20	177	271	53	11	208	450	91	191	20
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	3	1	1	0	1	0	0	0	0
Cap, veh/h	499	683	21	252	760	149	377	607	521	284	546	57
Arrive On Green	0.38	0.38	0.38	0.08	0.50	0.50	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1073	1817	55	1757	1532	300	1189	1881	1615	788	1692	177
Grp Volume(v), veh/h	10	0	680	177	0	324	11	208	450	91	0	211
Grp Sat Flow(s),veh/h/ln	1073	0	1872	1757	0	1831	1189	1881	1615	788	0	1869
Q Serve(g_s), s	0.4	0.0	26.7	4.3	0.0	8.1	0.5	6.3	19.6	7.5	0.0	6.5
Cycle Q Clear(g_c), s	0.4	0.0	26.7	4.3	0.0	8.1	7.0	6.3	19.6	13.8	0.0	6.5
Prop In Lane	1.00		0.03	1.00		0.16	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	499	0	704	252	0	908	377	607	521	284	0	603
V/C Ratio(X)	0.02	0.00	0.97	0.70	0.00	0.36	0.03	0.34	0.86	0.32	0.00	0.35
Avail Cap(c_a), veh/h	499	0	704	252	0	908	377	607	521	284	0	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	22.9	17.2	0.0	11.6	22.1	19.3	23.8	24.6	0.0	19.4
Incr Delay (d2), s/veh	0.0	0.0	25.7	8.5	0.0	0.2	0.1	1.5	17.1	3.0	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	18.6	2.7	0.0	4.1	0.2	3.5	11.2	1.9	0.0	3.6
LnGrp Delay(d),s/veh	14.8	0.0	48.6	25.7	0.0	11.8	22.2	20.9	40.9	27.5	0.0	21.0
LnGrp LOS	B		D	C		B	C	C	D	C		C
Approach Vol, veh/h		690			501			669			302	
Approach Delay, s/veh		48.1			16.7			34.4			23.0	
Approach LOS		D			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		31.0	9.0	35.0		31.0		44.0
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 24	6.0	* 28		* 24		* 37
Max Q Clear Time (g_c+I1), s		21.6	6.3	28.7		15.8		10.1
Green Ext Time (p_c), s		1.0	0.0	0.0		1.2		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	33.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	562	158	219	5	57	28	110	80	4	23	112	222
Future Volume (veh/h)	562	158	219	5	57	28	110	80	4	23	112	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1889	1900	1900	1869	1900	1810	1900	1900	1900	1863	1881
Adj Flow Rate, veh/h	585	165	228	5	59	29	115	83	4	24	117	231
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	5	0	0	0	2	1
Cap, veh/h	846	410	566	487	422	208	292	389	19	365	403	345
Arrive On Green	0.16	0.57	0.57	0.36	0.36	0.36	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1810	719	993	1005	1183	582	998	1798	87	1329	1863	1595
Grp Volume(v), veh/h	585	0	393	5	0	88	115	0	87	24	117	231
Grp Sat Flow(s),veh/h/ln	1810	0	1712	1005	0	1765	998	0	1884	1329	1863	1595
Q Serve(g_s), s	9.0	0.0	7.2	0.2	0.0	1.9	6.1	0.0	2.1	0.9	3.0	7.5
Cycle Q Clear(g_c), s	9.0	0.0	7.2	0.2	0.0	1.9	9.1	0.0	2.1	3.0	3.0	7.5
Prop In Lane	1.00		0.58	1.00		0.33	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	846	0	976	487	0	630	292	0	408	365	403	345
V/C Ratio(X)	0.69	0.00	0.40	0.01	0.00	0.14	0.39	0.00	0.21	0.07	0.29	0.67
Avail Cap(c_a), veh/h	846	0	1065	539	0	721	483	0	770	621	761	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	6.7	11.7	0.0	12.2	22.2	0.0	18.1	19.3	18.4	20.2
Incr Delay (d2), s/veh	2.4	0.0	0.3	0.0	0.0	0.1	0.9	0.0	0.3	0.1	0.4	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	3.5	0.1	0.0	0.9	1.8	0.0	1.1	0.3	1.5	3.5
LnGrp Delay(d),s/veh	11.9	0.0	7.0	11.7	0.0	12.3	23.1	0.0	18.4	19.4	18.8	22.4
LnGrp LOS	B		A	B		B	C		B	B	B	C
Approach Vol, veh/h		978			93			202			372	
Approach Delay, s/veh		9.9			12.3			21.1			21.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		18.2		38.1		18.2	12.0	26.1
Change Period (Y+Rc), s		6.0		6.0		6.0	3.0	6.0
Max Green Setting (Gmax), s		23.0		35.0		23.0	9.0	23.0
Max Q Clear Time (g_c+I1), s		11.1		9.2		9.5	11.0	3.9
Green Ext Time (p_c), s		0.9		3.5		1.6	0.0	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		14.0
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	939	390	3	0	16
Future Vol, veh/h	31	939	390	3	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	32	978	406	3	0	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	409	0	-	0	1450	408
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	1042	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1161	-	-	-	146	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	343	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1161	-	-	-	137	648
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	343	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1161	-	-	-	648
HCM Lane V/C Ratio	0.028	-	-	-	0.026
HCM Control Delay (s)	8.2	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	137	48	25	117	28	14
Future Vol, veh/h	137	48	25	117	28	14
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	4	0
Mvmt Flow	143	50	26	122	29	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	194	0	343	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	174	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1391	-	649	880
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1390	-	635	879
Mov Cap-2 Maneuver	-	-	-	-	635	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	-	-	1390	-
HCM Lane V/C Ratio	0.063	-	-	0.019	-
HCM Control Delay (s)	10.5	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	19	1	130	12	1
Future Vol, veh/h	133	19	1	130	12	1
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	50	0	2	0	0
Mvmt Flow	139	20	1	135	13	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	161	0	288	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	137	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1430	-	707	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	705	899
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1428	-
HCM Lane V/C Ratio	0.019	-	-	0.001	-
HCM Control Delay (s)	10.1	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	85	10	29	0	4	11	25	134	0	15	165	102
Future Vol, veh/h	85	10	29	0	4	11	25	134	0	15	165	102
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	10	0	2	0	0	12	1	2	0	3	2
Mvmt Flow	89	10	30	0	4	11	26	140	0	16	172	106

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	462	452	226	471	505	146	279	0	0	142	0	0
Stage 1	258	258	-	194	194	-	-	-	-	-	-	-
Stage 2	204	194	-	277	311	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.6	6.2	7.12	6.5	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.6	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.09	3.3	3.518	4	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	512	491	818	503	473	906	1228	-	-	1453	-	-
Stage 1	749	680	-	808	744	-	-	-	-	-	-	-
Stage 2	800	725	-	729	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	486	472	817	463	455	901	1227	-	-	1451	-	-
Mov Cap-2 Maneuver	486	472	-	463	455	-	-	-	-	-	-	-
Stage 1	731	670	-	788	725	-	-	-	-	-	-	-
Stage 2	765	707	-	682	653	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	10.2	1.3	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1227	-	-	535	714	1451	-	-
HCM Lane V/C Ratio	0.021	-	-	0.241	0.022	0.011	-	-
HCM Control Delay (s)	8	0	-	13.9	10.2	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.1	0	-	-

Appendix B

Environmental Impact Study

Environmental Impact Study
7th Line Improvements – 20th Sideroad to Lake Simcoe
Town of Innisfil, County of Simcoe

Prepared for:
The Ainley Group

Prepared by:
Azimuth Environmental Consulting, Inc.

February 2019

AEC 17-076

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

February 7, 2019 AEC 17-076

Ainley Group
550 Welham Road
Barrie, Ontario
L4N 8Z7

Attention: Steve Fournier, P.Eng. – Senior Engineer

Re: **Environmental Impact Study for Phases 2 – 3 of the Class EA at the 7th Line Improvements, 20th Sideroad to Lake Simcoe, Town of Innisfil**

Dear Mr. Fournier:

As requested, we have completed an Environmental Impact Study related to road improvements for future urbanization on the 7th Line from the 20th Side Road to Lake Simcoe in the Town of Innisfil. It is our understanding that this study is required by the Lake Simcoe Region Conservation Authority and the Town of Innisfil to assess potential impacts of the proposed development on natural heritage features and functions, and assess conformity of proposed activities with applicable legislation and/or policy.

The following report outlines Azimuth's study approach, describes natural heritage features within the study area, and provides an assessment of potential impacts of proposed development (preliminary design) on those features identified.

If you have questions or require addition information please do not hesitate to contact the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Sara Murphy, B. Sc.
Senior Aquatic Ecologist/Partner

Jim Broadfoot, H. B. Sc.
Terrestrial Ecologist

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1.0 INTRODUCTION

Azimuth Environmental Consulting Inc. (Azimuth) was retained by the Ainley Group (Ainley) to undertake an Environmental Impact Study (EIS) for improvements to 2.7 km of the 7th Line, to accommodate future growth in Alcona. The portion of road proposed for improvements extends from the 20th Side Road to Lake Simcoe as shown on Figure 1. The Town of Innisfil is completing this project in accordance with a Schedule 'C' Class Environmental Assessment (Class EA).

A selected design alterative for road improvements was determines in Phase 2 of the Class EA, and in this Phase 3, the project team is in the process of evaluating alternative designs of the recommended design, in order to select the preferred design moving forward.

The purpose of the EIS is to identify natural features within and adjacent to the limits of the proposed development, evaluate the potential for direct and indirect impacts, provide recommendations for avoidance/mitigation, and to provide direction with respect to permitting that might be required prior to the implementation phase of the EA. To meet this objective, this report presents a description of the environmental features and functions within the study area, and presents the environmental factors considered in the preparation of the design. It also presents an impact assessment of the design on natural environmental resources. This report, along with Figures, Tables, Photographs and Appended material describe the details of the project and implications to natural environmental resources. The EIS is intended to supplement the full scale design drawings prepared by Ainley, as included in Appendix A, and cited throughout this report. A terms of reference for the study was established with the Lake Simcoe Region Conservation Authority (Appendix B).

2.0 PLANNING CONTEXT

2.1 Provincial Planning Policy

The *Planning Act* requires that planning decisions shall be consistent with the Provincial Policy Statement (PPS). According to the PPS, development and site alteration shall not be permitted in:

- *Significant wetlands* in Ecoregions 5E, 6E and 7E; and,
- *Significant coastal wetlands*.

Similarly, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted within:

- *Significant woodlands* in Ecoregions 6E and 7E;
- *Significant valleylands* in Ecoregions 6E and 7E;
- *Significant wildlife habitat*;
- *Significant areas of natural and scientific interest*; and,
- *Coastal wetlands* in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b).

Section 2.1.6 of the PPS states that development and site alteration is not permitted in fish habitat except in accordance with federal and provincial requirements.

Section 2.1.7 of the PPS states, that development and site alteration shall not be permitted in habitat of endangered and threatened species, except in accordance with provincial and federal requirements.

Furthermore, as per Section 2.1.8 of the PPS, no development and site alteration will be permitted on lands adjacent to natural heritage features and areas defined above unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated there will be no negative impacts on the natural features and ecological functions.

It is ultimately the responsibility of the Province and/or Municipality to designate areas identified within Section 2.1.4 of the PPS as significant. The Natural Heritage Reference Manual and Ecoregion 6E Significant Wildlife Habitat Criterion Schedule were used to identify candidate features considered applicable to the property and adjacent lands (MNRF, 2000; MNRF, 2010).

2.2 Endangered Species Act

Ontario's *Endangered Species Act*, 2007 (ESA) provides regulatory protection to endangered and threatened species, prohibiting harassment, harm and/or killing of individuals and destruction of their habitats. Habitat is broadly characterized within the ESA as the area prescribed by a regulation as the habitat of the species or an area on which the species depends, directly or indirectly, to carry on its life processes including reproduction, rearing of young, hibernation, migration or feeding.

The various schedules of the ESA identify species at risk (SAR) in Ontario. Species identified include those listed as extirpated, endangered, threatened and species of concern. Only species listed as endangered and threatened receive protection from harm and destruction to habitat on which they depend.

Species listed under Ontario Regulation (O. Reg.) 230/08 of the ESA are addressed in this report.

2.3 Federal *Fisheries Act*

The *Fisheries Act* requires projects to avoid causing 'serious harm to fish' unless authorized by the Minister of Fisheries and Oceans Canada (DFO). Projects include those being conducted in or near waterbodies that support a commercial, recreational or Aboriginal fisheries. During the design and construction phases of projects, efforts should be made to protect fish and fish habitat in order to comply with the *Fisheries Act*.

In 2013, amendments to the *Fisheries Act* were made, including the Applications for Authorization (under Paragraph 35(2) (b) of the Fisheries Act Regulations) and Information Requirements Regulations that came into force. Under this process, for all *Fisheries Act* requirements, reviews and/or approvals, projects are to be screened using DFO Self Assessment guidance platform, 'Projects Near Water'. In accordance with that process, projects are to be evaluated under the Self-Assessment process to determine whether a project has the potential to result in 'serious harm to fish' and whether DFO review is required to obtain either a Letter of Advice or Authorization. Projects are typically only submitted to DFO for review if the project type of the guidance document does not match the project activity or criteria specified.

2.4 Town of Innisfil

The study area is located in the Town of Innisfil (the Town) and is subject to land use planning policies outlined in the Town's Official Plan. Portions of the study area are contained within the settlement area of 'Alcona', with individual land use designations for this section delineated in Schedule B1 (Appendix C). Land use designations for the remainder of the study area located outside of the Alcona settlement are depicted in Schedule B (Appendix C). The following land use designations apply to the study area:

- Hazard Land;
- Natural Environmental Area;
- Rural Area;
- Residential Low Density 1;
- Residential Low Density 2; and,
- Residential Medium Density.

2.5 Lake Simcoe Region Conservation Authority

Portions of the study area are located within regulated lands of the Lake Simcoe Region Conservation Authority (LSRCA; Appendix D) owing to the presence of Banks Creek.

As such, a work permit from the LSRCA is required prior to development in compliance with O. Reg. 179/06.

As a Class EA, agency consultation is ongoing for this project. The project team has met with the LSRCA during pre-consultation stages, Public Information Center (PIC) meetings, and the LSRCA is included as a member of the Technical Advisory Committee (TAC) for the project. This involvement has allowed for continued input from the LSRCA as to appropriate design in compliance with regulation, for consideration in the design.

3.0 STUDY APPROACH

3.1 Study Area

For the purpose of this project, the 'study area' that was evaluated by Azimuth for this EIS includes the 7th Line between 20th Sideroad and Lake Simcoe, within the existing road right of way (ROW). The 'adjacent lands' include areas outside of the study area extending approximately 120 m from the centreline of the road.

3.2 Background Data

Background information review for this EIS report included data from:

- Aerial images (Google, VuMap);
- MNRF's Natural Heritage Information Centre (NHIC) Make-A-Map: Natural Heritage Areas application [website];
- MNRF Species at Risk Inquiry (Appendix E);
- Atlas of the Breeding Birds of Ontario (OBBA) [website];
- MNRF's Species at Risk in Ontario (SARO) list (updated to June 20th, 2016);
- Ontario Nature – Ontario Reptile and Amphibian Atlas [website];
- Atlas of the Mammals of Ontario (Dobbyn, 1994);
- County of Simcoe Official Plan (2016);
- Town of Innisfil Official Plan and Schedules (2011 – Appendix C); and
- LSRCA Regulatory Area Mapping (Appendix D).

3.3 Vegetation

The Ecological Land Classification (ELC) for southern Ontario was used to classify vegetation community types within the study area (Lee *et al.*, 1998). Site visits were conducted in 2017 and 2018 to classify vegetation communities within the study area and adjacent lands.

Plant surveys were completed on June 14, July 25 and October 3 of 2017, and on November 1, 2018. Special attention was given to vascular plant SAR that could potentially occur within the area.

3.4 Wildlife

3.4.1 General

During the course of all field surveys, lists of species utilizing the study area were compiled from direct observations and interpretations of signs of activity (*i.e.*, tracks, scats, evidence of feeding).

3.4.2 Birds

Two dawn breeding bird surveys were completed in June of 2017 using point count protocol based on the Ontario Breeding Bird Atlas Guide for Participants (Bird Studies Canada *et al.*, 2001). Six point-count stations were surveyed, focusing on areas of natural cover adjacent to the 7th Line (Figures 2a-b). All bird species detected (seen or heard) were recorded at each station during a five minute period. Species observed while on-route to the next station and species observed during other surveys were recorded.

3.4.3 Amphibians

An amphibian survey was completed on June 20, 2017 following protocols of the Marsh Monitoring Program (Bird Studies Canada *et al.*, 2008). Six point count stations were surveyed within the study area (Figures 2a-b). Bear Creek Wetland in the City of Barrie was used as a control site to compare calling activity.

3.4.4 Bats

Snag density surveys were completed in woodland habitat encroaching the right-of-way and adjacent lands following Steps 1 and 2 of the MNRF's Maternity Roost Surveys (Forests/Woodlands) protocol (MNRF, 2015). Data were collected during the leaf-off season on January 24, February 5 and February 14, 2018, in keeping with the protocol. Plot based data were analysed to derive estimates of snags per hectare to compare to the MNRF's assumption that woodlands having over 10 snags/ha have potential to function as high quality maternity roost habitat and hence may provide habitat for endangered bats.

3.5 Species at Risk

Azimuth conducted a SAR assessment using field data combined with background information to confirm if permitting for SAR would need consideration in the planning of the project. An Information Request Package was sent to the MNRF (Appendix E) requesting additional natural heritage and/or SAR information that may be applicable to

the study area and adjacent lands, however no response was received. A comprehensive list of historically recorded SAR in the local area was assembled using data compiled from various data resources, including the Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas, Fisheries and Oceans Canada Aquatic Species at Risk Mapping and MNRF's Natural Heritage Information Centre.

3.6 Fish and Fish Habitat

A site visit was completed on April 25 and July 13, 2017 to characterize aquatic habitat conditions and document the potential for specialized or important habitat in the system. A request for additional background information was sent to MNRF as part of the Information Request Package (Appendix E), however a response was not received. Other desktop sources were queried for information related to thermal regime and fish community (e.g. Lands Information Ontario, Fish ON-Line, Innisfil Creeks Subwatershed Plan [LSRCA, 2012]).

4.0 EXISTING CONDITIONS

The 7th Line, from the 20th Side Road to Lake Simcoe is a two lane road that is deteriorated, and in need of major improvements to facilitate the urban expansion within the settlement area of Alcona. Land use within the study area and adjacent lands consists mainly of residential subdivisions, agricultural fields, and woodland. Existing residential subdivisions are located within the eastern half of the study area, while the central portion of the study area is currently undergoing development. The majority of western portion of the study is farmed. Throughout the study area, remnant forest communities occur along a stream corridor. The environmental setting of the study area is considered increasingly urbanized, as discussed below.

4.1 Vegetation

Vegetation communities within the study area and adjacent lands are shown on Figures 2a and 2b, with each community described by ecosite and composition in Table 1. None of the vegetation communities are considered to be provincially rare.

Table 2 provides a list of all plant species for the study area. Three (3) Butternut (*Juglans cinerea,* endangered), were identified during field investigations. Their locations are depicted on Figures 2a and 2b. Gray-headed Prairie Coneflower (*Ratibida pinnata*) is considered provincially rare (S3). However, we note this species is sold as a garden plant and often included in seed mixes. Therefore, given the location – urban/roadside, we do not consider the plants observed within the study area to represent a natural population, and hence do not identify this species as a significant natural heritage feature within this impact assessment.

4.2 Wildlife

4.2.1 General

The following species were observed during the course of completing field study: Red Squirrel (*Tamiasciurus hudsonicus*), Eastern Chipmunk (*Tamias striatus*), White-tailed Deer (*Odocoileus virginianus*), and Muskrat (*Ondatra zibethicus*). None of these species are designated SAR, and all are commonly found locally.

4.2.2 Birds

Table 3 provides a list of all bird species either observed or heard calling during the completion of birding surveys. None of the documented species are of provincial conservation concern, or designated as SAR.

4.2.3 Amphibians

A single Green Frog (*Lithobates clamitans*) was heard calling during the calling amphibian survey at point count Station 5 (Figure 2b). Weather conditions and time of survey met specified criterion for amphibian surveys according to the Marsh Monitoring Protocol (Bird Studies Canada, 2008; Appendix F). Green Frogs were also encountered within the study area on June 22, 2017. Green Frogs are not a species of provincial conservation concern or designated as SAR.

4.2.4 Bats

The results of the bat snag surveys for all woodland communities identified on the property indicate a snag density that either meets or greatly surpasses the MNRF's threshold value of 10 snags per ha. Therefore, all of the abovementioned communities have potential to function as high quality maternity roost habitat and hence may provide habitat for endangered bats.

4.3 Species at Risk

The following SAR are reported to occur for the general area:

- Mammals: Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*);
- Birds: Bald Eagle (*Haliaeetus leucocephalus*), Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Cerulean Warbler (*Dendroica cerulea*), Chimney Swift (*Chaetura pelagica*), Common Nighthawk (*Chordeiles minor*), Eastern Meadowlark (*Sturnella magna*), Eastern Whip-poor-will (*Anstrostomus vociferus*), Eastern Wood-pewee (*Contopus virens*), Golden-winged Warbler (*Vermivora chrysoptera*), Grasshopper Sparrow

(*Ammodramus savannarum pratensis*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Wood Thrush (*Hylocichla mustelina*), and Yellow Rail (*Coturnicops noveboracensis*);

- Reptiles: Blanding's Turtle (*Emydoidea blandingii*), Eastern Hog-nosed Snake (*Heterodon platirhinos*), Eastern Musk Turtle (*Sternotherus oderatus*), Eastern Ribbonsnake (*Thamnophis sauritus*) , and Snapping Turtle (*Chelydra serpentina*);
- Plants: Broad Beech Fern (*Phygopteris hexagonoptera*), Butternut (*Juglans cinerea*), and Eastern Prairie Fringed-orchid (*Platanthera leucophaea*); and,
- Insects: Monarch (*Danaus plexippus*).

An evaluation of potential habitat for SAR within the study area and adjacent lands is presented in Table 4. The results of the SAR assessment identify the following species as having potential to occur within the study area and adjacent lands:

- Mammals: Little Brown Myotis (END), Northern Myotis (END), and Tri-colored Bat (END);
- Birds: Eastern Wood-pewee (SC) and Wood Thrush (SC);
- Plants: Butternut (END); and,
- Insects: Monarch (SC).

4.4 Fish and Fish Habitat

4.4.1 Banks Creek

One watercourse is present in the study area (Banks Creek), which flows in an easterly direction and outlets into Lake Simcoe. The system is within the Innisfil Creeks subwatershed, which captures flow from a 9.6 km^2 watershed area (LSRCA, 2012). The alignment of the system relative to the study area is shown on Figures 2a and 2b. Photographs illustrating site conditions at Banks Creek are provided.

As shown on Figure 2a, at the upstream (west) end of the study area, Banks Creek crosses 7th Line approximately 180 m east of 20th Sideroad via an 18.8 m long, 1.6 m x 1.1 m corrugated steel arch culvert. From that point eastward, the channel is contained within the roadside ditch on the north side of the 7th Line, between the 20th Side Road and the railway crossing (~320 m) before flowing away from the roadside to the north. The channel is confined in the roadside ditch again for approximately 950 m on the north side of the 7th Line, north of Lamstone Street, to nearly St. Johns Road where it is directed through an existing culvert to the southeast quadrant of 7th Line and St Johns Road. The channel continues eastwards before passing through another culvert and flowing into Lake Simcoe (Figure 2b).

Along the 7th Line, the channel is generally confined within the roadside ditch, with unstable erosive banks particularly on the south bank at the road edge. The creeks attempt to meander through the channelized reach has resulted in erosion of the road embankment. The channel appears incised, with evidence of historic attempts to stabilize the embankments with manmade materials. Various culverts and outfalls are directed into the channel along its reach, and ATV crossings were evident crossing the channel. The system in general appears to be negatively impacted by anthropogenic influences.

The channel width ranges between 1.8 m and 3.5 m, with water depths of 0.3m - 0.6m. Substrates consist of sand and silt with coarse sediments (*i.e.* gravel, cobbles). Riparian vegetation is generally intact on the north side of the Banks Creek, however the development of Vance Crescent and associated subdivision has created a 'pinch' point through the corridor.

As documented in the Innisfil Creeks Subwatershed Plan, Banks Creek is a coldwater system located to the south of McLean Creek, which is almost entirely urbanized in the lower section containing the study area (LSRCA, 2018). It is known to contain five barriers to fish movement in the mid upper reaches but not in the lower, with areas of channel alteration, bank hardening and channelization in the mid to lower reaches (LSRCA, 2012) including portions at the 7th Line. The system flows through increasingly urbanized land uses in the mid to lower reaches. The current alignment of Banks Creek is at times, contained in the roadside ditch making it susceptible to the impacts associated with surface runoff and inputs of road salt/sand, and other untreated material from the roadside.

Watercress was observed at the upstream limits, and is anticipated to indicate some degree of groundwater inputs occur in the system. The system is considered permanently flowing with flowing water present during both the spring and summer field visit, however summer flows are reduced to trickle flow in some areas.

4.4.2 Fish Community

Spawning White Suckers were observed during the spring survey in the lower reaches along 7th Line (April 25, 2017). White Suckers typically spawn over gravel/cobble riffles, and this habitat is present along this stretch of 7th Line in Banks Creek. Minnows were also observed at the upstream end of the study area at the 20th Sideroad crossing. Available online background information from the MNRF Land Information Ontario database indicate that the following species have the potential of occuring in Banks Creek: Fathead Minnow, Eastern Blacknose Dace, Brook Trout, Creek Chub, Central Mudminnow, White Sucker, Brook Stickleback, Pumpkinseed, Emerald Shiner, Sand Shiner, Northern Redbelly Dace, and Bluntnose Minnow.

A request for additional background information was sent to MNRF, although a response has not been received. As per the Innisfil Creeks Subwatershed Plan (2012) produced by the LSRCA, Banks Creek is recognized as a coldwater watercourse with historic records of Brook Trout. No records of Brook Trout have arisen in recent years indicating that the system is no longer expected to contain a Brook Trout population.

Given the presence of fish throughout Banks Creek, spawning White Suckers with historical or current records for Brook Trout, and current condition, Banks Creek can be characterized as a cool-cold system that is likely functioning below its potential. The system is protected under the Federal *Fisheries Act.*

5.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

Background mapping from the NHIC (Appendix G) and LSRCA (Appendix H) identifies wetland, woodland and one watercourse within the study area.

5.1 Wetland

Based on the field work completed, two communities are classified as wetland (SWD2-2 and MAS2-1). These small communities (~ 0.3 ha) abut one another and are situated on the southern edge of the 7th Line between two lowland forested communities (Figure 2b). These wetlands are not designated as provincially significant.

5.2 Woodland

Portions of the subject lands are tree covered (*i.e.* forest, woodland, swamp). These remnant features are fragmented and isolated in such a way that they would not be considered significant in the context of the greater landscape.

5.3 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) functions were evaluated according to provincial criteria outlined in the Ecoregion 6E Criterion Schedule (MNRF, 2015). Of the 35+ wildlife habitat functions identified by the province as candidates for consideration as provincially significant, the results of studies indicate that the study area and adjacent lands have the potential to function as Bat Maternity Colony habitat, and habitat for Special Concern wildlife (Monarch).

5.4 Habitat of Endangered and Threatened Species

As discussed above, endangered bat species have the potential of utilizing the forested communities present on and adjacent to the study area. The results of snag tree density

surveys, (completed during leaf-off conditions of 2018) revealed densities of trees having diameter at breast height greater that 25 cm, and providing cavities/peeled bark. These trees would provide value to bats since the extent of roosting cover exceeds the threshold value of 10/ha. This value is assumed by the MNRF to identify woodlands as having potential to function as bat maternity colony habitat.

Three Butternut, (endangered) were identified within the study area (Figure 2a and 2b). DNA testing confirmed two of the trees as Butternut and not hybrids (Appendix I). Tissue from one tree was deemed not viable by the laboratory and hence, though submitted - was untested. It is speculative, but likely that the third tree is also pure Butternut and not a hybrid.

Impacts to SAR bat habitat, and Butternut require consideration, and are discussed in Sections 7.3.1 and 7.4.1, respectively.

5.5 Fish and Fish Habitat

Banks Creek is managed as a coldwater system that hosts a diverse community of commonly found fish species, including White Sucker which spawn in Banks Creek each spring. Banks Creek is not known to contain salmonids, and is considered a permanently flowing system, hosting direct fish habitat. The system does not contain aquatic SAR, or any known population of Brook Trout (coldwater indicator species historically occurring), and has been impacted by the effects of urban land use and proximity to the 7th Line.

6.0 PROPOSED DEVELOPMENT

At the Town's Public Open House (POH) the design alternative identified as the Preliminary Preferred Alternative was Alternative 5. This alternative consisted of a combination of 2, 3 and 4 lane wide profiles that would serve to provide improved traffic flow in addition to a 3.0 m wide paved, multi-use trail and 1.5 m wide sidewalks established in certain locations on the south side of the road to accommodate pedestrian safety.

To facilitate the permeation of stormwater into the ground, the following Low Impact Development (LID) practices have multiple infiltration galleries and stormwater discharge outfalls have been incorporated into the preliminary design drawings. The infiltration galleries will receive stormwater runoff from a new curb and gutter drainage system and direct runoff below ground, to promote reinfiltration into the water table. The discharge outfalls will function as discharge points to help disperse stormwater before entering Banks Creek. The section of the 7th line in the study area currently has no

stormwater management. In an area where a new stormwater management facility is not feasible, the galleries and outfalls will address the need for storage, water quality and quantity treatement in the Banks Creek subcatchment.

The road reconstruction preferred solution, as completed by Ainley, is provided in Appendix A. The development plan overlain on aerial mapping with labeling to identify proposed changes, is shown on Figures 3a, 3b, 3c and 3d.

The design identifies the existing road profile, and improvements may be summarized as follows:

- Reconstruction of the road profile to accommodate turning lanes, and build of curb-and-gutter along both sides of the 7th Line;
- Installation of new stormwater collection system, and construction of a total of 34 stormwater infiltration galleries on both sides of the roadway;
- Build of 17 stormwater discharge outfalls from a new curb and gutter collection system. The locations of outfalls in proximity to the watercourse varies, as represented on the drawings in Appendix A, (and Figures 3a to 3d);
- Build of a 3.0 m wide multi-use trail system on the north side of the 7th Line, extending the entire length of the study area. The pathway will occur atop the numerous infiltration galleries, to promote safe pedestrian use alongside the roadway;
- Build of multiple segments of 1.5 m wide sidewalks along the south side of the 7th Line;
- Banks Creek flows in the roadside ditch for approximately 55% of the study area length, and lies in the footprint of the proposed multi-use trail. The creek is currently susceptible to the negative effects of the roadway, and is proposed to be relocated away from the 7th Line to permanently move the creek away from the influences of the road. Relocating Banks Creek beyond the impacts of the roadway is an endeavor that will require in depth detailed fluvial design and permitting, but will provide a solution to the encroachment and provide protection of the roadway, that ultimately is expected to promote a healthier stream system in the long term;
- Realignment of Banks Creek is proposed from approximate Station 1+630 (PP11; Appendix A), eastward, to approximate Station 2+540 (PP17; Appendix A), at Wingrove Avenue. Total length of the realignment is 910 m. The area of proposed realignment is also shown on Figures 3c and 3d. The realignment will aim to relocate Banks Creek outside the limit of the reconstructed roadway, for both roadway protection and long term preservation of the watercourse;
- The design includes the installation of a total of five (5) retaining walls, of varying length, on the north side of the road. Retaining walls are designed to support the roadway in proximity to the relocated portion of Banks Creek, and minimize the extent of disturbance to the riparian corridor;

- The project includes the installation of a sanitary sewer to service the neighboring residential community to the north. The sanitary servicing enters the study area at approximate Station 1+880 (PP12; Appendix A). The sewer is aligned to cross under Banks Creek from northwest to southeast at the 7th Line, then eastward to Quarry Drive (PP15; Appendix A);
- The culvert that conveys Banks Creek under the 7th Line at the west limits is proposed to be replaced with a 17.6 m long concrete box culvert in order to accommodate the reconstructed road width, and new multi-use trail; and,
- Ainley has confirmed that the project will result in an estimated surplus of fill within the floodplain of Banks Creek, totaling 3,600 m^3. To balance the cut-fill, excavation of this quantity is proposed in an existing field located in the northeast quadrant of the intersection of the 7th Line and the 20th Side Road on agricultural lands. The cut is proposed at 1 m depth, with gentle sideslopes. The exact volume of cut will be reevaluated in detail design.

The Town of Innisfil is proceeding to evaluate alternative solutions with consideration of the natural environment, cultural, technical and economic environment, and expects to recommend a preferred solution to advance to Phase 4 of the Class EA. The reconstruction of the 7th Line is scheduled to occur in 2020/2021, pending the completion of an updated EIS in detail design (for approvals), Environmental Study Report (ESR), acquisition of all necessary approvals, property acquisition, and utility contracts in advance of road works.

7.0 IMPACT ASSESSMENT

The impact assessment is based on the preliminary preferred design as prepared by Ainley (Appendix A), and described above.

7.1 Wetland

The proposed works will result in approximately 90 m^2 (0.09 ha) of wetland removal, exclusively within the Cattail Mineral Shallow Marsh community (MAS2-1; Figure 3d). Loss of associated ROW vegetation within a 30 m buffer applied to the wetland amounts to approximately 95m^2 (0.095 ha).

7.2 Woodland

Woodland loss equates to 22,985m^2 (2.3 ha) from the forested communities: FOD7-3, FOM7-2, FOC4-1, and FOD8-1 (Figures 3a, 3b, 3c and 3d). Loss of associated ROW vegetation within a 30 m buffer applied to affected woodlands amounts to approximately 5,680m^2 (0.57 ha).

7.3 Significant Wildlife Habitat

7.3.1 Bat Maternity Colonies

The woodland communities within and adjacent to the study area have the potential to function as bat maternity colony habitat as measured snag tree density exceeds 10 trees/ha (Azimuth estimate - average 55.75 snag trees/ha). The area of continuous woodland within and adjacent to the study area covers approximately 18 ha. At a snag density of 55.75/ha this equates to an availability of just over 1,000 potential snag trees. The proposed development removes approximately 2.3 ha of woodland containing an approximately 130 potential snag trees. Therefore, based on field data it is clear that the proposed development maintains the majority of the snag trees having characteristics of value to bats as maternity colony habitat. The proposed development does not represent a negative impact to bat maternity habitat given the small scale of impact.

Recommendations are provided with respect to the timing of tree clearing to avoid impacts to bats should they occur within the woodlands located within or adjacent to the study area.

Monarch is listed as special concern. It can occur anywhere Common Milkweed (*Asclepias syriaca*) is found to be growing. Common Milkweed was observed within roadside vegetation communities but was not deemed “abundant”. Therefore, as with roadsides throughout southern Ontario, Monarch may occur within the ROW but as Milkweed was not abundant, the study area is not a significant/unique habitat.

Recommended timing windows for vegetation clearing will help to ensure that Monarch, and in particular eggs, larvae and chrysalides are protected from direct harm during the proposed works.

7.4 Habitat of Threatened and Endangered Species

7.4.1 Butternut

There are three (3) Butternut trees that occur in the study area. As shown on Figures 3a and 3c, based on the preferred design alternative provided in Appendix A, the Butternut trees do not physically occur within the limit of disturbance for road improvement, and will not need to be removed for construction. However, road widening will occur within 25-50 m of each tree, and for this reason, a Butternut Health Assessment (BHA) should be completed prior to any site alteration or development. The BHA is required in order to establish if any of the trees have a health status requiring considerations of potential for harm/impact to habitat, as per ESA regulations.

The health of the Butternut trees was generally assessed during field study in 2017. All three of the Butternut were showing signs of infection with butternut canker fungus and were in moderate to poor health condition. It appears likely that each would score as Category 1 under a BHA and if so, they would pose no issues with respect to tree protection/ESA permitting moving forward with development. The next available time period to complete a BHA begins in late May 2019 extending through to the end of August 2019. If one or more of the trees score as Category 2 or 3, the potential for impact related to adjacent works would need to be assessed. Further, consultation with the MNRF may be required should impact be deemed likely.

7.4.2 Endangered Bats

As per Section 7.3.1, the proposed development does not represent a negative impact to habitat of SAR bats. The scale of impact is considered small, and any kill/harm/harassment of bats can be avoided through the implementation of an effective mitigation strategy such as timing the process of tree clearing to avoid impacts to bats, should they occur, within the woodlands in the vicinity of the study area.

7.5 Fish and Fish Habitat

The road improvements will result in both temporary and permanent disturbances to Banks Creek. Aspects of the development that could potentially impact the watercourse are described as follows:

7.5.1 Channel relocation

The project proposes to realign 910 m of Banks Creek northward, on average a distance of 8.0 m (distance varies), in order to move the creek beyond the limit of the proposed multi-use trail, and roadside. The location of the proposed relocation is shown on Figures 3c and 3d. In the design drawings, refer to design drawings PP12-PP17 (Appendix A).

In accordance with DFO's process for evaluating channel relocations, the creek realignment requires the reconstruction of a new channel, and decommissioning of the existing channel. The realignment will result in the infilling of fish habitat, and the realignment of the new channel in essence becomes the 'offsetting plan'.

Quantifiable impacts to the creek are typically calculated based on aerial extent. For this purpose, using an existing bankfull width of 3.0 m (Water's Edge, 2018), the total area of infill, or channel 'loss' before offsetting = 3.1 m x 910 m = 2,821 m^2.

In design stages of the project, Ainley retained the services of Water's Edge, to provide opinion from a fluvial geomorphic perspective, whether the relocation of Banks Creek was feasible considering numerous constraints, primarily being availability of land and

physical room for relocation. Water's Edge completed an evaluation of the creek and based on their assessment concluded that a bankfull channel width of at least 3.1 m would be required to create a stable alignment in terms of fluvial design, and proposed a general fluvial profile within suitable lands for Town consideration. The fluvial assessment suggested riffle and pool locations for the new channel, based on an approximate bankfull channel width of no less than 3.1 m and pool depth of 0.65 m. The plans are considered preliminary as a means to conclude feasibility, and based on the assessment outcome, is likely to advance to a detailed stage of assessment. The channel relocation planning will require additional study by a qualified fluvial geomorphologist to ensure appropriate capacity is afforded, and that the channel relocation includes the necessary velocity and energy controls to create a stable channel in terms of fluvial design. Further, that the relocation plan integrates as many naturalized elements as possible to restore habitat functions for the fish community that inhabits this reach.

Under current fisheries regulations, the proposal to realign the creek will require review and approval from DFO in accordance with the Federal *Fisheries Act*. The infilling of the original alignment before the new channel is operational, constitutes an activity that causes 'serious harm to fish' and will require an Authorization from DFO, accordingly. The process of review is initiated with a Request for Review submission, which DFO responds to guiding as to 'next steps'. If DFO confirms that an Authorization is warranted, then the project team submits a DFO Request for Authorization with an offsetting plan, and Letter of Credit to DFO for review. The process of review can be lengthy; therefore early submission for a project of this scale will be required in order to secure federal permitting in advance of the Town's tendering period.

7.5.2 Retaining Walls

Banks Creek is proposed to be relocated to permit road improvements. As per the fluvial evaluation completed by Water's Edge (Water's Edge, 2018), the relocation can be achieved based on the preliminary fluvial design, but will need to consider pinch points at Vance Crescent. The recommendation from the fluvial assessment was that the future channel banks should likely be reinforced with bioengineering solutions to limit erosion risk (Water's Edge, 2018). Based on this, the proposed design includes five retaining structures as shown on Figures 3c and 3d. They are also reflected on design drawings PP11-PP16 (Appendix A).

Retention is anticipated to be required in order to provide channel reinforcement and contain the profile through the reach. This work is a component of the channel relocation plan, and will need to be included in all submissions to DFO for approval.

It is recommended that the design of the retaining structure be evaluated further in detail design for purposes of approvals, to develop a design that utilizes wholly, or integrates in part, naturalized reinforcement options. The design should attempt to avoid if possible exclusively hard armoring along the watercourse.

7.5.3 Stormwater Management

Stormwater at the 7th Line is currently untreated, and discharges overland directly to Banks Creek. The reconstruction of the 7th Line allows for the consideration of opportunity to provide SWM treatment in some capacity. Ainley, in consultation with the LSRCA, have designed a drainage strategy that includes the use of infiltration galleries, proposed adjacent to the roadway. In total, 34 infiltration galleries are proposed (19 and 15 on the north and south sides, respectively), that will span an overall length of 962 m. The galleries will be fed from the catch basins along the roadway, and on the north side of the 7th Line, will occur in part, beneath the multi-use trail. Their locations are depicted on Figures 3a, 3b, 3c and 3d, as well as, in the design drawings (Appendix A).

In accordance with Ainley's design, the infiltration galleries will receive runoff from impervious surfaces and provide infiltration to promote re-infiltration to the water table. Each gallery will be constructed no less than 1 m above the water table, and provide sufficient volume to eliminate the need for a SWM pond. The galleries have been designed to provide quantity control to meet LSRCA's SWM management objectives, and the design is advancing to also meet quality control. Quality control is also to be provided using a variety of other methods (i.e. sumps in catch basins, grass lined ditches etc.)

Ultimately, the proposal to provide SWM control will provide great benefit to Banks Creek in the long term. The creek has been impacted by anthropogenic influences associated with urbanism, and the inclusion of galleries in the design strategy will promote infiltration, and undoubtedly benefit fish and fish habitat in Banks Creek.

7.5.4 Culvert Replacement

The culvert that conveys Banks Creek across the 7th Line (203 m east of the 20th Side Road) will need extending to accommodate the new reconstruction width. As shown on design drawing PP2 (Appendix A), the culvert will likely be replaced with a 17.6 m long box culvert.

The culvert replacement will result in the alteration in habitat within the footprint of the extended culvert, and depending on the length of the extension, as well as footprint impacts on the upstream and downstream sides of the 7th Line, may require review by

DFO. If the works fall within the criteria for self assessment, then the project will not require DFO review.

In detail design it is recommended that the culvert design include substrate through the culvert length, and a low flow channel. The culvert should be evaluated to ensure that fish passage continues to occur post construction (particularly under low condition and for the 2-yr flows expected during the spring spawning period). As with any culvert design, the culvert should be sized appropriately to satisfy drainage criteria, and the structure should be embedded to promote natural channel processes.

7.5.5 Outfalls

As per the engineering design, stormwater collected in catch basins that is not directed to infiltration galleries will discharge to reconstructed outlets with headwalls to Banks Creek (Appendix A). The drainage strategy being developed, aims to satisfy both quality and quantity control. Consultation is occurring with the LSRCA to develop a plan that can achieve the LSRCA's SWM Guidelines as well as the SWM design criteria of the Ministry of the Environment, Conservation and Parks (MOECP). The design is advancing and will need to be satisfied in order to ultimately secure environmental approvals.

As long as water quality and control measures are in place, it is anticipated that receiving waters into Banks Creek will not adversely impact fish or fish habitat. For all headwall and associated outlet construction within the bankfull width of Banks Creek, or near water, a fisheries review should occur in order to identify appropriate mitigation requirements to avoid causing 'serious harm to fish'. Works are anticipated to occur outside the active channel (bankfull channel), in which case, a self assessment review may be sufficient without the requirement for DFO review. In any case, fisheries review by a qualified biologist will be required in detail design to confirm fisheries impacts and reporting and approval requirements.

7.5.6 Sanitary Sewer Crossing

The project includes a new sanitary sewer that will enter the project area from the north. The location is as shown on design drawing PP12 (Appendix A). The sewer line will need to cross Banks Creek, and will require that the pipe design be reviewed in detail to confirm the potential for fisheries impacts. In general, for any new crossing, the design should include the evaluation of whether the pipe alignment could negatively impact groundwater flow, and any requirement for anti seepage collars for example. Other impacts may be associated with the pipe depth below the channel bed, and whether the creek could be at risk of collapse or instability during construction stages or post development.

In detail design, the sanitary crossing should include a review of the appropriate depth below the channel invert, and an evaluation of the constructability plan. Installation by open cut versus drilling can have very different scheduling and cost requirements and will require assessment. For cost reasons, it is anticipated that open cut is a preferred viable option, in which case, the work plan should be reviewed by a fisheries ecologist to identify appropriate mitigation, and permitting. Given site conditions, there is no fisheries reason that the creek couldn't be open cut. Impacts to fisheries will occur, but are considered short duration, and can be mitigated with restoration. In typical cases, short duration open cut work projects can be addressed through DFO's self assessment process, without the need for DFO submission and review. This should be confirmed in detail design stages.

8.0 MITIGATION

The following recommendations are provided as mitigation for the proposed works:

8.1 Project design

The project will impact upon natural heritage features however the degree of impacts varies depending on the activity, and can be minimized to mitigate the effects. The following is recommended for consideration in detail design:

- Re-evaluate the limit of disturbance and confirm impacts to Butternut. Reaffirm approval requirements (if any) under the ESA in consultation with MNRF;
- Channel design to be completed by a qualified fluvial geomorphologist that includes diversified habitat conditions (*i.e.* pools and riffles), meandering stable profile and promotes natural fluvial processes to the extent possible;
- Retaining wall design should integrate bioengineering to integrate hardscaping for armouring with 'greening' that affords bank stability as well as naturalized elements where retention is required;
- Minimize the extent of retaining walls to the extent possible to permit natural channel processes and connectivity with the floodplain;
- Achieve the highest degree of stormwater management control as possible to meet water quality and quantify objectives for discharge to Banks Creek;
- Minimize the length of the one culvert replacement (just east of the 20th Side Road) to reduce impacts, while maintaining fluvial and fish passage functions at the crossing;
- Complete a natural heritage screening of the location proposed for the cut-fill balance, at the northeast intersection of the 7th Line and 20th Side Road. The land use is currently agriculture, therefore the natural heritage features assessment is

anticipated to focus on the potential for SAR (*i.e.* bird SAR such as Bobolink and Eastern Meadowlark).

8.2 Timing Restrictions

8.2.1 Terrestrial

Removal of trees and ground cover vegetation should be completed during the winter months to avoid impact to migratory breeding birds and bats. Based on Environment Canada guidance with respect to birds, and MNRF guidance with respect to bats, vegetation removal should only occur between November 1 and March 31.

8.2.2 Aquatic

Banks Creek is a coldwater watercourse to which fisheries timing restrictions apply. To protect fish during the spawning period, no in-water work is permitted between October 1 and July 1. This timing restriction applies to in-water work and near water work that has the potential to result in serious harm to fish under the Federal *Fisheries Act.*

The coldwater timing restriction was historically applied based on the past occurrence of fall spawning Brook Trout. Should project scheduling require creek work to occur between October 1 and March 31, a request can be made to MNRF to confirm if the system continues to be managed for Brook Trout, despite their lack of occurrence for many years. If MNRF is in agreement with a coolwater timing window, then no water work will be permitted from April 1 to July 1. MNRF should be re-consulted in detail design to confirm appropriateness of timing.

8.3 Species at Risk

It should be noted that the absence of a protected species at this time does not indicate they will never occur within the study area and/or adjacent lands. Habitat occupancy and use by animals is dynamic and can vary over time. Further, SAR lists are subject to change with species being up-listed or down-listed. This report is intended as a point-in-time assessment of the potential to impact SAR; it does not provide long term 'clearance' for SAR. While there is no expectation that our assessment should change significantly, it is the responsibility of the proponent to ensure they are not in contravention of the ESA at the time site works are undertaken.

8.4 Fish Salvage

Fish removal and relocation will be required prior to site dewatering in Banks Creek during the process of implementing the channel realignment. Fish relocation will include fish salvage and relocation downstream the work area, and must be completed by a

qualified fisheries biologist with an MNRF issued Licence to Collect Fish for Scientific Purposes secured prior to construction.

8.5 Sediment and Erosion Control

Sediment and erosion control will be of the utmost importance in completing this project to protect fish in Banks Creek. Diligent application of sediment and erosion controls will be required for all construction activities occurring in or around the creek to minimize the extent of accidental or unavoidable impacts to fish habitat, and alleviate the risk of sediment entering the creek and natural areas. Impacts that occur to fish habitat either directly or indirectly in the absence of a pre-acquired authorization from DFO would be considered a violation of the Federal *Fisheries Act*.

A sediment and erosion control plan will be required in detail design that is anticipated to include the following: flow control structures (*i.e.* check dams) for sediment control, staging to minimize the duration of exposure of unstable soils, coir logs for example for silt control, revegetation of exposed areas in a timely fashion for erosion control, sediment traps, and silt fencing (heavy duty and light duty). All environmental mitigation measures will need to be maintained as required (*i.e.* cleanouts), and designed to accommodate expected volumes of flow throughout the construction period.

Dewatering activities are expected to be required during some component of the project. Dewatering operations may include temporary coffer dams to isolate the work area, and pumping of water to a silt trap or envirobag if required, to allow for filtration prior to discharging to the creek. In detail design, the contractor will be required as part of the contract to adhere to a water quality management plan to ensure that sediment-laden water does not enter Banks Creek. Any siltation control structures (traps or bags) must be maintained as required (*i.e.* cleanouts), and designed to accommodate expected volumes of discharge throughout the construction period.

All sediment and erosion controls will need to be maintained until vegetation has been re-established to sufficiently stabilize disturbed soils. Proper sediment and erosion control procedures will be required to be outlined as a component of the Special Provisions in the contract documents for this project.

8.6 Site Restoration

In detail design, the areas of disturbance will need to be confirmed and restored through the design and implementation of a restoration plan. Pending continued LSRCA consultation in detail design, this is anticipated to also include the development of an Ecological Offsetting Plan to offset impacts to natural heritage features. All planting specifications are to include native species, compatible and consistent with the ecological

communities currently in the study area. Restoration may afford opportunity to improve ecological communities, and should be reviewed in detail design.

The DFO submission will also require a restoration plan to demonstrate remedial efforts to reconstruct the riparian corridor, and satisfy the objective of achieving overall net benefit in Banks Creek.

8.7 Monitoring

The project will have to include a commitment to monitoring during all key stages of implementation. Monitoring is integral to ensure that the project proceeds in accordance with environmental approvals, and that mitigation measures are devised and utilized as necessary to ensure adequate protection of natural heritage features and functions. In detail design, a monitoring plan will be required as a component of both the LSRCA and DFO submissions, and should include commitments to monitoring by the Town, Contract Administrator, as well as discipline experts, such as an ecologist, who is a Certified Inspector of Sediment and Erosion Control (CISEC). The project includes complexities that are considered of risk to the natural environment, therefore a monitoring plan can be an effective tool to reduce environmental risk, as well as to aid in satisfying the project schedule for permitting requirements and construction.

For project planning, a DFO Authorization will include a post construction monitoring component that can extend between 2-5 years. During this time, monitoring is completed numerous times throughout the year, and a year-end report is submitted to DFO annually to demonstrate compliance with approvals.

9.0 ENVIRONMENTAL APPROVALS

LSRCA permitting will be required for all works in regulated lands in accordance with O. Reg. 230/08.

Provided the mitigation measures recommended in this report are undertaken accordingly, the proposed development will be consistent with the regulations set out within Ontario's ESA. Approvals are not anticipated to be required from MNRF under the ESA. Should review in detail design confirm that impacts to Butternut are possible, MNRF consultation will be required.

The proposal to relocate Banks Creek will require submission to DFO for review and confirmation from DFO that the works will require an Authorization. The Request for Authorization submission will be required to include an offsetting plan (which is in essence the relocation), and all construction details applicable to a detail design

submission. This will include, but not limiting to, a sediment and erosion control plan, staging plan (*e.g.* channel relocation will be required prior to road construction), site grading, and restoration plans. The project ultimately includes the opportunity to improve water quality in Banks Creek, and is anticipated to be approvable by DFO, subject to further refinement in detail design.

Stormwater management design will be required to satisfy LSRCA and MOECP requirements for discharge to Banks Creek.

Confirmation of whether permitting is required from MOECP for a Permit to Take Water (PTTW), pending the outcome of a hydrogeology assessment, is being addressed by others.

10.0 CONCLUSIONS

The results of the EIS conclude that the proposed development can be completed with no negative impact to significant natural heritage features or related functions, and only minimal impact to wetlands and woodlands. Impacts are both permanent and temporary in nature, many of which are ultimately considered improvements, particularly for Banks Creek. As such, through this study, impacts are acknowledged, but considered acceptable and even encouraged for the overall benefit of this portion of Banks Creek. The project will not impact habitat of endangered or threatened species. Additional study will be required in detail design to confirm the extent of impacts, mitigation requirements, permitting, and acceptability of residual effects under current environmental legislation.

If deemed necessary by the LSRCA, offsetting requirements for direct loss of wetlands and woodlands amount to 0.09 ha and 2.3 ha, respectively. Additional work is required to assess the health of Butternut (END) trees located adjacent to the limit of disturbance to determine if permitting under Ontario's ESA is required.

The reconstruction of the 7th Line includes the proposal to realign 910 m of Banks Creek on the north side of the roadway, approximately (on average) 8.0 m northward. The channel relocation will result in disturbances to terrestrial resources, resulting from land clearing to accommodate the new channel corridor, however the impacts of relocation do allow for the opportunity to improve Banks Creek by eliminating the confinement in the roadside ditch. Impacts will occur to both terrestrial and aquatic resources, however in the long term, relocating the watercourse is anticipated to result in beneficial effects for fish habitat.

The use of infiltration galleries and other SWM controls will provide controls where none currently exist. Design for controls that satisfy LSRCA and MOECP requirements for

SWM discharge is anticipated to improve water quality conditions in Banks Creek, and ultimately fish habitat.

Proposed outfalls and sanitary sewer crossing will impose temporary impacts associated with construction as long as mitigation measures are in place to protect Banks Creek accordingly.

11.0 REFERENCES

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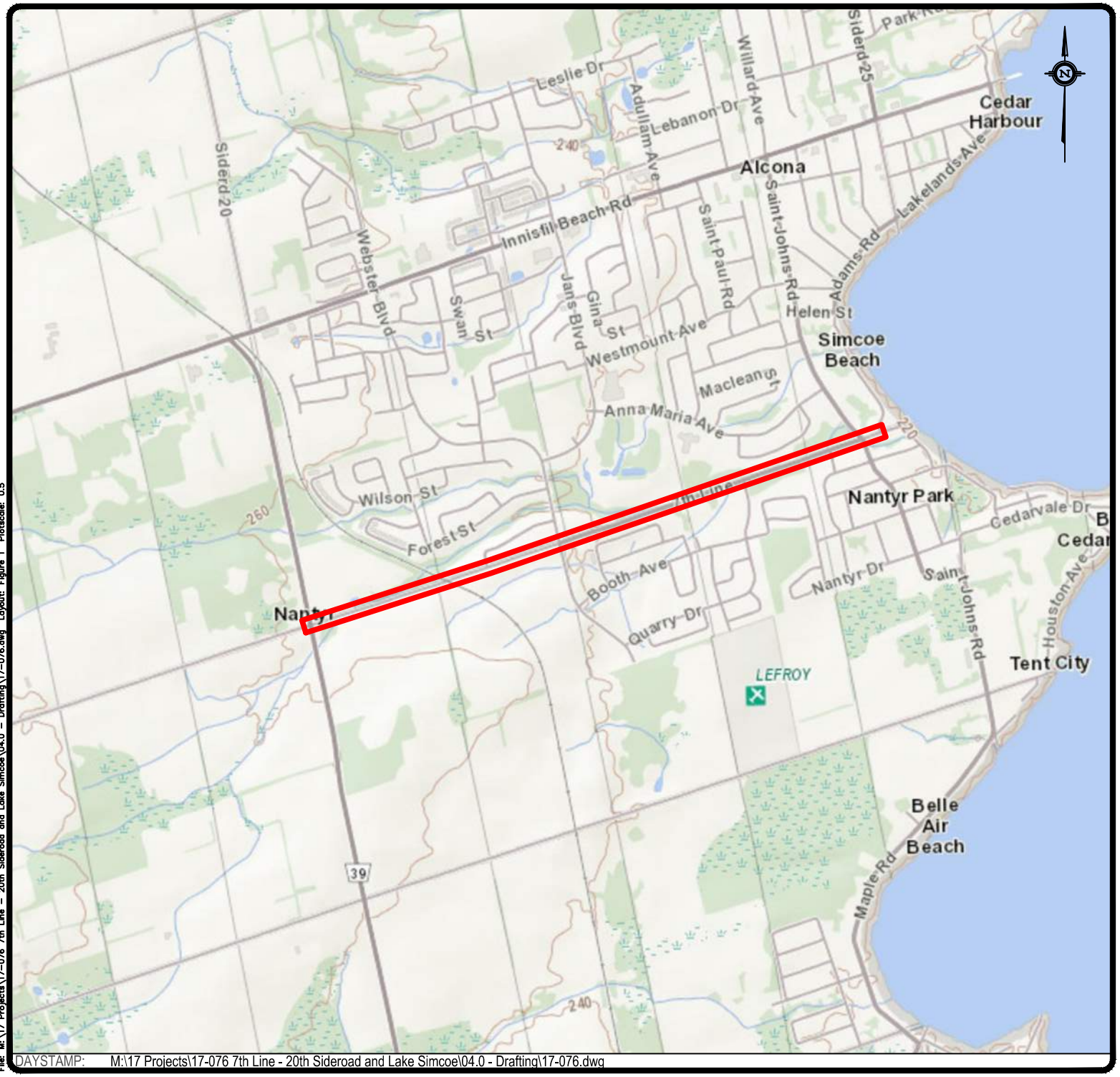

LEGEND:

Approx. Property Boundary

REG MAP

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED: *August 2017*	Figure No.
CREATED BY: *JLM*	
PROJECT NO.: *17-076*	1
REFERENCE: *MNRF*	

DAYSTAMP: M:\17 Projects\17-076 7th Line - 20th Sideroad and Lake Simcoe\04.0 - Drafting\17-076.dwg

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LEGEND:

- Approx. Study Area Boundary
- Watercourse
- Flow Direction
- Offline Pond
- CSP Culvert
- Butternut Locations
- Bird Point Count Station
- Amphibian Stations (white)
- Vegetation Communities

FOC4-1	Fresh - Moist White Cedar Coniferous Forest Type
FOM7-2a	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOM7-2b	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest Type
FODM5-11	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type
FOD8-1	Fresh - Moist Poplar Deciduous Forest Type
CUM1-1	Dry - Moist Old Field Meadow
CUT1-1	Sumac Cultural Thicket Type
OAGM1	Annual Row Crops
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

25m 0 75m

HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Features

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	January 2019	Figure No.
CREATED BY:	JLM	2a
PROJECT NO.:	17-076	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\17 Projects\17-076 7th Line - 20th Sideroad and Lake Simcoe\04.0 - Drafting\17-076.dwg

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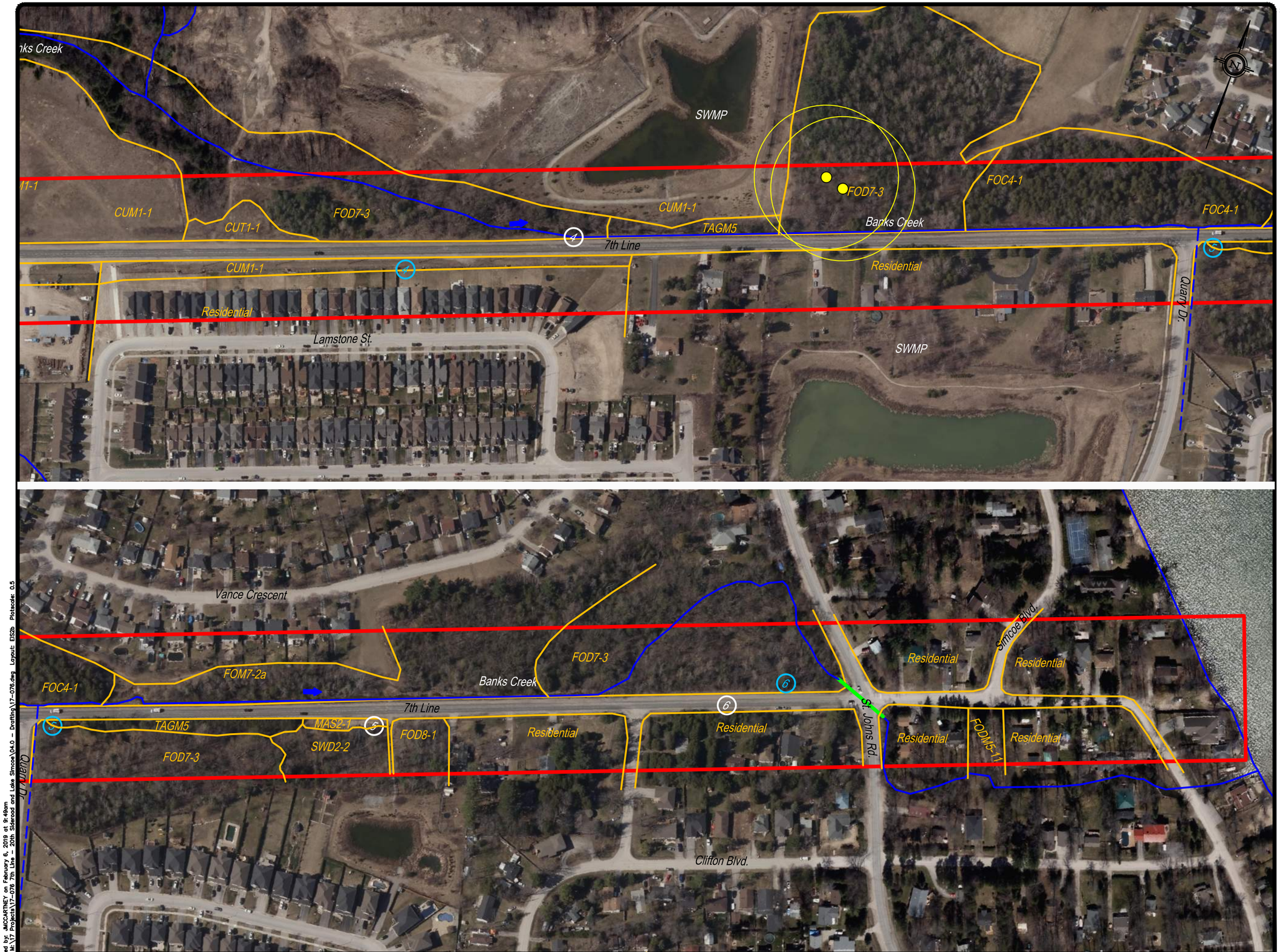

LEGEND:

- Approx. Study Area Boundary
- Watercourse
- Flow Direction
- Stormwater Drain
- CSP Culvert
- Butternut Locations
- Bird Point Count Station
- Amphibian Stations (white)
- Vegetation Communities

FOC4-1	Fresh - Moist White Cedar Coniferous Forest Type
FOM7-2a	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOM7-2b	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest Type
FODM5-11	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type
FOD8-1	Fresh - Moist Poplar Deciduous Forest Type
CUM1-1	Dry - Moist Old Field Meadow
CUT1-1	Sumac Cultural Thicket Type
OAGM1	Annual Row Crops
MAS2-1	Cattail Mineral Shallow Marsh Type
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

25m 0 75m

HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Features

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	January 2019	Figure No.
CREATED BY:	JLM	2b
PROJECT NO.:	17-076	
REFERENCE:	Simcoe County Maps	

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LEGEND:

- *Approx. Study Area Boundary*
- *Watercourse*
- *Flow Direction*
- *Offline Pond*
- *Disturbance Limit*
- *CSP Culvert*
- *Vegetation Communities*

FOC4-1	Fresh - Moist White Cedar Coniferous Forest Type
FOM7-2a	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOM7-2b	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest Type
FODM5-11	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type
FOD8-1	Fresh - Moist Poplar Deciduous Forest Type
CUM1-1	Dry - Moist Old Field Meadow
CUT1-1	Sumac Cultural Thicket Type
OAGM1	Annual Row Crops
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Development Plan

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	*January 2019*	Figure No.
CREATED BY:	*JLM*	3a
PROJECT NO.:	*17-076*	
REFERENCE:	*Simcoe County Maps*	

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LEGEND:

- Approx. Study Area Boundary
- Watercourse
- Flow Direction
- Stormwater Drain
- Disturbance Limit
- CSP Culvert
- Wetland
- 30m Wetland Buffer
- Vegetation Communities

FOC4-1	Fresh - Moist White Cedar Coniferous Forest Type
FOM7-2a	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOM7-2b	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest Type
FODM5-11	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type
FOD8-1	Fresh - Moist Poplar Deciduous Forest Type
CUM1-1	Dry - Moist Old Field Meadow
CUT1-1	Sumac Cultural Thicket Type
OAGM1	Annual Row Crops
MAS2-1	Cattail Mineral Shallow Marsh Type
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Development Plan

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	January 2019	Figure No. 3b
CREATED BY:	JLM	
PROJECT NO.:	17-076	
REFERENCE:	Simcoe County Maps	

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- *Watercourse*
- *Flow Direction*
- *Stormwater Drain*
- *Disturbance Limit*
- *CSP Culvert*
- *Wetland*
- *30m Wetland Buffer*
- *Vegetation Communities*

FOC4-1	*Fresh - Moist White Cedar Coniferous Forest Type*
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FOM7-2b	*Fresh - Moist White Cedar - Hardwood Mixed Forest Type*
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FODM5-11	*Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type*
FOD8-1	*Fresh - Moist Poplar Deciduous Forest Type*
CUM1-1	*Dry - Moist Old Field Meadow*
CUT1-1	*Sumac Cultural Thicket Type*
OAGM1	*Annual Row Crops*
MAS2-1	*Cattail Mineral Shallow Marsh Type*
TAGM5	*Fencerow/Hedgerow*
SWD2-2	*Green Ash Mineral Deciduous Swamp Type*

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Development Plan

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	*January 2019*	Figure No. 3c
CREATED BY:	*JLM*	
PROJECT NO.:	*17-076*	
REFERENCE:	*Simcoe County Maps*	

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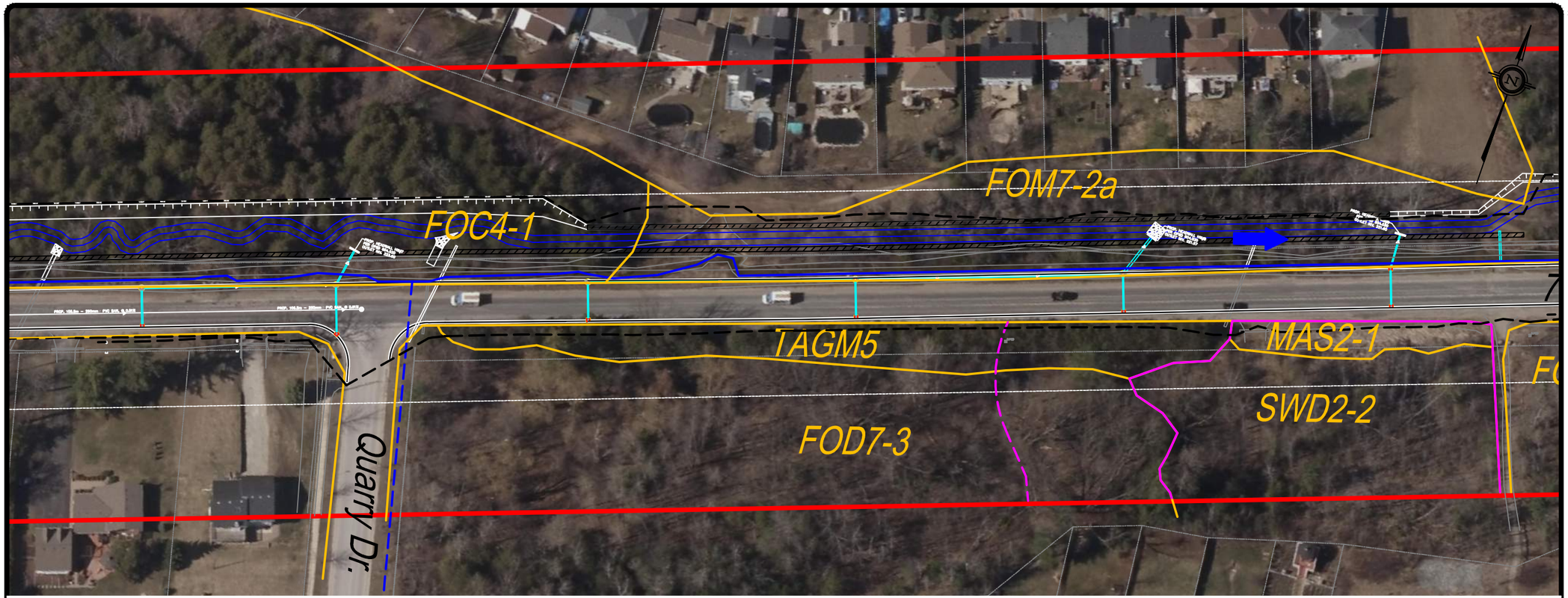

LEGEND:

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- Flow Direction
- Stormwater Drain
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- CSP Culvert
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- 30m Wetland Buffer
- Vegetation Communities

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MAS2-1	Cattail Mineral Shallow Marsh Type
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

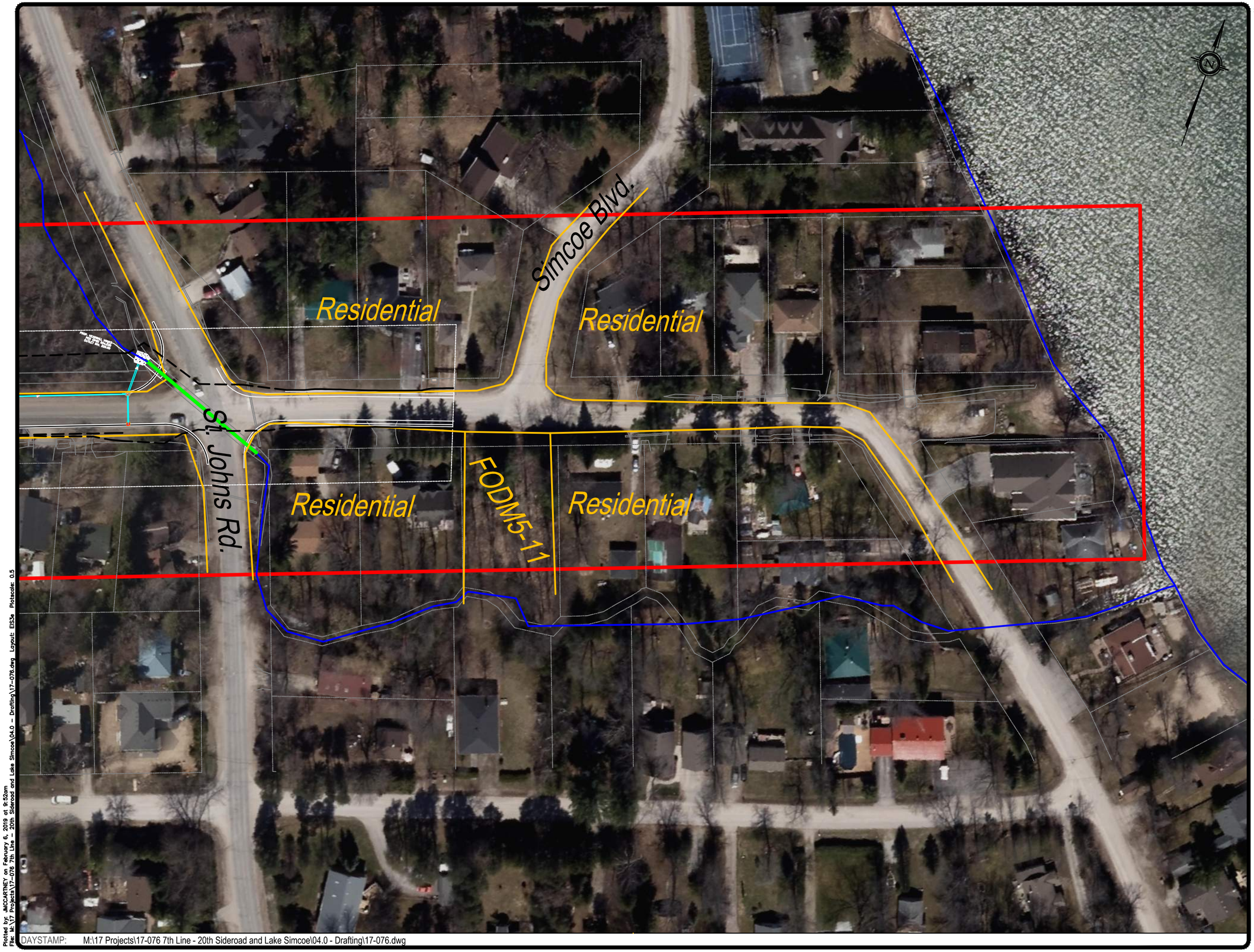
Proposed Development Plan

7th Line - 20th Sideroad to Lake Simcoe, Innisfil, ON

DATE ISSUED:	January 2019	Figure No. 3d
CREATED BY:	JLM	
PROJECT NO.:	17-076	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\17 Projects\17-076 7th Line - 20th Sideroad and Lake Simcoe\04.0 - Drafting\17-076.dwg

Plotted by: JMCCARTNEY on February 6, 2019 at 9:52am
File: M:\17 Projects\17-076 7th Line - 20th Sideroad and Lake Simcoe\04.0 - Drafting\17-076.dwg Layout: EIS3d Plotscale: 0.5



LEGEND:

- Approx. Study Area Boundary
- Watercourse
- Flow Direction
- Stormwater Drain
- Disturbance Limit
- CSP Culvert
- Wetland
- 30m Wetland Buffer
- Vegetation Communities

FOC4-1	Fresh - Moist White Cedar Coniferous Forest Type
FOM7-2a	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOM7-2b	Fresh - Moist White Cedar - Hardwood Mixed Forest Type
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest Type
FODM5-11	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type
FOD8-1	Fresh - Moist Poplar Deciduous Forest Type
CUM1-1	Dry - Moist Old Field Meadow
CUT1-1	Sumac Cultural Thicket Type
OAGM1	Annual Row Crops
MAS2-1	Cattail Mineral Shallow Marsh Type
TAGM5	Fencerow/Hedgerow
SWD2-2	Green Ash Mineral Deciduous Swamp Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

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File: M:\17 Projects\17-076 7th Line - 20th Sideroad and Lake Simcoe\04.0 - Drafting\17-076.dwg Layout: EIS3a Plotscale: 0.5

Table 1. Ecological Land Classification

Ecological Land Classification						Ground Cover
System	**Community Class**	**Community Series**	**Ecosite**	**Vegetation Type**	**Composition**	
Terrestrial	FO, Forest	FOC, Coniferous Forest	FOC4, Fresh - Moist White Cedar Coniferous Forest Ecosite	FOC4-1, Fresh - Moist White Cedar Coniferous Forest Type	This community is almost completely dominated by White Cedar. Green Ash and Trenbling Aspen are also present, but in low numbers. The dense shade created by the Cedar canopy has led to significantly-reduced sub-canopy, shrub and herb layers.	The herbaceous layer is quite sparse, with low plant numbers and species diversity. It is comprised mainly of a few small sedges and ferns, with some larger pockets of Ostrich Fern near the roadside borders.
Terrestrial	FO, Forest	FOM, Mixed Forest	FOM7, Fresh - Moist White Cedar - Hardwood Mixed Forest Ecotype	FOM7-2a, Fresh - Moist White Cedar - Hardwood Mixed Forest Type	This community resembles other forested communities of the area, but with notably higher cover of Eastern White Cedar. Trembling Aspen is the sub-dominant canopy species. The dense shade created by a Cedar canopy has led to reduced sub-canopy and shrub coverage.	The herbaceous layer is very similar to other described communities, but lower-diversity due to the dense shade from the Cedars. Areas of full Cedar cover contain open ground or dense Ostrich Fern populations. Exotic Coltsfoot is also common in these Cedar groves.
Terrestrial	FO, Forest	FOM, Mixed Forest	FOM7, Fresh - Moist White Cedar - Hardwood Mixed Forest Type	FOM7-2b, Fresh - Moist White Cedar - Hardwood Mixed Forest Type	This community is quite similar to FOM7-2a, with White Cedar dominant, but Green Ash is the secondary dominant tree species.	The herbaceous layer is very similar to other described communities, although areas of full Cedar cover contain Ostrich Fern, Coltsfoot or open ground.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD7, Fresh - Moist Lowland Deciduous Forest	FOD7-3, Fresh - Moist Willow Lowland Deciduous Forest Type	Multiple occurrences of this vegetation type, primarily on the north side of 7th Line. Crack Willow generally dominant, partiularly nearest the riparian borders. Green Ash and Trembling Aspen are also abundant, with prominent components of American Basswood, American Elm, and Balsam Poplar. Sub-canopy is consistent with canopy, but with fewer willows, with added components of scattered conifers, namely Eastern White Cedar and Eastern Hemlock. Shrub layer vegetation consists of hardwood saplings, Alternate-leaved Dogwood, Choke Cherry, and other common shrubs. Willows appear to be steadily aging out, becoming replaced by Green Ash - many of which are showing signs of decline.	Herbaceous layer variable adjacent to road shoulder, but generally dominated by hardwood seedlings, Canada Goldenrod, Riverbank Grape, Virgin's Bower, and a variety of native and exotic species with affinity for disturbance and light. Stream edges contains dense populations of Spotted Jewelweed and Spotted Joe-pye-weed, among other typical riparian herbs. Further from the roadside, community appears to transition to more fern dominant; higher quality.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD5, Dry - Fresh Sugar Maple Deciduous Forest Ecosite	FODM5-11, Dry - Fresh Sugar Maple - Hardwood Deciduous Forest type	A single, uncut lot, surrounded by residential lots with partial woodland closure, this community is dominated, from the canopy down through the ground layer, by a dense mix of native Sugar Maple, and non-native Norway Maple. Also present are occassional Basswood, Silver Maple and Red Oak.	Tree seedlings comprise the majority of ground flora. Also present are Garlic Mustard, and in smaller numbers Wild Strawberry, Perriwinkle, and woodland sedges.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD8, Fresh - Moist Poplar - Sassafras Deciduous Forest Ecosite	FOD8-1, Fresh - Moist Poplar Deciduous Forest Type	The canopy is dominated by Trembling Aspen, with Green Ash and White Elm sub-dominant. Green Ash is the main component of the understory and shrub layers, which also include Buckthorn, Red-osier Dogwood, Choke Cherry, and European Highbush Cranberry.	Ground flora includes Graceful Sedge, Calico Aster, Virgin's Bower, and Wild Strawberry.
Terrestrial	CU, Cultural	CUM, Cultural Meadow	CUM1, Mineral Cultural Meadow Ecosite	CUM1-1, Dry - Moist Old Field Meadow	These cultural meadows are variable in composition, but all appear to be recently retired hayfields, or grown-in areas where earthworks have recently occurred. Canada Bluegrass, Smooth Brome, Reed Canary-grass, Alfalfa, Red Clover, White Sweet Clover, and Wild Carrot are all common species in these communities. In some areas, soil is exposed. Shrubs and small trees are widely scattered in some areas, including Green Ash, mixed Willows, and Staghorn Sumac.	N/A
Terrestrial	CU, Cultural	CUT, Cultural Thicket	CUT1, Mineral Cultural Thicket Ecosite	CUT1-1, Sumac Cultural Thicket Type	The canopy in composed almost completely of Staghorn Sumac, with just a few young Balsam Poplar, White Ash and White Elm at the periphery.	Ground cover is dominated by Smooth Brome, but also includes some Orchard Grass, Black Raspberry and Canada Goldenrod.

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Ecological Land Classification						Ground Cover
System	**Community Class**	**Community Series**	**Ecosite**	**Vegetation Type**	**Composition**	
Terrestrial	CU, Cultural	AG, Agriculture	OAG, Open Agriculture	OAGM1, Annual Row Crops	Active agricultural fields with intermixed maintained residential lots. Occassional hedgerow communities with planted species or natural re-generation from nearby natural communities.	N/A
Terrestrial	CU, Cultural	AG, Agriculture	TAG, Treed Agriculture	TAGM5, Fencerow/Hedgerow	This "community" is a hedgerow, comprised of a single row of tightly-spaced, planted White Cedar trees, approximately 6m tall, located along the roadside.	N/A
Wetland	SW, Swamp	SWD, Deciduous Swamp	SWD2, Ash Mineral Deciduous Swamp	SWD2-2, Green Ash Mineral Deciduous Swamp Type	Narrow Green Ash swamp community between road shoulder and adjacent residential area to the south. Contains very small MAS2-1 (Cattail Mineral Shallow Marsh Type) inclusion at roadside edge. Does not host large areas of open water, but contains a more wetland-typical vegetation mix. Canopy trees declining, including few Crack Willow and Trembling Aspen; Common Buckthorn, Highbush Cranberry, and other shrubs common in lower strata.	Giant Goldenrod, Reed Canary Grass, Garlic Mustard and other weedy herbaceous species common. More open inclusions adjacent to road shoulder host Broad-leaved Cattail and Common Reed; Green Ash canopy is showing signs of decline.

Table 2. Vascular Plant List

Family	Scientific Name	Common Name	G-Rank	S-Rank	COSEWIC	MNRF
Aceraceae	*Acer negundo*	Manitoba Maple	G5	S5		
Aceraceae	*Acer platanoides*	Norway Maple	GNR	SE5		
Aceraceae	*Acer saccharum*	Sugar Maple	G5	S5		
Aceraceae	*Acer rubrum*	Red Maple	G5	S5		
Anacardiaceae	*Rhus typhina*	Staghorn Sumac	G5	S5		
Anacardiaceae	*Toxicodendron radicans*	Climbing Poison Ivy	G5	S5		
Apiaceae	*Aegopodium podagraria*	Goutweed	GNR	SE5		
Apiaceae	*Daucus carota*	Wild Carrot	GNR	SE5		
Apocynaceae	*Apocynum androsaemifolium*	Spreading Dogbane	G5	S5		
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit	G5	S5		
Asclepiadaceae	*Asclepias incarnata*	Swamp Milkweed	G5	S5		
Asclepiadaceae	*Asclepias syriaca*	Common Milkweed	G5	S5		
Asclepiadaceae	*Cynanchum rossicum*	European Swallow-wort	GNR	SE5		
Asteraceae	*Achillea millefolium*	Common Yarrow	G5	SE		
Asteraceae	*Ambrosia artemisiifolia*	Annual Ragweed	G5	S5		
Asteraceae	*Ambrosia trifida*	Great Ragweed	G5	S5		
Asteraceae	*Arctium minus*	Common Burdock	GNR	SE5		
Asteraceae	*Bidens cernua*	Nodding Beggarticks	G5	S5		
Asteraceae	*Bidens frondosa*	Devil's Beggarticks	G5	S5		
Asteraceae	*Cichorium intybus*	Chicory	GNR	SE5		
Asteraceae	*Cirsium arvense*	Canada Thistle	GNR	SE5		
Asteraceae	*Cirsium vulgare*	Bull Thistle	GNR	SE5		
Asteraceae	*Erigeron philadelphicus*	Philadelphia Fleabane	G5	S5		
Asteraceae	*Eurybia macrophylla*	Large-leaved Aster	G5	S5		
Asteraceae	*Euthamia graminifolia*	Grass-leaved Goldenrod	G5	S5		
Asteraceae	*Eutrochium maculatum var. maculatum*	Spotted Joe Pye Weed	G5T5	S5		
Asteraceae	*Inula helenium*	Elecampane	GNR	SE5		
Asteraceae	*Lactuca biennis*	Tall Blue Lettuce	G5	S5		
Asteraceae	*Leucanthemum vulgare*	Oxeye Daisy	GNR	SE5		
Asteraceae	*Matricaria discoidea*	Pineapple-weed Chamomile	G5	SE5		
Asteraceae	*Pilosella caespitosa*	Meadow Hawkweed	GNR	SE5		
Asteraceae	*Ratibida pinnata*	Gray-headed Prairie Coneflower	G5	S3		
Asteraceae	*Rudbeckia hirta var. pulcherrima*	Black-eyed Susan	G5T5	S5		
Asteraceae	*Solidago canadensis var. canadensis*	Canada Goldenrod	G5T5	S5		
Asteraceae	*Solidago nemoralis ssp. nemoralis*	Gray-stemmed Goldenrod	G5T5	S5		
Asteraceae	*Symphyotrichum cordifolium*	Heart-leaved Aster	G5	S5		
Asteraceae	*Symphyotrichum ericoides var. ericoides*	White Heath Aster	G5T5	S5		
Asteraceae	*Symphyotrichum lanceolatum ssp. lanceolatum*	Panicled Aster	G5T5	S5		
Asteraceae	*Symphyotrichum lateriflorum*	Starved Aster	G5	S5		
Asteraceae	*Symphyotrichum novae-angliae*	New England Aster	G5	S5		
Asteraceae	*Tanacetum vulgare*	Common Tansy	GNR	SE5		
Asteraceae	*Taraxacum officinale*	Common Dandelion	G5	SE5		

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Family	Scientific Name	Common Name	G-Rank	S-Rank	COSEWIC	MNRF
Asteraceae	*Tragopogon pratensis*	Meadow Goat's-beard	GNR	SE5		
Asteraceae	*Tussilago farfara*	Colt's-foot	GNR	SE5		
Balsaminaceae	*Impatiens capensis*	Spotted Jewelweed	G5	S5		
Betulaceae	*Betula alleghaniensis*	Yellow Birch	G5	S5		
Betulaceae	*Betula papyrifera*	Paper Birch	G5	S5		
Boraginaceae	*Echium vulgare*	Common Viper's-bugloss	GNR	SE5		
Boraginaceae	*Symphytum officinale*	Common Comfrey	GNR	SE5		
Brassicaceae	*Alliaria petiolata*	Garlic Mustard	GNR	SE5		
Brassicaceae	*Barbarea vulgaris*	Bitter Wintercress	GNR	SE5		
Brassicaceae	*Hesperis matronalis*	Dame's Rocket	G4G5	SE5		
Brassicaceae	*Nasturtium officinale*	Watercress	GNR	SE		
Campanulaceae	*Campanula rapunculoides*	Creeping Bellflower	GNR	SE5		
Caprifoliaceae	*Diervilla lonicera*	Northern Bush-honeysuckle	G5	S5		
Caprifoliaceae	*Lonicera tatarica*	Tartarian Honeysuckle	GNR	SE5		
Caprifoliaceae	*Sambucus canadensis*	Common Elderberry	G5T5	S5		
Caprifoliaceae	*Viburnum lantana*	Wayfaring-tree	GNR	SE2		
Caprifoliaceae	*Viburnum opulus ssp. trilobum*	Highbush Cranberry	GNR	S5		
Caryophyllaceae	*Saponaria officinalis*	Bouncing-bet	GNR	SE5		
Caryophyllaceae	*Silene vulgaris*	Maiden's Tears	GNR	SE5		
Celestraceae	*Celastrus orbiculatus*	Oriental Bittersweet	GNR	SE2		
Clusiaceae	*Hypericum perforatum*	Common St. John's-wort	GNR	SE5		
Cornaceae	*Cornus alternifolia*	Alternate-leaved Dogwood	G5	S5		
Cornaceae	*Cornus racemosa*	Gray Dogwood	G5?	S5		
Cornaceae	*Cornus stolonifera*	Red-osier Dogwood	G5	S5		
Cucurbitaceae	*Echinocystis lobata*	Wild Mock-cucumber	G5	S5		
Cupressaceae	*Thuja occidentalis*	Eastern White Cedar	G5	S5		
Cyperaceae	*Scirpus atrovirens*	Dark-green Bulrush	G5?	S5		
Cyperaceae	*Scirpus cyperinus*	Cottongrass Bulrush	G5	S5		
Dennstaedtiaceae	*Pteridium aquilinum*	Bracken Fern	G5	S5		
Dryopteridaceae	*Matteuccia struthiopteris*	Ostrich Fern	G5	S5		
Dryopteridaceae	*Onoclea sensibilis*	Sensitive Fern	G5	S5		
Fabaceae	*Desmodium canadense*	Showy Tick-trefoil	G5	S4		
Fabaceae	*Lotus corniculatus*	Garden Bird's-foot Trefoil	GNR	SE5		
Fabaceae	*Medicago lupulina*	Black Medic	GNR	SE5		
Fabaceae	*Medicago sativa*	Alfalfa	GNR	SE5		
Fabaceae	*Melilotus albus*	White Sweet-clover	G5	SE5		
Fabaceae	*Robinia pseudoacacia*	Black Locust	G5	SE5		
Fabaceae	*Securigera varia*	Common Crown-vetch	GNR	SE5		
Fabaceae	*Trifolium pratense*	Red Clover	GNR	SE5		
Fabaceae	*Trifolium repens*	White Clover	GNR	SE5		
Fabaceae	*Vicia hirsuta*	Hairy Vetch	GNR	SE1		
Fagaceae	*Quercus rubra*	Northern Red Oak	G5	S5		

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Family	Scientific Name	Common Name	G-Rank	S-Rank	COSEWIC	MNRF
Geraniaceae	*Geranium robertianum*	Herb-Robert	G5	S5		
Grossulariaceae	*Ribes americanum*	Wild Black Currant	G5	S5		
Grossulariaceae	*Ribes cynosbati*	Prickly Gooseberry	G5	S5		
Hippocastanaceae	*Aesculus hippocastanum*	Horse Chestnut	GNR	SE2		
Iridaceae	*Iris pseudacorus*	Yellow Iris	GNR	SE3		
Juglandaceae	*Juglans cinerea*	Butternut	G4	S3?	END	END
Juglandaceae	*Juglans nigra*	Black Walnut	G5	S4		
Lamiaceae	*Lycopus uniflorus*	Northern Water-horehound	G5	S5		
Lamiaceae	*Mentha arvensis*	Field Mint	G5	S5		
Lamiaceae	*Origanum vulgare*	Wild Marjoram	GNR	SE5		
Lamiaceae	*Prunella vulgaris ssp. vulgaris*	Self-heal	G5TU	SE3		
Liliaceae	*Convallaria majalis*	European Lily-of-the-valley	G5	SE5		
Liliaceae	*Hemerocallis fulva*	Orange Daylily	GNA	SE5		
Liliaceae	*Maianthemum canadense*	Wild Lily-of-the-valley	G5	S5		
Liliaceae	*Maianthemum racemosum*	False Solomon's-seal	G5	S5		
Lythraceae	*Lythrum salicaria*	Purple Loosestrife	G5	SE5		
Oleaceae	*Fraxinus pennsylvanica*	Green Ash	G5	S4		
Oleaceae	*Syringa vulgaris*	Common Lilac	GNR	SE5		
Onagraceae	*Circaea canadensis*	Broad-leaved Enchanter's Nightshade	G5T5	S5		
Onagraceae	*Oenothera biennis*	Common Evening Primrose	G5	S5		
Orchidaceae	*Epipactis helleborine*	Eastern Helleborine	GNR	SE5		
Oxalidaceae	*Oxalis stricta*	European Wood-sorrel	G5	S5		
Pinaceae	*Picea abies*	Norway Spruce	G5	SE3		
Pinaceae	*Picea glauca*	White Spruce	G5	S5		
Pinaceae	*Pinus strobus*	Eastern White Pine	G5	S5		
Pinaceae	*Pinus sylvestris*	Scotch Pine	GNR	SE5		
Pinaceae	*Tsuga canadensis*	Eastern Hemlock	G5	S5		
Plantaginaceae	*Plantago lanceolata*	English Plantain	G5	SE5		
Plantaginaceae	*Plantago major*	Common Plantain	G5	S5		
Poaceae	*Bromus inermis*	Awnless Brome	G5TNR	SE5		
Poaceae	*Dactylis glomerata*	Orchard Grass	GNR	SE5		
Poaceae	*Digitaria ischaemum*	Smooth Crabgrass	GNR	SE5		
Poaceae	*Elymus repens*	Creeping Wildrye	GNR	SE5		
Poaceae	*Glyceria striata*	Fowl Mannagrass	G5	S5		
Poaceae	*Miscanthus sinensis*	Chinese Silver Grass	GNR	SE1		
Poaceae	*Panicum virgatum*	Old Switch Panicgrass	G5	S4		
Poaceae	*Phalaris arundinacea*	Reed Canary Grass	G5	S5		
Poaceae	*Phragmites australis ssp. australis*	European Reed	G5T5	SE5		
Poaceae	*Poa compressa*	Canada Bluegrass	GNR	SE5		
Poaceae	*Sorghastrum nutans*	Yellow Indian-grass	G5	S4		
Polygonaceae	*Rumex obtusifolius*	Bitter Dock	GNR	SE5		
Primulaceae	*Lysimachia ciliata*	Fringed Loosestrife	G5	S5		

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Family	Scientific Name	Common Name	G-Rank	S-Rank	COSEWIC	MNRF
Primulaceae	*Lysimachia nummularia*	Creeping Jennie	GNR	SE5		
Ranunculaceae	*Anemone canadensis*	Canada Anemone	G5	S5		
Ranunculaceae	*Anemone virginiana var. virginiana*	Virginia Anemone	G5T5	S5		
Ranunculaceae	*Aquilegia vulgaris*	European Columbine	GNR	SE3		
Ranunculaceae	*Caltha palustris*	Yellow Marsh Marigold	G5	S5		
Ranunculaceae	*Clematis virginiana*	Virginia Virgin's-bower	G5	S5		
Ranunculaceae	*Ranunculus acris*	Tall Buttercup	G5	SE5		
Rhamnaceae	*Rhamnus cathartica*	Common Buckthorn	GNR	SE5		
Rosaceae	*Agrimonia gryposepala*	Hooked Agrimony	G5	S5		
Rosaceae	*Fragaria virginiana*	Wild Strawberry	G5	S5		
Rosaceae	*Geum aleppicum*	Yellow Avens	G5	S5		
Rosaceae	*Prunus serotina*	Wild Black Cherry	G5	S5		
Rosaceae	*Prunus virginiana*	Choke Cherry	G5	S5		
Rosaceae	*Rubus idaeus ssp. strigosus*	Wild Red Raspberry	G5T5	S5		
Salicaceae	*Populus balsamifera*	Balsam Poplar	G5	S5		
Salicaceae	*Populus tremuloides*	Trembling Aspen	G5	S5		
Salicaceae	*Salix bebbiana*	Bebb's Willow	G5	S5		
Salicaceae	*Salix discolor*	Pussy Willow	G5	S5		
Salicaceae	*Salix eriocephala*	Heart-leaved Willow	G5	S5		
Salicaceae	*Salix euxina*	Crack Willow	GNR	SE		
Salicaceae	*Salix interior*	Sandbar Willow	GNR	S5		
Scrophulariaceae	*Linaria vulgaris*	Butter-and-eggs	GNR	SE5		
Scrophulariaceae	*Verbascum thapsus*	Common Mullein	GNR	SE5		
Solanaceae	*Solanum dulcamara*	Climbing Nightshade	GNR	SE5		
Tiliaceae	*Tilia americana*	American Basswood	G5	S5		
Typhaceae	*Typha latifolia*	Broad-leaved Cattail	G5	S5		
Ulmaceae	*Ulmus americana*	American Elm	G5?	S5		
Urticaceae	*Laportea canadensis*	Wood Nettle	G5	S5		
Verbenaceae	*Verbena hastata*	Blue Vervain	G5	S5		
Verbenaceae	*Verbena stricta*	Hoary Vervain	G5	S4		
Verbenaceae	*Verbena urticifolia*	White Vervain	G5	S5		
Vitaceae	*Parthenocissus inserta*	Thicket Creeper	G5	S5		
Vitaceae	*Vitis riparia*	Riverbank Grape	G5	S5		

Table 3. Dawn Breeding Birds

			Point Count Stations								Conservation Ranks[B]		
Family	**Scientific Name**	**English Common Name**	**1**	**2**	**3**	**4**	**5**	**6**	**Breeding Expected**	**Area-sensitive***	**S-Rank**	**G-Rank**	**SARO Status**
Alcedinidae	*Megaceryle alcyon*	Belted Kingfisher				C(1)[A]			No	N	S4B	G5	
Anatidae	*Anas platyrhynchos*	Mallard			FO(2)		FO(2)		No	N	S5	G5	
Bombycillida	*Bombycilla cedrorum*	Cedar Waxwing		,C(2)	H/S(3),C/S(2)	,S(1)	C(2)	C(1),C(2)	Probable	N	S5B	G5	
Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal			S(1)	S(2),S(1)	S(1),H(1)	,S(1)	Probable	N	S5	G5	
Cardinalidae	*Passerina cyanea*	Indigo Bunting	,S(1)						Possible	N	S4B	G5	
Cardinalidae	*Pheucticus ludovicianus*	Rose-breasted Grosbeak		,FO(1)			,S(1)		Possible	N	S4B	G5	
Cathartidae	*Cathartes aura*	Turkey Vulture			,H(1)				Possible	N	S5B	G5	
Certhiidae	*Certhia americana*	Brown Creeper		,H(1)					Possible	Y	S5B	G5	
Charadriidae	*Charadrius vociferus*	Killdeer	,A(1)	,A(1)	,A(1)				Probable	N	S5B,S5N	G5	
Columbidae	*Zenaida macroura*	Mourning Dove		H(1),FO(2)	FO(3)	,H/FO(3)	FO(2)	,S(1)	Possible	N	S5	G5	
Corvidae	*Corvus brachyrhynchos*	American Crow	FO(1)		C(1),C(2)	Ob(2),S(1)	H(1),C(1)	C(1),C(3)	Possible	N	S5B	G5	
Corvidae	*Cyanocitta cristata*	Blue Jay	C/FO(1)					C(1)	No	N	S5	G5	
Emberizidae	*Melospiza melodia*	Song Sparrow	S(1),S(3)	S(2)	S(2),S(2)	S(1),S(1)		C(1),S(2)	Probable	N	S5B	G5	
Emberizidae	*Passerculus sandwichensis*	Savannah Sparrow		,S(2)	,S(2)				Possible	Y	S4B	G5	
Emberizidae	*Pooecetes gramineus*	Vesper Sparrow		S(1),S(1)				,S(1)	Probable	N	S4B	G5	
Emberizidae	*Spizella passerina*	Chipping Sparrow	S(1)	,S(2)	S(1),S(1)			C(1)	Probable	N	S5B	G5	
Fringillidae	*Carduelis tristis*	American Goldfinch	S/FO(3),S(2)	FO(1)	,S(2)	A/S(4)	,S(2)	C(1)	Probable	N	S5B	G5	
Fringillidae	*Carpodacus mexicanus*	House Finch				,FO(2)	,S(1)		Possible	?	SNA	G5	
Hirundinidae	*Hirundo rustica*	Barn Swallow		H/FO(3)					No	N	S4B	G5	THR
Hirundinidae	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow			P(2)				Probable	N	S4B	G5	
Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	S(1),S(2)	S(1),H/S/C(7)	H/S(3),S(6)	S(2),S(4)			Probable	N	S4	G5	
Icteridae	*Icterus galbula*	Baltimore Oriole		,S(1)					Possible	N	S4B	G5	
Icteridae	*Molothrus ater*	Brown-headed Cowbird	C/H(2),C(1)	C(1),C(1)	C(1),C(1)				No	N	S4B	G5	
Icteridae	*Quiscalus quiscula*	Common Grackle	FO(1)	H/C(3),H(6)	H/S(3),H(6)	H/C(4),H/FO(12)	,FO(12)	,C(6)	Possible	N	S5B	G5	
Laridae	*Sterna hirundo*	Common Tern					,FO(1)		No	N	S4B	G5	
Laridae	*Larus delawarensis*	Ring-billed Gull	FO(1)						No	N	S5B, S4N	G5	
Mimidae	*Dumetella carolinensis*	Gray Catbird		S(1),S(1)			,S(1)		Probable	N	S4B	G5	
Paridae	*Poecile atricapillus*	Black-capped Chickadee	S(1),S(1)		S(2)		S(1),S(2)	,S(4)	Probable	N	S5	G5	
Parulidae	*Geothlypis philadelphia*	Mourning Warbler	S(1)					C(1)	Possible	N	S4B	G5	
Parulidae	*Geothlypis trichas*	Common Yellowthroat			S(1),S(2)		S(1)		Probable	N	S5B	G5	
Parulidae	*Setophaga petechia*	Yellow Warbler	S(3),S(1)		,S(1)				Probable	N	S5B	G5	
Parulidae	*Setophaga ruticilla*	American Redstart			S(1)	,S(1)	S(1),S(1)		Probable	Y	S5B	G5	
Picidae	*Picoides pubescens*	Downy Woodpecker					,H(1)	C(1)	Possible	N	S5	G5	
Picidae	*Picoides villosus*	Hairy Woodpecker		,H(1)					Possible	N	S5	G5	
Sittidae	*Sitta canadensis*	Red-breasted Nuthatch					S(1)		Possible	Y	S5	G5	
Sturnidae	*Sturnus vulgaris*	European Starling	FO/H(3),H(3)	H/C(8)	S/FO(22),H/C(6)	C(2),C/H(5)			Possible	?	SNA	G5	
Troglodytidae	*Troglodytes aedon*	House Wren						,S(1)	Possible	N	S5B	G5	
Turdidae	*Turdus migratorius*	American Robin	S(2),S(1)	S/H(7),S(3)	,S(3)	H/S(4),S/H(3)	S/FO(2),S(2)	C(1),C(1)	Probable	N	S5B	G5	
Tyrannidae	*Empidonax alnorum*	Alder Flycatcher			,S(1)				Possible	N	S5B	G5	
Tyrannidae	*Myiarchus crinitus*	Great Crested Flycatcher						C(1)	No	N	S4B	G5	

Table 3. Dawn Breeding Birds

			Point Count Stations								Conservation Ranks[B]		
Family	**Scientific Name**	**English Common Name**	**1**	**2**	**3**	**4**	**5**	**6**	**Breeding Expected**	**Area-sensitive***	**S-Rank**	**G-Rank**	**SARO Status**
Tyrannidae	*Sayornis phoebe*	Eastern Phoebe		S(1)					Possible	N	S5B	G5	
Vireonidae	*Vireo gilvus*	Warbling Vireo	S(1)	C(1)		,S(1)			Possible	N	S5B	G5	
Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	S(1),S(1)		S(1)		S(1)	,S(1)	Probable	N	S5B	G5	

* According to Appendix C of the Significant Wildlife Habitat Technical Guide (MNRF, 2000)

Surveys Conditions:
1: June 7, 2017; Start Time 0525hr/ End Time 0640hr; Temperature 7°C; Wind B0; Cloud Cover 0%; Precipitation Nil; Observer B. Baker
2: June 22, 2017; Temperature 11°C; Wind B0; Cloud Cover 10%; Precipitation Nil; Observer B. Baker

[A]OBBA Breeding Evidence Codes:
Breeding Evidence Codes: Entry examples **S,S** - Singing Male detected during first survey and second survey; **S,** Singing male detected during first survey only **,S** Singing male detected during second survey only
The number in brackets represents the largest number of indicviduals observed during one period at that point location.
FO - Fly Over
X - Species observed in its breeding season (no breeding evidence)
POSSIBLE
H - Species observed in its breeding season in suitable nesting habitat
S - Singing male present, or breeding calls heard, in suitable nesting habitat in nesting season.
PROBABLE
A - Agitated behaviour or anxiety calls of an adult.
N - Nest building or excavation of nest hole.
P -Pair observed in suitable nesting habitat in nesting season.
T - Permanent territory presumed trhough registration of territorial behaviour (e.g. song) on at least two days, a week or more apart, at the same place.
CONFIRMED
DD - Distraction display or injury feigning.
FY - Recently fledged young or downy young, including incapable of sustained flight.

[B]Conservation Rank - from OMNRF, NHIC and SARO Lists 2014
S-rank - S1 - Extremely Rare, S2 - Very Rare, S3 - Rare to Uncommon, S4 - Common, S5 - Very Common
G-Rank - G1 - Critically Imperiled, G2 - Imperiled, G3 - Vulnerable, G4 - Apparently Secure, G5 - Secure
SARO - EXP (Extirpated), END (Endangered), THR (Threatened), SC (Special Concern)

Table 4: Species at Risk Assessment

Common Name	Species Name	ESA	SARA	Key Habitats Used By Species[1]	Habitat on or Adjacent to Study Area?	Observed?	Issue Related to Development?
Bald Eagle	*Haliaeetus leucocephalus*	SC	No status	Nests are typically found near the shoreline of lakes or large rivers, often on forested islands (Cadman *et al.* , 2007). ESA Protection: N/A	No	No	No
Bank Swallow	*Riparia riparia*	THR	No status	Nests in burrows excavated in natural and human-made settings with vertical sand and silt faces. Commonly found in sand or gravel pits, road cuts, lakeshore bluffs, and along riverbanks (COSEWIC, 2013c). ESA Protection: Species and general habitat protection	No	No	No
Barn Swallow	*Hirundo rustica*	THR	No status	Ledges and walls of man-made structures such as buildings, barns, boathouses, garages, culverts and bridges. Also nest in caves, holes, crevices and cliff ledges (COSEWIC, 2011d). ESA Protection: Species and general habitat protection	No	No	No
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	Blanding's Turtles are a primarily aquatic species that prefer wetland habitats, lakes, ponds, slow-moving streams, etc., however they may utilize upland areas to search for suitable basking and nesting sites. In general, preferred wetland sites are eutrophic and characterized by clear, shallow water, with organic substrates and high density of aquatic vegetation (COSEWIC, 2005a). ESA Protection: Species and general habitat protection	No	No	No
Bobolink	*Dolichonyx oryzivorus*	THR	No Status	Nests primarily in forage crops (*e.g.* hayfields and pastures) dominated by a variety of species such as clover, Timothy, Kentucky Bluegrass, tall grass, and broadleaved plants. Also occurs in wet prairie, graminoid peatlands, and abandoned fields dominated by tall grasses. Does not generally occupy fields of row crops (*e.g* . corn, soybeans, wheat) or short-grass prairie. Sensitive to habitat size and has lower reproductive success in small habitat fragments (COSEWIC, 2010b). ESA Protection: Species and general habitat protection	No	No	No
Broad Beech Fern	*Phygopteris hexagonoptera*	SC	SC	Rich soils in deciduous forests, such as Maple-Beech forests (MNRF, 2016). ESA Protection: N/A	No	No	No
Butternut	*Juglans cinerea*	END	END	Commonly found in riparian habitats, but is also found in rich, moist, well-drained loams, and well-drained gravels. Butternut is intolerant of shade (COSEWIC, 2003b). ESA Protection: Species and general habitat protection	Yes	Yes	Yes
Cerulean Warbler	*Dendroica cerulea*	THR	SC	Associated with large tracts of mature deciduous forest with tall trees and an open understory. Found in both wet bottomland forests and upland areas (COSEWIC, 2010a). ESA Protection: Species and general habitat protection	No	No	No
Chimney Swift	*Chaetura pelagica*	THR	THR	Nests primarily in chimneys though some populations (*i.e* . in rural northern areas) may nest in cavity trees (COSEWIC, 2007h). Recent changes in chimney design may be a significant factor in recent declines in numbers (Cadman *et al* ., 2007). ESA Protection: Species and general habitat protection	No	No	No
Common Nighthawk	*Chordeiles minor*	SC	THR	Open habitats including sand dunes, beaches recently logged/burned over areas, forest clearings, short grass prairies, pastures, open forests, bogs, marshes, lakeshores, gravel roads, mine tailings, quarries, and other open relatively clear areas (COSEWIC, 2007d). ESA Protection: N/A	No	No	No

Table 4: Species at Risk Assessment

Common Name	Species Name	ESA	SARA	Key Habitats Used By Species[1]	Habitat on or Adjacent to Study Area?	Observed?	Issue Related to Development?
Eastern Hog-nosed Snake	*Heterodon platirhinos*	THR	THR	Habitat features include: well-drained soil; loose or sandy soil; open vegetative cover; brushland or forest edge; proximity to water; and climatic conditions typical of the eastern deciduous forest biome. In the Georgian Bay region, open grass, sand, human-impacted and forest habitats over rock, wetland, and aquatic habitats are preferable (COSEWIC, 2007b). ESA Protection: Species and general habitat protection	No	No	No
Eastern Meadowlark	*Sturnella magna*	THR	No status	Most common in grassland, pastures, savannahs, as well as anthropogenic grassland habitats, including hayfields, weedy meadows, young orchards, golf courses, restored surface mines, *etc* . Occasionally nest in row crop fields such as corn and soybean, but there are considered low-quality habitat. Large tracts of grassland are preferred over smaller fragments and the minimum area required is estimated at 5ha (COSEWIC, 2011c). ESA Protection: Species and general habitat protection	No	No	No
Eastern Musk Turtle	*Sternotherus oderatus*	SC	THR	Inhabit littoral zones of waterways such as rivers, lakes, bays, streams, ponds, canals, and swamps with slow to no current and soft bottoms. During the active season they prefer shallow water (<2m) with abundant vegetation. Most are found close to shore and do not venture onto land except to nest or access adjacent wetlands (COSEWIC, 2012b). ESA Protection: N/A	No	No	No
Eastern Prairie Fringed-orchid	*Platanthera leucophaea*	END	END	It is a species primarily of mesic prairies, fens and old fields (COSEWIC, 2003a). ESA Protection: Species and general habitat protection	No	No	No
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	Found in wetland habitats with both flowing and standing water such as marshes, bogs, fens, ponds, lake shorelines and wet meadows. Most sightings occur near the water's edge (COSEWIC, 2012c). ESA Protection: N/A	No	No	No
Eastern Small-footed Myotis	*Myotis Lleibii*	END	END	Generally occurs in mountainous or rocky regions as well as in buildings, on the face of rock bluffs and beneath slabs of rock and stones. Hibernation is typically confined to caves and old mines (Best and Jennings, 1997). ESA Protection: Species and general habitat protection	No	No	No
Eastern Whip-poor-will	*Antrostomus vociferus*	THR	THR	Semi-open forests or patchy forests with clearings, such as barrens or forests that are regenerating following major disturbances, are preferred nesting habitats (COSEWIC, 2009a). ESA Protection: Species and general habitat protection	No	No	No
Eastern Wood-pewee	*Contopus virens*	SC	No status	Mostly in mature and intermediate-age deciduous and mixed forests having an open understory. It is often associated with forests dominated by Sugar Maple and oak. Usually associated with forest clearings and edges within the vicinity of its nest (COSEWIC, 2012e). ESA Protection: N/A	Yes	No	No
Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	Areas of early successional scrub surrounded by mature forests including dry uplands, swamp forests, and marshes (COSEWIC, 2006a). ESA Protection: N/A	Yes	No	No
Grasshopper Sparrow *pratensis* subspecies	*Ammodramus savannarum pratensis*	SC	No status	Typically breeds in large human-created grasslands (≥5 ha), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by low, sparse perennial herbaceous vegetation (COSEWIC, 2013d). ESA Protection: N/A	No	No	No

Table 4: Species at Risk Assessment

Common Name	Species Name	ESA	SARA	Key Habitats Used By Species[1]	Habitat on or Adjacent to Study Area?	Observed?	Issue Related to Development?
Little Brown Myotis	*Myotis lucifugus*	END	END	Forests and regularly aging human structures as maternity roost sites. Regularly associated with attics of older buildings and barns for summer maternity roost colonies. Overwintering sites are characteristically mines or caves, but can often include buildings (MNRF, 2014) (COSEWIC, 2013b). ESA Protection: Species and general habitat protection	Yes	Not Assessed	Potentially
Monarch	*Danaus plexippus*	SC	SC	Breeding habitat is confined to sites where milkweeds, the sole food of caterpillars, grow. Milkweeds grow in a variety of environments, including meadows in farmlands, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairie, river banks, irrigation ditches, arid valleys, and south-facing hills (COSEWIC, 2010c). ESA Protection: N/A	Yes	No	Potentially
Northern Brook Lamprey	*Ichthyomyzon fossor*	SC	SC	Inhabits clear, coolwater streams. Adults are found in fast flowing riffles comprised of rock or gravel (MNRF, 2016). ESA Protection: N/A	No	No	No
Northern Myotis	*Myotis septentrionalis*	END	END	Maternity roost sites are generally located within deciduous and mixed forests and focused in snags including loose bark and cavities of trees. Overwintering sites are characteristically mines or caves (COSEWIC, 2013b). ESA Protection: Species and general habitat protection	Yes	Not Assessed	Potentially
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC	THR	Occurs in open deciduous forests, particularly those dominated by oak and beech, grasslands, forest edges, orchards, pastures along rivers and roads, urban parks, golf courses, cemeteries, beaver ponds and timber stands that have been treated with herbicides (COSEWIC, 2007f). ESA Protection: N/A	Yes	No	No
Snapping Turtle	*Chelydra serpentina*	SC	SC	Habitat is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Often located in ponds, sloughs, shallow bays or river edges and slow streams, or areas combining several of these wetland habitats (COSEWIC, 2008a). ESA Protection: N/A	No	No	No
Tri-colored Bat	*Perimyotis subflavus*	END	END	Maternity roost sites include forests and modified landscapes (barns or human-made structures). Overwintering sites include mines and caves (COSEWIC, 2013b). ESA Protection: Species and general habitat protection	Yes	Not Assessed	Potentially
Wood Thrush	*Hylocichla mustelina*	SC	No status	Found in moist, deciduous hardwood or mixed stands, often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches (COSEWIC, 2012f). ESA Protection: N/A	Yes	No	No
Yellow Rail	*Coturnicops noveboracensis*	SC	SC	Nest in wet marshy areas of short grass-like vegetation. The habitat must remain wet throughout the breeding season (COSEWIC, 2009c). ESA Protection: N/A			

[1] Habitat as outlined within the MNRF's Species at Risk in Ontario website files (https://www.ontario.ca/environment-and-energy/species-risk-ontario-list), or Species Specific COSEWIC Reports referenced in this document.
Species at Risk in Ontario List (June 13, 2017)

Photograph 1: Banks Creek south of 7th Line, 100 metres east of 20th Sideroad

Photograph 2: Existing culvert 200 metres east of 20th Sideroad

Photograph 3: Existing corrugated steel pipe (CSP) 300 metres east of 20th Sideroad

Photograph 4: Existing CSP 470 metres east of 20th Sideroad

Photograph 5: Banks Creek between Canadian National Railway and Webster Boulevard

Photograph 6: Banks Creek between Canadian National Railway and Webster Boulevard

Photograph 7: Banks Creek 200 metres east of Webster Boulevard

Photograph 8: Existing CSP 550 metres east of Webster Boulevard

Photograph 9: Banks Creek 100 metres west of Quarry Drive

Photograph 10: Existing CSP at Quarry Drive crossing 7th Line

Photograph 11: Fish movement in Banks Creek 100 metres west of St. John's Road

Photograph 12: Existing culvert at St. John's Road crossing 7th Line

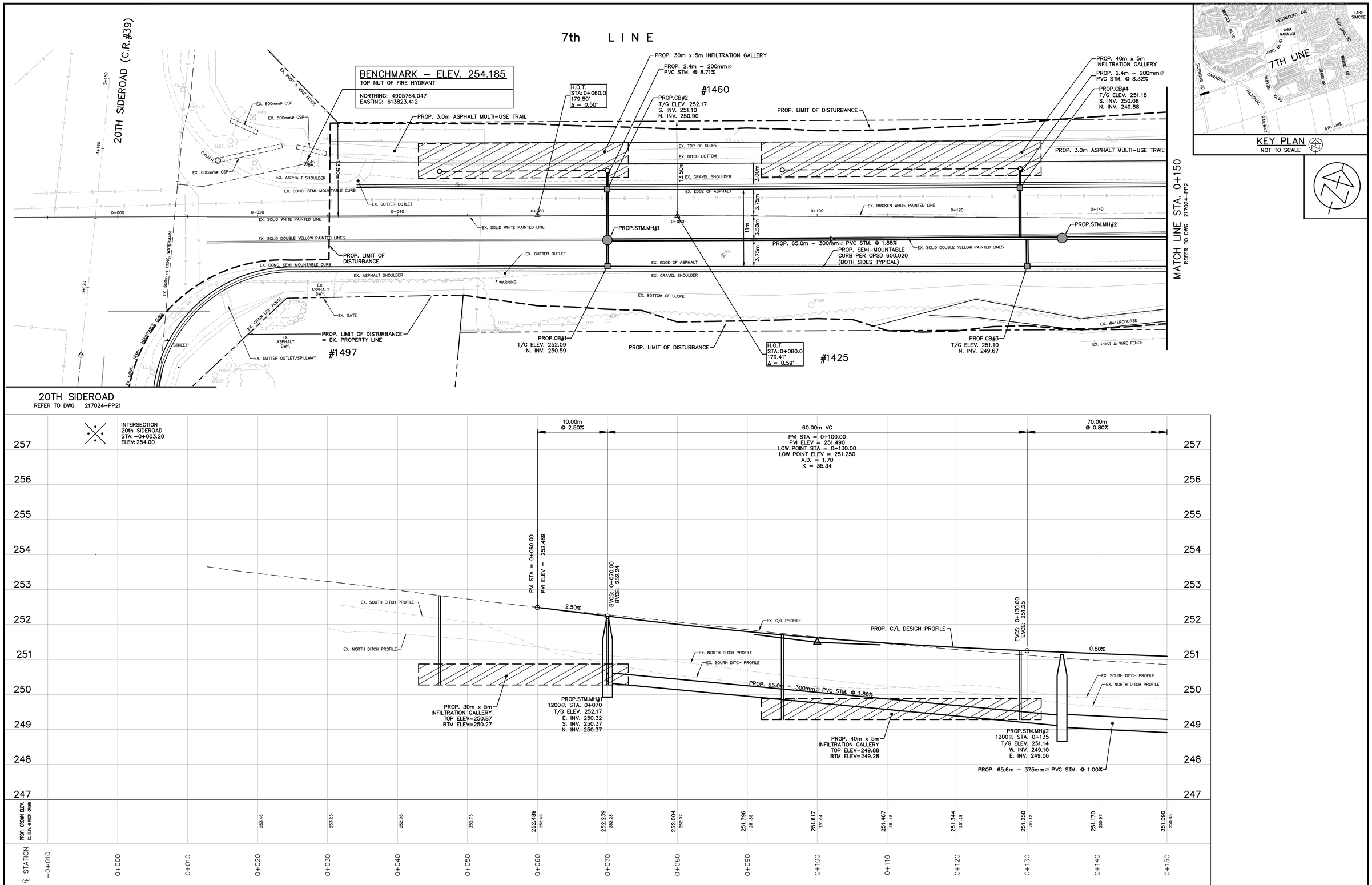
Photograph 13: Outfall at St. John's Road/7th Line culvert crossing

Photograph 14: Banks Creek outflow into Lake Simcoe

APPENDICES

APPENDIX A

Preliminary Concept Design



NOTES

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PRELIMINARY

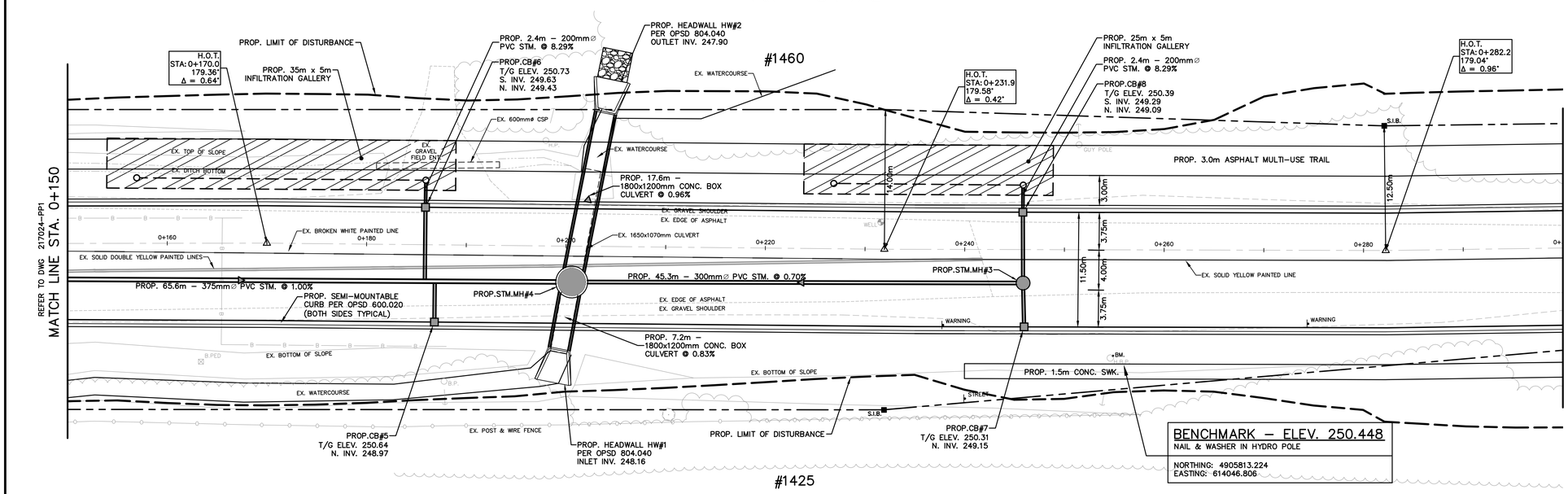
SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

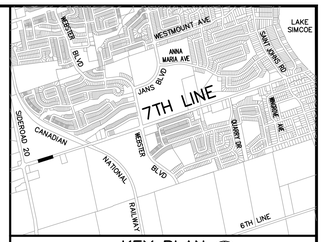
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

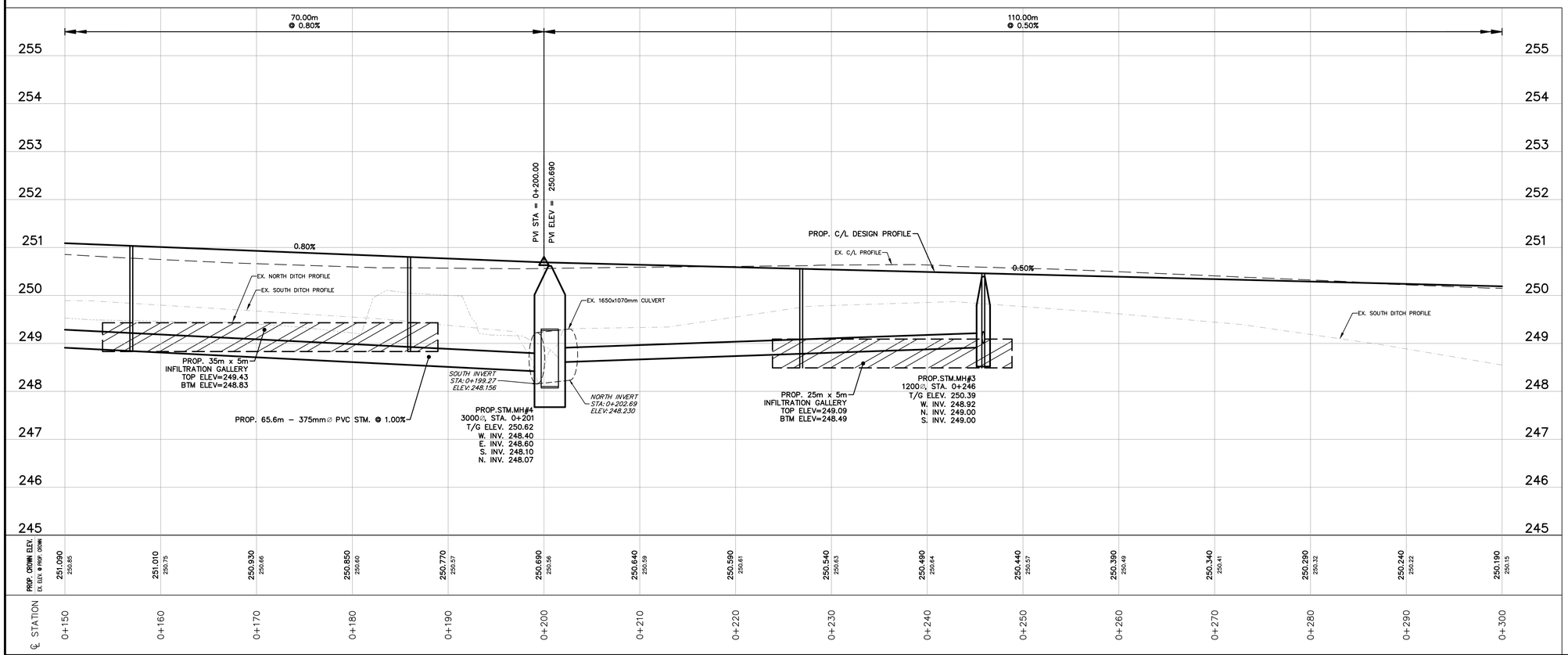
PLAN & PROFILE
7TH LINE
STA. –0+010 TO STA. 0+150

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP1







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DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+150 TO STA. 0+300

Ainley GROUP
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CONTRACT No.

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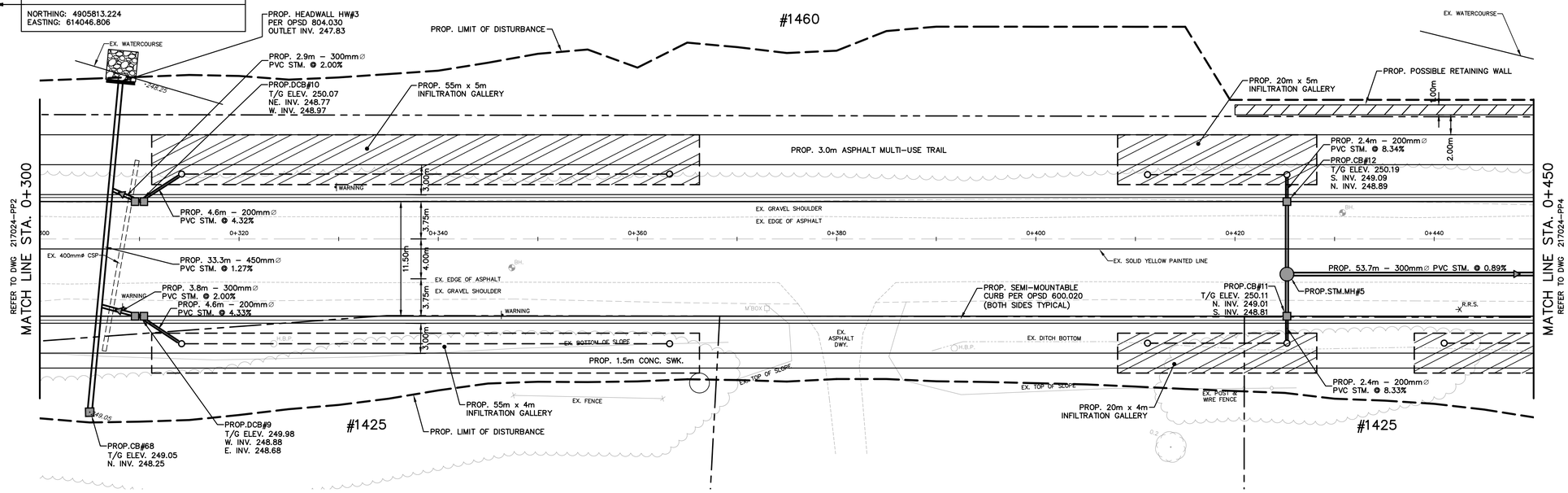
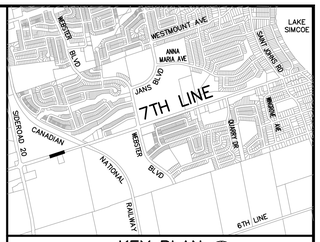
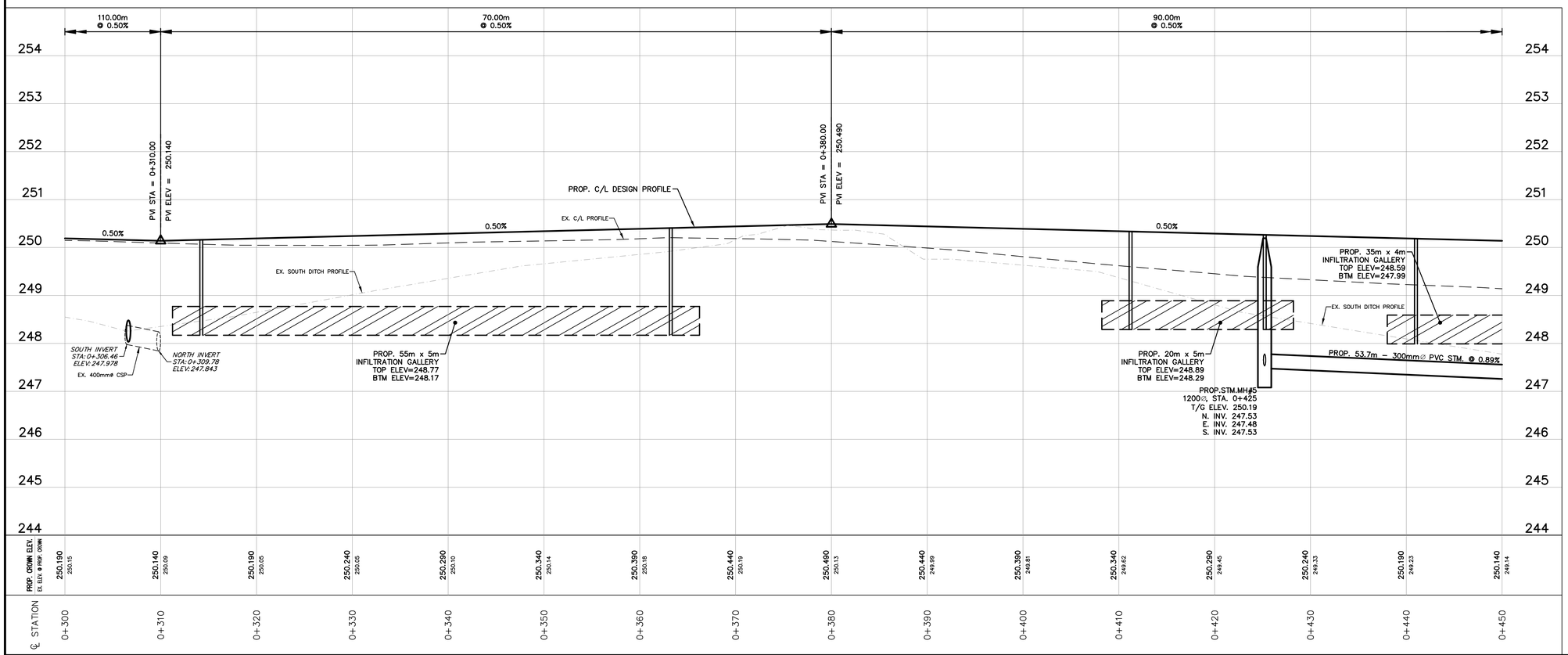
BENCHMARK – ELEV. 250.448
NAIL & WASHER IN HYDRO POLE ON SOUTH SIDE OF ROAD AT APPROX. STATION 0+255.
NORTHING: 4905813.224
EASTING: 614046.806

7th LINE





KEY PLAN
NOT TO SCALE



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DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+300 TO STA. 0+450

Ainley GROUP
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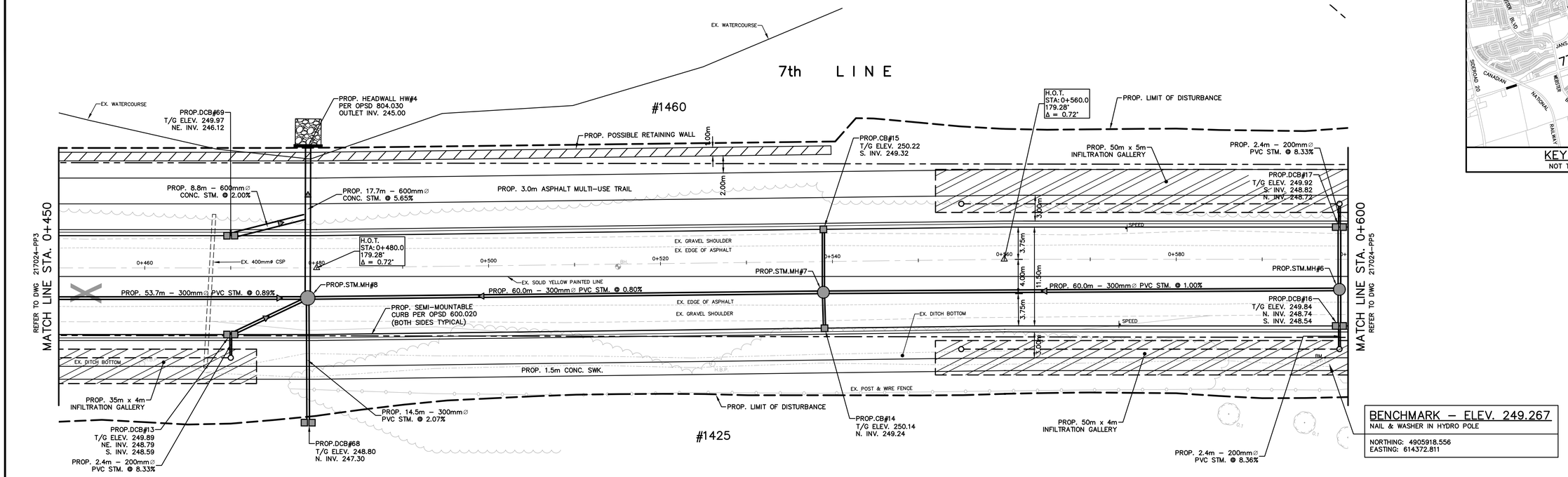

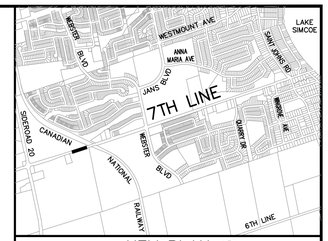

KEY PLAN
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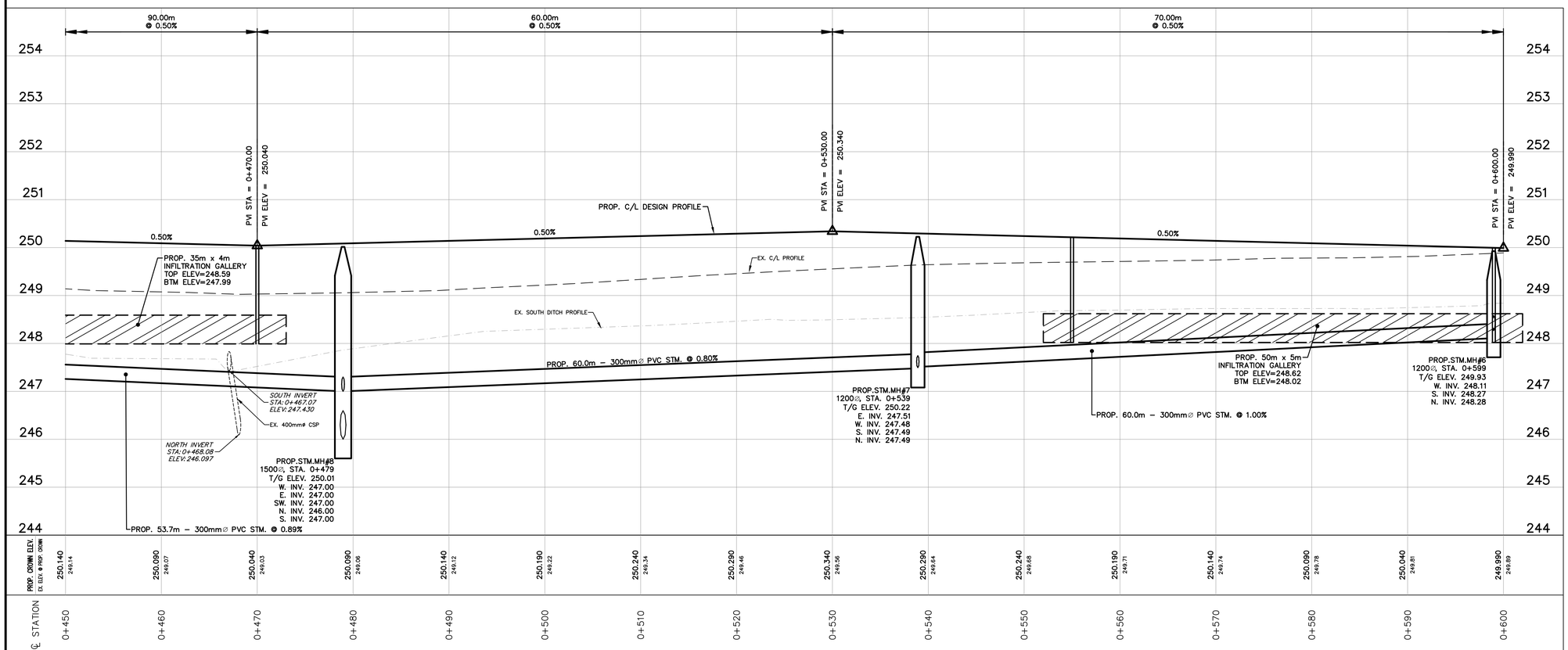
BENCHMARK – ELEV. 249.267

NAIL & WASHER IN HYDRO POLE

NORTHING: 4905918.556
EASTING: 614372.811



NOTES

NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

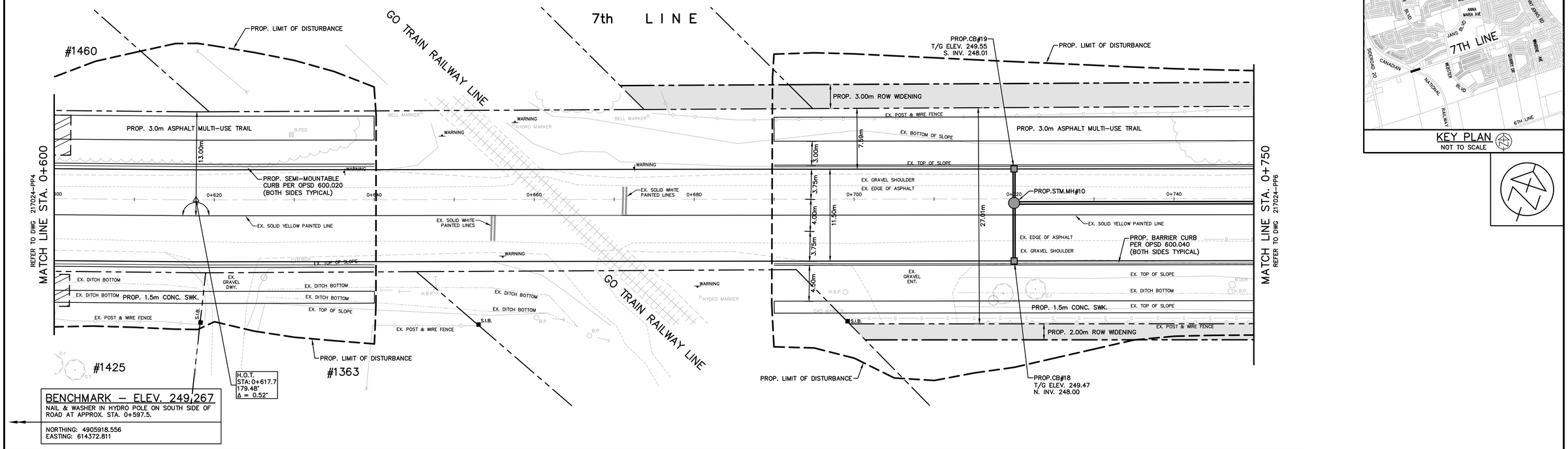
PLAN & PROFILE
7TH LINE
STA. 0+450 TO STA. 0+600

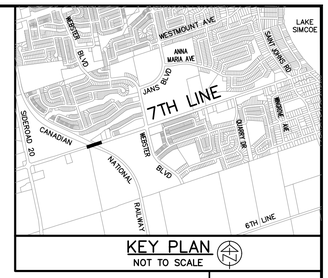
Ainley GROUP CONSULTING ENGINEERS PLANNERS

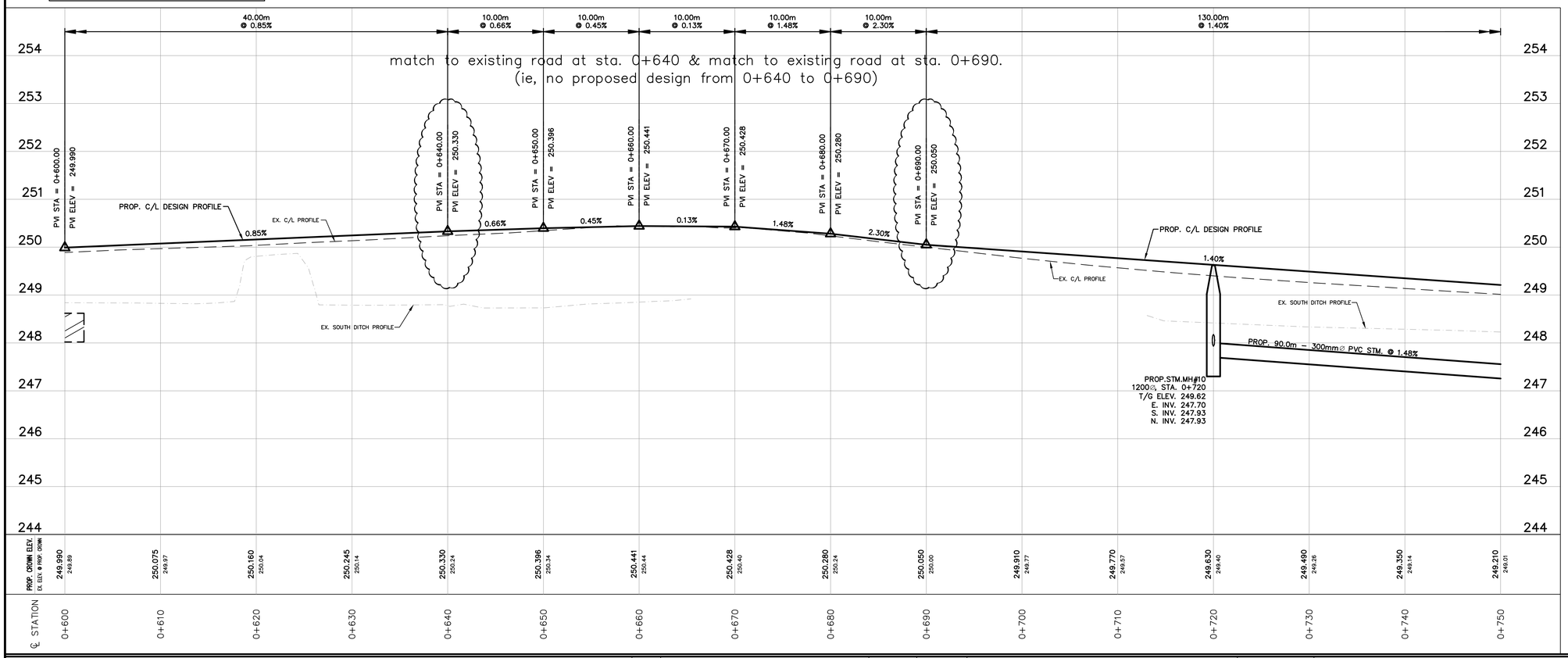
CONTRACT No.

DWG. No. 217024-PP4

Plotted by: RWECKERLE on October 18, 2018 at 2:08pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP4







NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

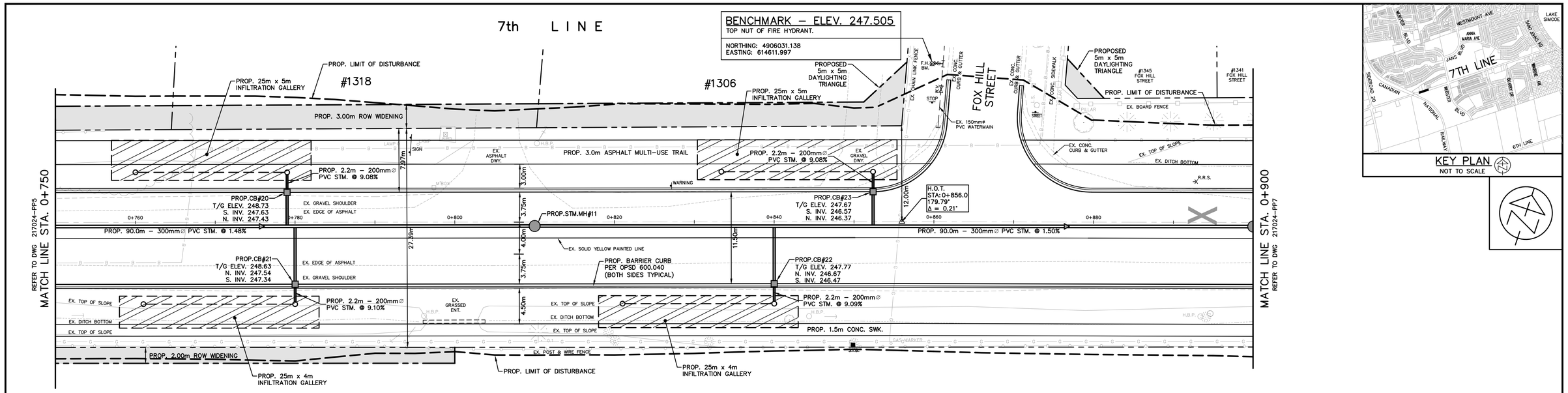
PLAN & PROFILE
7TH LINE
STA. 0+600 TO STA. 0+750

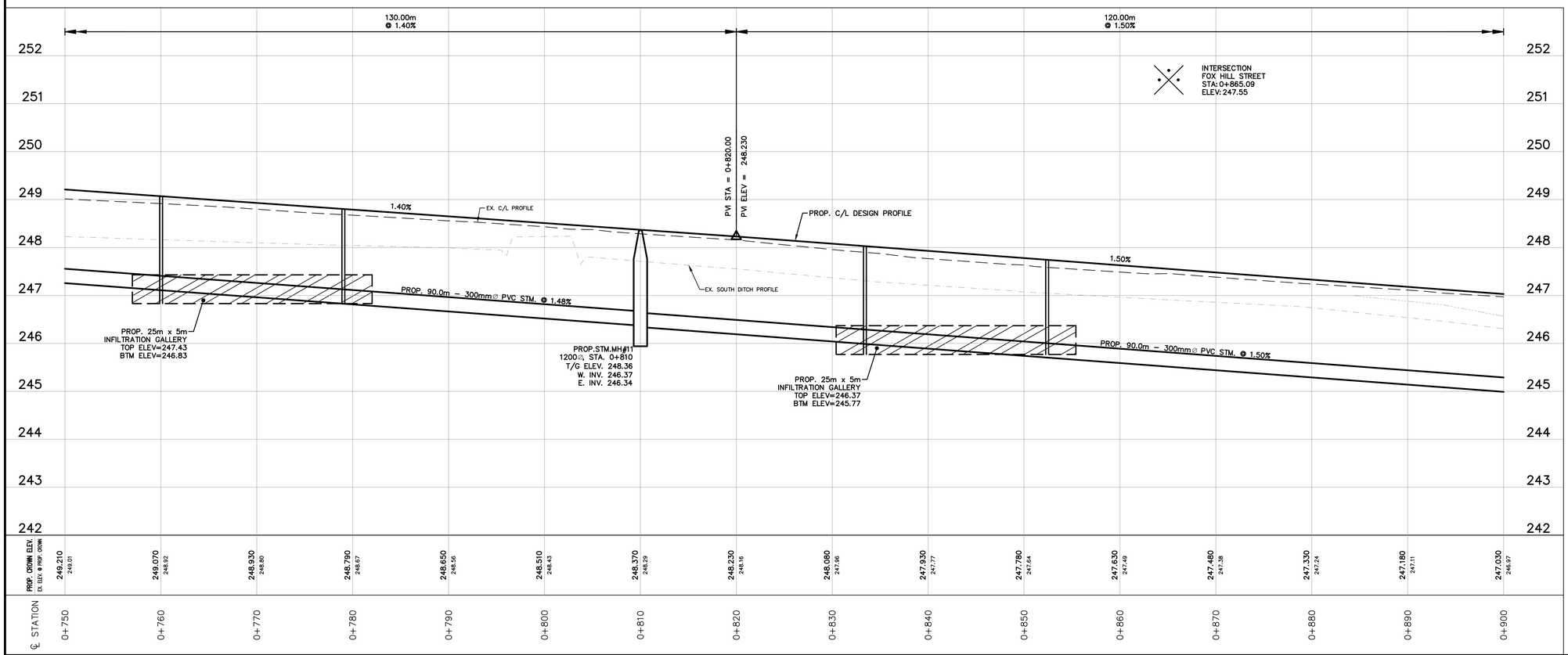
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP5

Plotted by: RWECKERLE on October 18, 2018 at 2:09pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP5





NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+750 TO STA. 0+900

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

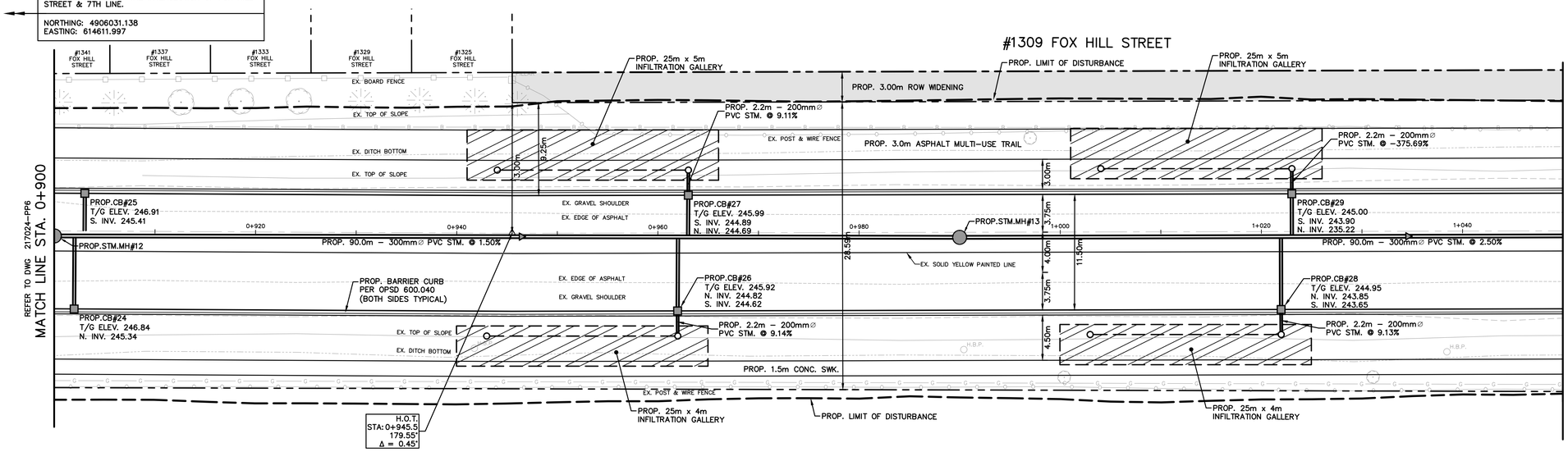
DWG. No. 217024-PP6

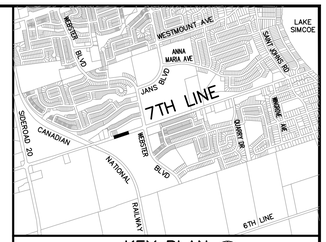
Plotted by: RWECKERLE on October 18, 2018 at 2:09pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP6

BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

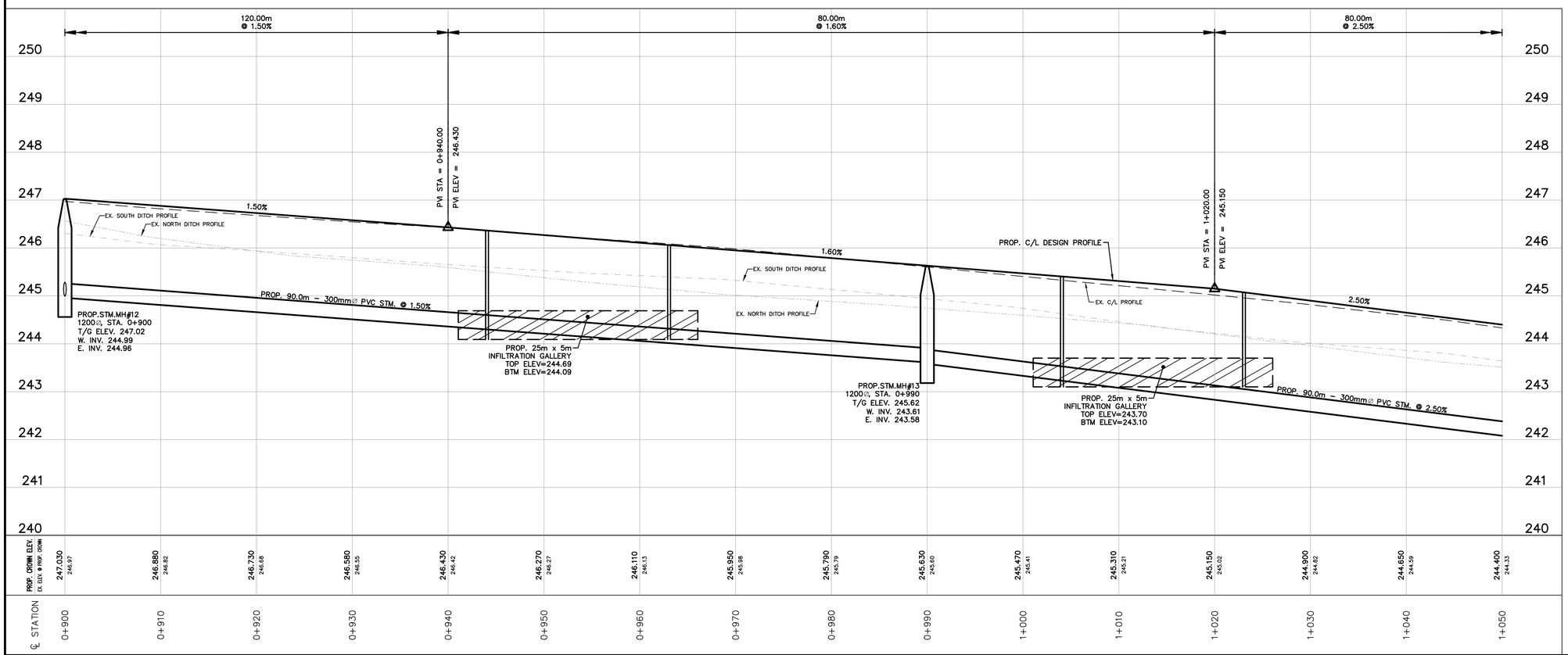
NORTHING: 4906031.138
EASTING: 614611.997

7th LINE





KEY PLAN
NOT TO SCALE



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+900 TO STA. 1+050

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP7

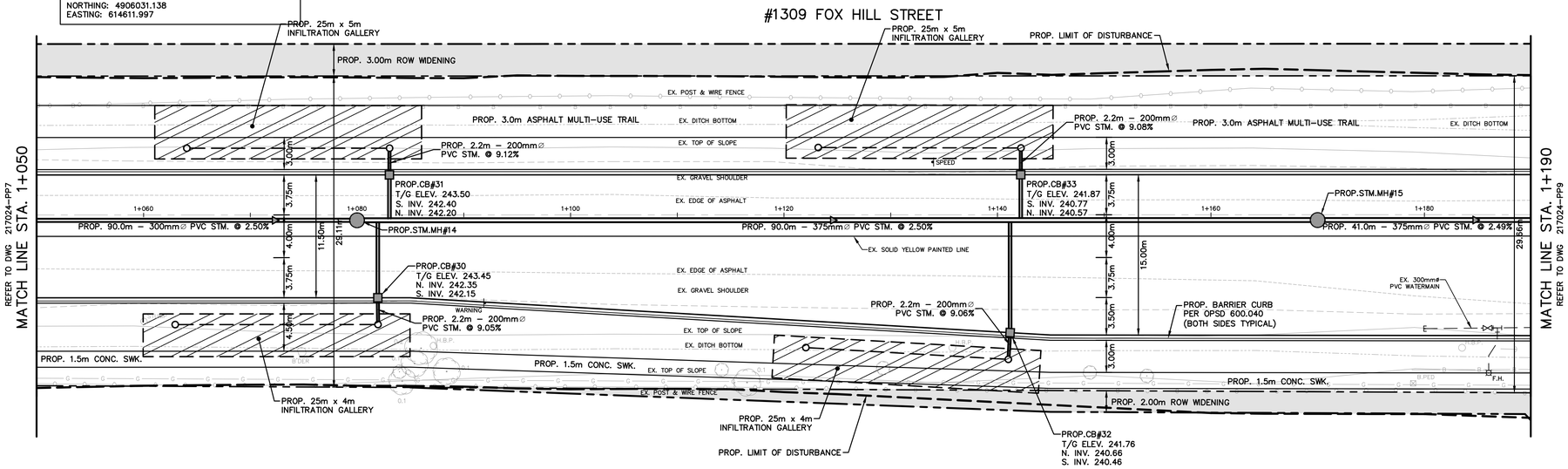
Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP7

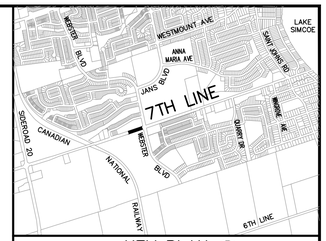
BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

NORTHING: 4906031.138
EASTING: 614611.997

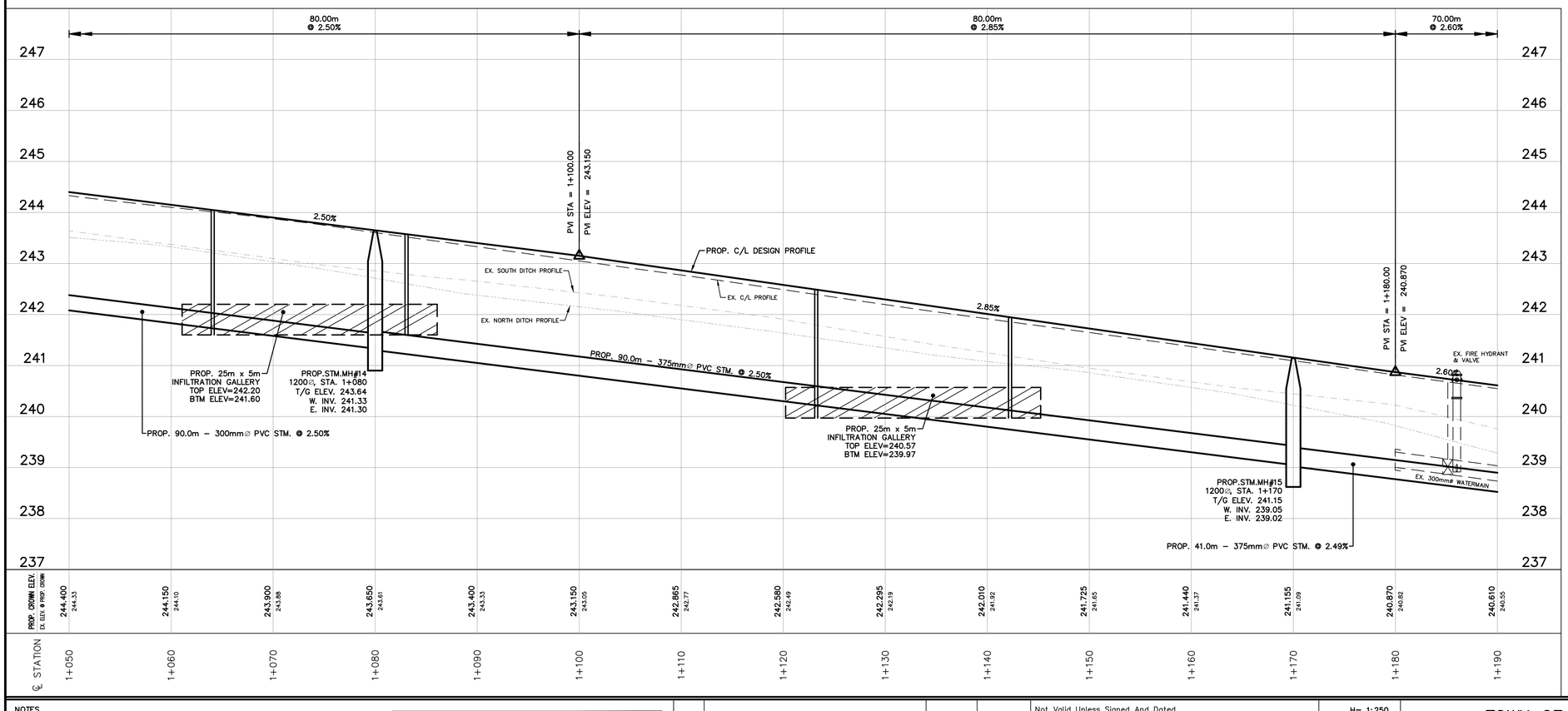
7th LINE

#1309 FOX HILL STREET





KEY PLAN
NOT TO SCALE



NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

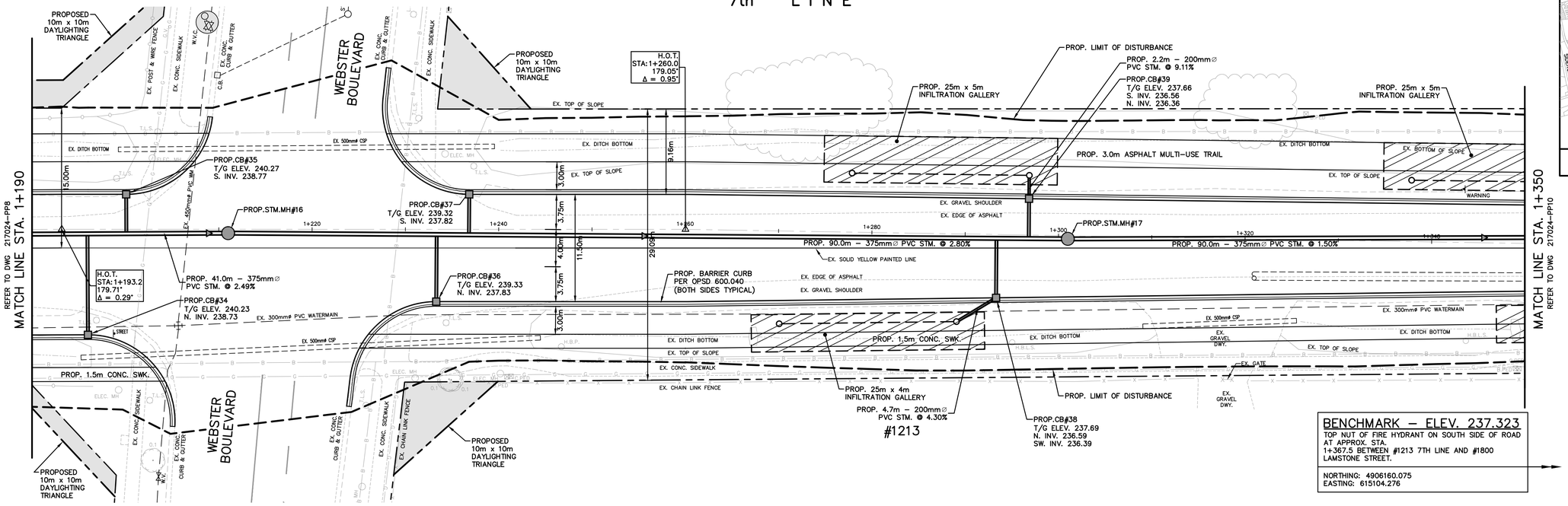
PLAN & PROFILE
7TH LINE
STA. 1+050 TO STA. 1+190

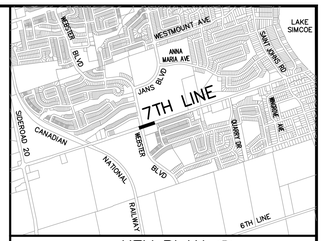
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP8

Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP8

7th LINE



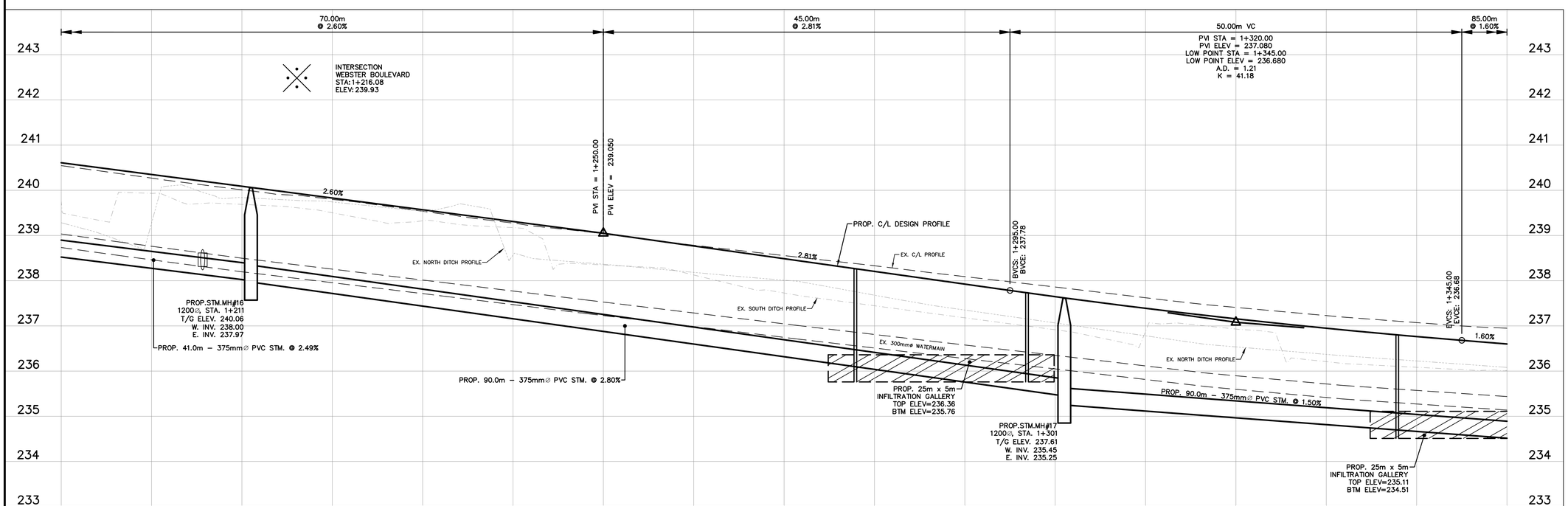


KEY PLAN
NOT TO SCALE

BENCHMARK – ELEV. 237.323

TOP NUT OF FIRE HYDRANT ON SOUTH SIDE OF ROAD AT APPROX. STA. 1+367.5 BETWEEN #1213 7TH LINE AND #1800 LAMSTONE STREET.

NORTHING: 4906160.075
EASTING: 615104.276



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP9

CONTRACT DRAWINGS

Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

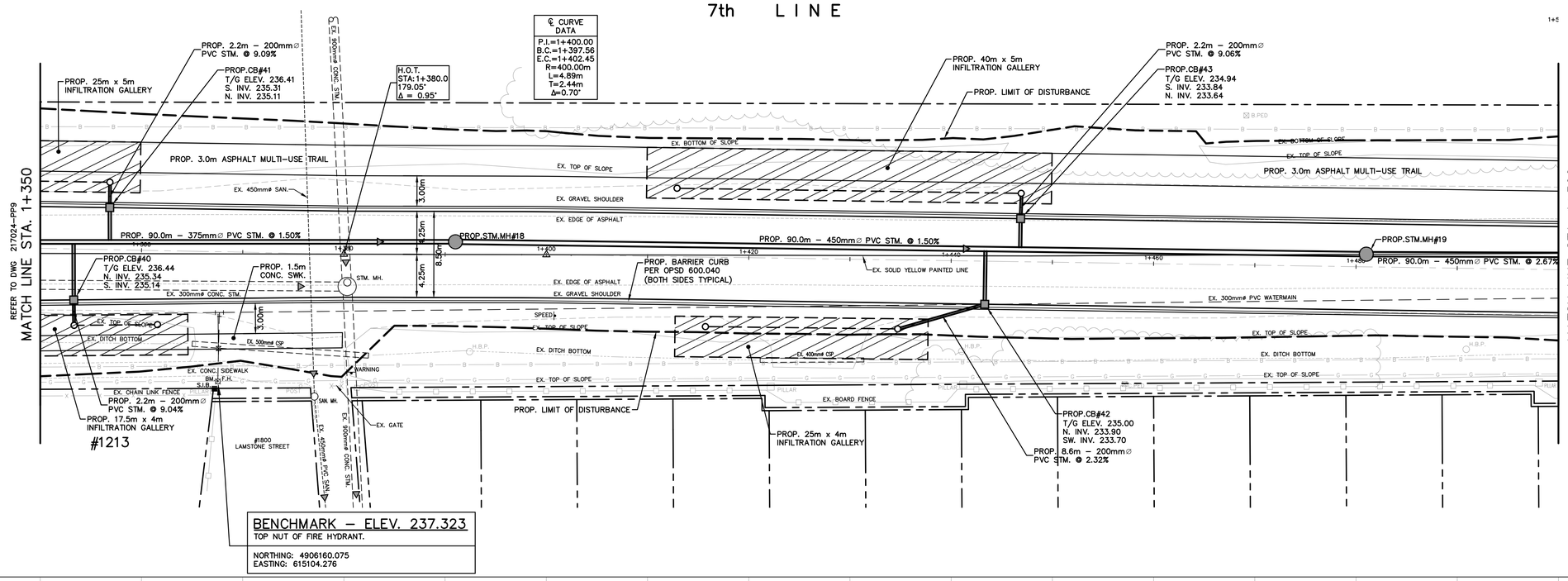
PLAN & PROFILE
7TH LINE
STA. 1+190 TO STA. 1+350

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

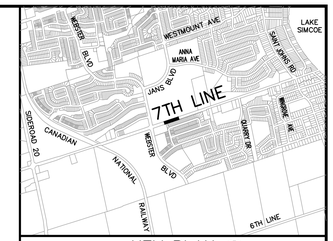
CONTRACT No.

DWG. No. 217024–PP9

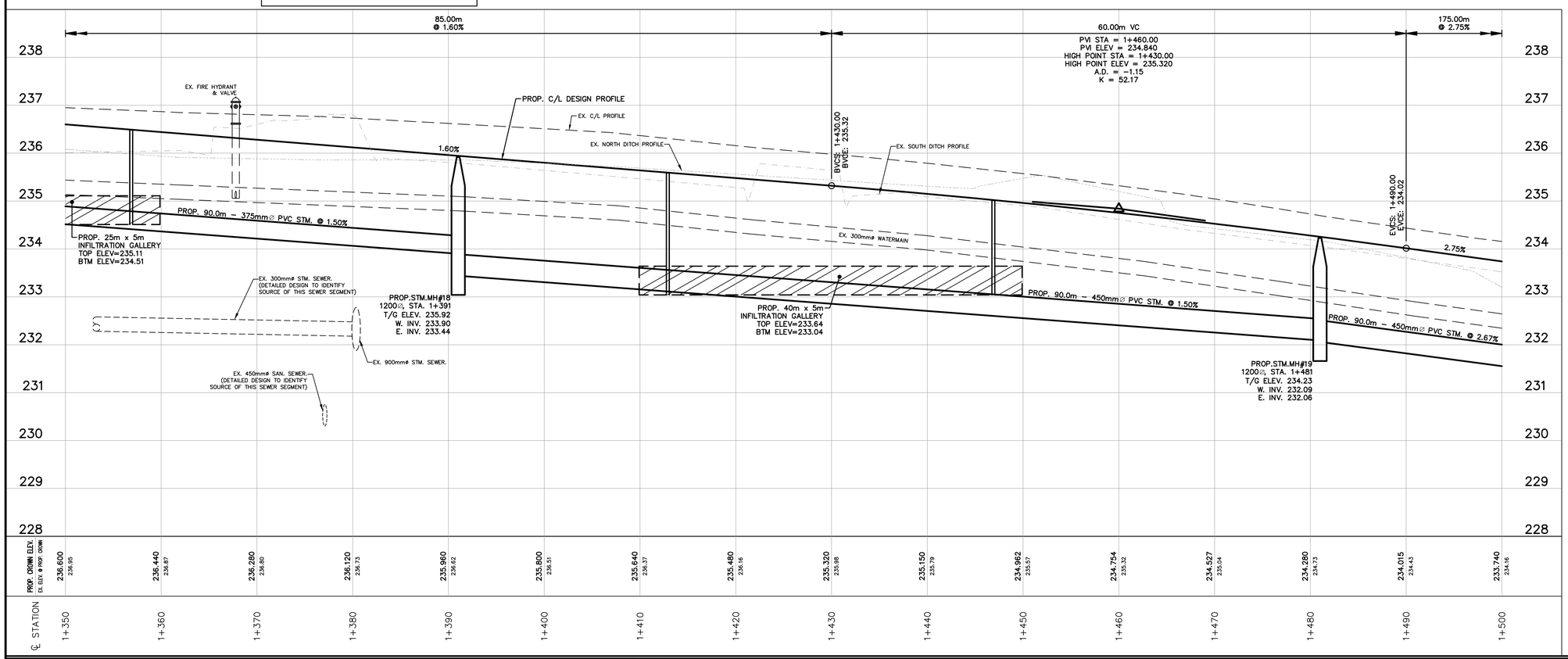
7th LINE



BENCHMARK – ELEV. 237.323
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906160.075
EASTING: 615104.276



KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP10

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

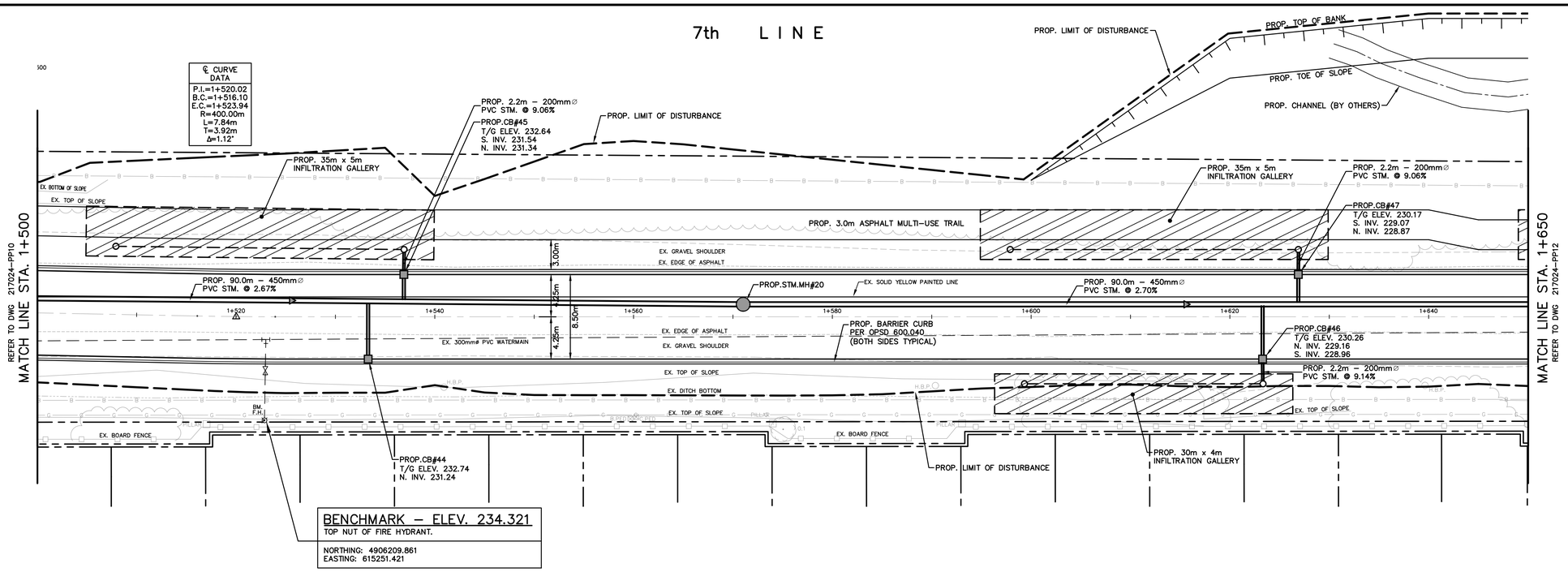
PLAN & PROFILE
7TH LINE
STA. 1+350 TO STA. 1+500

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP10

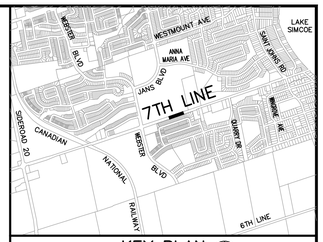
7th LINE



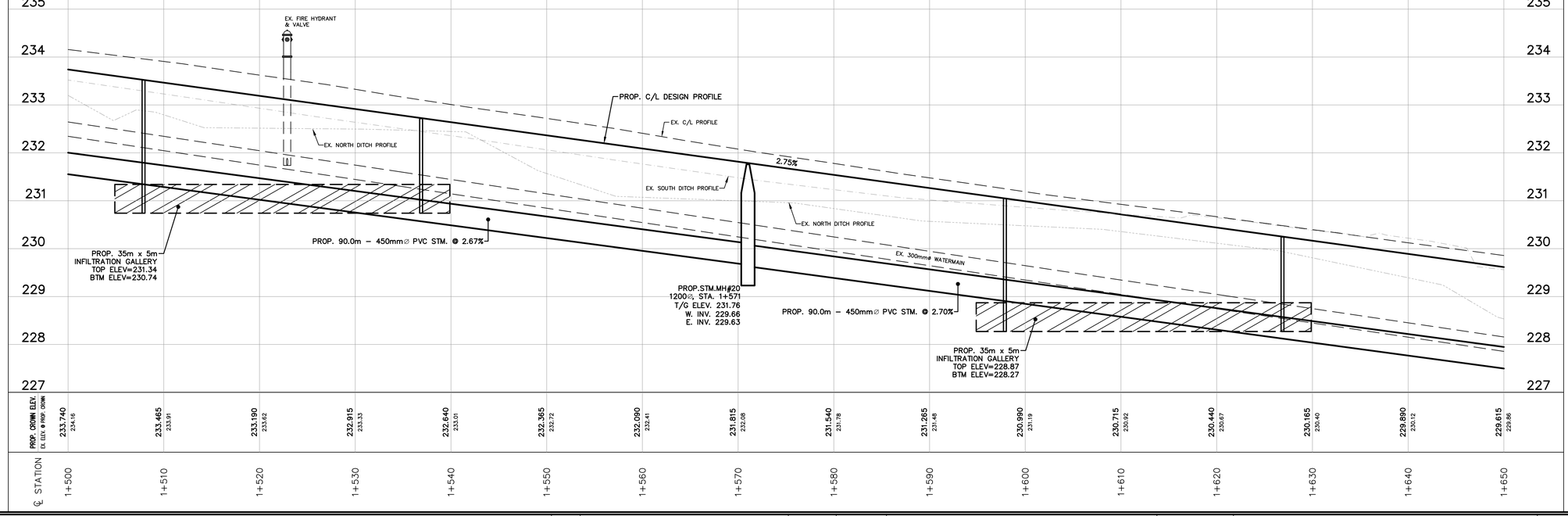
BENCHMARK – ELEV. 234.321

TOP NUT OF FIRE HYDRANT.

NORTHING: 4906209.861
EASTING: 615251.421



KEY PLAN
NOT TO SCALE



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL

7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

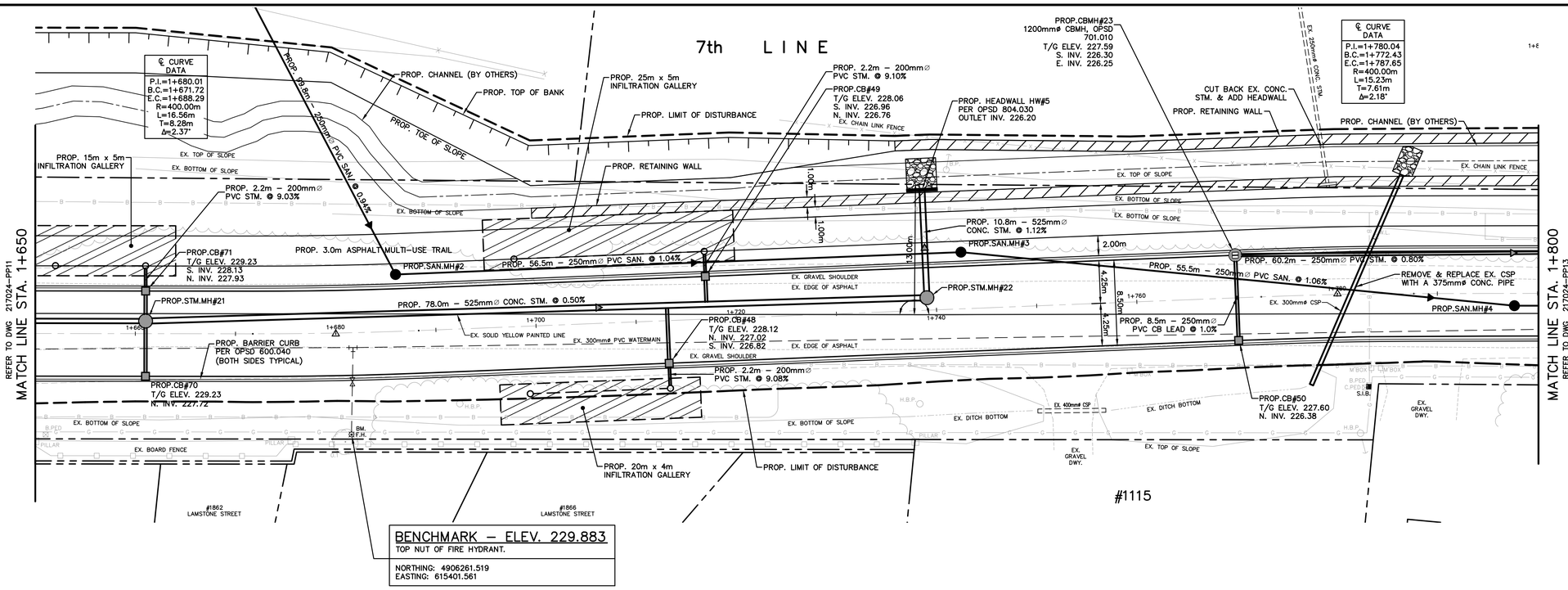
PLAN & PROFILE
7TH LINE
STA. 1+500 TO STA. 1+650

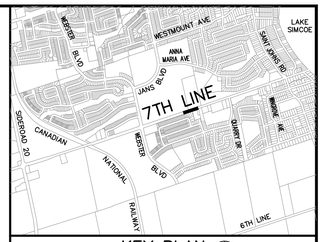
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP11

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP11





KEY PLAN
NOT TO SCALE

NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

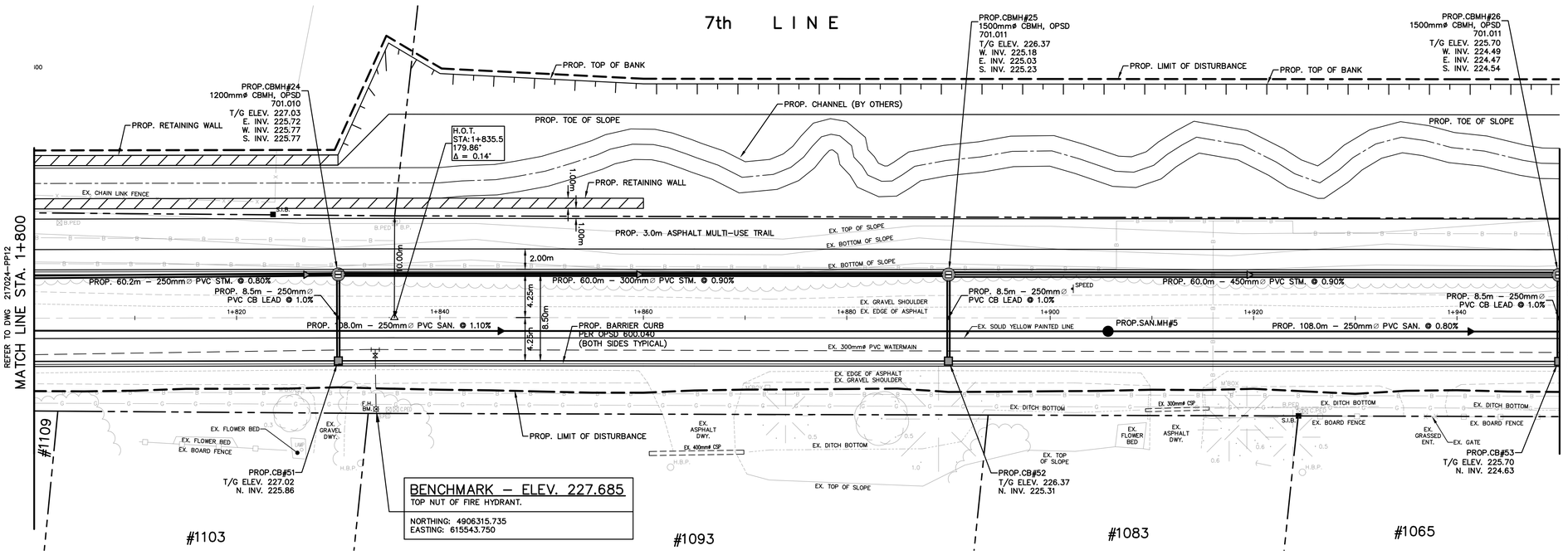
PLAN & PROFILE
7TH LINE
STA. 1+650 TO STA. 1+800

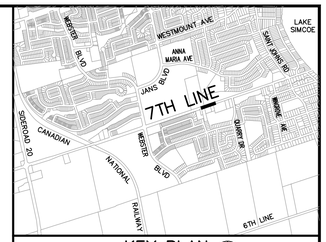
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

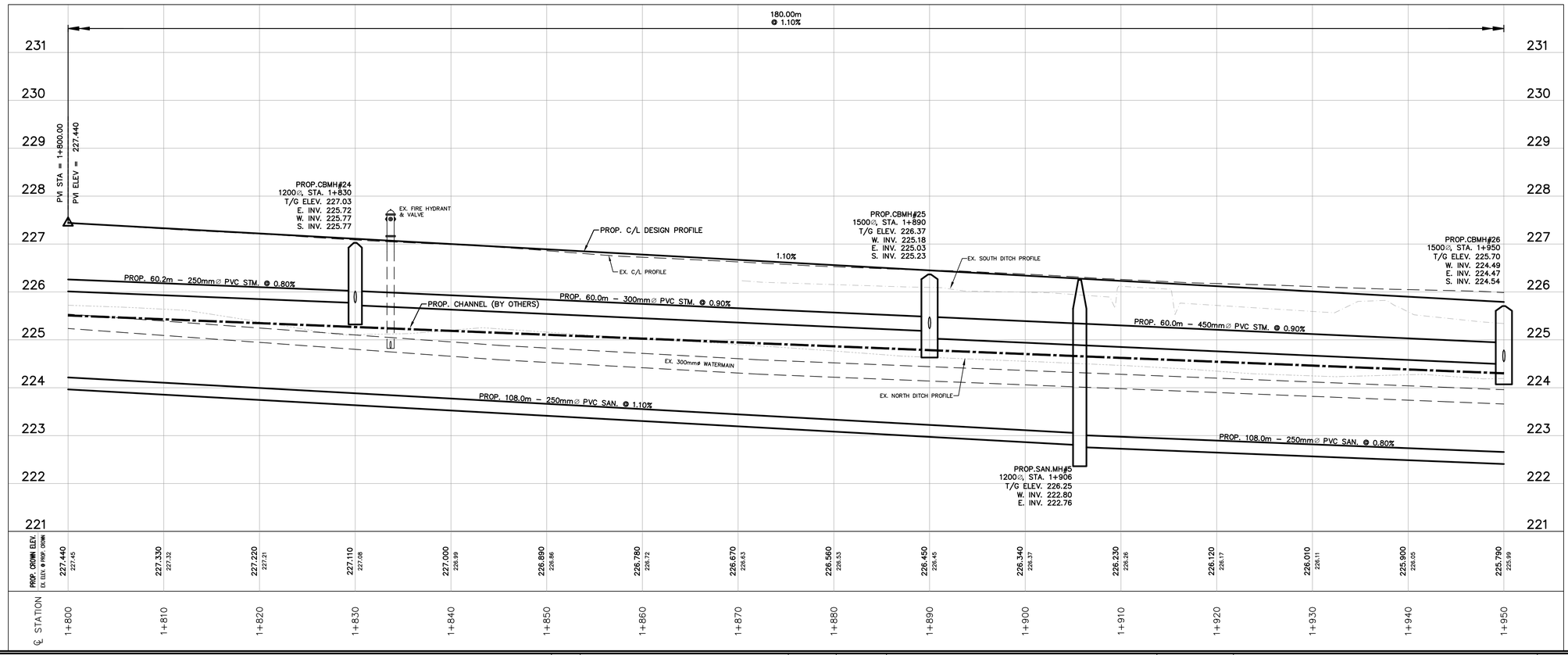
CONTRACT No.

DWG. No. 217024–PP12

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP12







NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

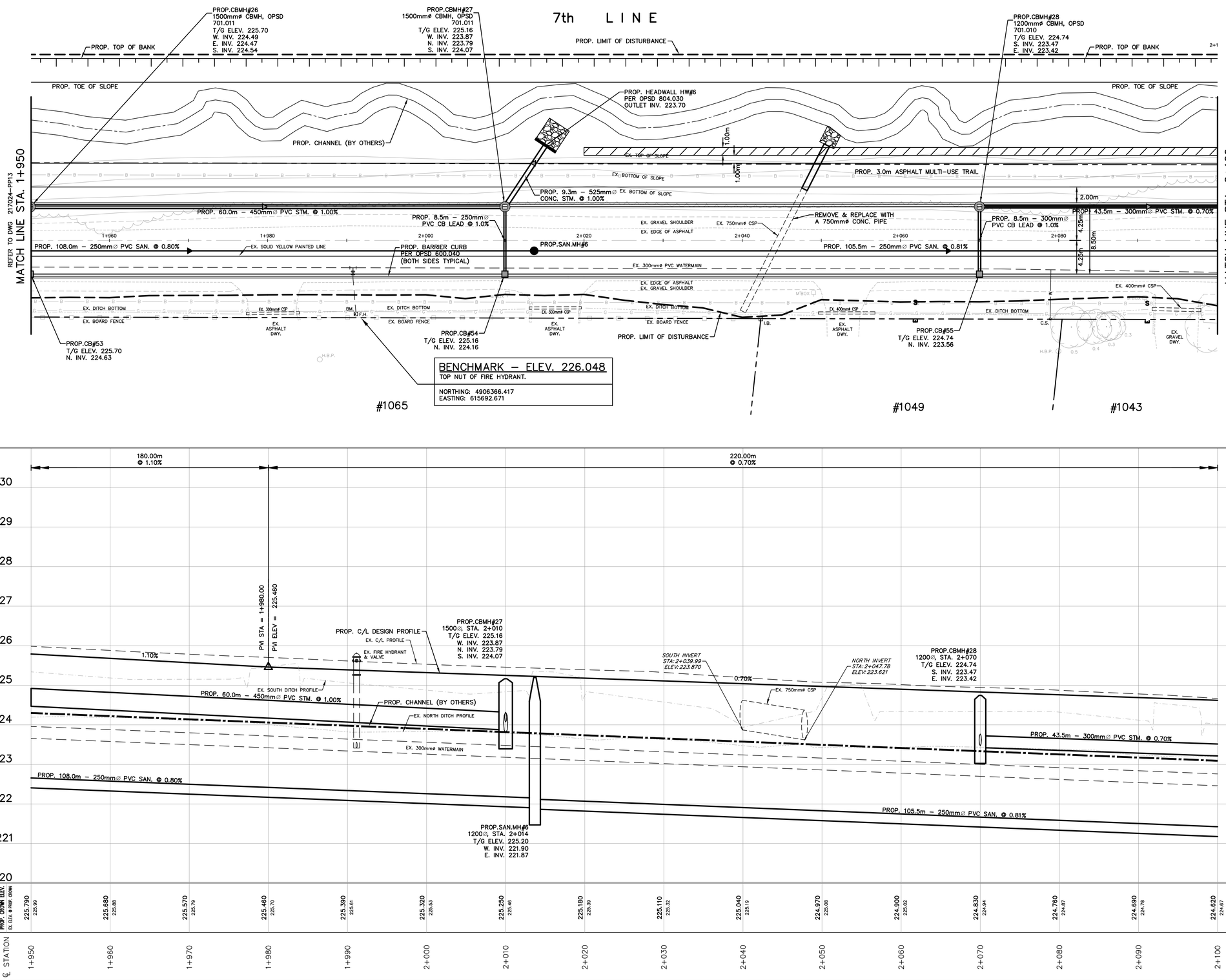
PLAN & PROFILE
7TH LINE
STA. 1+800 TO STA. 1+950

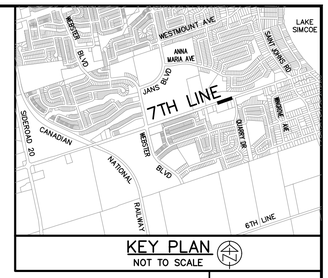
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP13

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP13





NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

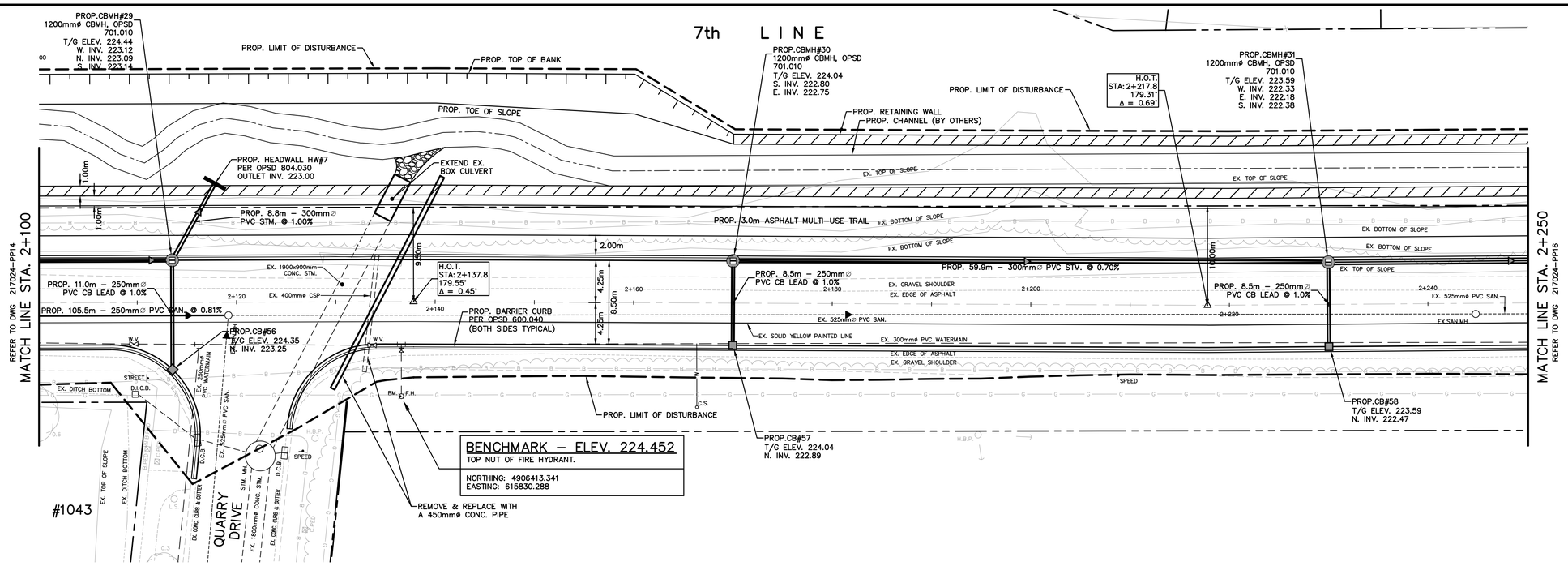
PLAN & PROFILE
7TH LINE
STA. 1+950 TO STA. 2+100

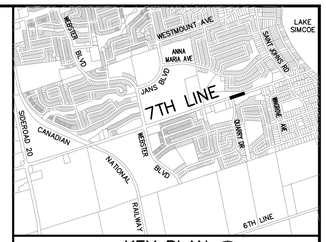
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

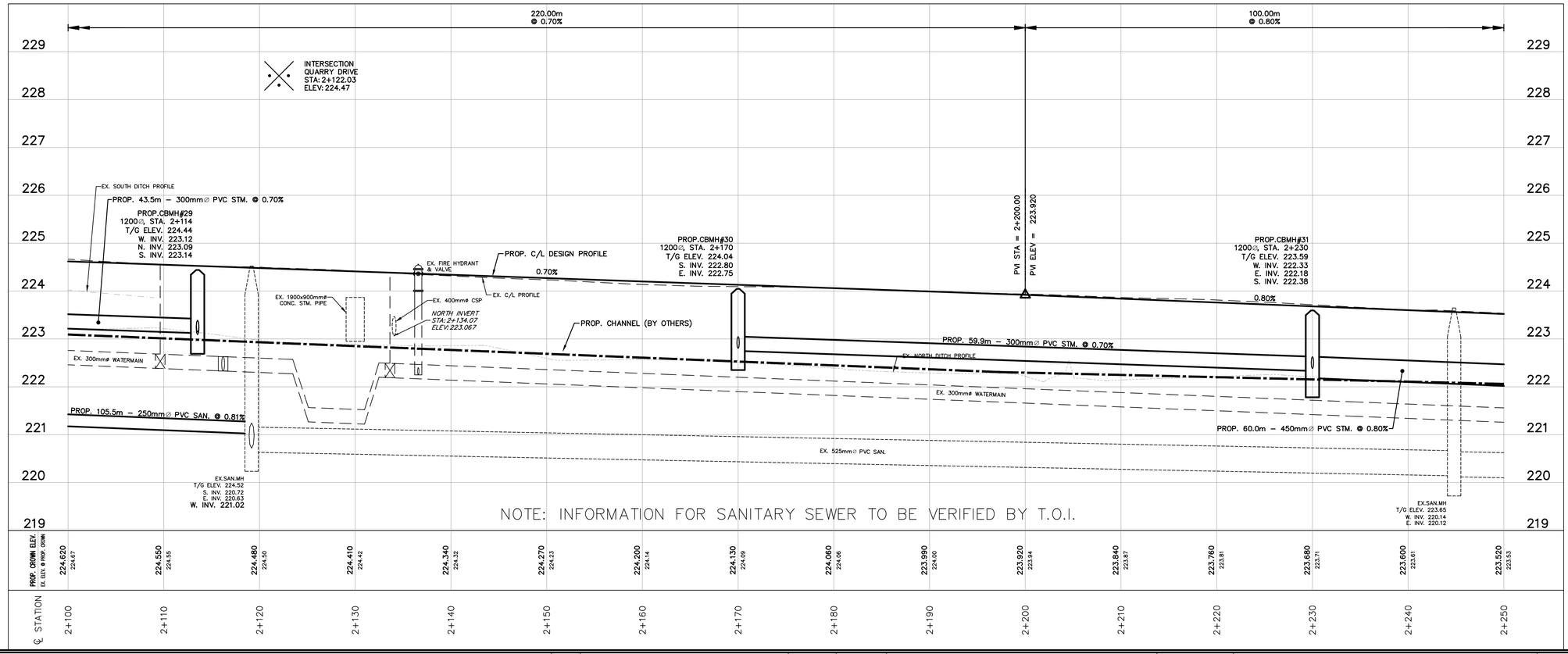
DWG. No. 217024-PP14

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP14





KEY PLAN
NOT TO SCALE



NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

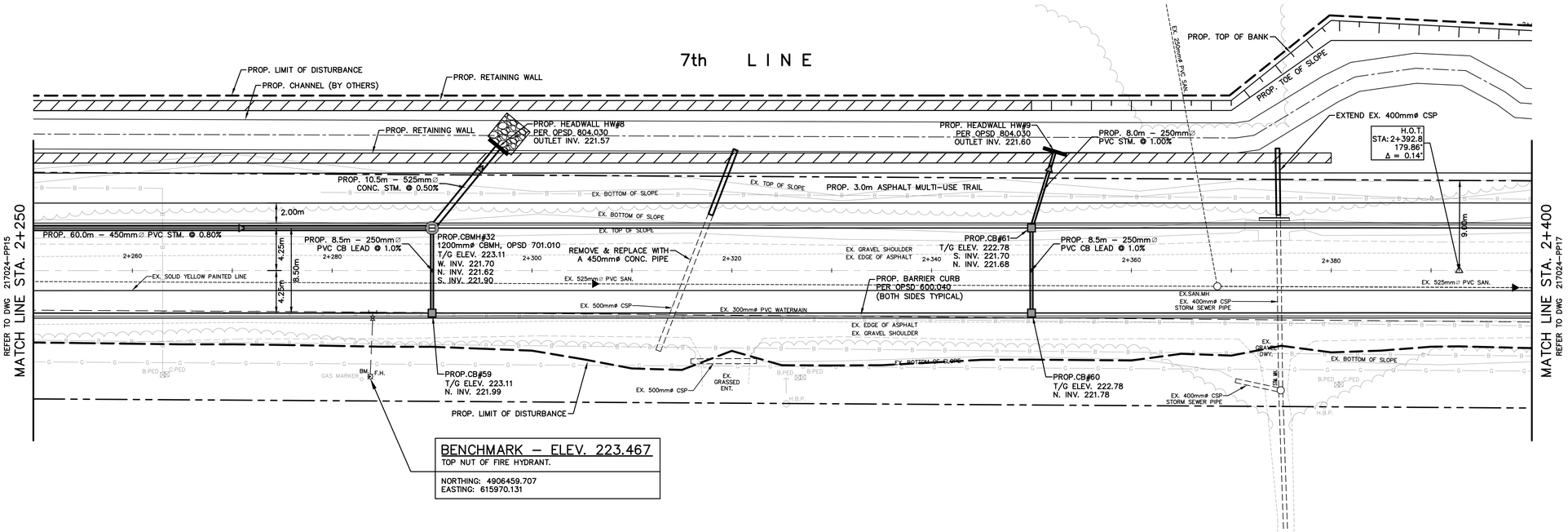
PLAN & PROFILE
7TH LINE
STA. 2+100 TO STA. 2+250

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

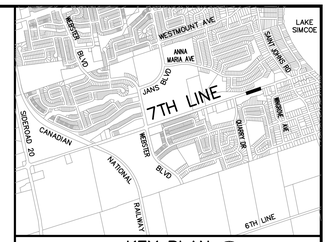
CONTRACT No.

DWG. No. 217024-PP15

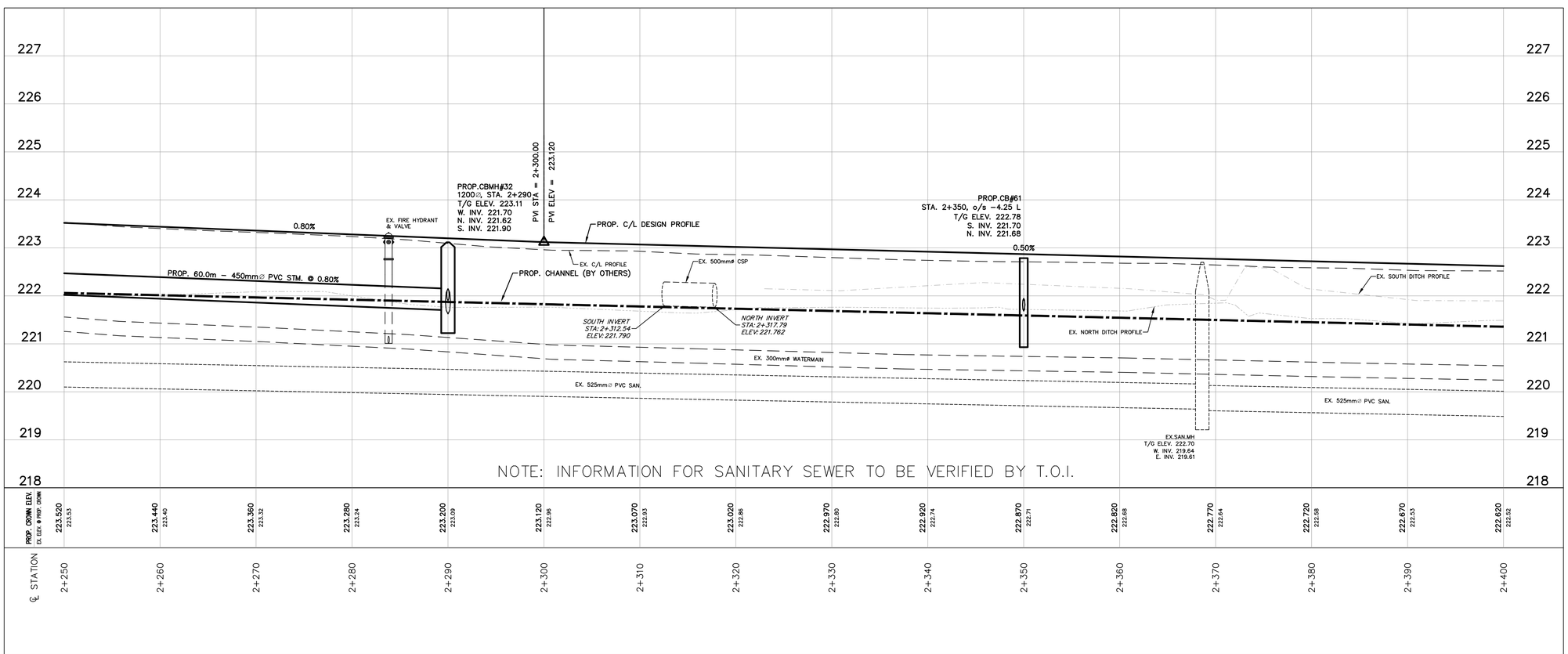
Plotted by: RWECKERLE on October 18, 2018 at 2:14pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP15



BENCHMARK – ELEV. 223.467
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906459.707
EASTING: 615970.131



KEY PLAN
NOT TO SCALE



NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP16

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

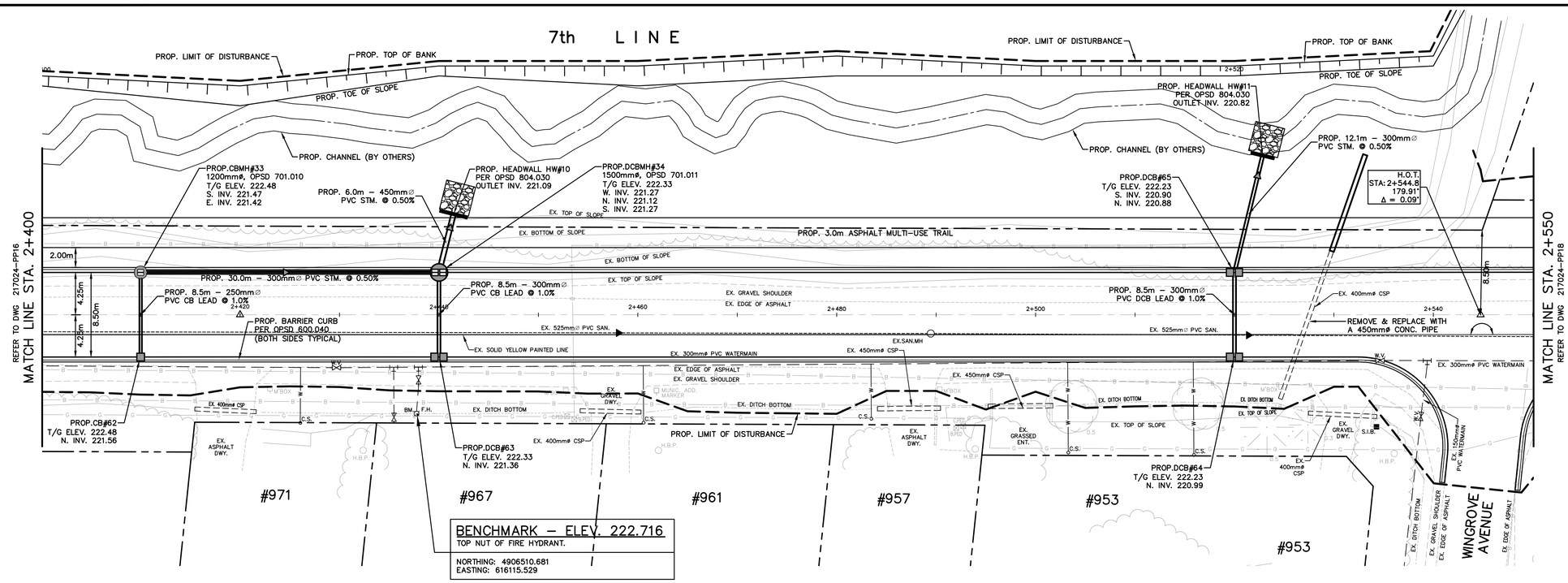
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

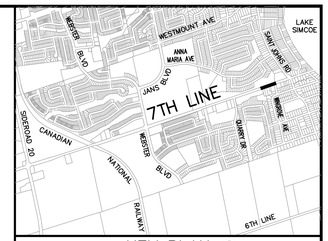
PLAN & PROFILE
7TH LINE
STA. 2+250 TO STA. 2+400

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

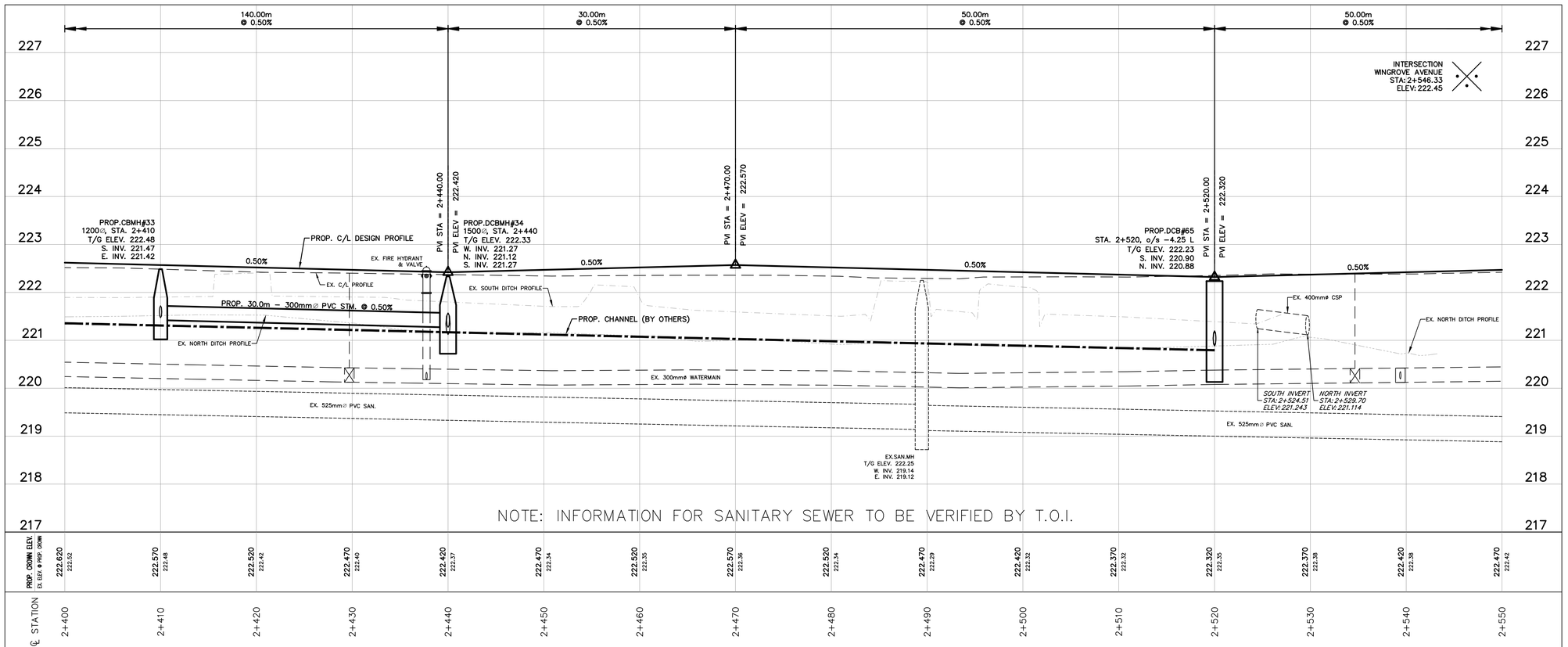
CONTRACT No.

DWG. No. 217024-PP16





KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP17

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

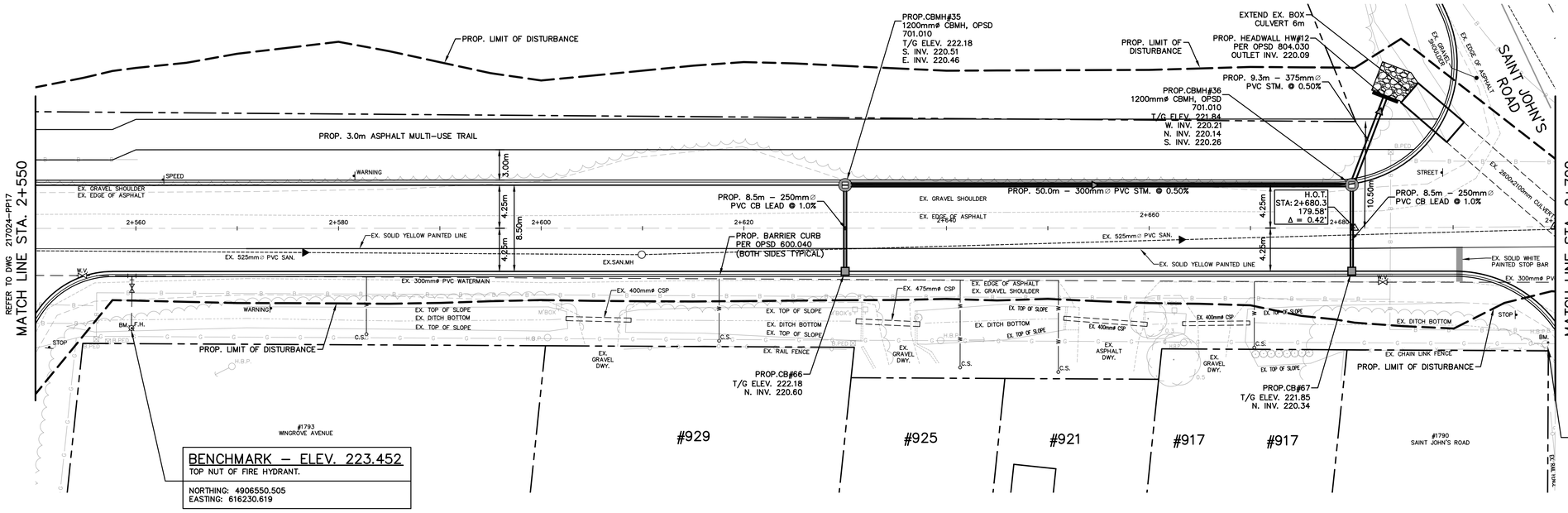
PLAN & PROFILE
7TH LINE
STA. 2+400 TO STA. 2+550

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

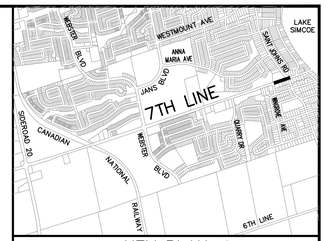
DWG. No. 217024–PP17

7th LINE

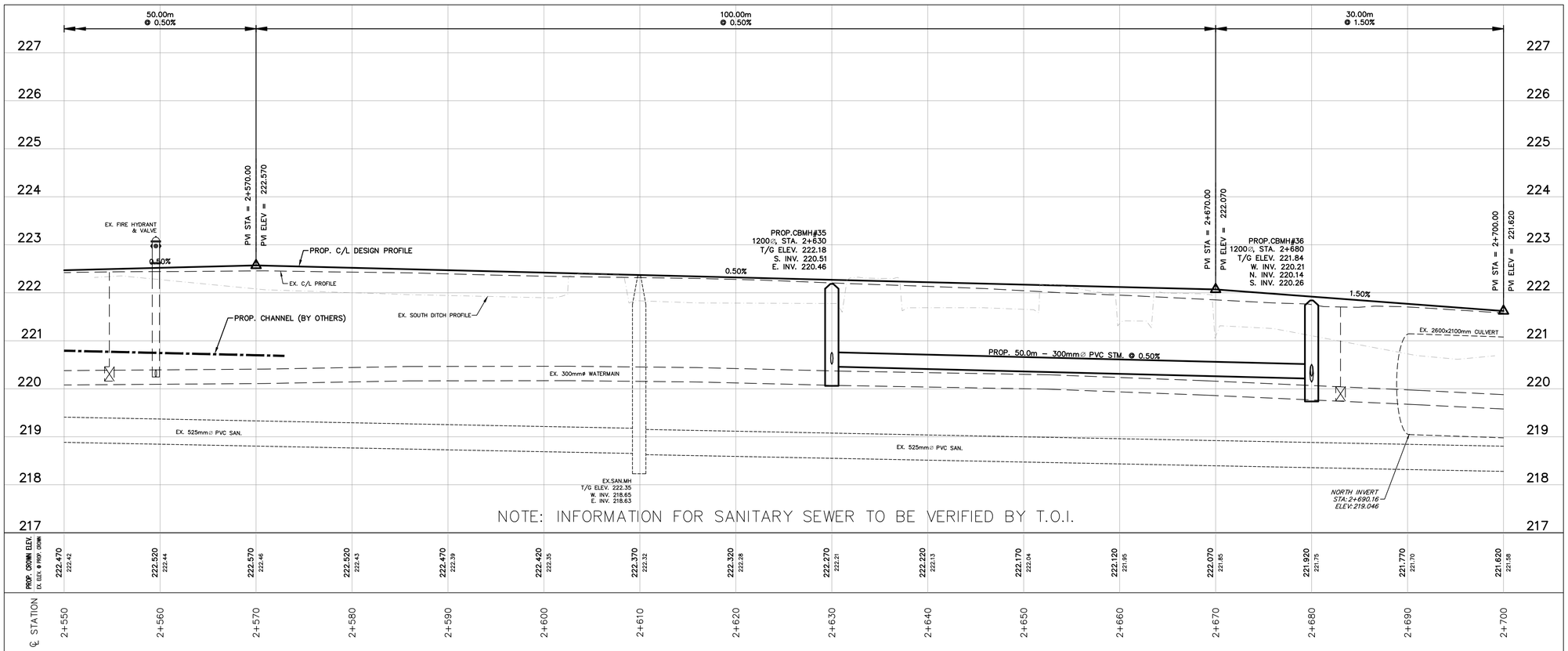


BENCHMARK – ELEV. 223.452
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906550.505
EASTING: 616230.619

BENCHMARK – ELEV. 221.243
NAIL & WASHER IN HYDRO BELL POLE
NORTHING: 4906594.847
EASTING: 616363.173



KEY PLAN
NOT TO SCALE



NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

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Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

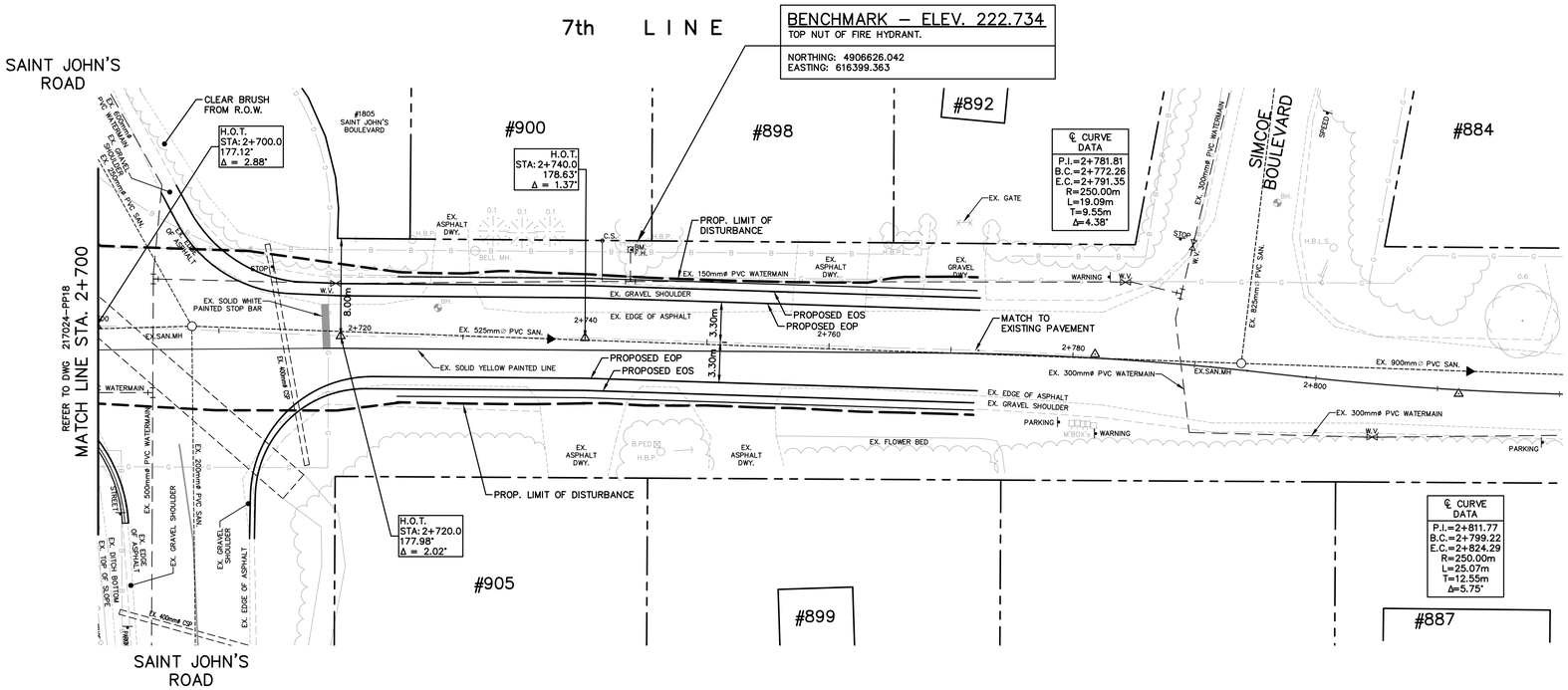
PLAN & PROFILE
7TH LINE
STA. 2+550 TO STA. 2+700

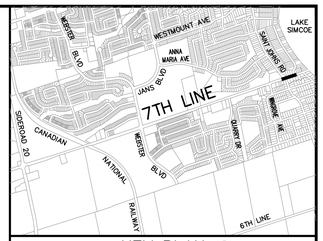
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

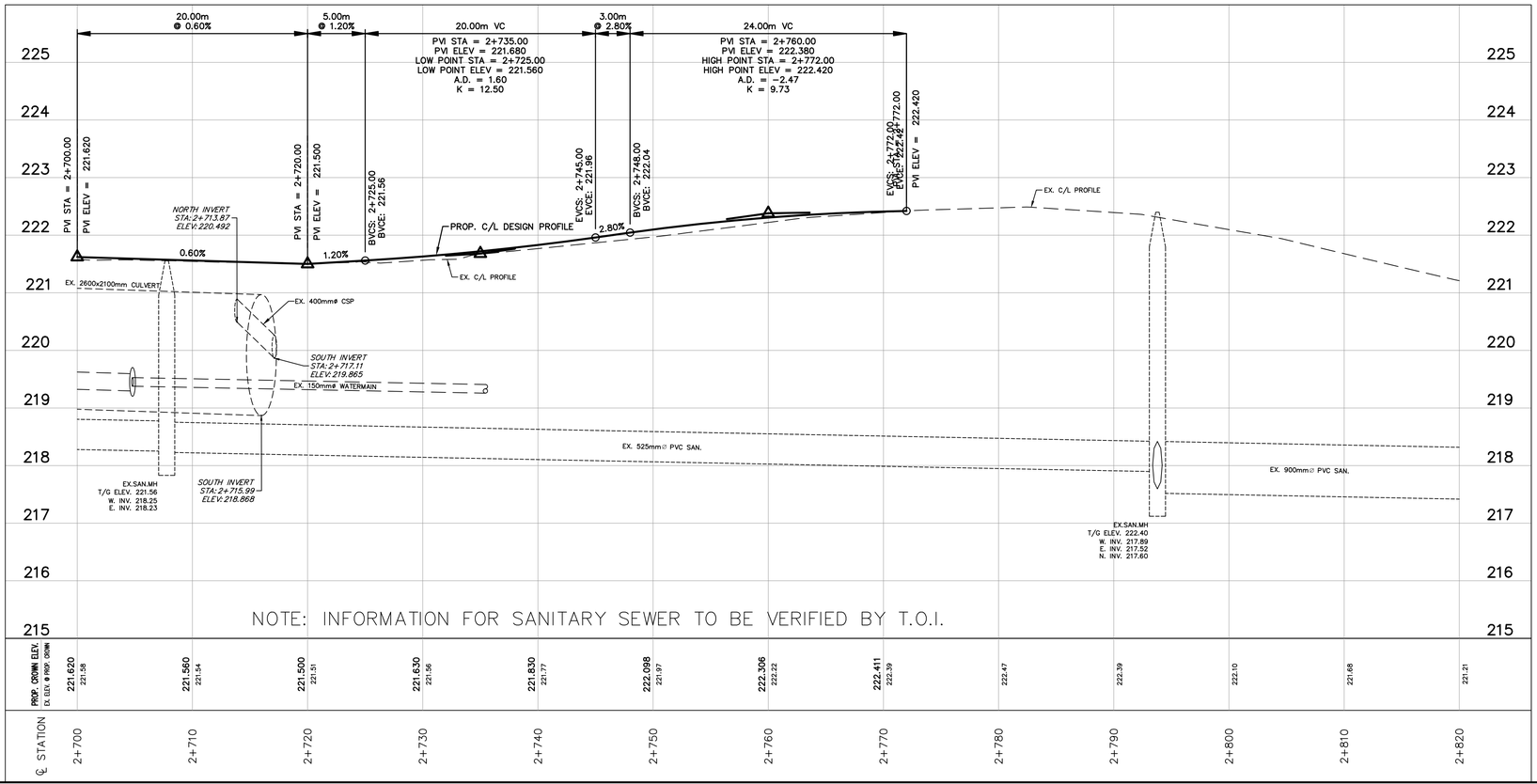
DWG. No. 217024-PP18

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP18





KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP19

CONTRACT DRAWINGS

Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 2+670 TO STA. 2+820

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP19

APPENDIX B

Terms of Reference Submission and Comments

Cassandra Fligg

From: Kate Lillie [K.Lillie@lsrca.on.ca]
Sent: May 12, 2017 3:49 PM
To: Roger Holmes
Cc: Brad Baker; Andrea Potter
Subject: RE: 7th Line Class EA between 20th Sideroad and St. Johns Road - Terms of Reference
Attachments: 7thLine EA Innisfil 1of2.pdf; 7thLine EA Innisfil 2of2.pdf

Hi Roger,

Following up on your request for information, please find attached two maps showing the ecological land classification to the community series for the 7th Line and surrounding area. Please keep in mind that this information is based on aerial interpretation and should be field verified. I've only included labels for NH units; any polygons without a label are classified as either being either agricultural or urban or rural development.

You may also find the Innisfil Creeks Subwatershed Plan to be helpful. It is available on our webpage here: http://www.lsrca.on.ca/Shared%20Documents/reports/innisfil_subwatershed_plan_2012.pdf

If you need any further information, please let me know.

Thanks,

Kate Lillie, HBSc, EP, ISA
Natural Heritage Ecologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281, ext. 527 | 1-800-465-0437
k.lillie@LSRCA.on.ca | www.LSRCA.on.ca

From: Roger Holmes [mailto:rholmes@azimuthenvironmental.com]
Sent: Wednesday, April 26, 2017 1:12 PM
To: Taylor Stevenson; Kate Lillie
Cc: Brad Baker; Andrea Potter
Subject: 7th Line Class EA between 20th Sideroad and St. Johns Road - Terms of Reference

Hello Taylor and Kate,

Azimuth Environmental Consulting Inc. (Azimuth) has been retained by the Ainley Group to complete the natural environmental components of a Schedule 'C' Class Environmental Assessment (Class EA) for future road improvements along 7th Line between 20th Sideroad and Lake Simcoe in the Town of Innisfil (the Town). 7th Line between 20th Sideroad and St. Johns Road is being considered for future urbanization, and the Towns Official Plan (OP) identifies this section as a major collector with a minimum recommended right-of-way (ROW) of 26 metres (mapping attached for reference). The Class EA is also to account for Metrolix's plans to twin and electrify the rail corridor between 20th Sideroad and Websters Boulevard.

Azimuth will be completing an Environmental Impact Study (EIS) for this project. At this time, we could like to confirm the Terms of Reference of the EIS to ensure the LSRCA is in agreement with the scope. The following represents the scope of work that we propose to assist with completion of the EA:

- Project team consultation, collection and review available background information related to the natural environment (fisheries and terrestrial biology);
- Prepare one Information Gathering Form (IGF) to MNRF Midhurst District based on the background information present, site conditions and potential for SAR to occur in the study limits;
- Complete the following field studies within the roadway ROW and immediate adjacent lands to assist with the completion of both Phase 2 and Phase 3 requirements:
    - Assess the study area for the presence of Species at Risk (SAR), or habitat suitable to support such species, based on background information and site reconnaissance (June 2017);
    - Dawn breeding bird surveys - 3 mornings in June/early July 2017 (as per MNRF survey protocol);
    - Amphibian surveys - 3 evenings during the 2017 breeding season (spring);
    - Evaluate spring, summer, and fall vegetation communities, using protocols of the Ecological Land Classification (ELC) for Southern Ontario (Lee *et al.,* 1998. Ecological land classification for southern Ontario: first approximation and its applications. SCSS *Field Guide* FG-02) (one site visit in May/ June 2017);
    - Complete spring and summer vascular plant surveys;
    - Conduct spring and summer aquatic habitat assessments of the mapped watercourses and drainage features in the study area to characterize their form and function;
- Complete a SAR screening for the study area by searching available databases and obtaining information from the MNRF Midhurst District Office to determine if SAR may be affected by the project;

We would also like to take this opportunity to request any natural heritage background information from the LSRCA that may be helpful in completing the EIS.

Please feel free to contact me if you would like to discuss any aspects of the project.

Roger Holmes, M.Sc.,
Aquatic Ecologist

Azimuth Environmental Consulting, Inc.
642 Welham Road
Barrie, ON, L4N 9A1
office: (705) 721-8451
fax: (705) 721-8926
cell: 705-795-7101
rholmes@azimuthenvironmental.com

www.azimuthenvironmental.com

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering

Natural Heritage Landcover

7th Line, Innisfil
Map 1 of 2

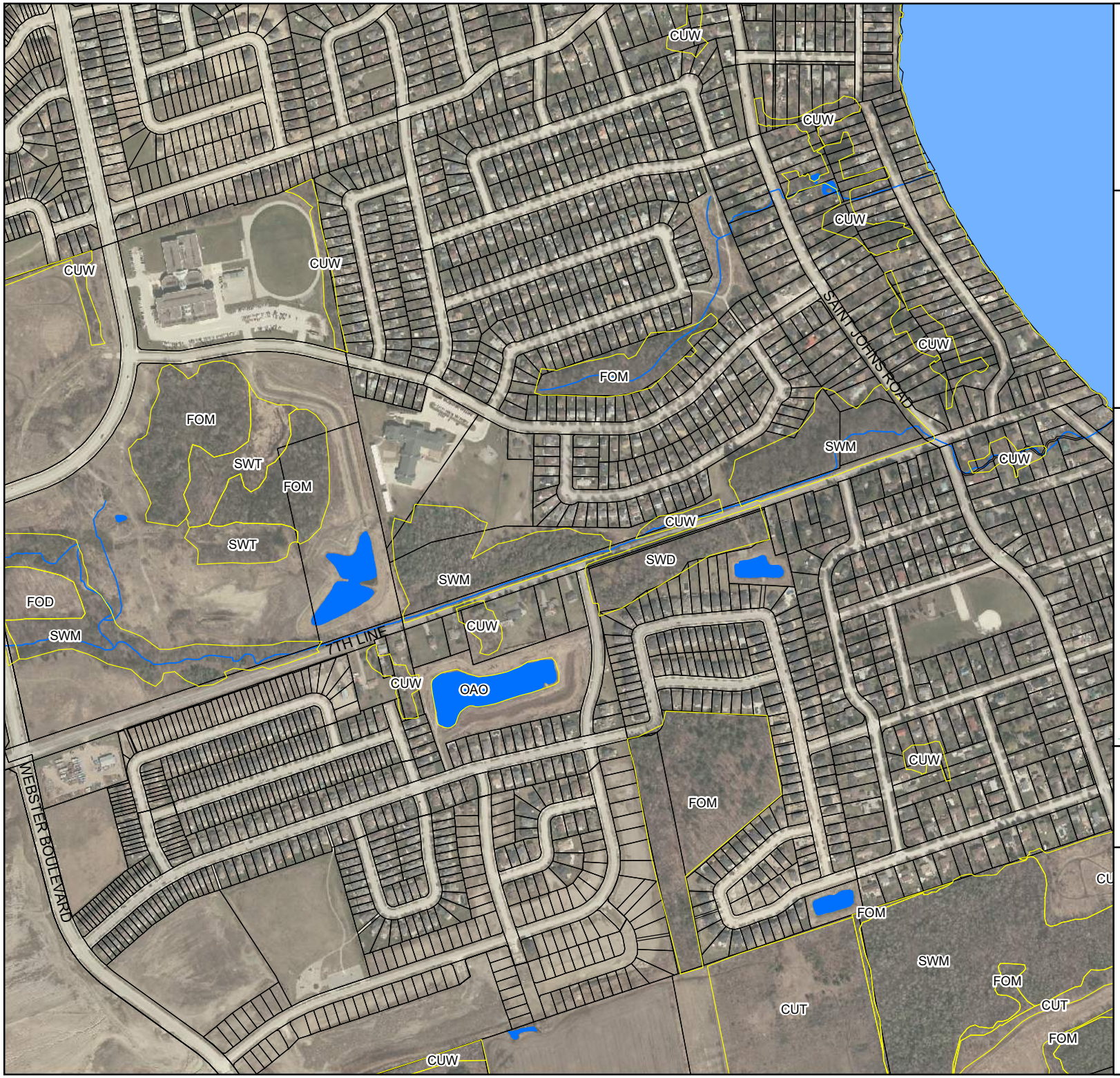
Legend

- ELC Community Series
- Watercourse
- Waterbody

Location Map

0 50 100 200 300
Metres

Lake Simcoe Region conservation authority



Natural Heritage Landcover

7th Line, Innisfil
Map 2 of 2

Legend

- ELC Community Series
- Watercourse
- Waterbody

Location Map

0 50 100 200 300
Metres

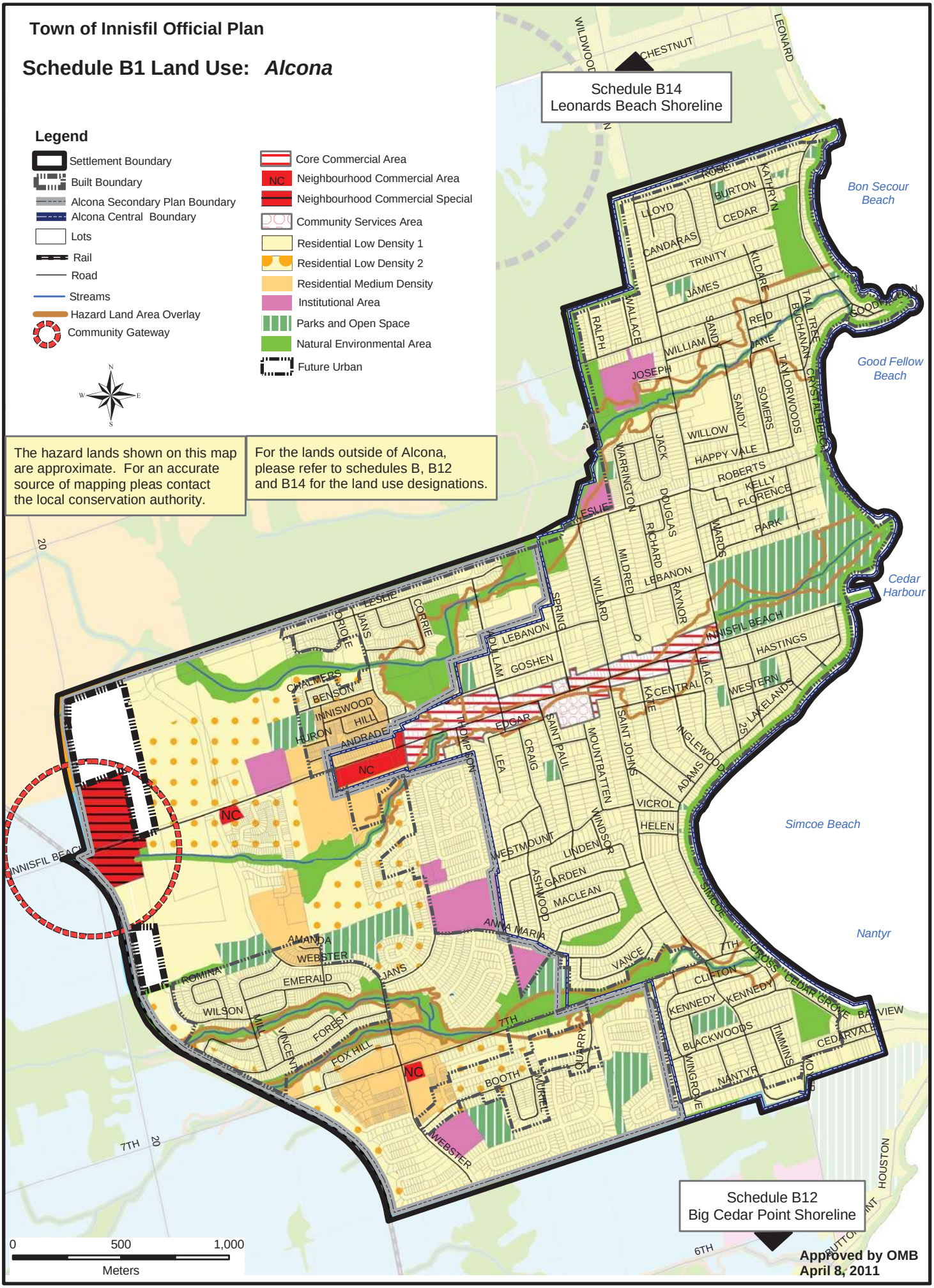
Lake Simcoe Region conservation authority

APPENDIX C

Town of Innisfil Official Plan: Schedules B and B1

Town of Innisfil Official Plan

Schedule B1 Land Use: *Alcona*



Schedule B: Land Use

Innisfil Official Plan

Legend

Land Use Designations

- Specialty Crop Area
- Agricultural Area
- Rural Area
- Special Rural Area
- Natural Environmental Area
- Greenbelt Plan - Natural Heritage System Overlay
- Estate Residential Area
- Shoreline Residential Area
- Highway Commercial Area
- Shoreline Commercial Area
- Rural Industrial
- Extractive Industrial Area
- Institutional Area
- Parks and Open Space
- Urban and Village Settlements (see Schedules B1 to B3 & B5 to B10)

- Big Bay Point Resort (see OPA 17 approved by OMB Dec. 14, 2007)
- Closed Landfill
- Waste Disposal Assessment Area
- Innisfil Municipal Boundary
- Streams
- Hazard Land Area Overlay
- Lots
- Rail
- Roads

Non Decision insofar as Innisfil Heights being identified as an Urban Settlement and Fennell's Corners being identified as a Village Settlement

Appeal #50
As it relates to the Non Decision of Innisfil Heights

Appeal #52
As it relates to the Urban Settlement boundary for Sandy Cove

Appeal #55
As it relates to the Agricultural Area and Natural Environmental Area designations

Appeal #54
As it relates to the Rural Area, Special Rural Area, and Agricultural Area designations

Appeal #56
As it relates to the Rural Area designation

Non Decision

Non Decision

Non Decision

Non Decision

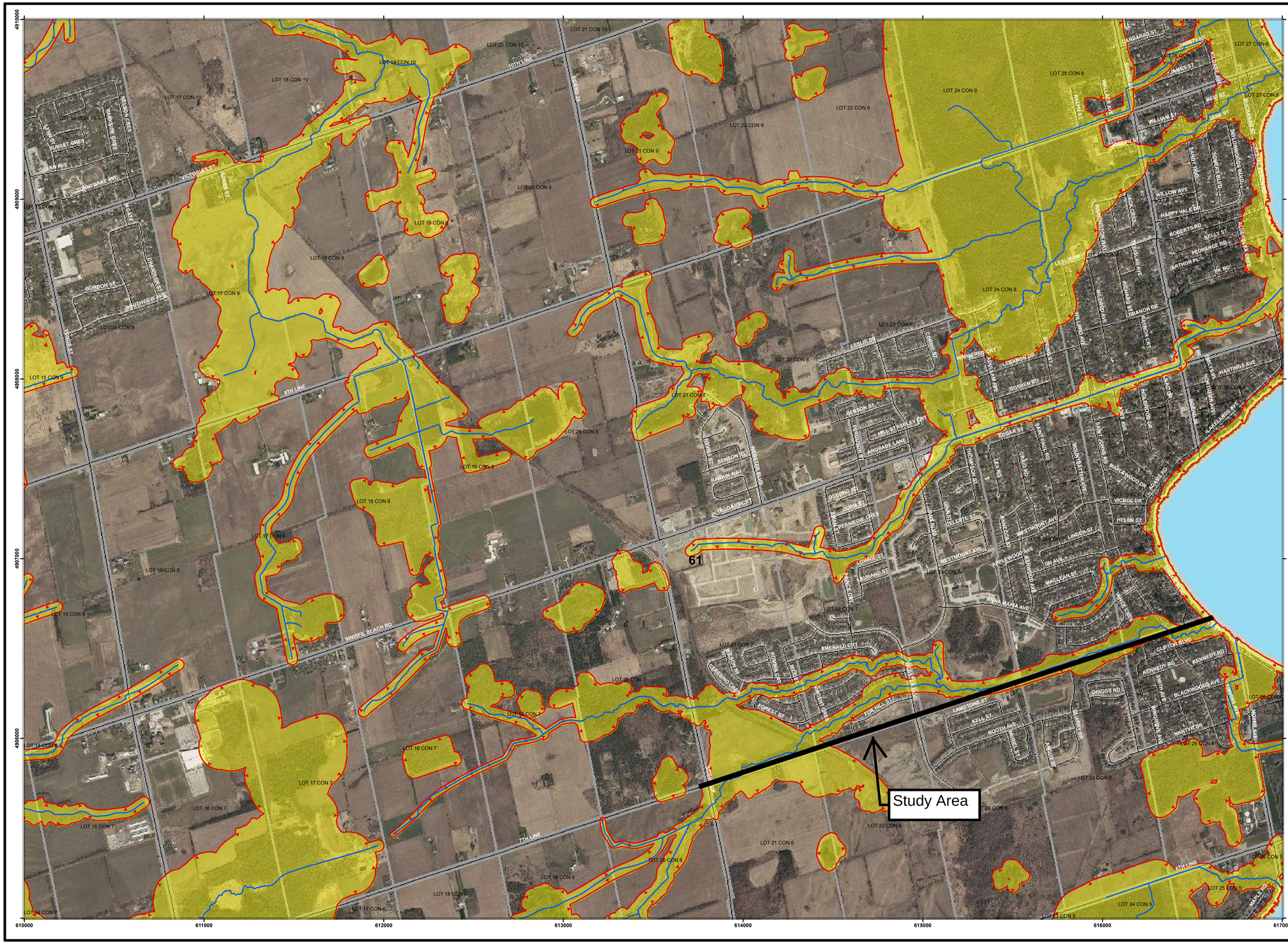
Big Bay Point
Sandy Cove
Barrie
Stroud
Alcona
Lefroy - Belle Ewart
De Grassi Point
Churchill
Gilford
Cook's Bay
Fennell's Corners
Innisfil Heights
Thornton
Cookstown
Lake Simcoe
Kempenfelt Bay

Kilometers
0 0.5 1 2 3 4

Approved by OMB
May 13, 2009 and
March 1, 2010

APPENDIX D

LSRCA Regulated Lands Mapping

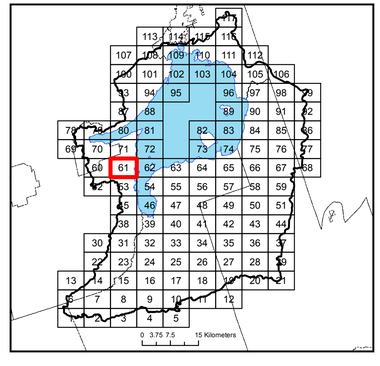


Lake Simcoe Region conservation authority

N

Legend

- WATERCOURSE
- ROAD
- REGULATION AREA
- LOT_CONCESSION
- LSRCA JURISDICTION
- MUNICIPAL BOUNDARY
- LAKE SIMCOE



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THIS MAP WAS PRODUCED FOR ILLUSTRATIVE PURPOSES ONLY. © LAKE SIMCOE REGION CONSERVATION AUTHORITY, 2014. ALL RIGHTS RESERVED.
THE FOLLOWING DATA SETS OF MUNICIPAL BOUNDARY, LOT_CONCESSION ARE © QUEEN'S PRINTER FOR ONTARIO (2014). REPRODUCED WITH PERMISSION.
ORTHOPHOTOGRAPHY 2013, 2012, 2002 © J.D. BARNES LIMITED

RIVERINE HAZARDS WERE BASED ON EXISTING FLOOD PLAIN MAPPING. FLOOD PLAIN LIMITS WHERE ENGINEERING PRODUCTS DID NOT EXIST WERE DETERMINED BY LSRCA STAFF.
RIVERINE EROSION HAZARDS WERE DETERMINED BY LSRCA STAFF. A 15-METER SETBACK WAS APPLIED FROM THE LIMITS OF ALL RIVERINE HAZARDS.
SHORELINE FLOOD HAZARDS WERE DETERMINED BY LSRCA STAFF BY APPLYING THE EQUATIONS PREVIOUSLY DEVELOPED THROUGH AN ENGINEERING STUDY.
SHORELINE EROSION HAZARDS WERE DETERMINED BY LSRCA STAFF.
WETLANDS WERE DELINEATED BY THE MINISTRY OF NATURAL RESOURCES. SETBACKS OF 120-M FROM PROVINCIALLY SIGNIFICANT WETLANDS (PSWs) AND 30-M FROM ALL OTHER WETLANDS WERE APPLIED.
MEANDERBELT WIDTHS WERE ESTABLISHED THROUGH A STUDY. IN THE ABSENCE OF A STUDY, MEANDERBELT WIDTHS WERE CALCULATED AS 20 TIMES THE BANKFULL WIDTHS ESTIMATED FROM THE CORRESPONDING DRAINAGE AREAS.

PLEASE REFER TO "REFERENCE MANUAL FOR DETERMINATION OF REGULATION LIMITS" (LSRCA, 2005) OR CONTACT LSRCA (905-895-1281) FOR MORE INFORMATION

1:10,000

0 0.225 0.45 0.9 1.35 1.8

Kilometers

NO.	REVISIONS	DATE		
0	ONTARIO REGULATION 179/06 APPROVED	MAY 8, 2006	CHECKED - NATURAL HERITAGE	KB
1	Mapping revisions to the regulation limit have been completed as referenced in the document "Regulation Limit Changes, May 2007"	SEPTEMBER 28, 2007	CHECKED - REGULATIONS	JP
2	Mapping revisions to the regulation limit have been completed as referenced in the document "Regulation Limit Changes, April 2009". Ortho imagery changed to reflect most recent imagery available. Mapdata disclaimer changed to reflect most current disclaimers in use.	APRIL 24, 2009	CHECKED - ENGINEERING	JP
3	Mapping revisions to the regulation limit have been completed as referenced in the document "Regulation Limit Changes, July 2013". Ortho imagery changed to reflect most recent imagery available. Mapdata disclaimer changed to reflect most current disclaimers in use.	JULY 26, 2013	APPROVED	TH
4	Mapping revisions to the regulation limit have been completed as referenced in the document "Regulation Limit Changes, September 2014". Ortho imagery reflects most recent imagery available. Mapdata disclaimer changed to reflect most current information.	SEPTEMBER 26, 2014	DATE:	JANUARY 2006
			MAPPED BY:	JB

(ONTARIO REGULATION 97/04)

REGULATION OF DEVELOPMENT, INTERFERENCE WITH WETLANDS AND ALTERATIONS TO SHORELINES AND WATERCOURSES.

ONTARIO REGULATION 179/06

PLOT DATE: SEPTEMBER 2014

FILE LOCATION:

SHEET NO. 61

OF 117

APPENDIX E

MNRF Information Request Package

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

August 21, 2017 AEC 17-076

Ministry of Natural Resources and Forestry
Midhurst District
2284 Nursery Road
Midhurst, Ontario
L0L 1X0

Attention: District Planner - Midhurst District

Re: Species at Risk Screening and Background Fisheries Information Request for a Class EA, 7th – 20th Sideroad to Lake Simcoe Class EA, Town of Innisfil

To Whom It May Concern:

Azimuth Environmental Consulting, Inc. (Azimuth) has been retained to complete the natural environmental components of a Class Environmental Assessment (Class EA) for future improvements along 7th Line between 20th Sideroad and Lake Simcoe in the Town of Innisfil (the Town). We are sending this letter as a component of the Species at Risk (SAR) screening and background fisheries information request for this study area. We request that the information outlined herein be considered and that any additional considerations/information which is deemed relevant to the project be provided to allow for a thorough screening. Background mapping of the study area is attached for reference.

EXISTING CONDITIONS

Fisheries

The study area is within the Innisfil Creeks Subwatershed. Banks Creek is present in the study area and flows in an easterly direction along a majority of the 7th Line. Banks Creek crosses 7th Line approximately 180m east of 20th Sideroad, and runs adjacent to the 7th Line from approximately 400m east of Webster Road to St. John's Sideroad, where it crosses 7th Line again under the 7th Line and St John's Sideroad intersection. It is our understanding that Banks Creek is a coldwater watercourse with historic records of Brook Trout, although it is unknown whether these populations exist today (Innisfil Creeks Subwatershed Plan, 2012).

Fisheries information from the Ministry of Natural Resources (MNRF) Land Information Ontario database indicates that Bluntnose Minnow, Brook Stickleback, Brook Trout, Central Mudminnow, Creek Chub, Eastern Blacknose Dace, Emerald Shiner, Fathead Minnow, Northern Redbelly Dace, Pumpkinseed, Sand Shiner and White Sucker are present within this watercourse.

Terrestrial

The property is located within the Town of Innisfil. The study area extends eastward from 20th Sideroad towards Lake Simcoe on the 7th Line. Surrounding lands primarily consist of agriculture, woodland, residential dwellings, maintained lawns and roadways.

BACKGROUND SAR DATA

Fisheries

The Innisfil Creeks Subwatershed Plan (LSRCA, 2012) states that there are no known aquatic SAR within the Innisfil Creeks subwatershed. Furthermore, available information from DFO SAR mapping and the Natural Heritage Information Centre (NHIC) does not indicate the presence of aquatic SAR (threatened or endangered) within the study area (attached).

We request that MNRF complete the attached table to identify any available information on fish communities and aquatic habitat. The table includes a request for any historical fish community data, fish habitat sensitivity, aquatic SAR, permanency, thermal regime, and MNRF fisheries timing restrictions that should be considered for this project.

Terrestrial

Natural Heritage Information Centre (NHIC)

Available information from the NHIC shows that three SAR species, Eastern Meadowlark, Henslow's Sparrow and a Restricted Species, have been recorded within 1km of the study area (17PK1305, 17PK1306, 17PK1405, 17PK1406, 17PK1506 and 17PK1606).

Ontario Breeding Bird Atlas

A search of the Ontario Breeding Bird Atlas has been completed. Square 17PK10 was queried and it was determined that several SAR bird species have been recorded demonstrating probable or confirmed breeding evidence within the 10 x 10km data square. These species include Bank Swallow, Barn Swallow, Black Tern, Bobolink, Canada Warbler, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, Least Bittern, Red-headed Woodpecker and Wood Thrush.

Ontario Reptile and Amphibian Atlas
Available information from Ontario Reptile and Amphibian Atlas shows that Blanding's Turtle, Eastern Musk Turtle and Snapping Turtle also need to be considered.

Azimuth Preliminary Assessment
Our preliminary habitat assessment suggests that the following should be considered in addition: Butternut, Little Brown Myotis, Monarch, Northern Long-eared Myotis and Tri-colored Bat.

SUMMARY
In summary, based on information reviewed, the following are being considered in our assessment:

- Mammals: Little Brown Myotis, Northern Long-eared Myotis and Tri-colored Bat;
- Reptiles and Amphibians: Blanding's Turtle, Eastern Musk Turtle and Snapping Turtle;
- Birds: Bank Swallow, Barn Swallow, Black Tern, Bobolink, Canada Warbler, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, Henslow's Sparrow, Least Bittern, Red-headed Woodpecker and Wood Thrush;
- Plants and Lichens: Butternut;
- Fish and Fish Habitat: within Banks Creek; and,
- Insects: Monarch.

Given our understanding of the habitat requirements of the above-noted species our screening will focus on Barn Swallow, Blanding's Turtle, Bobolink, Butternut, Chimney Swift, Eastern Meadowlark, Eastern Musk Turtle, Eastern Wood-pewee, Little Brown Myotis, Northern Long-eared Myotis, Red-headed Woodpecker, Snapping Turtle, Tri-colored Bat and Wood Thrush.

There is currently no indication that potential habitat for Bank Swallow, Black Tern, Canada Warbler, Henslow's Sparrow, and Least Bittern exists on or adjacent to the property. Azimuth is aware that these species have been identified in the area historically and will continue to be mindful of them during the site assessment. We propose that these species will not be considered in our EIS unless our on-site evaluation or MNRF response provides information indicating potential habitat for these species in the surrounding area.

If the District's files contain additional or contradictory information, we would appreciate your input at this time.

It is generally our intention to append this correspondence in the resulting EIS. If restricted species occur in the area and the MNRF determines that these need to be considered in our review, please provide two copies of the response - one with the species name replaced with (Restricted Species) for inclusion within Azimuth's natural heritage review report, and the other retaining the identity of the species for Azimuth's internal use only.

Thank you very much for your assistance in this matter. If you have any questions regarding this project please do not hesitate to contact us.

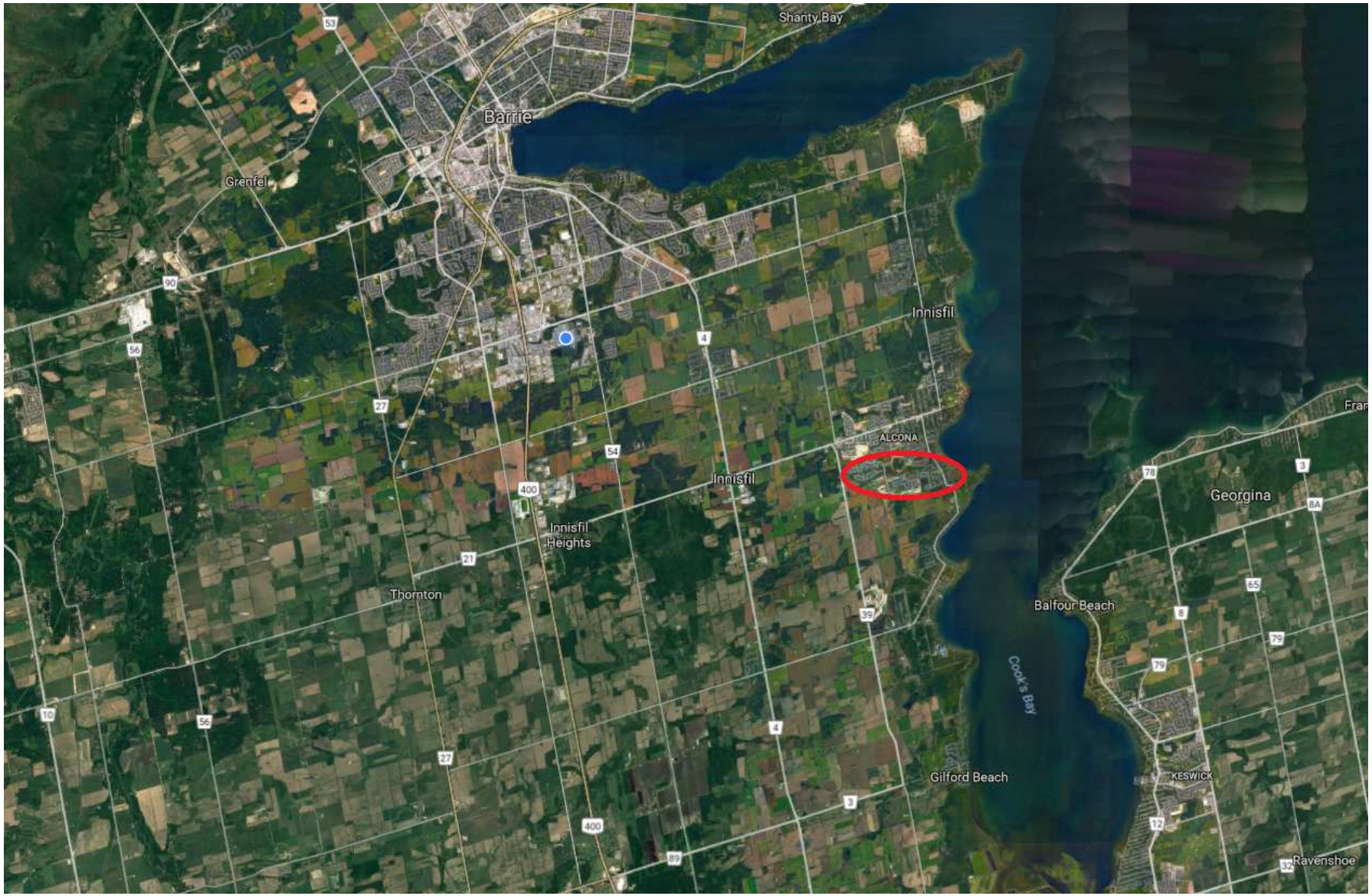
Regards,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Roger Holmes, MSc.
Aquatic Ecologist
Attach: AEC 17-076 Site Location
AEC 17-076 Natural Heritage Information Centre Data Summary (17PK1305, 17PK1306, 17PK1405, 17PK1406, 17PK1506 and 17PK1606)
AEC 17-076 Ontario Breeding Bird Atlas Data Summary (17PK10)
AEC 17-076 DFO Aquatic SAR Mapping

General Study area

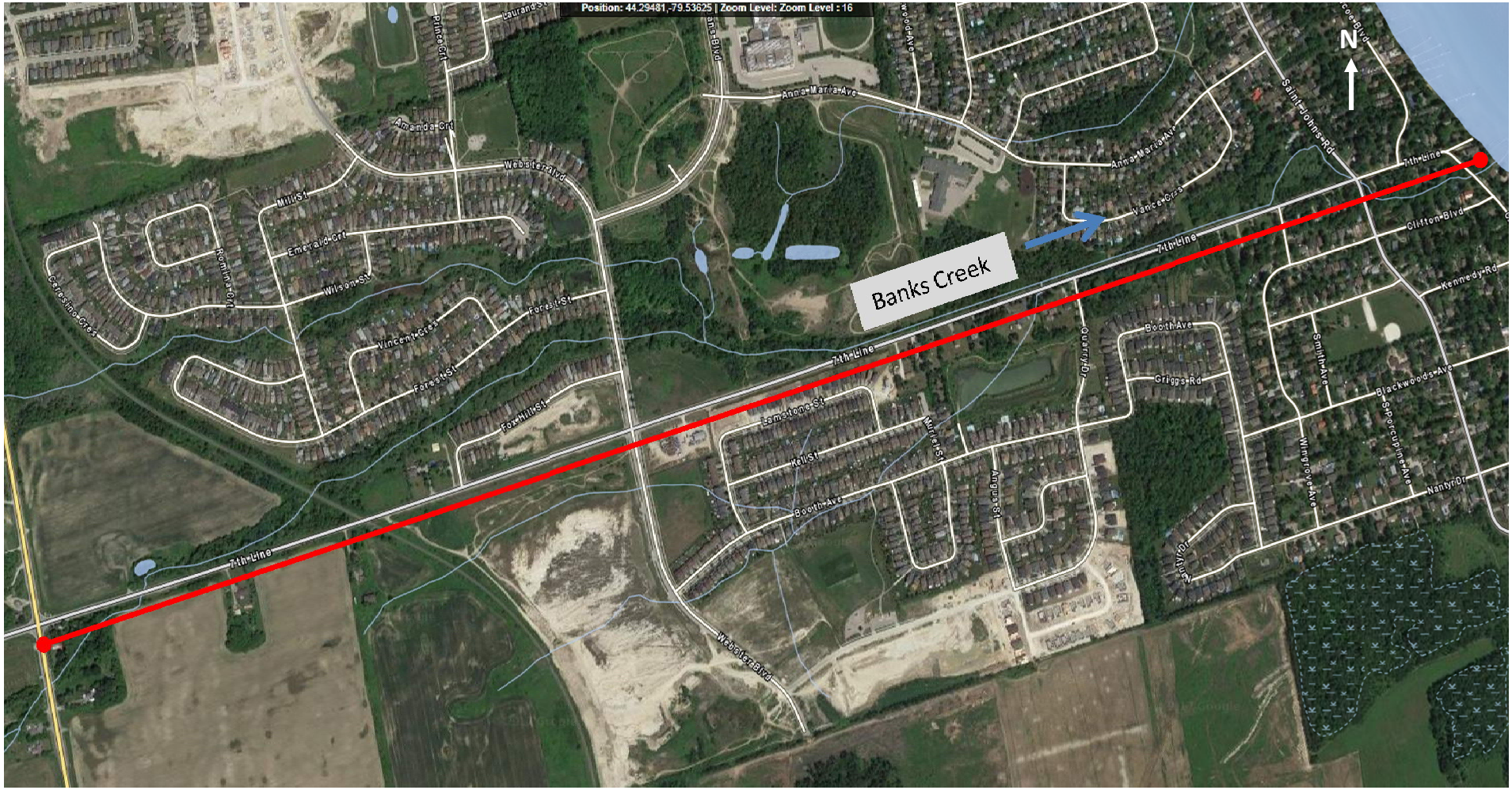
(Approximate study location illustrated by red circle)



Source: Google Maps

7th Line Study Area

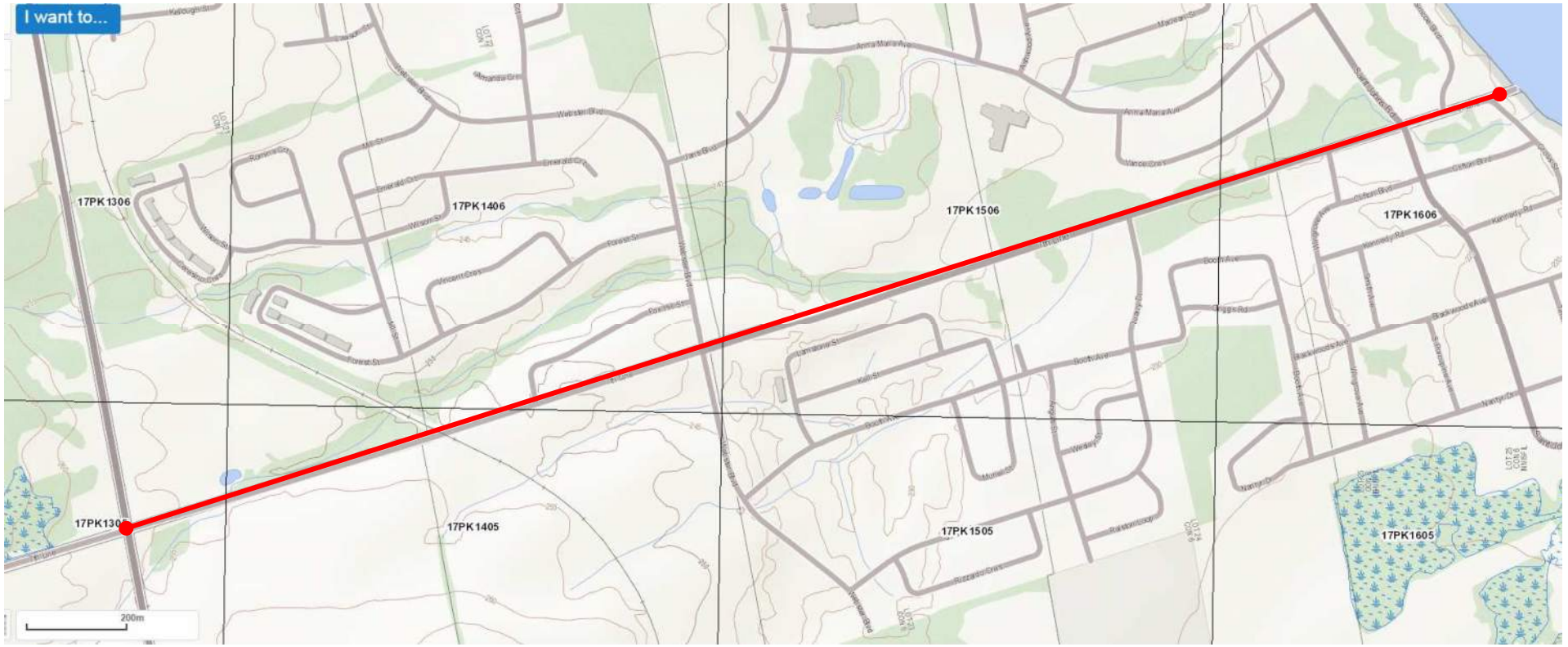
(Approximate length of study area along 7th Line illustrated by red line)



Source: VuMap

NHIC Background Data

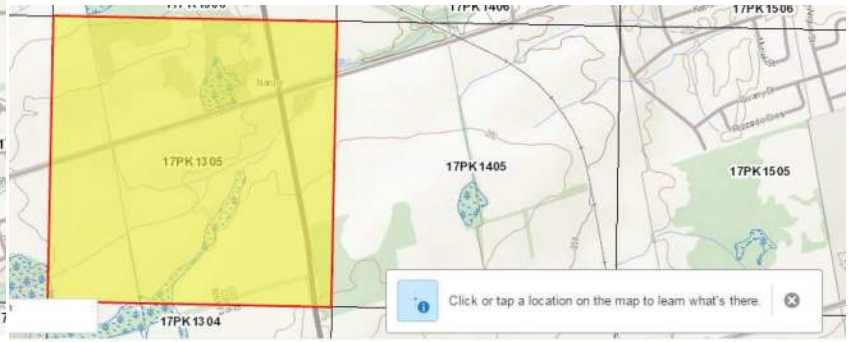
17-076 7th Line *(Approximate study location illustrated by red line)*



Source: NHIC Make a Map

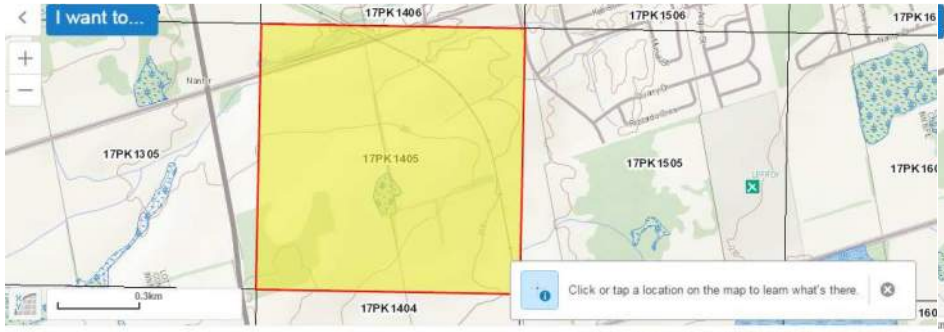
NHIC Data -- Grid ID = 1018170

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID	D
RESTRICTED SPECIES	RESTRICTED SPECIES				1970-07-09	16375	
Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250	h
Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275	h
Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886	h
Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825	h



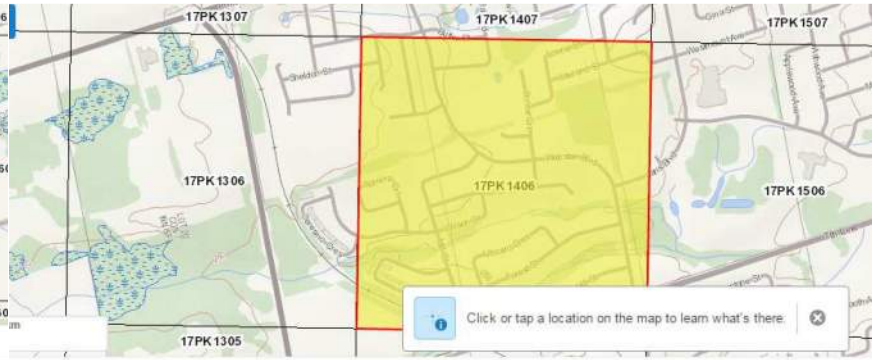
NHIC Data -- Grid ID = 1018169

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
RESTRICTED SPECIES	RESTRICTED SPECIES				1970-07-09	16375
Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250
Arrow Clubtail	Stylurus spiniceps	S2			1979-07-09	41858
Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275
Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886
Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825



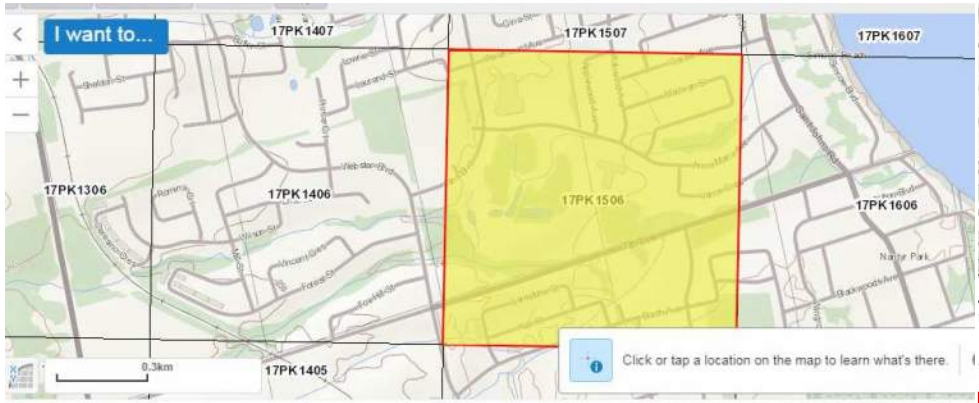
NHIC Data -- Grid ID = 1018179

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
RESTRICTED SPECIES	RESTRICTED SPECIES	RESTRICTED SPECIES				1970-07-09	16375
SPECIES	Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250
SPECIES	Arrow Clubtail	Stylurus spiniceps	S2			1979-07-09	41858
SPECIES	Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275
SPECIES	Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886
SPECIES	Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825
SPECIES	Eastern Meadowlark	Sturnella magna	S4B	THR	THR	2005-7-9	107340



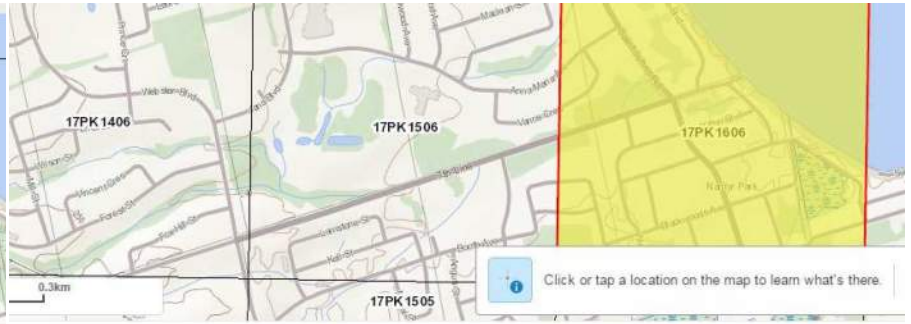
NHIC Data -- Grid ID = 1018180

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
RESTRICTED SPECIES	RESTRICTED SPECIES				1970-07-09	16375
Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250
Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275
Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886
Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825



NHIC Data -- Grid ID = 1018190

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID	D
SPECIES	Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250	h
SPECIES	Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275	h
SPECIES	Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886	h
SPECIES	Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825	h



NHIC Data -- Grid ID = 1018200

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
Henslow's Sparrow	Ammodramus henslowii	SHB	END	END	1942-06-03	13052
Plains Emerald	Somatochlora ensigera	S1			1959-08-08	41250
Awnless Graceful Sedge	Carex formosa	S4			1972-06-15	59275
Trailing Wild Bean	Strophostyles helvola	S4			1981-08-23	59886
Eastern Red Damsel	Amphiagrion saucium	S4			1939-07-01	91825
Zebra Mussel	Dreissena polymorpha	SNA			2007-08-11	94697

OBBA Background Data

17-076 7th Line

Square Summary (17PK10)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
16	10	59	85	24	39	71	134	27	150	22	0

Region summary (#13: Simcoe County)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
68	63	65	181	190	2075	850

Target number of point counts in this square: 24 road side, 1 off road (1 in deciduous forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Canada Goose		NY	58	95
Trumpeter Swan †		AE	0	43
Wood Duck		FY	76	78
Gadwall ‡			6	4
American Wigeon		H	6	12
American Black Duck		P	44	47
Mallard	S	FY	93	95
Blue-winged Teal		FY	79	53
Northern Shoveler		P	11	10
Northern Pintail		H	14	7
Green-winged Teal		H	0	18
Redhead †			3	1
Ring-necked Duck		P	4	21
Lesser Scaup ‡			1	1
Hooded Merganser		FY	25	30
Common Merganser		FY	36	46
Red-breast Merganser			9	20
Gray Partridge ‡			0	1
Ring-necked Pheasant		T	15	10
Ruffed Grouse	H	FY	92	81
Wild Turkey		D	0	81
Common Loon		S	28	52
Pied-billed Grebe		T	22	32
Double-crest Cormorant §			11	27

SPECIES	Code		%	
	1st	2nd	1st	2nd
Black-crown N.-Heron † §			12	9
Yellow-crn N.-Heron †			0	0
Turkey Vulture	T	T	77	84
Osprey		NY	42	53
Northern Harrier	AE	CF	76	66
Sharp-shinned Hawk	CF	H	50	60
Cooper's Hawk	FY	FY	17	47
Northern Goshawk		AE	15	27
Red-should Hawk †		H	17	44
Broad-winged Hawk	NY	A	58	66
Red-tailed Hawk	AE	FY	92	81
American Kestrel	AE	FY	85	76
Merlin ‡		FY	1	21
Yellow Rail †			3	3
King Rail †			3	3
Virginia Rail		FY	36	47
Sora		NE	31	43
Common Moorhen			17	12
American Coot		P	15	12
Coot/Moorhen			0	0
Sandhill Crane ‡			0	21
Killdeer	NE	A	96	96
Rock Dove	AE	AE	87	84
Spotted Sandpiper	DD	A	95	78

SPECIES	Code		%	
	1st	2nd	1st	2nd
Caspian Tern †			1	3
Black Tern † §		T	30	21
Common Tern §		H	34	23
Forster's Tern † §			0	1
Mourning Dove	NE	NB	95	95
Yellow-billed Cuckoo			6	18
Black/Yell-billed Cuckoo		NE	0	18
Black-billed Cuckoo		T	58	75
Eastern Screech-Owl		S	12	49
Great Horned Owl	P	T	74	55
Barred Owl			20	49
Long-eared Owl ‡			3	4
Short-eared Owl †			1	4
North Saw-whet Owl			9	12
Common Nighthawk			63	40
Whip-poor-will			60	38
Chimney Swift	P		63	32
Ruby-thr Hummingbird	H	FY	88	95
Belted Kingfisher	FY	NY	95	92
Red-headed Woodpecker †	NY	T	65	29
Yellow-bellied Sapsucker	FY	NY	80	95
Downy Woodpecker	CF	NY	95	96
Hairy Woodpecker	S	CF	95	93
Northern Flicker	CF	AE	98	95

American Bittern			50	44
Least Bittern †		S	12	23
Great Blue Heron §	H	H	77	63
Great Egret †			0	1
Green Heron §		T	84	70

Upland Sandpiper			60	38
Common Snipe	H	FY	79	61
American Woodcock	FY	D	79	72
Ring-billed Gull §		H	6	33
Herring Gull §	H	H	49	38

Pileated Woodpecker	S	T	80	93
Olive-sided Flycatcher			22	20
Eastern Wood-Pewee	P	NB	96	96
Alder Flycatcher		NE	47	76
Willow Flycatcher		NE	42	55

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SPECIES	Code		%	
	1st	2nd	1st	2nd
Least Flycatcher	H	H	88	89
Eastern Phoebe	NU	T	95	96
Gr Crested Flycatcher	FY	AE	98	96
Eastern Kingbird	CF	FY	98	95
Loggerhead Shrike †			15	3
Yellow-throated Vireo ‡			30	26
Blue-headed Vireo		H	9	38
Warbling Vireo	CF	CF	92	93
Philadelphia Vireo ‡			1	4
Red-eyed Vireo	CF	A	93	96
Blue Jay	FY	FY	96	96
American Crow	FY	NY	98	96
Common Raven			7	55
Horned Lark	T	FY	68	47
Purple Martin	CF	FY	61	27
Tree Swallow	NE	NY	98	96
North Rgh-wing Swallow	FY	H	68	56
Bank Swallow §	NY	AE	88	58
Cliff Swallow §	AE	NY	82	63
Barn Swallow	NY	FY	96	95
Black-capped Chickadee	FY	NY	96	96
Tufted Titmouse †			1	0
Red-breast Nuthatch		A	52	90
White-breast Nuthatch	CF	NY	87	93
Brown Creeper		H	55	60
Carolina Wren ‡		T	1	6
House Wren	FY	NY	87	95
Winter Wren	A	A	68	95

SPECIES	Code		%	
	1st	2nd	1st	2nd
Marsh Wren	S	N	42	33
Golden-crown Kinglet			7	21
Ruby-crown Kinglet			6	7
Blue-gr Gnatcatcher ‡	S	A	14	24
Eastern Bluebird		FY	57	73
Veery	S	T	95	96
Swainson's Thrush		H	14	20
Hermit Thrush		T	39	69
Wood Thrush	S	FY	90	92
American Robin	NE	NE	98	96
Gray Catbird	CF	NE	98	96
Northern Mockingbird			6	18
Brown Thrasher	H	A	96	92
European Starling	NY	FS	98	96
Cedar Waxwing	CF	FY	98	96
Blue-winged Warbler			4	24
Golden-winged Warbler			30	43
Blue/Gold-wing Warbler ‡			0	15
Brewster's Warbler †			0	3
Nashville Warbler	CF	T	74	84
Northern Parula		H	12	21
Yellow Warbler	NY	NE	98	92
Chestn-sided Warbler	FY	T	68	95
Magnolia Warbler		H	20	58
Black-thr Blue Warbler			22	63
Yellow-rumped Warbler	S	A	41	78
Black-thr Green Warbler		T	34	90
Blackburnian Warbler		S	28	58

SPECIES	Code		%	
	1st	2nd	1st	2nd
Kirtland's Warbler †			1	0
Prairie Warbler †			6	9
Bay-breasted Warbler ‡			1	3
Cerulean Warbler †			12	16
Black-white Warbler	FY	T	84	93
American Redstart	A	FY	85	90
Ovenbird	CF	A	98	96
North Waterthrush	A	A	61	86
Mourning Warbler	CF	FY	63	81
Common Yellowthroat	FY	FY	92	95
Canada Warbler		H	46	56
Eastern Towhee			53	73
Chipping Sparrow	NY	NY	96	96
Clay-colored Sparrow		T	14	36
Field Sparrow	A	T	84	87
Vesper Sparrow	FY	H	84	70
Savannah Sparrow	CF	CF	88	81
Grasshopper Sparrow			38	41
Song Sparrow	NY	CF	98	96
Swamp Sparrow	CF	A	84	86
White-throat Sparrow	FY	FY	95	87
Dark-eyed Junco		H	25	21
Scarlet Tanager		H	79	86
Northern Cardinal	NY	CF	66	84
Rose-breast Grosbeak	NU	FY	95	93
Indigo Bunting	DD	CF	90	93
Bobolink	CF	NE	87	83
Red-wing Blackbird	NY	NY	96	96

Sedge Wren			19	20	Pine Warbler		FY	26	80	Eastern Meadowlark	CF	NE	88	83

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SPECIES	Code		%	
	1st	2nd	1st	2nd
Western Meadowlark ‡			6	1
Yellow-h Blackbird †			1	0
Rusty Blackbird ‡			1	1
Brewer's Blackbird ‡			3	7
Common Grackle	CF	CF	96	96
Brown-head Cowbird	FY	FY	98	95
Orchard Oriole ‡			0	1
Baltimore Oriole	CF	AE	96	96
Purple Finch	S	T	66	73
House Finch		NY	3	72
Red Crossbill ‡			7	1
White-winged Crossbill ‡			1	3
Pine Siskin			17	18
American Goldfinch	A	FY	98	96
Evening Grosbeak			15	15
House Sparrow	NY	AE	88	75

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #13 (Simcoe County). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17PK10 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #13). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 20/12/2016. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17PK10

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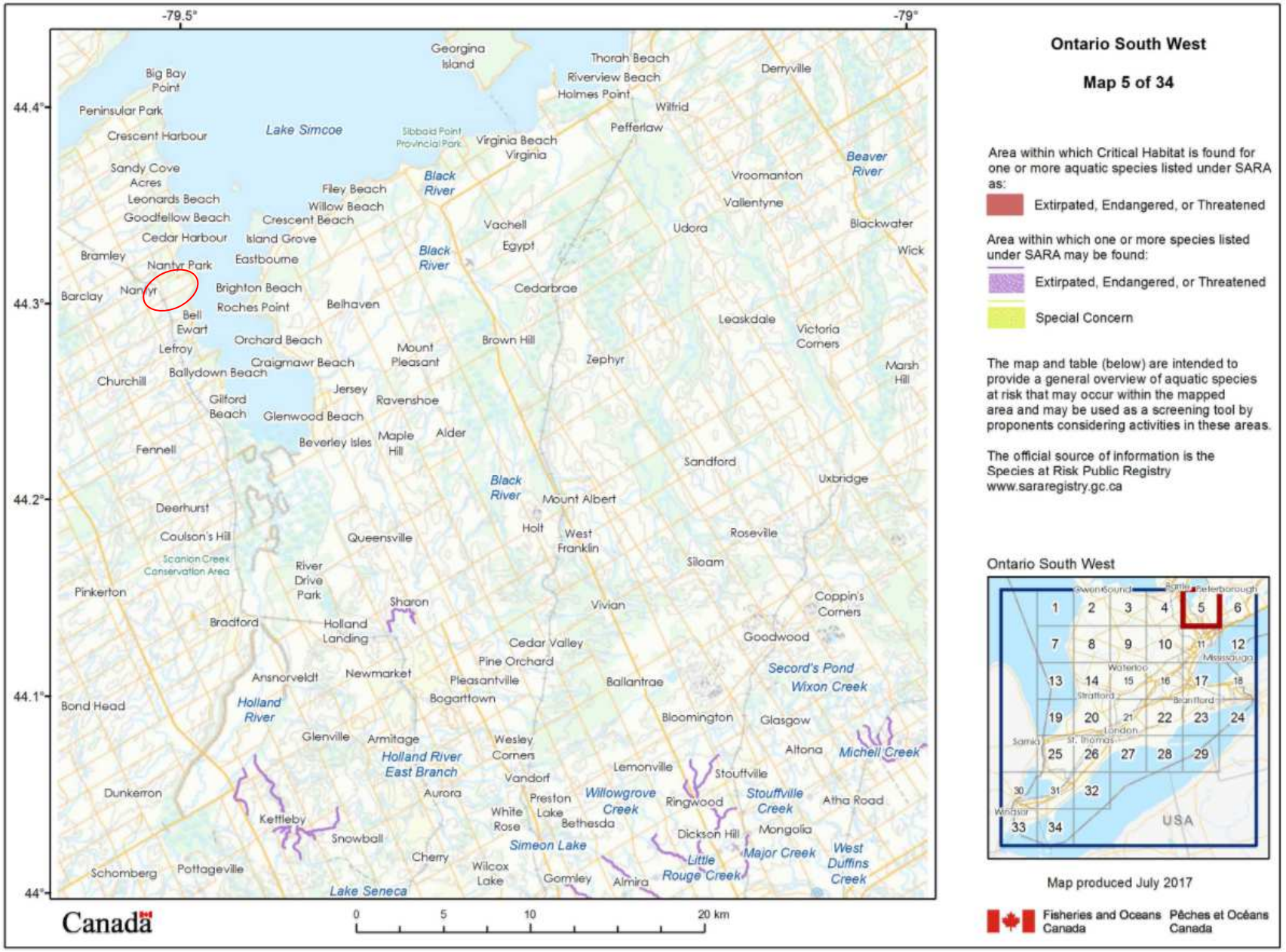
DFO Aquatic SAR Mapping

17-076 7th Line *(Approximate study location illustrated within the red circle)*



Source: Google Earth

APPENDIX F

Amphibian Survey Sheets

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th Line Innisfil 17-076

Date June 2017

Weather	
	Air Temp. 14°C
	Wind Direct.
	Speed 81
	Cloud (%) 80
	Precip. Nil
	Moon Not Vis

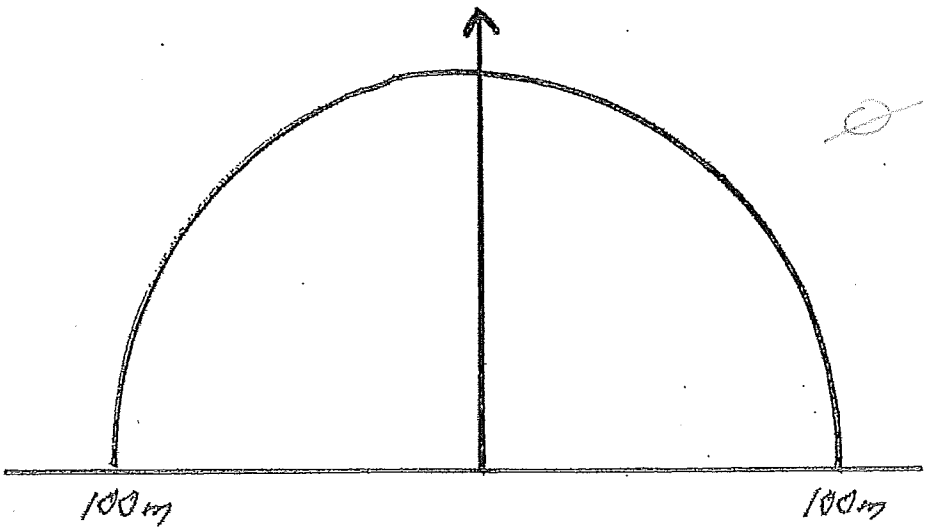
Observer(s) MP BB

Start Time 10:54

Backg. Noise (Code) 2 traffic

Station # 1

Mark Location & Direction on Attached Map



Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th Line Innisfil 17-076

Date June 20 / 17

Weather	
	Air Temp. 14°C
	Wind Direct.
	Speed B1
	Cloud (%) 80
	Precip. Drizzle
	Moon Not vis.

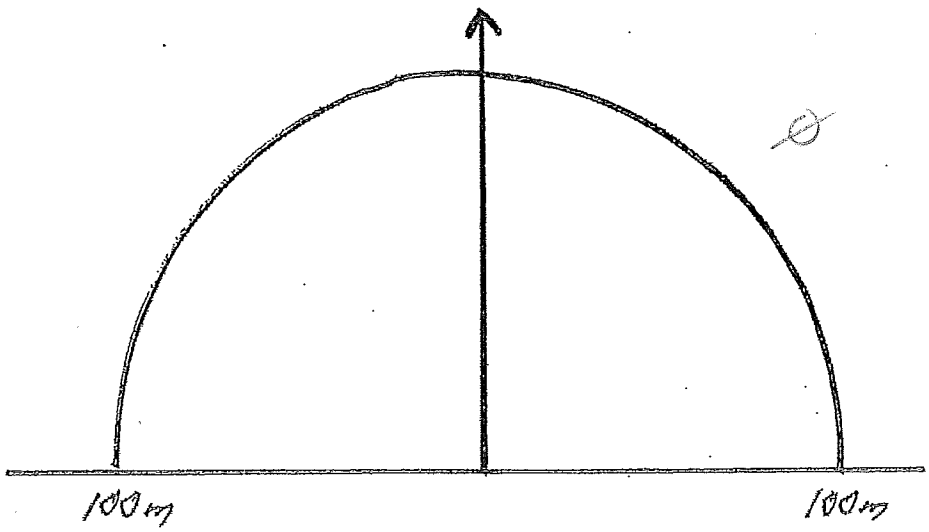
Observer(s) MP BB

Start Time 10:48

Backg. Noise (Code) 1

Station # 2

Mark Location & Direction on Attached Map



Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th Line Innisfil 17-076

Date June 20/17

Weather		
	Air Temp.	14°C
	Wind	Direct.
		Speed B1
	Cloud (%)	80
	Precip.	light rain
	Moon	Not Vis.

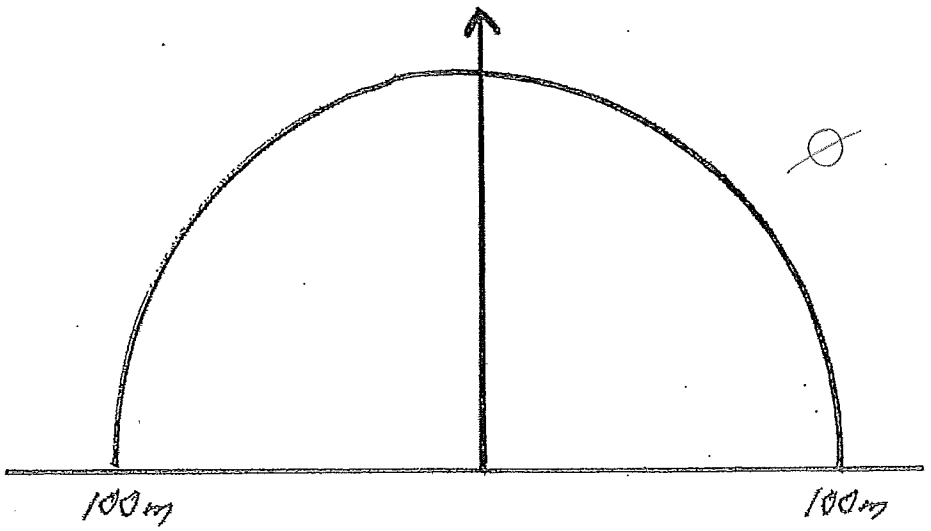
Observer(s) AP BB

Start Time 10.42

Backg. Noise (Code) 2

Station # 3

Mark Location & Direction on Attached Map



Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th Line Innisfil 17-076

Date June 20 /17

Weather	
	Air Temp. 14 °C
	Wind Direct.
	Speed B1
	Cloud (%) 90
	Precip. light rain
	Moon not v/s.

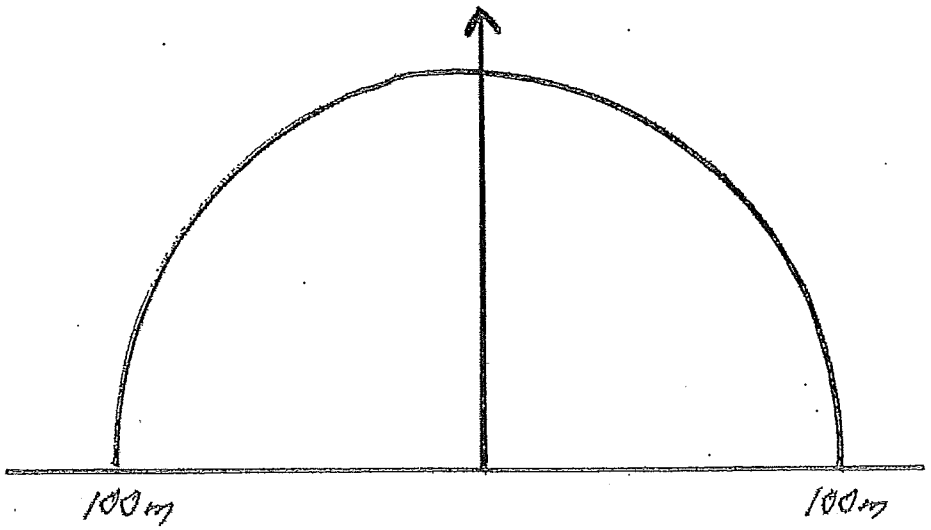
Observer(s) MP BB

Start Time 10:36

Backg. Noise (Code) 1

Station # 4

Mark Location & Direction on Attached Map



Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th Line Innisfil II-076

Date June 2017

Weather	
	Air Temp. 14°C
	Wind Direct.
	Speed B1
	Cloud (%) 90
	Precip. light rain
	Moon Not Vis

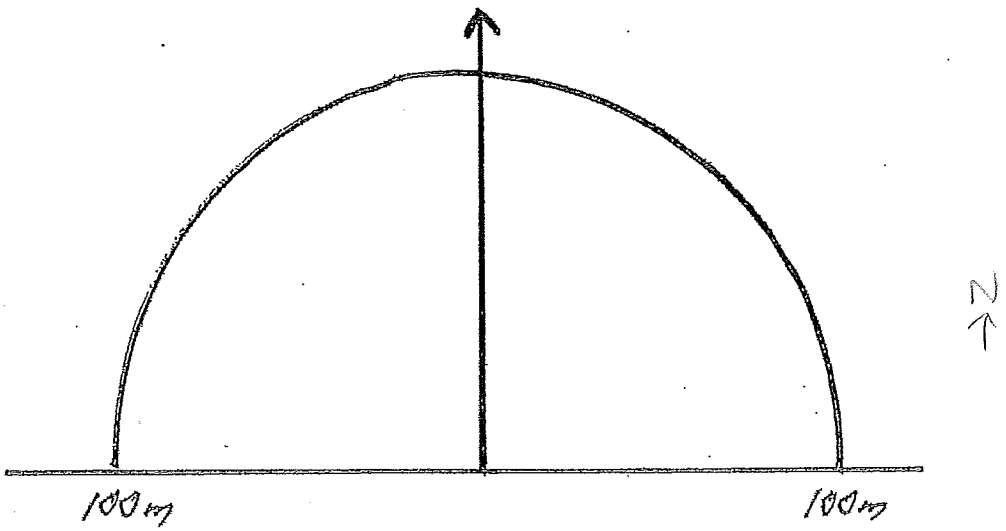
Observer(s) RP BB

Start Time 10:31

Backg. Noise (Code) 1 light rain

Station # 5

Mark Location & Direction on Attached Map



G. Frog 1-1

Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

AZIMUTH EVENING FROG/TOAD CALL SURVEY

Project 7th line Innisfil 17-076

Date June 20/17

Weather	
	Air Temp. 14°C
	Wind Direct.
	Speed B1
	Cloud (%) 90
	Precip. light rain
	Moon Not Vis

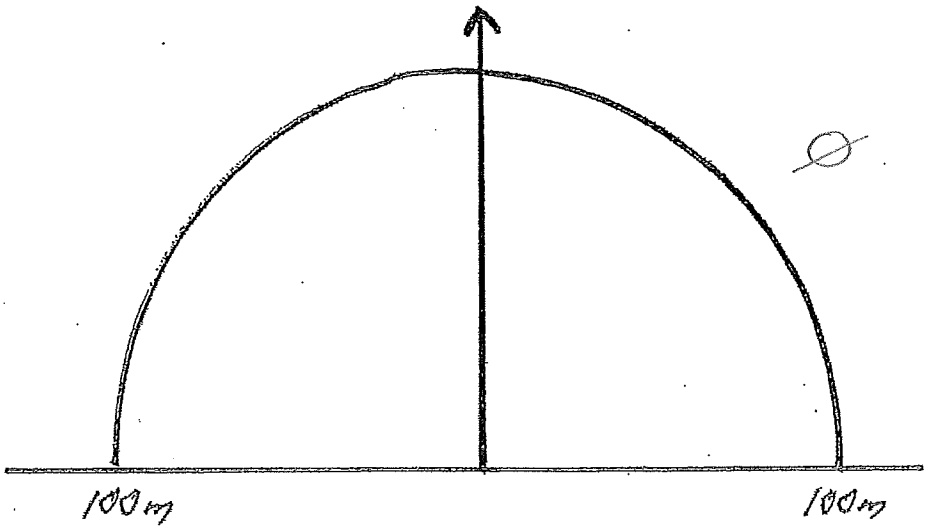
Observer(s) MP BB

Start Time 10:25

Backg. Noise (Code) 1 light rain

Station # 6

Mark Location & Direction on Attached Map



Summary			
First 3 Min.			Second 2 Min.
Species	Code-Est #		Species

APPENDIX G

Natural Heritage Information Centre Mapping

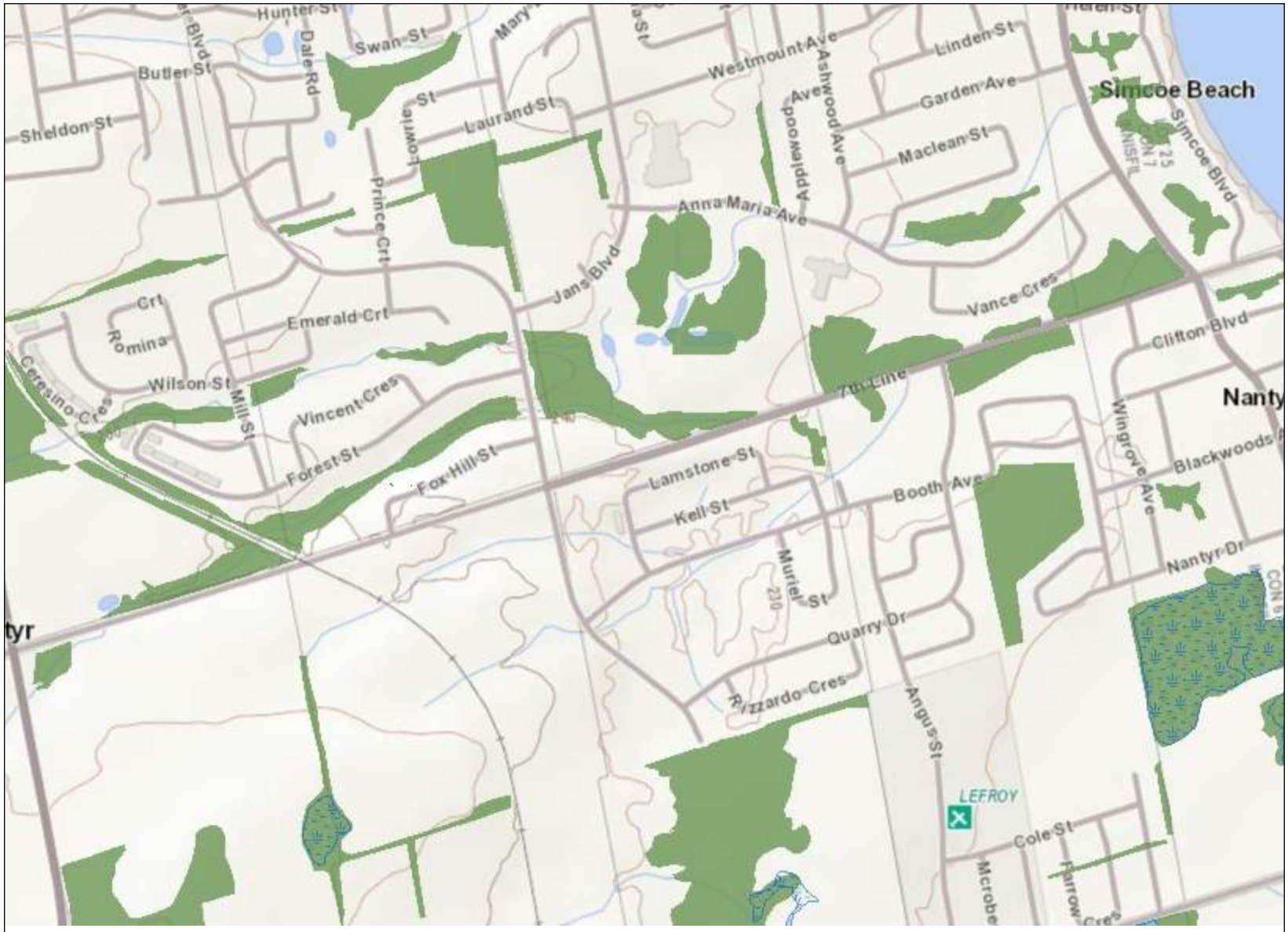
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

AEC 17-076

Notes:



Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion

Wetland
- Provincially Significant Wetland Evaluated
- Non - Provincially Significant Wetland Evaluated
- Unevaluated Wetland

Area of Natural Heritage & Scientific Interest (ANSI)
- Provincially Significant Life Science ANSI
- Provincially Significant Earth Science ANSI

Greenbelt Plan
- Boundary
- River Valley Connections

Land Use Designations
- Protected Countryside
- Towns and Villages
- Hamlets
- Urban River Valley
- Specialty Crop Area

Niagara Escarpment Plan (NEP)
- Boundary
- Parks and Open Space System

Land Use Designations
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Mineral Resource Extraction Area
- Escarpment Recreation Area
- Urban Area
- Minor Urban Centre

Oak Ridges Moraine Conservation Plan (ORM)
- Boundary

Land Use Designations
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement
- Palgrave Estates Residential Community
- Settlement Area

0.7 0 0.33 0.7 Kilometers

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

APPENDIX H

LSRCA Natural Heritage Mapping

Natural Heritage Landcover

7th Line, Innisfil
Map 1 of 2

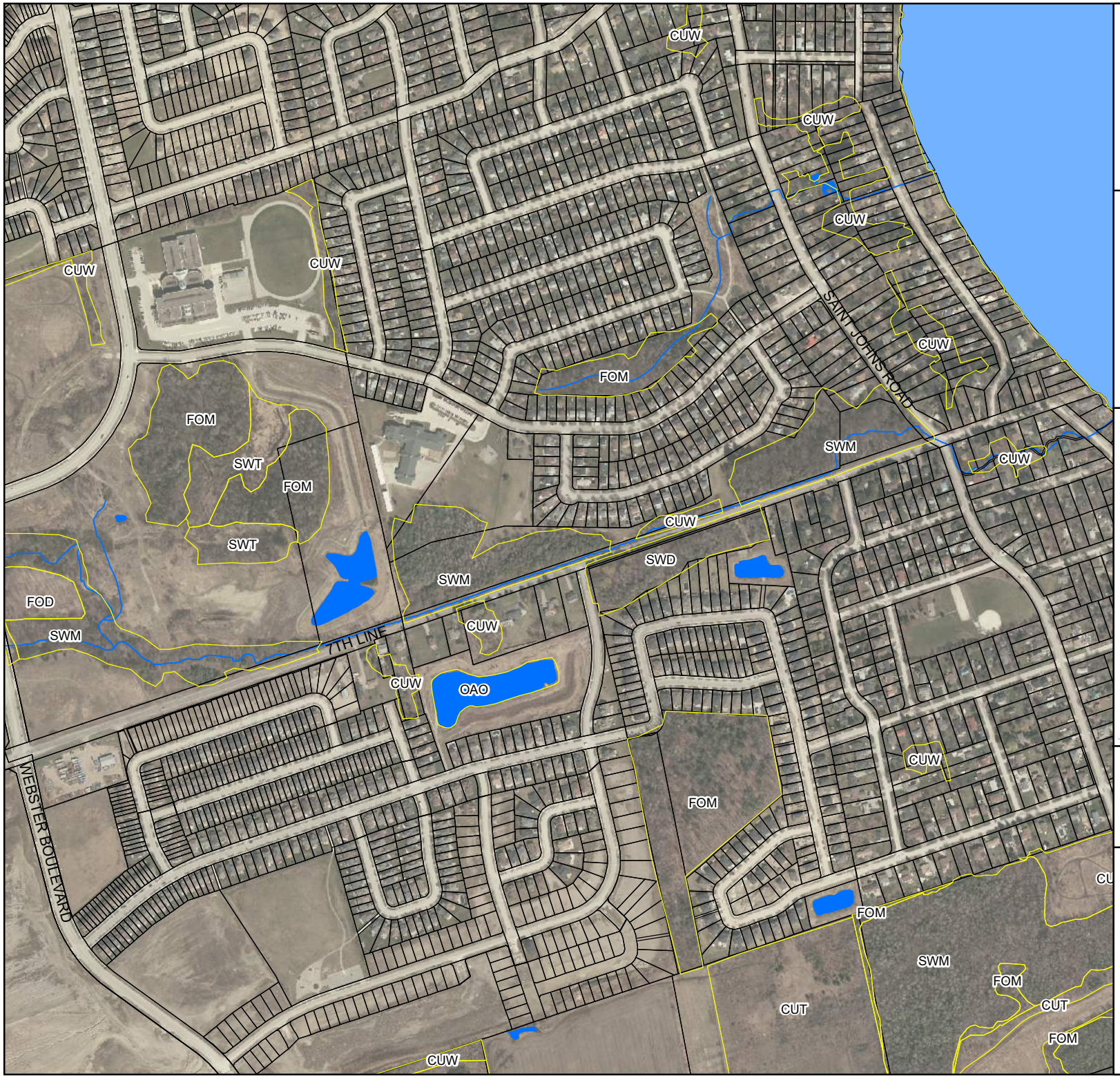
Legend

- ELC Community Series
- Watercourse
- Waterbody

Location Map

0 50 100 200 300
Metres

Lake Simcoe Region conservation authority



Natural Heritage Landcover

7th Line, Innisfil
Map 2 of 2

Legend

- ELC Community Series
- Watercourse
- Waterbody

Location Map

0 50 100 200 300
Metres

Lake Simcoe Region conservation authority

APPENDIX I

Butternut Hybridity Testing Results

Ontario

FRMS-PL-F-003

LABORATORY TEST REPORT

BUTTERNUT HYBRIDITY TEST

OFRILS

1235 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Phone: 705 946 7448
Fax: 705 946 2030

Report Date: 2018-03-22

Report ID: OFRILS-PL-1814

Client	Azimuth Environmental Consulting		
Address	642 Welham Rd. Barrie, Ontario L4N 9A1		
Contact	Mike Francis		
Phone:	(705) 627-3588	Fax:	
E-mail:	mfrancis@azimuthenvironmental.com		

MNRF Contact	Tracy Allison		
Address	1450 Seventh Avenue East Floor 1 Owen Sound, Ontario N4K 5R1		
Phone:	(519) 371-6751	Fax:	
E-mail:	Tracy.Allison@ontario.ca		

Sample Received On: 2018-03-15

Method: Molecular tests to detect butternut x Japanese walnut hybrids*

Test Report:

Three standard molecular tests were conducted on two samples from the Town of Innisfil, Simcoe County, Ontario. Hybridity was not detected in the results of laboratory tests. To the best of our knowledge both samples represent butternut, Juglans cinerea. Sample details may be found on page two of this report.

Please direct any questions to the contact below.

The Forest Pathology Laboratory applies three standard molecular tests published by Zhao & Woeste (2011) * for detecting hybrids.
Note: If these tests are for the purpose of seed tree certification, the results apply only to the tested tree(s), and cannot extend to progeny resulting from open pollination.

This result and test report relates only to the items tested.

All appropriate laboratory quality controls were applied in producing the result/s. The results and interpretation are reported to the best of the knowledge and expertise of the lab and is based on the reference method adopted.

Laboratory Contact:
Glenna Halicki Hayden
Forest Pathology Lab Supervisor
Ontario Forest Research Institute
1235 Queen Street East
Sault Ste. Marie, ON P6A 2E5
Phone: 705 946 7412 Fax: 705 946 2030
Email: glenna.halickihayden@ontario.ca
Web: http://ontario.ca/ofri

Authorized Signature Glenna Halicki Hayden Digitally signed by Glenna Halicki Hayden DN: cn=Glenna Halicki Hayden, o=Forest Health, ou=Ontario Forest Research Institute, email=glenna.halickihayden@ontario.ca, c=CA Date: 2018.03.23 10:53:26 -04'00'

Name

* Based on published reference method: Peng Zhao & Keith E. Woeste. 2011. DNA markers identify hybrids between butternut (*Juglans cinerea* L.) and Japanese walnut (*Juglans ailantifolia* Carr.). Tree Genetics & Genomes 7:511–533. DOI 10.1007/s11295-010-0352-4.

All errors and omissions are limited to the cost of the analysis

Ontario

FRMS-PL-F-003

SAMPLE INFORMATION AND TEST SUMMARY

OFRILS

1235 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Phone: 705 946 7448
Fax: 705 946 2030

Report ID: OFRILS-PL- 1814

Lab ID	Sample Type	Tree ID	Collection Site	UTM Coordinates	LAB RESULT Hybridity Detected	
18027	Dormant Bud Tissue	Butternut # 1	Lot 21, Con. 7, Town of Innisfil, Simcoe County, Ontario	17T 614040 4905848	☒ NO	☐ YES
18028	Tissue Dead Sample Not Tested	Butternut # 2	Lot 21, Con. 7, Town of Innisfil, Simcoe County, Ontario	17T 615564 4906378	☐ NO	☐ YES
18029	Dormant Bud Tissue	Butternut #3	Lot 21, Con. 7, Town of Innisfil, Simcoe County, Ontario	17T 615577 4906374	☒ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES

All errors and omissions are limited to the cost of the analysis

Appendix C

Hydrogeological Report

GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Preliminary Hydrogeological Site Assessment

The 7th Line Widening and Improvements

Between the 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

Prepared For:

Ainley Group

GeoPro Project No.: 17-1797H

Report Date: January 30, 2019 Revised

GeoPro Consulting Limited Tel. (905) 237-8336

Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6

GeoPro CONSULTING LIMITED

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DRAWINGS **No.**

FIGURES **No.**

APPENDICES **No.**

Limitations to the Report

1.0 INTRODUCTION

GeoPro Consulting Limited ("GeoPro") was retained by Ainley Group (the "Client") to conduct a hydrogeological site assessment for the 7th Line widening and improvements between the 20th Sideroad and Lake Simcoe, in the Town of Innisfil, Ontario (the "Site"). The approximate location of the Site is shown on Drawing No. 1.

It is understood that the proposed 7th Line widening and improvements also include the installation of storm sewer, sanitary sewer and infiltration galleries, as well as replacement or extension of culverts.

It should be noted that the design drawings provided when preparing this hydrogeological site assessment report was preliminary. In this regard, this hydrogeological site assessment report is considered to be preliminary.

1.1 Purposes

The purposes of this preliminary hydrogeological site assessment were to characterize the subsurface soil, bedrock, and groundwater conditions at the Site and to assess the need for groundwater control in order to facilitate the design of the Project.

It should be noted that the preliminary hydrogeological site assessment was completed concurrently with a geotechnical investigation carried out by GeoPro at the Site. The results of the geotechnical investigation were summarized in a separate report.

1.2 Scope of Work

In conjunction with the geotechnical investigation, the preliminary hydrogeological investigation comprised the following tasks:

1) Conducting a search and review of the available geology and hydrogeology data resources, including Ministry of the Environment, Conservation and Parks ("MECP") Water Well Records ("WWR") and other sources;
2) Conducting a site visit to observe the site features and potential source(s) of contamination;
3) Conducting groundwater sampling and testing;
4) Completing a borehole elevation survey, groundwater level monitoring and in-situ hydraulic conductivity tests (slug tests); and
5) Completing data processing, interpretation and report preparation.

This report has been prepared for the Client and the Town of Innisfil only. Third party use of this report without GeoPro's consent is prohibited. The limitation conditions presented in this report form an integral part of the report and they must be considered in conjunction with this report.

1.3 Previous Investigations and Reports

1.3.1 Investigation(s) by GeoPro

Geotechnical investigation by GeoPro was conducted in tandem with this preliminary hydrogeological site assessment at the Site. The subsurface investigations consisted of advancement of forty-seven (47) boreholes (BH111, BH112, BH121, BH122, BH131, BH132, BH141, BH142, BH151, BH152, BH161, BH162, BH171, BH181, BH201 to BH215, BH301 to BH314, BH401, BH402, BH501 and BH601) to depths ranging from about 2.0 to 12.7 meters below ground surface ("mBGS"), and installation of four (4) monitoring wells in boreholes BH202, BH402, BH501 and BH601. In addition, a total of twelve (12) test pits (TP1 to TP12) were excavated in the proposed widening areas.

The results of the geotechnical investigation were summarized in a separate report. The information and data obtained from GeoPro's geotechnical investigation has been incorporated in this hydrogeological site assessment report. The approximate borehole, monitoring well and test pit locations are shown on Drawing No. 2A to 2C, and the Borehole Logs are provided in Appendix A.

This preliminary hydrogeological site assessment report should be read in conjunction with the geotechnical report.

2.0 SITE CONDITIONS

2.1 Site Feature Observations

A site visit was made on August 8, 2017 to observe the general site features and sources of potential contamination and/or environmental concern.

The Site is the existing roadway along the 7th Line between the 20th Sideroad and Lake Simcoe, bounded by wooded lands, farmlands and residential properties.

Banks Creek flows in an easterly direction, along the north side of the 7th Line. Four (4) corrugated steel pipe ("CSP") culverts were noted crossing the roadway of the 7th Line in south-north directions near the 20th Sideroad, Quarry Drive, Wingrove Avenue and St. Johns Road. .

Sanitary manholes were observed along the 7th Line from St. Johns Road to the east end of the Site.

No gas stations, auto garages (auto service shops) and dry cleaners were noted in the area within a 500 m radius from the Site. However, a railway track indicated as the Metrolinx/GO train corridor was observed to cross the roadway of the 7th Line near the west end of the proposed alignment. The corner property located at the southeast of the intersection of the 7th Line and Webster Boulevard was noted to be occupied by a drilling company, namely Lone Star Drilling & Elevator Caissons Ltd. Based on Google Map, lots of drill rig, vehicles and stored materials were visible in this property.

2.2 Physiography and Drainage

The Site is located within the Peterborough Drumlin Field and Simcoe Lowlands physiographical region, in the boundary area between Drumlinized Till Plains, Sand Plains and Beaches, according to the "Physiography Map of South Central Portion of Southern Ontario" (Map 2226, Scale 1:253,440) prepared by the Ontario Department of Mines and Northern Affairs, and based on the database maintained by the Ontario Geological Survey ("OGS").

The Site is located in Innisfil Creeks Subwatershed within the Lake Simcoe Watershed, under the jurisdiction of the Lake Simcoe Region Conservation Authority ("LSRCA"). Mclean Creek, Banks Creek and Moyer Creek are located within a 500 m radius of the proposed alignment and drain into Lake Simcoe. The Site is located in the drainage area of Banks Creek, which generally runs along the side of the 7th Line from west to east, and flows towards the Lake Simcoe. Mclean Creek is located approximately 240 m north of the proposed alignment and Moyer Creek is located approximately 240 m south of the east end of the Site.

2.3 Geology

2.3.1 Bedrock Geology

The bedrock at the Site consists of Middle Ordovician deposits of limestone, dolostone, shale, arkose and sandstone (Simcoe Gravel pit), with depths ranging from 65 to 95 mBGS, according to the "Bedrock Geology of Southern Ontario" (Map 2544, Scale 1: 1,000,000) prepared by the Ontario Department of Mines and Northern Affairs and based on the database maintained by the OGS.

2.3.2 Surficial Geology

As shown on Drawing No. 3, the Site and its surrounding area are located on till deposits, and both fine-textured and coarse-textures glaciolacustrine deposits, according to the "Surficial Geology of Southern Ontario" database maintained by the OGS.

2.3.3 Site Stratigraphy

As shown on the Hydrogeological Profiles on Drawing No. 4A to 4R, and on Borehole Logs in Appendix A, the soil stratigraphy at the Site generally consisted of fill and/or topsoil underlain by till deposits (silty sand till, sandy silt till and clayey silt till) with zones of cohesionless soils (silt to fine sand) and cohesive soils (silty clay to clayey silt). Coarse textured sand to gravel deposits may be encountered as well. The fill materials generally consisted of sand and gravel, gravelly sand, sandy gravel, sandy silt, silty (fine) sand, sand and silt, (fine) sand, organic silt, organic clayey silt and clayey silt, with the thicknesses ranging from 0.5 m to 2.9 m. No bedrock was encountered at the maximum depth of approximately 12.7 mBGS.

2.4 Hydrogeology

The hydrogeological conditions at the Site were evaluated based on the information obtained from the Ministry of Natural Resources and Forestry and the Ontario Source Protection Information Atlas, the water well data collected from the MECP database, the information obtained in the geotechnical investigation, and the data collected from the additional work conducted at the Site.

2.4.1 Highly Vulnerable Aquifer ("HVA")

Based on the Ontario Source Protection Information Atlas, the west end of the Site, close to the intersection of 7th Line and 20th Sideroad, is located in an area with a highly vulnerable aquifer ("HVA"). In general, a HVA consists of source granular aquifer materials or fractured rock that have a high permeability and are exposed near the ground surface with a relatively shallow water table.

An aquifer is indicated as vulnerable if possible contaminants could quickly flow into it and impact water quality.

2.4.2 MECP WWR

A search of the MECP WWR database was conducted focusing on the area within a 500 m radius of the Site. The locations of the MECP water wells are shown on Drawing No. 5. A summary of water well records is included in Appendix B and presented in the following table.

Type of Well Record	Number of Record
Public	1
Domestic	65
Monitoring	2
Not Used	9
Unknown Use	5
Total	**82**

Based on review of the WWR database, sixty-six (66) water wells are used for water supply. The recorded depths of the water wells ranged from approximately 4.6 to 97.8 mBGS. No bedrock was encountered at the maximum depth of 97.8 mBGS, and record of water level was found in the well records ranged from 0.9 to 96.9 mBGS.

2.4.3 Wellhead Protection Areas ("WHPA")

Based on the Ontario Source Protection Information Atlas, the Site and its neighboring properties are not located within either a water quality Wellhead Protection Area (WHPA - A to F), or a water quantity Well Head Protection Area (WHPA - Q1 and Q2).

2.4.4 Intake Protection Zone ("IPZ")

Based on the Ontario Source Protection Information Atlas, the Site is located within the intake protection zone ("IPZ") IPZ-3 where contaminants released during an extreme event may be transported to a municipal surface water intake. The nearest municipal surface water intake location is approximately 1.8 km northeast of the Site.

2.4.5 Groundwater Levels

Groundwater conditions were observed in the advanced boreholes during and immediately upon completion of drilling. The results of observations are included in the Borehole Logs in Appendix A.

Groundwater level monitoring was conducted on August 8, 2017 in all the monitoring wells installed at the Site. The monitoring well construction details and the measured groundwater levels are shown in the borehole logs and summarized in the following table.

Monitoring Well ID	Well Elevation (m)	Screen Interval (mBGS)	Screen Interval Elevation (m)	August 8, 2017	
				Water Level (mBGS)	Groundwater Elevation (m)
BH601	221.60	7.7 - 9.2	213.9 - 212.4	1.37	220.23
BH501	226.20	2.8 - 4.3	223.4 - 221.9	1.68	224.52
BH402	249.70	9.2 - 10.7	240.5 - 239.0	2.62	247.08
BH202	250.50	6.1 - 7.6	244.4 - 242.9	5.67	244.83

As shown in above table, the measured groundwater levels ranged from 1.37 to 5.67 mBGS, corresponding to elevations ranged from 220.23 to 224.52 meters above sea level ("mASL").

It is expected that the shallow groundwater would follow the local surface water flow pattern, which is generally in an eastward direction, towards Lake Simcoe.

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations.

2.4.6 Groundwater Quality

Groundwater sampling was conducted on August 8, 2017 by GeoPro from Monitoring Well BH501. The collected groundwater samples were submitted to AGAT Laboratories ("AGAT") in Mississauga, Ontario for analysis of metals as set out in Provincial Water Quality Objectives ("PWQO") of the Environmental Protection Act. The analytical results are presented in Appendix C.

The results were compared with the respective criteria specified in PWQO. Based on the comparison, no exceedances of PWQO were found for metals in the analyzed water samples.

3.0 ESTIMATED HYDRAULIC CONDUCTIVITY

The hydraulic conductivity (K-value) of the soils was estimated based on the results obtained from the grain size analyses of selected soil samples and from the single well response tests (slug tests).

3.1 Grain Size Distribution Method

Grain size analysis (sieve and hydrometer) of fourteen (14) soil samples collected from BH202, BH205, BH206, BH207, BH212, BH215, BH302, BH304, BH308, BH311, BH402, BH501 and BH601 were conducted, and the results of grain size analysis are presented in Figure No. 1 to No.5.

The hydraulic conductivity of fourteen (14) soil sample was estimated using applicable empirical equations based on the particle size gradation details. As shown in the following table, the estimated K value of the tested soil ranged from 2.8×10^{-8} cm/s to 2.9×10^{-3} cm/s.

Borehole ID	Sample #	Soil sample Depth (mBGS)	Soil Type	K Value (cm/s)
BH308	SS6	4.6 ~ 5.0	Silty Clay	2.9×10^{-8}
BH206	SS3	1.5 ~ 2.0	Clayey Silt	4.4×10^{-7}
BH212	SS4	2.3 ~ 2.8	Clayey Silt	9.0×10^{-7}
BH402	SS6	4.6 ~ 5.0	Clayey Silt	3.5×10^{-7}
BH205	SS4	2.3 ~ 2.8	Sandy Silt	3.4×10^{-6}
BH207	SS5	3.1 ~ 3.5	Sandy Silt	2.3×10^{-5}
BH302	SS6	4.6 ~ 5.0	Sandy Silt	9.2×10^{-6}
BH304	SS3	1.5 ~ 2.0	Sandy Silt	4.7×10^{-6}
BH202	SS4	2.3 ~ 2.8	Sandy Silt	1.8×10^{-5}
BH202	SS7B	6.4 ~ 6.6	Sandy Silt	9.7×10^{-4}
BH215	SS4	2.3 ~ 2.8	Sandy Silt	3.3×10^{-4}
BH601	SS9	9.1 ~ 9.6	Fine Sand	1.1×10^{-3}
BH311	SS3	1.5 ~ 2.0	Sand	2.9×10^{-3}
BH501	SS5	3.1 ~ 3.5	Sand and Gravel	2.0×10^{-3}

3.2 Single Well Response Test (Slug Test) Method

GeoPro conducted single well response tests (slug tests) in four (4) monitoring wells (BH202, BH402, BH501 and BH601). Prior to the slug testing, initial water levels were measured manually using a water level tape. The monitoring wells were purged using Waterra pumps (tubing and footvalves) to remove the sediments settled in the well and in the sand pack around the well screen.

The field slug tests were completed using the rising head method in which a known volume of groundwater was removed from the tested monitoring well, and the water level recovery was measured and recorded. Before purging the water, an electronic datalogger was placed in the monitoring well to record the change in water level (head) versus time throughout the test. The recorded water level data was plotted on a semi-logarithmic scale using Hvorslev's method to estimate the hydraulic conductivity values.

Slug Test analysis graphs and calculations are included in Appendix D. A summary of K values estimated from the slug tests is presented in the following table.

Monitoring Well No.	Screen Depth (mBGS)	Soil Type	Estimated K-Value (cm/s)
BH202	6.1 ~ 7.6	Gravelly Sand; Silty Sand; Sandy Silt to Silty Sand	8.0×10^{-4}
BH402	9.2 ~ 10.7	Silty Sand; Clayey Silt; Clayey Silt Till	1.1×10^{-4}
BH501	2.8 ~ 4.3	Sand and Gravel	1.1×10^{-2}
BH601	7.7 ~ 9.2	Fine Sand	8.0×10^{-4}

Based on the slug test results, the estimated hydraulic conductivity values of screened soils ranged from 1.1×10^{-4} cm/s to 1.1×10^{-2} cm/s.

4.0 TEMPORARY DEWATERING REQUIREMENTS

In general, temporary dewatering is intended to lower the groundwater table within the excavation area(s) in order to provide a "dry" working condition for the Project.

The temporary dewatering rate generally depend on the design specifications of the proposed structures (such as invert elevation, length, depth, and/or size, etc.), and the site hydrogeological conditions such as soil types, groundwater levels, groundwater and flow regime, and drawdown levels required for maintaining dry working conditions and stable excavation bottom and slopes.

4.1 Preliminary Proposed Development Concept

Based on the design drawing dated in August 2017 provided by the Client, the Project would involve excavation for a 1852.2 m long, 300 mm to 525 mm diameter ("dia.") storm sewer, a 433.5 m long, 250 mm dia. sanitary sewer and infiltration galleries. Based on the design drawing, the excavation for the storm sewer is proposed to extend the depth of 3.0 mBGS, and the excavation for the sanitary sewer is proposed to extend to the depth of 4.0 mBGS.

It should be noted that the infiltration galleries should be installed at least 1 m above the groundwater table, according to the TRCA's Stormwater Management Criteria ("SWMC"), Version 1.0, dated August 2012.

In addition, replacement or extension of the box culverts as per the design drawing are listed in the table below.

Culvert Name	Replacement /Extension	Location	Length (m)	Size	Invert depths (mASL)
C1	Replacement	Sta. 0+199.27 to Sta. 0+202.69	24.8	1.8 m x 1.2 m	248.16 to 247.90
C2	Extension	Sta. 2+690.16 to Sta. 2+717.11	6.0	2.6 m x 2.1 m	Assumed 220.09

A copy of the design drawings is provided in Appendix E.

4.2 Preliminary Excavation and Temporary Dewatering Requirements

The measured groundwater levels on-site ranged from 1.37 to 5.67 mBGS. Considering the seasonal fluctuations, the initial water level for temporary dewatering calculations is assumed to be 1.0 m higher than the highest measured water level or at the ground surface, which is at 0.37 mBGS. Therefore, temporary dewatering or groundwater control would be required to lower the water level to at least 1 m below the excavation base to achieve dry work conditions for excavation and installation.

As shown on Drawing No. 4A to 4R, the details of excavation and temporary dewatering requirements of culverts replacement or extension are provided in the following table.

Culvert Name	Anticipated Excavation Depth (mBGS)	Anticipated Target Water Level (mBGS)	Anticipated Initial Water Level (mBGS)	Dewatering Requirement (Yes/No)
C1	2.8	3.8	0.37	Y
C2	2.0	3.0	0.37	Y

Dewatering involves controlling groundwater by pumping to lower groundwater levels in the vicinity of the excavation. Sump pumping is the simplest form of dewatering, by which groundwater is allowed to enter the excavation, and is then collected in a sump and pumped away by robust solids handling pumps. Sump pumping can be effective in many circumstances, but seepage into the excavation may create the risk of instability and other excavation and installation problems.

To prevent significant groundwater seepage into the excavation and ensure stability of the excavation base and side slopes, it may be necessary to lower groundwater levels prior to excavation, which is known as 'pre-drainage'. The pre-drainage methods may include deep wells, wellpoints, eductors (ejectors), vacuum wells, and horizontal wells, etc.

As indicated in the Borehole Logs, saturated soils at the Site consist of till deposits with zones of cohesionless soils textured from silt to gravel. Considering the relatively high hydraulic conductivity of the cohesionless soils, pre-drainage groundwater control measures by deep wells and/or well points may be required in conjunction with conventional sump pumping.

4.3 Preliminary Temporary Dewatering Estimation

Storm Sewer and Sanitary Sewer

The following assumptions are considered in estimating the preliminarily temporary dewatering requirements:

- An initial water level assumed to be at 0.37 mBGS;
- A target water level assumed to be at 4 mBGS for the proposed storm sewer, and 5 mBGS for the proposed sanitary sewer;
- A bottom width of the trench excavation assumed to be 1.525 m for the proposed storm sewer, 1.25 m for the proposed sanitary sewer;
- A length of the trench excavation assumed to be 1853 m for the proposed storm sewer, 434 m for the proposed sanitary sewer;
- The highest estimated hydraulic conductivity value from the slug tests was used in the dewatering volume estimation, which is 1.1 x 10^{-2} cm/s or 1.1 x 10^{-4} m/s.

Culvert Replacement or Extension

The assumptions in the table below are considered in estimating the preliminarily temporary dewatering requirements.

Culvert Name	Anticipated Excavation Depth (mBGS)	Anticipated Target Water Level (mBGS)	Anticipated Initial Water Level (mBGS)	Length (m)	Size	Anticipated Hydraulic Conductivity (m/s)
C1	2.8	3.8	0.37	24.8	1.8 m x 1.2 m	1.1 x 10^{-4}
C2	2.0	3.0	0.37	6.0	2.6 m x 2.1 m	1.1 x 10^{-4}

The following Dupuit-Thiem equation was used to estimate the dewatering flow rate needed to drain the excavation trench, in an unconfined aquifer under steady-state conditions:

$$Q = [\pi \times K \times (H^2 - h_W^2)]/Ln(R_o/r_e) + 2[x \times K \times (H^2 - h_W^2)/2L]$$

Where:

Q = Flow Rate [m^3/s]

x = Trench length [m]

H = Initial Water Level [m]

h_w = Target water Level [m]

K = Hydraulic Conductivity [m/s]

r_e = effective radius [m], r_e = width of the excavation/2

$R_o = 3000*(H-h_w)*K^{1/2}$ [m]

$L = R_o/2$ [m]

The following Dupuit-Thiem equation was used to calculate radial flow to an open excavation from an unconfined aquifer under steady-state condition:

$$Q = [\pi \times K \times (H^2 - h_W^2)]/Ln(R_o/r_e)$$

Where:

Q = Flow Rate [m^3/s]

H = Initial Water Level [m]

h_w = Target water Level [m]

K = Hydraulic Conductivity [m/s]

r_e = effective radius [m], r_e = (excavation area/ $\pi)^{0.5}$ [m]

$R_o = 3000*(H-h_w)*K^{1/2}$ [m]

Based on the calculations, the estimated radius of influence and the estimated steady-state groundwater inflow rates for the Project are summarized in the following table:

Excavation Section	Estimated Excavation Length (m)	Estimated Excavation Width (m)	Estimated Excavation Depth (mBGS)	Estimated Radius of Influence (m)	Steady-State Dewatering Rate (L/day)
Storm Sewer	1853	8.8	3.0	114	29,736,231
Sanitary Sewer	434	10.5	4.0	146	7,722,556
C1	24.8	2.8	2.8	108	1,496,910
C2	6.0	3.6	2.0	83	600,114

The dewatering requirement is expected to be highest at the beginning of the dewatering process, when the volume of groundwater stored within the pore space of the soil matrix and/or fracture space of the weathered bedrock must be removed. The additional pumping rates to be considered to allow removal of the aquifer storage within 30 days for the Project are summarized in the following table:

Excavation Section	Aquifer Storage Removal Rate (L/day)
Storm Sewer	3,056,743
Sanitary Sewer	2,004,751
C1	455,374
C2	216,936

During and after storm events, significantly higher dewatering flow rates are anticipated to account for direct precipitation and runoff into the excavation. The highest recorded daily rainfall at the nearest Environmental Canada station (SHANTY BAY) is 103.2 mm (based on data from Environmental Canada). The additional pumping capacities for the Project, assuming removal of a 103.2 mm storm event within 24 hours, are summarized in the following table:

Excavation Section	Removal of Direct Precipitation (L/day)
Storm Sewer	1,679.952
Sanitary Sewer	470,730
C1	29,907
C2	2,229

Based on the conservative assumptions described above, the total maximum daily dewatering flow rates for the Project are summarized in the following table:

Excavation Section		Estimated Radius of Influence (m)	Maximum Dewatering Rate (L/day)
Storm Sewer	Entire Length	114	34,472,927
	50 m each day	114	930,192
Sanitary Sewer	Entire Length	146	10,198,037
	50 m each day	146	1,174,889
C1		108	1,982,191
C2		83	819,279

Based on the conservative assumptions described above, the total maximum daily dewatering flow rate of each excavation section would be more than 400,000 L/day, with consideration of removal of the aquifer storage within a 30-day period and storm events. The maximum estimated zone of influence would be 146 m from the centre of the excavation.

It should be noted that the assumptions of the excavation depths and areas for the dewatering estimations are based on our understanding of the proposed development and the information provided by the Client. Should there be any modifications of the design or the assumed excavation depths and areas, this office should be further consulted and the dewatering estimations may need to be revised accordingly.

It is known that subsurface conditions may change significantly between and beyond the on-site boreholes. As the information obtained and assumptions made in this investigation report are based on the results obtained from a limited number of investigated locations, unexpected water bearing zones with a hydraulic conductivity higher than that used in this calculation may be present. In addition, the above estimated dewatering volumes are based on the estimated hydraulic conductivity (K-value) from grain size analysis from limited soil samples and in-situ slug tests.

Please note that it is the responsibility of the contractor to ensure dry conditions are maintained within the excavation at all time and at all costs.

4.4 Permit-to-Take-Water/Regulatory Registration

According to O. Reg. 387/04, water taking over 50,000 litres per day requires a Permit to Take Water ("PTTW"), which shall be obtained in accordance with the MOECC's PTTW Manual, dated April 2005.

According to O. Reg. 63/16, a PTTW would not be required for temporary dewatering at a construction site in an amount less than 400,000 L/day. However, the dewatering at a construction site in an amount between 50,000 L/day and 400,000 L/day shall be registered through the Environmental Activity and Sector Registry ("EASR").

According to the dewatering rate estimations, the total temporary dewatering rate of individual excavations would be more than 400,000 L/day. Therefore, a PTTW will be required for the temporary dewatering. The PTTW application would need to consider the number of excavations that may be completed concurrently, to ensure an adequate maximum daily dewatering rate and volume is requested.

5.0 POTENTIAL TEMPORARY DEWATERING IMPACTS

5.1 Potential Sources of Contamination

During the site visit, Metrolinx/GO train corridor was observed near the west end of the proposed alignment. A drilling company was noted at the southeast corner of the intersection located at 7th Line and Webster Boulevard. According to the observations on aerial photographs of Google Map, lots of drill rigs, vehicles and stored materials were visible within this property. In addition, fuel tanks may be present in the drilling company. Therefore, environmental concerns due to the temporary dewatering activities should be considered when designing a dewatering system.

Please note that the level of environmental issues observation outlined herein is meant to provide a broad indication of environmental concerns based on the visual observations during the site visit. The observation results contained in this report should not be considered a warranty with respect to environmental evaluation or assessment of the subject site for any specific purpose. Furthermore, it must be noted that our scope of work was limited to the preliminary observation of potential environmental concerns. The scope of work did not include any environmental evaluation or assessment of the subject site (such as a Phase One or Phase Two Environmental Site Assessment).

5.2 Highly Vulnerable Aquifer ("HVA")

As discussed previously, west end of the Site is located in an area with an HVA present beneath the ground surface, which indicates that if contamination occurs at the Site it could potentially affect the aquifer.

Considering that the Project should be completed in a short period of time, there would be a relatively low potential for impact to the HVA due to the temporary dewatering activities. However, frequent monitoring of the excavation and installation activities should be carried out during the project, preventative measures (such as implementation of safe equipment fueling practices) should be in place during excavation and installation, and spill management equipment should be readily available on-site during the project.

5.3 Water Supply Wells near the Site Area

Based on the MOECC water well records, a total of sixty-five (65) water well records are related to domestic wells, and some of which are located within the estimated zone of influence. Therefore, impact on these private water wells due to the temporary dewatering activities should be anticipated.

5.4 Wellhead Protection Area ("WHPA")

As discussed, the Site is not located within a WHPA. Therefore, no WHPA impacts due to the temporary dewatering are anticipated.

5.5 Intake Protection Zone ("IPZ")

As discussed previously, the Site is located within an IPZ-3 protection area where contaminants released during an extreme event may be transported to the intake.

The proposed development should be completed in a short period of time, so there is a low potential for impact to the municipal intake location due to the temporary dewatering activities, frequent monitoring of excavation and installation activities should be carried out during the project, including monitoring of discharge water chemistry. Preventative measures (such as implementation of safe equipment fueling practices) should be in place during excavation and installation, and spill management equipment should be readily available on-site during the project.

5.6 Surface Water

Based on the site observation, the Banks Creek is located along the roadway of the 7th Line, which is within the estimated zone of influence, and also crosses the roadway of the 7th Line under culverts. Diversion of the surface water may be considered if replacement or extension of the culverts is required during the proposed road widening. Therefore, impact on the Banks Creek due to the road widening and improvements, and temporary dewatering should be anticipated.

5.7 Ground Subsidence in Adjacent Structures

Under certain conditions, dewatering activities can cause ground settlement or subsidence. When groundwater level is lowered in the soil deposits, effective stresses would be increased and consolidation and subsequent settlement may occur.

Structures such as residential houses and roadways located within the zone of influence may be impacted due to temporary dewatering.

6.0 PRELIMINARY RECOMMENDATIONS

6.1 PTTW Application

- Based on the preliminary dewatering calculations, the temporary dewatering rate would be more than 400,000 L/day, and a PTTW for temporary dewatering will be required.
- The PTTW application(s) should be conducted in accordance with the Permit to Take Water Manual, dated April 2005, issued by Ministry of the Environment and Climate Change.
- The process of PTTW application generally takes a minimum of three (3) months.

6.2 Point of Discharge

As discussed above, the Site is located adjacent to the Banks Creek. The chemical analyses of the groundwater samples collected from the Site indicated that no exceedances of PWQO were found for metals in the analyzed water samples, and the water generated from temporary dewatering may meet the PWQO guidelines.

Therefore, the pumped water could be discharged overland, and to the swales, ditches or the creeks near the Site after properly treated. It should be noted that local conservation authority may be consulted if pumped water is discharged directly into the creeks.

6.3 Diversion of Surface Water

Based on the site observation, the Banks Creek crosses the roadway of the 7th Line at two (2) locations within the proposed alignment area. During the proposed road widening, replacement/extension of culverts and/or diversion of the creek water may be considered during the excavation and installation to maintain the creek flow.

It should be noted that in accordance with Ontario Regulation 387/04 as amended by O. Reg. 64/16, a PTTW may not be required for the activity of diverting the waters of a water body for the proposed road widening, if water levels upstream and downstream of the work area are not affected by the diversion, and no pumping is applied in the creek water diversion.

6.4 Temporary Dewatering Plan

Prior to the dewatering activities, a temporary dewatering plan shall be prepared by a selected contractor for GeoPro's review.

It should be noted that the design and installation of a temporary dewatering system is the responsibility of the construction contractor, including selection of a sump pump, wellpoint system or deep well system. The extent and details of dewatering scheme (well size, spacing, pump level, screen size and wick gradation) are left solely to the contractor's discretion to achieve the performance objectives for stable slopes and dry conditions and should be based on their own interpretation and analysis of the site conditions, equipment, experience and plant efficiency.

It should be noted that any dewatering discharge released into natural environment should meet the PWQO guidelines, and cannot contain TSS in excess of 25 mg/L, which is recommended by MOECC. The elevated TSS concentration is usually related to the sediments in water. Therefore, a treatment of the pumped water should be required prior to discharge. The contractor shall at its own discretion select appropriate treatment methods including filtration and decantation system to eliminate or remove the potential sediments in water.

Once the pumping system, header pipes and a decanter tank/holding tank are installed, a trial dewatering for a short period of time should be conducted to obtain a representative groundwater sample from the decanting tank for chemical analysis to confirm the water quality.

6.5 Water Well Survey and Water Level Monitoring

As discussed above, some domestic wells are located within the estimated zone of influence. The temporary dewatering may influence the use of the existing water wells because of the water levels may be lowered.

It would be recommended to conduct a door-to-door water well survey on the properties located adjacent to the Site and/or within the estimated zone of influence to establish a baseline information of the water well(s) near the Site. If agreed on with the well owners, a well water monitoring program (including water level and water quality) could be conducted on the accessible water well(s) during the development.

In addition, the Site contact information would be given to the well owners for emergency purposes, and temporary provision of potable water would be made available in case that the unexpected lowering of water levels causes the malfunction of the water wells near the Site.

6.6 Building/Structure Settlement Monitoring

As discussed above, the structures located within the zone of influence may be susceptible to potential settlement or subsidence due to the temporary dewatering. Therefore, the following monitoring and mitigative measures are recommended to be carried out before and during the temporary dewatering:

- It should be necessary to carry out a pre-development condition survey, and install settlement monitoring monuments for the existing buildings and roadway within the estimated radius of influence.

- The above settlement monitoring monuments should be surveyed prior to the dewatering to establish a baseline, and surveyed on a daily basis during the dewatering. The survey results should be provided to the geotechnical engineer of GeoPro for evaluation. The estimated potential and actual settlements should also be reviewed by a structural engineer to assess the potential damage to the existing structures.

- If the settlement monitoring indicates an undesirable deformation, the dewatering would have to be stopped or reduced to a lower rate, and alternative measures may be considered for the excavation, which should be approved by the geotechnical engineer and project team.

6.7 Surface Water Monitoring and Contingency/Mitigation Measures

As discussed above, the Banks creek would be impacted due to the temporary dewatering activities because of its proximity from the Site and/or the likely use as the point of discharge. A surface water baseline study and monitoring program should be conducted pre- and during the development, and the local conservation authority would be contacted and consulted for advice to design the study and monitoring program.

6.7.1 Baseline Study

A baseline study of the tributary would be conducted to establish the pre-development conditions on the water level, baseflow and water quality, which may include chemical testing of surface water samples for general metals and inorganics or as per the advice from the local conservation authority.

6.7.2 Surface Water Level and Baseflow Monitoring

Considering that the treated water may be discharged directly or indirectly to the creek, the surface water level and baseflow may be maintained depending on the discharge volume.

However, visual observation of the creek water levels may be conducted daily at a selected location during the development. Should adverse impact be observed during the temporary dewatering, the dewatering volume may be reviewed and modified appropriately. If required, water with acceptable water quality may be introduced to the creek to maintain the baseflow in the creek.

6.7.3 Surface Water Quality Monitoring

Should monitoring of the discharged water quality be conducted, the surface water quality may not be an issue. However, if significant water level changes are found, a sampling and chemical testing may have to be considered to assess any change in surface water quality. Should adverse impact be observed during

the temporary dewatering, the dewatering volume may be modified. If required, water with acceptable water quality may be introduced to the creek to maintain the baseflow in the creek.

6.8 Erosion Control/Sedimentation Mitigation Plan

It should be noted that the pumped water generated from the temporary dewatering should not be discharged without treatment. When the treatment including filtration or decanting is carried out appropriately, sedimentation should not be an issue.

However, the dewatering discharge may result in the erosions on land surface and/or in the creek channel depending on the selected discharge points. Therefore, erosion control may have to be considered, which is discussed in the following table.

Period	Monitoring Location	Monitoring Frequency	Method	Triggers for Mitigation	Mitigation/ Contingency
Pre-Development	Water discharge points (swale, ditch, creek or overland locations)	Prior to discharge	Visual observation	None	All erosion and sediment controls should be in place prior to commencing discharge activities. The water should be dispersed through straw bales or filter bags, when necessary combined with rock check dam.
In - Development	Water discharge points (swale, ditch or overland locations)	Daily	Visual observation	Noted erosion	To reduce the discharge to watercourse using overland flow. To control the flow/runoff velocity to a minimum. To select and apply optimal alternatives of erosion control methods.

6.9 Groundwater Monitoring and Contingency/Mitigation Measures

During temporary dewatering, a groundwater monitoring program including water level, discharge volume and water quality shall be conducted.

6.9.1 Groundwater Level

Prior to commencement of the temporary dewatering, water level measurements would be recommended to be conducted to verify the assumed water level used in the calculation. If significant variation occurs, the dewatering volume calculation may be reviewed.

7.0 CLOSURE

We trust that the information contained in this report is complete within our terms of reference. If you have any questions or require further information, please do not hesitate to contact our office.

Sincerely,

GeoPro Consulting Limited
Geotechnical - Hydrogeology - Environmental - Materials Testing – Inspection

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Senior Hydrogeologist

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6.9.2 Total Dewatering Volume

- The dewatering volume (pumped or discharged) shall be monitored and recorded during the course of the temporary dewatering.
- The pumped or discharged volume should be measured daily using a flow measuring device to ensure that the dewatering volume does not exceed the approved or accepted dewatering volume limits.
- If the measured total volume tends to exceed the approved limit, the excavation and installation methodology should have to be altered or dewatering discontinued temporarily in order to ensure that the allowable pumping be within the regulated limit.
- The contractor on behalf of the Client should maintain a record of all water takings, which should include the dates and duration of water takings, and the total measured volume of water pumped per day for each day that water is taken under the permit.

6.9.3 Water Quality

To ensure that discharge effluent meets the PWQO guideline or match the local surface water quality, local conservation authority may be consulted before temporary dewatering, and groundwater quality should be monitored during the temporary dewatering.

As TSS is an important parameter which may directly reflect the water quality, a treatment facility should be considered to reduce the concentrations of the suspended solids in the pumped water prior to dewatering discharge.

Prior to discharge of the treated water, a representative water sample should be collected and analyzed for the parameters as per PWQO standards or as required by local conservation authority. During the temporary dewatering, daily field monitoring of the TSS/turbidity in the water to be discharged is recommended. Also, groundwater quality should be monitored weekly for the first month via chemical testing for PWQO metals or for the parameters as required. If the results demonstrate that groundwater quality consistently meets the applicable standards, the monitoring frequency can be reduced to once every month afterwards.

When dewatering takes place near the property at the southeast of the 7th Line and Webster Boulevard, groundwater samples should also be analyzed for petroleum hydrocarbons (“PHCs”).

6.10 Monitoring Well Decommissioning

According to Ontario Regulation 903 (“O. Reg. 903”), when the monitoring wells are no longer used, they should be decommissioned by a licensed water well contractor.

8.0 REFERENCES

Chapman, L.J. and D.F. Putnam. 1984. The Physiography of Southern Ontario. 3rd ed. Ontario Geological Survey Special Volume 2, Ontario Ministry of Natural Resources, Ontario, Canada.

C.W. Fetter, 2001, Applied Hydrogeology, 4th Edition, Prentice-Hall Inc.,

D.P. Coduto, 1999, Geotechnical engineering: Principles and Practice, Prentice-Hall Inc.,

Powers, J. Patrick et al, 2007 Construction Dewatering and Groundwater Control, New methods and Applications, Third Edition, John Wiley and Sons Inc.

Ontario Ministry of Environment and Climate Change, Permit to Take Water Manual, April 2005

DRAWINGS

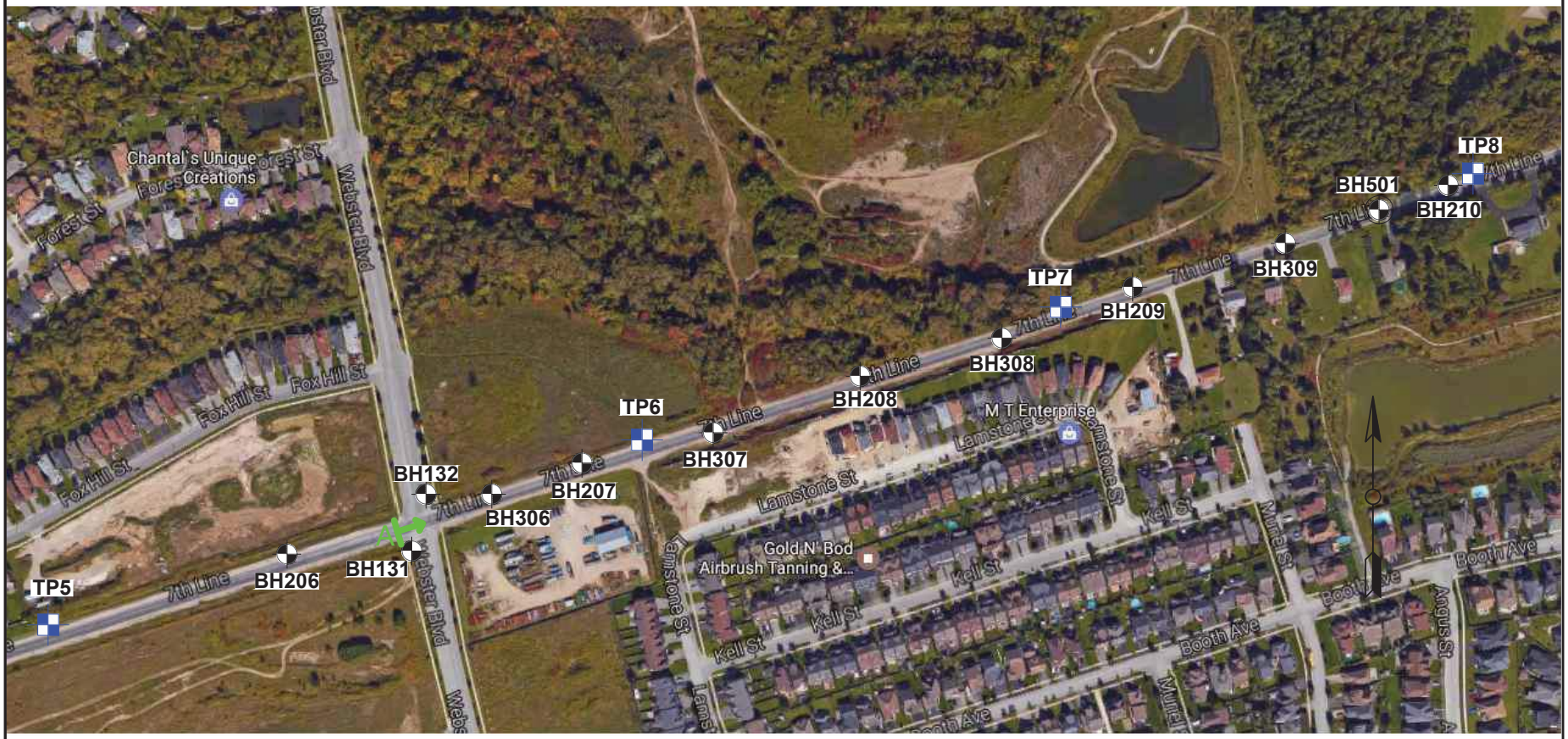
Client:	Ainley Group			Project No.: 17-1797H	Drawing No.: 1
Drawn:	WG	Approved:	BG	Title:	Site Location Plan
Date:	December 2018	Scale:	As Shown	Project:	Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario
Original Size:	Letter	Rev:	BG		GeoPro Consulting Limited

Source: Google Map

Legend:

- Borehole Location
- Monitoring Well Location
- Test Pit Location

Client:	Ainley Group			Project No.: 17-1797H	Drawing No.: 2A
Drawn:	KY	Approved:	BG	Title:	Borehole, Monitoring Well and Test Pit Location Plan
Date:	December 2018	Scale:	NTS	Project:	Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario
Original Size:	Letter	Rev:	BG		GeoPro Consulting Limited



Source: Google Map

Legend:

- Borehole Location
- Monitoring Well Location
- Test Pit Location
- A - A' Cross Section Baseline

Client:	Ainley Group			Project No.: 17-1797H	Drawing No.: 2B
Drawn:	KY	Approved:	BG	Title:	Borehole, Monitoring Well and Test Pit Location Plan
Date:	December 2018	Scale:	NTS	Project:	Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario
Original Size:	Letter	Rev:	BG		GeoPro Consulting Limited

Source: Google Map

Legend:

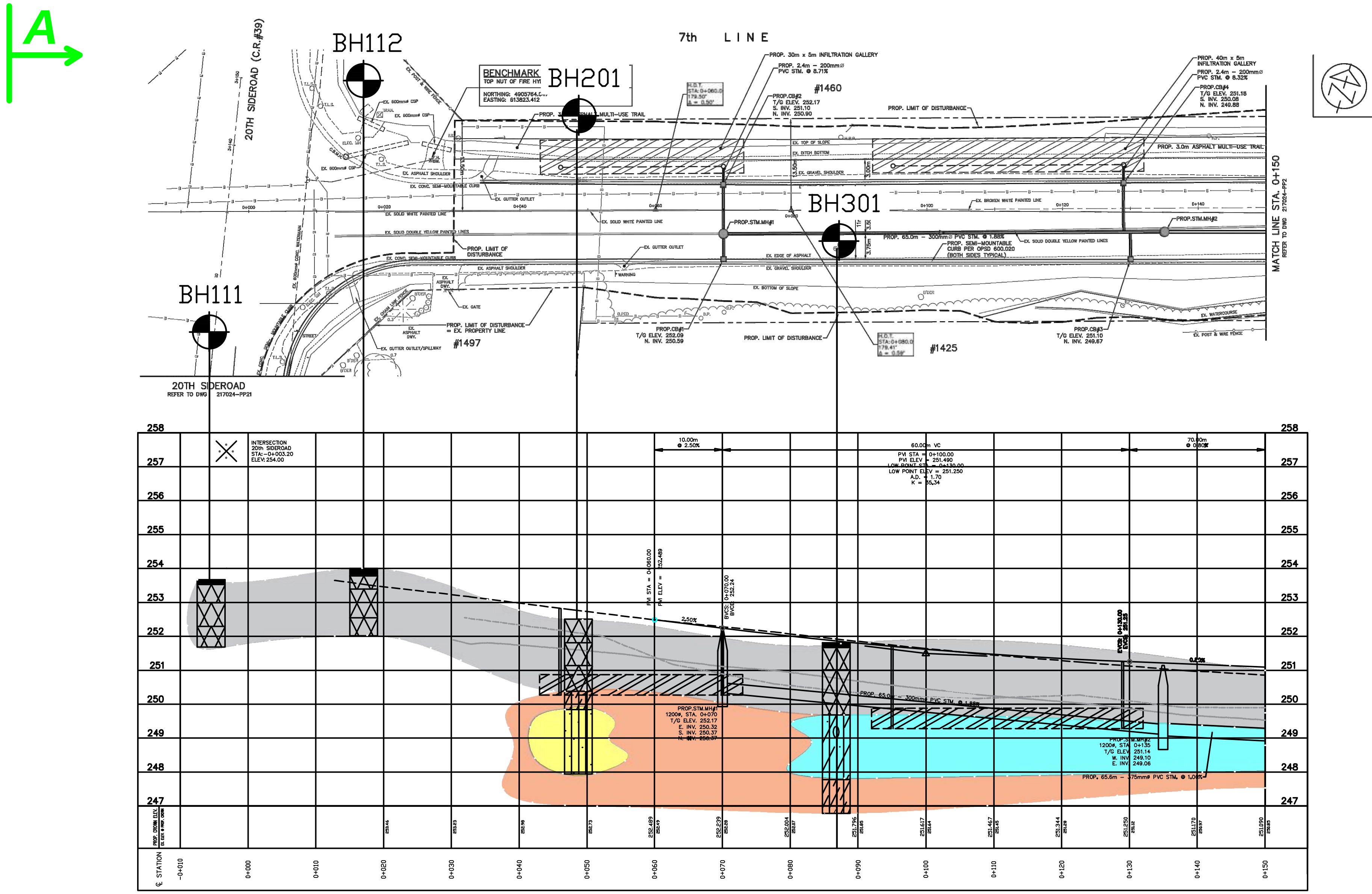
- Borehole Location at Center Line (300 Series)
- Borehole Location at Culvert (BH601)
- Test Pit Location
- A - A' Cross Section Baseline

Client:	Ainley Group			Project No.: 17-1797H	Drawing No.: 2C
Drawn: KY		Approved: BG		Title: Borehole, Monitoring Well and Test Pit Location Plan	
Date: December 2018		Scale: NTS		Project: Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario	
Original Size: Letter		Rev: BG		GeoPro Consulting Limited	

Legend

- 8a Fine-textured glaciolacustrine deposits
  Silt and clay, minor sand and gravel
- 5b Till
  Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain
- 5d Till
  Clay to silt-textured till
- 12 Older alluvial deposits
  Clay, silt, sand, gravel, may contain organic remains
- 9c Coarse-textured glaciolacustrine deposits
  Sand, gravel, minor silt and clay
- 6 Ice-contact stratified depositsIce-contact stratified deposits
  Sand and gravel, minor silt, clay and till
- 20 Organic Deposits
  Peat, muck, marl

Client: Ainley Group		Project No.: 17-1797H	Drawing No.: 3
Drawn: WG	Approved: BG	Title: Surficial Geology	
Date: December 2018	Scale: As Shown	Project: Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario	
Original Size: Letter	Rev: BG	GeoPro Consulting Limited	



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand
Clay to Clayey Silt	Sand to Gravel	BedRock

Borehole

Monitoring Well

Groundwater level and Date Recorded

Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

Date:	December 2018	Scale:	As Shown	Drawn:	MB	Approved:	KY	Rev:	KY	Project No.:	17-1797H	Drawing No.:	**4A**

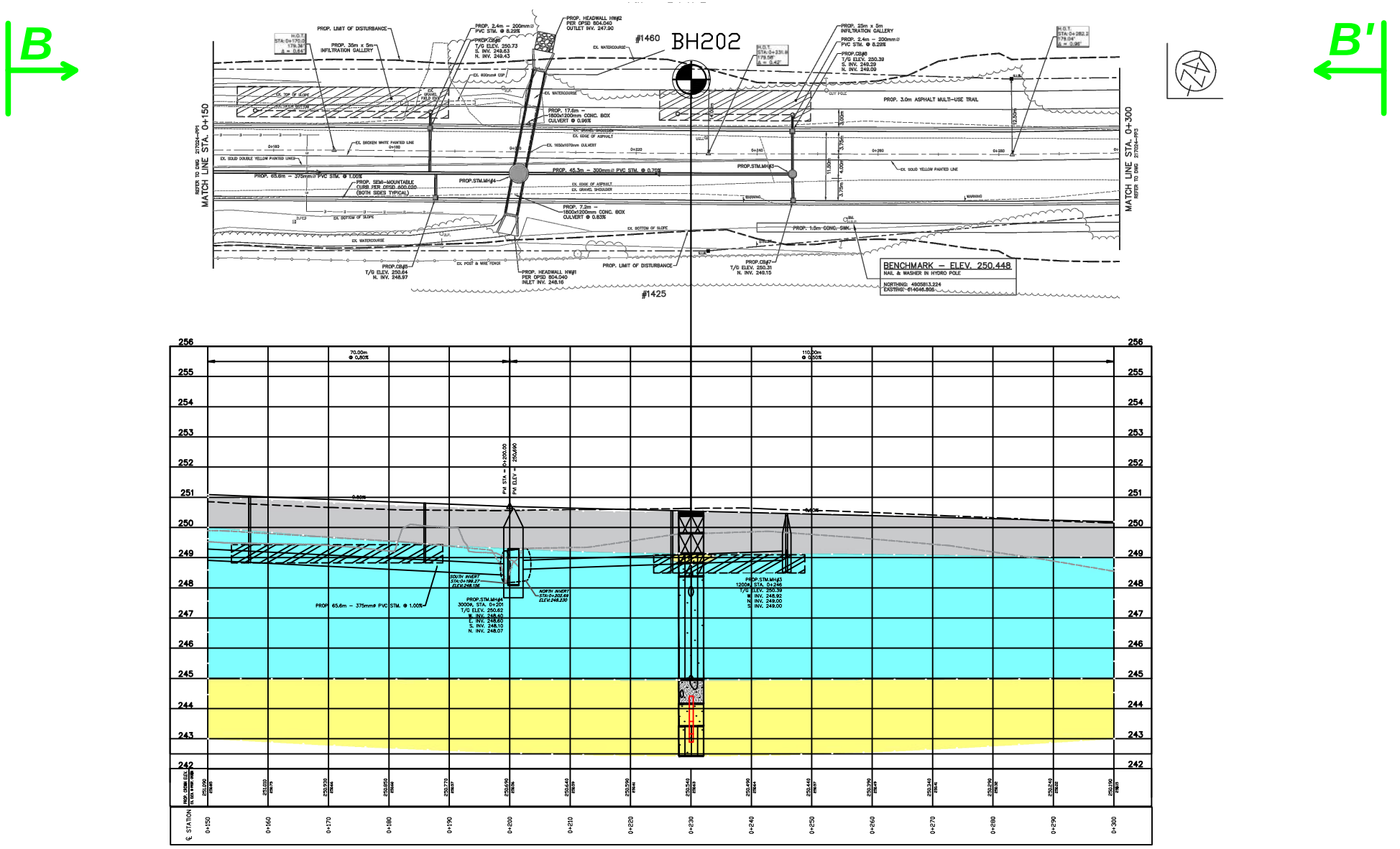
Original Size: Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **A-A'**

Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

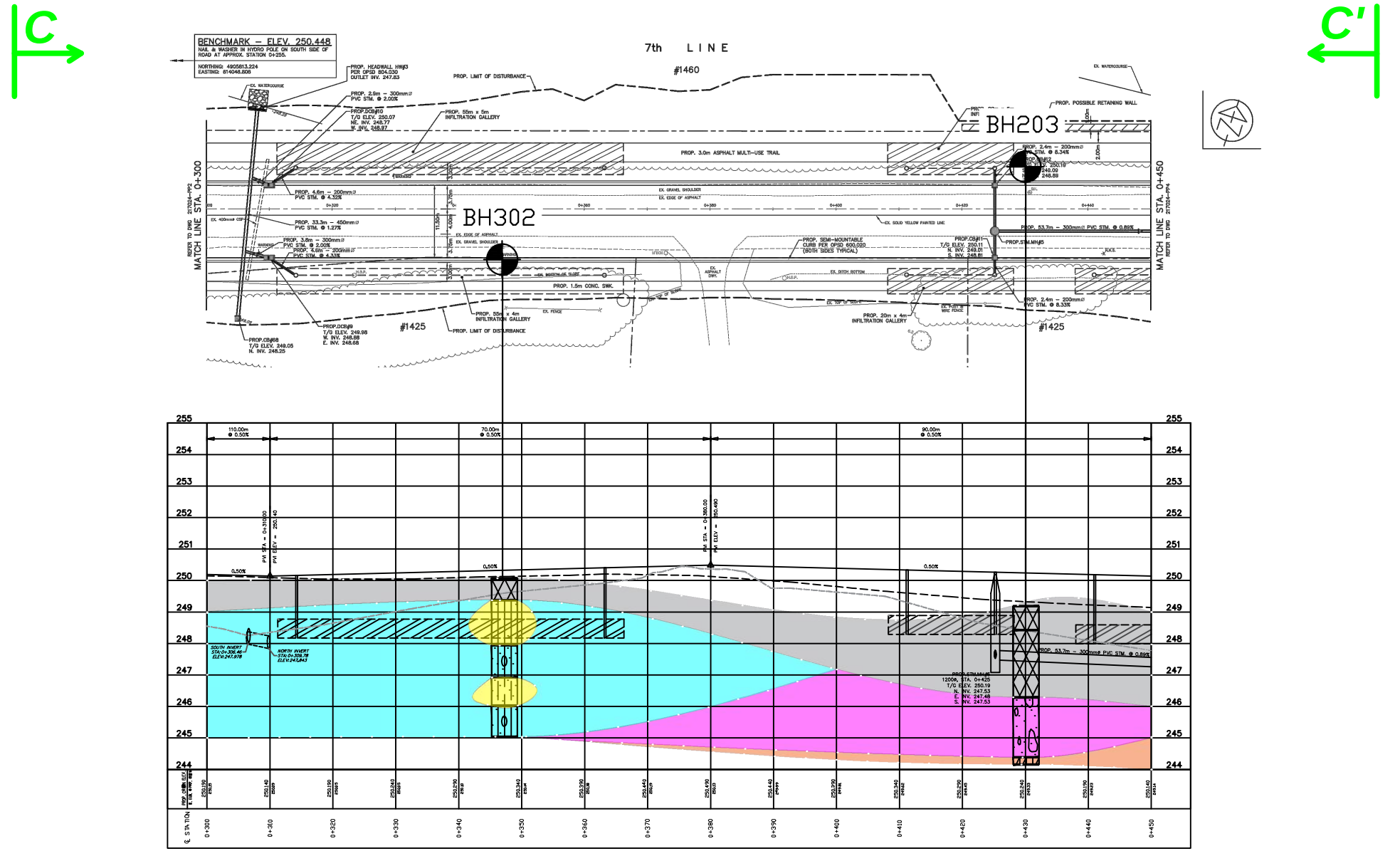
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	4B	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **B-B'**

Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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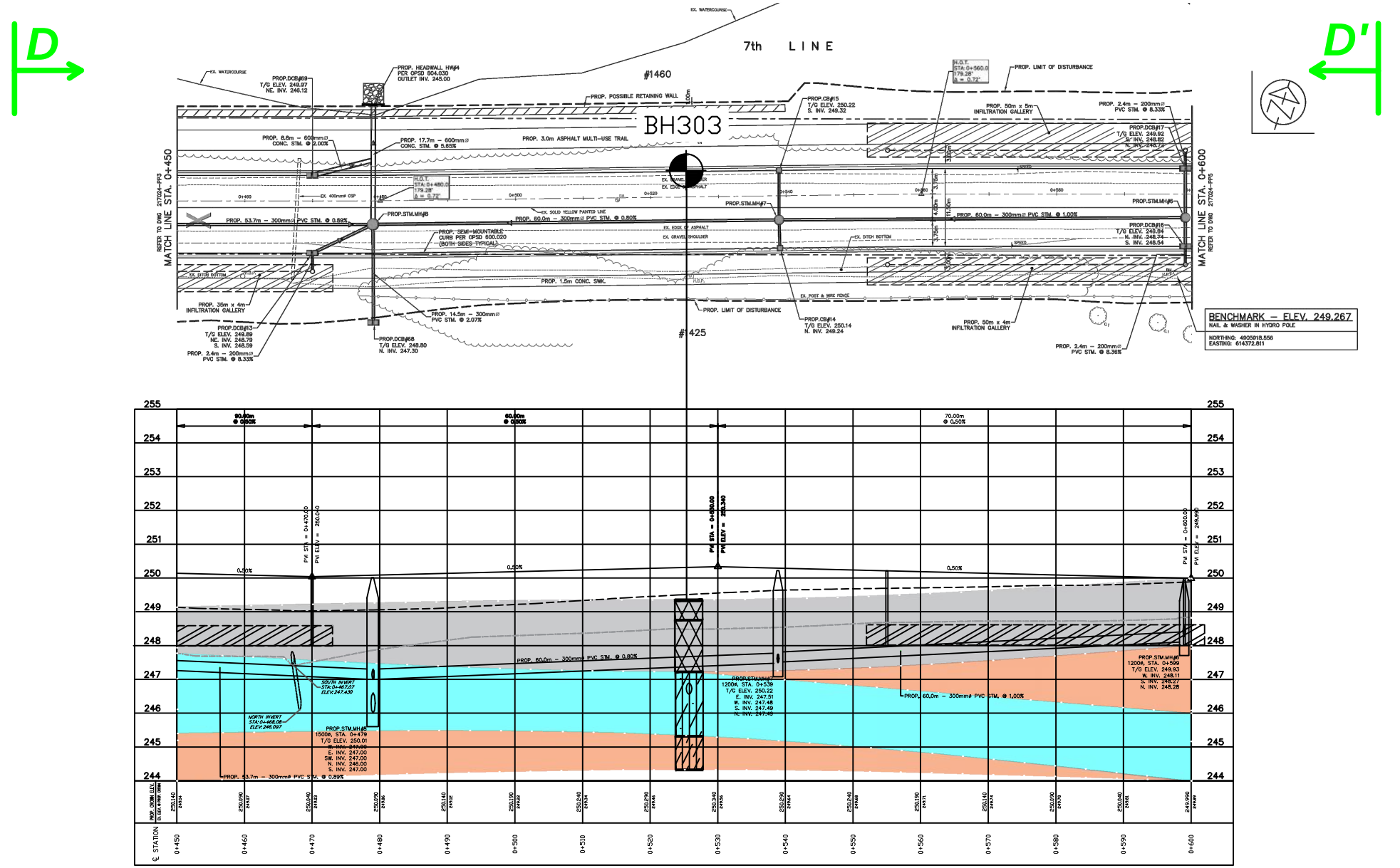
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	4C	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **C-C'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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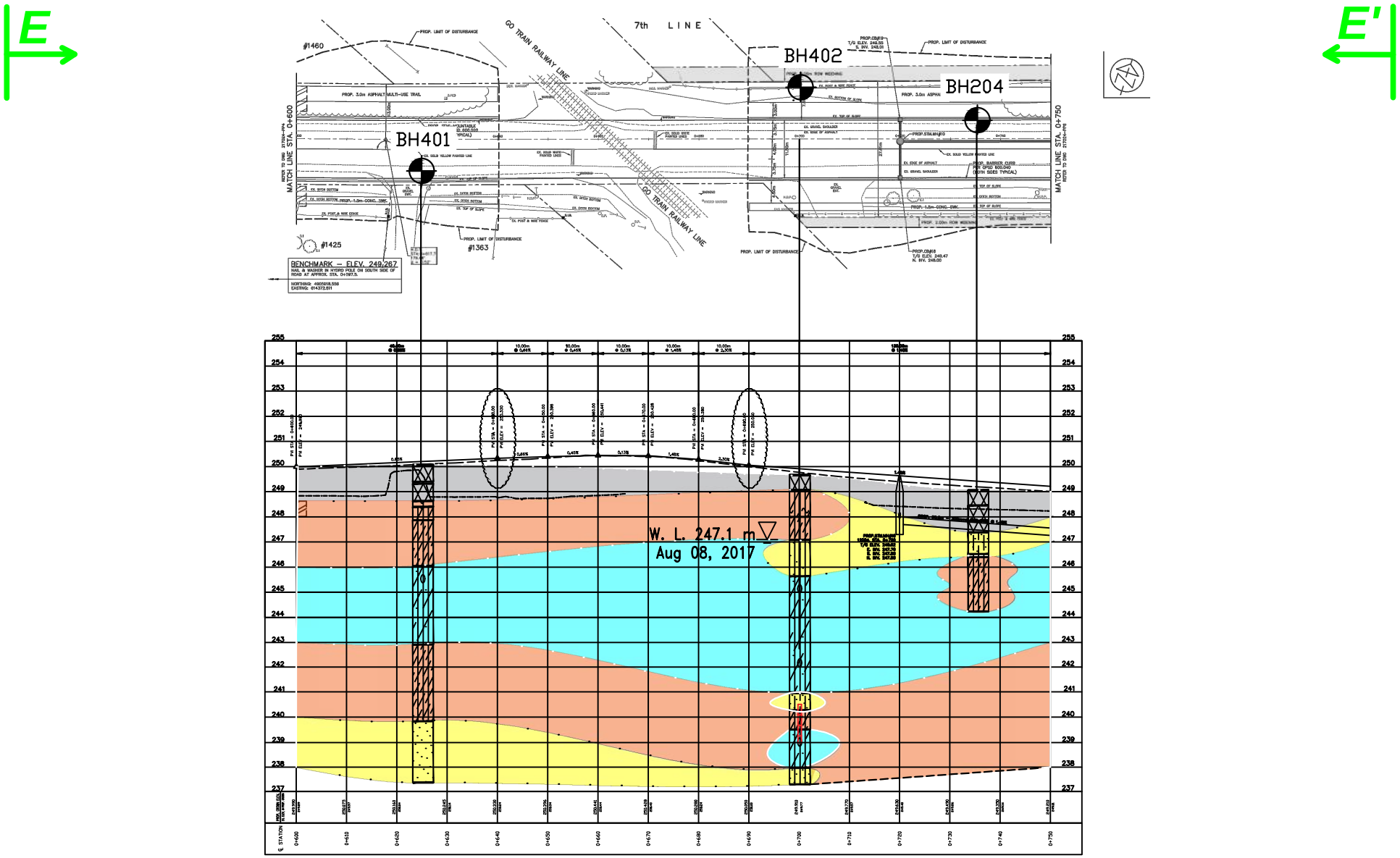
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4D**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **D-D'**

Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

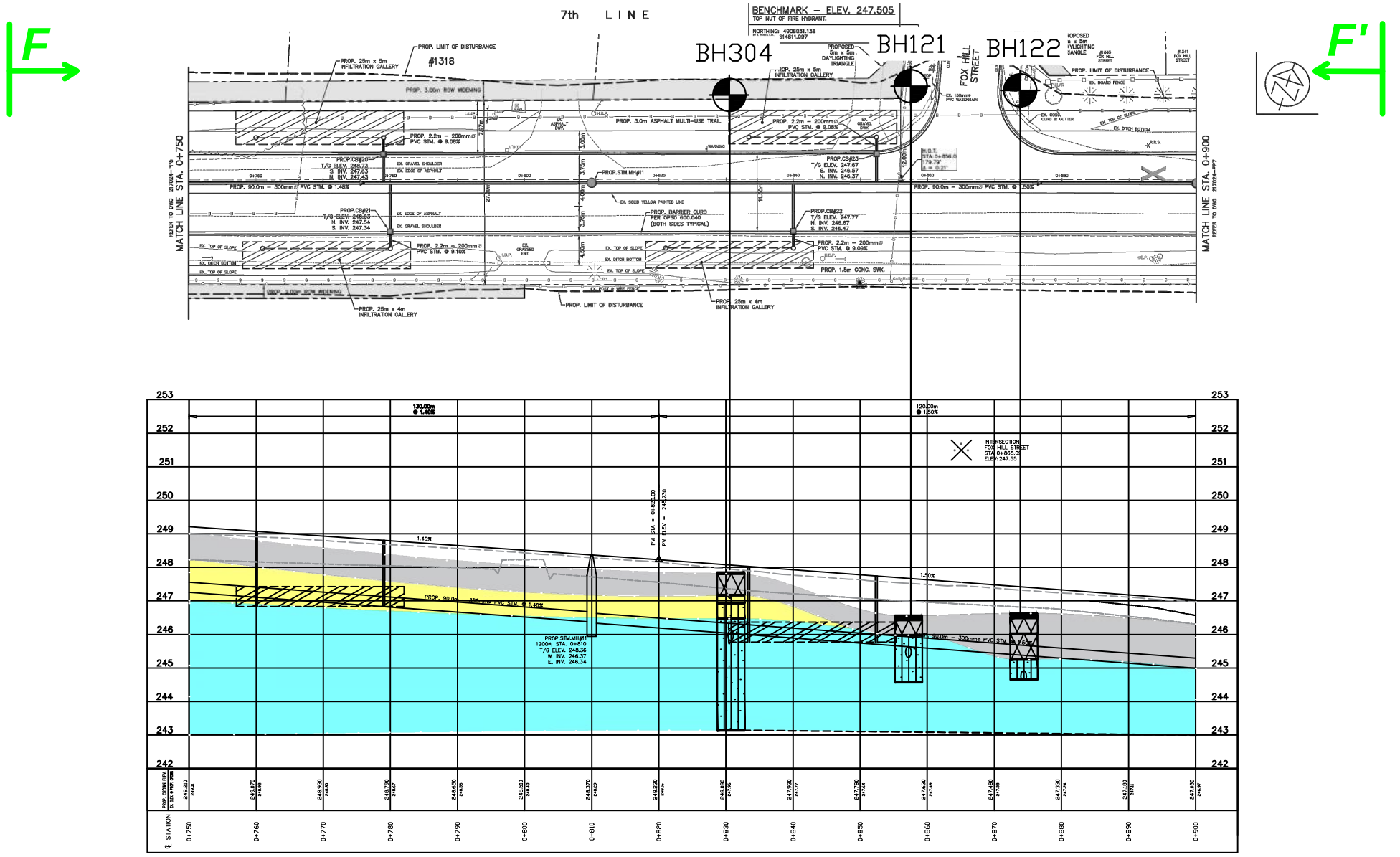
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4E**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **E-E'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

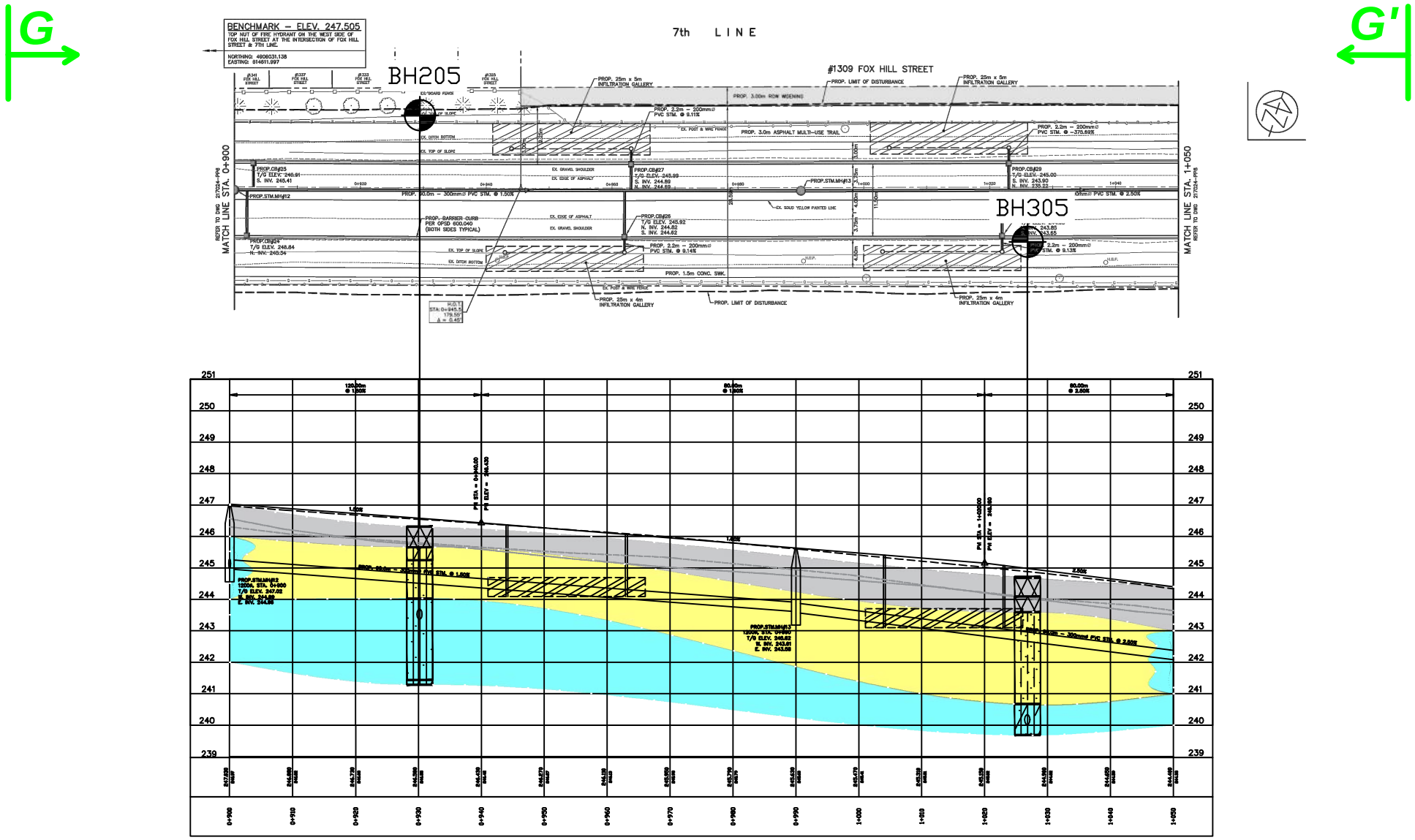
Date:	December 2018	Scale:	As Shown	Drawn:	MB	Approved:	KY	Rev:	KY
Project No.:	17-1797H	Drawing No.:	**4F**	Original Size:	Letter				

Client: **Ainley Group**

Title: Subsurface Projection Diagram **F-F'**

Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

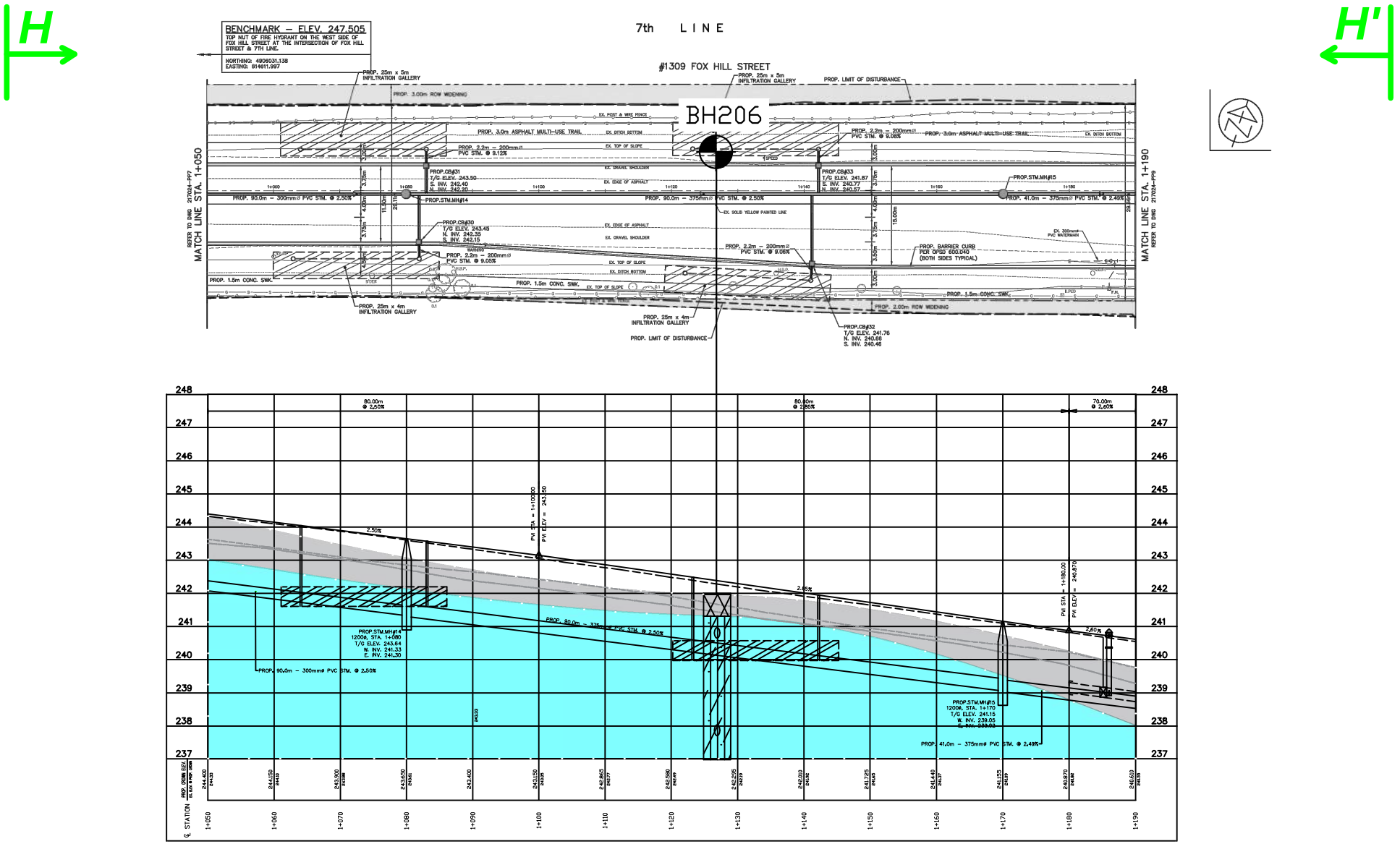
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4G**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram **A-A'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

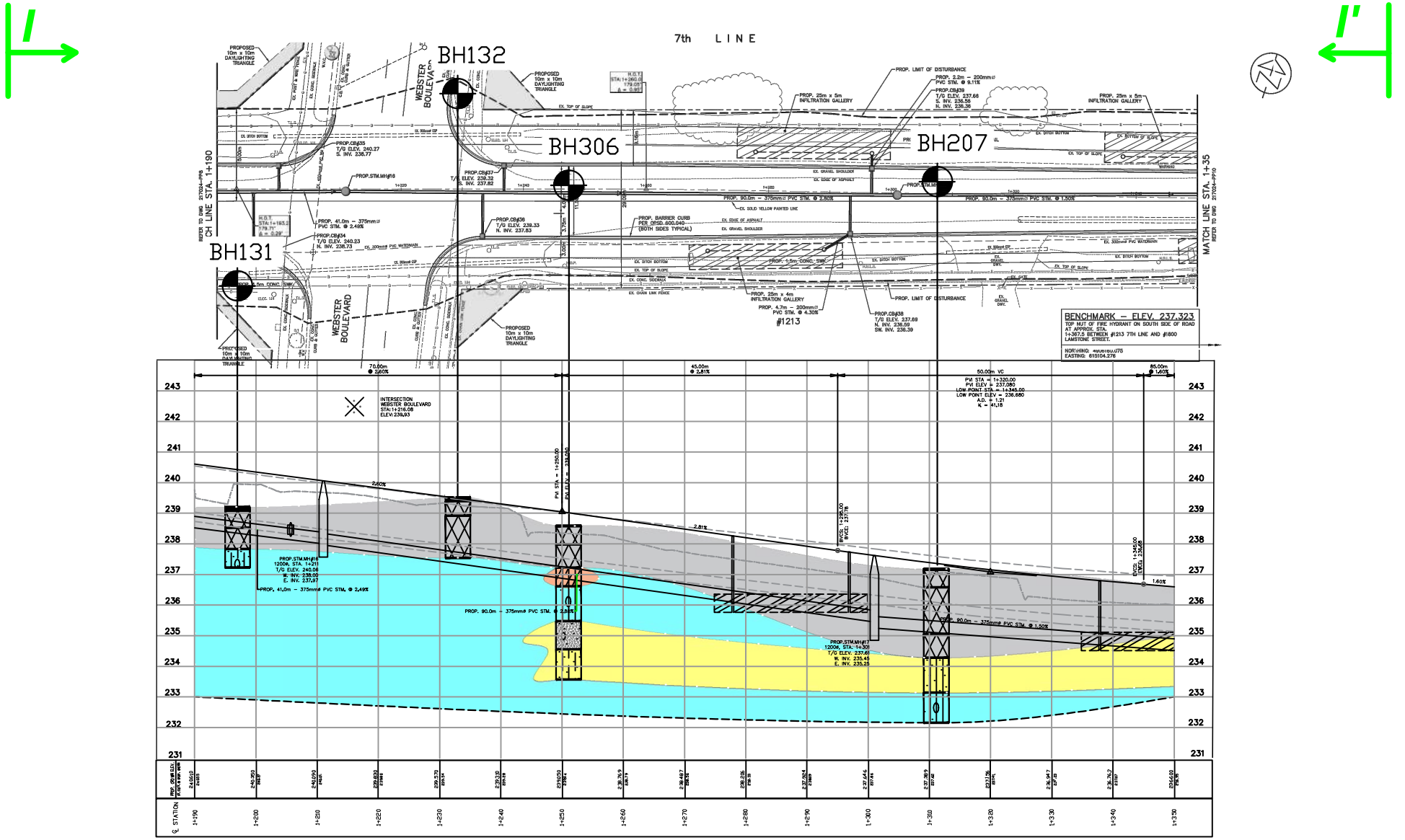
Date:	December 2018	Scale:	As Shown	Drawn:	MB	Approved:	KY	Rev:	KY
Project No.:	17-1797H	Drawing No.:	4H	Original Size:	Letter				

Client: **Ainley Group**

Title: Subsurface Projection Diagram **H-H'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

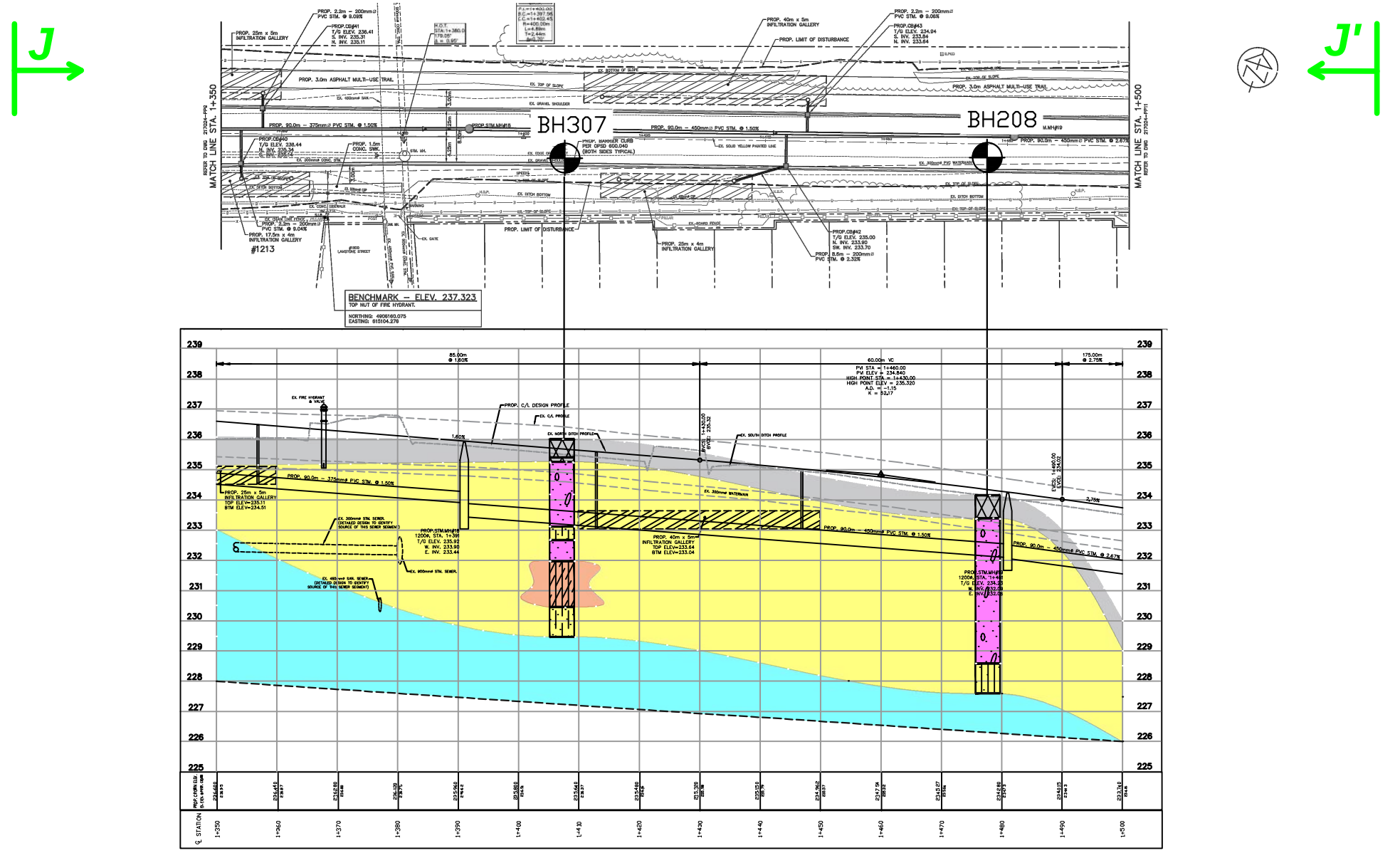
Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

Date: December 2018	Scale: As Shown	Drawn: MB	Approved: KY	Rev: KY	Project No.: 17-1797H	Drawing No.: **4I**	Original Size: Letter
Client: **Ainley Group**	Title: Subsurface Projection Diagram **I-I'**	Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**	GeoPro Consulting Limited					



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

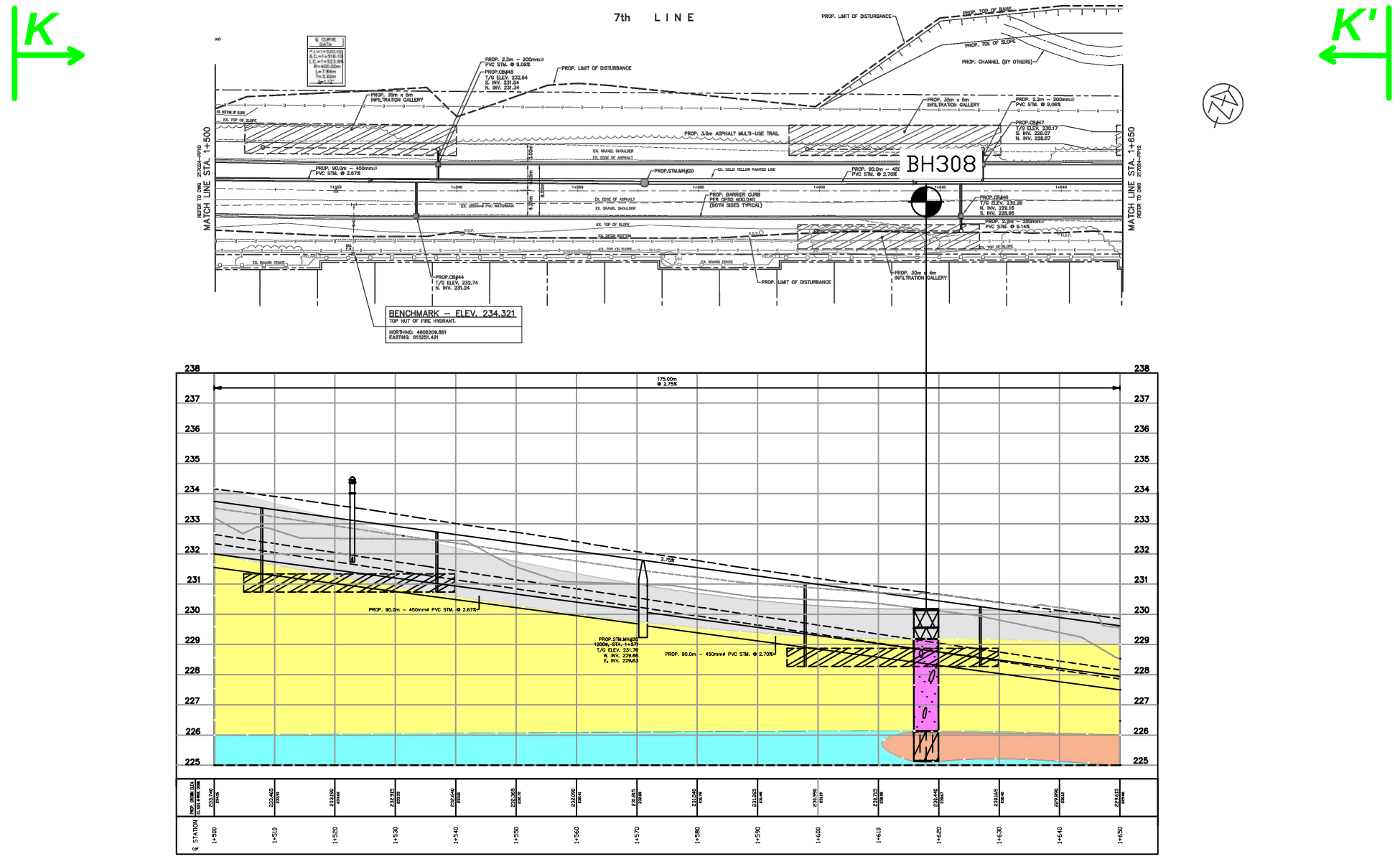
Date:	December 2018	Scale:	As Shown	Drawn:	MB	Approved:	KY	Rev: KY
Project No.:	17-1797H	Drawing No.:	**4J**	Original Size:	Letter			

Client: **Ainley Group**

Title: Subsurface Projection Diagram J-J'

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

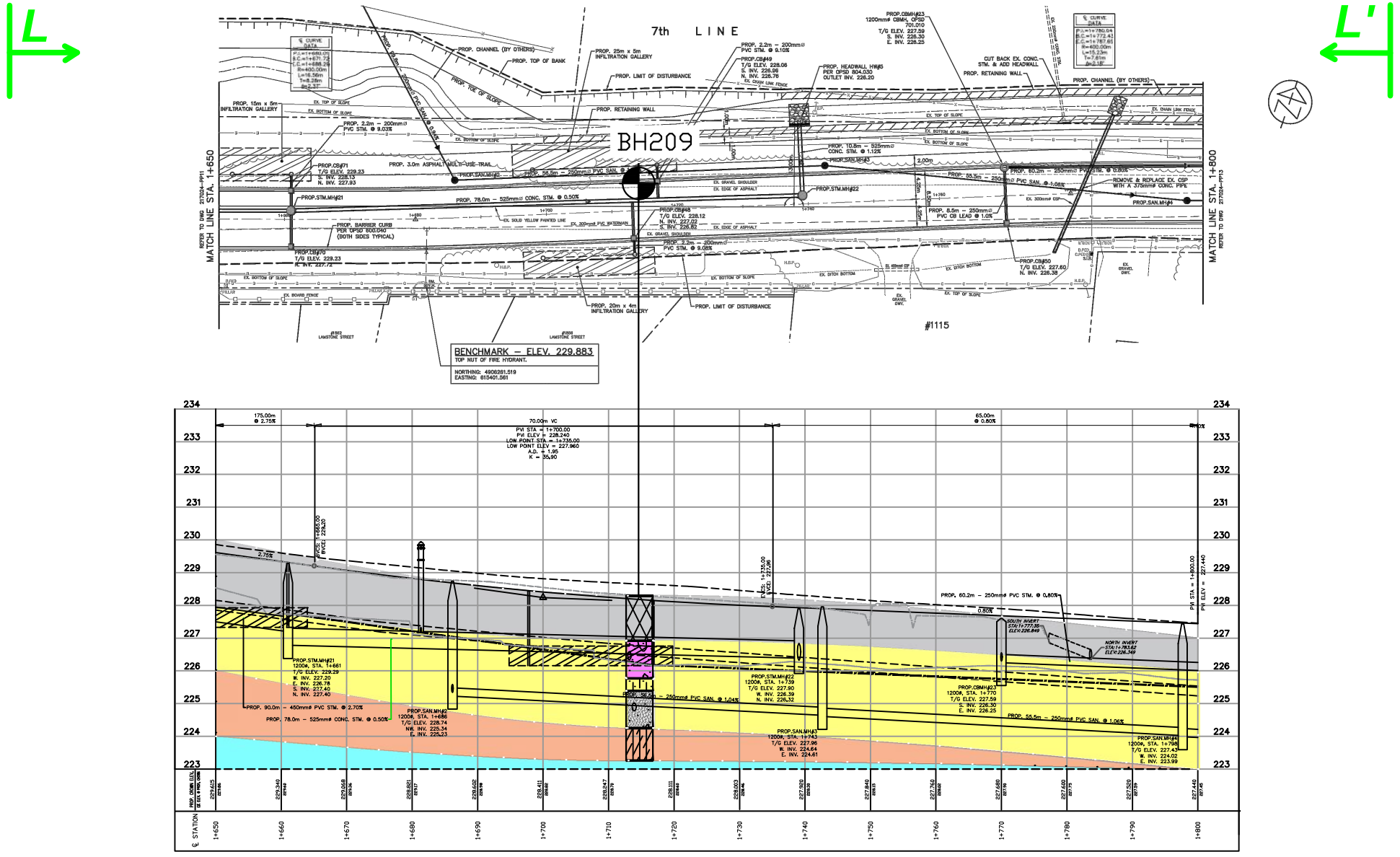
Date: December 2018	Scale: As Shown	Drawn: MB	Approved: KY	Rev: KY	Project No.: 17-1797H	Drawing No.: **4K**	Original Size: Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram K-**K'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

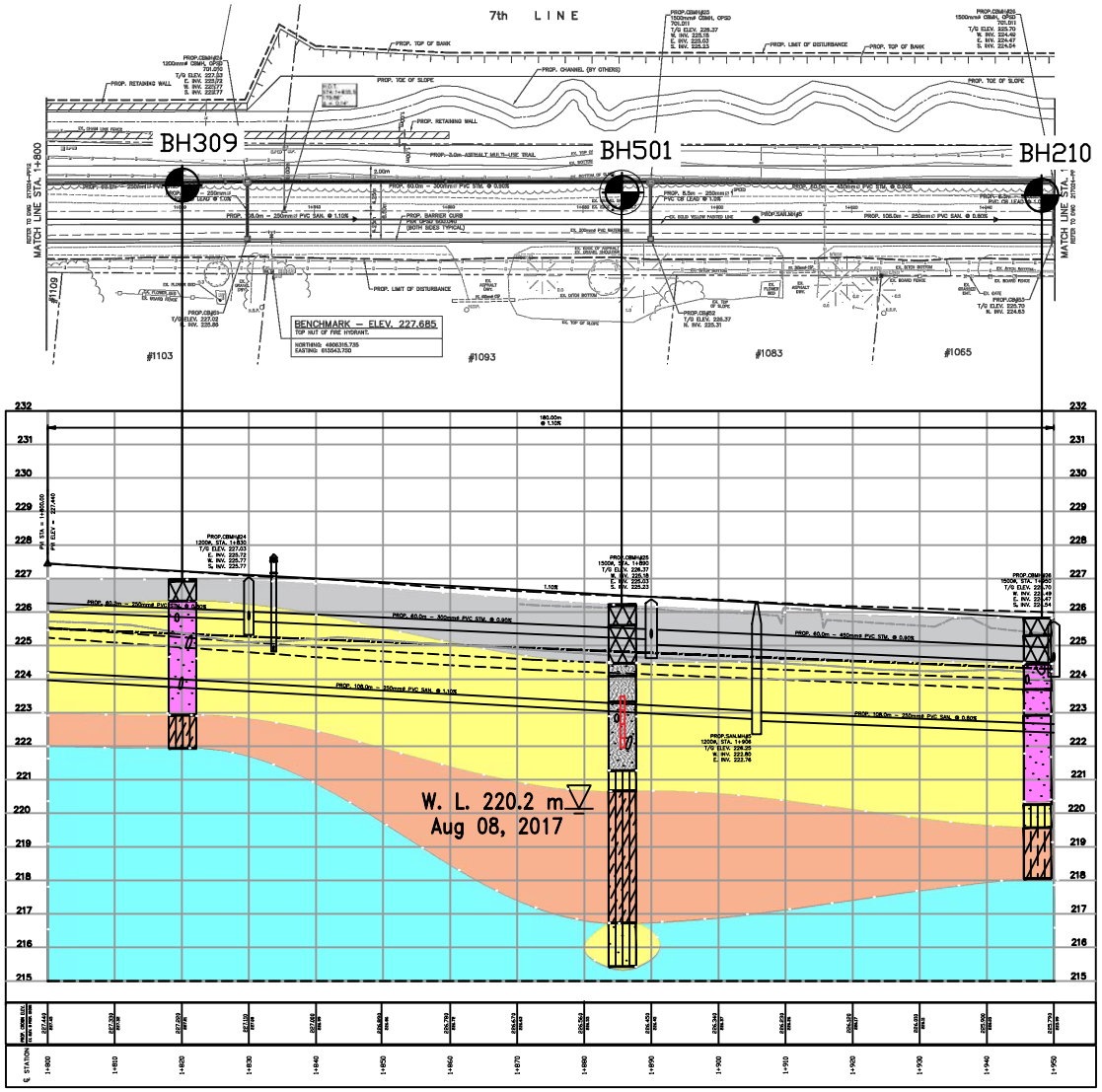
1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

2. Please also note that the groundwater levels shown on the hydrogeological profiles were measured in limited number of monitoring wells at different screen depths. The groundwater levels between and beyond the monitoring wells may differ significantly from those encountered at the monitoring well locations and screen depths. Groundwater levels were measured on a specific date and may change due to the seasonal fluctuation.

Date: December 2018	Scale: As Shown	Drawn: MB	Approved: KY	Rev: KY	Project No.: 17-1797H	Drawing No.: **4L**	Original Size: Letter
Client: **Ainley Group**	Title: Subsurface Projection Diagram L-**L'**	Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**	GeoPro Consulting Limited					

M

M'



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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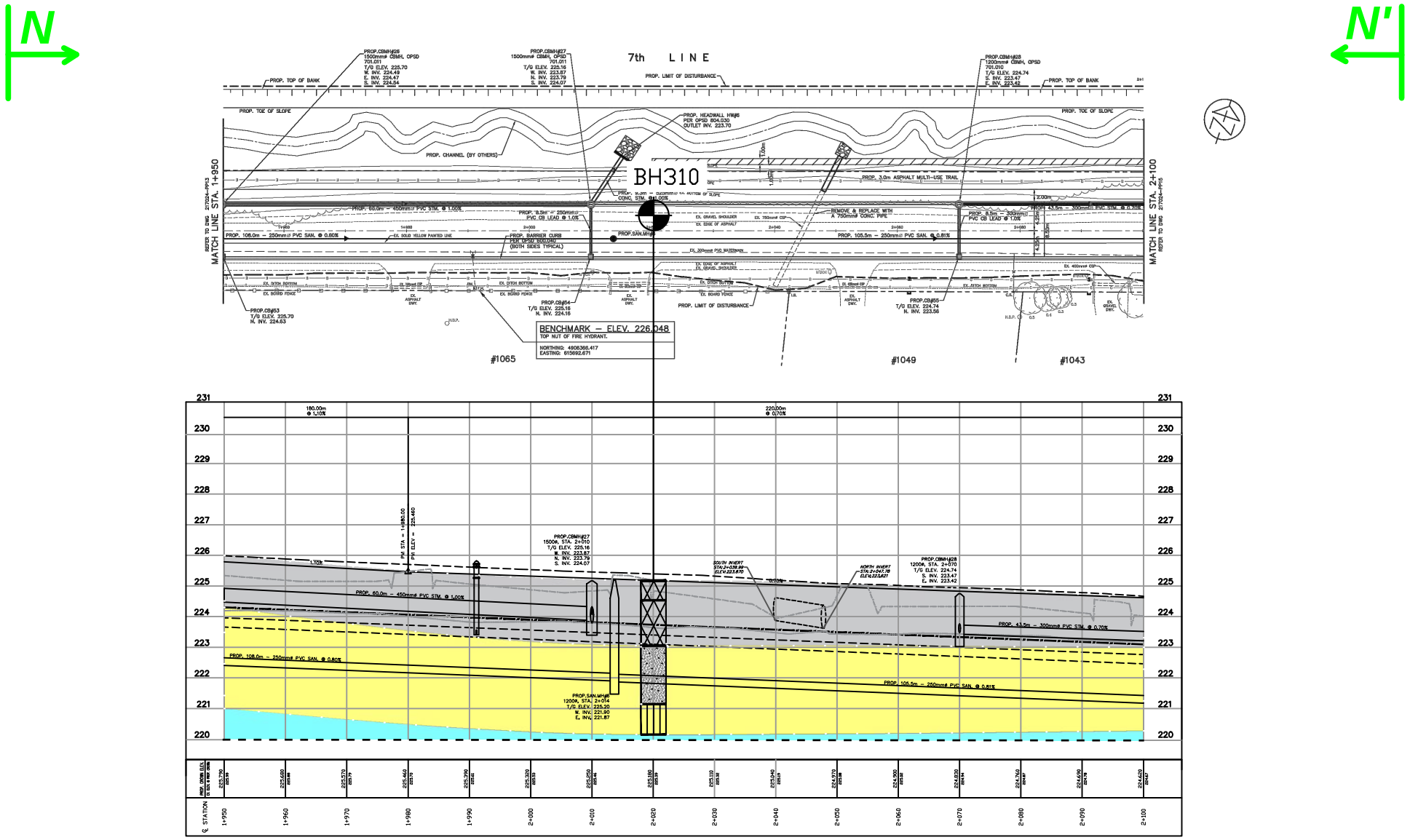
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4M**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram M-**M'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4N**	Letter

Client: **Ainley Group**

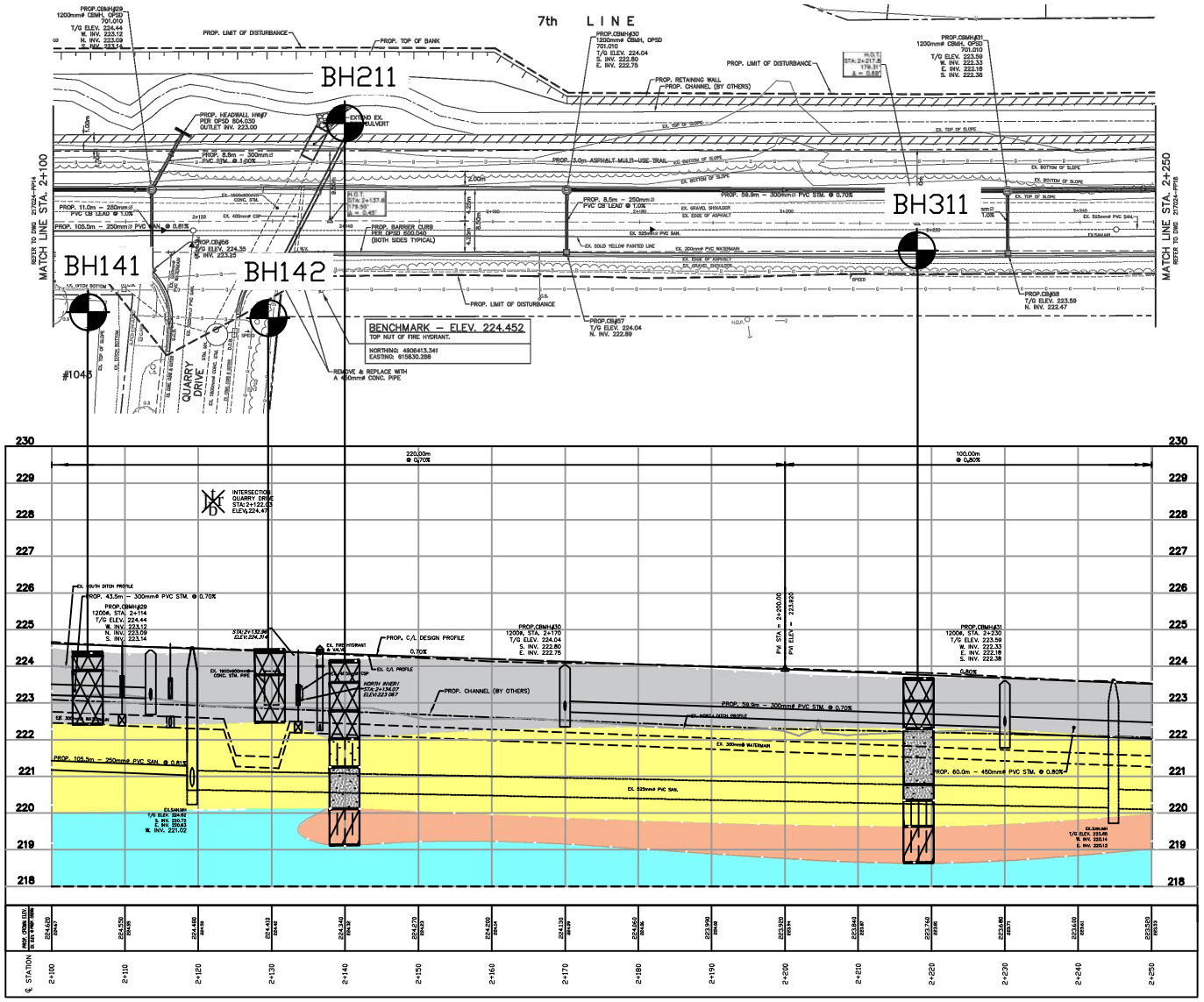
Title: Subsurface Projection Diagram N-**N'**

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited

O

O'



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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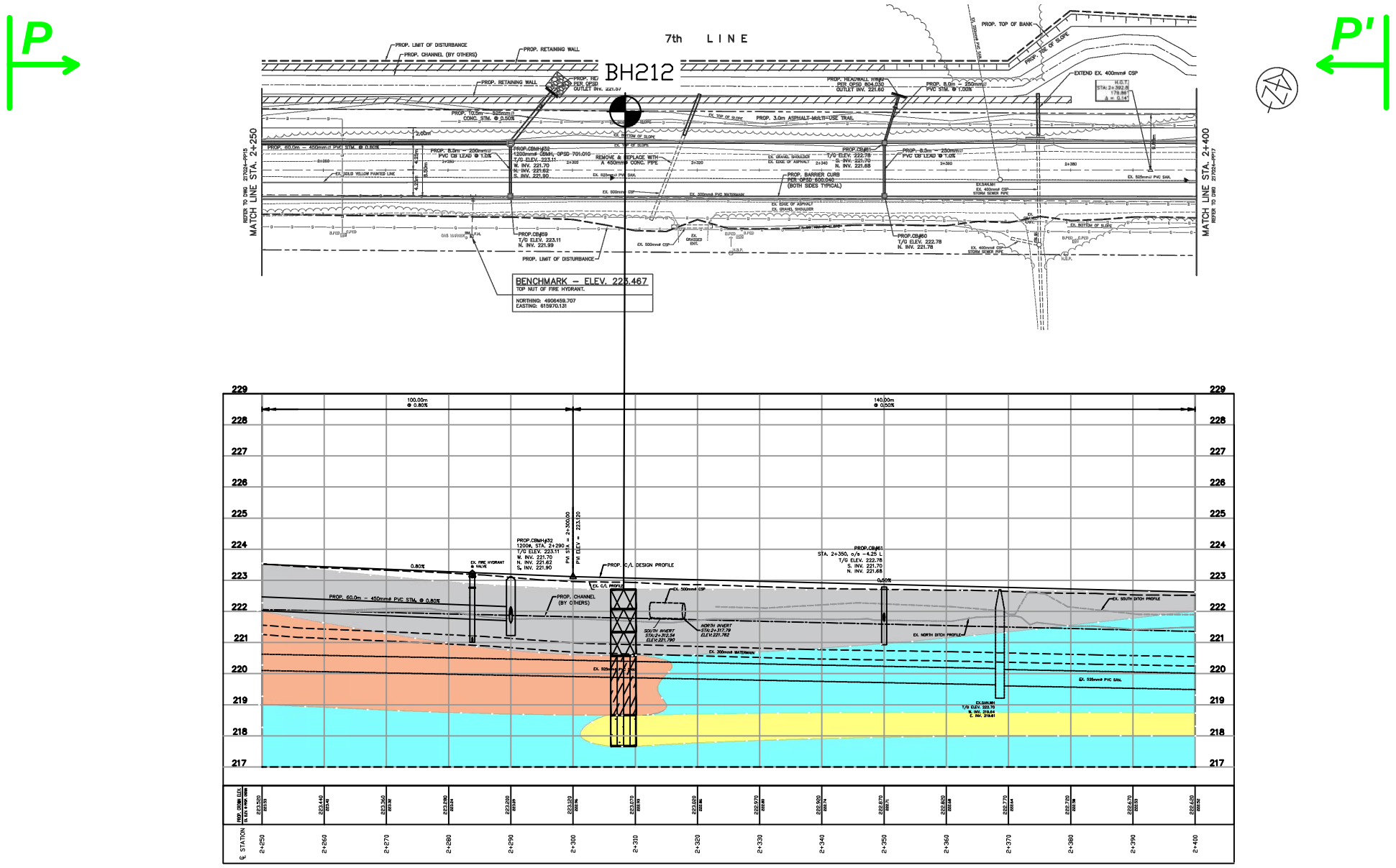
Date: December 2018	Scale: As Shown	Drawn: MB	Approved: KY	Rev: KY	Project No.: 17-1797H	Drawing No.: **4O**	Original Size: Letter
Client: **Ainley Group**	Title: Subsurface Projection Diagram O-**O'**	Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**	GeoPro Consulting Limited					



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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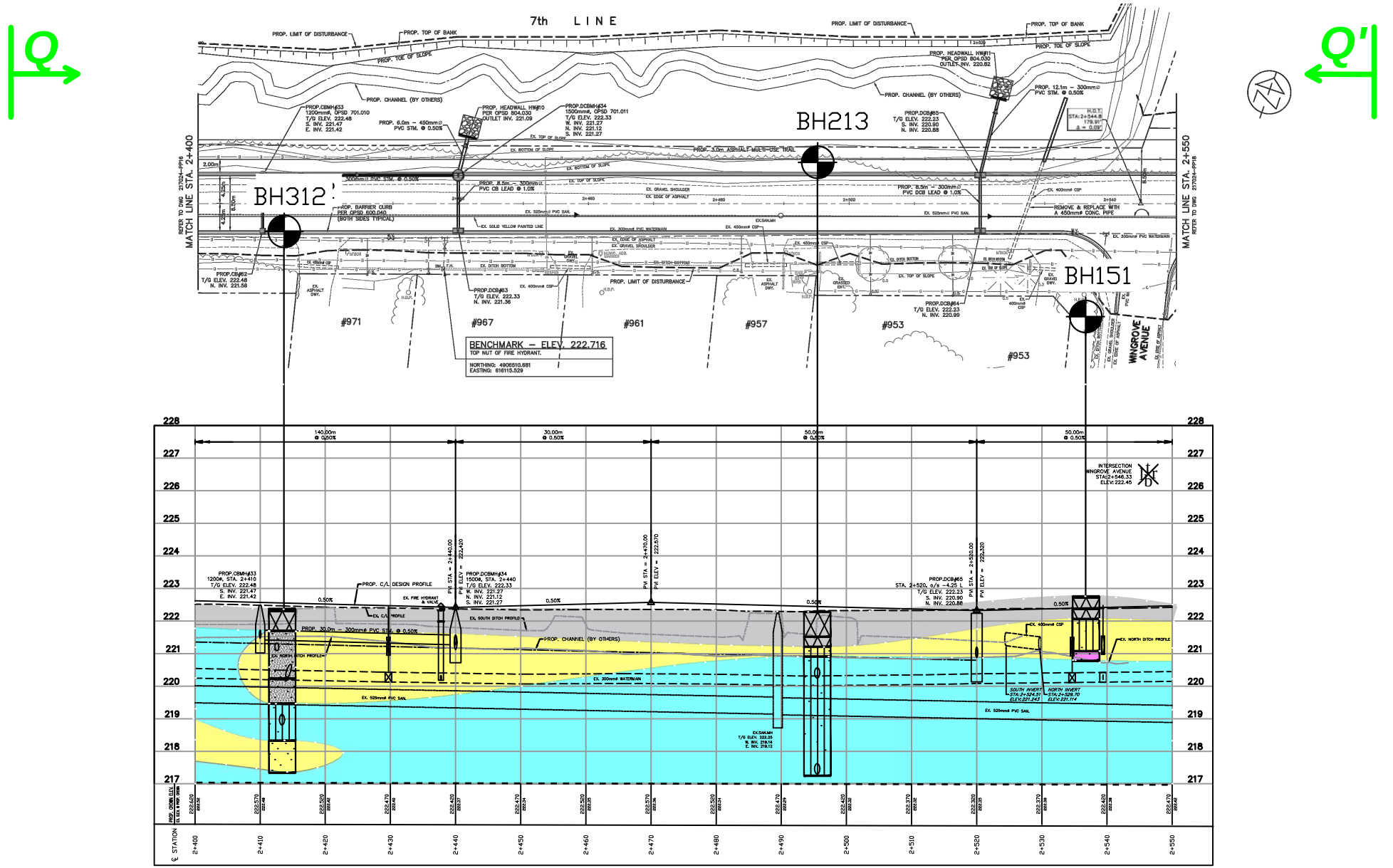
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4P**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram P-**P'**

Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**

GeoPro Consulting Limited



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand	Borehole
Clay to Clayey Silt	Sand to Gravel	BedRock	Monitoring Well
			Groundwater level and Date Recorded
			Monitoring Well Screen

Note:

1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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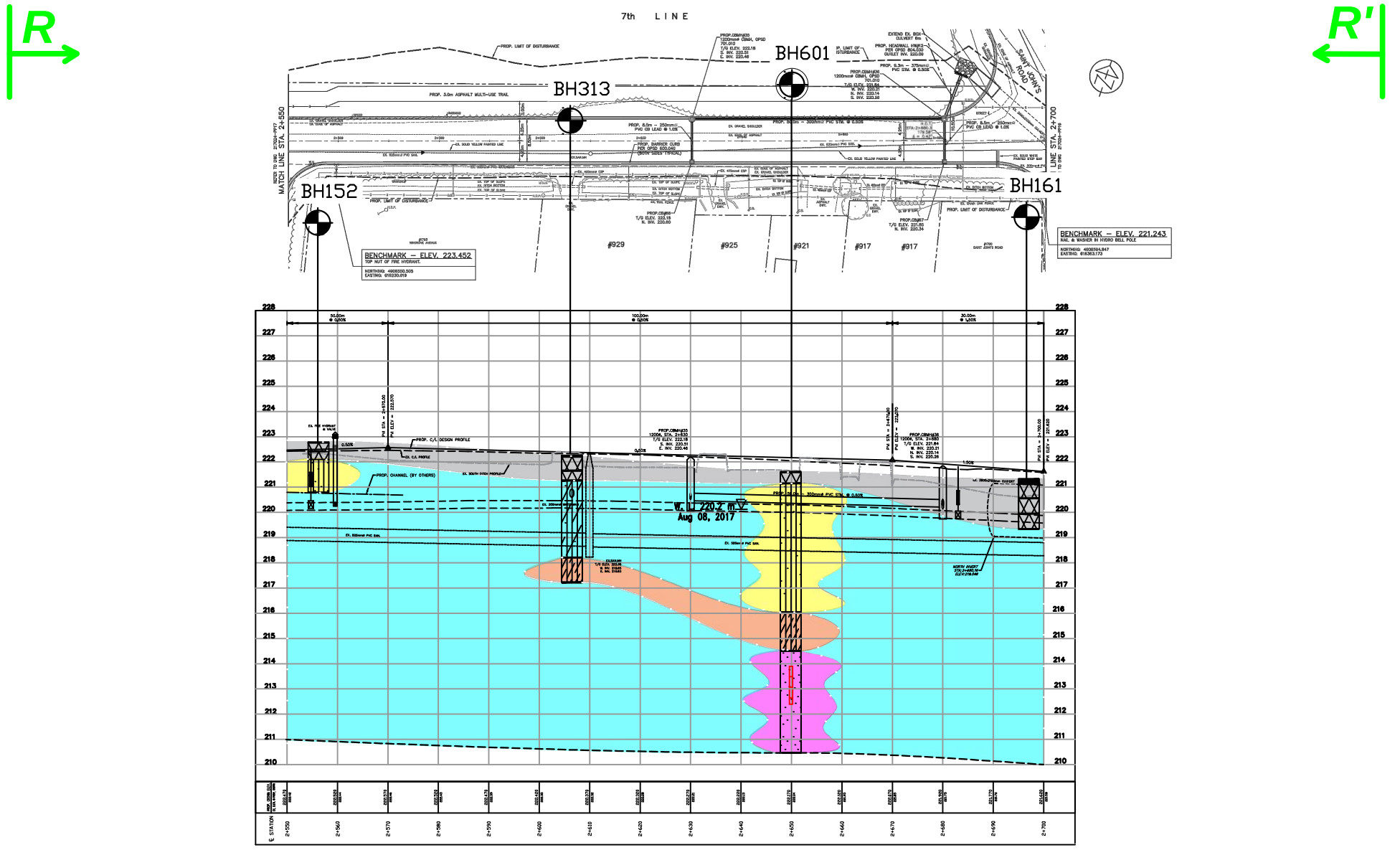
Date: December 2018	Scale: As Shown	Drawn: MB	Approved: KY	Rev: KY	Project No.: 17-1797H	Drawing No.: **4Q**	Original Size: Letter
Client: **Ainley Group**	Title: Subsurface Projection Diagram Q-**Q'**	Project: **Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario**					GeoPro Consulting Limited	



LEGEND

Asphalt, Topsoil, Fill	Till Deposits	Silt to Fine Sand
Clay to Clayey Silt	Sand to Gravel	BedRock

Borehole
Monitoring Well
Groundwater level and Date Recorded
Monitoring Well Screen

Note:
1. Please note that the hydrogeological profiles are prepared according to the inferred site stratigraphy based on the information obtained from the limited number of boreholes. The subsurface soil between and beyond the boreholes may differ significantly from those encountered at the borehole locations. The inferred boundary between the different soil strata should be considered as approximate and for reference only.

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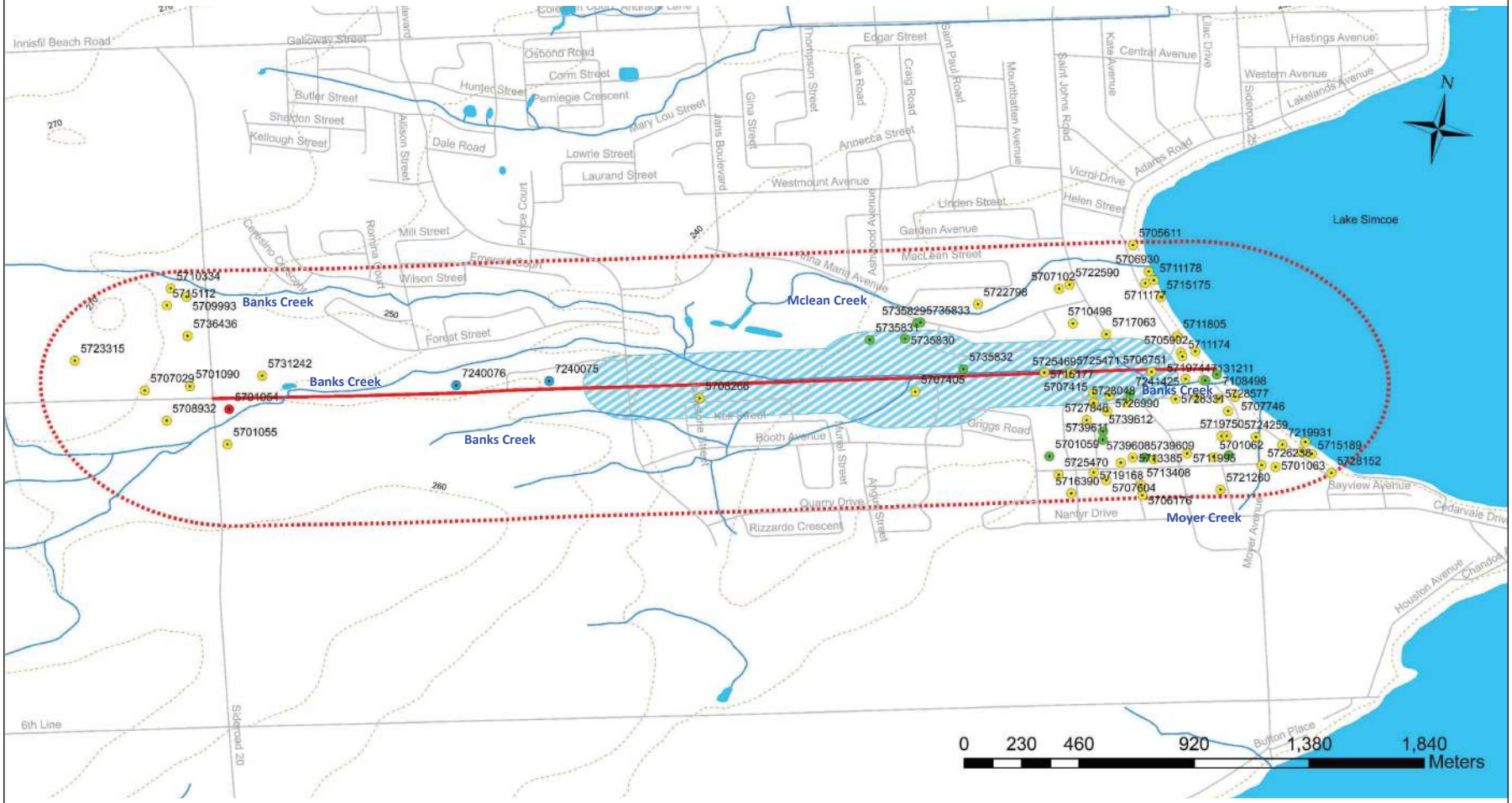
Date:	Scale:	Drawn:	Approved:	Rev:	Project No.:	Drawing No.:	Original Size:
December 2018	As Shown	MB	KY	KY	17-1797H	**4R**	Letter

Client: **Ainley Group**

Title: Subsurface Projection Diagram R-R'

Project: **Hydrogeological Site Assessment**
7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario

GeoPro Consulting Limited



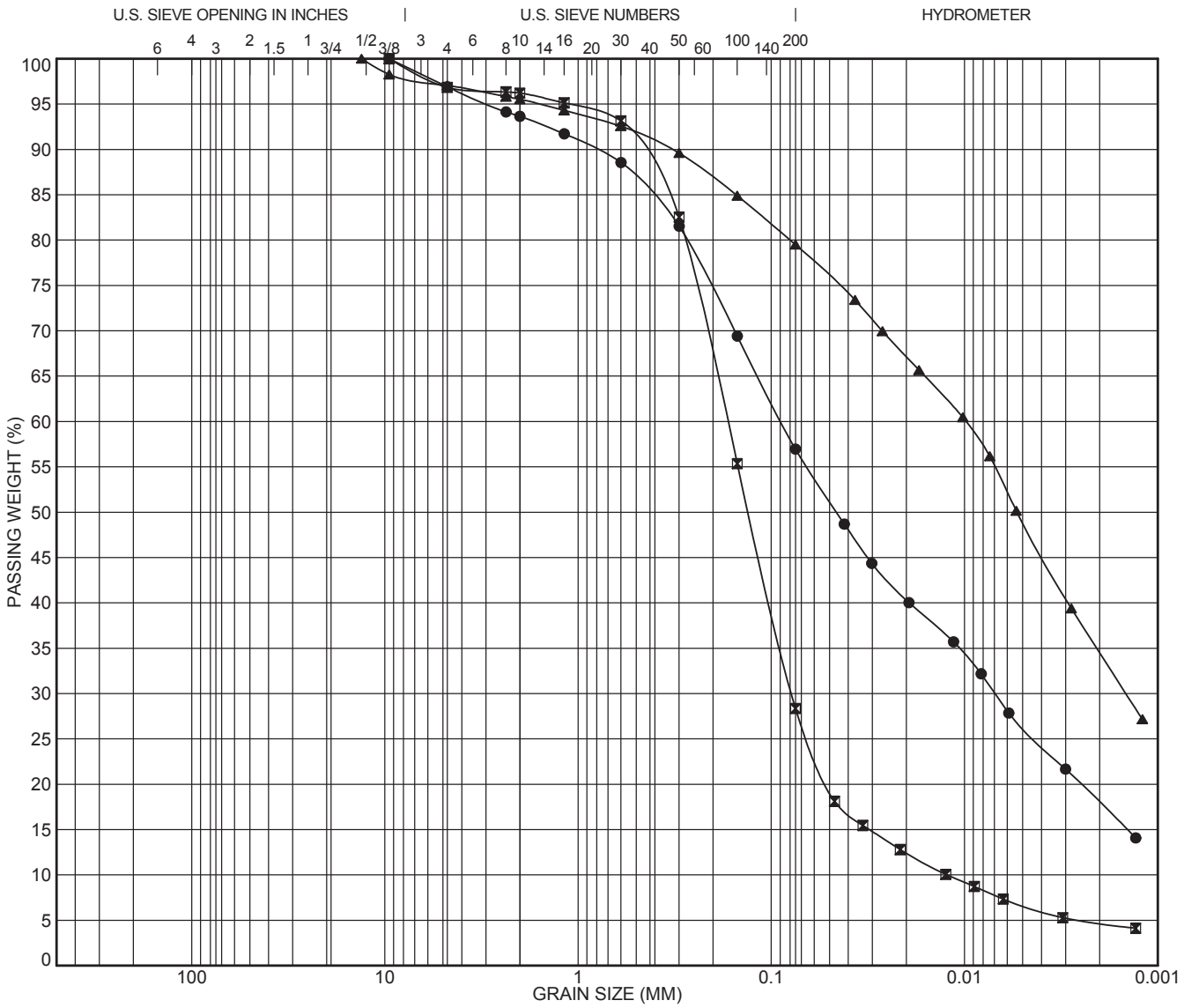
Source: MOECC Database; Toporama Database

Legend

- Public
- Monitoring
- Domestic
- Not used/ Unknown Use
- 500m Radius From The Site
- Estimated Zone of Influence
- Approximate Location of The Site

Client:	Ainley Group	Project No.: 17-1797H	Drawing No.: 5
Drawn: KY	Approved: BG	Title:	MOECC Water Well Location Plan
Date: December 2018	Scale: As Shown	Project:	Hydrogeological Site Assessment 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Township of Innisfil, Ontario
Original Size: Letter	Rev: BG		GeoPro Consulting Limited

FIGURES



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BH202	SS4	2.29						
⊠	BH202	SS7B	6.35					2.94	13.71
▲	BH206	SS3	1.52						

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH202	SS4	2.29	9.5	0.089	0.007		3.1	39.9	39.0	18.0
⊠	BH202	SS7B	6.35	9.5	0.169	0.078	0.012	3.2	68.5	23.7	4.7
▲	BH206	SS3	1.52	13.2	0.01	0.001		3.0	17.5	45.0	34.5

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Tel: 905-237-8336 Fax: 905-248-3699
office@geoproconsulting.ca www.geoproconsulting.ca

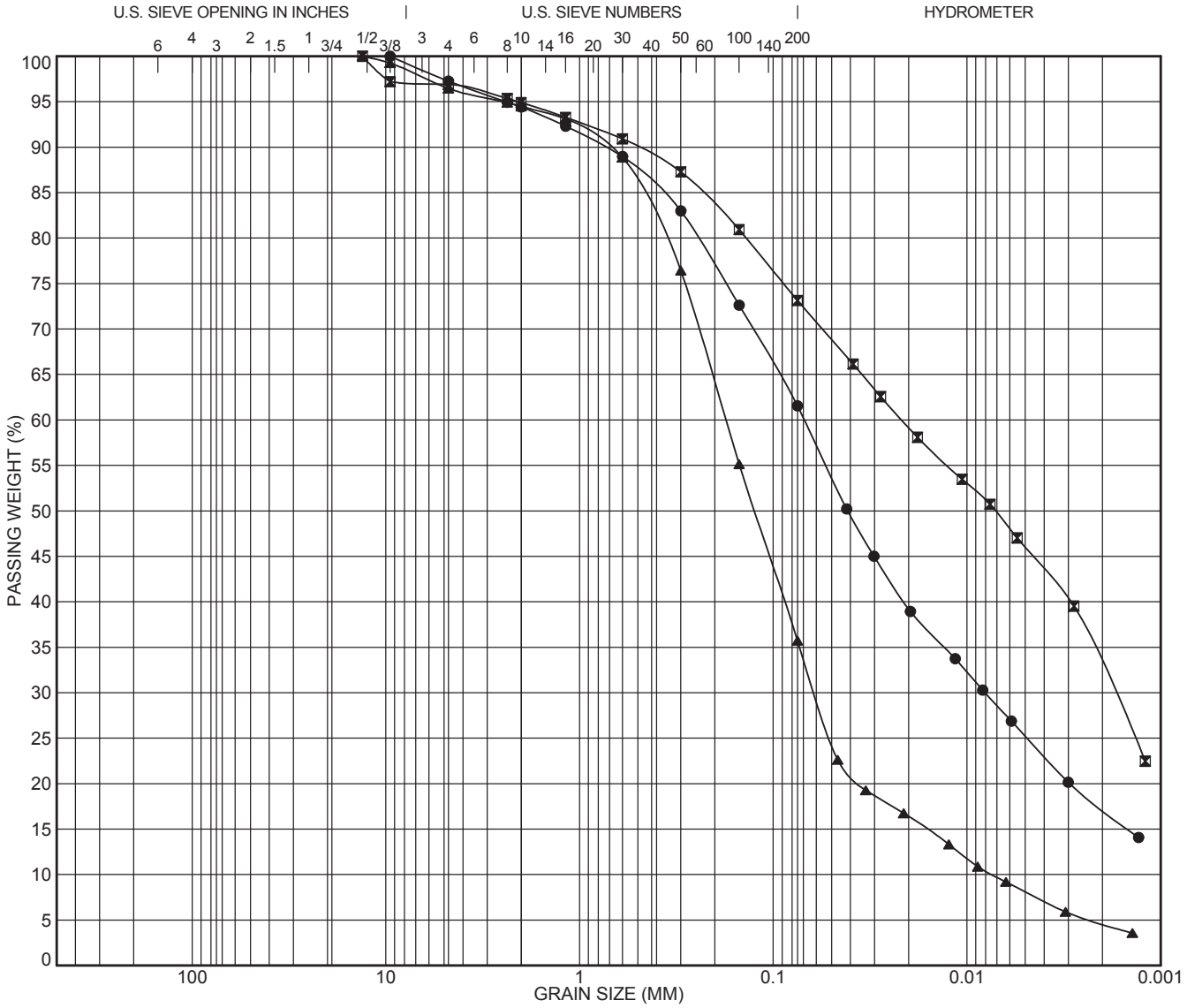
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-20

FIGURE NO.: 1 | TESTED ON: 2017-07-31



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BH207	SS5	3.05						
⊠	BH212	SS4	2.29						
▲	BH215	SS4	2.29					2.85	23.75

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH207	SS5	3.05	9.5	0.069	0.008		2.7	35.7	44.3	17.2
⊠	BH212	SS4	2.29	13.2	0.022	0.002		3.1	23.7	40.4	32.7
▲	BH215	SS4	2.29	13.2	0.176	0.061	0.007	3.6	60.7	31.1	4.6

GeoPro CONSULTING LIMITED
Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6
Tel: 905-237-8336 Fax: 905-248-3699
office@geoproconsulting.ca www.geoproconsulting.ca

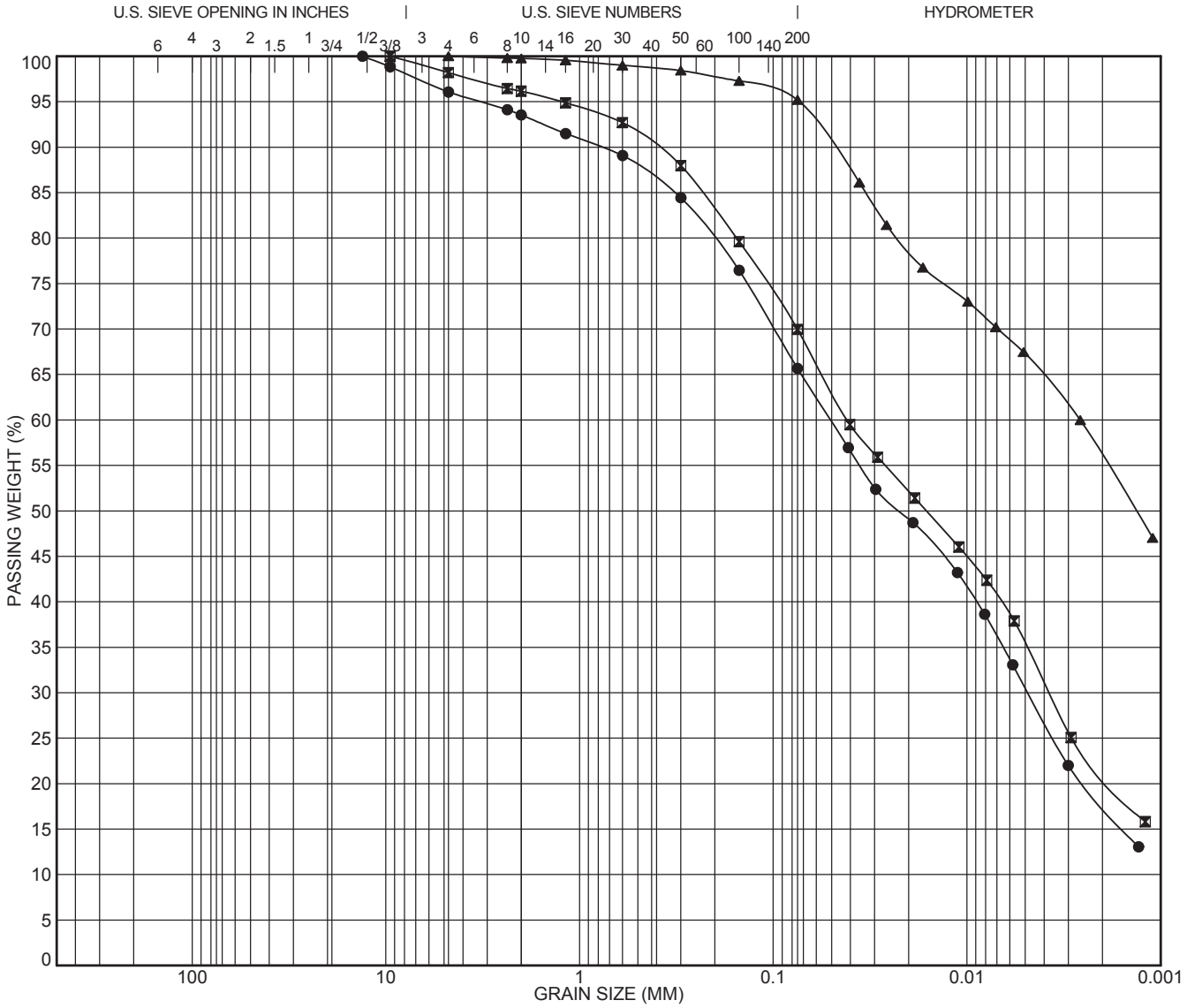
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-26

FIGURE NO.: 2 | TESTED ON: 2017-02-08



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
● BH302	SS6	4.57						
⊠ BH304	SS3	1.52						
▲ BH308	SS6	4.57						

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **BH302**	**SS6**	**4.57**	**13.2**	**0.051**	**0.005**		**3.9**	**30.4**	**48.0**	**17.7**
⊠ **BH304**	**SS3**	**1.52**	**9.5**	**0.041**	**0.004**		**1.8**	**28.2**	**48.8**	**21.2**
▲ **BH308**	**SS6**	**4.57**	**4.75**	**0.003**			**0.0**	**4.8**	**39.2**	**56.0**

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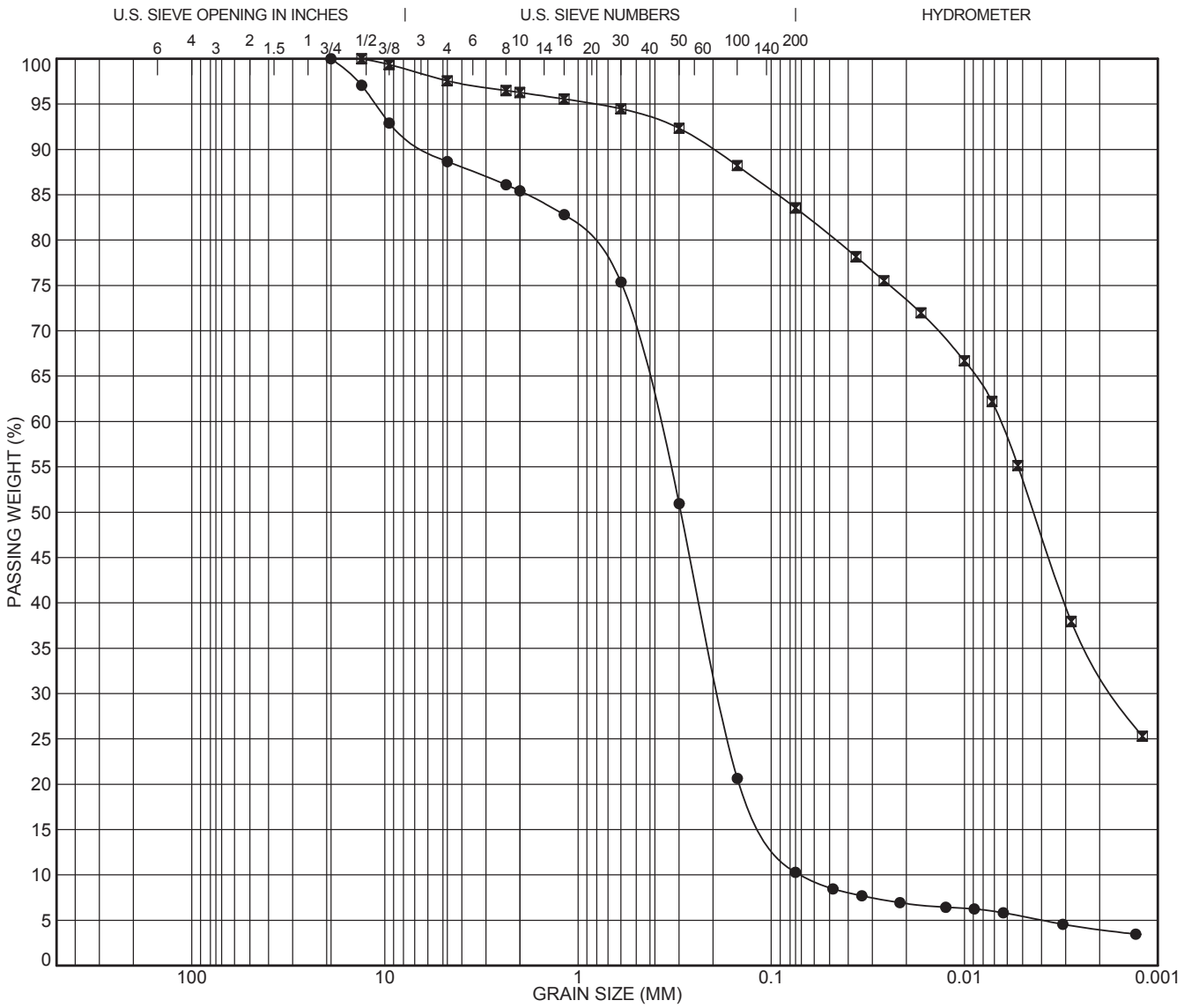
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-24

FIGURE NO.: 3 | TESTED ON: 2017-07-20



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	**BH311**	**SS3**	**1.52**					**1.27**	**5.54**
⊠	**BH402**	**SS6**	**4.57**						

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH311**	**SS3**	**1.52**	**19**	**0.388**	**0.186**	**0.07**	**11.3**	**78.4**	**6.3**	**4.0**
⊠	**BH402**	**SS6**	**4.57**	**13.2**	**0.007**	**0.002**		**2.4**	**14.0**	**50.6**	**32.9**

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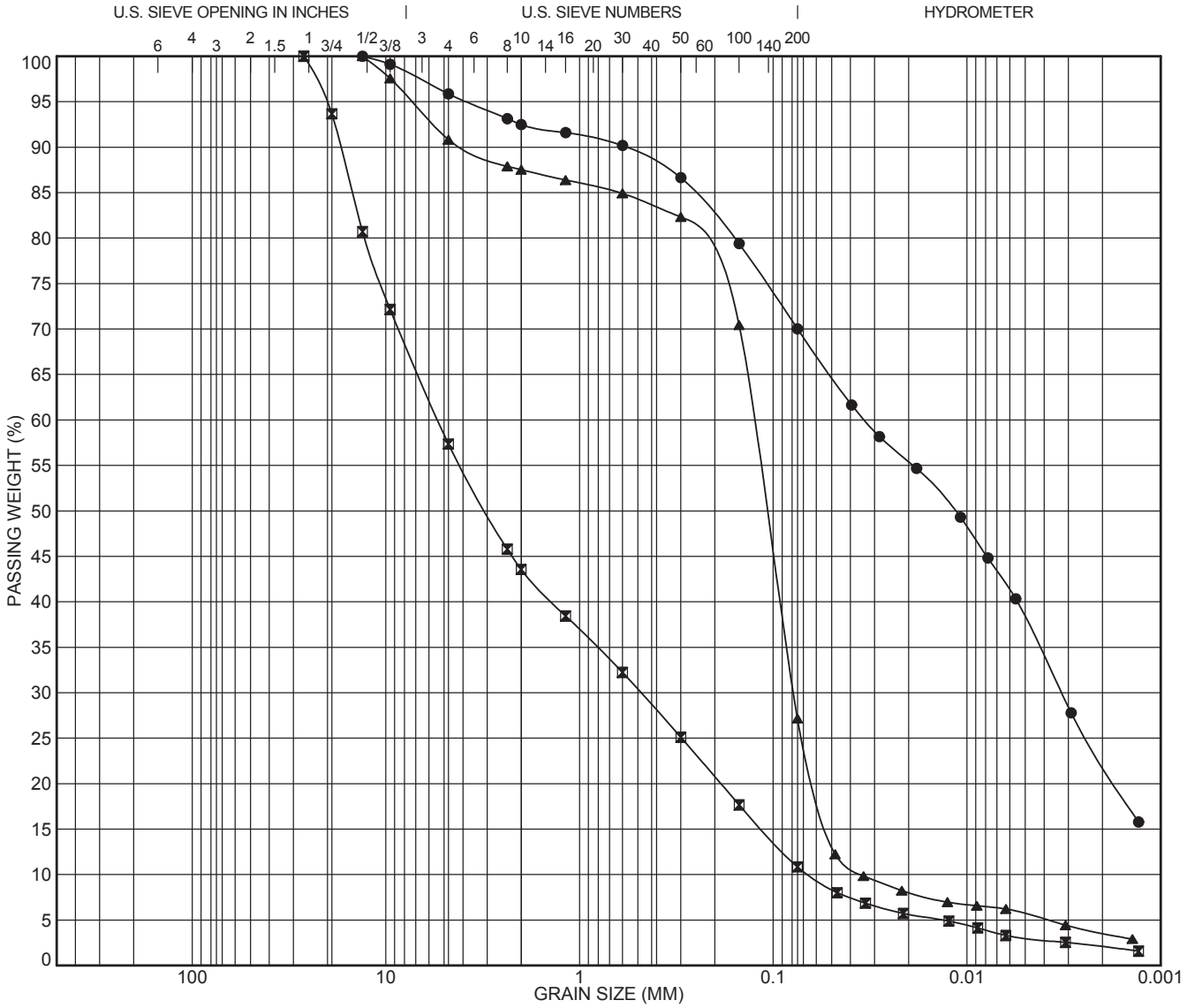
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-19

FIGURE NO.: 4 | TESTED ON: 2017-07-31



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BH205	SS4	2.29						
⊠	BH501	SS5	3.05					0.66	82.43
▲	BH601	SS9	9.14					1.39	3.62

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH205	SS4	2.29	13.2	0.034	0.003		4.1	25.8	47.8	22.2
⊠	BH501	SS5	3.05	26.5	5.378	0.483	0.065	42.6	46.5	8.8	2.1
▲	BH601	SS9	9.14	13.2	0.127	0.078	0.035	9.2	63.7	23.6	3.6

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GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-28

FIGURE NO.: 5 | TESTED ON: 2017-02-08

APPENDIX A

ENCLOSURES

Enclosure 1A: Notes on Sample Descriptions

1. Each soil stratum is described according to the *Modified Unified Soil Classification System*. The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined according to Canadian Foundation Engineering Manual, 4th Edition. Different soil classification systems may be used by others. Please note that a description of the soil stratums is based on visual and tactile examination of the samples augmented with field and laboratory test results, such as a grain size analysis and/or Atterberg Limits testing. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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Enclosure 1B: Explanation of Terms Used in the Record of Boreholes

Sample Type

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO	Drive open
DS	Dimension type sample
FS	Foil sample
NR	No recovery
RC	Rock core
SC	Soil core
SS	Spoon sample
SH	Shelby tube Sample
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

Penetration Resistance

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) required to drive a 50 mm (2 in) drive open sampler for a distance of 300 mm (12 in).

PM – Samples advanced by manual pressure
WR – Samples advanced by weight of sampler and rod
WH – Samples advanced by static weight of hammer

Dynamic Cone Penetration Resistance, N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) to drive uncased a 50 mm (2 in) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in).

Piezo-Cone Penetration Test (CPT):

An electronic cone penetrometer with a 60 degree conical tip and a projected end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurement of tip resistance (Q_t), porewater pressure (PWP) and friction along a sleeve are recorded electronically at 25 mm penetration intervals.

Textural Classification of Soils (ASTM D2487)

Classification	Particle Size
Boulders	> 300 mm
Cobbles	75 mm - 300 mm
Gravel	4.75 mm - 75 mm
Sand	0.075 mm – 4.75 mm
Silt	0.002 mm-0.075 mm
Clay	<0.002 mm(*)

(*) Canadian Foundation Engineering Manual (4th Edition)

Coarse Grain Soil Description (50% greater than 0.075 mm)

Terminology	Proportion
Trace	0-10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. sand and gravel)	> 35%

Soil Description

a) Cohesive Soils(*)

Consistency	Undrained Shear Strength (kPa)	SPT "N" Value
Very soft	<12	0-2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very stiff	100-200	15-30
Hard	>200	>30

(*) Hierarchy of Shear Strength prediction

1. Lab triaxial test
2. Field vane shear test
3. Lab. vane shear test
4. SPT "N" value
5. Pocket penetrometer

b) Cohesionless Soils

Compactness Condition (Formerly Relative Density)	SPT "N" Value
Very loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	>50

Soil Tests

w	Water content
w_p	Plastic limit
w_l	Liquid limit
C	Consolidation (oedometer) test
CID	Consolidated isotropically drained triaxial test
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement
D_R	Relative density (specific gravity, Gs)
DS	Direct shear test
ENV	Environmental/ chemical analysis
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified proctor compaction test
SPC	Standard proctor compaction test
OC	Organic content test
U	Unconsolidated Undrained Triaxial Test
V	Field vane (LV-laboratory vane test)
γ	Unit weight

LOG OF BOREHOLE BH111

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
253.7 0.0 253.6	**ASPHALT CONCRETE:** (140 mm)						
0.1 253.0	**GRANULAR BASE/SUBBASE:** (540 mm)		1	AS			
0.7 1 252.3	**FILL:** gravelly sand, brown, moist, loose to compact		2	SS	10		253
1.4 251.7	**FILL:** clayey silt, some sand, trace gravel, brown, moist, firm		3	SS	7		252
2.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling. 2) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH112

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 3

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
254.0 0.0 253.8	**ASPHALT CONCRETE:** (220 mm)						
0.2 253.4	**GRANULAR BASE/SUBBASE:** (390 mm)		1	AS			
0.6 1 252.6	**FILL:** gravelly sand, brown, moist, compact		2	SS	15		253
1.5 252.0	**FILL:** organic clayey silt, trace sand, greenish grey to black, moist, firm		3	SS	5		
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH121

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 4

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
246.6											
246.5 0.0	**ASPHALT CONCRETE:** (120 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (460 mm)		1	AS							
246.0							246				
0.6	**SAND AND SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, compact		2	SS	14						
1											
	--- zones of sand						245				
244.6			3	SS	21						
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH122

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 5

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
246.7 0.0 246.5	**ASPHALT CONCRETE:** (130 mm)						
0.1 246.1	**GRANULAR BASE/SUBBASE** (470 mm)		1	AS			
0.6 1 245.3	**FILL:** clayey silt, trace sand, trace organics, brown, moist, stiff		2	SS	10		246
1.4 244.7	**SAND AND SILT TILL:** some clay, trace gravel, seams of sand, containing cobbles and boulders, brown, moist, dense		3	SS	37		245
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH131

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 6

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
239.2 0.0	**ASPHALT CONCRETE:** (120 mm)						239
239.1 0.1	**GRANULAR BASE/SUBBASE:** (560 mm)		1	AS			
238.5 0.7	**FILL:** silty sand, some clay, trace gravel, brown, moist, loose		2	SS	7		238
237.8 1.4	**SILTY SAND TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, dense		3	SS	35		
237.2 2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH132

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 7

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
239.5 0.0 239.4	**ASPHALT CONCRETE:** (130 mm)					
0.1 238.9	**GRANULAR BASE/SUBBASE:** (470 mm)		1	AS		
0.6 1	**FILL:** clayey silt, some sand, trace gravel, trace organics, brown, moist, firm to stiff		2	SS	8	
237.5			3	SS	10	
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.					

ELEVATION: 239, 238

DYNAMIC PENETRATION TEST (○ SPT, ≈ Cone, blows/0.3m) 20 40 60 80
SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane) 20 40 60 80
Plastic Limit (w_P) — Natural Moisture Content (w) — Liquid Limit (w_L)
WATER CONTENT (%) 10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH141

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 8

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
224.4							
224.3 0.0	**ASPHALT CONCRETE:** (110 mm)						
0.1	**GRANULAR BASE/SUBBASE:** (400 mm)		1	SS	75		
223.9							224
0.5	**FILL:** sand, some silt, trace gravel, trace to some organics, brown to brownish grey, wet, loose to compact		2	SS	13		
1							223
222.4			3	SS	10		
2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH142

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 9

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
224.4							
224.3 / 0.1	**ASPHALT CONCRETE:** (80 mm) **GRANULAR BASE/SUBBASE:** (610 mm)		1	SS	33		224
223.7 / 0.7	**FILL:** gravelly sand, some silt, pockets of organic silt, brown to brownish grey, wet, compact		2	SS	15		223
222.5 / 2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.9 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.		3	SS	12		

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^{3}$, $\times^{3}$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH151

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 10

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	WATER CONTENT (%) (Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L)	UNIT WT (kN/m^3)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.8											
222.8	**ASPHALT CONCRETE:** (25 mm)										
222.4	**GRANULAR BASE/SUBBASE:** (350 mm)		1	SS	48						
0.4 222.1	**FILL:** organic silt, some clay, some sand, dark grey, moist, dense										
0.7	**SANDY SILT:** some clay, trace gravel, brown, moist, compact to dense		2	SS	23		222				
221.1			3A	SS							
1.7 220.8	**SAND AND GRAVEL:** trace silt, brown, wet, dense		3B	SS	41		221				
2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH152

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: JJ | DATE: 2017-07-26

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 11

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
222.8							
222.6 / 0.0	**ASPHALT CONCRETE:** (25 mm)						
	GRANULAR BASE/SUBBASE: (400 mm)		1A	SS	23		
222.4 / 0.4	**FILL:** sandy silt, some clay, trace gravel, some organics, brown to dark brown, moist, compact		1B	SS			
222.1 / 0.7	**SAND AND SILT TO SILTY SAND:** some clay, trace gravel, brown, moist, compact to very dense		2	SS	20		222
1			3	SS	57		221
220.8 / 2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.						

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80

Natural Moisture Content: Plastic Limit w_P — w — Liquid Limit w_L

WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3, Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH161

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: EW
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 12

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
221.3							
221.2 0.0	**ASPHALT CONCRETE:** (125 mm)						
0.1	**GRANULAR BASE/SUBBASE:** (635 mm)		1	AS			
220.6 0.8	**FILL:** sand and gravel, trace silt, brown, moist, compact		2	SS	15		
219.9 1.4	**FILL:** fine sand, trace silt, trace gravel, pockets of silty sand, brown, saturated, very loose to loose		3	SS	4		
219.3 2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
WATER CONTENT (%): Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L; 10 20 30 40
UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH162

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: EW
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 13

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
221.5							
0.0 / 221.3	**ASPHALT CONCRETE:** (190 mm)						
0.2 / 220.9	**GRANULAR BASE/SUBBASE:** (460 mm)		1	AS			221
0.7 / 219.5	**FILL:** sand, some gravel, trace silt, containing waste asphalt pieces, very loose to loose		2	SS	6		220
			3	SS	4		
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST (○ SPT, ≳ Cone, blows/0.3m) 20 40 60 80
SHEAR STRENGTH (kPa) (● Unconfined, ▲ Quick Triaxial, × Field Vane & Sensitivity, ⊠ Penetrometer, + Lab Vane) 20 40 60 80
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%) 10 20 30 40
UNIT WT (kN/m^3)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH171

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
222.6							
222.5 / 0.1	**ASPHALT CONCRETE:** (75 mm)						
	GRANULAR BASE/SUBBASE (400 mm)		1	SS	55		
222.1 / 0.5	**FILL:** gravelly sand, trace to some silt, brown, moist, compact to very dense						222
1			2	SS	30		
							221
220.6			3	SS	25		
2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.7 m below ground surface (mBGS) 2) Borehole was dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH181

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 15

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
219.8							
219.5 0.4	**ASPHALT CONCRETE:** (40 mm) **GRANULAR BASE/SUBBASE:** (320 mm) **FILL:** sand, trace silt, trace organics, brown, wet, compact		1	SS	16		219
			2	SS	15		
217.8			3	SS	15		218
2.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 1.2 mBGS upon completion of drilling. 3) Borehole caved at a depth of 1.7 mBGS upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80
SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH201

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 16

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
252.5					
0.0 / 251.8	**GRANULAR FILL:** (700 mm)	1	SS	11	252
0.7 / 251.1	**FILL:** clayey silt, some sand, trace gravel, brown, moist, soft to firm	2	SS	4	
1.4 / 250.4	**PROBABLE FILL:** clayey silt, some sand, trace gravel, brown, moist, stiff	3	SS	10	251
2.1 / 249.8	**CLAYEY SILT:** trace sand, brown, moist, very stiff	4A	SS	20	
2.7	**SANDY SILT TO SAND AND SILT TO SILTY SAND:** trace clay, trace gravel, brown, moist to wet, compact to very dense	4B	SS		250
	--- containing cobbles and boulders	5	SS	26	
	--- containing cobbles and boulders, wet, very dense	6	AS	50	249
247.9					248
4.6	**END OF BOREHOLE DUE TO AUGER REFUSAL**				

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Borehole was open and dry upon completion of drilling.

DYNAMIC PENETRATION TEST: SPT / Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
WATER CONTENT (%): Plastic Limit (w_P) Natural Moisture Content (w) Liquid Limit (w_L); 10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
20	71	9	

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH202

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 17

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
250.5						
250.4 / 0.0	**ASPHALT CONCRETE:** (120 mm)				Concrete	
250.4 / 0.1	**GRANULAR BASE/SUBBASE:** (580 mm)	1	AS			250
249.8						
0.7	**FILL:** sandy silt, trace clay, trace gravel, pockets of clayey silt, brown, moist, loose	2	SS	8		
249.2						
1.4 / 248.9	**CLAYEY SILT:** some sand, trace gravel, brown, moist, very stiff	3A	SS			249
1.7	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown, moist, very stiff	3B	SS	23		
248.4 / 2.1						
	SANDY SILT TILL TO SAND AND SILT TILL: some clay, trace gravel, containing cobbles and boulders, brown, moist, dense to very dense	4	SS	44		248
					Bentonite	
		5	SS	85 / 290 mm		
						247
		6	SS	50 / 125 mm		246
	--- layers of silty sand					
245.0						245
5.6	**GRAVELLY SAND:** some silt, layers of clayey silt, brown, moist, very dense				W. L. 244.9 m Aug 08, 2017	
244.2		7A	SS	79		
6.4	**SILTY SAND:** trace clay, trace gravel, brown, moist, very dense	7B	SS		Sand	244
243.5					Screen	
7.1	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, layers of sand, brown, moist, very dense					243
242.5		8	SS	80	Natrual Pack	
8.1	**END OF BOREHOLE**					

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.9 mBGS upon completion of drilling.
3) Borehole caved at a depth of 6.4 mBGS upon completion of drilling.
4) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Readings (mBGS)

Date	W. L.	Depth
Aug 8, 2017	5.67	

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	3	40	39	18
	3	68	24	5

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH203

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 18

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
249.2							
0.0	**GRANULAR FILL:** (760 mm)		1	SS	12		249
248.4							
0.8	**FILL:** clayey silt, trace to some sand, trace gravel, some organics, trace rootlets, dark brown, moist, stiff to very stiff		2	SS	9		248
			3	SS	16		
	--- layers of sandy silt		4	SS	13		247
246.3							
2.9	**GRAVELLY SAND:** some silt, trace clay, pockets of sandy silt, brown, wet, compact to dense		5	SS	16		246
244.4			6A	SS	49		245
4.8	**CLAYEY SILT:** trace sand, trace gravel, grey, wet, hard		6B	SS			
244.2							
5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Borehole caved at a depth of 3.0 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH204

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 19

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
249.1							249
0.0	**GRANULAR FILL:** (610 mm)		1	SS	25		
248.5							248
0.6	**FILL:** sandy silt, some clay, trace gravel, trace organics, brown, moist, compact		2	SS	11		
247.9							
1.2	**FILL:** clayey silt, trace sand, trace gravel, trace organics, brown, moist, firm to stiff		3A	SS			
247.4							247
1.7	**SILTY SAND:** trace clay, brown, wet, loose to compact		3B	SS	5		
246.6			4A	SS	24		
246.5	**FINE SANDY SILT:** some clay, brown, moist, compact		4B	SS			
2.7	**CLAYEY SILT:** trace sand, brown, moist, very stiff to hard		4C	SS			246
			5	SS	53		
244.3			6	SS	50 / 250 mm		245
4.8	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.1 mBGS upon completion of drilling.
3) Borehole caved at a depth of 3.1 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ⌁ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit / Natural Moisture Content / Liquid Limit
w_P w w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
38	50	11	

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH205

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 20

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) 20 40 60 80	SHEAR STRENGTH (kPa) ● Unconfined ▲ Quick Triaxial ✕ Field Vane & Sensitivity ⊠ Penetrometer + Lab Vane 20 40 60 80	Plastic Limit w_P	Natural Moisture Content w	Liquid Limit w_L	WATER CONTENT (%) 10 20 30 40	UNIT WT (kN/m^3)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
246.4															
0.0 / 245.7	**GRANULAR FILL:** (660 mm)		1	SS	19		246								
0.7 / 245.3	**ORGANIC CLAYEY SILT:** some sand, trace gravel, dark brown, moist, stiff		2A	SS	14										
1.1 / 244.1	**SANDY SILT:** some clay, trace gravel, brown, moist, compact		2B	SS			245								
			3	SS	14										
2.3 / 241.5	**SANDY SILT TILL:** some clay to clayey, trace gravel, containing cobbles and boulders, brown, moist, compact to very dense		4	SS	24		244								4 26 48 22
			5	SS	34		243								
							242								
244.9 / 5.0	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, grey, moist, hard		6	SS	62										
	END OF BOREHOLE														

Note:
1) Borehole was open and dry upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH206

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 21

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
242.0					
241.8 / 0.0	**GRANULAR FILL:** (30 mm)				
	FILL: silty sand, some clay, trace gravel, some organics, brown to dark brown, moist, compact	1	SS	11	
241.3 / 0.7	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown to grey, moist, stiff to hard	2	SS	13	241
		3	SS	23	240
		4	SS	33	239
		5	SS	36	238
	--- grey	6	SS	30	
237.0 / 5.0	**END OF BOREHOLE**				237

Note:
1) Borehole was open and dry upon completion of drilling.

DYNAMIC PENETRATION TEST: SPT, Cone, blows/0.3m (20, 40, 60, 80)
SHEAR STRENGTH (kPa): Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane (20, 40, 60, 80)
WATER CONTENT (%): Plastic Limit (w_P), Natural Moisture Content (w), Liquid Limit (w_L) (10, 20, 30, 40)

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
3	18	45	34

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH207

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 22

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
237.2						
237.0 0.2	**ASPHALT CONCRETE:** (30 mm)					
	GRANULAR BASE/SUBBASE: (570 mm)		1	AS		
236.6 0.6	**FILL:** silty sand, trace gravel, trace to some organics, layers/pockets of sandy silt, dark brown, moist, loose to dense		2	SS	9	
1						
			3	SS	31	
2 235.1						
2.1	**FILL:** sand and gravel, trace silt, brown, moist to wet, compact		4	SS	20	
234.3						
3 2.9	**SAND AND SILT:** some clay, trace gravel, layers of clayey silt, brown, wet, compact		5	SS	11	
4 233.2						
4.0	**SANDY SILT TILL:** some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, grey, moist, compact		6	SS	26	
5 232.2						
5.0	**END OF BOREHOLE**					

Notes:
1) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.
2) Borehole was dry upon completion of drilling.

ELEVATION: 237, 236, 235, 234, 233

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
3	36	44	17

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH208

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 23

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
234.1							
0.0	**GRANULAR FILL:** (760 mm)		1	AS			234
233.4							
0.8	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist to wet, compact to very dense		2	SS	30		233
			3	SS	46		232
			4	SS	61		231
			5	SS	41		230
	--- wet		6	SS	17		229
228.6							
5.6	**SANDY SILT:** some clay, trace gravel, grey, moist, dense		7	SS	37		228
227.6							
6.6	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.
3) Borehole was dry upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ⌇ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH209

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 24

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
228.3 / 0.0	**GRANULAR FILL:** (1400 mm)	1	AS	
		2	SS	13
226.9 / 1.4	**GRAVELLY SAND:** trace silt, brown, moist to wet, loose to compact	3	SS	5
225.8 / 2.5	**SILTY FINE SAND:** trace clay, brown, wet, compact	4A	SS	15
225.4 / 2.9	**SANDY GRAVEL:** some silt, trace organics, grey, wet, dense	4B	SS	
		5	SS	46
224.3 / 4.0	**CLAYEY SILT:** trace sand, grey, very moist, very stiff	6	SS	18
223.3 / 5.0	**END OF BOREHOLE**			

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Borehole was open and dry upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane; 20 40 60 80
Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)
WATER CONTENT (%): 10 20 30 40
UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3, Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH210

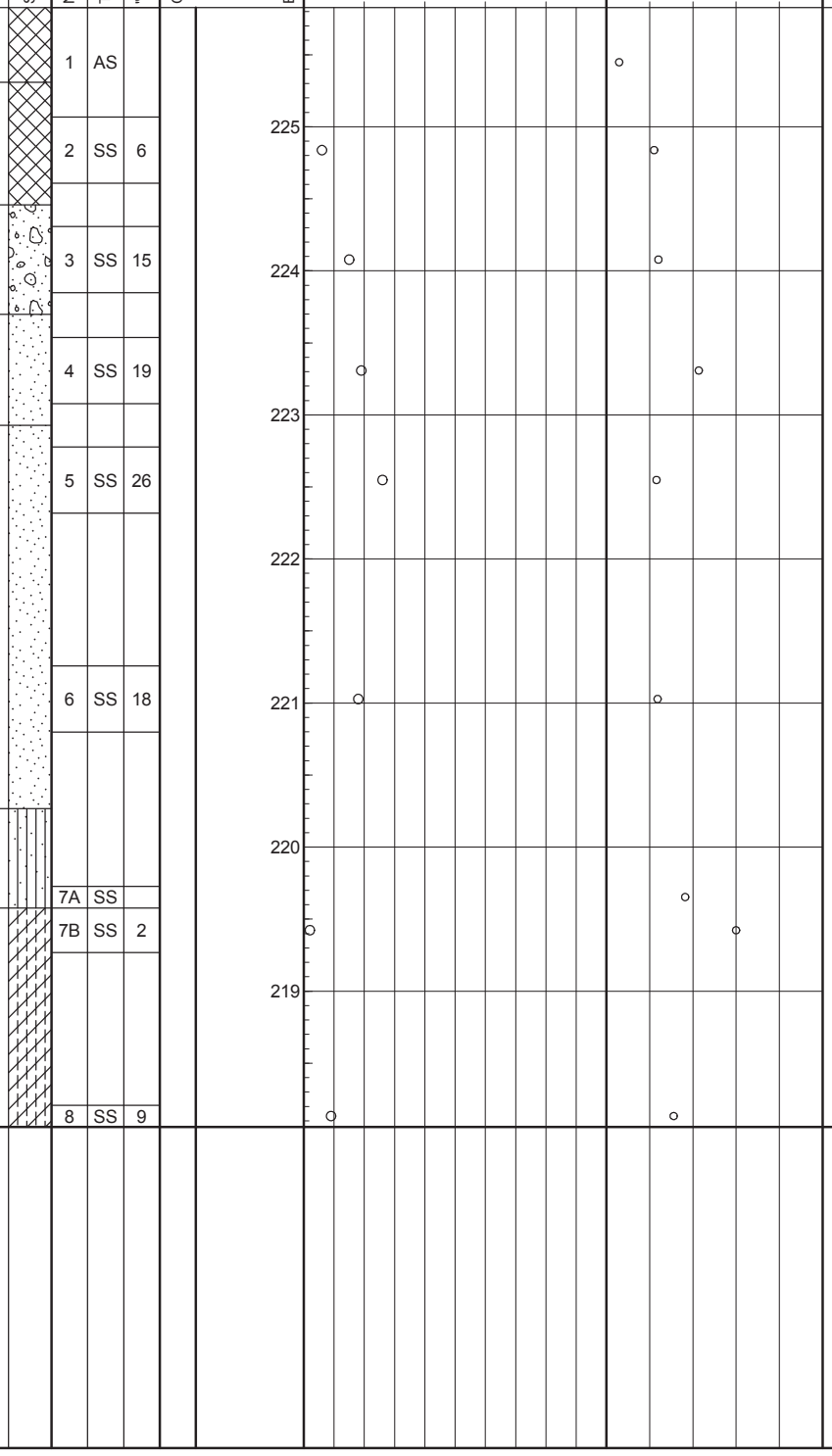
PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW:
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 25

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
225.8 / 0.0	**GRANULAR FILL:** (520 mm)	1	AS	
225.3 / 0.5	**FILL:** sand, some silt, trace gravel, trace organics, brown, moist, loose	2	SS	6
224.5 / 1.4	**GRAVELLY SAND:** trace silt, brown, saturated, compact	3	SS	15
223.7 / 2.1	**FINE SAND:** trace silt, brown, saturated, compact	4	SS	19
222.9 / 2.9	**SAND:** trace to some gravel, trace silt, brown, wet, compact	5	SS	26
		6	SS	18
220.3 / 5.6	**SANDY SILT:** trace clay, trace gravel, grey, saturated, very loose	7A	SS	
219.6 / 6.3	**SILTY CLAY TO CLAYEY SILT:** trace sand, trace gravel, grey, very moist, very soft to stiff	7B	SS	2
218.1 / 7.8	**END OF BOREHOLE**	8	SS	9

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.7 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: SPT / Cone, blows/0.3m (20, 40, 60, 80)
SHEAR STRENGTH (kPa): Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane (20, 40, 60, 80)
Natural Moisture Content: Plastic Limit (w_P), w, Liquid Limit (w_L)
WATER CONTENT (%): 10, 20, 30, 40
UNIT WT (kN/m^3)
REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL



GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH211

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 26

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) 20 40 60 80	SHEAR STRENGTH (kPa) ● Unconfined ▲ Quick Triaxial ✕ Field Vane & Sensitivity ⊠ Penetrometer + Lab Vane 20 40 60 80	Plastic Limit w_P	Natural Moisture Content w	Liquid Limit w_L	WATER CONTENT (%) 10 20 30 40	UNIT WT (kN/m^3)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
224.2															
224.0 / 0.0	**ASPHALT CONCRETE:** (40 mm)														
	GRANULAR BASE/SUBBASE: (560 mm)		1	AS											48 44 8
223.6 / 0.6	**FILL:** sandy silt, some clay, trace gravel, brown, moist, loose		2	SS	7										
1 / 222.8															
1.4	**FILL:** sand, some silt, trace gravel, pockets of organic silt, brown, moist, loose		3	SS	6										
2 / 222.0															
2.1	**SILTY SAND:** trace gravel, grey, saturated, compact		4	SS	13										
221.3															
3 / 2.9	**SAND:** some silt, some gravel, grey, wet, compact		5	SS	29										
4 / 220.1															
4.0	**SILTY CLAY:** trace sand, layers of silt, grey, wet, firm to stiff		6	SS	8										
5 / 219.1															
5.0	**END OF BOREHOLE**														

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.5 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.3 mBGS upon completion of drilling.

ELEVATION: 224, 223, 222, 221, 220

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3, Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH212

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW:
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 27

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.7								
0.0 / 222.1	**GRANULAR FILL:** (630 mm)	1	AS					41 47 12
0.6 / 221.3	**FILL:** sand and gravel, brown, wet, loose	2	SS	7				
1.4 / 220.6	**FILL:** silty sand, trace gravel, some organics, trace to some decay rootlets, containing shell fragments, black, wet, very loose to loose	3	SS	4				
2.1 / 218.7	**CLAYEY SILT:** some sand to sandy, trace gravel, grey, wet, firm to stiff	4	SS	8				3 24 40 33
		5	SS	9				
4.0 / 217.7	**SANDY SILT:** some clay, trace gravel, grey, moist, dense	6	SS	48				
5.0	**END OF BOREHOLE**							

Notes:
1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.1 mBGS upon completion of drilling.
3) Borehole caved at a depth of 1.4 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
WATER CONTENT (%): Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L; 10 20 30 40

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH213

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 28

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
222.3				
0.0	**GRANULAR FILL:** (760 mm)	1	AS	
221.5				
0.8	**FILL:** silty sand, trace clay, trace gravel, pockets of silt, brown, moist to wet, compact	2A	SS	11
221.2		2B	SS	
1.1	**REWORKED SANDY SILT:** trace clay, trace organics, black, moist, compact			
220.9				
1.4	**SANDY SILT TILL:** trace to some clay, trace gravel, containing cobbles and boulders, brown to grey, moist, loose to dense	3	SS	8
		4	SS	23
		5	SS	43
	--- pockets of silt	6	SS	22
217.2				
5.0	**END OF BOREHOLE**			

Notes:
1) Borehole caved at a depth of 4.3 m below ground surface (mBGS) upon completion of drilling.
2) Borehole was dry upon completion of drilling.

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

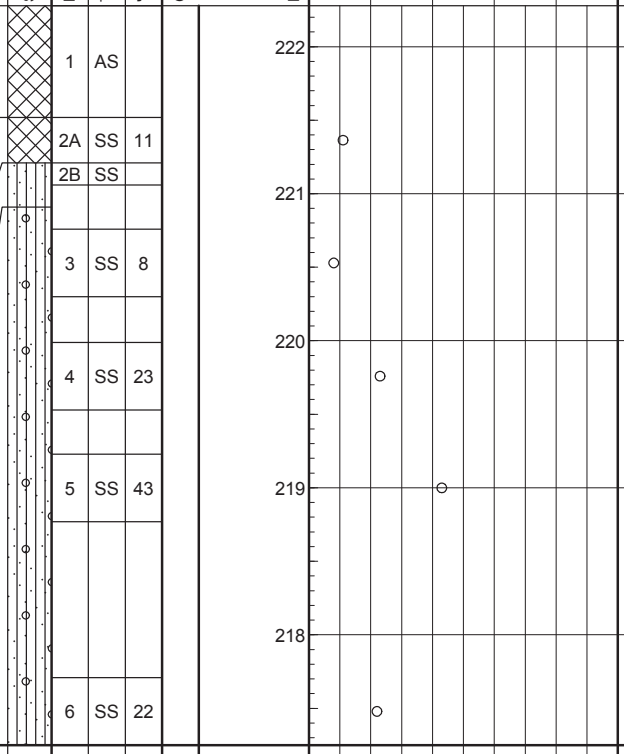
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
44	47	9	



GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH214

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 29

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
221.5						
221.0 / 0.5	**ASPHALT CONCRETE:** (50 mm) **GRANULAR BASE/SUBBASE:** (450 mm)		1	SS	28	
0.5	**FILL:** silty sand, trace clay, trace gravel, pockets of silt, moist, brown, compact		2	SS	15	
219.4			3	SS	14	
2.1	**FILL:** silty fine sand, containing limestone fragments, containing asphalt fragments, brown, saturated, compact		4	SS	11	
218.6						
2.9	**SILTY FINE SAND:** trace clay, layers of fine sandy silt, organic inclusion, brown to grey, wet, compact		5	SS	19	
217.5						
4.0	**SILTY SAND:** trace gravel, grey, moist, very dense		6	SS	50 / 255 (mm)	
216.7						
4.8	**END OF BOREHOLE**					

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.2 mBGS upon completion of drilling.

ELEVATION: 221, 220, 219, 218, 217

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH215

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 30

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
219.9							
0.0 / 219.3	**GRANULAR FILL:** (630 mm)		1	AS			
0.6 / 218.5	**FILL:** silty sand, trace gravel, layers of organic silt, brown, wet, loose		2	SS	9		219
1.4 / 217.8	**SAND:** trace to some silt, trace gravel, grey, wet, compact		3	SS	20		218
2.1 / 217.0	**SILTY SAND:** trace clay, trace gravel, layers of sand, grey, wet, very dense		4	SS	67		217
2.9 / 215.9	**SAND AND SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		5	SS	76 / 255 mm		216
4.0 / 215.1	**SAND AND SILT TILL:** trace clay, trace gravel, layers of sandy silt, layers of silt, containing cobbles and boulders, grey, moist, very dense		6	SS	92 / 230 mm		
4.8	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 1.5 mBGS upon completion of drilling. 3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
4	61	31	4

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH301

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: Mahboob | DATE: 2017-07-11

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 31

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
251.8 0.0	**ASPHALT CONCRETE:** (140 mm)						
251.7 0.1	**GRANULAR BASE/SUBBASE:** (660 mm)		1	AS			
251.0 0.8	**FILL:** clayey silt, trace sand, some organics, trace rootlets, containing woodpieces, black to dark brown, moist, soft to firm		2	SS	4		251
			3	SS	3		250
249.7 2.1	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown, moist, stiff to very stiff		4	SS	9		249
			5	SS	22		248
247.8 4.0	**CLAYEY SILT:** trace sand, brown, moist, hard		6	SS	37		247
246.8 5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST (○ SPT, ≈ Cone, blows/0.3m) 20 40 60 80

SHEAR STRENGTH (kPa) ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane 20 40 60 80

Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)

WATER CONTENT (%) 10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^3$, $\times^3$: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

GeoPro

LOG OF BOREHOLE BH302

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 32

ELEV / DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	TYPE	"N" BLOWS/0.3m	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
250.1 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (680 mm)	1	AS		60 32 8
249.4 / 0.7	**SANDY SILT:** some clay, trace gravel, brown, moist, loose to compact	2	SS	12	
		3	SS	7	
248.0 / 2.1	**SAND AND SILT TILL:** trace clay, trace gravel, layers of sand, containing cobbles and boulders, brown, moist, compact to dense	4	SS	25	
		5A	SS		
247.0 / 3.2	**SILTY SAND:** trace clay, trace gravel, layers of sandy silt, brown, moist, dense	5B	SS	41	
246.1 / 4.0	**SANDY SILT TILL:** some clay, trace gravel, layers of silt, containing cobbles and boulders, brown, moist, compact	6	SS	28	4 30 48 18
245.1 / 5.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 4.0 mBGS upon completion of drilling. 2) Borehole was dry upon completion of drilling.				

Column headings: SOIL PROFILE; STRATA PLOT; SAMPLES; GROUND WATER; ELEVATION (250, 249, 248, 247, 246); DYNAMIC PENETRATION TEST (O SPT, Cone, blows/0.3m: 20 40 60 80); SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane: 20 40 60 80); Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L; WATER CONTENT (%) 10 20 30 40; UNIT WT (kN/m^3)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3, \times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH303

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 33

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
249.4							
249.0 0.0	**ASPHALT CONCRETE:** (25 mm) **GRANULAR BASE/SUBBASE:** (575 mm)		1	AS			249
248.8 0.6	**FILL:** clayey silt, trace to some sand, trace gravel, trace organics, dark brown to brown, moist, stiff		2	SS	9		
1	--- containing cobbles and boulders		3	SS	9		248
247.3 2.1	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, brown, moist, very stiff to hard		4	SS	17		247
3			5	SS	30		246
245.4 4.0	**CLAYEY SILT:** trace sand, grey, moist, hard		6	SS	31		245
244.4 5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH304

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

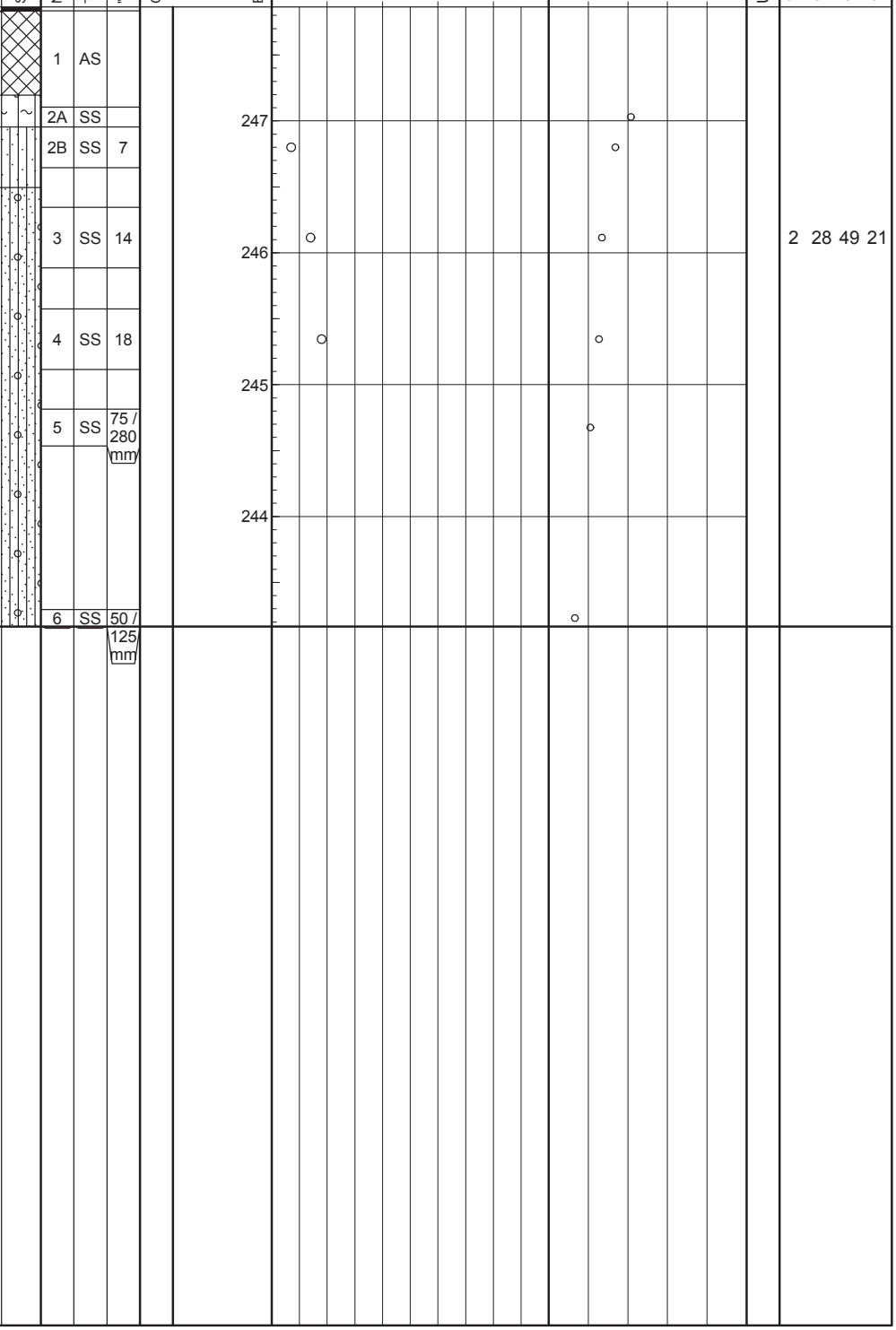
DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 34

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
247.9					
247.6	**ASPHALT CONCRETE:** (25 mm)				
	GRANULAR BASE/SUBBASE: (640 mm)	1	AS		
247.2					
0.7 / 247.0	**ORGANIC SILT:** some clay, trace sand, dark brown, moist, loose	2A	SS		
1 0.9	**SANDY SILT:** some clay, trace gravel, trace organics, brown, moist, loose	2B	SS	7	
246.5					
1.4	**SANDY SILT TILL TO SAND AND SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist. compact to very dense	3	SS	14	2 28 49 21
2		4	SS	18	
3		5	SS	75 / 280 mm	
	--- auger grinding				
4					
243.2		6	SS	50 / 125 mm	
4.7	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.0 mBGS upon completion of drilling.



GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3, Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH305

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 35

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
244.7							
244.6 / 0.1	**ASPHALT CONCRETE:** (30 mm)						
	GRANULAR BASE/SUBBASE: (590 mm)		1	AS			
244.1 / 0.6	**FILL:** clayey silt, trace organics, pockets of sand, brown, moist, stiff		2A	SS	10		244
243.6 / 1.1	**SILTY SAND:** some clay, trace gravel, trace organics, brown, wet, compact to dense		2B	SS			
			3	SS	17		243
			4	SS	27		242
			5	SS	33		241
240.7 / 4.0	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, grey, moist, very stiff		6	SS	26		240
239.7 / 5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 3.1 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.0 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH306

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 36

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
238.6							
238.6	**ASPHALT CONCRETE:** (20 mm)						
	GRANULAR BASE/SUBBASE: (590 mm)		1	AS			
238.0							238
0.6	**FILL:** silty sand, trace clay, some organics, dark brown, moist, loose to compact		2	SS	10		
1							
237.2							
1.4	**CLAYEY SILT:** trace sand, trace gravel, brown, moist, stiff		3	SS	12		237
236.6							
2.0	**SANDY SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, compact to very dense		4	SS	17		
3							236
235.5							
3.1	**SAND AND GRAVEL:** trace silt, brown, moist, very dense		5A / 5B	SS	63		
4							235
234.6							
4.0	**SILTY SAND:** trace clay, trace gravel, brown, wet, dense		6	SS	33		
5							234
233.6							
5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Borehole was open and dry upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH307

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 37

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
236.0						
236.0	**ASPHALT CONCRETE:** (20 mm)					
235.9	**GRANULAR BASE/SUBBASE:** (590 mm)		1	AS		
235.4						
235.2	**FILL:** silty sand, trace gravel, pockets of organic silt, dark brown, moist		2	SS	23	
0.8	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist, compact to dense					
1			3	SS	27	
2			4	SS	38	
233.1						
2.9	**SILTY SAND:** some clay, trace gravel, brown, wet, compact		5A	SS	15	
232.7						
3.4	**SAND:** some silt, trace gravel, brown, wet, compact		5B	SS		
232.0						
4.0	**CLAYEY SILT:** trace sand, grey, wet, firm		6	SS	7	
5						
230.4						
5.6	**SILTY SAND:** some clay, some gravel, grey, wet, compact		7	SS	11	
6						
229.5						
6.6	**END OF BOREHOLE**					

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.6 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.6 mBGS upon completion of drilling.

ELEVATION: 235, 234, 233, 232, 231, 230

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^{3}$, $\times^{3}$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH308

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 38

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
230.2						
230.0 / 0.0	**ASPHALT CONCRETE:** (30 mm)					
	GRANULAR BASE/SUBBASE: (580 mm)		1	AS		
229.6 / 0.6	**FILL:** silty sand, trace clay, trace gravel, pockets of sandy silt, brown, moist, compact		2A	SS	14	
229.2 / 1.0	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist to wet, compact to dense		2B	SS		
			3	SS	44	
			4	SS	19	
	--- wet		5	SS	21	
226.1 / 4.0	**SILTY CLAY:** trace sand, grey, wet, stiff		6	SS	10	
225.1 / 5.0	**END OF BOREHOLE**					

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 2.4 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ~ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

ELEVATION: 230, 229, 228, 227, 226

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	5	39	56

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3, Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH309

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-25

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 39

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
227.0							
226.9 / 0.0	**ASPHALT CONCRETE:** (40 mm)						
	GRANULAR BASE/SUBBASE: (600 mm)		1	AS			
226.3 / 0.6	**SAND AND GRAVEL:** trace silt, brown, saturated, compact to very dense		2	SS	17		226
			3	SS	23		225
			4	SS	20		224
			5	SS	54		223
222.9 / 4.0	**CLAYEY SILT:** trace sand, trace gravel, grey, wet, stiff		6	SS	11		222
222.0 / 5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 1.8 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit | Natural Moisture Content | Liquid Limit
w_P w w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH310

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 40

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
225.2							
225.0 / 0.0	**ASPHALT CONCRETE:** (20 mm)						
224.9 / 0.2	**GRANULAR BASE/SUBBASE:** (630 mm)		1	AS			
224.5 / 0.7	**PROBABLE FILL:** sand, trace to some gravel, trace silt, trace organics, dark brown, moist to wet, loose to compact		2	SS	13		
1							
			3	SS	6		
2 / 223.1							
2.1	**SAND:** trace silt, trace gravel, brown, saturated, compact		4	SS	22		
3							
			5	SS	20		
4 / 221.1							
4.0	**SILT:** some clay to clayey, trace sand, trace gravel, grey, wet, loose						
			6	SS	9		
5 / 220.2							
5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

ELEVATION: 225, 224, 223, 222, 221

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3, Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH311

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 41

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Quick Triaxial, Field Vane & Sensitivity, Penetrometer, Lab Vane)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
223.7											
223.6 / 0.0	**ASPHALT CONCRETE:** (40 mm)										
223.1 / 0.6	**GRANULAR BASE/SUBBASE:** (580 mm)		1	AS							
222.3 / 1.4	**FILL:** silty sand, trace clay, trace gravel, brown, moist, compact		2	SS	13		223				
220.8 / 2.9	**SAND:** trace to some gravel, trace clay, trace silt, brown, wet to saturated, very loose to loose		3	SS	4		222				11 78 6 5
220.4 / 3.3	**SAND AND GRAVEL:** trace silt, brown, saturated, compact		4	SS	9		221				
219.6 / 4.0	**SILT:** some clay, trace sand, grey, saturated, compact		5A	SS	15						
218.7 / 5.0	**SILTY CLAY:** trace sand, grey, moist, firm		5B	SS			220				
	END OF BOREHOLE Note: 1) Borehole was open and dry upon completion of drilling.		6	SS	9		219				

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH312

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

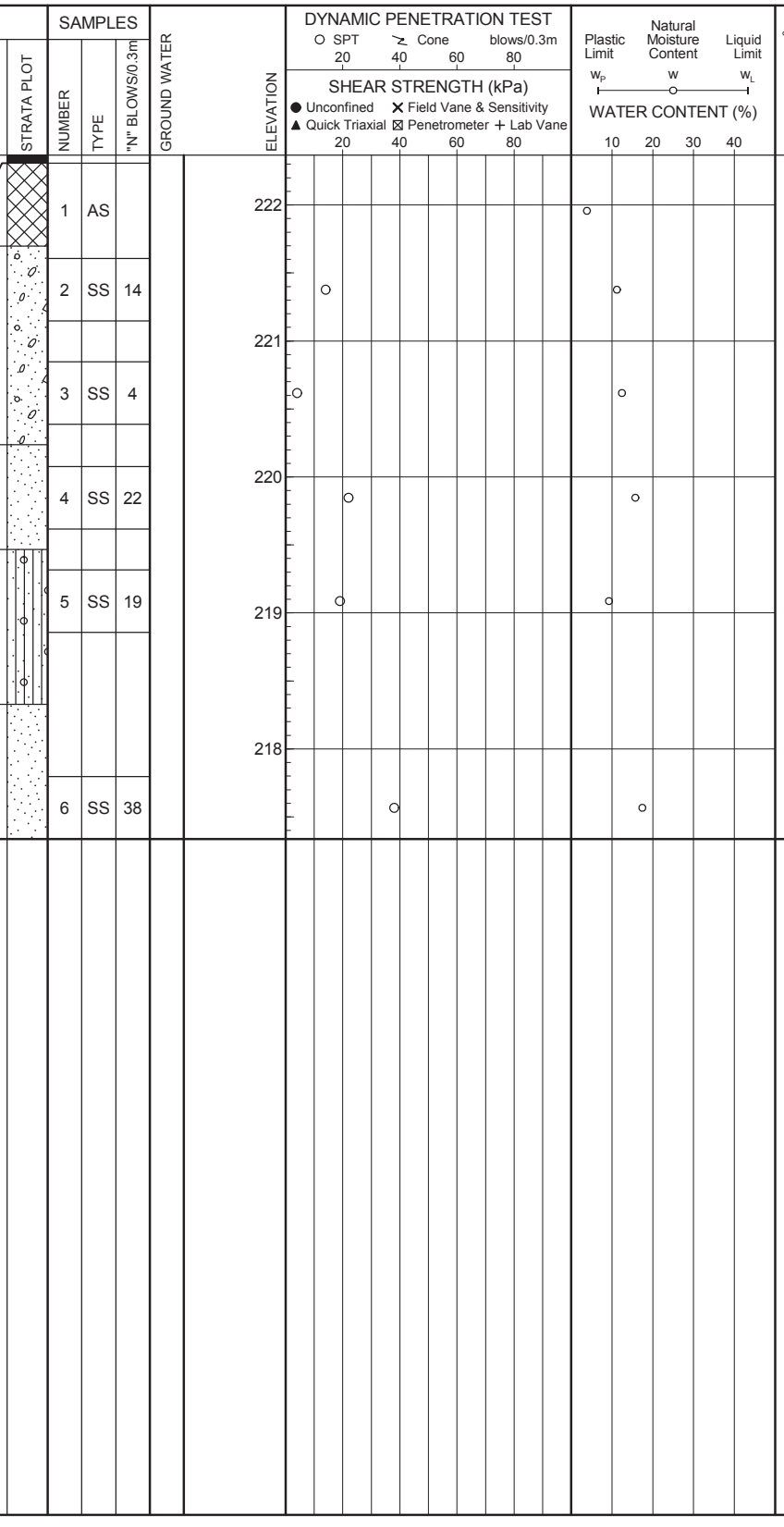
FIELD ENGINEER: CC | DATE: 2017-07-27

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 42

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
222.4						
222.3 0.1	**ASPHALT CONCRETE:** (60 mm) **GRANULAR BASE/SUBBASE:** (610 mm)		1	AS		
221.7 0.7	**SAND AND GRAVEL:** trace silt, brown, saturated, very loose to compact		2	SS	14	
1						
3			3	SS	4	
2 220.2 2.1	**SAND:** trace to some silt, trace gravel, brown, saturated, compact		4	SS	22	
219.5						
3 2.9	**SANDY SILT TILL:** trace to some clay, trace gravel, containing cobbles and boulders, grey, moist, compact		5	SS	19	
4 218.3 4.0	**SAND:** trace silt, trace gravel, grey, saturated, dense		6	SS	38	
217.3 5.0	**END OF BOREHOLE**					

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.1 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.



UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	50	39	11	

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH313

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 43

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER
222.3						
222.2 / 0.1	**ASPHALT CONCRETE:** (45 mm)					
222.1 / 0.4	**GRANULAR BASE/SUBBASE:** (555 mm)		1	AS		
221.7 / 0.6	**FILL:** sandy gravel, trace silt, brown, moist, loose		2A	SS	8	
			2B	SS		
221.3 / 1.0	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, brown to grey, moist, firm to hard					
			3	SS	26	
			4	SS	37	
			5	SS	27	
218.2 / 4.0	**CLAYEY SILT:** trace sand, grey, very moist, very stiff					
			6	SS	20	
217.2 / 5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.					

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

ELEVATION: 222, 221, 220, 219, 218

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH314

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 44

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
220.8							
220.6 0.0	**ASPHALT CONCRETE:** (35 mm)						
	GRANULAR BASE/SUBBASE: (400 mm)		1	AS			
220.4 0.4	**FILL:** silty sand, trace gravel, pockets of sand and silt, brown, moist, compact		2	SS	14		220
1 219.4							
1.4	**FILL:** sand and silt, trace clay, trace gravel, trace organics, layers of clayey silt, brown, wet, compact to dense		3	SS	30		219
2 218.7							
2.1	**SANDY SILT TO SAND AND SILT:** trace gravel, seams of sand, brown, wet, very dense		4	SS	70		218
217.9							
3 2.9	**SAND:** trace silt, trace gravel, layers of sandy silt, brown, wet, very dense		5	SS	58		217
4 216.7							
4.1	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		6	SS	72		216
5 215.8							
5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.7 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.7 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	16	68	16	

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

01 - GEOPRO SOIL LOG GEOPRO 17-1797GH BH LOGS 20170821- EW.GPJ 2017-08-21 10:39

LOG OF BOREHOLE BH401

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 45

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
250.1							
250.0 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (660 mm)		1	AS			250
249.4 / 0.7	**FILL:** sand and gravel, trace silt, brown, moist						
1 / 248.9 / 1.2	**FILL:** silty sand, some gravel, trace clay, brown, moist, dense		2	SS	36		249
248.7 / 1.5	**ORGANIC SILT:** some clay, black, moist, loose		3A	SS			
248.4 / 1.7	**ORGANIC CLAYEY SILT:** trace sand, dark grey, moist, stiff		3B	SS	9		248
2 / 247.9 / 2.2	**CLAYEY SILT:** trace sand, grey to brown, moist, stiff to hard		4	SS	12		
3			5	SS	38		247
246.1 / 4.0	**CLAYEY SILT TILL:** some to trace sand, trace gravel, containing cobbles and boulders, brown to grey, moist, hard		6	SS	66		246
5	--- grey						
6			7	SS	80		244
7 / 243.0	--- layers of silt						243
7.2	**CLAYEY SILT:** trace sand, layers of silt, grey, moist, hard		8	SS	71		242
9			9	SS	35		241
10							

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined × Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3 : Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH401

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 45

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
239.9							240				
10.2	**SAND:** trace silt, trace gravel, grey, wet to saturated, dense to very dense										
11			10	SS	58		239				
12											
237.5			11	SS	36		238				
12.7	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 10.7 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 10.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 10.1 mBGS upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH402

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 46

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
249.7							
249.6 / 0.0	**ASPHALT CONCRETE:** (30 mm) **GRANULAR BASE/SUBBASE** (570 mm)		1	AS		Concrete	
249.1 / 0.6	**ORGANIC CLAYEY SILT:** some sand, trace gravel, brown, moist, stiff to hard		2	SS	37		249
248.0 / 1.7	**CLAYEY SILT:** trace to some sand, trace gravel, brown, moist, stiff to very stiff		3A	SS			
			3B	SS	13		248
			4A	SS	19		
247.1 / 2.6	**SANDY SILT:** some clay, trace gravel, brown, moist to wet, compact		4B	SS		W. L. 247.1 m, Aug 08, 2017	
			5	SS	21		246
245.7 / 4.0	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown to grey, moist, hard					Bentonite	
			6	SS	43		245
	--- grey		7	SS	33		244
							243
			8	SS	40		242
241.0 / 8.7	**SILTY SAND:** trace gravel, grey, wet, dense						241
240.3 / 9.4	**CLAYEY SILT:** trace sand, grey, moist, hard		9A	SS	37		
			9B	SS		Sand	240
						Screen	

DYNAMIC PENETRATION TEST (SPT, Cone, blows/0.3m) 20 40 60 80
SHEAR STRENGTH (kPa) ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane 20 40 60 80
Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%) 10 20 30 40
UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
2	14	51	33

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH402

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 46

ELEV DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	WATER CONTENT (%)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
239.6 10.1	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, grey, moist, hard	10	SS	50 / 150 mm	Natural pack	239		
238.1 11.7	**SAND AND SILT:** trace clay, trace gravel, grey, wet, very dense	11	SS	50 / 125 mm		238		
237.4 12.3	**END OF BOREHOLE**							

Notes:
1) Water encountered at a depth of 7.6 m below ground surface (mBGS) during drilling.
2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Readings (mBGS)

Date	W. L. Depth
Aug 8, 2017	2.62

Chart headings: DYNAMIC PENETRATION TEST (○ SPT, Cone, blows/0.3m: 20 40 60 80); SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane: 20 40 60 80); Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L; WATER CONTENT (%) 10 20 30 40; UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH501

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-25
REF. NO.: 17-1797GH
ENCL. NO.: 47

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
226.2						
226.0 / 0.2	**ASPHALT CONCRETE:** (40 mm)				Concrete	
225.6 / 0.6	**GRANULAR BASE/SUBBASE:** (580 mm)	1	AS			226
0.6	**FILL:** silty sand, trace to some organics, pockets of organic silt, containing wood fragments, brown, moist, very loose to compact	2	SS	4		
					Bentonite	225
224.5		3A	SS	21	W. L. 224.6 m Aug 08, 2017	
1.8	**SAND AND GRAVEL:** brown, moist, compact	3B	SS			
224.1						
2.1	**NO RECOVERY:** likely sand and gravel, very loose	4	SS	3		224
223.3						
2.9	**SAND AND GRAVEL:** trace silt, brown, wet, compact to dense	5	SS	30	Sand / Screen	223
		6A	SS	19		222
221.3		6B	SS			
5.0	**SILT:** trace clay, grey, wet, compact					221
220.7						
5.6	**CLAYEY SILT TO SILTY CLAY:** trace sand, trace gravel, grey, moist to wet, soft to stiff	7	SS	10		220
	--- sandy	8	SS	14	Natural pack	219
						218
216.7		9A	SS	3		217
9.5	**SANDY SILT:** some to trace clay, trace gravel, grey, wet, very loose to very dense	9B	SS			

DYNAMIC PENETRATION TEST: SPT / Cone, blows/0.3m (20, 40, 60, 80)
SHEAR STRENGTH (kPa): Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane (20, 40, 60, 80)
WATER CONTENT (%): Plastic Limit (w_P), Natural Moisture Content (w), Liquid Limit (w_L) (10, 20, 30, 40)
UNIT WT (kN/m^3)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
43	47	9	1

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH501

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-25
REF. NO.: 17-1797GH
ENCL. NO.: 47

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (O SPT, Cone, blows/0.3m) / SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit (w_P, w, w_L) WATER CONTENT (%)	UNIT WT (kN/m^3)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SANDY SILT: some to trace clay, trace gravel, grey, wet, very loose to very dense(Continued)						216				
215.4	--- trace clay		10	SS	50 / 125 mm				○		
10.8	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 4.6 mBGS upon completion of drilling. 3) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Readings (mBGS) Date W. L. Depth Aug 8, 2017 1.68										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH601

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-28
REF. NO.: 17-1797GH
ENCL. NO.: 48

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
221.6				
0.0 / 221.1	**GRANULAR BASE/SUBBASE:** (450 mm)	1	AS	
0.5	**SANDY SILT:** trace to some clay, trace gravel, brown to grey, moist, loose to very dense	2	SS	6
		3	SS	23
	--- fine sand layers	4	SS	29
	--- fine sand layers	5	SS	51
216.0	--- grey	6	SS	42
5.6	**CLAYEY SILT:** some sand, grey, moist, hard	7	SS	39
214.5	--- fine sand layers			
7.1	**FINE SAND TO SILTY FINE SAND:** trace silt to silty, trace clay, trace gravel, grey, wet, very loose to compact	8	SS	3
		9	SS	24

GROUND WATER: Concrete; W. L. 220.2 m Aug 08, 2017; Bentonite; Sand; Screen

DYNAMIC PENETRATION TEST (○ SPT, ≳ Cone, blows/0.3m) 20 40 60 80
SHEAR STRENGTH (kPa) (● Unconfined, ▲ Quick Triaxial, ✕ Field Vane & Sensitivity, ⊠ Penetrometer, + Lab Vane) 20 40 60 80
WATER CONTENT (%) (Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L) 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
9	64	24	3

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH601

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-28
REF. NO.: 17-1797GH
ENCL. NO.: 48

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (O SPT, Cone, blows/0.3m) / SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	FINE SAND TO SILTY FINE SAND: trace silt to silty, trace clay, trace gravel, grey, wet, very loose to compact(Continued)					Natural pack	211				
11 210.4			10	SS	10			○	○		
11.1	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 6.1 m below ground surface (mBGS) during drilling. 2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Readings (mBGS) Date W. L. Depth Aug 8, 2017 1.37										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES +3, ×3: Numbers refer to Sensitivity ▲ε=3% Strain at Failure

WELL_ID	EAST83	NORTH83	Use Type
5701054	613852.4	4905718	Public
Total: 1			
5701055	613869.4	4905580	Domestic
5701056	616556.4	4906554	Domestic
5701057	616650.4	4906419	Domestic
5701061	616498.4	4906526	Domestic
5701062	616641.4	4906330	Domestic
5701063	616820.4	4906342	Domestic
5701090	613728.4	4905776	Domestic
5701116	616524.4	4906729	Domestic
5705611	616284.4	4907093	Domestic
5705902	616484.4	4906713	Domestic
5706176	616464.4	4906123	Domestic
5706191	616384.4	4906233	Domestic
5706751	616414.4	4906613	Domestic
5706930	616344.4	4907003	Domestic
5707029	613604.4	4905723	Domestic
5707102	616104.4	4906863	Domestic
5707405	615764.4	4906343	Domestic
5707415	616264.4	4906483	Domestic
5707604	616354.4	4906153	Domestic
5707746	616664.4	4906583	Domestic
5708266	615164.4	4906143	Domestic
5708932	613684.4	4905623	Domestic
5709414	616474.4	4906273	Domestic
5709503	616884.4	4906423	Domestic
5709509	616364.4	4906473	Domestic
5709993	613664.4	4906123	Domestic
5710334	613614.4	4906143	Domestic
5710496	616164.4	4906738	Domestic
5711174	616491.4	4906698	Domestic
5711177	616342.4	4906954	Domestic
5711178	616364.4	4906973	Domestic
5711805	616464.4	4906773	Domestic
5711995	616564.4	4906323	Domestic
5712075	616314.4	4906423	Domestic
5713385	616414.4	4906263	Domestic
5713408	616454.4	4906163	Domestic
5713907	616514.4	4906613	Domestic
5715112	613614.4	4906073	Domestic
5715175	616394.4	4906913	Domestic
5715189	616914.4	4906423	Domestic
5715589	616888.4	4906464	Domestic
5716177	616114.4	4906523	Domestic
5716390	616264.4	4906073	Domestic

5717063	616264.4	4906723	Domestic
5719168	616314.4	4906173	Domestic
5719744	616564.4	4906623	Domestic
5719750	616664.4	4906423	Domestic
5721260	616680	4906209	Domestic
5722590	616131	4906887	Domestic
5722798	615886.4	4906736	Domestic
5723315	613390.4	4905783	Domestic
5724259	616747.4	4906443	Domestic
5725469	616181.4	4906538	Domestic
5725470	616217.4	4906136	Domestic
5725471	616188.4	4906544	Domestic
5726238	616780.4	4906338	Domestic
5726990	616311	4906486	Domestic
5727846	616262.4	4906372	Domestic
5728048	616271.4	4906445	Domestic
5728152	616980.5	4906364	Domestic
5728331	616653	4906522	Domestic
5728577	616620.4	4906563	Domestic
5731242	613924.4	4905876	Domestic
5736436	613691	4905971	Domestic
7219931	616826	4906435	Domestic
Total: 65			
7240075	614732	4906088	Monitoring
7240076	614474	4905996	Monitoring
Total: 2			
5735829	615727	4906613	Not Used
5735830	615703	4906542	Not Used
5735831	615605	4906509	Not Used
5735832	615885	4906471	Not Used
5735833	615736	4906618	Not Used
5739608	616448	4906272	Not Used
5739609	616448	4906272	Not Used
5739611	616319.7	4906308	Not Used
5739612	616315.1	4906341	Not Used
5701059	616180.4	4906200	Unknown Use
5701060	616682.4	4906350	Unknown Use
7108498	616599	4906656	Unknown Use
7131211	616570	4906623	Unknown Use
7241425	616367	4906510	Unknown Use
Total: 14			

Summary of Well Type in 500m Radius from the Site			
Well Type	**Number of Records**		**Sum**
Public	1	1	**82**
Domestic	65	65	
Monitoring	2	2	
Not Used	9	14	
Unknown Use	5		

Water Well Records

June 6, 2017

12:18:06 PM

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
INNISFIL TOWNSHIP	17 614732 4906088 W	2015-03 7190	0.75			MO	0015 5	7240075 (Z186102) A177473	BRWN CLAY SILT 0010 GREY CLAY SILT HARD 0020
INNISFIL TOWNSHIP CON 06 018	17 616271 4906445 W	1971-04 3660	5	FR 0039	10/27/6/1:0	DO	0039 3	5728048 (87973)	MUCK SAND 0005 BRWN CLAY 0011 GREY CLAY HARD 0036 GREY FSND 0042
INNISFIL TOWNSHIP CON 06 020	17 613684 4905623 W	1972-06 3203	5	FR 0139	75/80/8/2:30	DO		5708932 ()	BRWN LOAM 0002 BRWN GRVL STNS 0019 BRWN CLAY GRVL 0026 GREY CLAY 0045 GREY CLAY SAND STNS 0098 GREY SAND CLAY 0128 GREY CLAY GRVL 0139
INNISFIL TOWNSHIP CON 06 021	17 613869 4905580 W	1965-10 2514	6	FR 0144	68/85/10/1:30	DO		5701055 ()	LOAM 0001 BRWN CLAY MSND BLDR 0014 BLUE CLAY BLDR 0035 MSND 0057 MSND GRVL SILT 0110 CLAY 0118 GRVL MSND SILT 0143 CSND 0144 GRVL 0145
INNISFIL TOWNSHIP CON 06 021	17 613852 4905718 W	1959-12 1308	30	FR 0006	6//0/:	PS		5701054 ()	BRWN CLAY 0002 BRWN MSND 0012 BLUE CLAY MSND BLDR 0024
INNISFIL TOWNSHIP CON 06 023	17 615164 4906143 W	1971-08 3203	5	FR 0175	30/180/4/2:0	DO	0192 3	5708266 ()	PRDG 0021 BRWN SAND GRVL 0026 BLUE CLAY 0175 GREY SAND SILT 0195
INNISFIL TOWNSHIP CON 06 024	17 616747 4906443 W	1988-11 2513	6	FR 0081	1/77/5/1:30	DO	0081 4	5724259 (44473)	YLLW SAND LOAM 0002 BRWN CLAY SAND BLDR 0008 GREY CLAY SILT SAND 0081 GREY FSND SILT VERY 0085
INNISFIL TOWNSHIP CON 06 024	17 615764 4906343 W	1970-07 3203	5	FR 0135	0/60/5/1:0	DO	0157 3	5707405 ()	BRWN LOAM 0001 BRWN CLAY GRVL 0009 GREY CLAY GRVL 0018 GREY CLAY 0046 GREY CLAY GRVL STNS 0088 GREY CLAY 0134 GREY SILT 0157 MSND 0160
INNISFIL TOWNSHIP CON 06 024	17 616114 4906523 W	1977-03 3413	30	FR 0021	6/20/4/4:0	DO		5716177 ()	LOAM 0002 BLUE CLAY 0021 GRVL LTCL 0026
INNISFIL TOWNSHIP CON 06 024	17 616464 4906123 W	1969-02 3203	4	FR 0039	0/26/5/1:0	DO	0049 3	5706176 ()	LOAM 0001 CLAY MSND 0010 MSND CLAY 0023 GREY CLAY 0039 FSND 0052 FSND CLAY 0059
INNISFIL TOWNSHIP CON 06 024	17 616262 4906372 W	1990-01 3203	5	FR 0081	16/75/4/2:0	DO	0083 4	5727846 (43390)	BRWN CLAY SAND 0005 GREY CLAY 0039 GREY CLAY SAND 0081 GREY FSND 0089
INNISFIL TOWNSHIP CON 06 024	17 616448 4906272 W	2005-03 7219	38		4///:	NU		5739608 (Z23093) A023613 A	
INNISFIL TOWNSHIP CON 06 024	17 616448 4906272 W	2005-03 7219	5		4///:	NU		5739609 (Z23092) A023620 A	
INNISFIL TOWNSHIP CON 06 024	17 616320 4906308 W	2005-03 7219	36		1///:	NU		5739611 (Z23091) A023615 A	
INNISFIL TOWNSHIP CON 06 024	17 616315 4906341 W	2005-03 7219	36		3///:	NU		5739612 (Z23094) A023614 A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
INNISFIL TOWNSHIP CON 06 025	17 616564 4906623 W	1984-11 2514	6 6	UK 0245	4/130/20/2:30	DO		5719744 ()	LOAM DKCL 0001 YLLW SAND 0011 GREY SILT CLAY SAND 0078 GREY CLAY 0214 GREY SILT SAND GRVL 0234 GREY LMSN 0249
INNISFIL TOWNSHIP CON 06 025	17 616264 4906073 W	1979-08 4816	6	FR 0088	30//6/4:0	DO	0084 5	5716390 ()	SAND 0014 CLAY 0035 SAND 0055 CLAY 0057 CLAY SAND LYRD 0088 FSND SILT 0125 CLAY 0217 BLCK FSND 0251 CSND 0290
INNISFIL TOWNSHIP CON 06 025	17 616367 4906510 W	2015-03 3413						7241425 (Z202129) A	
INNISFIL TOWNSHIP CON 06 025	17 616599 4906656 W	2008-01 2513						7108498 (Z51127) A045655 A	PRDR 0249
INNISFIL TOWNSHIP CON 06 025	17 616454 4906163 W	1975-04 3203	5	FR 0028	4/10/6/0:30	DO	0033 3	5713408 ()	BRWN CLAY SAND STNS 0008 GREY CLAY 0028 GREY SAND 0037
INNISFIL TOWNSHIP CON 06 025	17 616650 4906419 W	1960-05 1515	2	FR 0022	//6/0:30	DO	0022 4	5701057 ()	BLCK MUCK 0015 BLUE CLAY 0022 GRVL 0026
INNISFIL TOWNSHIP CON 06 025	17 616314 4906423 W	1974-10 4102	30	FR 0027	6///:	DO		5712075 ()	LOAM 0002 BRWN CLAY PORS 0016 BLUE CLAY PCKD 0027 GREY FSND 0028
INNISFIL TOWNSHIP CON 06 025	17 616664 4906423 W	1984-09 2514	6	FR 0048	0/45/15/1:0	DO	0048 3	5719750 ()	LOAM MUCK GRVL 0002 GREY CLAY 0018 GREY SAND SILT CLAY 0048 GREY FSND 0051
INNISFIL TOWNSHIP CON 06 025	17 616564 4906323 W	1974-10 4102	30	FR 0021	4///:	DO		5711995 ()	LOAM 0002 BRWN CLAY BLDR PCKD 0017 BLUE CLAY LOOS PORS 0021 BRWN FSND 0022
INNISFIL TOWNSHIP CON 06 025	17 616264 4906483 W	1970-08 3203	5	FR 0047	10/38/4/1:15	DO	0049 3	5707415 ()	BRWN MSND 0002 BRWN GRVL 0006 BRWN CLAY STNS 0011 GREY CLAY GRVL 0026 GREY CLAY MSND 0036 GREY SILT 0047 GREY MSND 0054
INNISFIL TOWNSHIP CON 06 025	17 616354 4906153 W	1970-11 3203	5	FR 0038	10/28/5/1:0	DO	0042 3	5707604 ()	BRWN FILL MSND 0002 BRWN CLAY STNS 0020 GREY CLAY STNS 0038 GREY MSND 0045
INNISFIL TOWNSHIP CON 06 025	17 616664 4906583 W	1970-12 1657	5	FR 0242	-1/120/15/4:0	DO		5707746 ()	FILL 0005 BRWN PEAT 0017 GREY CLAY MSND 0024 MSND 0027 GREY CLAY MSND 0184 BLUE CLAY 0220 GREY CLAY MSND 0242 ROCK 0250
INNISFIL TOWNSHIP CON 06 025	17 616491 4906698 W	1974-07 3202	5	FR 0037	8/49/4/1:45	DO	0054 3	5711174 ()	BRWN SAND ROCK 0035 GREY SAND 0037 GREY SAND 0053 GREY SAND CLAY 0057
INNISFIL TOWNSHIP CON 06 025	17 616570 4906623 W	2009-01 7075						7131211 (Z76740) A086895 A	
INNISFIL TOWNSHIP CON 06 025	17 616474 4906273 W	1972-12 1555	30	FR 0006 UK 0018	3/22/18/2:0	DO		5709414 ()	CLAY 0004 GRVL 0010 CLAY STNS 0016 CLAY STNS 0022
INNISFIL TOWNSHIP CON 06 025	17 616364 4906473 W	1972-11 3203	5	FR 0040	6/35/5/1:10	DO	0043 3	5709509 ()	BLCK LOAM 0002 BRWN SAND 0015 GREY CLAY SAND 0030 GREY SAND CLAY 0040 GREY SAND 0046
INNISFIL TOWNSHIP CON 06 025	17 616414 4906263 W	1975-01 3203	5	FR 0032	4/18/8/2:0	DO	0037 3	5713385 ()	BRWN SAND 0009 GREY CLAY 0032 GREY SAND 0040
INNISFIL TOWNSHIP CON 06 025	17 616780 4906338 W	1989-11 4919	30	UK 0060	10/30/10/1:0	DO		5726238 (62565)	BRWN LOAM HARD 0001 BRWN CLAY HARD 0060 GREY SAND LOOS 0067

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
INNISFIL TOWNSHIP CON 06 025	17 616180 4906200 W	1966-08 5414	2	FR 0054 FR 0076	8/18/2/3:0			5701059 ()	CLAY 0009 GRVL 0023 GREY CLAY 0048 HPAN CLAY 0053 MSND 0056 GREY CLAY 0075 MSND 0076
INNISFIL TOWNSHIP CON 06 025	17 616682 4906350 W	1966-09 5414	2	FR 0029	4/10/6/3:0			5701060 ()	LOAM 0003 GREY CLAY 0018 HPAN CLAY 0029 MSND 0030
INNISFIL TOWNSHIP CON 06 025	17 616498 4906526 W	1967-07 2514	6	FR 0042	0/42/5/2:0	DO	0042 3	5701061 ()	PRDG 0003 MSND 0012 BLUE CLAY MSND 0030 BLUE CLAY MSND STNS 0042 MSND 0045
INNISFIL TOWNSHIP CON 06 025	17 616641 4906330 W	1967-08 4608	30	FR 0007	7//2/:	DO		5701062 ()	LOAM 0001 GREY CLAY STNS 0018
INNISFIL TOWNSHIP CON 06 025	17 616620 4906563 W	1991-09 1851	7	FR 0037	0/33/4/3:45	DO	0038 3	5728577 (104794)	BRWN SAND STNS BLDR 0010 GREY CLAY SAND GRVL 0037 BRWN SAND WBRG 0041 GREY CLAY 0041
INNISFIL TOWNSHIP CON 06 025	17 616653 4906522 W	1991-08 1851	7	FR 0035	5/20/15/2:0	DO	0031 4	5728331 (104758)	BLCK LOAM 0001 GREY SAND BLDR CLAY 0026 BRWN SAND FGVL WBRG 0035
INNISFIL TOWNSHIP CON 06 025	17 616314 4906173 W	1984-03 3742	30		8/32/4/4:0	DO		5719168 ()	BRWN CLAY 0015 BLUE CLAY 0036 CSND 0040
INNISFIL TOWNSHIP CON 06 025	17 616311 4906486 W	1990-08 1467	5	FR 0029	14/28/4/2:30	DO	0040 7	5726990 (71537)	LOAM 0001 BRWN SAND CLAY 0012 GREY CLAY SAND 0029 GREY SAND 0048 GREY SAND CLAY 0048
INNISFIL TOWNSHIP CON 06 025	17 616414 4906613 W	1969-10 4102	30 24	FR 0030	5///:	DO		5706751 ()	BRWN CLAY 0005 CSND 0015 BLUE CLAY 0024 BLUE FSND SILT 0030
INNISFIL TOWNSHIP CON 06 025	17 616188 4906544 W	1989-08 2513	6	FR 0089	12/95/10/1:0	DO	0099 4	5725471 (44503)	YLLW SAND CLAY BLDR 0008 GREY CLAY SAND BLDR 0089 GREY FSND SILT VERY 0103
INNISFIL TOWNSHIP CON 06 025	17 616217 4906136 W	1989-08 2513	6	FR 0036	1/24/10/1:0	DO	0043 3	5725470 (44504)	BRWN MUCK SAND 0008 BRWN CLAY 0036 GREY SAND SILT 0046
INNISFIL TOWNSHIP CON 06 025	17 616181 4906538 W	1989-08 2513	6	FR 0085	12/82/10/1:0	DO	0087 4	5725469 (44490)	YLLW SAND CLAY 0019 GREY CLAY SAND BLDR 0085 GREY FSND VERY 0091
INNISFIL TOWNSHIP CON 06 025	17 616514 4906613 W	1976-12 1204	5	FR 0191	-1/4/7/17:30	DO	0191 3	5713907 ()	BRWN SAND CLAY 0045 GREY SILT CLAY 0063 GREY CLAY 0191 BRWN SAND GRVL 0194
INNISFIL TOWNSHIP CON 06 025	17 616384 4906233 W	1969-02 2514	6	FR 0056	15/57/3/3:0	DO	0057 3	5706191 ()	FILL 0002 FSND 0007 MSND CLAY 0049 FSND CLAY 0056 GREY FSND 0060
INNISFIL TOWNSHIP CON 06 025	17 616556 4906554 W	1956-06 5434	2	FR 0019	-1///:	DO		5701056 ()	CSND GRVL 0015 CLAY 0019 QSND 0021
INNISFIL TOWNSHIP CON 06 026	17 616914 4906423 W	1978-04 4816	6	FR 0045	/28/15/2:0	DO	0044 4	5715189 ()	PRDG 0015 CLAY 0030 MSND CLAY LYRD 0040 FSND 0055
INNISFIL TOWNSHIP CON 06 026	17 616980 4906364 W	1971-06 1851	7	FR 0045	0/44/4/2:0	DO	0045 3	5728152 (104772)	BLCK LOAM 0003 BLCK MUCK 0023 GREY SAND CLAY 0042 GREY SAND GRVL 0045 GREY SAND 0048
INNISFIL TOWNSHIP CON 06 026	17 616888 4906464 W	1978-08 4816	6	FR 0040	/40/5/2:0	DO	0042 4	5715589 ()	SAND 0013 CLAY 0030 MSND CLAY LYRD 0040 FSND 0049
INNISFIL TOWNSHIP CON 06 026	17 616820 4906342 W	1957-06 5434	2	FR 0045	0///:	DO		5701063 ()	BLCK MUCK 0010 HPAN 0044 MSND 0045

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
INNISFIL TOWNSHIP CON 06 026	17 616884 4906423 W	1972-11 3203	5	FR 0042	-1/0/5/1:0	DO	0056 3	5709503 ()	BLCK LOAM 0001 BRWN SAND 0007 GREY SAND CLAY 0042 GREY SAND CLAY 0059
INNISFIL TOWNSHIP CON 06 026	17 616826 4906435 W	2014-04 3413				DO		7219931 (Z178063) A	
INNISFIL TOWNSHIP CON 07 020	17 613604 4905723 W	1969-08 3109	30	FR 0017	12///:	DO		5707029 ()	LOAM 0002 CLAY MSND 0017 MSND 0020
INNISFIL TOWNSHIP CON 07 020	17 613728 4905776 W	1967-09 4608	30	FR 0010	4//2/:	DO		5701090 ()	MSND 0002 GRVL 0015
INNISFIL TOWNSHIP CON 07 020	17 613614 4906143 W	1973-09 3203	5	FR 0284	50/80/5/3:45	DO	0287 3	5710334 ()	GREY CLAY SAND 0284 GREY SAND 0290
INNISFIL TOWNSHIP CON 07 020	17 613691 4905971 W	2001-10 2513	6	FR 0116	30/80/20/1:0	DO	0112 4	5736436 (224034)	LOAM 0001 BRWN CLAY SAND 0003 GREY CLAY 0049 GREY SILT GRVL 0057 GREY CLAY FSND 0092 GREY CLAY 0112 GREY SAND CLAY 0116
INNISFIL TOWNSHIP CON 07 020	17 613614 4906073 W	1977-09 3203	5	FR 0318	75/153/5/5:0	DO		5715112 ()	BLCK LOAM 0002 BRWN SAND CLAY 0018 GREY CLAY 0063 GREY CLAY SILT LYRD 0152 GREY CLAY 0289 GREY CLAY GRVL 0291 GREY GRVL PCKD 0318 GREY GRVL 0321 GREY CLAY GRVL PCKD 0321
INNISFIL TOWNSHIP CON 07 020	17 613664 4906123 W	1973-04 4608	30	FR 0048	30/40/3/:	DO		5709993 ()	BRWN CLAY 0005 GREY CLAY GRVL 0048
INNISFIL TOWNSHIP CON 07 020	17 613390 4905783 W	1988-05 4919	30	UK 0010 UK 0030	8/26//1:0	DO		5723315 (25662)	BRWN LOAM HARD 0001 BRWN CLAY HARD 0020 GREY CLAY HARD 0028
INNISFIL TOWNSHIP CON 07 021	17 613924 4905876 W	1994-10 2513	6	FR 0104	31/106/10/1:30	DO	0108 7	5731242 (140389)	BLCK LOAM 0001 BRWN CLAY SAND 0016 GREY CLAY 0027 GREY SAND SILT CLAY 0064 GREY SAND SILT 0086 GREY CLAY 0104 GREY FSND CMTD 0116
INNISFIL TOWNSHIP CON 07 022	17 614474 4905996 W	2015-03 7190	0.75			MO	0015 5	7240076 (Z202357) A177474	BRWN CLAY SILT SAND 0008 BRWN SAND SILT LOOS 0010 GREY SILT SAND HARD 0020
INNISFIL TOWNSHIP CON 07 024	17 616104 4906863 W	1970-04 4102	30	FR 0008	8///:	DO		5707102 ()	BRWN FSND 0008 BRWN CSND 0025
INNISFIL TOWNSHIP CON 07 024	17 615727 4906613 W	2001-01 2801				NU		5735829 (225714) A	
INNISFIL TOWNSHIP CON 07 024	17 616131 4906887 W	1987-10 2513	6	FR 0078	12/66/11/1:0	DO	0078 4	5722590 (NA)	YLLW SAND 0026 GREY SAND 0047 GREY CLAY GRVL HARD 0078 GREY FSND 0082
INNISFIL TOWNSHIP CON 07 024	17 616680 4906209 W	1986-01 3203	5	FR 0042	10/28/3/1:0	DO	0039 3	5721260 (NA)	SAND FILL 0002 LOAM 0003 BRWN SAND CLAY 0014 GREY SAND 0042 GREY CLAY 0042
INNISFIL TOWNSHIP CON 07 024	17 615605 4906509 W	2001-01 2801				NU		5735831 (225713) A	
INNISFIL TOWNSHIP CON 07 024	17 615885 4906471 W	2001-01 2801				NU		5735832 (225712) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
INNISFIL TOWNSHIP CON 07 024	17 615736 4906618 W	2001-01 2801				NU		5735833 (225710) A	
INNISFIL TOWNSHIP CON 07 024	17 615703 4906542 W	2001-01 2801				NU		5735830 (225711) A	
INNISFIL TOWNSHIP CON 07 025	17 616484 4906713 W	1968-04 3205	5 5	FR 0033	1/26/1/1:0	DO	0038 3	5705902 ()	LOAM 0001 CLAY MSND 0033 FSND 0041 CLAY 0042
INNISFIL TOWNSHIP CON 07 025	17 616524 4906729 W	1967-11 3203	5	FR 0038	3/30/3/2:0	DO	0042 3	5701116 ()	LOAM 0001 BRWN MSND 0022 GREY CLAY 0023 GREY CLAY SILT 0038 GREY FSND 0045 GREY CLAY 0046
INNISFIL TOWNSHIP CON 07 025	17 616394 4906913 W	1977-12 4816	6	FR 0060	5//4/2:0	DO	0059 3	5715175 ()	SAND 0030 SAND CLAY 0059 CSND 0062
INNISFIL TOWNSHIP CON 07 025	17 616284 4907093 W	1968-01 3203	5	FR 0016 FR 0063	10/26/1/2:0	DO	0036 3	5705611 ()	FILL 0002 CLAY MSND 0016 MSND 0039 GREY CLAY 0040 MSND 0045 GREY CLAY 0063 MSND CLAY 0078 GREY CLAY 0098 BLDR 0100
INNISFIL TOWNSHIP CON 07 025	17 616344 4907003 W	1969-12 1204	4	FR 0022	5/12/2/1:0	DO	0031 3	5706930 ()	BRWN MSND 0005 BLCK MUCK 0022 BRWN MSND 0034
INNISFIL TOWNSHIP CON 07 025	17 616264 4906723 W	1980-11 3742	30	FR 0004	4/15/5/4:0	DO		5717063 ()	SAND 0005 GRVL 0018 BLUE SAND 0024
INNISFIL TOWNSHIP CON 07 025	17 616364 4906973 W	1974-07 3203	5	FR 0025	2/28/3/1:10	DO	0028 4	5711178 ()	BRWN LOAM SAND 0003 BRWN SAND GRVL 0020 GREY SAND GRVL 0022 BRWN CSND 0024 SAND 0025 GREY SAND 0033 GREY CLAY 0033
INNISFIL TOWNSHIP CON 07 025	17 616342 4906954 W	1974-07 3203	5	FR 0033	2/34/4/2:0	DO	0035 3	5711177 ()	GREY SAND STNS 0003 BRWN SAND 0007 BRWN SILT 0027 BRWN CLAY SILT 0033 GREY SAND 0038
INNISFIL TOWNSHIP CON 07 025	17 616164 4906738 W	1973-07 4608	30	FR 0018	8/18/3/:	DO		5710496 ()	SAND 0026
INNISFIL TOWNSHIP CON 07 026	17 616464 4906773 W	1974-11 2648	6	FR 0035	4/36/2/3:0	DO	0035 4	5711805 ()	BRWN SAND 0012 BLUE CLAY GRVL 0031 BLUE SAND SILT 0039
INNISFIL TOWNSHIP CON 08 015	17 615886 4906736 W	1987-11 3030	36	FR 0003	3///:	DO		5722798 (17953)	BRWN LOAM 0001 BRWN SAND 0004 BRWN SAND GRVL 0006 GREY FSND 0018

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION

Notes:
UTM: UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
DATE CNTR: Date Work Completedand Well Contractor Licence Number
CASING DIA: Casing diameter in inches
WATER: Unit of Depth in Fee. See Table 4 for Meaning of Code

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only
FORMATION: See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
BLDR	BOULDERS	FCRD	FRACTURED	IRFM	IRON FORMATION	PORS	POROUS	SOFT	SOFT
BSLT	BASALT	FGRD	FINE-GRAINED	LIMY	LIMY	PRDG	PREVIOUSLY DUG	SPST	SOAPSTONE
CGRD	COARSE-GRAINED	FGVL	FINE GRAVEL	LMSN	LIMESTONE	PRDR	PREV. DRILLED	STKY	STICKY
CGVL	COARSE GRAVEL	FILL	FILL	LOAM	TOPSOIL	QRTZ	QUARTZITE	STNS	STONES
CHRT	CHERT	FLDS	FELDSPAR	LOOS	LOOSE	QSND	QUICKSAND	STNY	STONEY
CLAY	CLAY	FLNT	FLINT	LTCL	LIGHT-COLOURED	QTZ	QUARTZ	THIK	THICK
CLN	CLEAN	FOSS	FOSILIFEROUS	LYRD	LAYERED	ROCK	ROCK	THIN	THIN
CLYY	CLAYEY	FSND	FINE SAND	MARL	MARL	SAND	SAND	TILL	TILL
CMTD	CEMENTED	GNIS	GNEISS	MGRD	MEDIUM-GRAINED	SHLE	SHALE	UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE	GRNT	GRANITE	MGVL	MEDIUM GRAVEL	SHLY	SHALY	VERY	VERY
CRYS	CRYSTALLINE	GRSN	GREENSTONE	MRBL	MARBLE	SHRP	SHARP	WBRG	WATER-BEARING
CSND	COARSE SAND	GRVL	GRAVEL	MSND	MEDIUM SAND	SHST	SCHIST	WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED	GRWK	GREYWACKE	MUCK	MUCK	SILT	SILT	WTHD	WEATHERED
DLMT	DOLOMITE	GVLY	GRAVELLY	OBDN	OVERBURDEN	SLTE	SLATE		
DNSE	DENSE	GYPS	GYPSUM	PCKD	PACKED	SLTY	SILTY		
DRTY	DIRTY	HARD	HARD	PEAT	PEAT	SNDS	SANDSTONE		
DRY	DRY	HPAN	HARDPAN	PGVL	PEA GRAVEL	SNDY	SANDYOAPSTONE		

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Well Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial	MT	Monitoring TestHole
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

APPENDIX C

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD
40 VOGELL ROAD UNIT 25-27
RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797GH

AGAT WORK ORDER: 17T247183

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Aug 17, 2017

PAGES (INCLUDING COVER): 6

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T247183
PROJECT: 17-1797GH

CLIENT NAME: GEOPRO CONSULTING LTD
SAMPLING SITE:

ATTENTION TO: Bujing Guan
SAMPLED BY:Will S.

PWQO - Metals Scan + Hg (Water)

DATE RECEIVED: 2017-08-09

DATE REPORTED: 2017-08-17

		SAMPLE DESCRIPTION:		BH 501
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-08-08
Parameter	Unit	G / S	RDL	8626135
Aluminum-dissolved	mg/L	0.075	0.004	<0.004
Antimony	mg/L	0.020	0.003	<0.003
Arsenic	mg/L	0.1	0.003	<0.003
Barium	mg/L		0.002	0.150
Beryllium	mg/L	0.011	0.001	<0.001
Boron	mg/L	0.20	0.01	0.05
Cadmium	mg/L	0.0002	0.0001	<0.0001
Chromium	mg/L		0.003	0.008
Cobalt	mg/L	0.0009	0.0005	<0.0005
Copper	mg/L	0.005	0.002	<0.002
Iron	mg/L	0.3	0.01	0.22
Lead	mg/L	**	0.001	<0.001
Manganese	mg/L		0.002	0.181
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Molybdenum	mg/L	0.04	0.002	0.008
Nickel	mg/L	0.025	0.003	<0.003
Selenium	mg/L	0.1	0.004	<0.004
Silver	mg/L	0.0001	0.0001	<0.0001
Strontium	mg/L		0.005	0.556
Thallium	mg/L	0.0003	0.0003	<0.0003
Titanium	mg/L		0.002	0.010
Tungsten	mg/L	0.03	0.010	<0.010
Uranium	mg/L	0.005	0.002	<0.002
Vanadium	mg/L	0.006	0.002	0.002
Zinc	mg/L	0.03	0.005	<0.005
Zirconium	mg/L	0.004	0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO (mg/L) **Dependent on alkalinity
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By: Nivine Basily

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD
PROJECT: 17-1797GH
SAMPLING SITE:

AGAT WORK ORDER: 17T247183
ATTENTION TO: Bujing Guan
SAMPLED BY:Will S.

Water Analysis

RPT Date: Aug 17, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
PWQO - Metals Scan + Hg (Water)															
Aluminum-dissolved	8630097		0.006	0.006	NA	< 0.004	102%	90%	110%	107%	90%	110%	93%	70%	130%
Antimony	8626135	8626135	<0.003	<0.003	NA	< 0.003	95%	90%	110%	89%	90%	110%	85%	70%	130%
Arsenic	8626135	8626135	<0.003	<0.003	NA	< 0.003	103%	90%	110%	99%	90%	110%	102%	70%	130%
Barium	8626135	8626135	0.150	0.155	3.6%	< 0.002	101%	90%	110%	96%	90%	110%	95%	70%	130%
Beryllium	8626135	8626135	<0.001	<0.001	NA	< 0.001	94%	90%	110%	96%	90%	110%	87%	70%	130%
Boron	8626135	8626135	0.05	0.06	2.7%	< 0.01	107%	90%	110%	106%	90%	110%	104%	70%	130%
Cadmium	8626135	8626135	<0.0001	<0.0001	NA	< 0.0001	101%	90%	110%	99%	90%	110%	100%	70%	130%
Chromium	8626135	8626135	0.008	0.009	NA	< 0.003	103%	90%	110%	100%	90%	110%	97%	70%	130%
Cobalt	8626135	8626135	<0.0005	0.0005	NA	< 0.0005	98%	90%	110%	93%	90%	110%	89%	70%	130%
Copper	8626135	8626135	<0.002	<0.002	NA	< 0.002	103%	90%	110%	100%	90%	110%	94%	70%	130%
Iron	8626135	8626135	0.22	0.26	16.6%	< 0.01	109%	90%	110%	104%	90%	110%	85%	70%	130%
Lead	8626135	8626135	<0.001	<0.001	NA	< 0.001	95%	90%	110%	92%	90%	110%	89%	70%	130%
Manganese	8626135	8626135	0.181	0.189	4.5%	< 0.002	100%	90%	110%	97%	90%	110%	94%	70%	130%
Dissolved Mercury	8625482		<0.0001	<0.0001	NA	< 0.0001	104%	90%	110%	100%	90%	110%	96%	80%	120%
Molybdenum	8626135	8626135	0.008	0.008	NA	< 0.002	102%	90%	110%	106%	90%	110%	115%	70%	130%
Nickel	8626135	8626135	<0.003	<0.003	NA	< 0.003	102%	90%	110%	97%	90%	110%	89%	70%	130%
Selenium	8626135	8626135	<0.004	<0.004	NA	< 0.004	101%	90%	110%	101%	90%	110%	109%	70%	130%
Silver	8626135	8626135	<0.0001	<0.0001	NA	< 0.0001	103%	90%	110%	106%	90%	110%	113%	70%	130%
Strontium	8626135	8626135	0.556	0.554	0.4%	< 0.005	96%	90%	110%	99%	90%	110%	99%	70%	130%
Thallium	8626135	8626135	<0.0003	<0.0003	NA	< 0.0003	106%	90%	110%	102%	90%	110%	99%	70%	130%
Titanium	8626135	8626135	0.010	0.010	6.2%	< 0.002	92%	90%	110%	101%	90%	110%	87%	70%	130%
Tungsten	8626135	8626135	<0.010	<0.010	NA	< 0.010	93%	90%	110%	91%	90%	110%	94%	70%	130%
Uranium	8626135	8626135	<0.002	<0.002	NA	< 0.002	103%	90%	110%	102%	90%	110%	103%	70%	130%
Vanadium	8626135	8626135	0.002	0.002	NA	< 0.002	93%	90%	110%	98%	90%	110%	86%	70%	130%
Zinc	8626135	8626135	<0.005	<0.005	NA	< 0.005	99%	90%	110%	97%	90%	110%	97%	70%	130%
Zirconium	8626135	8626135	<0.004	<0.004	NA	< 0.004	96%	90%	110%	98%	90%	110%	87%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.
QA Qualifier for metals - Antimony: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

Certified By: Divine Basily

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

QA Violation

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T247183

PROJECT: 17-1797GH

ATTENTION TO: Bujing Guan

RPT Date: Aug 17, 2017			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
PWQO - Metals Scan + Hg (Water)											
Antimony	8626135	BH 501	95%	90%	110%	89%	90%	110%	85%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.
QA Qualifier for metals - Antimony: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

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FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T247183

PROJECT: 17-1797GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Will S.

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum-dissolved	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Dissolved Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

AGAT Laboratories

18m

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 17T 247183

Cooler Quantity:

Arrival Temperatures: 7.1 | 7.3 | 7.3 / 6.1 | 6.5 | 6.3

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Geo Pro Consulting
Contact: Beijing Guan.
Address: Unit 17, 40 Vogell Road. Richmond Hill. On
Phone: 905-237-8336 Fax: 905-248-3699
Reports to be sent to:
1. Email: bguan@geoproconsulting.ca
2. Email: kwi@geoproconsulting.ca

Project Information:

Project: 17-1797 GH
Site Location: 7th Line, Innisfil.
Sampled By: Will Sun
AGAT Quote #: GeoPro PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ No Regulatory Requirement

☐ Regulation 153/04 — Table (Indicate One): ☐ Ind/Com ☐ Res/Park ☐ Agriculture; Soil Texture (Check One): ☐ Coarse ☐ Fine

☐ Sewer Use: ☐ Sanitary ☐ Storm; Region (Indicate One); ☐ MISA

☐ Regulation 558; ☐ CCME; ☑ Prov. Water Quality Objectives (PWQO); ☐ Other (Indicate One)

Is this submission for a Record of Site Condition? ☐ Yes ☑ No

Report Guideline on Certificate of Analysis: ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply): ☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Analyses requested (column headers)

Field Filtered - Metals, Hg, CrVI (Y/N); O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (Incl. Hydrides)); ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR; Full Metals Scan; Regulation/Custom Metals; Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2; Volatiles: ☐ VOC ☐ BTEX ☐ THM; CCME Fractions 1 to 4; ABNs; PAHs; PCBs: ☐ Total ☐ Aroclors; Organochlorine Pesticides; TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs; Sewer Use; PWQO Metals

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	PWQO Metals
BH501	20170808	11:30 AM	3	GW		✓

Samples Relinquished By (Print Name and Sign): Will Sun	Date	Time	Samples Received By (Print Name and Sign): D. Bvoszo 2017/08/09	Date / Time 2:25
Samples Relinquished By (Print Name and Sign): D. Bvoszo 2017/08/09	Date	Time 4:30	Samples Received By (Print Name and Sign):	Date / Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date / Time

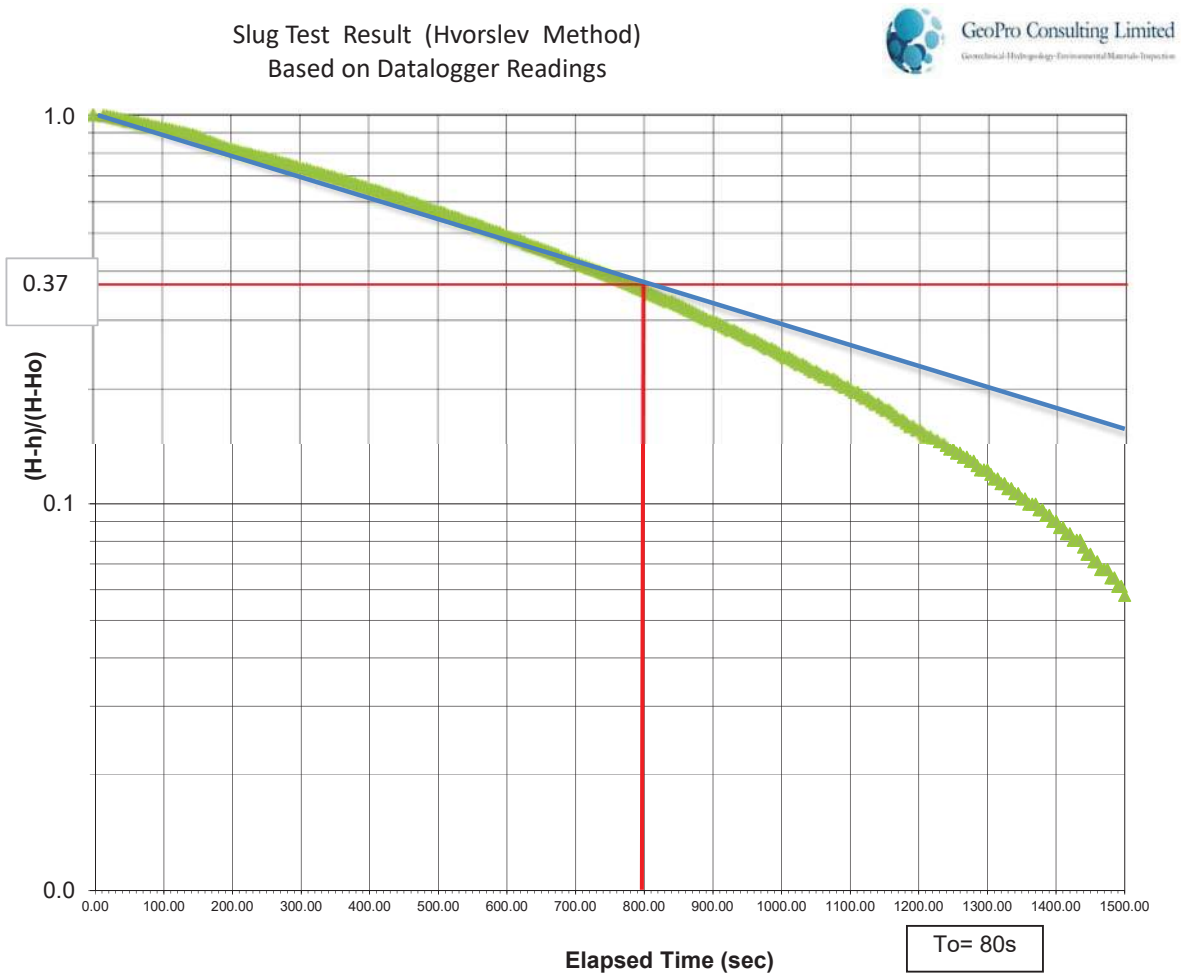
Page 1 of 1

Nº: T 053923

APPENDIX D

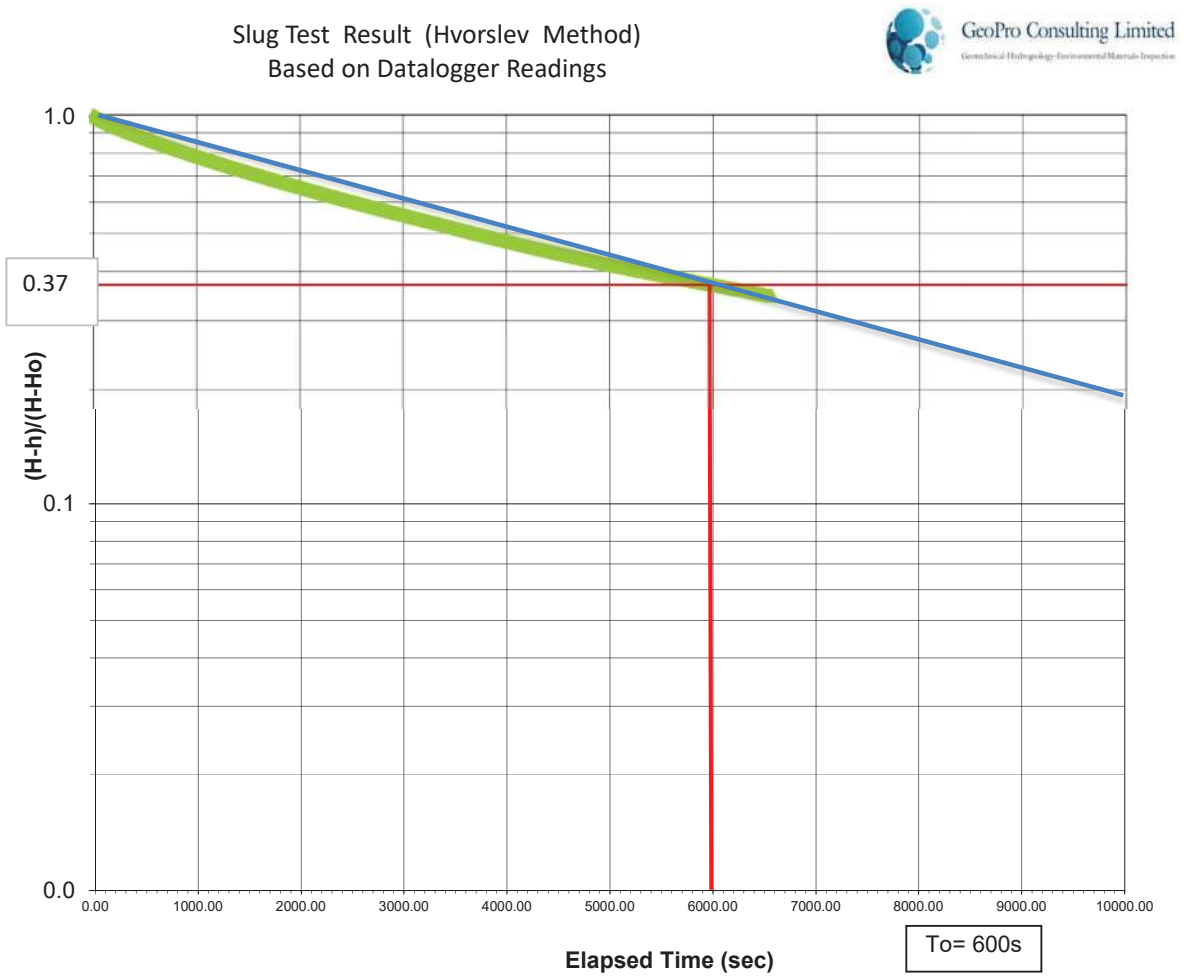
Slug Test: BH202
(Based on data from Datalogger - Rising Head Method -August 8, 2017)

7th Line, Town of Innisfil, Ontario				
Project No. : 17-1797H		H =	Assumed Initial Water Head	
Conducted by:	Will Sun	Ho =	Water Head at time = 0	
Interpretted by:	Kaiying Qiu	h =	Water Head/Level at time t	
Well Number:	BH202			
Screen Depth (mBGS):	6.1 ~ 7.6			
Well Elevation (mASL):	250.50	L =	150	cm
Well Diameter:	2.0" ID	R =	7.75	cm
Static Water Level (mBGS):	5.67	r =	2.55	cm
Finish Reading (H)	11.232	To =	80	sec
Start Reading (h_0)	10.299	$K = r^2\ln(L/R)/(2LTo)$ =	**8.0E-04**	cm/s



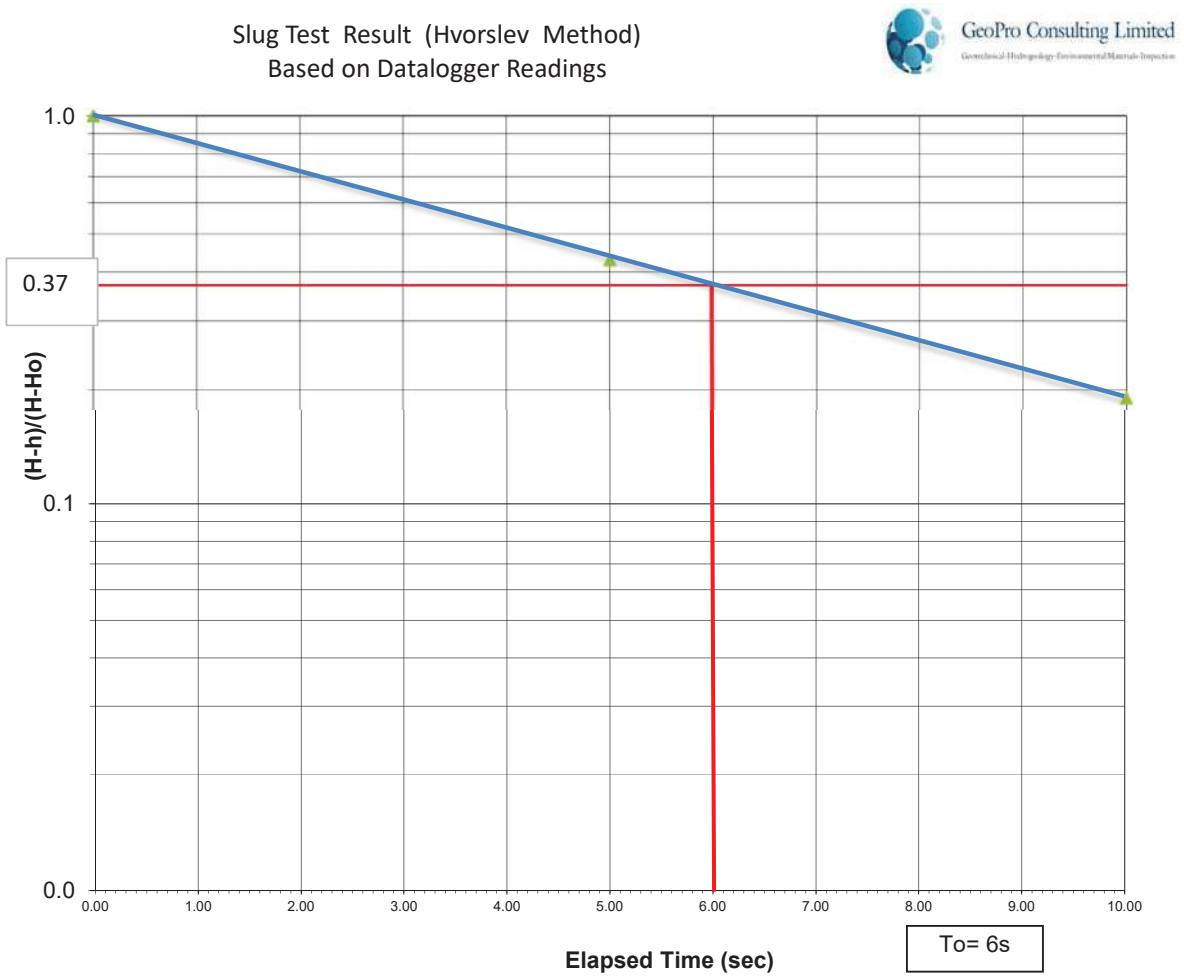
Slug Test: BH402
(Based on data from Datalogger - Rising Head Method -August 8, 2017)

7th Line, Town of Innisfil, Ontario				
Project No. : 17-1797H		H =	Assumed Initial Water Head	
Conducted by:	Will Sun	Ho =	Water Head at time = 0	
Interpretted by:	Kaiying Qiu	h =	Water Head/Level at time t	
Well Number:	BH402			
Screen Depth (mBGS):	9.2 ~ 10.7			
Well Elevation (mASL):	249.70	L =	150	cm
Well Diameter:	2.0" ID	R =	7.75	cm
Static Water Level (mBGS):	2.62	r =	2.55	cm
Finish Reading (H)	12.865	To =	600	sec
Start Reading (h_0)	10.6036	$K = r^2\ln(L/R)/(2LTo)$ =	**1.1E-04**	cm/s



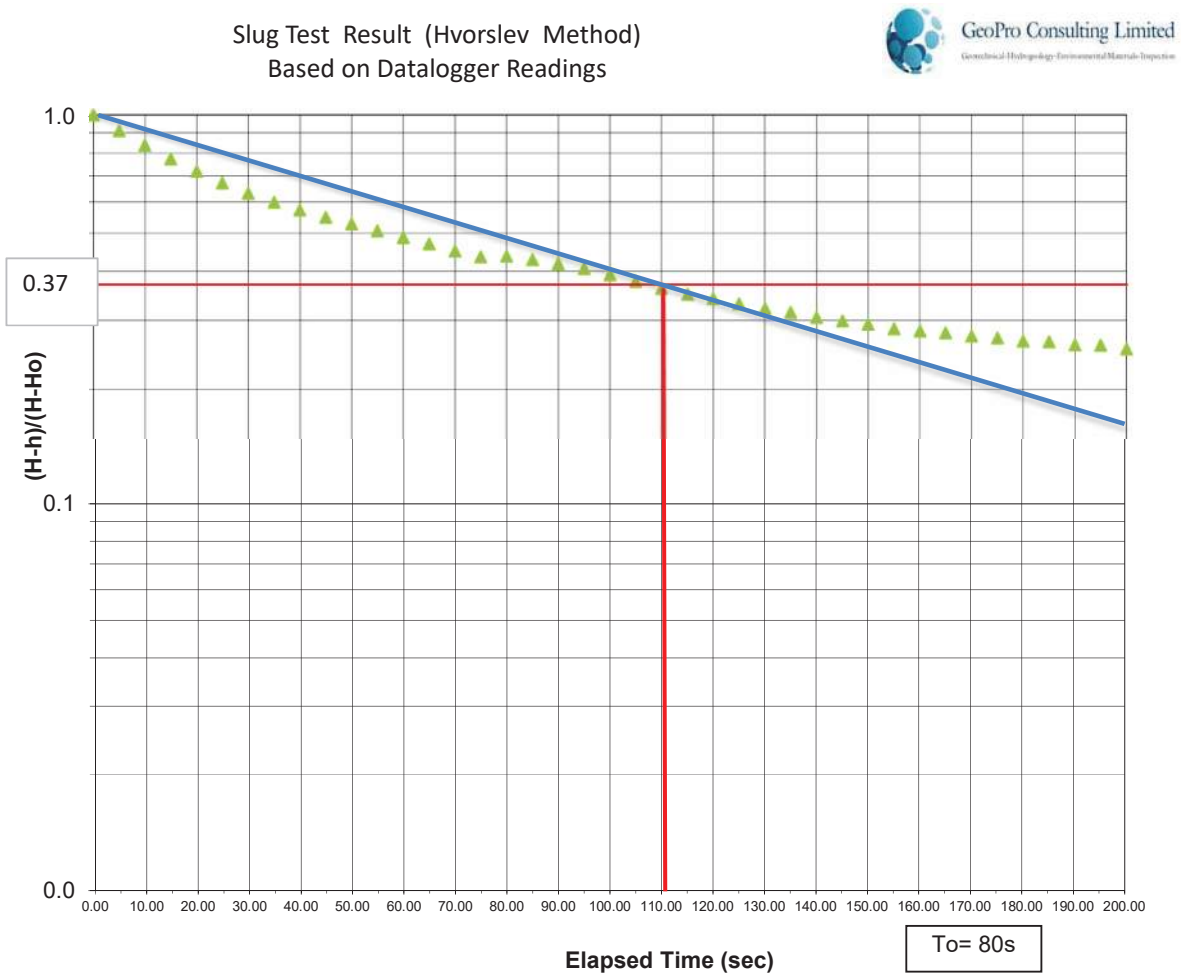
Slug Test: BH501
(Based on data from Datalogger - Rising Head Method -August 8, 2017)

7th Line, Town of Innisfil, Ontario				
Project No. : 17-1797H		H =	Assumed Initial Water Head	
Conducted by:	Will Sun	Ho =	Water Head at time = 0	
Interpretted by:	Kaiying Qiu	h =	Water Head/Level at time t	
Well Number:	BH501			
Screen Depth (mBGS):	2.8 ~ 4.3			
Well Elevation (mASL):	226.20	L =	150	cm
Well Diameter:	2.0" ID	R =	7.75	cm
Static Water Level (mBGS):	1.68	r =	2.55	cm
Finish Reading (H)	12.768	To =	6	sec
Start Reading (h_0)	12.705	$K = r^2\ln(L/R)/(2LTo)$ =	**1.1E-02**	cm/s

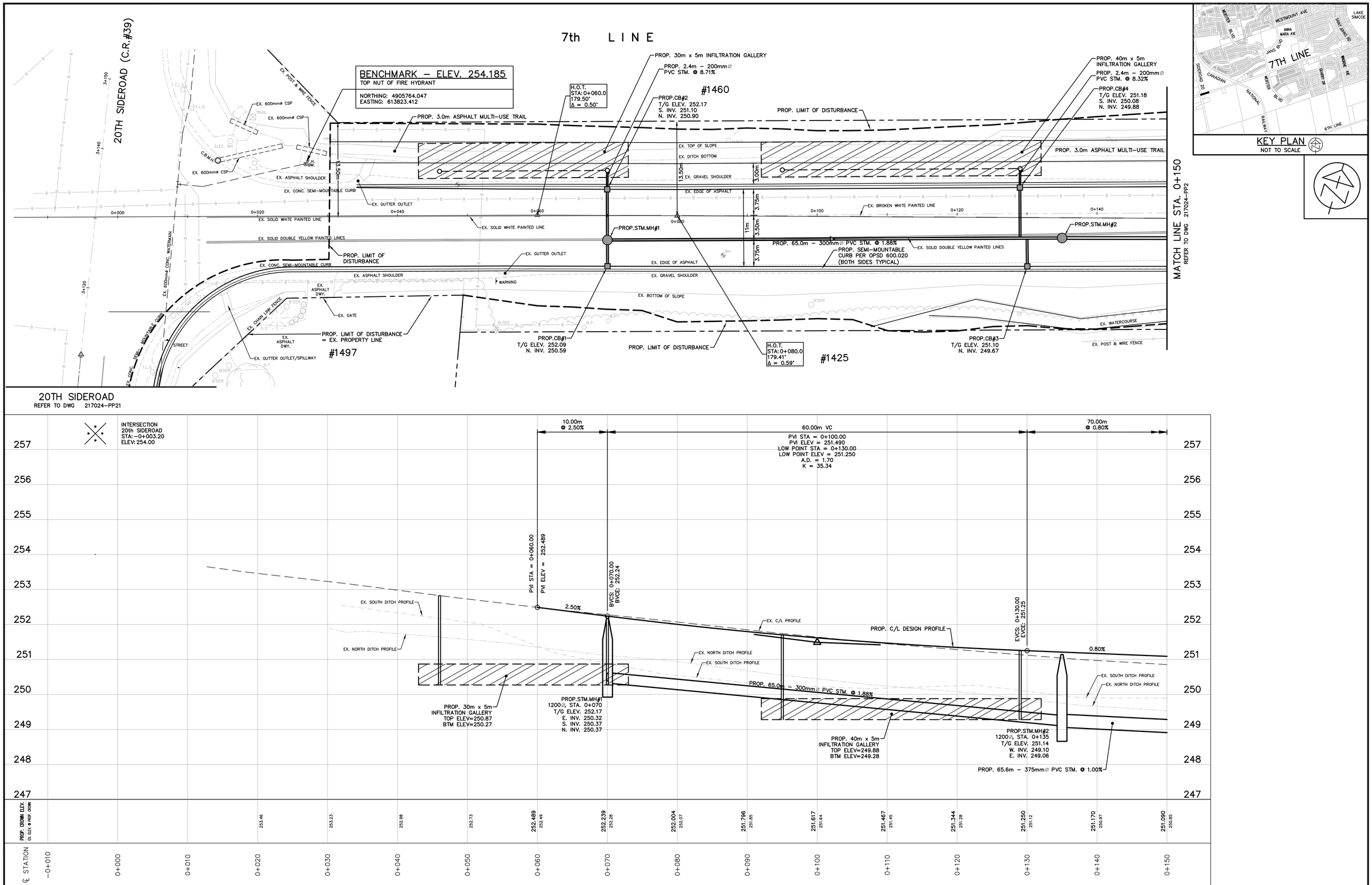


Slug Test: BH601
(Based on data from Datalogger - Rising Head Method -August 8, 2017)

7th Line, Town of Innisfil, Ontario					
Project No. : 17-1797H		H =	Assumed Initial Water Head		
Conducted by:	Will Sun	Ho =	Water Head at time = 0		
Interpretted by:	Kaiying Qiu	h =	Water Head/Level at time t		
Well Number:	BH601				
Screen Depth (mBGS):	7.7 ~ 9.2				
Well Elevation (mASL):	221.60	L =	150	cm	
Well Diameter:	2.0" ID	R =	7.75	cm	
Static Water Level (mBGS):	1.37	r =	2.55	cm	
Finish Reading (H)	14.3136	To =	80	sec	
Start Reading (h_0)	13.7336	$K = r^2\ln(L/R)/(2LTo)$ =	**8.0E-04**	cm/s	



APPENDIX E



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:07pm
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CONTRACT DRAWINGS

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

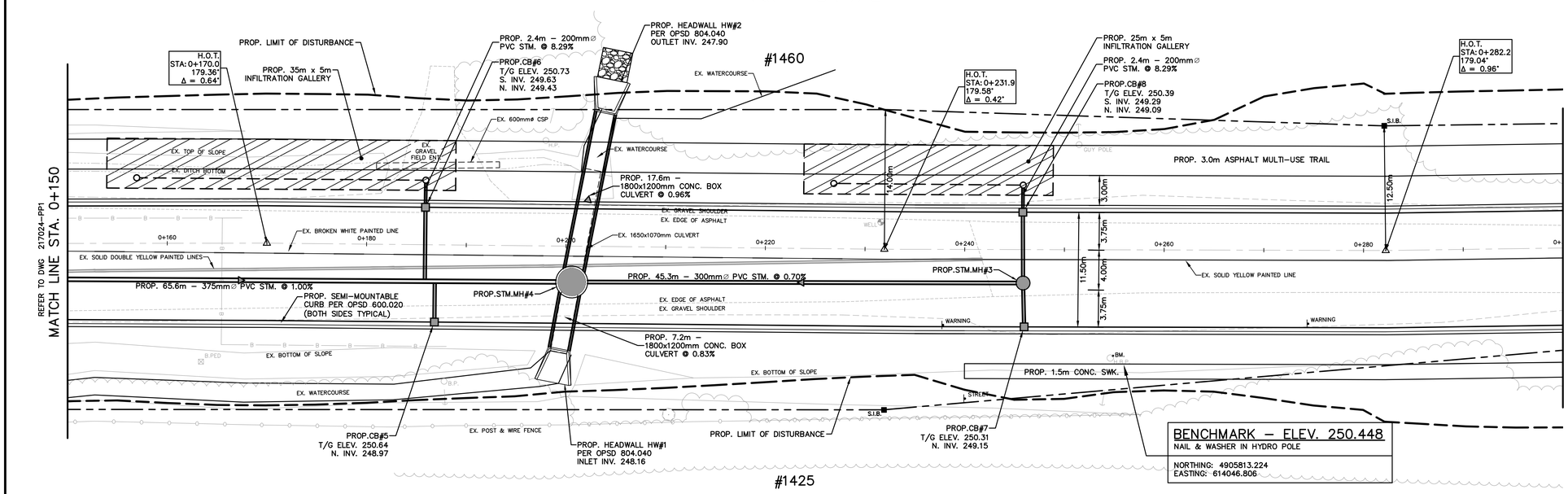
SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

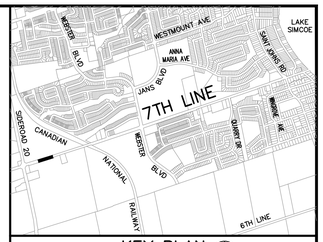
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

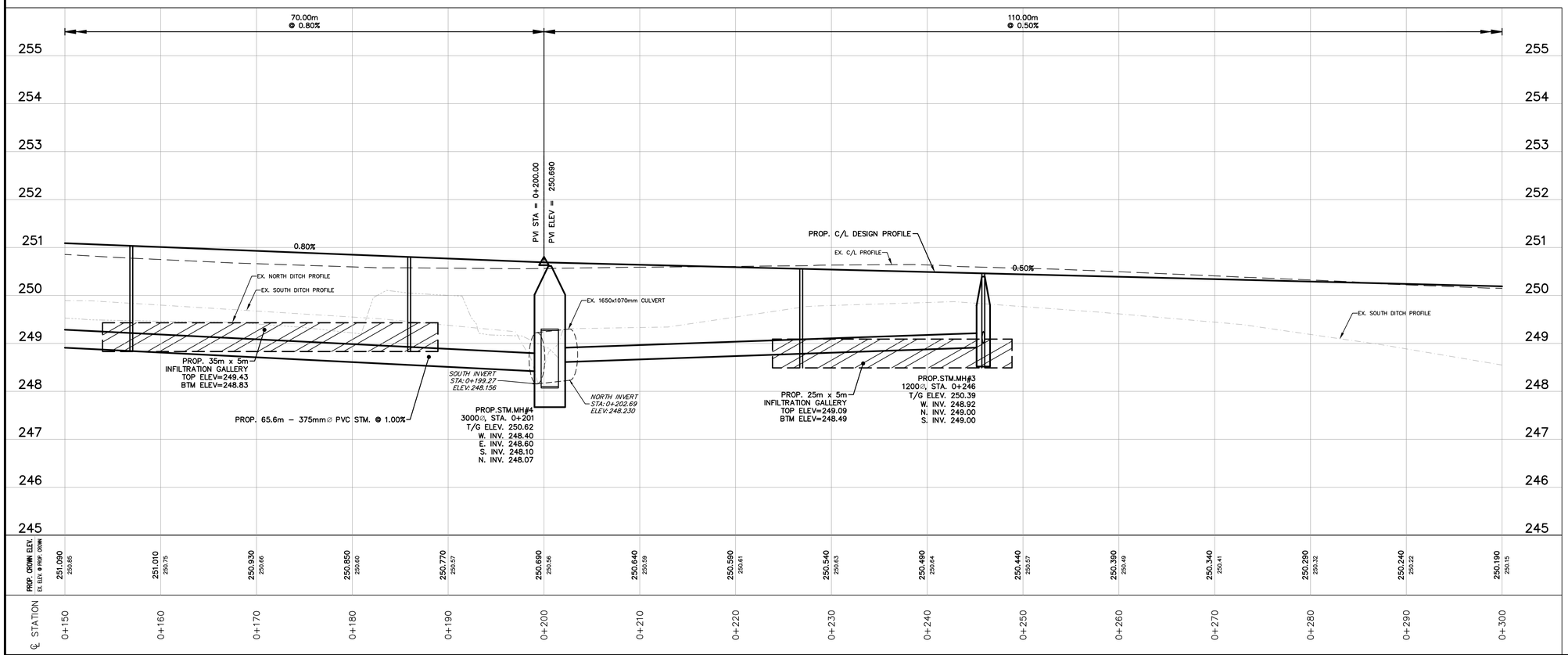
PLAN & PROFILE
7TH LINE
STA. –0+010 TO STA. 0+150

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP1







NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+150 TO STA. 0+300

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

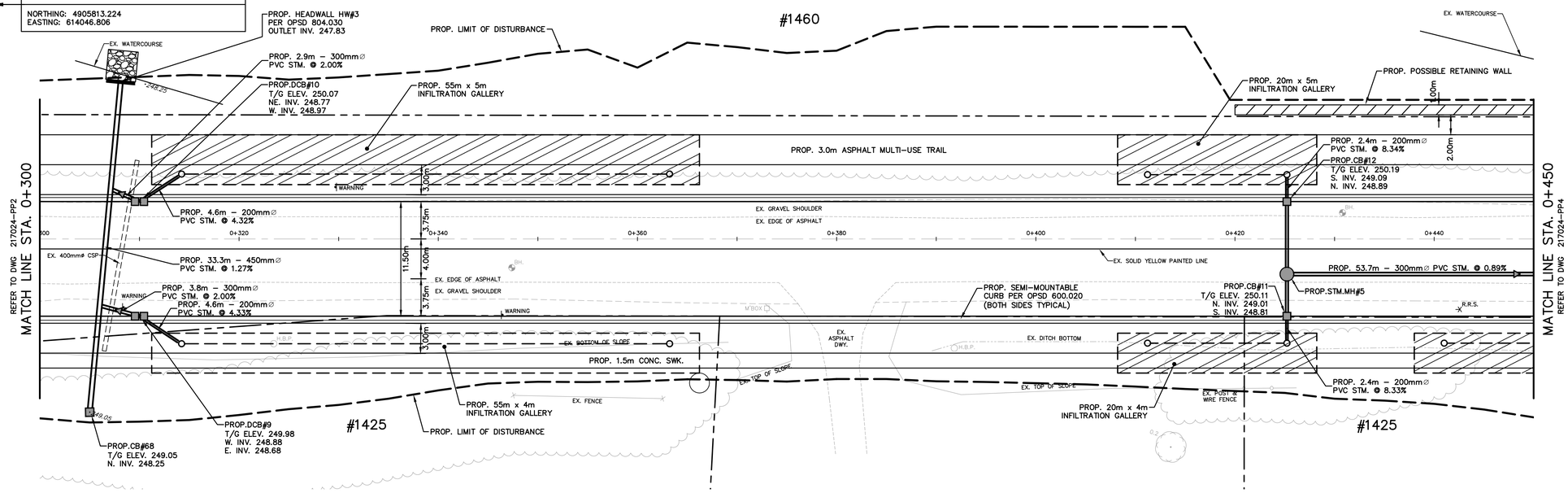
CONTRACT No.

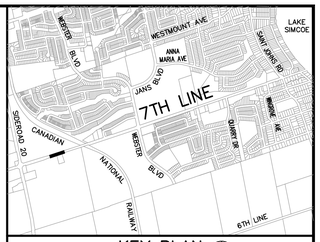
DWG. No. 217024-PP2

Plotted by: RWECKERLE on October 18, 2018 at 2:07pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP2

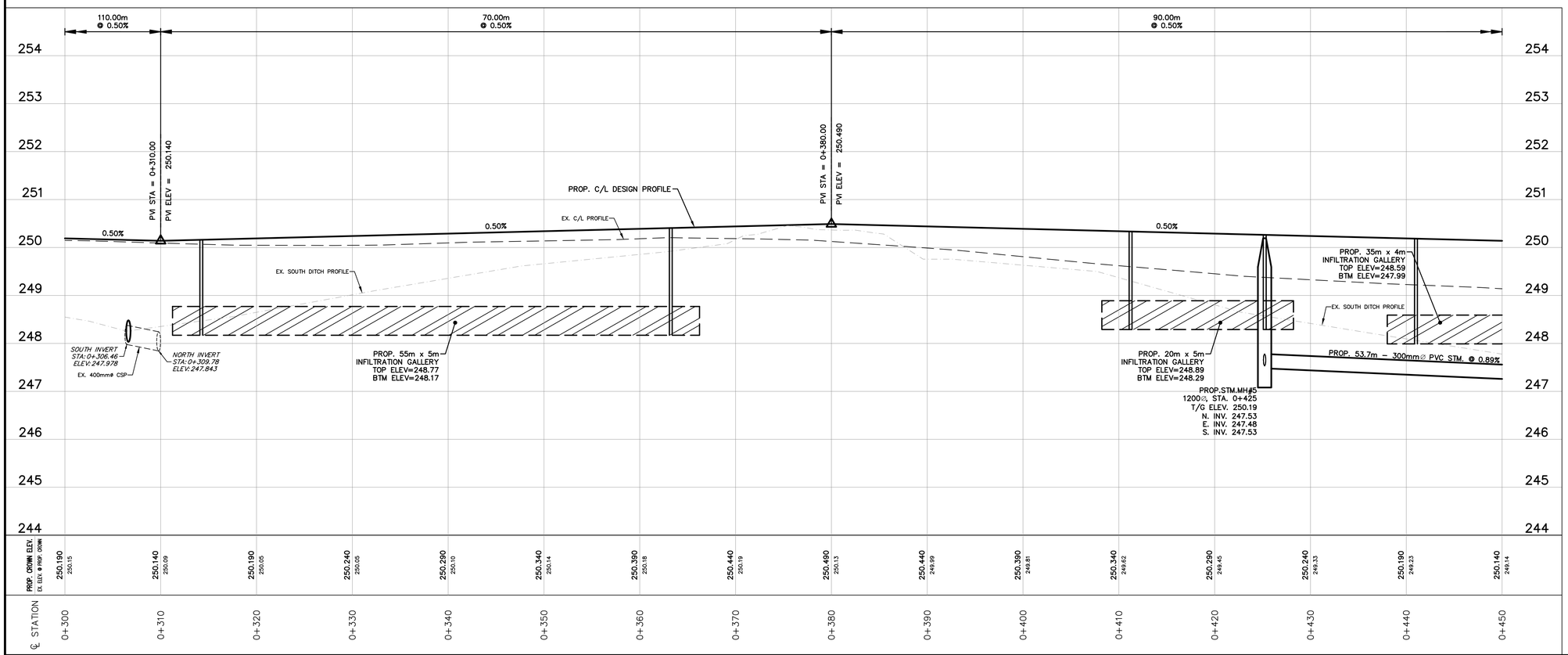
BENCHMARK – ELEV. 250.448
NAIL & WASHER IN HYDRO POLE ON SOUTH SIDE OF ROAD AT APPROX. STATION 0+255.
NORTHING: 4905813.224
EASTING: 614046.806

7th LINE





KEY PLAN
NOT TO SCALE



NOTES

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+300 TO STA. 0+450

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024–PP3

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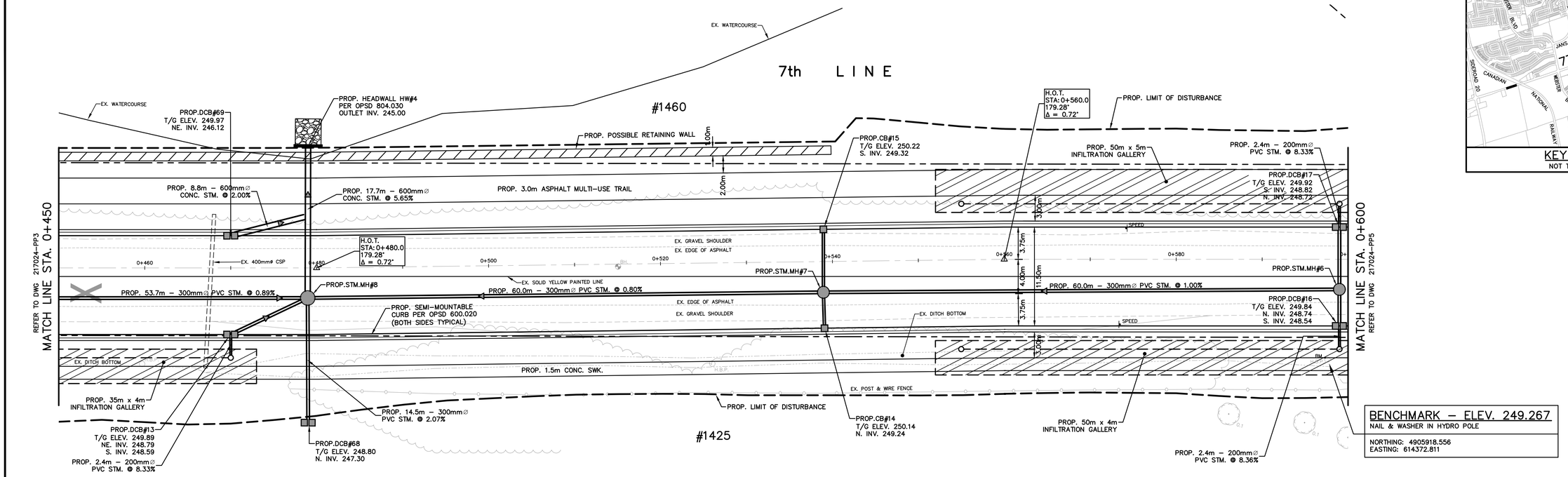
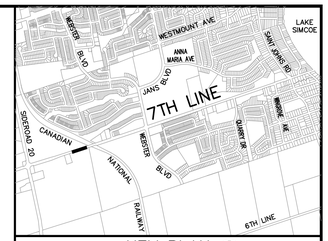


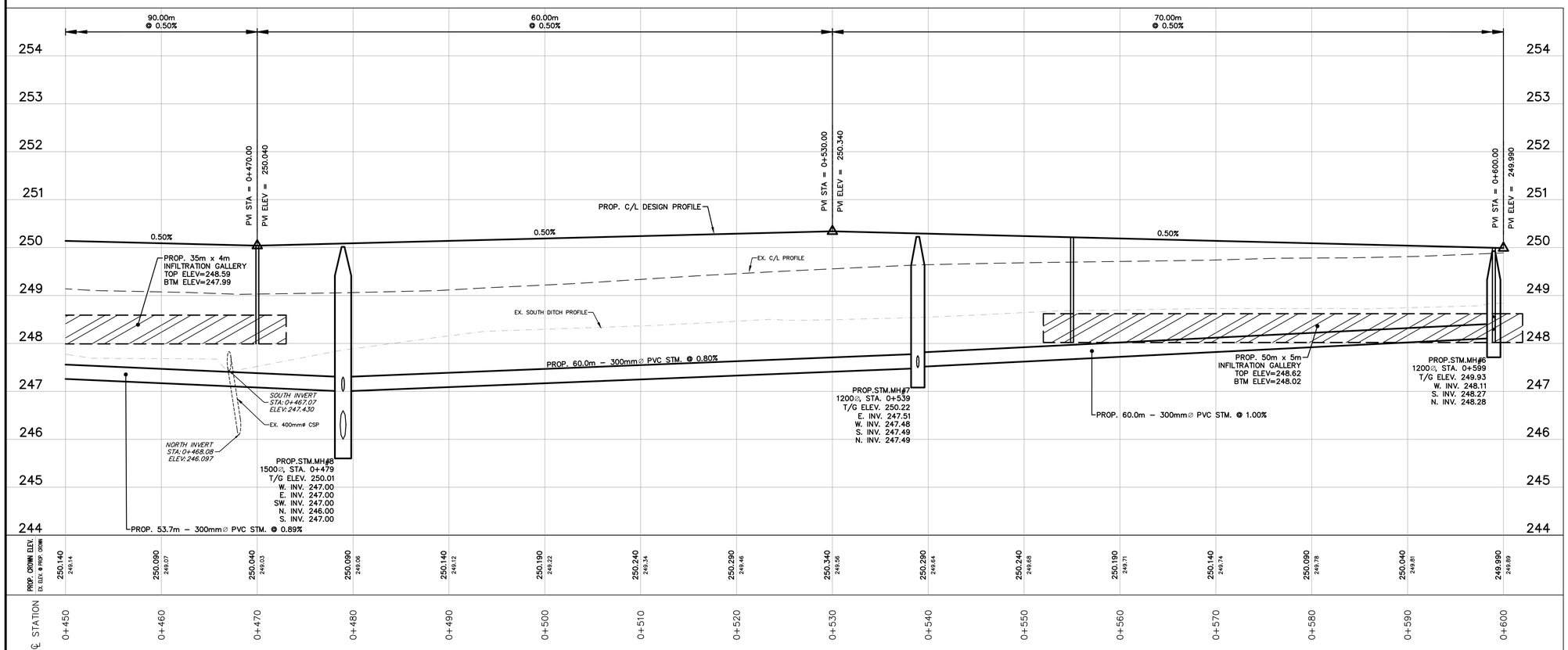


KEY PLAN
NOT TO SCALE

BENCHMARK – ELEV. 249.267

NAIL & WASHER IN HYDRO POLE

NORTHING: 4905918.556
EASTING: 614372.811



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

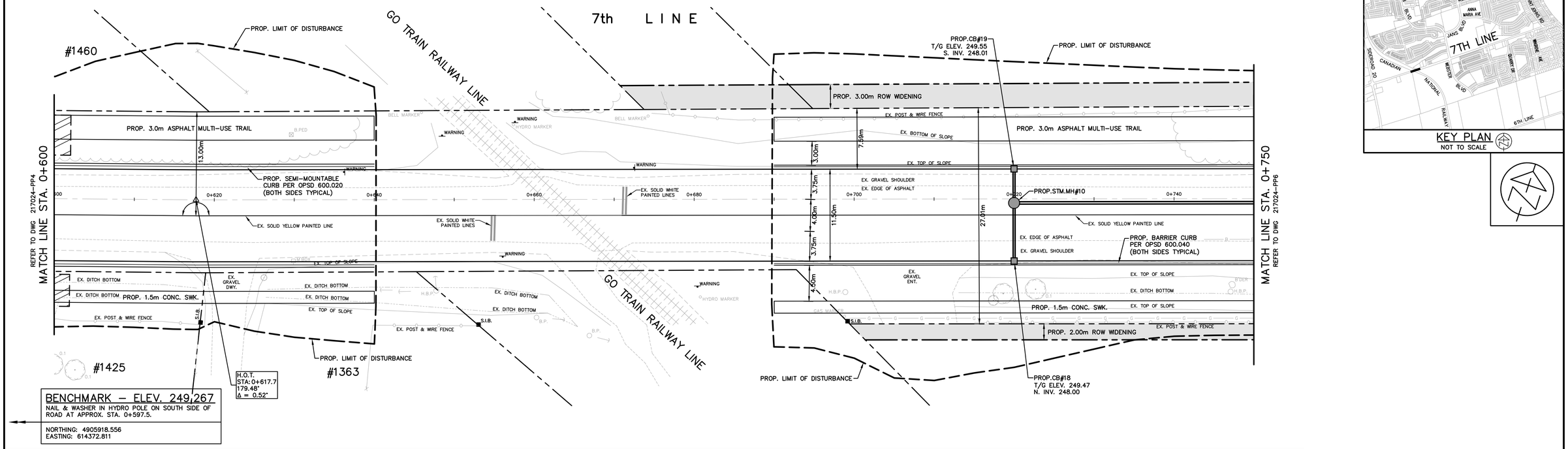
PLAN & PROFILE
7TH LINE
STA. 0+450 TO STA. 0+600

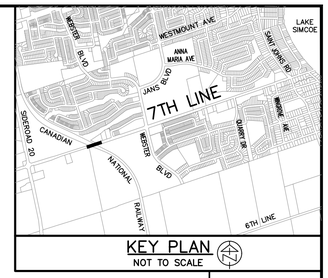
Ainley GROUP CONSULTING ENGINEERS PLANNERS

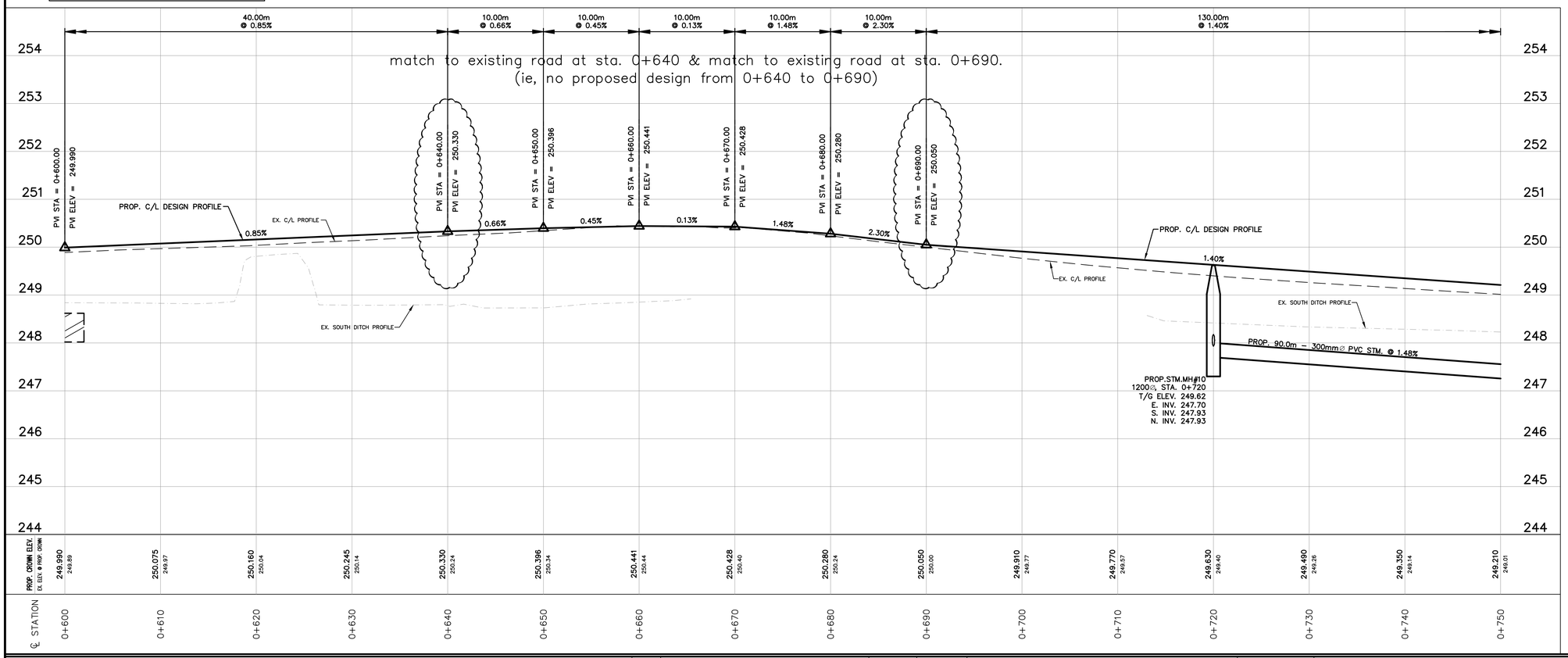
CONTRACT No.

DWG. No. 217024-PP4

Plotted by: RWECKERLE on October 18, 2018 at 2:08pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP4







NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

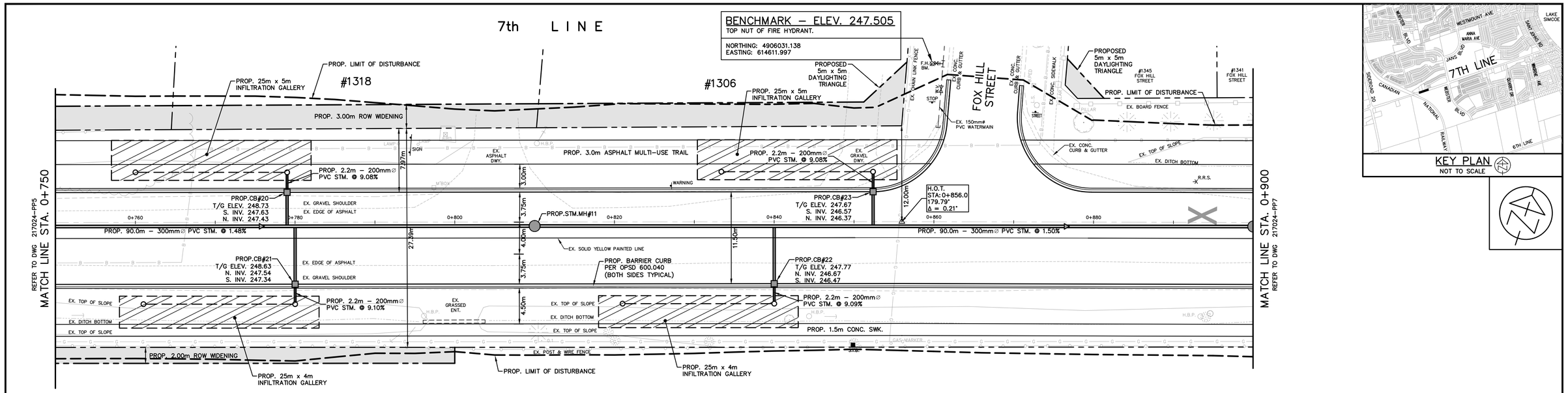
PLAN & PROFILE
7TH LINE
STA. 0+600 TO STA. 0+750

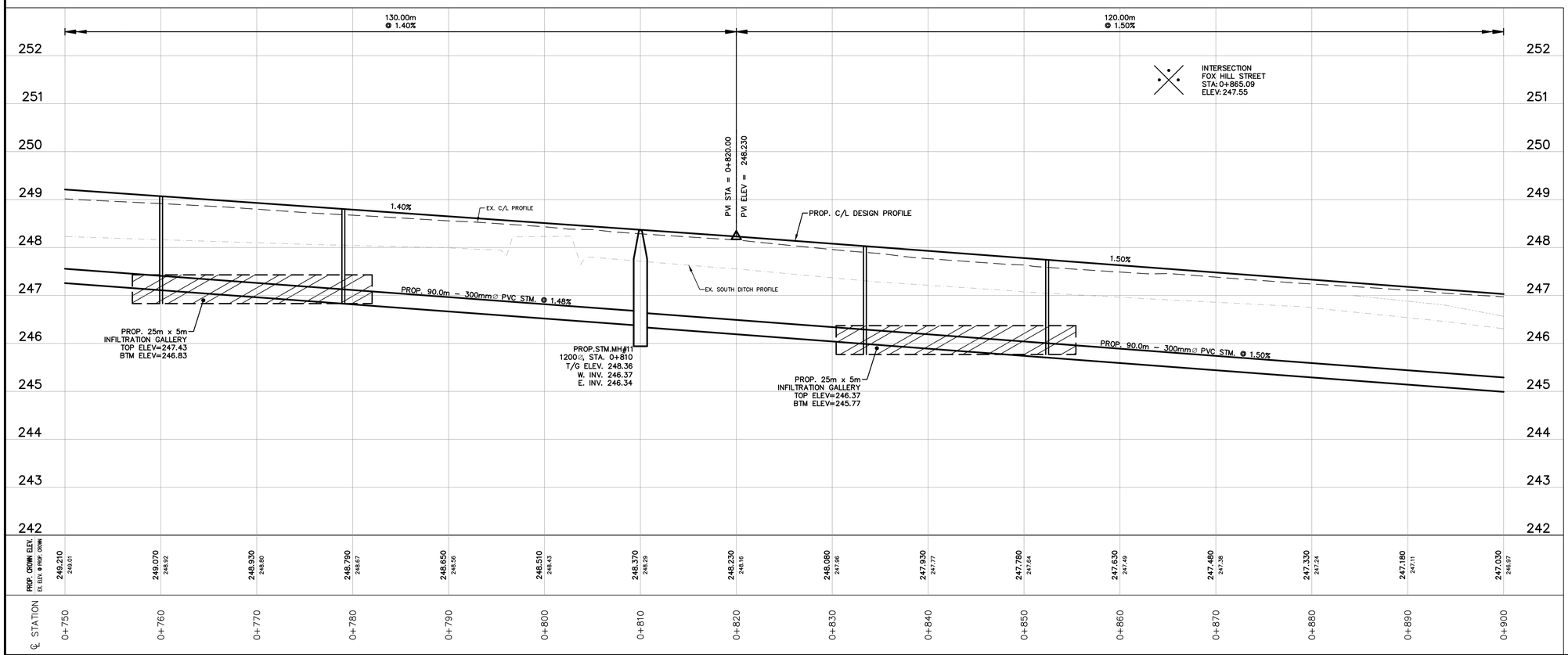
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP5

Plotted by: RWECKERLE on October 18, 2018 at 2:09pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP5





NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+750 TO STA. 0+900

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

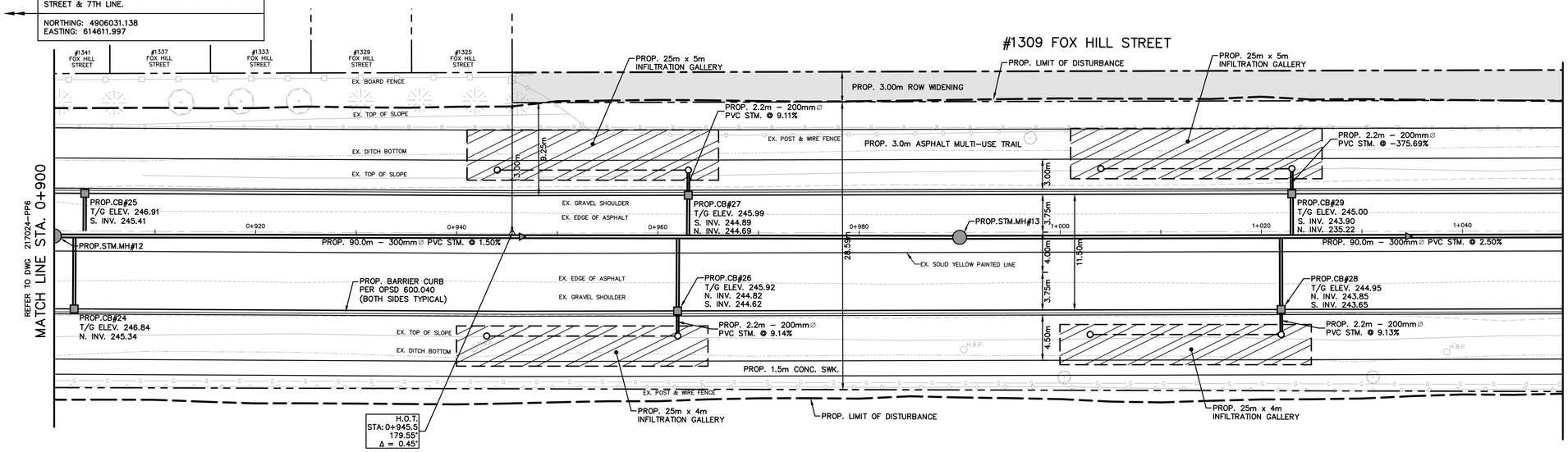
DWG. No. 217024-PP6

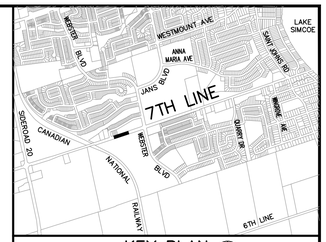
Plotted by: RWECKERLE on October 18, 2018 at 2:09pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP6

BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

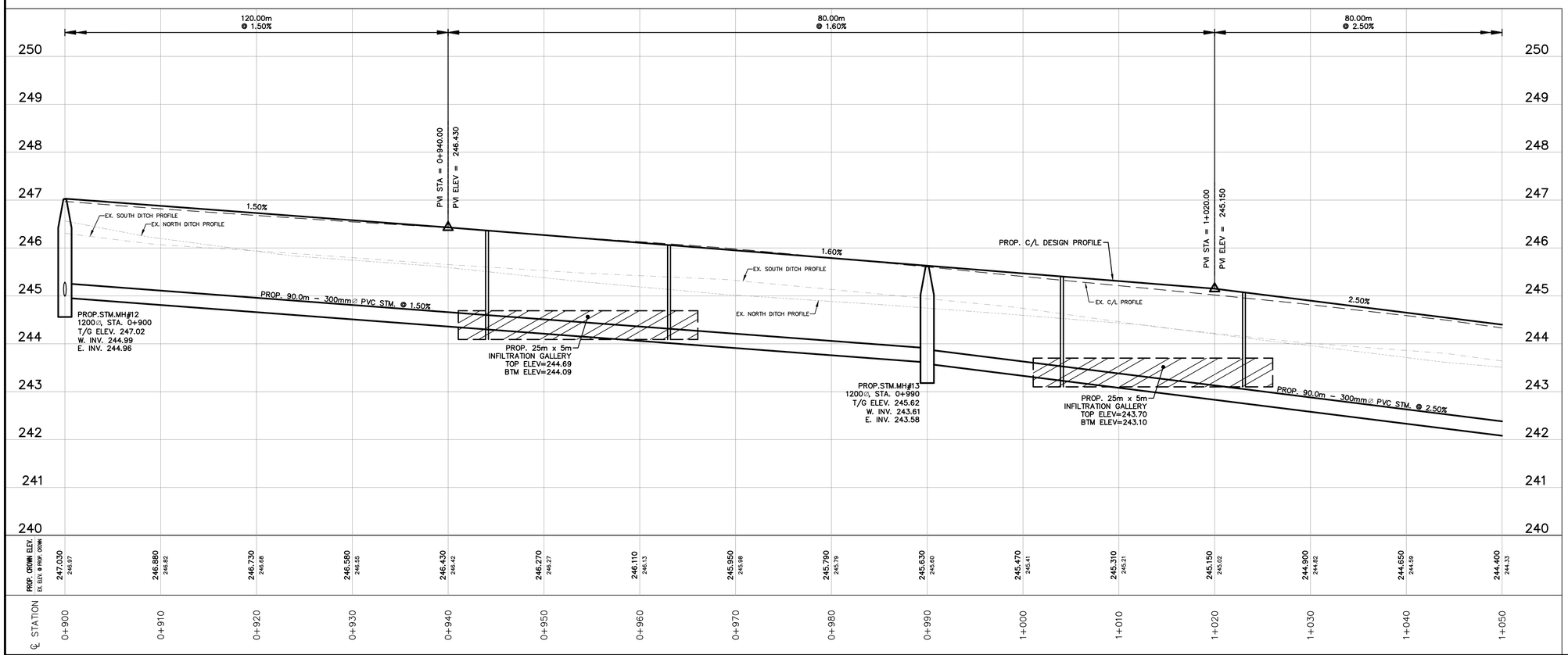
NORTHING: 4906031.138
EASTING: 614611.997

7th LINE





KEY PLAN
NOT TO SCALE



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+900 TO STA. 1+050

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP7

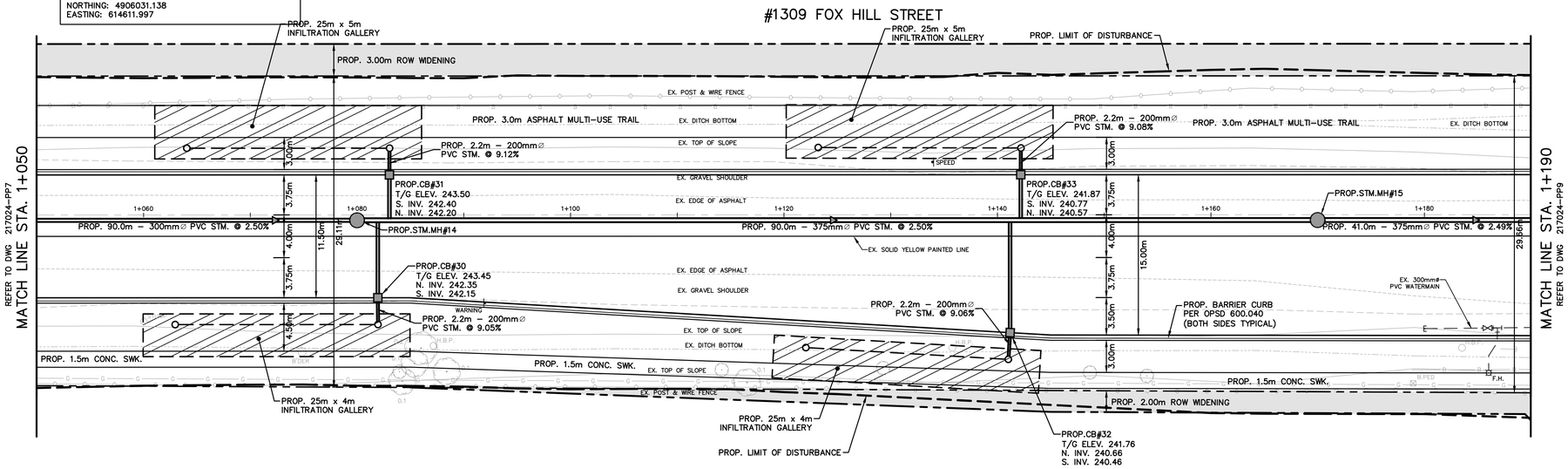
Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP7

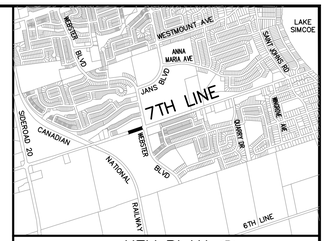
BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

NORTHING: 4906031.138
EASTING: 614611.997

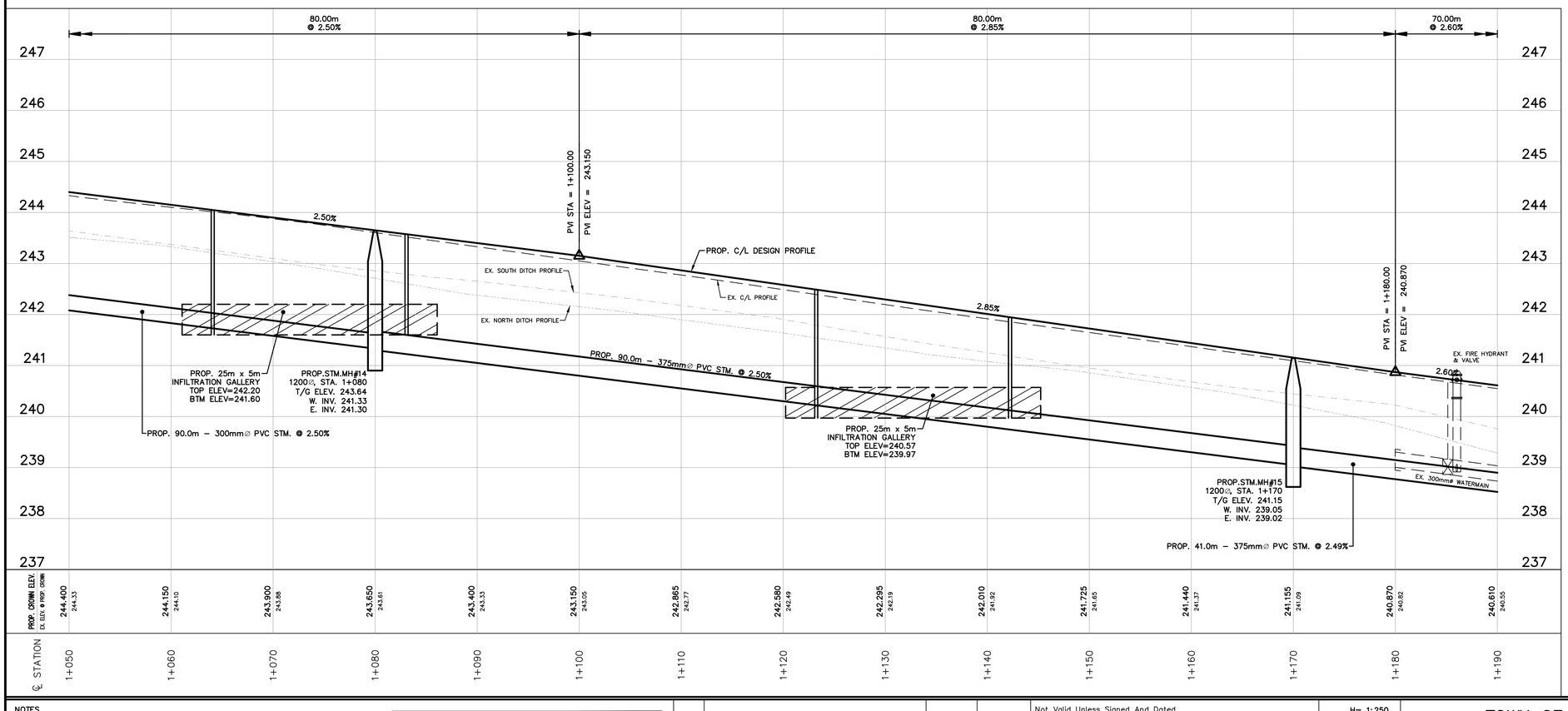
7th LINE

#1309 FOX HILL STREET





KEY PLAN
NOT TO SCALE



NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

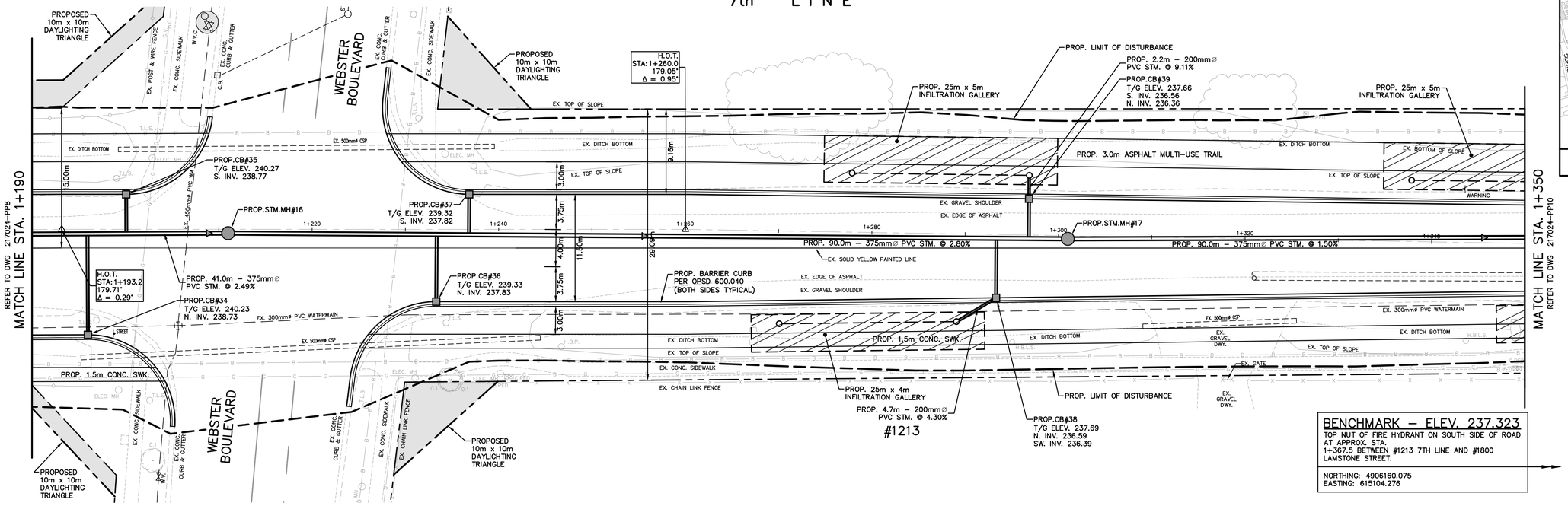
PLAN & PROFILE
7TH LINE
STA. 1+050 TO STA. 1+190

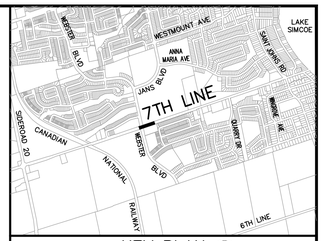
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP8

Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP8

7th LINE



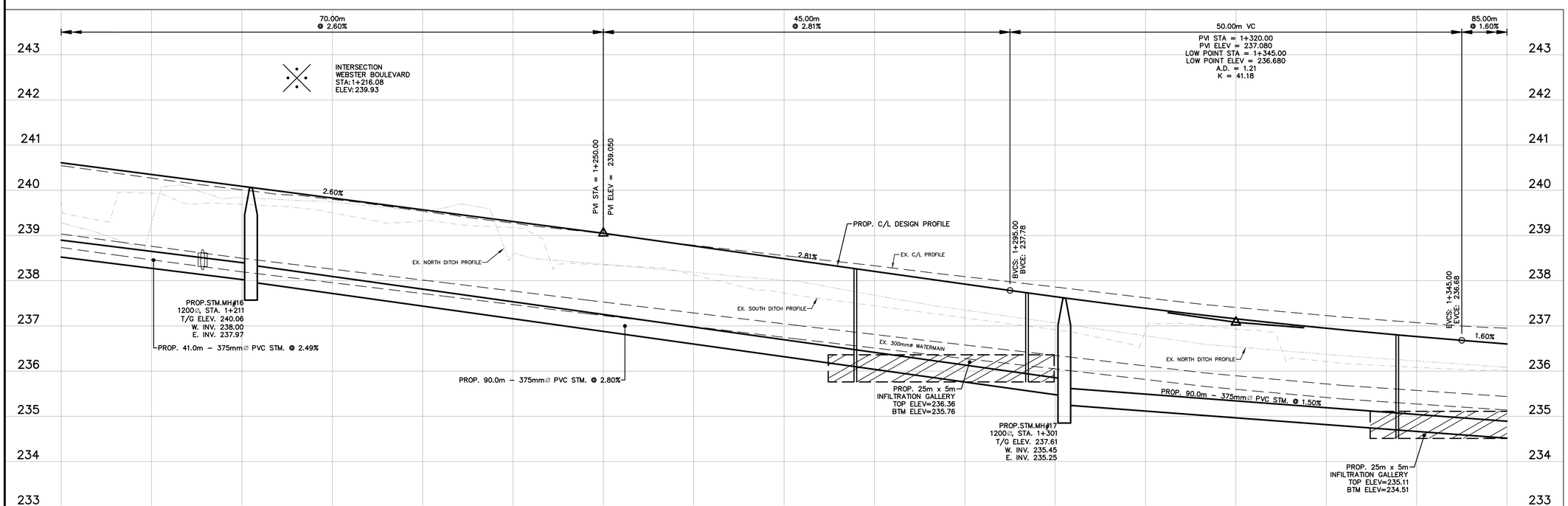


KEY PLAN
NOT TO SCALE

BENCHMARK – ELEV. 237.323

TOP NUT OF FIRE HYDRANT ON SOUTH SIDE OF ROAD AT APPROX. STA. 1+367.5 BETWEEN #1213 7TH LINE AND #1800 LAMSTONE STREET.

NORTHING: 4906160.075
EASTING: 615104.276



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP9

CONTRACT DRAWINGS

Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

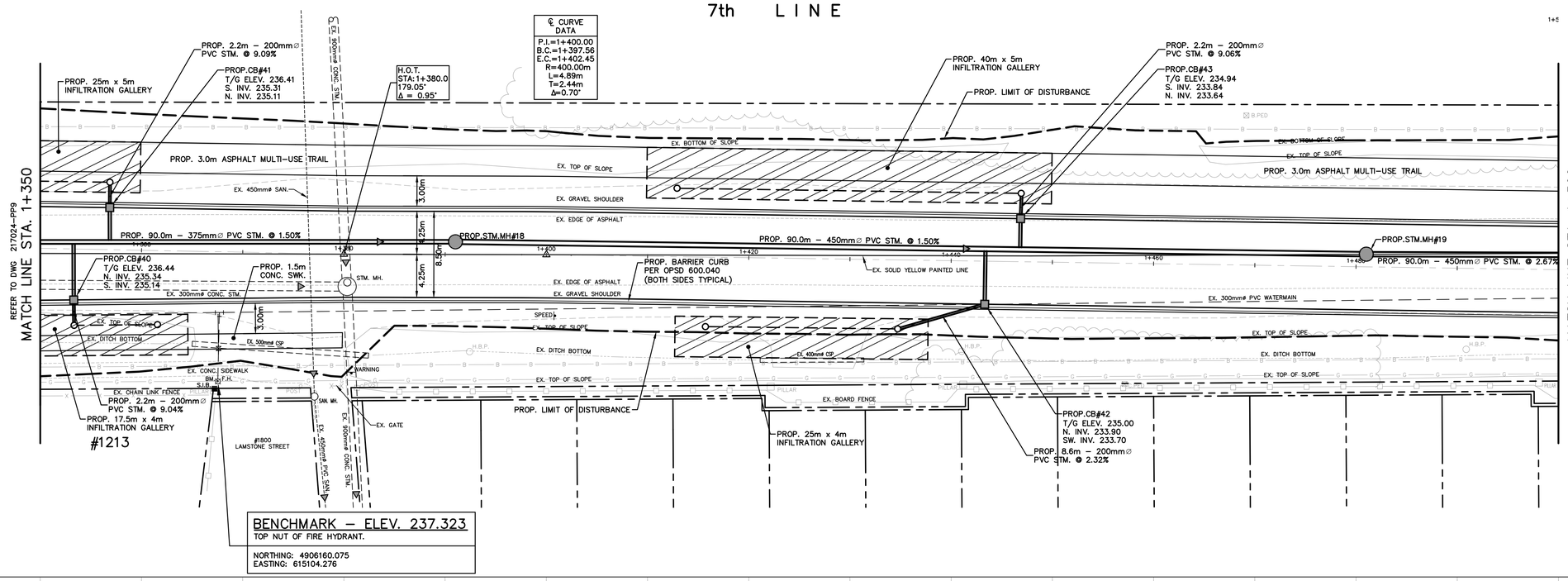
PLAN & PROFILE
7TH LINE
STA. 1+190 TO STA. 1+350

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

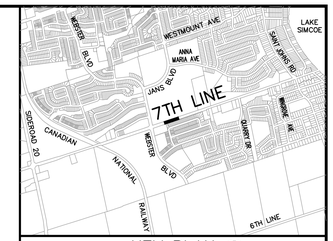
CONTRACT No.

DWG. No. 217024–PP9

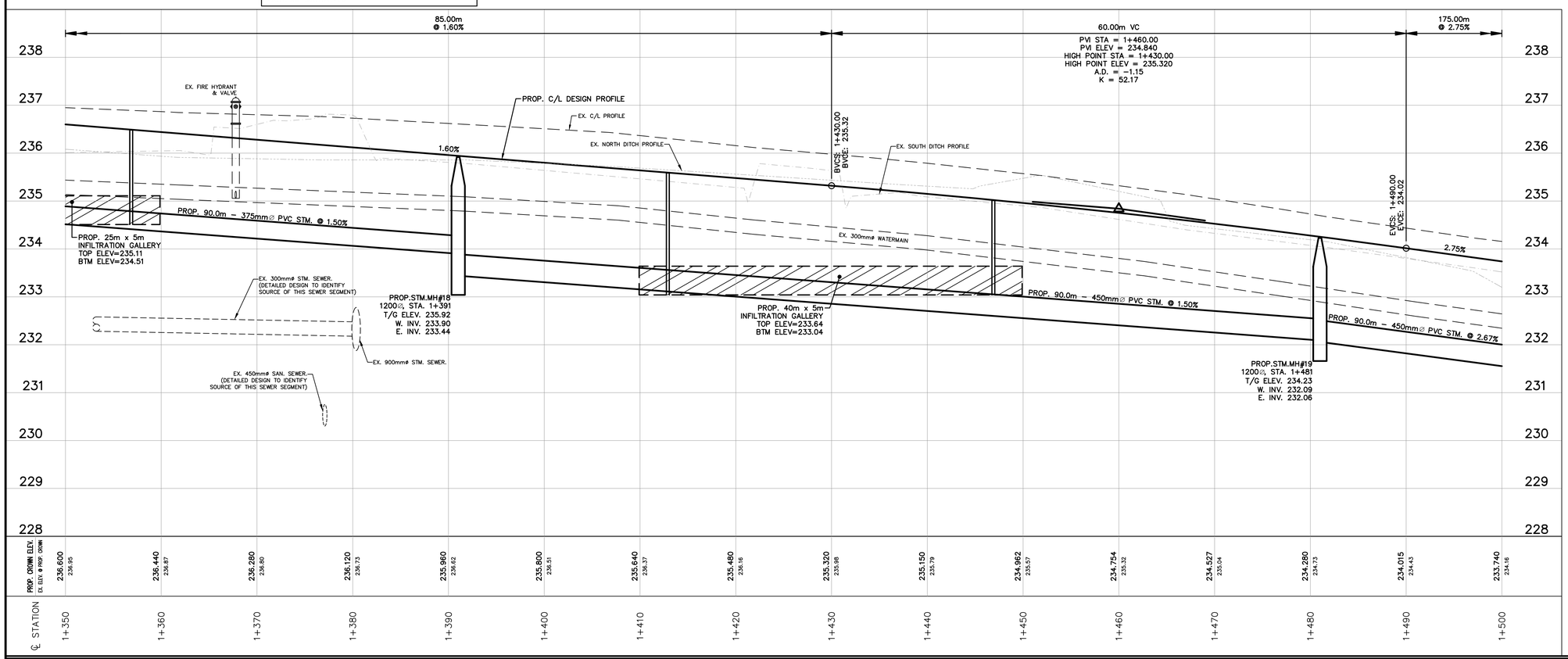
7th LINE



BENCHMARK – ELEV. 237.323
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906160.075
EASTING: 615104.276



KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP10

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

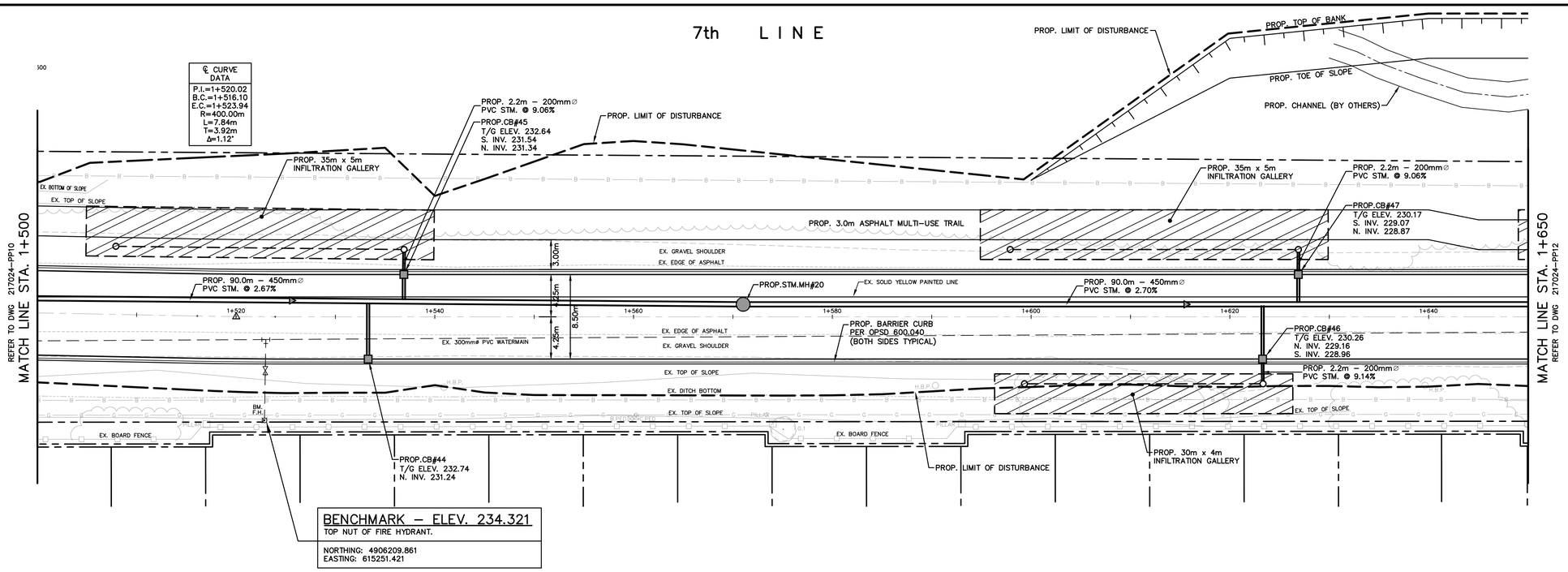
PLAN & PROFILE
7TH LINE
STA. 1+350 TO STA. 1+500

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP10

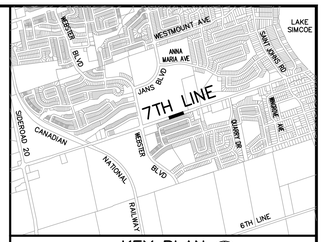
7th LINE



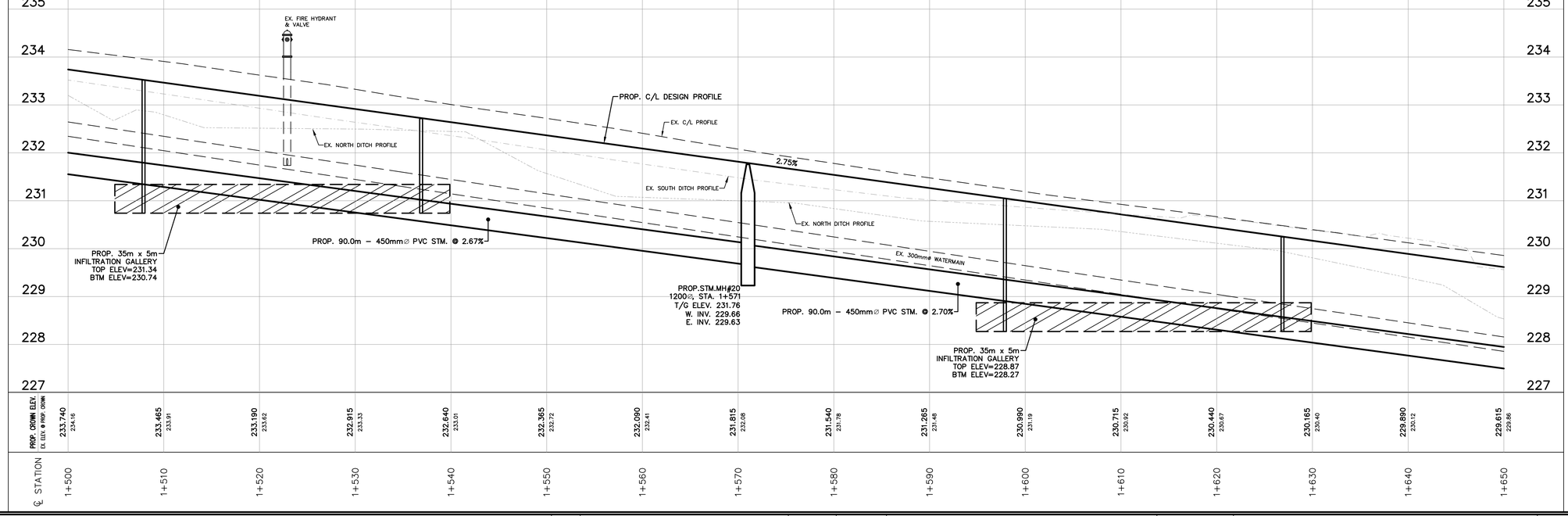
BENCHMARK – ELEV. 234.321

TOP NUT OF FIRE HYDRANT.

NORTHING: 4906209.861
EASTING: 615251.421



KEY PLAN
NOT TO SCALE



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL

7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

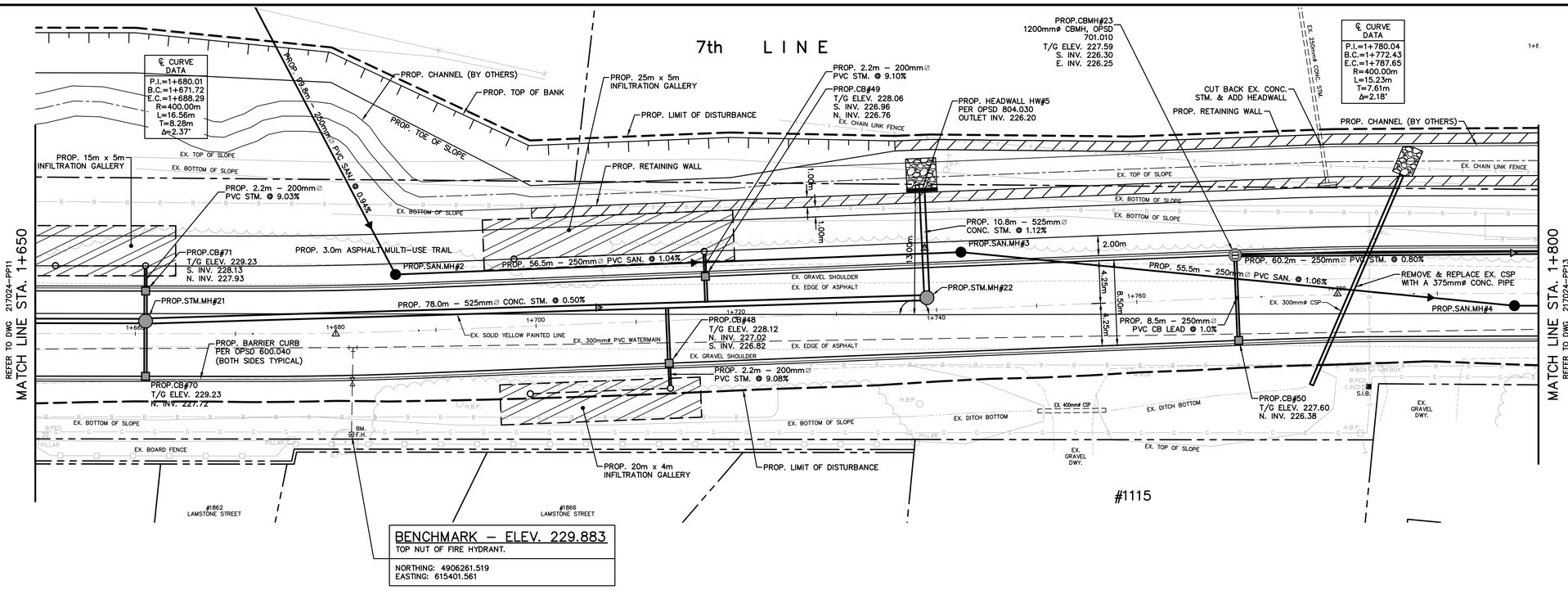
PLAN & PROFILE
7TH LINE
STA. 1+500 TO STA. 1+650

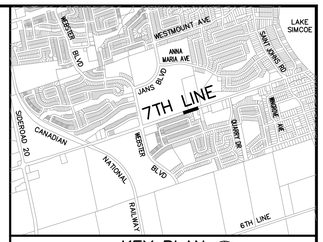
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP11

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP11





KEY PLAN
NOT TO SCALE

NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

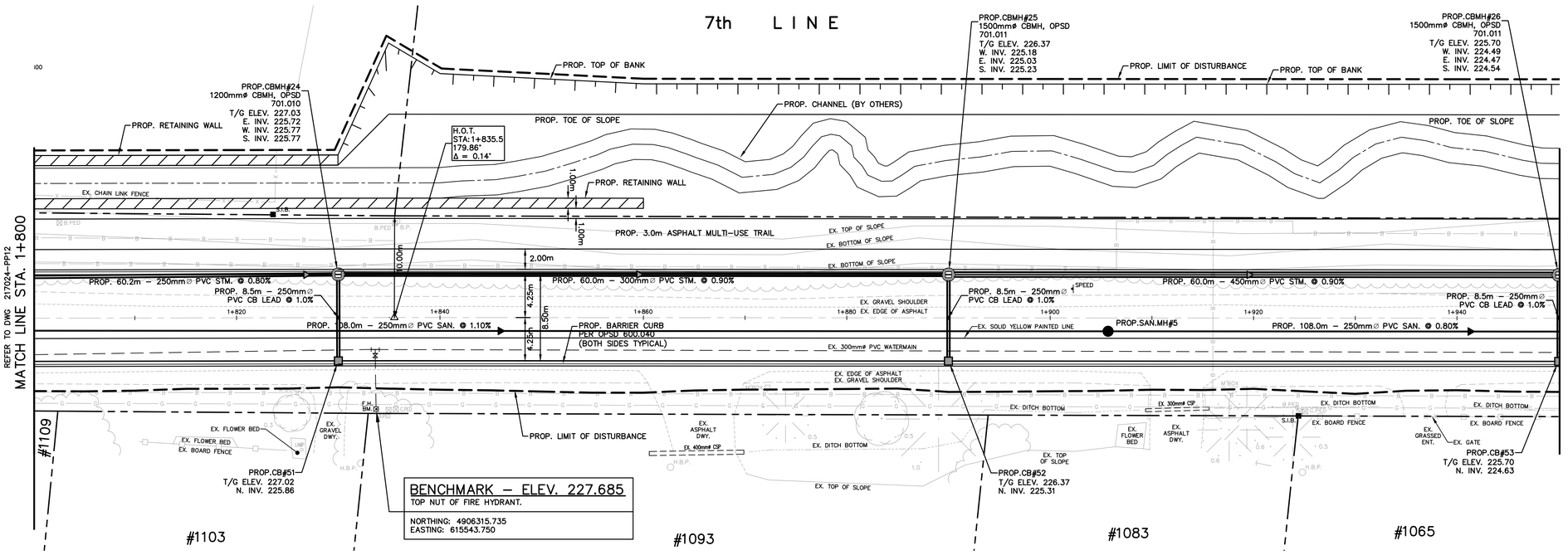
PLAN & PROFILE
7TH LINE
STA. 1+650 TO STA. 1+800

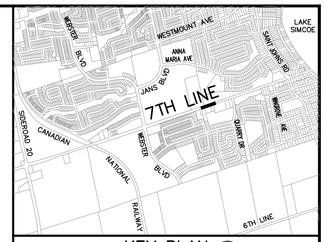
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

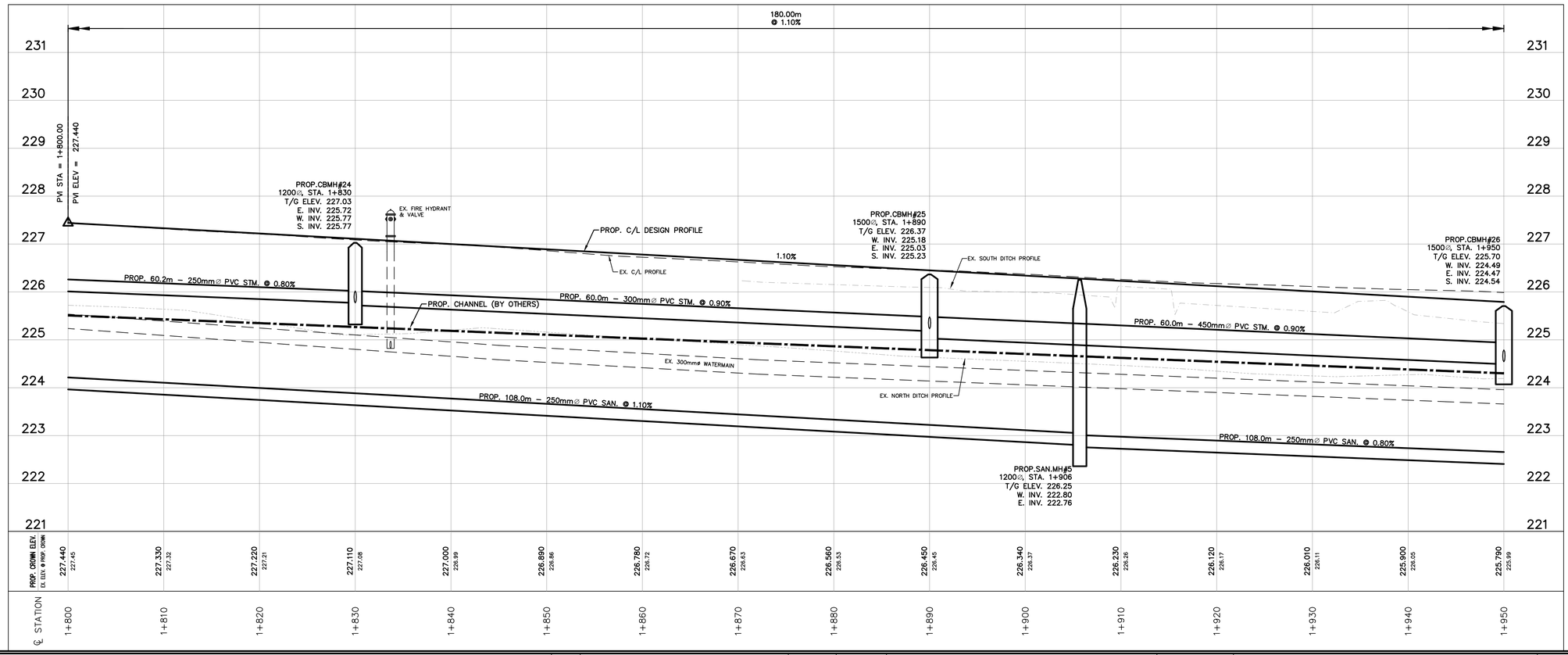
CONTRACT No.

DWG. No. 217024–PP12

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP12







NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

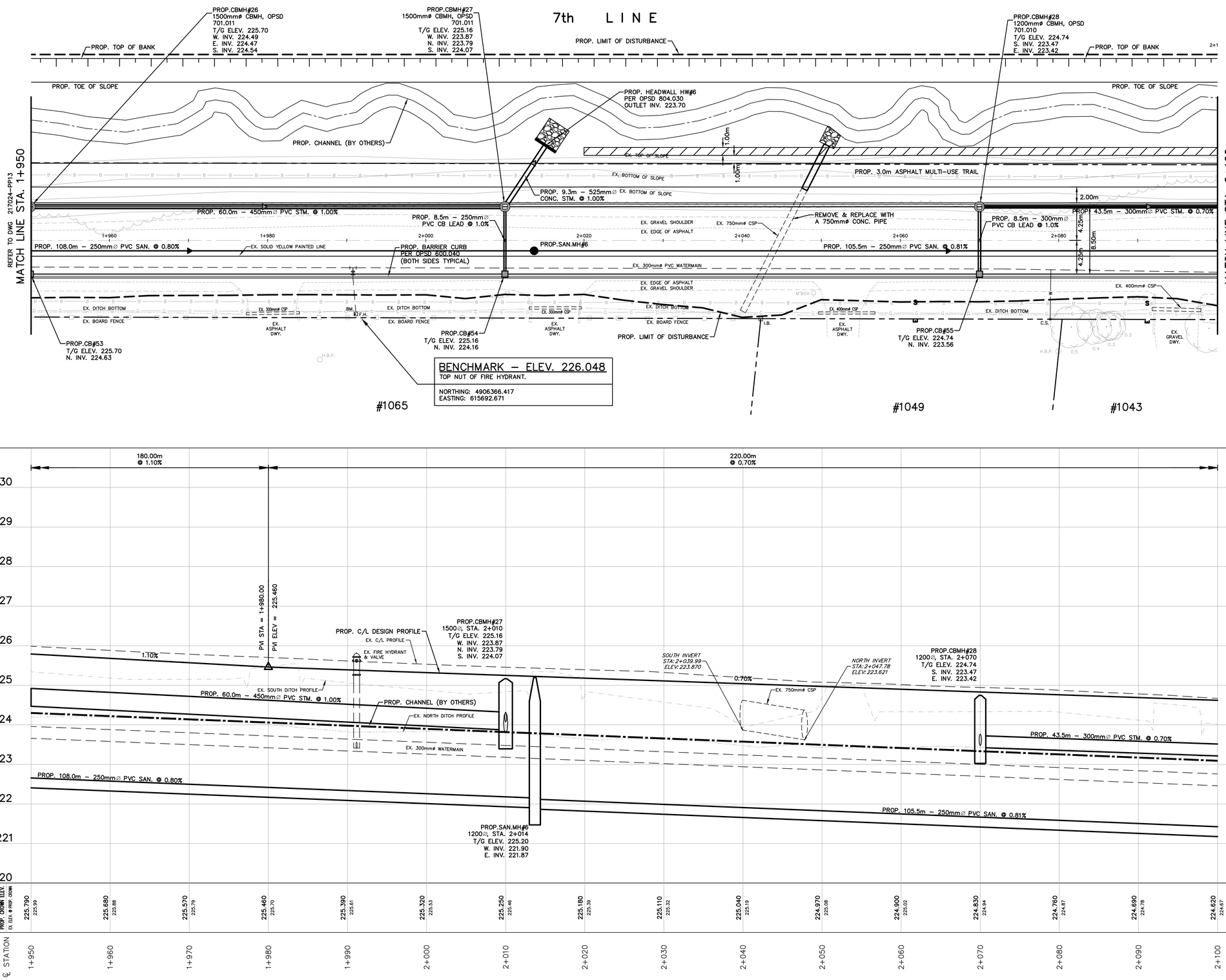
PLAN & PROFILE
7TH LINE
STA. 1+800 TO STA. 1+950

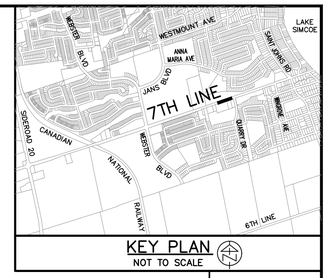
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP13

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP13





NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

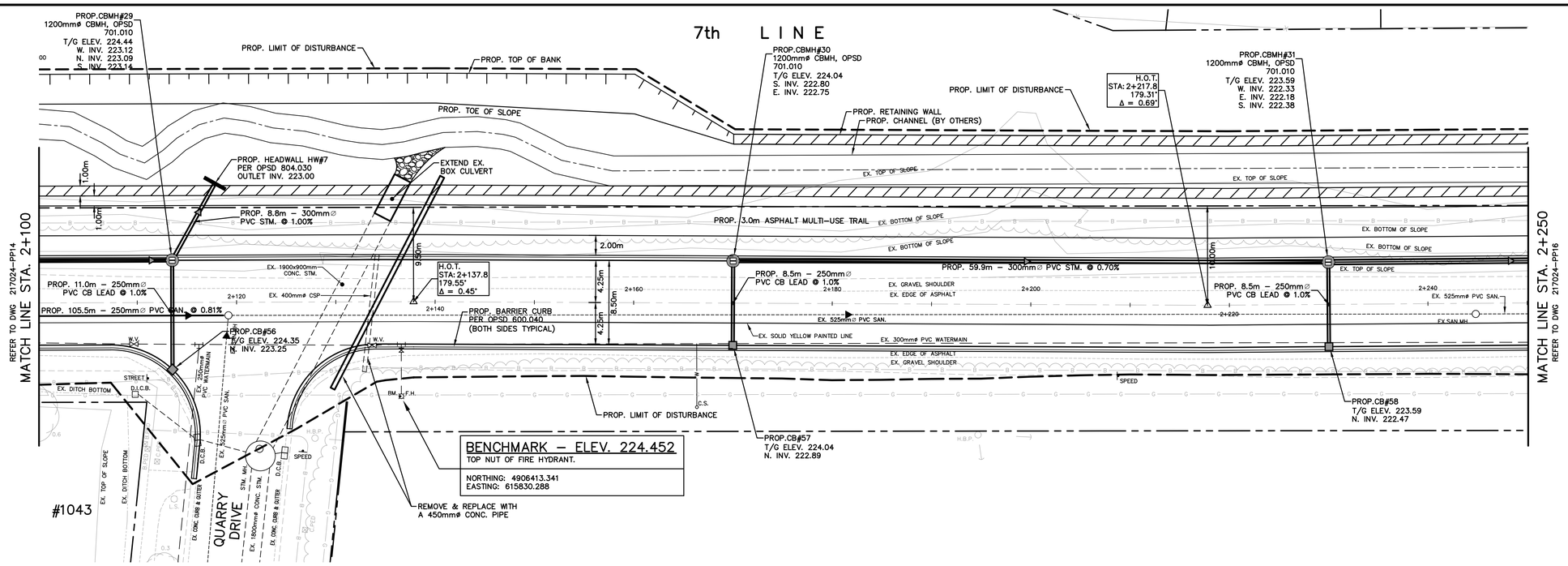
PLAN & PROFILE
7TH LINE
STA. 1+950 TO STA. 2+100

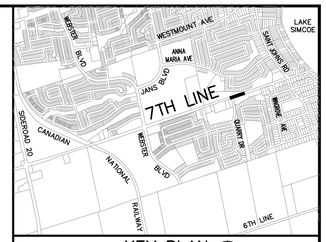
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP14

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP14





KEY PLAN
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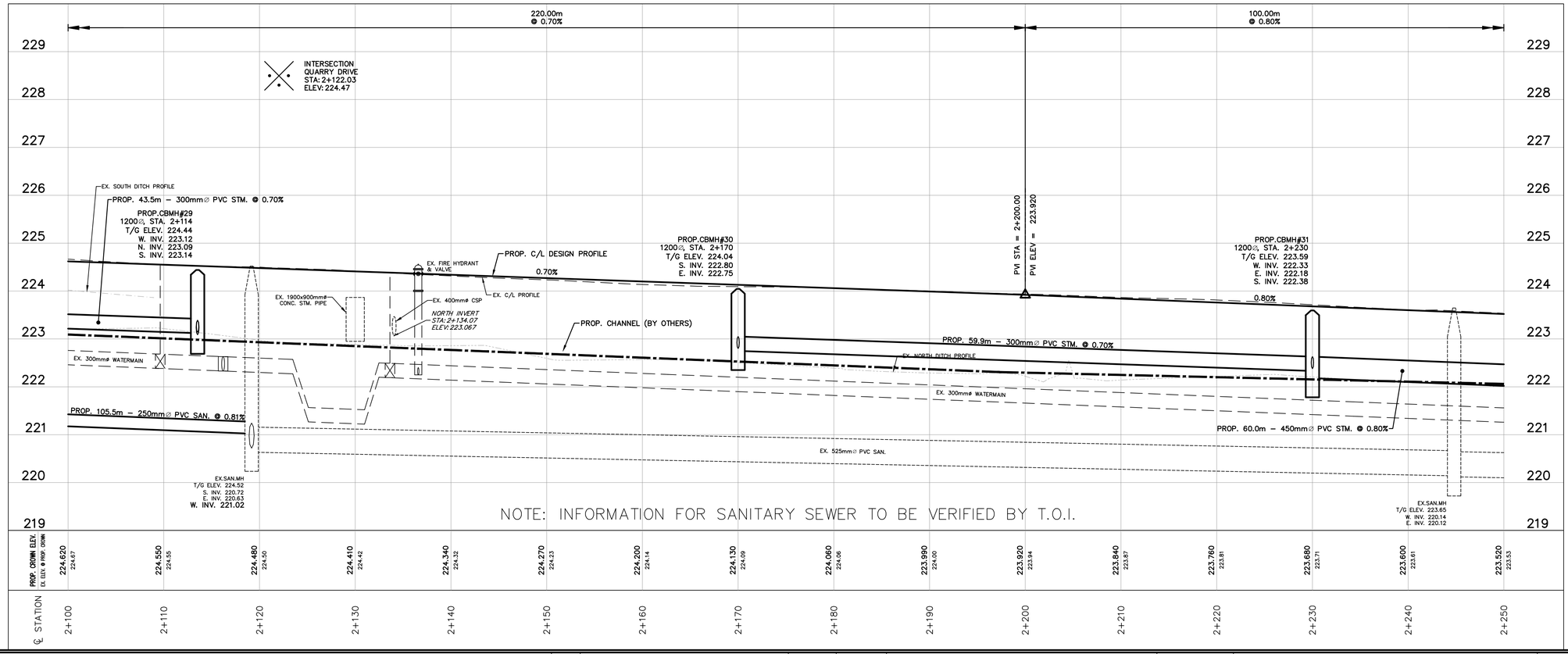

NOTES

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SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 2+100 TO STA. 2+250

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP15

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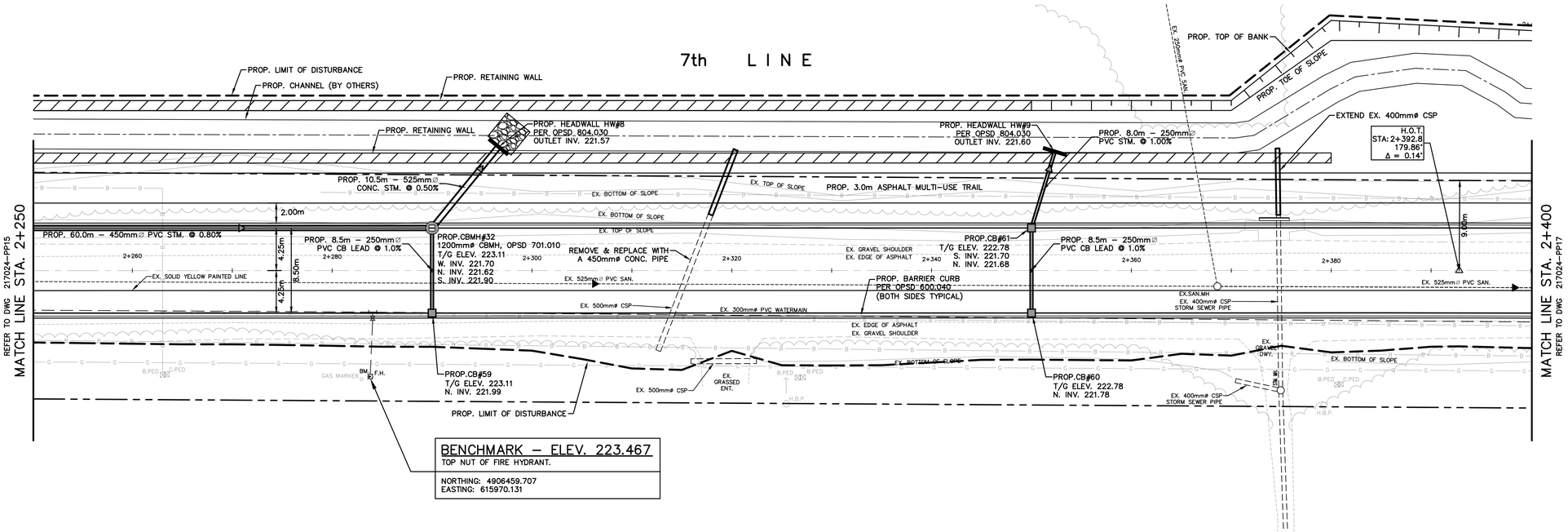
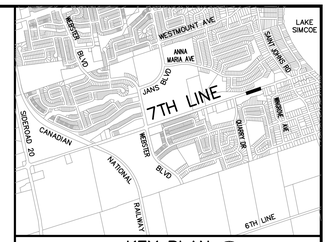


BENCHMARK – ELEV. 223.467
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906459.707
EASTING: 615970.131



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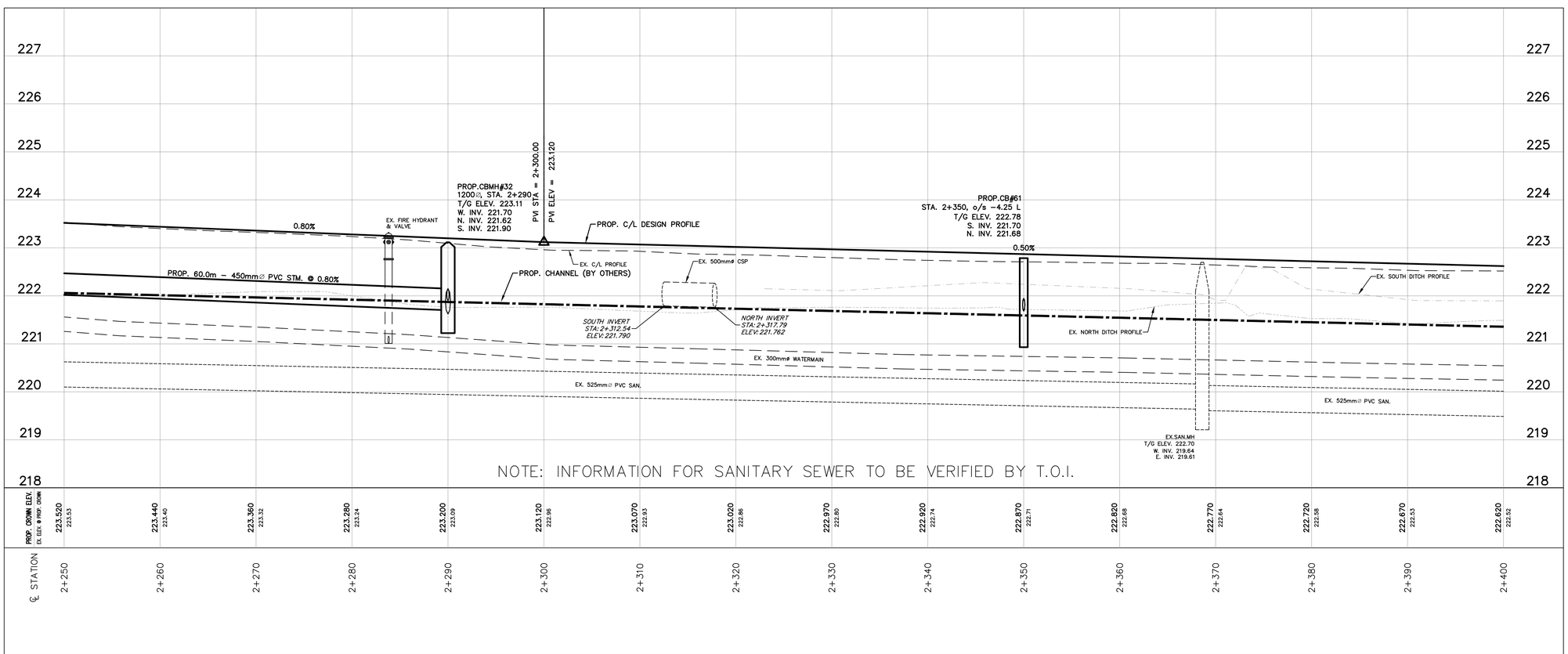

NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP16

NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

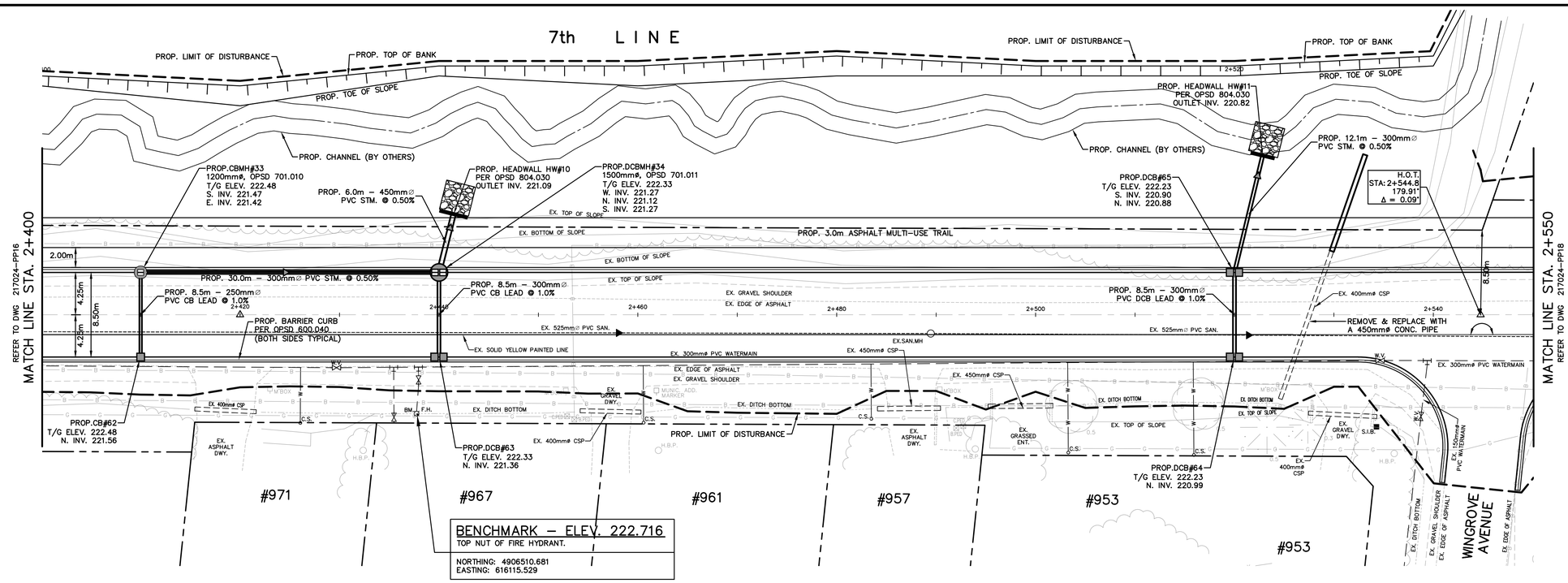
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

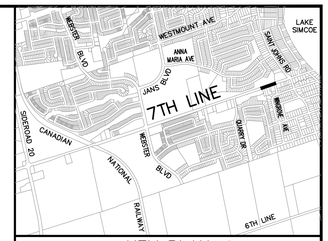
PLAN & PROFILE
7TH LINE
STA. 2+250 TO STA. 2+400

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP16





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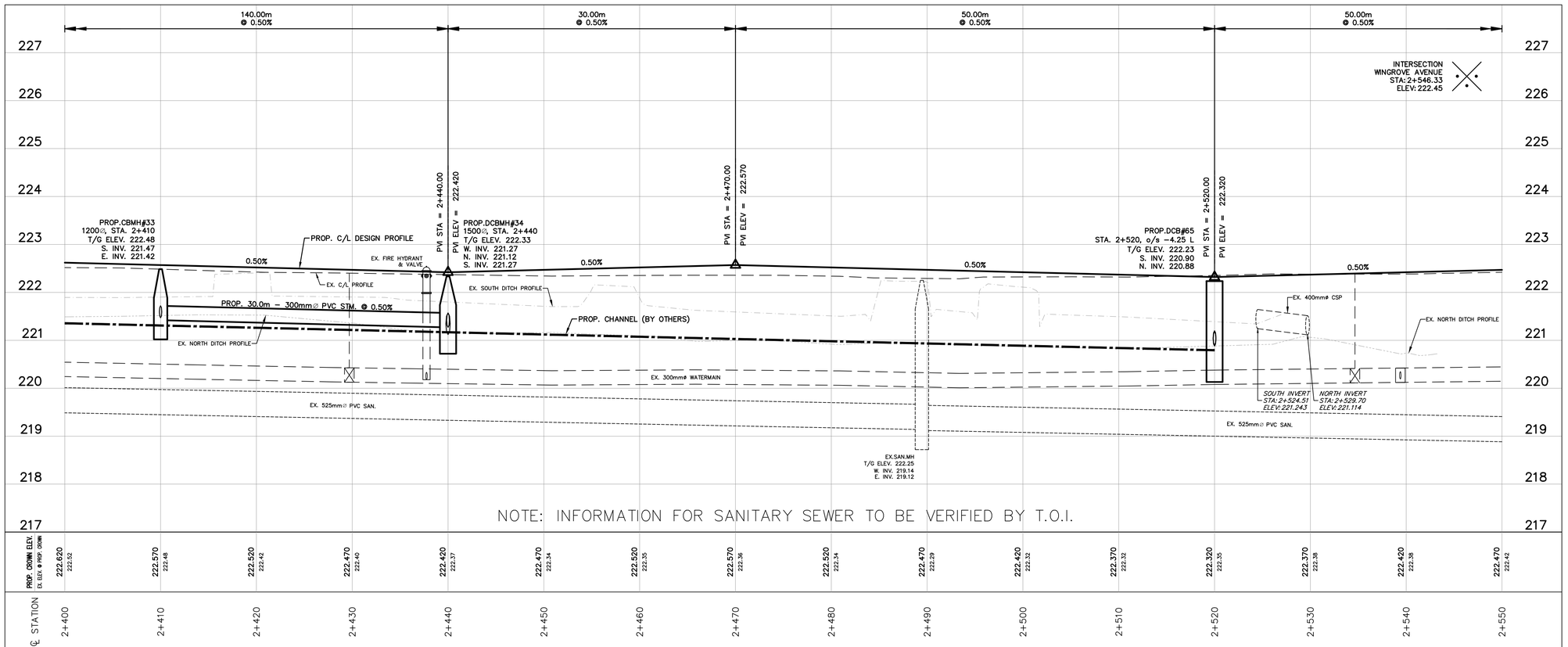

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Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP17

NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
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CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

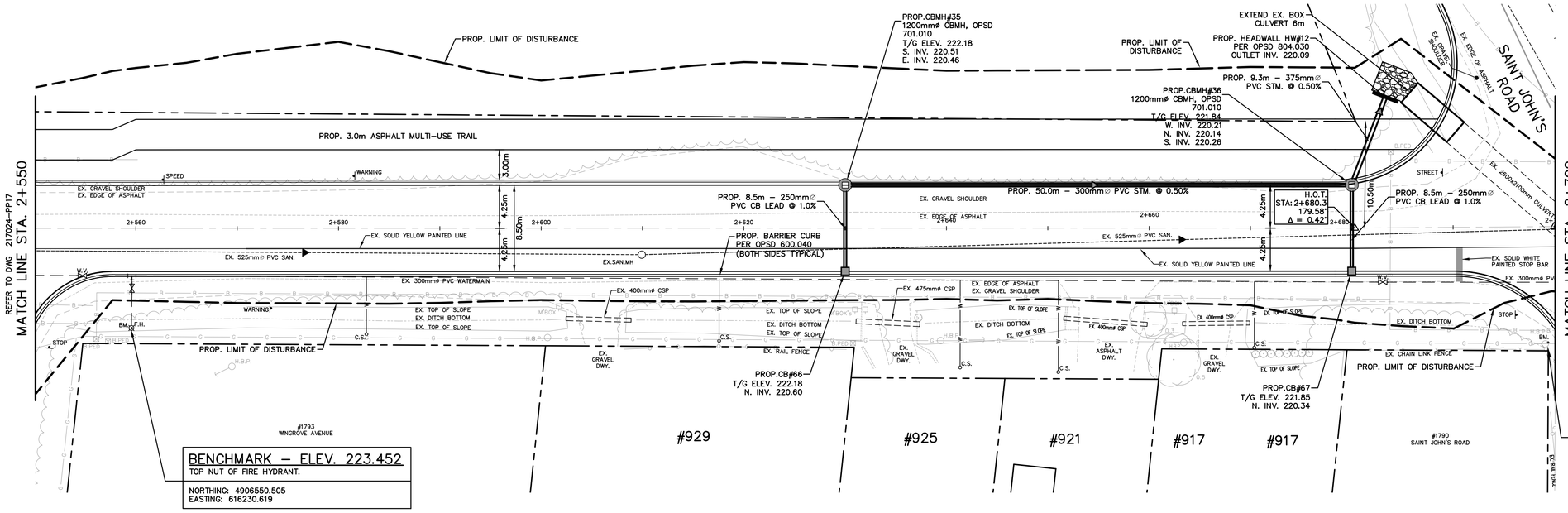
PLAN & PROFILE
7TH LINE
STA. 2+400 TO STA. 2+550

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

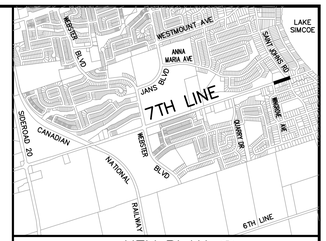
DWG. No. 217024–PP17

7th LINE



BENCHMARK – ELEV. 223.452
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906550.505
EASTING: 616230.619

BENCHMARK – ELEV. 221.243
NAIL & WASHER IN HYDRO BELL POLE
NORTHING: 4906594.847
EASTING: 616363.173



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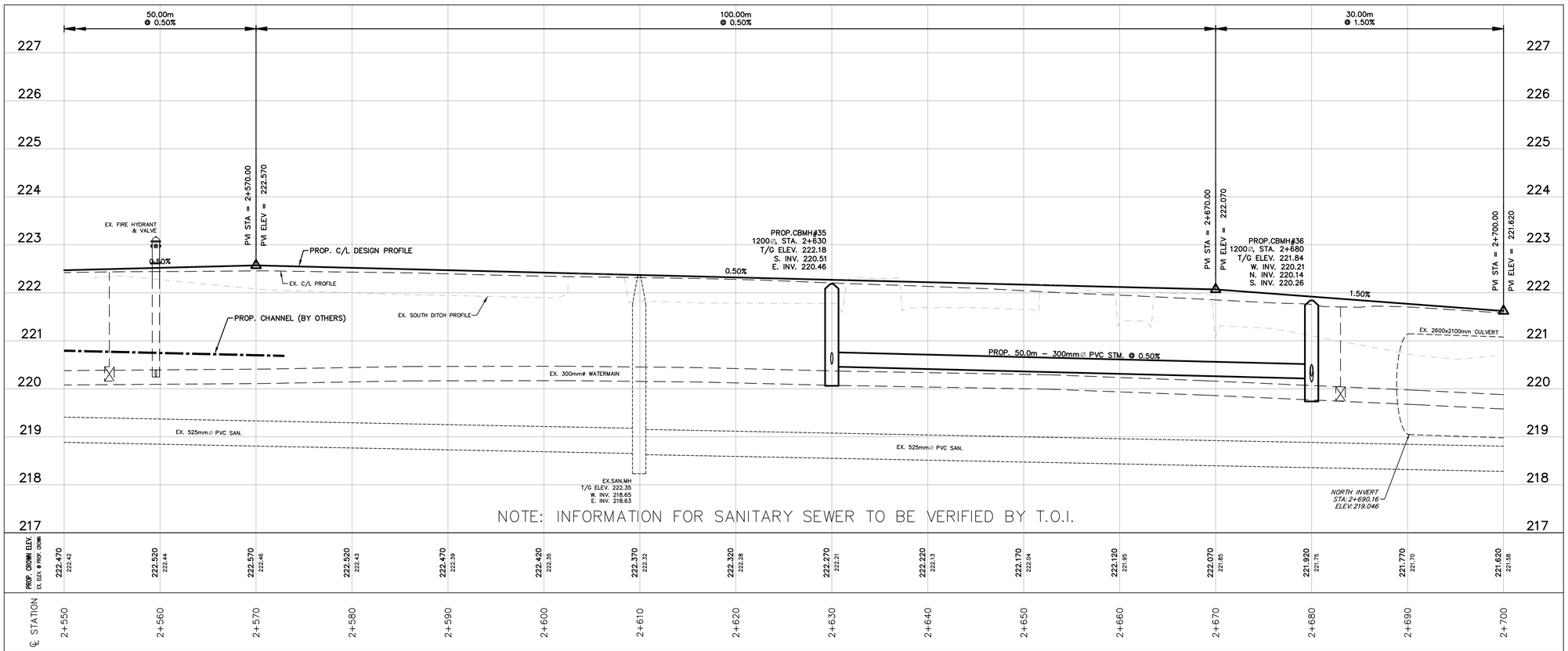

NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
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CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 2+550 TO STA. 2+700

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP18

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
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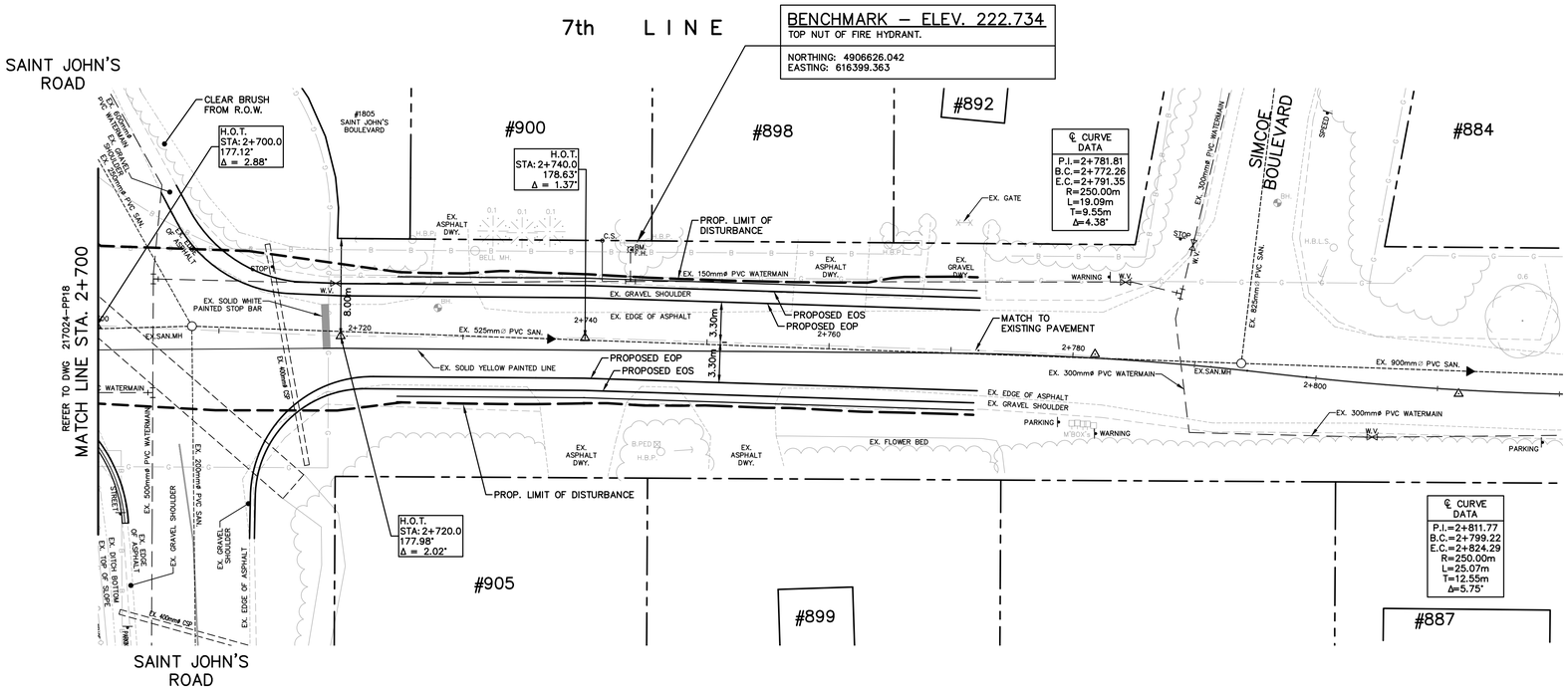

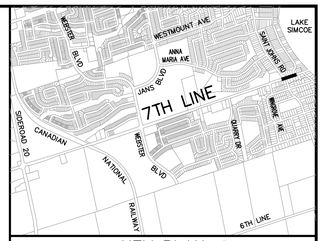

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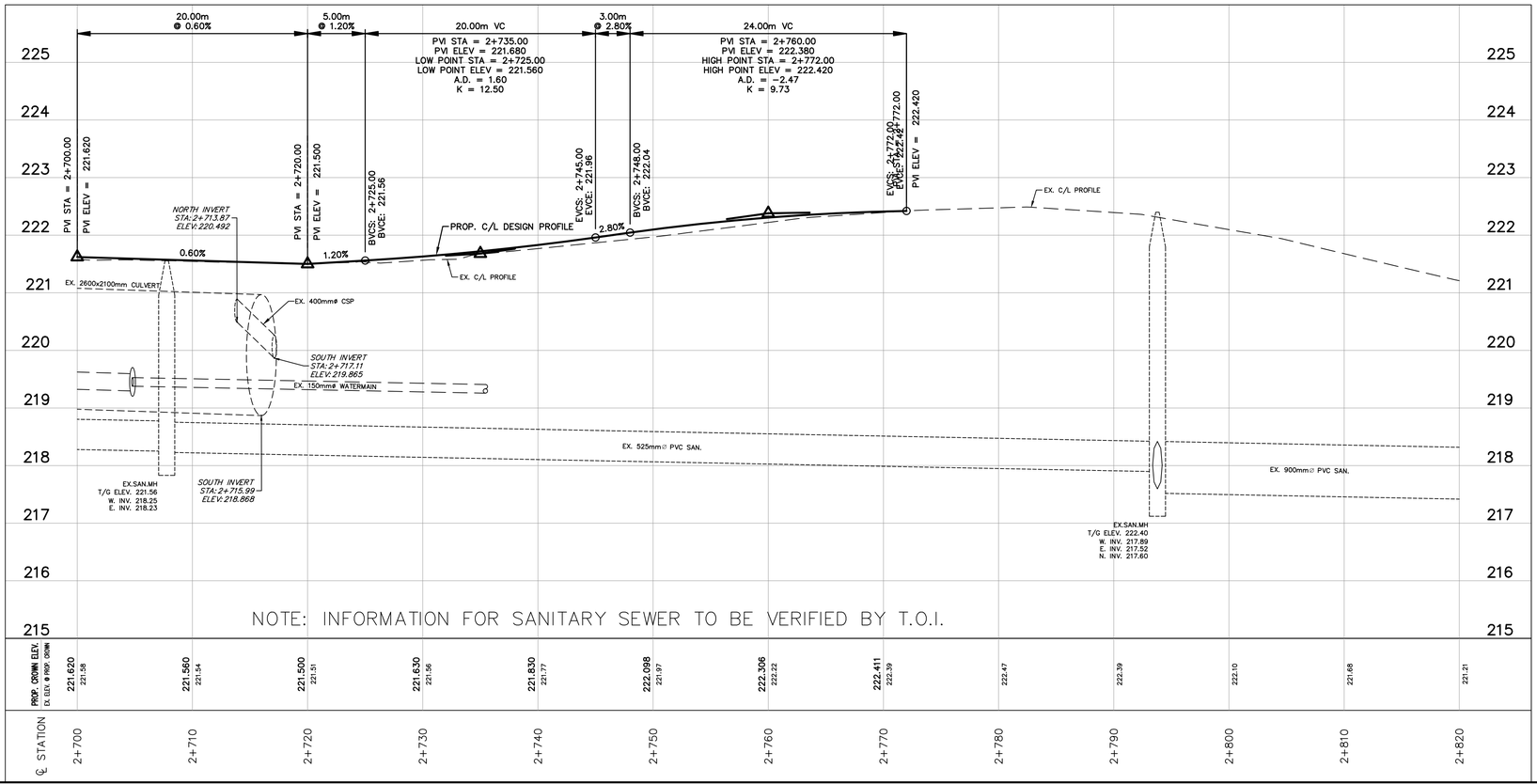

NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP19

CONTRACT DRAWINGS

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DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 2+670 TO STA. 2+820

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP19

LIMITATIONS TO THE REPORT

This report is intended for the Client named and Town of Innisfil only. The report is prepared based on the work has been undertaken in accordance with normally accepted geotechnical engineering practices in Ontario.

The comments and recommendations given in this report are based on information determined at the limited number of the test hole and test pit locations. The boundaries between the various strata as shown on the borehole logs are based on non-continuous sampling and represent an inferred transition between the various strata and their lateral continuation rather than a precise plane of geological change. Subsurface and groundwater conditions between and beyond the test holes and test pits may differ significantly from those encountered at the test hole and test pit locations. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole and test pit locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The report reflects our best judgment based on the information available to GeoPro Consulting Limited at the time of preparation. Unless otherwise agreed in writing by GeoPro Consulting Limited, it shall not be used to express or imply warranty as to any other purposes. No portion of this report shall be used as a separate entity, it is written to be read in its entirety. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated.

The design recommendations given in this report are applicable only to the project designed and constructed completely in accordance with the details stated in this report. Otherwise, our responsibility is limited to interpreting the subsurface information at the borehole or test pit locations.

Should any comments and recommendations provided in this report be made on any construction related issues, they are intended only for the guidance of the designers. The number of test holes and test pits may not be sufficient to determine all the factors that may affect construction activities, methods and costs. Such as, the thickness of surficial topsoil or fill layers may vary significantly and unpredictably; the amount of the cobbles and boulders may vary significantly than what described in the report; unexpected water bearing zones/layers with various thickness and extent may be encountered in the fill and native soils. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and make their own conclusions as to how the subsurface conditions may affect their work and determine the proper construction methods.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GeoPro Consulting Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

Appendix D

Geotechnical Report

GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Geotechnical Investigation

7th Line Widening and Improvements
Between 20th Sideroad and Lake Simcoe
Town of Innisfil, Ontario

Prepared For:

Ainley Group

GeoPro Project No.: 17-1797GH Revised

Report Date: January 15, 2018

T: (905) 237-8336 E: office@geoproconsulting.ca

Units 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6

GeoPro CONSULTING LIMITED

Table of Contents

1 INTRODUCTION

GeoPro Consulting Limited (GeoPro) was retained by Ainley Group (the Client) to conduct a geotechnical investigation for the proposed 7th Line widening and improvements between 20th Sideroad and Lake Simcoe, in the Town of Innisfil, Ontario.

The purpose of this geotechnical investigation was to obtain information on the existing subsurface conditions by means of a limited number of boreholes, in-situ tests and laboratory tests of soil samples to provide required geotechnical design information. Based on GeoPro's interpretation of the obtained data, geotechnical comments and recommendations related to the project designs are provided.

This report is prepared with the condition that the design will be in accordance with all applicable standards and codes, regulations of authorities having jurisdiction, and good engineering practice. Furthermore, the recommendations and opinions in this report are applicable only to the proposed project as described above. On-going liaison and communication with GeoPro during the design stage and construction phase of the project is strongly recommended to confirm that the recommendations in this report are applicable and/or correctly interpreted and implemented. Also, any queries concerning the geotechnical aspects of the proposed project shall be directed to GeoPro for further elaboration and/or clarification.

This report is provided on the basis of the terms of reference presented in our approved proposal prepared based on our understanding of the project. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations of this report can be relied upon.

This report deals with geotechnical issues only. The geo-environmental (chemical) aspects of the subsurface conditions, including the consequences of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources were not investigated and were beyond the scope of this assignment. However, limited chemical testing was carried out on selected soil samples for excess soil disposal purposes.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario. Laboratory testing, for most part, follows ASTM or CSA Standards or modifications of these standards that have become standard practice in Ontario.

This report has been prepared for the Client and Town of Innisfil only. Third party use of this report without GeoPro's consent is prohibited. The limitations to the report presented above form an integral part of the report and they must be considered in conjunction with this report.

2 SITE AND ROJECT DESCRIPTION

Town of Innisfil's official Plan has identified 7th Line between 20th Sideroad and St. Johns Road for future urbanization as a Major Collector roadway. It is understood that the road section between 20th Sideroad and Webster Boulevard will be widened to 26 m ROW from the existing 20 m ROW and the road section between Webster Boulevard and Lake Simcoe will remain the same configuration (e.g. no widening). Our geotechnical investigation and recommendations will be used to support the Class EA study for this proposed project.

The total length of the proposed project is approximately 2.9 km. Improvements of the watermain/sewers and appurtenances, intersections, culverts, and sidewalks may be carried out in conjunction with the road widening and improvements.

3 INVESTIGATION PROCEDURE

3.1 Existing Pavement Condition Survey

The section of 7th Line within the project limits was visited on July 7, 2017 by a GeoPro pavement engineer who carried out a detailed visual pavement condition survey of the existing pavement. The survey was conducted in general accordance with MTO SP-022 Flexible Pavement Condition Rating Guidelines for Municipalities. During the site visit, key pavement distresses were observed (noting the type, severity and general density of surface distresses); the general site and pavement drainage conditions were also noted. Photographs, including descriptions of the typical pavement distresses, are enclosed in Appendix A.

3.2 Borehole and Core Investigation

The field work for the geotechnical investigation was carried out on July 11, 18 to 20, 24 to 28, 2017 during which time forty-seven (47) boreholes (Boreholes BH111, BH112, BH121, BH122, BH131, BH132, BH141, BH142, BH151, BH152, BH161, BH162, BH171 and BH181 on the pavement of sideroad intersections; Boreholes BH201, BH203 to BH206, BH208 to BH210, BH212, BH213 and BH215 on the existing shoulders; and Boreholes BH202, BH207, BH211, BH214, BH301 to BH314, BH401, BH402, BH501 and BH601 on the pavement) were advanced to depths ranging from about 2.0 m to 12.7 m below the existing ground surface. In addition, the pavement was cored at fifteen (15) borehole locations (BH111, BH122, BH132, BH141, BH161, BH171, BH181, BH302, BH304, BH307, BH309, BH310, BH312, BH313 and BH314) using a core drill in order to obtain samples of the existing asphalt concrete for thickness measurements, visual examination and testing. Twelve (12) test pits (TP1 to TP12) were taken in the proposed widening areas. The borehole and test pit locations are shown on Drawings 1 to 3. Pavement core photographs are provided in Appendix B.

The boreholes were advanced using truck-mounted solid stem continuous flight auger equipment and continuous split spoon, supplied by drilling specialist subcontracted to GeoPro. Soil samples were recovered at regular intervals of depth using a 50 mm O.D. split-spoon sampler driven into

the soil in accordance with the Standard Penetration Test (SPT) procedure described in ASTM D1586 - 11 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.

Groundwater condition observations were made in the open boreholes during drilling and upon completion of drilling. The boreholes were backfilled and sealed upon completion of drilling. Monitoring well (51 mm in diameter) was installed in each of Boreholes BH202, BH402, BH501 and BH601.

All soil samples obtained during this investigation were brought to our laboratory for further examination. These soil samples will be stored for a period of three (3) months after the day of issuing draft report, after which time they will be discarded unless we are advised otherwise in writing. Geotechnical classification testing (including water content, grain size distribution and Atterberg Limits, when applicable) were carried out on selected soil samples. The complete laboratory test results are attached in Figures 1 to 8.

Nine (9) asphalt concrete cores were taken and submitted to AGAT Laboratories for observation/testing of the presence of asbestos. The asbestos analysis results are provided in Appendix C.

The elevation at the as-drilled borehole location was surveyed by a DGPS unit. Since the elevation was not provided by a professional surveyor, information should be considered to be approximate. Contractor performing the work should confirm the elevations prior to construction. The borehole locations plotted on Borehole and Test Pit Location Plan, Drawings 1 to 3, were based on the measurement of site features and should be considered to be approximate.

4 PAVEMENT AND SUBSURFACE CONDITIONS

4.1 Existing Pavement Conditions

In general, the existing pavement on 7th Line between 20th Sideroad and Lake Simcoe was observed to be mainly in poor condition with localized very poor areas. The major distresses are extensive slight to severe alligator cracking, frequent slight to severe longitudinal and transverse cracking, frequent slight to severe edge cracking and pavement edge broken, intermittent slight to moderate patching and potholes. The ride quality of this section is generally considered to be fair to poor.

This existing roadway was designed and constructed to an rural cross-section (open ditches). The overall surface drainage is generally considered to be poor. Observations along the roadway indicate that pavement surface water generally flows along the existing pavement grades and is being directed to ditches. However, the drainage is impaired by poor grading and surface distresses with unsealed cracks allowing surface water to infiltrate into the underlying pavement

and subgrade. At most sections, ditches were observed to be shallow to non-existent and not free-flowing, therefore, granular base/subbase might be saturated due to lack of drainage.

4.2 Subsurface Conditions

The borehole and test pit locations are shown on Drawings 1 to 3. Notes on sample descriptions are presented in Enclosure 1A. Explanations of terms used in the borehole logs are presented in Enclosure 1B. The subsurface conditions in the forty-seven boreholes are presented in the individual borehole logs (Enclosures 2 to 48 inclusive). Detailed descriptions of the major soil strata encountered in the boreholes drilled at the site are provided in the following.

Existing Pavement Structure

Twenty-one (21) boreholes were advanced through the pavement structure of the existing road lanes, twelve (12) boreholes were advanced through the existing shoulders, fourteen (14) boreholes were advanced on the major sideroad intersections. A flexible pavement structure was observed on 7th Line and on the major sideroads. The range and average thickness of pavement structure are summarized in the following table.

Section		Pavement Structure		
		Asphalt Concrete Range (Mean) (mm)	**Granular Base/Subbase Range (Mean) (mm)**	**Total Thickness (mm)**
7th Line Pavement	Section 1 (20th Sideroad - 240 m East of 20th Sideroad)	120 - 140 (130)	580 - 660 (620)	700 - 800 (750)
	Section 2 (240 m East of 20th Sideroad - Quarry Drive)	20 - 40 (25)	570 - 680 (605)	600 - 680 (630)
	Section 3 (Quarry Drive - St. Johns Road)	40 - 60 (45)	555 - 610 (575)	600 - 670 (620)
	Section 4 (St. Johns Road - Lake Simcoe)	35 - 50 (42)	400 - 450 (425)	435 - 500 (470)
7th Line Shoulder	20th Sideroad - Lake Simcoe	-	450 - 760 (650)	450 - 760 (650)
Sideroad (20th Sideroad)		140 - 220 (180)	390 - 540 (465)	610 - 680 (645)
Sideroad (Fox Hill Street)		120 - 130 (125)	460 - 470 (465)	580 - 600 (590)
Sideroad (Webster Boulevard)		120 - 130 (125)	470 - 560 (515)	600 - 680 (640)

Sideroad (Quarry Drive)	80 - 110 (95)	400 - 610 (505)	510 - 690 (600)
Sideroad (Wingrove Avenue)	25	350 - 400 (375)	375 - 425 (400)
Sideroad (St. Johns Road)	125 – 190 (155)	460 - 635 (540)	650 - 760 (705)
Sideroad (Simcoe Boulevard)	75	400	475
Sideroad (Cross Street)	40	320	360

(Probable) Fill Materials and Reworked Materials

(Probable) fill materials and reworked materials consisting of sand and gravel, gravelly sand, sandy gravel, sandy silt, silty (fine) sand, sand and silt, (fine) sand, organic silt, organic clayey silt, clayey silt deposits were encountered below granular fill and the granular base/subbase materials in all boreholes except for Boreholes BH121, BH205, BH208, BH209, BH302, BH304, BH309, BH312, BH402 and BH601, and extended to depths ranging from about 0.7 m to 2.9 m below the existing ground surface. Boreholes BH111, BH112, BH132, BH141, BH142, BH161, BH162, BH171 and BH181 were terminated in these fill materials. For cohesionless fill materials, SPT N values ranging from 4 to 48 blows per 300 mm penetration indicated a very loose to dense compactness. For cohesive fill materials, SPT N values ranging from 3 to 16 blows per 300 mm penetration indicated a soft to very stiff consistency. The in-situ moisture content measured in the soil samples ranged from approximately 1% to 32%.

Sandy Silt Till, Silty Sand Till, and Sand and Silt Till

Sandy silt till, silty sand till and sand and silt till deposits were encountered below the granular base/subbase, fill materials, sandy silt, reworked sandy silt, sand and silt to silty sand, sand, clayey silt, clayey silt till deposits in Boreholes BH121, BH122, BH131, BH202, BH205, BH207, BH213, BH215 BH302, BH304, BH306 and BH312, and extended to depths ranging from 2.0 m to 5.6 m below the existing ground surface. Boreholes BH121, BH122, BH131, BH207, BH213, BH215, BH302 and BH304 were terminated in these deposits. SPT N values ranging from 8 to greater than 100 blows per 300 mm penetration indicated a loose to very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 3% to 22%.

Upper Silt, (Fine) Sandy Silt, Sand and Silt, Silty (Fine) Sand, (Fine) Sand, Gravelly Sand, Sand and Gravel, and Sandy Gravel

Upper silt, (fine) sandy silt, sand and silt, silty (fine) sand, (fine) sand, gravelly sand, sand and gravel and sandy gravel deposits were encountered below the granular base/subbase, granular fill, (probable) fill materials, clayey silt, organic clayey silt, organic silt, sandy silt till, sand and silt till and silty sand till deposits in Boreholes BH151, BH152, BH201, BH203 to BH205, BH207 to BH212, BH214, BH215, BH302, BH304 to BH312, BH314, BH402, BH501 and BH601, and extended to

depths ranging from about 1.4 m to 5.6 m below the existing ground surface. Boreholes BH151, BH152, BH201, BH212, BH214, BH306, BH310, BH312 and BH314 were terminated in these deposits. SPT N values ranging from 3 to greater than 100 blows per 300 mm penetration indicated a very loose to very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 2% to 22%.

Lower (Fine) Sand, Silty Sand, Sand and Silt, Sandy Silt, and Gravelly Sand

Lower (fine) sand, silty sand, sand and silt, sandy silt and gravelly sand deposits were encountered below sandy silt till to sand and silt till, upper sand and gravel to gravelly sand, upper sand, clayey silt to silty clay and clayey silt till deposits in Boreholes BH202, BH208, BH210, BH307, BH401, BH402, BH501 and BH601, and extended to depths ranging from 6.3 m to 12.7 m below the existing ground surface. Boreholes BH202, BH208, BH307, BH401, BH402, BH501, BH601 were terminated in these deposits. SPT N values ranging from 2 to greater than 100 blows per 300 mm penetration indicated a very loose to very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 6% to 23%.

Upper Clayey Silt

Upper clayey silt deposit was encountered below the fill materials, fine sandy silt and organic clayey silt deposit in Boreholes BH201, BH202, BH204, BH212, BH306, BH401 and BH402, and extended to depths ranging from about 1.7 m to 4.8 m below the existing ground surface. Borehole BH204 was terminated in this deposit. SPT N values ranging from 3 to greater than 100 blows per 300 mm penetration indicated a firm to hard consistency. The natural moisture content measured in the soil samples ranged from approximately 9% to 24%.

Lower Clayey Silt and Silty Clay

Lower clayey silt and silty clay deposits were encountered below the clayey silt till, silt, sandy silt, silty sand, sand, sand and gravel, gravelly sand, and sandy gravel deposit in Boreholes BH203, BH209 to BH211, BH301, BH303, BH307 to BH309, BH311, BH313, BH401, BH402, BH501 and BH601, and extended to depths ranging from about 5.0 m to 10.2 m below the existing ground surface. Boreholes BH203, BH209 to BH211, BH301, BH303, BH308, BH309, BH311 and BH313 were terminated in these deposits. SPT N values ranging from 2 to 71 blows per 300 mm penetration indicated very soft to hard consistency. The natural moisture content measured in the soil samples ranged from approximately 10% to 30%.

Clayey Silt Till

Clayey silt till deposit was encountered below the fill materials, clayey silt, sandy silt, sandy silt till, and silty sand deposits in Boreholes BH202, BH205, BH206, BH301, BH303, BH305, BH313, BH401 and BH402, and extended to depths ranging from 2.1 m to 11.7 m below the existing ground surface. Boreholes BH205, BH206 and BH305 were terminated in this deposit. SPT N values

ranging from 8 to greater than 100 per 300 mm penetration indicated firm to hard consistency. The natural moisture content measured in the soil samples ranged from approximately 8% to 17%.

Organic Clayey Silt

Organic clayey silt deposit was encountered below the granular base/subbase, granular fill and organic silt deposits in Boreholes BH205, BH401 and BH402, and extended to depths ranging from about 1.1 m to 2.2 m below the existing ground surface. SPT N values ranging from 9 to 37 blows per 300 mm penetration indicated stiff to hard consistency. The natural moisture content measured in these soil samples ranged from approximately 4% to 32%.

Organic Silt

Organic silt deposit was encountered below the fill materials and granular base/subbase in Boreholes BH304 and BH401, and extended to depths ranging from about 0.9 m to 1.7 m below the existing ground surface. SPT N values ranging from 7 to 9 blows per 300 mm penetration indicated loose compactness. The natural moisture content measured in the soil samples ranged from approximately 21% to 26%.

4.3 Groundwater Conditions

Groundwater condition observations made in the boreholes during and immediately upon completion of drilling are shown in the borehole logs and are also summarized in the following table.

BH No.	BH Depth (m)	Depth of Water Encountered during Drilling (mBGS)	Cave-in Depth upon Completion of Drilling (mBGS)	Water Level upon Completion of Drilling (mBGS)
BH111	2.0	0.8	Open	Dry
BH141	2.0	-	1.8	Dry
BH142	2.0	-	1.9	Dry
BH151	2.0	-	1.8	Dry
BH152	2.0	-	1.8	Dry
BH171	2.0	-	1.7	Dry
BH181	2.0	1.5	1.7	1.2
BH201	4.6	4.1	Open	Dry
BH202	8.1	4.6	6.4	4.9
BH203	5.0	3.0	3.0	-
BH204	4.8	2.3	3.1	3.1
BH207	5.0	-	4.3	Dry
BH208	6.6	4.6	2.4	Dry
BH209	5.0	2.3	Open	Dry
BH210	7.8	1.5	2.7	1.8

BH211	5.0	2.3	2.3	1.5
BH212	5.0	0.8	1.4	1.1
BH213	5.0	-	4.3	Dry
BH214	4.8	2.3	4.2	1.8
BH215	4.8	1.5	4.3	1.5
BH301	5.0	2.3	4.3	4.0
BH302	5.0	-	4.0	Dry
BH304	4.7	2.3	4.0	4.0
BH305	5.0	3.1	4.0	4.0
BH306	5.0	4.6	Open	Dry
BH307	6.6	3.0	4.6	4.6
BH308	5.0	3.0	2.4	2.4
BH309	5.0	2.3	1.8	1.8
BH310	5.0	2.3	2.4	1.8
BH312	5.0	2.3	4.3	3.1
BH314	5.0	2.3	4.7	3.7
BH401	12.7	10.7	10.1	10.1
BH402	12.3	7.6	-	-
BH501	10.8	2.3	4.6	-
BH601	11.1	6.1	-	-

Note: mBGS = meters below ground surface

Four (4) monitoring wells (51 mm) were installed to monitor long-term groundwater conditions and field slug test. The monitoring well construction details and measured groundwater levels are shown in the following table.

Monitoring Well ID	Screen Interval (mBGS)	Water Level (mBGS) Date of Monitoring	Elevation of Groundwater Level (m)
		August 8, 2017	
BH202	6.1 – 7.6	5.67	244.9
BH402	9.2 – 10.7	2.62	247.1
BH501	2.8 – 4.3	1.68	224.6
BH601	7.7 – 9.2	1.37	220.2

Note: mBGS = meter below ground surface

It should be noted that groundwater levels can vary and are subject to seasonal fluctuations in response to weather events.

4.4 Topsoil Thickness Measurements

Twelve (12) test pits were taken in the proposed widening lanes (existing ditch, field and boulevard) to obtain the thickness of topsoil and/or organic matter. The measured thicknesses from the test pits ranged from 150 mm to 350 mm with an average of 230 mm. Test pit locations

are shown on Borehole Location Drawings 1 to 3. The measured topsoil and/or organic matter thicknesses are shown in the following table:

Location	Thickness of Topsoil (mm)
TP-1	150
TP-2	350
TP-3	150
TP-4	200
TP-5	200
TP-6	230
TP-7	150
TP-8	250
TP-9	250
TP-10	300
TP-11	350
TP-12	170
Average	**230**

It should be noted that the thickness of the topsoil explored at the test pit vary greatly and may not be representative for calculating the amount of topsoil at the site.

4.5 Laboratory Testing Results

Sieve analyses were completed on nine samples of the recovered granular base/subbase materials on the pavement lanes and granular fill on the shoulders, and the results were compared to OPSS.MUNI 1010 Granular A and Granular B Type I specifications. The grain size distribution curves for these samples are presented in Figures 1 to 3, and a summary of the results is provided in the following table.

Sample	OPSS.MUNI 1010 Granular A	OPSS.MUNI 1010 Granular B Type I
BH201 SS1	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (9.2% passing 0.075 mm sieve)
BH204 SS1	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (11.1% passing 0.075 mm sieve)
BH211 AS1	Meets requirements	Meets requirements
BH212 AS1	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (11.6% passing 0.075 mm sieve)
BH213 AS1	Does not meet requirements due to excessive percentages passing 0.075 mm sieves	Does not meet requirements due to excessive fines (9.3% passing 0.075 mm sieve)
BH302 AS1	Meets requirements	Meets requirements

BH304 AS1	Does not meet requirements due to less percentages passing 19 mm sieves	Meets requirements
BH312 AS1	Does not meet requirements due to excessive percentages passing 0.15 mm and 0.075 mm sieves	Does not meet requirements due to excessive fines (11.2% passing 0.075 mm sieve)
BH314 SS1	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (15.8% passing 0.075 mm sieve)

Grain size analysis of fourteen subgrade samples confirmed the visual description of the subgrade soils. In addition, the soils were examined and compared to frost susceptibility characteristics in accordance with the MTO Pavement Design and Rehabilitation Manual. The summarized results are provided in the following table, and the grain size distribution curves of these samples are presented in Figures 4 to 8.

Soil Sample	Description	Susceptibility of Frost Heaving
BH202 SS4	Sand and Silt Till	Low
BH202 SS7B	Silty Sand	Low
BH205 SS4	Sandy Silty Till	Low
BH206 SS3	Clayey Silt Till	Low
BH207 SS5	Sand and Silt	Low
BH212 SS4	Clayey Silt Till	Low
BH215 SS4	Silty Sand	Low
BH302 SS6	Sandy Silt Till	Low
BH304 SS3	Sandy Silt Till	Low
BH308 SS6	Silty Clay	Low
BH311 SS3	Sand	Low
BH402 SS6	Clayey Silt Till	Low
BH501 SS5	Sand and Gravel	Low
BH601 SS9	Silty Fine Sand	Low

4.6 Asbestos Analysis Results

Nine (9) asphalt concrete cores (BH111, BH132, BH161, BH302, BH304, BH307, BH310, BH312 and BH314) were submitted to AGAT Laboratories in Mississauga, Ontario ("AGAT") to determine if asbestos fibres are present in the existing asphalt concrete. To analyze for asbestos in asphalt samples, AGAT uses a method modified from EPA/NIOSH methodology protocols, and typically expresses results using semi-qualitative ranges.

Based on the analytical results, no asbestos fibres were identified in asphalt concrete core samples analyzed. Therefore, the asphalt concrete at these sample locations would not be considered as an asbestos containing material. Pavement asphalt core photographs are provided in Appendix B and asbestos analysis test results are attached to Appendix C.

5 DISCUSSION AND RECOMMENDATIONS

This report contains the findings of GeoPro's geotechnical investigation, together with geotechnical engineering recommendations and comments. These recommendations and comments are based on factual information and are intended only for use by the design engineers. The number of boreholes may not be sufficient to determine all factors that may affect construction methods and costs. Subsurface conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction that could not be detected or anticipated at the time of the site investigation. The anticipated construction conditions are also discussed, but only to the extent that they may influence design decisions. The construction methods discussed, however, express GeoPro's opinion only and are not intended to direct contractors on how to carry out construction. Contractors should also be aware that the data and interpretation presented in this report may not be sufficient to assess all factors that may have an effect on construction.

The design drawings of the project were not available when this report was prepared. Once the design drawings and detailed site plan are available, this report will be reviewed by GeoPro, and further recommendations will be provided as needed.

5.1 Pavement Structure Designs

5.1.1 Traffic Data Analysis

The traffic data on two road sections were provided by the Client in an e-mail dated July 27, 2017. The traffic data was interpreted by GeoPro to estimate the number of Equivalent Single Axle Loads (ESALs) for pavement design purposes. Traffic loading repetitions were determined for the 20 year pavement design life period that is considered typical for municipal pavements of this type. On this basis, the ESAL applications during the design period were calculated in accordance with the Appendix D of MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The total design ESALs anticipated over the 20-year design life period at two sections are summarized in the following table.

Parameters	Traffic Data	
	From 20th Sideroad to Webster Boulevard	From Quarry Drive to St. Johns Road
AADT (2017)	6,000	2,599
Commercial Vehicle Percentage	2%	2%
Annual Growth Rate	2.5%	2.5%
Estimated Total Design ESALs (20-Year)	421,900	182,800

5.1.2 Pavement Design

The subgrade soils along the proposed roadway generally consisted of cohensionless sandy/silty soils, glacial till or cohesive clayey silt deposits based on GeoPro's borehole information. The

resilient modulus of subgrade has been assumed to be 25 MPa. The pavement designs were developed based on the 1993 AASHTO Guide for Design of Pavement Structures and MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The pavement design parameters are summarized in the following table. The detailed traffic analysis and estimated ESALs for the 20-year pavement design life are given in Appendix D, Traffic Data Analyses.

Design Parameters	Values
Design Life	20 Years
Initial Serviceability Index	4.4
Terminal Serviceability Index	2.2
Reliability Level, %	85
Overall Standard Deviation	0.46
Design Subgrade Resilient Modulus, MPa	25
Design Structure Number	92 (from 20th Sideroad to Webster Boulevard) 81 (from Quarry Drive to St. Johns Road)
Existing Pavement	
Layer Coefficient of Hot Mix Asphalt	0.28
Layer Coefficient of Granular Base/Subbase Course	0.08
Drainage Coefficients of Base and Subbase Courses	0.9
Reconstructed/Widening Pavements	
Layer Coefficient of Hot Mix Asphalt	0.42
Layer Coefficient of Granular Base Course	0.14
Layer Coefficient of Granular Subbase Course	0.09
Pulverized Materials	0.12
Drainage Coefficients of Base and Subbase Courses	1.0

Note: No traffic data available for road section between Webster Boulevard and Quarry Drive, we assume it has same traffic as road section between 20th Sideroad and Webster Boulevard.

5.1.3 Rehabilitation and Widening Recommendations

It is understood that the road section from 20th Sideroad to Webster Boulevard will be widened to ROW of 26 metres, the existing lanes and proposed widening area should be carried out in general accordance with Town of Innisfil Standard Drawing 204, Urban Major Collector Road with 26 m Road Allowance.

Based on the existing pavement conditions, borehole information and anticipated traffic, the 7th Line will be divided into four sections to design pavement structures within the project limits.

- Section 1: from 20th Sideroad to approximate 240 m east of 20th Sideroad;
- Section 2: from approximate 240 m east of 20th Sideroad to Quarry Drive;
- Section 3: from Quarry Drive to St. Johns Road; and

- Section 4: from St. Johns Road to Lake Simcoe.

Conventional mill and overlay, full-depth HMA resurfacing, partial-depth reconstruction, and full-depth reclamation (pulverization), pad and HMA overlay may be considered for the existing lanes rehabilitation in conjunction with the completion of sewer and watermain installation and replacement on 7th Line.

The rehabilitated/constructed pavement Structural Numbers should be greater than the Design Structural Numbers. As such, the pavement is structurally adequate for the expected traffic loads in 20-year design period.

It should be noted that adoption of the pavement rehabilitation options may result in a grade raise as shown in a Summary Table below, the grade increase will impact the intersection roads and side entrances, which should be considered by the design engineer.

The details of rehabilitation options and designed pavement structures for the existing lanes and widening area for each section are shown in Table 1 below:

Table 1: Pavement Structure Designs

Road Section	**Section 1** (from 20th Sideroad to approximate 240 m east of 20th Sideroad)	**Section 2** (from approximate 240 m east of 20th Sideroad to Quarry Drive)		**Section 3** (from Quarry Drive to St. Johns Road)		**Section 4** (from St. Johns Road to Lake Simcoe)	
		Option 1	**Option 2**	**Option 1**	**Option 2**	**Option 1**	**Option 2**
Existing Lanes Rehabilitation Methodology	Mill and Overlay	Pulverization and HMA Overlay	Full-Depth HMA Resurfacing	Pulverization and HMA Overlay	Partial-Depth Reconstruction	Pulverization, Pad and HMA Overlay	Partial-Depth Reconstruction
Existing Lanes Pavement Structure							
HMA Surface Course (HL3 or SP 12.5)	40	40	40	40	40	40	40
HMA Binder Course (HL 8 or SP 19)	50	60	80	60	60	60	60
Remaining Asphalt Concrete	40	-	-	-	-	-	-
New Granular A Base	-	-	-	-	50	50	100
Pulverization Materials	-	120	-	120	-	120	-
Remaining Granular Base/Subbase	620	510	605	500	520	345	425
Total Thickness	750	730	725	720	670	615	625
Grade Increase	-	100	120	100	50	150	160
Rehabilitated Pavement Structural Number	94	93	94	92	86	88	87
Design Structural Number (SN)	92	92		81		81	
Widening Area Pavement Structure							
HMA Surface Course	40	40	40	40	40	Not Applied	
HMA Binder Course	80	60	80	60	60		
Granular A Base	150	150	150	150	150		
Granular B Type I Subbase *	480	480	460	470	420		
Total Thickness	750	730	730	720	670		
Constructed Structural Number (SN)	115	106	112	105	101		

* Minimum thickness of subbase; the subbase thickness should match the existing subbase depth of the adjacent pavement structure to be rehabilitated.

The construction procedure for each rehabilitation option is provided briefly as followings.

Mill and Overlay Rehabilitation

The pavement condition and borehole information indicated that the road section from 20th Sideroad to 240 m east of 20th Sideroad (Section 1) are structurally adequate for the anticipated traffic. A mill with conventional hot-mix asphalt overlay along with full depth crack repairs and localized full depth repairs is considered to rehabilitate pavement at this road section to address cracking and extend the pavement service life. The mill and overlay construction procedure may be considered as follows:

- Remove the existing asphalt concrete by milling to depth of about 90 mm;
- The milled surface should be carefully inspected and any thin, loose, and delaminated lifts of existing asphalt concrete which remain after milling should be removed prior to overlay to ensure a proper bond between layers. The milled surface should be provided with a continuous centre-to-edge cross fall of 2 percent;
- Any areas exhibiting structural failure (severe transverse and longitudinal cracked areas, for instance) shall be repaired in accordance with the instructions provided in the section **"**Full-Depth Base Repairs"; and
- Place 90 mm thickness hot-mix asphalt (one 50 mm lift of OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19 and one 40 mm lift of OPSS 1150 HL 3 or OPSS.MUNI 1151 SP 12.5 surface course). The surface of the completed pavement should also be provided with a grade of 2 percent.

Any cross-fall improvements that may be required should be addressed by placement of an OPSS 1150 HL 3 HS levelling/padding course prior to placement of the binder course and surface course. The milled surface should be properly cleaned (power broomed and/or washed, as necessary) and tack coated using SS-1 emulsified asphalt prior to placement of any new hot mix asphalt.

This mill and overlay option should be adequate to restore the pavement ride quality and address the existing distresses. However, some reflective cracking should be expected to occur within the first two to three years that will require timely crack sealing to prevent the ingress of moisture into the pavement.

Full-Depth Reclamation (Pulverization), Pad and HMA Overlay

If the existing pavement is allowed to raise, a full-depth reclamation (pulverization), Pad and hot-mix asphalt overlay may be considered to rehabilitate the existing lanes in Sections 2 to 4 to improve the structural capacity.

The construction procedure may be considered as follows:

- Pulverize the existing asphalt concrete and underlying granular base/subbase materials to a depth of 120 mm; grade and compact to 100 percent of Standard Proctor Maximum Dry Density (SPMDD);
- The exposed pulverized base should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft, segregated or wet spots shall be repaired in accordance with the instructions provided in the section **"**Full-Depth Base Repairs";
- Place 50 mm thickness of OPSS.MUNI Granular A base course as shown in the Table 1 for Section 4, and compact to 98 percent of SPMDD; and
- Place sufficient thickness of hot-mix asphalt as shown in the Table 1 for Section 1 (OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19 binder course and 1150 HL 3 or OPSS.MUNI 1151 SP12.5 surface course), produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

Full-Depth Hot-Mix Asphalt Resurfacing

As an alternative of pulverization, the full-depth hot-mix asphalt resurfacing may be considered to rehabilitate the existing lanes in Section 2. The construction procedure may be considered as follows:

- Remove the existing asphalt concrete and underlying granular materials and dispose off-site. The removed depths should accommodate designed new asphalt concrete thicknesses;
- The exposed granular base/subbase surface should be graded and compacted to 100 percent of SPMDD;
- The exposed granular base should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft, segregated or wet spots shall be repaired in accordance with the instructions provided in the section **"**Full-Depth Base Repairs"; and
- Place 120 mm thickness of hot-mix asphalt as shown in the Table 1 for Section 1 (one 80 mm lift of OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19 binder course and one 40 mm lift of 1150 HL 3 or OPSS.MUNI 1151 SP 12.5 surface course), produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

Partial-Depth Reconstruction

As an alternative of pulverization, the partial-depth reconstruction may be considered to rehabilitate the existing lanes in Sections 3 and 4. The construction procedure may be considered as follows:

- Remove the existing asphalt concrete and underlying granular materials and dispose off-site. The removed depths should accommodate designed new asphalt concrete thicknesses;
- The exposed granular base/subbase surface should be graded and compacted to 100 percent of SPMDD;
- The exposed granular base should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft, segregated or wet spots shall be repaired in accordance with the instructions provided in the section **"**Full-Depth Base Repairs";
- Place sufficient thickness of OPSS.MUNI Granular A base course as shown in the Table 1 for Sections 3 and 4, and compact to 98 percent of SPMDD; and
- Place 120 mm thickness of hot-mix asphalt as shown in the Table 1 for Sections 3 and 4 (one 60 mm lift of OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19 binder course and one 40 mm lift of 1150 HL 3 or OPSS.MUNI 1151 SP 12.5 surface course), produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

Full-Depth Reconstruction and Widening Area Construction

It should be noted that the road section near the Metrolinx railway (at least 50 m on both west and east side) should be constructed with full-depth reconstruction as discussed for the widening area in this road section (Section 2) to maintain the existing grade.

Further to rehabilitation to the existing lanes, the full-depth reconstruction and proposed widening area construction procedure may be considered as follows:

- Near Metrolinx railway: completely remove the existing asphalt concrete, granular base/subbase materials and subgrade to the depth required to accommodate the new pavement structure;
- Widening Area: completely remove the existing topsoil, organic matter and any other obviously deleterious materials to the depths required to accommodate the new pavement structure;
- The exposed subgrade surface should be graded and compacted to 98 percent of SPMDD;
- The prepared subgrade should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft/loose or wet areas or other obviously deleterious materials must be excavated and properly replaced with material similar to the existing subgrade soils or other granular soils approved by the geotechnical engineer;

- All backfill materials should be placed in uniform loose lifts not exceeding 200 mm thickness and compacted to at least 98 percent of SPMDD. The finished subgrade should be provided with a grade of 3 percent towards the positive drainages;
- Place a sufficient thickness OPSS.MUNI Granular B Type I (modified) subbase course as shown in the Table 1 for Sections 1 to 3 in loose lifts not exceeding 200 mm thickness, compact to 98 percent of SPMDD;
- Place 150 mm of OPSS.MUNI Granular A base course and compact to 98 percent of SPMDD; and
- Place sufficient thickness of hot-mix asphalt as shown in the Table 1 for Sections 1 to 3 (OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19 binder course and 1150 HL 3 or OPSS.MUNI 1151 SP 12.5 surface course), produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

5.1.3.1 Full-Depth Base Repairs

Any soft or wet spots observed during proof-rolling and the areas which exhibit severe pavement distresses (i.e. severe alligator cracking, longitudinal cracking and depression) will require full-depth repairs discussed as follows.

- The granular base/subbase materials should be removed to expose the subgrade;
- The exposed subgrade surface should be graded and compacted to 98 percent of SPMDD, the surface of the subgrade should be provided with a minimum cross-fall of 3 percent;
- The exposed subgrade should be inspected and sub-excavated as necessary to provide a competent subgrade for the specified base repair. Any soft, loose, disturbed, wet, organic soils and any other deleterious materials must be removed and replaced with material similar to the subgrade soils or other granular soils approved by the geotechnical engineer. The subexcavations must be inspected by the geotechnical engineer from GeoPro. The backfill materials should be placed in loose lifts not exceeding 200 mm and compacted to at least 98 percent of SPMDD; and
- Place OPSS.MUNI 1010 Granular B Type I (modified) to match the adjacent granular subbase thickness in uniform loose lifts not exceeding 200 mm on the approved subgrade. This should be followed by OPSS.MUNI Granular A to match the adjacent granular base thickness in uniform loose lifts not exceeding 200 mm on the approved granular subbase. All granular materials should be compacted to 100 percent of SPMDD.

5.1.4 Sideroad Intersections Restoration

This section of the report provides recommendations for the restoration of the pavement structure at the main sideroad intersections (including 20th Sideroad, Fox Hill Street and Webster Boulevard, Quarry Drive, Wingrove Avenue, St. Johns Road, Simcoe Boulevard and Cross Street), where required. Disturbed/damaged pavement, resulting from the road connection operations,

should be restored in kind to match the existing pavement structures which can be referred to Section 4.2 Table, Pavement Structure for the Sideroads.

5.1.5 Drainage Improvements

For the proposed road widening section (from 20th Sideroad to St. Johns Road) with urbanization, control of surface water is an important factor in achieving a good pavement service life. Therefore, we recommend that provisions be made to drain the new pavement subgrade and its granular layers. It is understood that the proposed improvements are anticipated to consist of typical urban section (concrete curb/gutter and catchbasins). To provide positive drainage across the pavement platform, the surface of pavement should be sloped at a grade of two percent and the pavement subgrade should be sloped at a grade of three percent towards the subdrains. Subdrains should be designed and constructed in accordance with OPSS or local municipality specifications.

For the road Section from St. Johns Road to Lake Simcoe, the existing rural cross section (open ditches) will remain. The provision of adequate subsurface and surface drainage is critical to the structural performance of a pavement. Drainage improvements can significantly reduce the overall structural improvements required in future. The use of properly constructed side ditch leading to a positive outlet should be considered for the section of roadway. As the existing side ditches were relatively shallow or non-existent at some locations, these side ditches should be reconstructed, with ditches cleaned of any vegetation and deepened as necessary and restored to a free-flowing condition. In this regard, proper drainage consists of well defined (and maintained) ditching to at least 150 mm below the top of subgrade leading to a positive outlet in accordance with local municipality standard specifications. Pavement should be provided with a continuous centre-to-edge cross-fall of 2%.

5.1.6 General Pavement Recommendations

5.1.6.1 Pavement Materials

The following hot-mix asphalt mix types should be selected:

- HL 3 or SP 12.5 Surface Course; and
- HL 8 or SP 19 Binder Course

These hot mix asphalt mixes should be designed and produced in conformance with OPSS 1150 requirements for HL 3 and HL 8 or OPSS.MUNI 1151 for SP12.5 and SP 19, as amended by Town's standard specifications.

Granular A and Granular B Type I material should be used as base course and subbase course, respectively. Both the Granular A and Granular B Type I materials should meet OPSS.MUNI 1010 specifications, as amended by Town's standard specifications.

5.1.6.2 Asphalt Cement Grade

Performance graded asphalt cement PG 58-34 conforming to OPSS.MUNI 1101 requirements is recommended for the HMA binder and surface courses.

5.1.6.3 Tack Coat

A tack coat (SS1) should be applied to all construction joints prior to placing hot mix asphalt to create an adhesive bond. Prior to placing hot mix asphalt, SS1 tack coat must also be applied to all existing surfaces, between all new lifts and any cut surfaces in accordance with OPSS 308 requirements.

5.1.6.4 Compaction

All granular base and subbase materials should be placed in uniform lifts not exceeding 200 mm loose thickness and compacted to 100 percent of the material's SPMDD at ±2 percent of the materials Optimum Moisture Content (OMC). Hot mix asphalt should be placed and compacted in accordance with TS 310 specifications.

5.1.6.5 Pavement Tapers

At the limits of construction, appropriate tapering of the pavement thickness to match the existing pavement structure should be implemented in accordance with OPSS and the applicable local municipality specifications.

A joint transition treatment will be necessary where old and new asphalt pavement layers abut. The recommended transition treatment consists of milling the old surface layer approximately 300 m wide and 50 mm deep to provide better pavement tie-in to adjacent new asphalt pavement structure.

It is recommended that all construction joints at the ends of the pavement be cleaned with stiff bristle brooms and compressed air to remove all dust, dirt and other foreign matter. A tack coat should be applied to all construction joints prior to the placement of asphalt concrete to ensure an adequate bond between the old and new pavements.

5.1.6.6 Subgrade Preparation

All topsoil, organics, soft/loose and otherwise disturbed soils should be stripped from the subgrade area. The exposed subgrade consisting of fine grained sandy/silty soils will be disturbed by construction traffic when wet; especially if site work is carried out during periods of wet weather. Under inclement weather conditions, an adequate granular working surface may be required to facilitate construction traffic as well as to minimize subgrade disturbance and to protect its integrity.

Immediately prior to placing the granular subbase, the exposed subgrade should be compacted and then proofrolled with a heavy rubber tired vehicle (such as a loaded gravel truck) in conjunction with inspection by a geotechnical engineer from GeoPro. The subgrade should be inspected for signs of rutting or displacement. Areas displaying signs of rutting or displacement should be recompacted and retested, or the material should be subexcavated and replaced with well-compacted clean fill materials approved by the geotechnical engineer from GeoPro.

The fill materials may consist of either granular material or local inorganic soils provided that its moisture content is within ±2 percent of OMC. Fill should be placed and compacted in accordance with OPSS.MUNI 501 and the final 300 mm of the subgrade should be compacted to 98 percent of SPMDD.

5.1.6.7 Reuse and Disposal of Existing Pavement Materials

It should be noted that gradation analyses of the majority of the selected samples of the existing granular base and subbase materials do not meet the OPSS.MUNI 1010 granular A and B Type I or Town's specifications with excessive content of fines. Therefore, the existing excavated granular materials could not be reused as subbase/base materials, however, they can be reused as subgrade material to replace soft, wet or otherwise disturbed areas identified during proofrolling.

5.1.6.8 Maintenance

Systematic routine preventative maintenance is strongly recommended for all newly constructed pavements. Crack routing and sealing will generally be required within 2 to 3 years after pavement construction. As the pavement ages, it will also be necessary to patch areas of medium to high severity distresses, such as potholes and ravelling. Routine maintenance should also be considered to extend the life of the pavement.

5.2 Sanitary Sewer and Watermain

5.2.1 Conventional (Open Cut) Installation

Based on the provided information by the Client in an email dated July 21, 2017, new sanitary sewer may be installed at road section from the midpoint of Webster Boulevard and Quarry Drive (approximate 440 m west of Quarry Drive) to Quarry Drive and watermain will be replaced from Webster Boulevard to St. Johns Road.

The invert depths of the new sanitary sewer may be installed and proposed watermain are not available at the time of preparing the report. Refer to the sanitary sewer at the intersection of Quarry Drive and 7th Line, the invert depth of new sanitary sewer may be installed is assumed up to 4 m below the existing ground surface, and watermain invert depth will be assumed up to 3 m below the existing ground surface. According to the results of this investigation, the soils at the proposed founding depths are generally anticipated to be in the fill materials, sandy/silty, clayey silt and glacial tills. The native soils are considered to be suitable for supporting the pipes,

provided the integrity of the base of the trench can be maintained during construction. The suitability of the existing fill materials to support the pipes, if encountered at the base of the trenches, should be further assessed during construction. This assessment will require inspection during construction by qualified geotechnical personnel from GeoPro to determine the suitability of the fill materials for supporting the pipes. The organic soils must be completely removed prior to placing the pipes.

It should be noted that some difficulties may be encountered in excavating the hard/very dense tills at some locations. In addition, these tills are inferred containing cobbles and boulders. Once the actual service invert depths are finalized, the following comments and recommendations should be reviewed and revised as necessary.

5.2.2 Trenching Excavation and Temporary Groundwater Control

Based on the results of this investigation, excavations (assumed up to 5 m below existing ground surface) for the new sanitary sewer may be installed and proposed watermain will be subexcavated through fills, native sandy/silty soils, clayey silt and glacial tills and/or potential engineered fill. The new sanitary sewer may be installed and watermain are anticipated to be generally be above, at or below the measured groundwater table.

Cobbles/Boulders may be anticipated in the native till soils. Provisions should be made in the excavation contract for the removal of possible cobbles and boulders in the native soil or potential obstructions in the fill materials.

Groundwater control during excavation within the glacial tills and clayey silt can be handled, as required, by pumping from properly constructed and filtered sumps located within the excavations. Perched groundwater should be expected in the fill materials and native cohesionless sandy/silty soils above the groundwater tables at various depths which can be handled, as required, by pumping from properly constructed and filtered sumps located within the excavations. However, more significant groundwater seepage should be expected from any wet cohesionless sandy/silty deposits below the prevailing groundwater tables at the time of construction and any wet cohesionless sandy/silty layers/zones within the tills. Depending upon the actual thickness and extent of the sandy/silty deposits/layers and the finalized design pipe invert depths, some form of positive (pro-active) groundwater control or depressurization may be required to maintain the stability of the base and side slopes of the trench excavations, in addition to pumping from sumps. The groundwater level should be lowered to at least 1 m below the excavation base prior to excavating for the new sanitary sewer may be installed.

It should be noted that any construction dewatering or water taking in Ontario is governed by Ontario Regulation 387/04 - Water Taking and Transfer, made under the Ontario Water Resources Act (OWRA), and/or Ontario Regulation 63/16 – Registrations under Part II.2 of the Act – Water Taking, made under Environmental Protection Act. Based on these regulations, water taking of more than 400,000 L/day is subject to a Permit to Take Water (PTTW), while water taking of 50,000 L/day to 400,000 L/day is to be registered through the Environmental Activity and Sector

Registry (EASR). A hydrogeological study is concurrently carried out by GeoPro and will be reported under a separate cover.

Where excavations are conducted by conventional temporary open cuts, side slopes should not be steeper than 1.5 horizontal to 1 vertical (1.5H:1V). However, depending upon the construction procedures adopted by the contractor, actual groundwater seepage conditions, the success of the contractor's groundwater control methods and weather conditions at the time of construction, some flattening and/or blanketing of the slopes may be required, especially in looser/softer zones (i.e. in fills or wet sandy/silty deposits) or where localized seepage is encountered. Care should be taken to direct surface runoff away from the open excavations and all excavations should be carried out in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. According to OHSA, the glacial till deposits or stiff to hard clayey silt would be classified as Type 2 soils above the groundwater table and Type 3 soils below groundwater table; the existing fill materials and native silty/sandy soils would be classified as Type 3 soils above groundwater table and Type 4 soils below groundwater table and unless supported by shoring or other approved retaining method, the excavations will require minimum side slopes of 3H:1V. In addition, care must be taken during excavation to ensure that adequate support is provided for any existing structures and underground services located adjacent to the excavations.

The excavated material should be placed well back from the edge of the excavation and stockpiling of materials adjacent to the excavation should be prohibited, to minimize surcharge loading near the excavation crest.

5.2.3 Temporary Shoring and Trench Boxes

It is understood that for the majority of the new sanitary sewer may be installed and proposed watermain, the extent of the excavations will have to be minimized to allow for traffic to continue using a reduced portion of the existing roadway. Where side slopes of excavations are steepened to limit the extent of the excavation, some form of trench support system such as a trench box system will be required. The earth pressure on the shoring system should be evaluated by using the pressure distribution diagram shown on Drawing 4. It must be emphasized that a trench liner box provides protection for construction personnel but does not provide any lateral support for the adjacent excavation walls, underground services or existing structures. In the case of trench box excavation work, the tolerance for disturbance of any structure founded above a 1 horizontal to 1 vertical line projected up from the base of the excavation should be assessed prior to construction. If adjacent structures and/or utilities or existing pavement structure open for traffic are susceptible to damage from construction induced settlement, then excavation support using sheet piles or a strutted soldier pile and lagging wall must be considered. It is therefore, imperative that any underground services or existing structures adjacent to the excavations be accurately located prior to construction and adequate support provided where required. Steepened excavations should be left open for as short a duration as possible and completely backfilled at the end of each working day. Care must be taken during excavation near

underground structures (i.e. culvert, gas utilities, etc.) located within or adjacent to the excavation. The owner of the utility/service should also be contacted prior to excavating near their easement to confirm that the proposed excavation meets their requirements.

While the use of trench boxes is an effective and economical trench-support method, its use can cause increased loss of ground relative to properly braced shoring, especially when working close to granular base courses below existing pavements or along existing utility trenches backfilled with granular materials. Trench boxes also reduce the contractor's ability to compact backfill materials placed between the trench wall and the outer trench box shell, thereby increasing the likelihood of post-construction settlements along the trench walls. When trench boxes are used along existing roadways, settlements frequently occur along the trench wall, which may manifest months after completion of backfilling. In such cases, following the backfilling of the trench, road reconstruction should include a provision for saw-cutting the asphalt at least 1 m back from the trench walls, recompacting the upper trench backfill, and then repaving. Where permissible under the OHSA and where its use is considered to be a safe alternative for shoring and bracing, contractors may elect to utilize trench boxes for temporary trench wall support for trenches less than 6 m deep in Type 2 and 3 soils. Where trench depths exceed 6 m (or at any trench depth in Type 4 soil), Engineered Support Systems are required under the OHSA.

Further to the above and in consideration of the cohesionless fill materials, native silty/sandy soils, some loss of ground should be expected for the sections of nearly vertical excavation where a trench box will be used. It is anticipated that in the predominantly cohesionless soils, the unsupported soils on the trench sides will relax, filling the void between the trench walls and trench box. This may lead to loss of ground below the pavement and potentially undermine and reduce the stability of the pavement structure adjacent to the open traffic lanes. In order to minimize this effect, the gap between the trench walls and trench box should be minimized during the excavation and trench box installation.

5.2.4 Pipe Support and Bedding

The bedding for the new sanitary sewer may be installed and proposed watermain should be compatible with the type and class of pipe, the surrounding subsoil and anticipated loading conditions and should be designed in accordance with the standards of the local municipality or Ontario Provincial Standard Specifications (OPSS). Where granular bedding is deemed to be acceptable, it should consist of at least 150 mm of OPSS Granular A or 19 mm crusher run limestone material. The thickness of the bedding may, however, have to be increased (i.e. 300 mm to 450 mm) depending on the pipe diameter or in accordance with local standard specifications or if wet or weak subgrade conditions are encountered, especially when the soil at the trench base level consists of wet sandy/silty deposits. From Springline to 300 mm above obvert of the pipe, sand cover could be used. All bedding and cover material should be placed in 150 mm loose lifts and uniformly compacted to at least 95 percent of the materials SPMDD.

To avoid the loss of soil fines from the subgrade, clear stone bedding material should not be used in any case for pipe bedding or to stabilize the bases.

5.2.5 Trench Backfill

Based on visual and tactile examination and the measured nature water contents of the soil samples, the majority of the on-site existing fill materials, native sandy/silty soils, clayey soils and glacial till deposits are anticipated to be generally near their estimated optimum water contents for compaction; however, the silty/sandy soils below the groundwater tables are considered to be wetter than the optimum water contents, which will require some drying prior to be reused as backfill materials.

The excavated materials at suitable water contents may be reused as trench backfill provided they are free of significant amounts of topsoil, organics or other deleterious material, and are placed and compacted as outlined below. It should also be noted that due to the predominantly fine-grained, silty nature of the majority of the existing fill and native soils, some difficulty would be expected in achieving adequate compaction during wet weather.

The backfill should be placed in maximum 300 mm loose lifts at or near (±2%) their optimum moisture content and each lift should be compacted to at least 95% SPMDD. From 1 m below subgrade to subgrade elevation, the materials should be placed in maximum 300 mm loose lifts and uniformly compacted to at least 98 % SPMDD. Unsuitable materials such as organic soils, boulders, cobbles, frozen soils, etc. should not be used for backfilling. In pavement areas, the upper zone of the trench backfill within the depth of 1.4 m below the pavement surface should be non-frost susceptible materials without excessive fines and compacted to at least 98% SPMDD. The fine grained silty soils encountered at the site is potentially of high frost susceptibility, which should not be used in the upper zone of the trench backfill within the depth of 1.4 m below the pavement surface.

It should be noted that if the soils for trench backfilling were placed and compacted at wet of their optimum water content (>2%), we would expect pumping and rolling conditions which would require mitigative measures in order to construct roads and utilities. This might include significant extra thickness of granular base, base reinforcement using geogrids or importing of better quality common fill.

Alternatively, if placement water contents at the time of construction are too high, or if there is a shortage of suitable in-situ material, then an approved imported sandy material which meets the requirements for OPSS Select Subgrade Material (SSM) could be used. It should be placed in loose lift thicknesses as indicated above and uniformly compacted to at least 95% of SPMDD. Backfilling operations during cold weather should avoid inclusions of frozen lumps of material, snow and ice.

Normal post-construction settlement of the compacted trench backfill should be anticipated, with the majority of such settlement taking place within about 6 months following the completion of trench backfilling operations. This settlement may be compensated for, where necessary, by

placing additional granular material prior to asphalt paving. Alternatively, if the asphalt binder course is placed shortly following the completion of trench backfilling operations in these areas, any settlement that may be reflected by subsidence of the surface of the binder asphalt should be compensated for by placing an additional thickness of binder asphalt or by padding.

5.3 Culvert Replacement (BH601)

The existing culvert is a Corrugated Steel Pipe (CSP) culvert at intersection of 7th Line and St. Johns Road which may be replaced. Either concrete box or CSP may be considered to replace the existing culvert in conjunction with the 7th Line road widening and improvements. However, the founding elevations, size and types of the culvert were not available at the time of preparing this report. Once the final design is available, it should be further reviewed by the geotechnical engineer from GeoPro, following which additional recommendations can be provided, as required.

5.3.1 Foundation Design Considerations and Wingwalls

It is understood that the culvert will be designed in accordance with the 2006 Canadian Highway Bridge Design Code (CHBDC). Based on the results of this investigation, the fill materials are considered unsuitable to support the proposed culvert/wingwall and should be completely removed from the footprint of the culvert. The proposed culvert may be founded in the native, undisturbed, competent native deposits. The soil bearing resistance at the Serviceability Limit State (SLS) and a factored bearing resistance at the Ultimate Limit State (ULS), together with the corresponding founding depth at the borehole location and anticipated soil, are provided in the following table.

Borehole No.	Bearing Resistance at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth Below Existing Ground (m)	Anticipated Bearing Soil
BH601	250	375	2.0	Compact Sandy Silt

It is recommended that a 75 mm thick leveling pad of Granular A or concrete fine aggregate (meeting the gradation requirements in OPSS 1002) should be placed on top of the approved subgrade to facilitate positioning and seating of the culvert segment(s).

All foundation bases must be inspected by GeoPro to confirm the design bearing values prior to pouring concrete.

Foundations designed to the specified bearing resistance values at the serviceability limit states (SLS) are expected to settle less than 25 mm total and 19 mm differential.

Where it is necessary to place foundations at different levels, the upper foundation must be founded below an imaginary 7 vertical to 10 horizontal (7V:10H) line drawn up from the base of

the lower foundation. The lower footing must be installed first to minimize the risk of undermining the upper footing.

It should be noted that the recommended foundation type, founding depths, and bearing resistances were based on the borehole information only. The geotechnical recommendations and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to the subsurface conditions between and beyond the boreholes when foundation construction is underway. The interpretation between and beyond the boreholes and the recommendations of this report **must** therefore be checked through field inspections provided by a qualified geotechnical engineer from GeoPro to validate the information for use during the construction stage. Due to the anticipated variation of the subsurface conditions at this specific site, the geotechnical engineer who carried out the geotechnical investigation shall be retained during the construction stage to avoid the potential misinterpretation of the soil information presented in the report.

5.3.2 Subgrade Protection, Frost Protection and Scour Protection

It should be noted that the proposed founding level should be at least 1.4 m below the proposed final grade to provide sufficient earth cover for frost protection, unless the culvert is designed to withstand the frost pressures. It should be noted that scour protection, such as rip rap and rock blocks, should not be considered as earth cover for frost protection purposes.

Subject to the water course flow velocities, provisions may be made for scour and erosion protection for the new culvert. For culvert protection, there are two treatment zones to be considered, namely the embankment and the creek channel. If required, a seal of compacted cohesive clayey soil at least 300 mm thick should be placed in front and at the sides of the culvert inlet to prevent water infiltrations to the sides and below the culvert, which could wash out the granular base and backfill material. The culvert inlet should also be protected with at least 0.6 m thick rip rap extending to a minimum 1 m beyond the clay seal. Clay seal is not required at the outlet but it should also be protected with at least 0.6 m rip rap.

The requirements for design of erosion protection measures for the inlet and outlet of the proposed culvert should be considered by design engineers. As a minimum requirement, rip rap protection for the culvert should be considered in accordance with the applicable OPSS/OPSD standards.

5.3.3 Sliding Resistance

Resistance to lateral forces /sliding resistance between the culvert footing base concrete and the subgrade should be calculated in accordance with Section 6.7.5 of the CHBDC. The coefficient of friction may be considered as follows:

- Coefficient of friction between pour-in-place concrete footings and native soils = 0.35 (unfactored)

- Coefficient of friction between precast concrete footings and native soils = 0.25 (unfactored)

It should be noted that these values are unfactored; in accordance with Section 6.7.5 of the CHBDC, a factor of 0.8 should be applied when calculating the horizontal resistance.

5.3.4 Temporary Excavations and Groundwater Control

It is anticipated that the foundation excavations at the site will consist of temporary open cuts with side slopes not steeper than 1.5 horizontal to 1 vertical (1.5H:1V). However, depending on the construction procedures adopted by the contractor and the weather conditions at the time of construction, some local flattening of the slopes will be required, especially in looser/softer zones (i.e. in fills) or where localized seepage is encountered. All excavations should be carried out in accordance with the Occupational Health and Safety Act (OHSA) and Regulations for Construction Projects. According to the Act, the existing fills and native sandy/silty soils would be classified as Type 3 soils above groundwater table and Type 4 below the groundwater table.

The excavations for the culvert may extend to a maximum depth of about 2 m to 3 m below the existing ground surface through the existing fill materials and sandy silt deposit. If space permits, open-cut excavations to the proposed depths should be carried out in accordance with the guidelines outlined in the OHSA for Construction Activities. In addition, care must be taken during excavation to ensure that adequate support is provided for any existing structures and underground services located adjacent to the excavations.

Should adjacent structures and/or utilities be susceptible to damage from construction induced settlement, a more positive excavation support system may be considered.

Groundwater control at the site should be required to allow for construction of foundation elements in a dry condition. Perched groundwater should be expected in the fill materials and native cohesionless sandy/silty soils above the groundwater tables at various depths which can be handled, as required, by pumping from properly constructed and filtered sumps located within the excavations. However, more significant groundwater seepage should be expected from any wet cohesionless sandy/silty deposits below the prevailing groundwater tables at the time of construction. Due to the predominated wet sandy/silty soils anticipated at the site, some form of positive (pro-active) groundwater control or depressurization should be required to maintain the stability of the base and side slopes of the excavations, in addition to pumping from sumps. The groundwater level should be lowered to at least 1 m below the excavation base prior to excavating for the site services.

It should be noted that any construction dewatering or water taking in Ontario is governed by Ontario Regulation 387/04 - Water Taking and Transfer, made under the Ontario Water Resources Act (OWRA), and/or Ontario Regulation 63/16 – Registrations under Part II.2 of the Act – Water

Taking, made under Environmental Protection Act. Based on these regulations, water taking of more than 400,000 L/day is subject to a Permit to Take Water (PTTW), while water taking of 50,000 L/day to 400,000 L/day is to be registered through the Environmental Activity and Sector Registry (EASR).

Depending on the construction procedures and groundwater control measures adopted by the contractor and weather conditions at the time of construction, cut off measures, such as a sheet pile wall, may be required to improve the effectiveness of the groundwater control measures in addition to pumping from sumps.

Control of the creek water will be necessary at the culvert site in order for foundation construction to be carried out in dry conditions. Depending on the creek flow at the time of construction, surface water could flow through the culvert area by means of a temporary pipe, or be diverted by pumping from behind a temporary cofferdam. Assuming that the cofferdam and/or temporary bypass are effective, seepage into the excavation during normal water flow conditions should be adequately controlled by pumping from properly filtered sumps. Pumping discharges should conform to the guidelines from local municipality, MOECC, conservation authority and other relevant agencies. It should be noted that any water that needs to be removed from excavation including surface water is considered as groundwater from the perspective of Ministry of Environment and Climate Changes (MOECC).

Surface water should be directed away from the excavation area to prevent ponding of water that could result in disturbance and weakening of the foundation subgrade.

Depending on the construction staging sequence and schedule, temporary roadway protection may be required along the roadway to facilitate the culvert construction works.

5.3.5 Lateral Earth Pressures for Design

The following recommendations are made concerning the design of the walls, assuming that the backfill to the culvert and wing walls consists of free-draining granular fill meeting the requirements of OPSS 1010 Granular A or Granular B. This fill should be compacted in loose lifts not greater than 200 mm in thickness to 98 percent of the material's Standard Proctor Maximum Dry Density (SPMDD) in accordance with OPSS 501. The fill materials should be benched into the existing roadway embankment side slopes. Longitudinal drains and weep holes should be installed to provide positive drainage of the granular backfill. Other aspects of the granular backfill requirements with respect to sub-drains and frost taper should be in accordance with applicable Ontario Provincial Standard Drawings.

Computation of earth pressures acting against any wing walls should be in accordance with the Canadian Highway Bridge Design Code (CHBDC) S6-06. For design purposes, the following properties can be assumed for backfill.

Compacted Granular 'A' or Granular 'B' Type II

Angle of Internal Friction =35 (unfactored)

Unit Weight = 22 kN/m3

Coefficient of Lateral Earth Pressure:

Level Backfill	Backfill Sloping at 3H:1V	Backfill Sloping at 2H:1V
K_a=0.27	K_a=0.34	K_a=0.40
K_b=0.35	K_b=0.44	K_b=0.50
K_o=0.43	K_o=0.56	K_o=0.62
K*=0.45	K*=0.60	K*=0.66

Compacted Granular 'B' Type I

Angle of Internal Friction ϕ=32° (unfactored)

Unit Weight = 21 kN/m^3

Coefficient of Lateral Earth Pressure:

Level Backfill	Backfill Sloping at 3H:1V	Backfill Sloping at 2H:1V
K_a=0.31	K_a=0.39	K_a=0.47
K_b=0.39	K_b=0.49	K_b=0.57
K_o=0.47	K_o=0.62	K_o=0.69
K*=0.54	K*=0.68	K*=0.78

Note: K_a is the coefficient of active earth pressure

K_b is the backfill earth pressure coefficient for an unrestrained structure including compaction efforts

K_o is the coefficient of earth pressure at rest

K* is the earth pressure coefficient for a soil loading a fully restrained structure and includes compaction effects

These values are based on the assumption that the backfill behind the retaining structures is free-draining granular material and adequate drainage is provided.

The earth pressure coefficient to be adopted will depend on whether the retaining structure is restrained or some movement can occur such that the active state of earth pressure can develop. The effect of compaction should also be taken into account in the selection of the appropriate earth pressure coefficients. The use of vibratory compaction equipment behind the abutments and the walls should be restricted in size.

A minimum compaction surcharge of 12 kPa should be included in the lateral earth pressures for the structural design of the walls, according to CHBDC Section 6.12.3 and Figure 6.6. Other surcharge loadings should be accounted for in the design as required.

The above calculation yields lateral pressures due to soil loading only. If the culvert is intended to become partially submerged during the design flood event, then appropriate hydrostatic pressures below the water table should be added to the earth pressures calculated as above in order to obtain the total lateral pressure acting on the culvert.

The fill depth during placement should be maintained equal on both sides of the culvert walls, with one side not exceeding the other by more than 500 mm.

The use of heavy vibratory equipment behind the culvert and any other below-grade structures should be limited within a lateral distance equal to the height of the backfill (at the time of compaction) above the base of the structure. If required, GeoPro can provide additional assistance with the refinement of design earth pressure parameters based on the type of culvert selected, dimensions, etc.

6 ENVIRONMENTAL SOIL ANALYTICAL RESULTS

6.1 Soil Sample Submission

In order to provide information on the chemical quality of the subsurface soils, selected soil samples were submitted to AGAT Laboratories in Mississauga, Ontario ("AGAT") for chemical analyses. Descriptions of the selected soil samples and analytical parameters are presented in the following table:

Sample ID	Soil Depth (mBGS)	Primary Soil	Analytical Parameters
BH112 SS2	0.8 – 1.4	Fill Materials	EC & SAR
BH121 SS2	0.8 – 1.2	Sand and Silt Till	EC & SAR
BH131 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH142 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH151 SS2	0.8 – 1.2	Sandy Silt	EC & SAR
BH162 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH171 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH201 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH202 SS3B	1.7 – 2.0	Clayey Silt Till	EC & SAR
BH203 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH203 SS3	1.5 – 2.0	Fill Materials	EC & SAR
BH204 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH205 SS2B	1.1 – 1.2	Sandy Silt	EC & SAR
BH206 SS2	0.8 – 1.2	Clayey Silt Till	EC & SAR
BH210 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH211 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH212 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH213 SS2B	1.1 – 1.2	Reworked Sandy Silt	EC & SAR

BH214 SS2	0.8 – 1.2	Fill Materials	EC & SAR
BH301 SS2	0.8 – 1.2	Fill Materials	VOCs & PHCs
BH301 SS3	1.5 – 2.0	Fill Materials	Metals and Inorganics
BH302 SS2	0.8 – 1.2	Sandy Silt	Metals and Inorganics
BH303 SS2	0.8 – 1.2	Fill Materials	VOCs & PHCs
BH303 SS3	1.5 – 2.0	Fill Materials	Metals and Inorganics
BH304 SS2B	0.9 – 1.2	Sandy Silt	Metals and Inorganics, VOCs and PHCs
BH305 SS2A	0.8 – 1.1	Fill Materials	Metals and Inorganics
BH306 SS2	0.8 – 1.2	Fill Materials	Metals and Inorganics, VOCs and PHCs
BH307 SS2&SS3	0.8 – 2.0	Sand and Gravel to Gravelly Sand	Metals and Inorganics, VOCs and PHCs
BH308 SS2B	1.0 – 1.2	Sand and Gravel to Gravelly Sand	Metals and Inorganics
BH309 SS2	0.8 – 1.2	Sand and Gravel	Metals and Inorganics, VOCs and PHCs
BH310 SS2&SS3	0.8 – 2.0	Probable Fill	Metals and Inorganics
BH311 SS2	0.8 – 1.2	Fill Materials	Metals and Inorganics, VOCs and PHCs
BH312 SS2&SS3	0.8 – 2.0	Sand and Gravel	Metals and Inorganics
BH313 SS2B	1.0 – 1.2	Clayey Silt Till	Metals and Inorganics, VOCs and PHCs
BH314 SS2	0.8 – 1.2	Fill Materials	Metals and Inorganics, VOCs and PHCs
BH501 SS2	0.8 – 1.2	Fill Materials	EC & SAR

Note: EC = Electrical Conductivity
SAR = Sodium Adsorption Ratio
PHCs = Petroleum Hydrocarbons Fractions F1-F4
VOCs = Volatile Organic Compounds

It should be noted that at the time of the sampling, no obvious visual or olfactory evidence of environmental impact (i.e. staining or odours) was observed at the sampling locations.

6.2 Soil Analysis Results

A total of thirty-six (36) soil samples were analysed for the parameters of metals and inorganics, EC, SAR, PHCs and VOCs, under Ontario Regulation 153/04 ("O. Reg. 153/04") as amended. A copy of the soil analytical results is provided in the Laboratory Certificates of Analysis, attached to Appendix E.

The soil analytical results were compared with Ontario Ministry of the Environment and Climate Change (MOECC) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", April 2011, Table 1: Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Uses (2011 MOECC Table 1 Standards); Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (2011 MOECC Table 2 Standards), and Table 3: Full Depth Generic Site Condition Standards in a non-potable Ground Water Condition (2011 MOECC Table 3 Standards).

Based on the comparison, exceedances of the MOECC Table 1, Table 2 or Table 3 standards were noted for EC and/or SAR in the tested soil samples in Boreholes BH112, BH121, BH131, BH142, BH151, BH162, BH171, BH201 to BH206, BH210 to BH214, BH301 to BH303, BH305 to BH314 and BH501, and VOC (Toluene) in the tested soil sample in Borehole BH311. The exceedance values detected in the soil samples are summarized in the following table:

Soil Sample ID	Parameter	Detected Value / Unit	MOECC Table 1 Standards Guideline Value	MOECC Table 2 and 3 Standards (R/P/I) Guideline Value	MOECC Table 2 and 3 Standards (I/C/C) Guideline Value
BH112 SS2	EC	1.64 mS/cm	**0.57**	**0.7**	**1.4**
	SAR	18.6	**2.4**	**5**	**12**
BH121 SS2	SAR	3.06	**2.4**	5	12
BH131 SS2	SAR	6.84	**2.4**	**5**	12
BH142 SS2	SAR	7.94	**2.4**	**5**	12
BH151 SS2	SAR	2.44	**2.4**	5	12
BH162 SS2	SAR	10.3	**2.4**	**5**	12
BH171 SS2	SAR	3.45	**2.4**	5	12
BH201 SS2	EC	0.769 mS/cm	**0.57**	**0.7**	1.4
	SAR	11.7	**2.4**	**5**	12
BH202 SS3	SAR	4.59	**2.4**	5	12
BH203 SS2	EC	1.35 mS/cm	**0.57**	**0.7**	1.4
	SAR	14.4	**2.4**	**5**	**12**
BH203 SS3	EC	0.879 mS/cm	**0.57**	**0.7**	1.4
	SAR	7.35	**2.4**	**5**	12
BH204 SS2	EC	0.905 mS/cm	**0.57**	**0.7**	1.4
	SAR	7.52	**2.4**	**5**	12
BH205 SS2B	EC	0.808 mS/cm	**0.57**	**0.7**	1.4
	SAR	7.27	**2.4**	**5**	12
BH206 SS2	EC	0.639 mS/cm	**0.57**	0.7	1.4
	SAR	4.06	**2.4**	5	12
BH210 SS2	EC	0.759 mS/cm	**0.57**	**0.7**	1.4
	SAR	10.9	**2.4**	**5**	12
BH211 SS2	EC	0.806 mS/cm	**0.57**	**0.7**	1.4
	SAR	11.1	**2.4**	**5**	12
BH212 SS2	SAR	7.0	**2.4**	**5**	12
BH213 SS2	EC	0.769 mS/cm	**0.57**	**0.7**	1.4
	SAR	11.6	**2.4**	**5**	12
BH214 SS2	SAR	5.23	**2.4**	**5**	12
BH301 SS3	EC	1.32 mS/cm	**0.57**	**0.7**	1.4
	SAR	13.5	**2.4**	**5**	**12**
BH302 SS2	EC	1.59 mS/cm	**0.57**	**0.7**	**1.4**
	SAR	25.1	**2.4**	**5**	**12**
BH303 SS3	EC	1.23 mS/cm	**0.57**	**0.7**	1.4
	SAR	18.5	**2.4**	**5**	**12**
BH305 SS2A	EC	2.08 mS/cm	**0.57**	**0.7**	**1.4**
	SAR	25.3	**2.4**	**5**	**12**

Soil Sample ID	Parameter	Detected Value / Unit	MOECC Table 1 Standards Guideline Value	MOECC Table 2 and 3 Standards (R/P/I) Guideline Value	MOECC Table 2 and 3 Standards (I/C/C) Guideline Value
BH306 SS2	EC	0.844 mS/cm	**0.57**	**0.7**	1.4
	SAR	10.7	**2.4**	**5**	12
BH307 SS2&SS3	EC	0.649 mS/cm	**0.57**	0.7	1.4
	SAR	8.57	**2.4**	**5**	12
BH308 SS2	EC	1.19 mS/cm	**0.57**	**0.7**	1.4
	SAR	20.9	**2.4**	**5**	**12**
BH309 SS2	EC	0.658 mS/cm	**0.57**	0.7	1.4
	SAR	10.6	**2.4**	**5**	12
BH310 SS2&SS3	EC	0.724 mS/cm	**0.57**	**0.7**	1.4
	SAR	5.09	**2.4**	**5**	12
BH311 SS2	SAR	5.36	**2.4**	**5**	12
	VOCs (Toluene)	0.46 µg/g	**0.2**	2.3	2.3
BH312 SS2&SS3	SAR	2.67	**2.4**	5	12
BH313 SS2	EC	0.767 mS/cm	**0.57**	**0.7**	1.4
	SAR	15.5	**2.4**	**5**	**12**
BH314 SS2	SAR	3.58	**2.4**	5	12
BH501 SS2	EC	3.3 mS/cm	**0.57**	**0.7**	**1.4**
	SAR	16.6	**2.4**	**5**	**12**

Note: R/P/I = Residential, Parkland and Institutional Property Use
I/C/C = Industrial, Commercial and Community Property Use
0.57 = standard value exceeded by the analytical result

6.3 Discussion of Analytical Results

Based on the analytical results, exceedances of MOECC Table 1, Table 2 or Table 3 Standards were noted for EC and/or SAR and VOCs in the tested soil samples. It should be noted that the samples with exceedances of EC and SAR values were taken from the boreholes located on roadway pavement and shoulders. The elevated EC and SAR values in the tested soil samples may likely be attributed to the application of de-icing salt on the road.

Based on the results of soil sample analysis, GeoPro would recommend the following disposal options:

1) The soils generated at BH304 can be re-used on Site or re-used at a receiving site which is not used for agricultural purposes and would accept the soils as per the test results;
2) The soils generated at the Site at the same tested sample depths from Boreholes BH121, BH151, BH171, BH202, BH206, BH312, BH314 can be re-used for the on-site development, provided that the soils will not be in contact with groundwater, or re-used at a receiving site which is not considered as an environmentally sensitive site and would accept the soil as per the test results;

3) The soils generated at the Site at the same tested sample depths from Boreholes BH112, BH131, BH142, BH162, BH201, BH203 to BH205, BH210 to BH214, BH301 to BH303, BH305 to BH310, BH313 and BH501 may be disposed at facilities, which are suitable to accept salt-impacted excess soil (i.e., certain former aggregate sites, mines, etc.) or at a licensed landfill site. However, additional chemical testing may be required by these facilities; and

4) The soils generated at the Site at the same tested sample depth from Borehole BH311 may be disposed at a licensed landfill site; however, additional chemical testing under O. Reg. 347/90 may be required by the landfill site.

It should be noted that the results of the chemical analysis refer only to the soil samples analyzed, which were obtained from specific sampling locations and sampling depths, and that the soil chemistry may vary between and beyond the location and depth of the samples taken. Therefore, soil materials to be used on site or transported to other sites must be inspected during excavation for indication of variance in composition or any chemical/environmental constraints. If conditions indicate significant variations, further chemical analyses should be carried out.

Please note that the level of testing outlined herein is meant to provide a broad indication of soil quality based on the limited soil samples tested. The analytical results contained in this report should not be considered a warranty with respect to the soil quality or the use of the soil for any specific purpose. Furthermore, it must be noted that our scope of work was only limited to the review of the analytical results of the limited number of samples. The scope of work did not include any environmental evaluation or assessment of the subject site (such as a Phase One or Phase Two Environmental Site Assessment).

Sites accepting fill may have requirements relating to its aesthetic or engineering properties in addition to its chemical quality. Some receiving sites may have specific chemical testing protocols, which may require additional tests to meet the requirements. The requirements for accepting the fill at an off-site location must be confirmed in advance. GeoPro would be pleased to assist once the receiving sites are determined and the requirements of the receiving sites are available.

7 CORROSIVITY POTENTIAL

The sulphate (SO_4) resistance requirements for concrete in contact with the site soils were evaluated by performing water-soluble sulphate tests on six (6) soil samples taken from Boreholes BH207, BH210, BH211, BH213, BH309 and BH310, with depths shown in the following table. The analytical data are attached to Appendix F.

The test revealed that the sulphate concentrations in the tested soil samples from tested samples ranged from 4 to 64 ug/g (or 0.0004% to 0.0064%). The category of severity of attack is “negligible” based on CSA Standard A23.1, Concrete Materials and Methods of Concrete Construction. The final selection of the type of concrete should be made by the Engineer taking into account all aspects of design considerations.

The corrosivity of soils towards ferrous metal was evaluated by performing corrosivity tests on same soil samples. The corrosivity of soils was evaluated using the 10 points method which is based on five soil properties: sulphides, resistivity, pH, Redox potential and moisture content. The following table summarizes the ANSI/AWWA rating for the tested soil sample for the potential for corrosion towards buried grey or ductile cast iron pipe. A score of ten (10) points or more indicates potential for corrosion.

BH No./ Sample No.	Parameter (Score)							
	Depth (m)	Soil Type	PH	Resistivity (ohm.cm)	Sulfide (%)	Redox potential (mV)	Moisture Content (%)	Total Points
BH207 SS3	1.5 – 2.0	Fill Materials	9.11 (3)	7250 (0)	<0.05 (2)	197 (0)	8.8 (1)	6
BH210 SS5	3.0 – 3.5	Sand	9.03 (3)	11500 (0)	<0.05 (2)	191 (0)	11.6 (2)	7
BH211 SS3	1.5 – 2.0	Fill Materials	8.28 (0)	1580 (0)	<0.05 (2)	197 (0)	17.8 (1)	3
BH213 SS3	1.5 – 2.0	Sandy Silt Till	8.31 (0)	2880 (0)	<0.05 (2)	192 (0)	12.8 (1)	3
BH309 SS5	3.0 – 3.5	Sand and Gravel	8.90 (3)	9090 (0)	<0.05 (2)	178 (0)	12.7 (2)	7
BH310 SS5	3.0 – 3.5	Sand	9.29 (3)	10300 (0)	<0.05 (2)	157 (0)	16.4 (2)	7

According to the ANSI/AWWA rating system, the tested samples pose low to moderate potential for corrosion of grey ductile iron pipe. Further provision of recommendations for corrosion protection is outside of the scope of GeoPro's terms of reference.

Note that there may be other overriding factors in the assessment of corrosion potential, such as the application of de-icing salts on the roadway and subsequent leaching into the subsoils, stray currents, etc.

8 MONITORING AND TESTING

The geotechnical aspects of the final design drawings and specifications should be reviewed by this office prior to tendering and construction, to confirm that the intent of this report has been met. During construction, full-time engineered fill monitoring and sufficient foundation inspections, subgrade inspections, in-situ density tests and materials testing should be carried out to confirm that the conditions exposed are consistent with those encountered in the boreholes, and to monitor conformance to the pertinent project specification.

9 CLOSURE

We appreciate the opportunity to be of service to you and trust that this report provides sufficient geotechnical engineering information to facilitate the detailed design of this project. We look forward to providing you with continuing service during the construction stage. Please do not hesitate to contact our office should you wish to discuss, in further detail, any aspects of this project.

Yours very truly,

GEOPRO CONSULTING LIMITED

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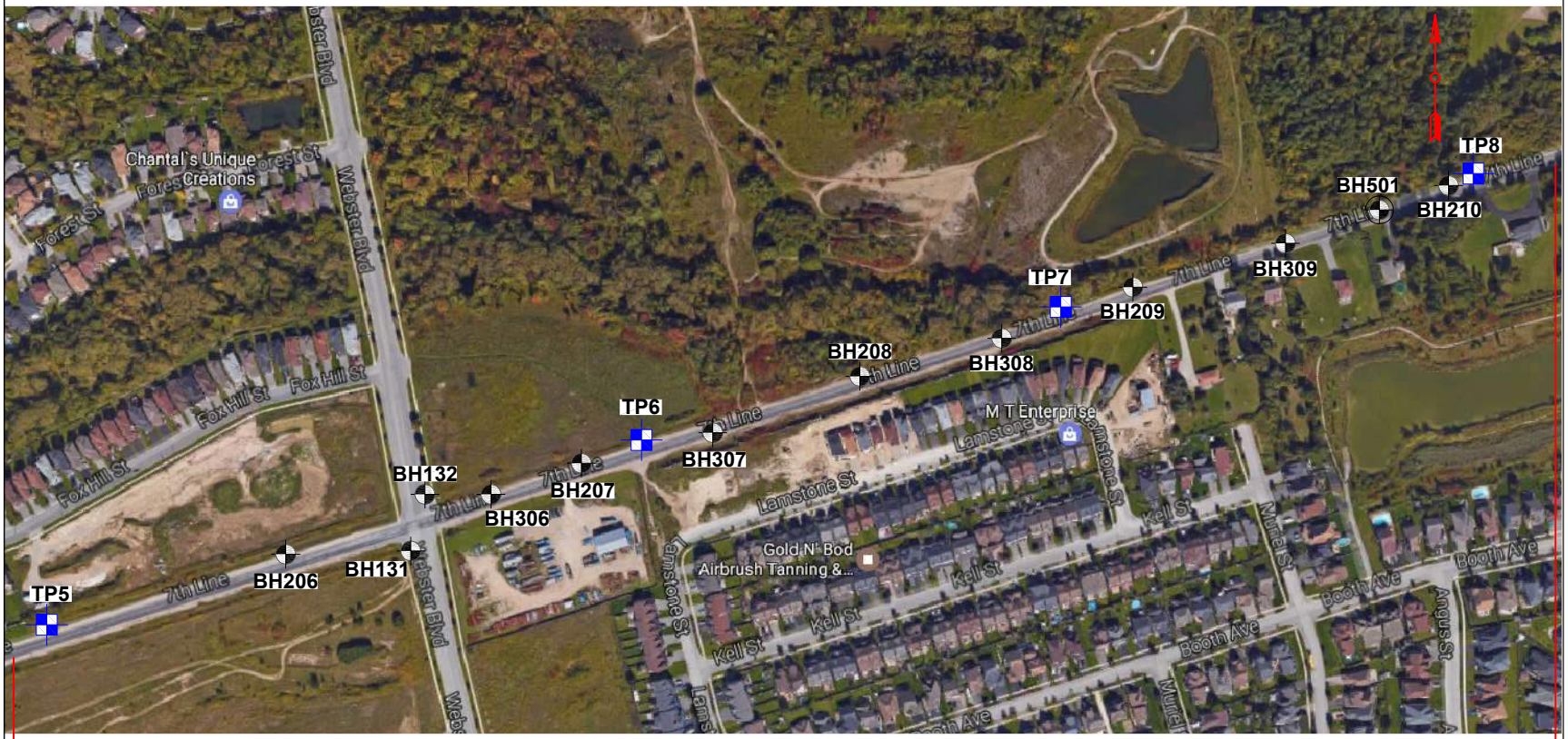
DRAWINGS

Legend:

- Borehole Location at Intersections (100 Series)
- Borehole Location at Shoulder (200 Series)
- Borehole Location at Center Line (300 Series)
- Borehole Location beside Railway (BH401 & BH402)
- Test Pit Location

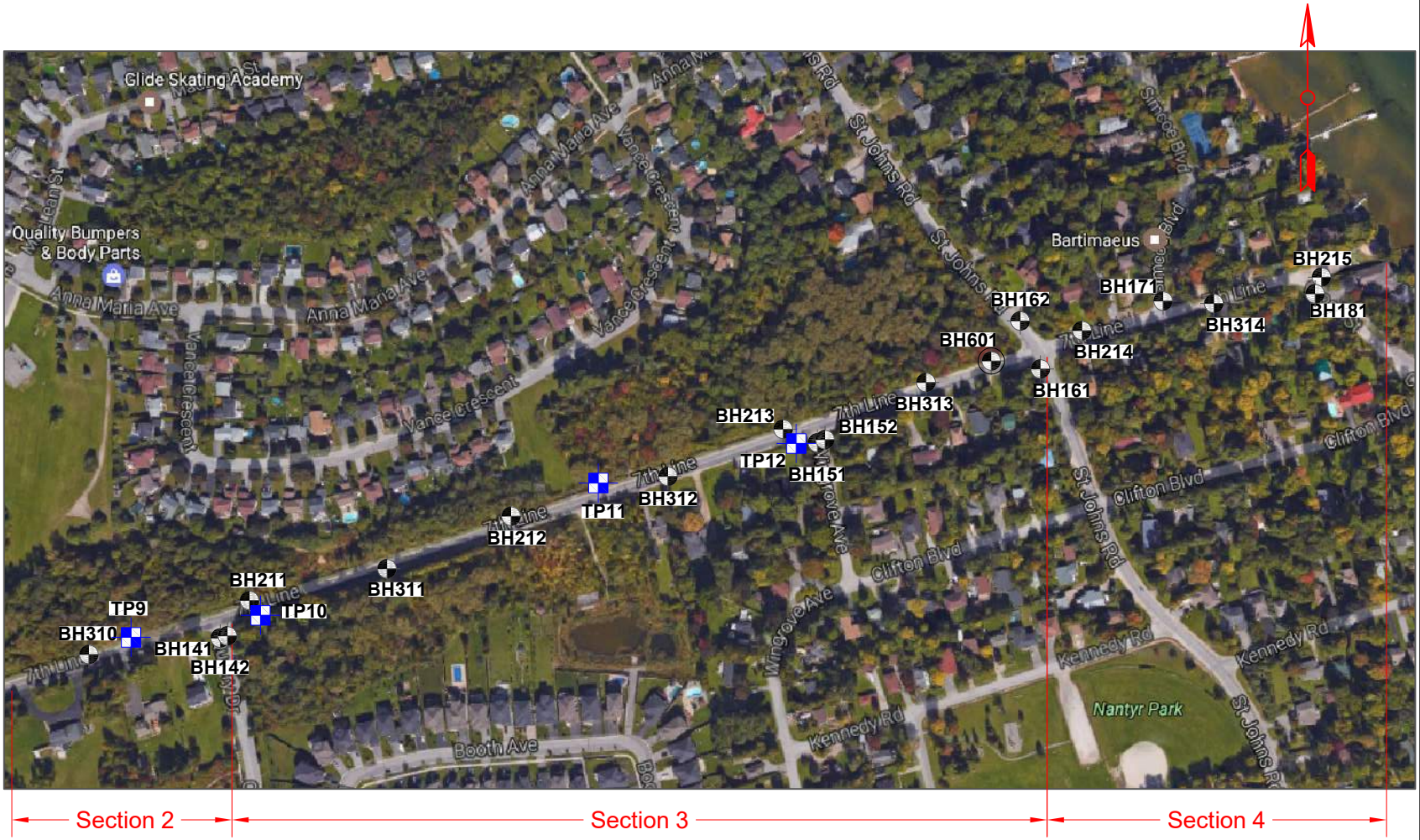
Client:	Ainley Group			Project No.: 17-1797GH	Drawing No.: 1
Drawn:	EW	Approved:	DL	Title:	Borehole and Test Pit Location Plan
Date:	August 2017	Scale:	NTS	Project:	Geotechnical Investigation for 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe Town of Innisfil, Ontario
Original Size:	Letter	Rev:	GH		GeoPro Consulting Limited



Legend:

- Borehole Location at Intersections (100 Series)
- Borehole Location at Shoulder (200 Series)
- Borehole Location at Center Line (300 Series)
- Borehole Location at Drainage Channel (BH501)
- Test Pit Location

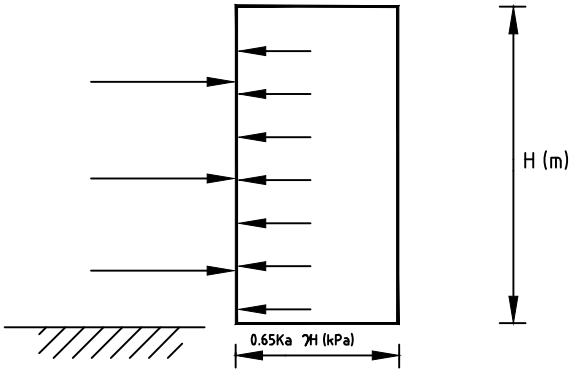
Client:	Ainley Group			Project No.: 17-1797GH	Drawing No.: 2
Drawn:	EW	Approved:	DL	Title:	Borehole and Test Pit Location Plan
Date:	August 2017	Scale:	NTS	Project:	Geotechnical Investigation for 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe Town of Innisfil, Ontario
Original Size:	Letter	Rev:	GH		GeoPro Consulting Limited



Legend:

- Borehole Location at Intersections (100 Series)
- Borehole Location at Shoulder (200 Series)
- Borehole Location at Center Line (300 Series)
- Borehole Location at Culvert (BH601)
- Test Pit Location

Client:	Ainley Group	Project No.: 17-1797GH	Drawing No.: 3
Drawn: EW	Approved: DL	Title:	Borehole and Test Pit Location Plan
Date: August 2017	Scale: NTS	Project:	Geotechnical Investigation for 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe Town of Innisfil, Ontario
Original Size: Letter	Rev: GH		GeoPro Consulting Limited

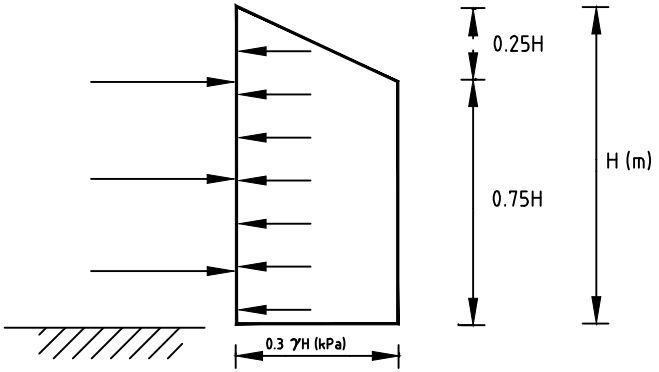


g = unit weight of soil = 21.0 kN/m^3

g' = submerged unit weight of soil (i.e. below ground water level)= 11.2 kN/m^3

Ka = 0.3

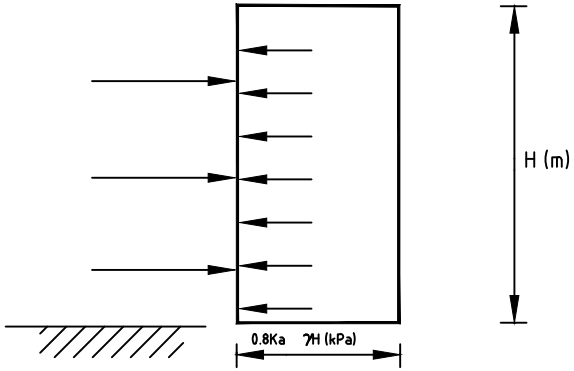
IN COMPACT TO VERY DENSE NON-COHESIVE SOILS (SANDS AND SILTS)



g = unit weight of soil = 21.5 kN/m^3

g' = submerged unit weight of soil (i.e. below ground water level)= 11.7 kN/m^3

IN COHESIVE CLAYS OR CLAYEY SOILS

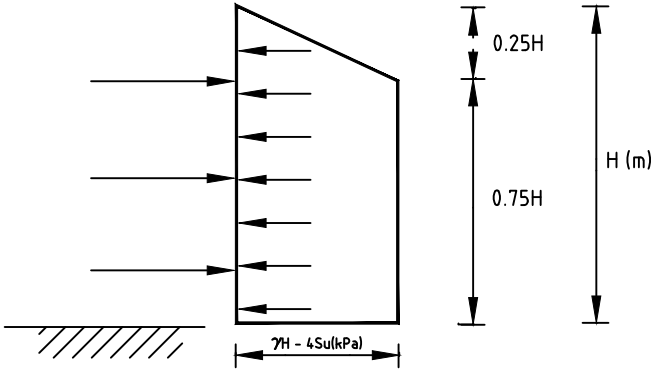


g = unit weight of soil = 19.0 kN/m^3

g' = submerged unit weight of soil (i.e. below ground water level)= 9.2 kN/m^3

Ka = 0.36

IN LOOSE OR DISTURBED NON-COHESIVE SOILS (SANDS AND SILTS)



γ = unit weight of soil = 19.0 kN/m^3

γ' = submerged unit weight of soil (i.e. below ground water level)= 9.2 kN/m^3

Su = 10 KPa

IN VERY SOFT TO FIRM COHESIVE CLAYS OR CLAYEY SOILS

Notes:
1. Check system for partial excavation condition.
2. If the free water level is above the base of the excavation, the hydrostatic pressure must be added to the above pressure distribution.
3. If surcharge loadings are present near the excavation, these must be included in the lateral pressure calculation.

Client:	Ainley Group			Project No.: **17-1797GH**	Drawing No.: **4**
Drawn:	**EW**	Approved:	**JY**	Title:	**Earth Pressure Distribution on Braced Excavations**
Date:	**August, 2017**	Scale:	**N.T.S**	Project:	Geotechnical Investigation for 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe Town of Innisfill, Ontario
Original Size:	**Letter**	Rev:	**JY**		GeoPro Consulting Limited

S:\Projects_Projects 2017\17-1797GH Ainley Planmac 7th Line Road Improvements Innisfil\BH Plan & Drawing\EARTH PRESSURE DISTRIBUTION ON BRACED EXCAVATIONS-Aug-2012.dwg

ENCLOSURES

Enclosure 1A: Notes on Sample Descriptions

1. Each soil stratum is described according to the *Modified Unified Soil Classification System*. The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined according to Canadian Foundation Engineering Manual, 4th Edition. Different soil classification systems may be used by others. Please note that a description of the soil stratums is based on visual and tactile examination of the samples augmented with field and laboratory test results, such as a grain size analysis and/or Atterberg Limits testing. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Enclosure 1B: Explanation of Terms Used in the Record of Boreholes

Sample Type

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO	Drive open
DS	Dimension type sample
FS	Foil sample
NR	No recovery
RC	Rock core
SC	Soil core
SS	Spoon sample
SH	Shelby tube Sample
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

Penetration Resistance

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) required to drive a 50 mm (2 in) drive open sampler for a distance of 300 mm (12 in).

PM – Samples advanced by manual pressure
WR – Samples advanced by weight of sampler and rod
WH – Samples advanced by static weight of hammer

Dynamic Cone Penetration Resistance, N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) to drive uncased a 50 mm (2 in) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in).

Piezo-Cone Penetration Test (CPT):

An electronic cone penetrometer with a 60 degree conical tip and a projected end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurement of tip resistance (Q_t), porewater pressure (PWP) and friction along a sleeve are recorded electronically at 25 mm penetration intervals.

Textural Classification of Soils (ASTM D2487)

Classification	Particle Size
Boulders	> 300 mm
Cobbles	75 mm - 300 mm
Gravel	4.75 mm - 75 mm
Sand	0.075 mm – 4.75 mm
Silt	0.002 mm-0.075 mm
Clay	<0.002 mm(*)

(*) Canadian Foundation Engineering Manual (4th Edition)

Coarse Grain Soil Description (50% greater than 0.075 mm)

Terminology	Proportion
Trace	0-10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. sand and gravel)	> 35%

Soil Description

a) Cohesive Soils(*)

Consistency	Undrained Shear Strength (kPa)	SPT "N" Value
Very soft	<12	0-2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very stiff	100-200	15-30
Hard	>200	>30

(*) Hierarchy of Shear Strength prediction

1. Lab triaxial test
2. Field vane shear test
3. Lab. vane shear test
4. SPT "N" value
5. Pocket penetrometer

b) Cohesionless Soils

Compactness Condition (Formerly Relative Density)	SPT "N" Value
Very loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	>50

Soil Tests

w	Water content
w_p	Plastic limit
w_l	Liquid limit
C	Consolidation (oedometer) test
CID	Consolidated isotropically drained triaxial test
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement
D_R	Relative density (specific gravity, Gs)
DS	Direct shear test
ENV	Environmental/ chemical analysis
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified proctor compaction test
SPC	Standard proctor compaction test
OC	Organic content test
U	Unconsolidated Undrained Triaxial Test
V	Field vane (LV-laboratory vane test)
γ	Unit weight

LOG OF BOREHOLE BH111

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
253.7											
253.6 0.0	**ASPHALT CONCRETE:** (140 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (540 mm)		1	AS							
253.0											
0.7	**FILL:** gravelly sand, brown, moist, loose to compact		2	SS	10		253				
252.3											
1.4	**FILL:** clayey silt, some sand, trace gravel, brown, moist, firm		3	SS	7		252				
251.7											
2.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling. 2) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH112

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 3

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) / SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
254.0											
0.0 / 253.8	**ASPHALT CONCRETE:** (220 mm)										
0.2 / 253.4	**GRANULAR BASE/SUBBASE:** (390 mm)		1	AS							
0.6 / 252.6	**FILL:** gravelly sand, brown, moist, compact		2	SS	15		253				
1.5 / 252.0	**FILL:** organic clayey silt, trace sand, greenish grey to black, moist, firm		3	SS	5						
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: Numbers refer to Sensitivity; Strain at Failure

LOG OF BOREHOLE BH121

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 4

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST / SHEAR STRENGTH (kPa)	WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
246.6											
246.5 0.0	**ASPHALT CONCRETE:** (120 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (460 mm)		1	AS							
246.0							246				
0.6	**SAND AND SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, compact		2	SS	14						
1	--- zones of sand		3	SS	21		245				
244.6											
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
WATER CONTENT (%): Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L; 10 20 30 40

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH122

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 5

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
246.7				
246.6 0.0	**ASPHALT CONCRETE:** (130 mm)			
0.1	**GRANULAR BASE/SUBBASE** (470 mm)	1	AS	
246.1				
0.6	**FILL:** clayey silt, trace sand, trace organics, brown, moist, stiff	2	SS	10
245.3				
1.4	**SAND AND SILT TILL:** some clay, trace gravel, seams of sand, containing cobbles and boulders, brown, moist, dense	3	SS	37
244.7				
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.			

GROUND WATER

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
ELEVATION: 246, 245

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

01 - GEOPRO SOIL LOG GEOPRO 17-1797GH BH LOGS 20170817 - SD.GPJ 2017-08-17 14:50

LOG OF BOREHOLE BH131

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 6

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST / SHEAR STRENGTH (kPa)	WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
239.2											
239.1 / 0.1	**ASPHALT CONCRETE:** (120 mm)										
	GRANULAR BASE/SUBBASE: (560 mm)		1	AS			239				
238.5 / 0.7	**FILL:** silty sand, some clay, trace gravel, brown, moist, loose		2	SS	7						
237.8 / 1.4	**SILTY SAND TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, dense		3	SS	35		238				
237.2 / 2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane; 20 40 60 80
WATER CONTENT (%): Plastic Limit (w_P), Natural Moisture Content (w), Liquid Limit (w_L); 10 20 30 40

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH132

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-20

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 7

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (○ SPT, ≳ Cone, blows/0.3m) / SHEAR STRENGTH (kPa) (● Unconfined, ▲ Quick Triaxial, ✕ Field Vane & Sensitivity, ⊠ Penetrometer, + Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
239.5											
239.4 0.0	**ASPHALT CONCRETE:** (130 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (470 mm)		1	AS							
238.9							239				
0.6	**FILL:** clayey silt, some sand, trace gravel, trace organics, brown, moist, firm to stiff		2	SS	8						
							238				
237.5			3	SS	10						
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH141

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 8

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
224.4											
224.3	**ASPHALT CONCRETE:** (110 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (400 mm)		1	SS	75		224				
223.9											
0.5	**FILL:** sand, some silt, trace gravel, trace to some organics, brown to brownish grey, wet, loose to compact		2	SS	13		223				
222.4			3	SS	10						
2.0	**END OF BOREHOLE**										

Notes:
1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling.
2) Borehole was dry upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH142

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: JJ | DATE: 2017-07-26

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 9

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) Plastic Limit / Natural Moisture Content / Liquid Limit	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
224.4											
224.3 / 0.1	**ASPHALT CONCRETE:** (80 mm)										
	GRANULAR BASE/SUBBASE: (610 mm)		1	SS	33		224				
223.7 / 0.7	**FILL:** gravelly sand, some silt, pockets of organic silt, brown to brownish grey, wet, compact		2	SS	15						
			3	SS	12		223				
222.5 / 2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.9 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.										

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH151

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 10

ELEV / DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	TYPE	"N" BLOWS/0.3m	WATER CONTENT (%)
222.8					
222.8 / 0.0	**ASPHALT CONCRETE:** (25 mm)				
222.4 / 0.4	**GRANULAR BASE/SUBBASE:** (350 mm)	1	SS	48	
222.1 / 0.7	**FILL:** organic silt, some clay, some sand, dark grey, moist, dense				
	SANDY SILT: some clay, trace gravel, brown, moist, compact to dense	2	SS	23	
221.1 / 1.7		3A	SS		
220.8 / 2.0	**SAND AND GRAVEL:** trace silt, brown, wet, dense	3B	SS	41	
	END OF BOREHOLE				

Notes:
1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling.
2) Borehole was dry upon completion of drilling.

Column headings: SOIL PROFILE; SAMPLES; GROUND WATER; ELEVATION (222, 221); DYNAMIC PENETRATION TEST (O SPT, Cone, blows/0.3m: 20, 40, 60, 80); SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane: 20, 40, 60, 80); Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L; WATER CONTENT (%) (10, 20, 30, 40); UNIT WT (kN/m³); REMARKS AND GRAIN SIZE DISTRIBUTION (%) (GR SA SI CL)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH152

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: JJ | DATE: 2017-07-26

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 11

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST / SHEAR STRENGTH (kPa)	WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.8											
222.8 / 0.0	**ASPHALT CONCRETE:** (25 mm)										
222.4 / 0.4	**GRANULAR BASE/SUBBASE:** (400 mm)		1A	SS	23						
222.1 / 0.7	**FILL:** sandy silt, some clay, trace gravel, some organics, brown to dark brown, moist, compact		1B	SS							
1	**SAND AND SILT TO SILTY SAND:** some clay, trace gravel, brown, moist, compact to very dense		2	SS	20		222				
			3	SS	57		221				
220.8 / 2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.										

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80

WATER CONTENT (%): Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L); 10 20 30 40

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲$^{\varepsilon=3\%}$ Strain at Failure

LOG OF BOREHOLE BH161

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: EW
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 12

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) Plastic Limit / Natural Moisture Content / Liquid Limit	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
221.3											
221.2 / 0.0	**ASPHALT CONCRETE:** (125 mm)										
0.1	**GRANULAR BASE/SUBBASE:** (635 mm)		1	AS			221				
220.6											
0.8	**FILL:** sand and gravel, trace silt, brown, moist, compact		2	SS	15						
219.9							220				
1.4	**FILL:** fine sand, trace silt, trace gravel, pockets of silty sand, brown, saturated, very loose to loose		3	SS	4						
219.3											
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH162

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: EW
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 13

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit / Natural Moisture Content / Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
221.5											
0.0 / 221.3	**ASPHALT CONCRETE:** (190 mm)										
0.2 / 220.9	**GRANULAR BASE/SUBBASE:** (460 mm)		1	AS			221				
0.7	**FILL:** sand, some gravel, trace silt, containing waste asphalt pieces, very loose to loose		2	SS	6						
							220				
219.5			3	SS	4						
2.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH171

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: JJ | DATE: 2017-07-26

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) Plastic Limit / Natural Moisture Content / Liquid Limit	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.6											
222.5	**ASPHALT CONCRETE:** (75 mm)										
0.1	**GRANULAR BASE/SUBBASE** (400 mm)		1	SS	55						
222.1											
0.5	**FILL:** gravelly sand, trace to some silt, brown, moist, compact to very dense						222				
1			2	SS	30						
							221				
220.6			3	SS	25						
2.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 1.7 m below ground surface (mBGS) 2) Borehole was dry upon completion of drilling.										

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH181

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 15

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
219.8											
219.8 / 0.0	**ASPHALT CONCRETE:** (40 mm)										
219.5 / 0.4	**GRANULAR BASE/SUBBASE:** (320 mm)										
	FILL: sand, trace silt, trace organics, brown, wet, compact		1	SS	16						
1			2	SS	15		219				
217.8			3	SS	15		218				
2.0	**END OF BOREHOLE**										

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.2 mBGS upon completion of drilling.
3) Borehole caved at a depth of 1.7 mBGS upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH201

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 16

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
252.5											
0.0 / 251.8	**GRANULAR FILL:** (700 mm)		1	SS	11		252				20 71 9
0.7 / 251.1	**FILL:** clayey silt, some sand, trace gravel, brown, moist, soft to firm		2	SS	4						
1.4 / 250.4	**PROBABLE FILL:** clayey silt, some sand, trace gravel, brown, moist, stiff		3	SS	10		251				
2.1 / 249.8	**CLAYEY SILT:** trace sand, brown, moist, very stiff		4A	SS	20		250				
2.7	**SANDY SILT TO SAND AND SILT TO SILTY SAND:** trace clay, trace gravel, brown, moist to wet, compact to very dense		4B	SS							
	--- containing cobbles and boulders		5	SS	26		249				
247.9	--- containing cobbles and boulders, wet, very dense		6	AS	50		248				
4.6	**END OF BOREHOLE DUE TO AUGER REFUSAL** Notes: 1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling. 2) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH202

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 17

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	GR	SA	SI	CL
250.5 / 0.0	**ASPHALT CONCRETE:** (120 mm)								
0.1 / 249.8	**GRANULAR BASE/SUBBASE:** (580 mm)	1	AS						
0.7 / 249.2	**FILL:** sandy silt, trace clay, trace gravel, pockets of clayey silt, brown, moist, loose	2	SS	8					
1.4 / 248.9	**CLAYEY SILT:** some sand, trace gravel, brown, moist, very stiff	3A	SS						
1.7 / 248.4	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown, moist, very stiff	3B	SS	23					
2.1	**SANDY SILT TILL TO SAND AND SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, dense to very dense	4	SS	44		3	40	39	18
		5	SS	85 / 290 mm					
	--- layers of silty sand	6	SS	50 / 125 mm					
5.6 / 244.2	**GRAVELLY SAND:** some silt, layers of clayey silt, brown, moist, very dense	7A	SS	79					
		7B	SS						
6.4 / 243.5	**SILTY SAND:** trace clay, trace gravel, brown, moist, very dense					3	68	24	5
7.1 / 242.5	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, layers of sand, brown, moist, very dense	8	SS	80					
8.1	**END OF BOREHOLE**								

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.9 mBGS upon completion of drilling.
3) Borehole caved at a depth of 6.4 mBGS upon completion of drilling.
4) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling.

Water Level Readings (mBGS)
Date W. L. Depth
Aug 8, 2017 5.67

GROUND WATER: Concrete; Bentonite; W. L. 244.9 m Aug 08, 2017; Sand; Screen; Natrual Pack

DYNAMIC PENETRATION TEST: SPT, Cone, blows/0.3m
SHEAR STRENGTH (kPa): Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane
WATER CONTENT (%): Plastic Limit (w_P), Natural Moisture Content (w), Liquid Limit (w_L)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: Numbers refer to Sensitivity; Strain at Failure

LOG OF BOREHOLE BH203

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 18

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
249.2							
0.0	**GRANULAR FILL:** (760 mm)		1	SS	12		249
248.4							
0.8	**FILL:** clayey silt, trace to some sand, trace gravel, some organics, trace rootlets, dark brown, moist, stiff to very stiff		2	SS	9		
			3	SS	16		248
	--- layers of sandy silt		4	SS	13		247
246.3							
2.9	**GRAVELLY SAND:** some silt, trace clay, pockets of sandy silt, brown, wet, compact to dense		5	SS	16		246
			6A	SS	49		245
244.4							
4.8	**CLAYEY SILT:** trace sand, trace gravel, grey, wet, hard		6B	SS			
244.2							
5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Borehole caved at a depth of 3.0 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80
SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit | Natural Moisture Content | Liquid Limit
w_P w w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

01 - GEOPRO SOIL LOG GEOPRO 17-1797GH BH LOGS 20170817 - SD.GPJ 2017-08-17 14:51

LOG OF BOREHOLE BH204

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-19

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 19

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
249.1											
0.0 / 248.5	**GRANULAR FILL:** (610 mm)		1	SS	25		249				38 50 11
0.6 / 247.9	**FILL:** sandy silt, some clay, trace gravel, trace organics, brown, moist, compact		2	SS	11		248				
1.2 / 247.4	**FILL:** clayey silt, trace sand, trace gravel, trace organics, brown, moist, firm to stiff		3A	SS							
1.7 / 246.6	**SILTY SAND:** trace clay, brown, wet, loose to compact		3B	SS	5		247				
2.4 / 246.4	**FINE SANDY SILT:** some clay, brown, moist, compact		4A	SS	24						
2.5			4B	SS							
2.7	**CLAYEY SILT:** trace sand, brown, moist, very stiff to hard		4C	SS			246				
			5	SS	53						
244.3			6	SS	50 / 250 mm		245				
4.8	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 3.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 3.1 mBGS upon completion of drilling.										

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH205

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 20

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
246.4 / 0.0	**GRANULAR FILL:** (660 mm)	1	SS	19	246
245.7 / 0.7	**ORGANIC CLAYEY SILT:** some sand, trace gravel, dark brown, moist, stiff	2A	SS	14	
245.3 / 1.1	**SANDY SILT:** some clay, trace gravel, brown, moist, compact	2B	SS		245
		3	SS	14	
244.1 / 2.3	**SANDY SILT TILL:** some clay to clayey, trace gravel, containing cobbles and boulders, brown, moist, compact to very dense	4	SS	24	244
		5	SS	34	243
					242
241.5 / 4.9		6	SS	62	
	CLAYEY SILT TILL: some sand, trace gravel, containing cobbles and boulders, grey, moist, hard				
5.0	**END OF BOREHOLE**				

Note:
1) Borehole was open and dry upon completion of drilling.

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane

Natural Moisture Content
Plastic Limit w_P — w — Liquid Limit w_L
WATER CONTENT (%)

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
4	26	48	22

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH206

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 21

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
242.0											
242.0 / 0.0	**GRANULAR FILL:** (30 mm)										
	FILL: silty sand, some clay, trace gravel, some organics, brown to dark brown, moist, compact		1	SS	11						
241.3											
0.7	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown to grey, moist, stiff to hard		2	SS	13		241				
			3	SS	23						3 18 45 34
			4	SS	33		240				
			5	SS	36		239				
							238				
	--- grey		6	SS	30						
237.0							237				
5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH207

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 22

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
237.2											
237.0 / 0.0	**ASPHALT CONCRETE:** (30 mm)										
	GRANULAR BASE/SUBBASE: (570 mm)		1	AS							
236.6											
0.6	**FILL:** silty sand, trace gravel, trace to some organics, layers/pockets of sandy silt, dark brown, moist, loose to dense		2	SS	9		237				
							236				
			3	SS	31						
235.1											
2.1	**FILL:** sand and gravel, trace silt, brown, moist to wet, compact		4	SS	20		235				
234.3											
2.9	**SAND AND SILT:** some clay, trace gravel, layers of clayey silt, brown, wet, compact		5	SS	11		234				3 36 44 17
233.2											
4.0	**SANDY SILT TILL:** some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, grey, moist, compact						233				
			6	SS	26						
232.2											
5.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 4.3 mBGS upon completion of drilling. 2) Borehole was dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH208

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 23

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
234.1					
0.0	**GRANULAR FILL:** (760 mm)	1	AS		234
233.4					
0.8	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist to wet, compact to very dense	2	SS	30	233
		3	SS	46	
		4	SS	61	232
		5	SS	41	231
	--- wet	6	SS	17	230
228.6					229
5.6	**SANDY SILT:** some clay, trace gravel, grey, moist, dense	7	SS	37	228
227.6					
6.6	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
2) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.
3) Borehole was dry upon completion of drilling.

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

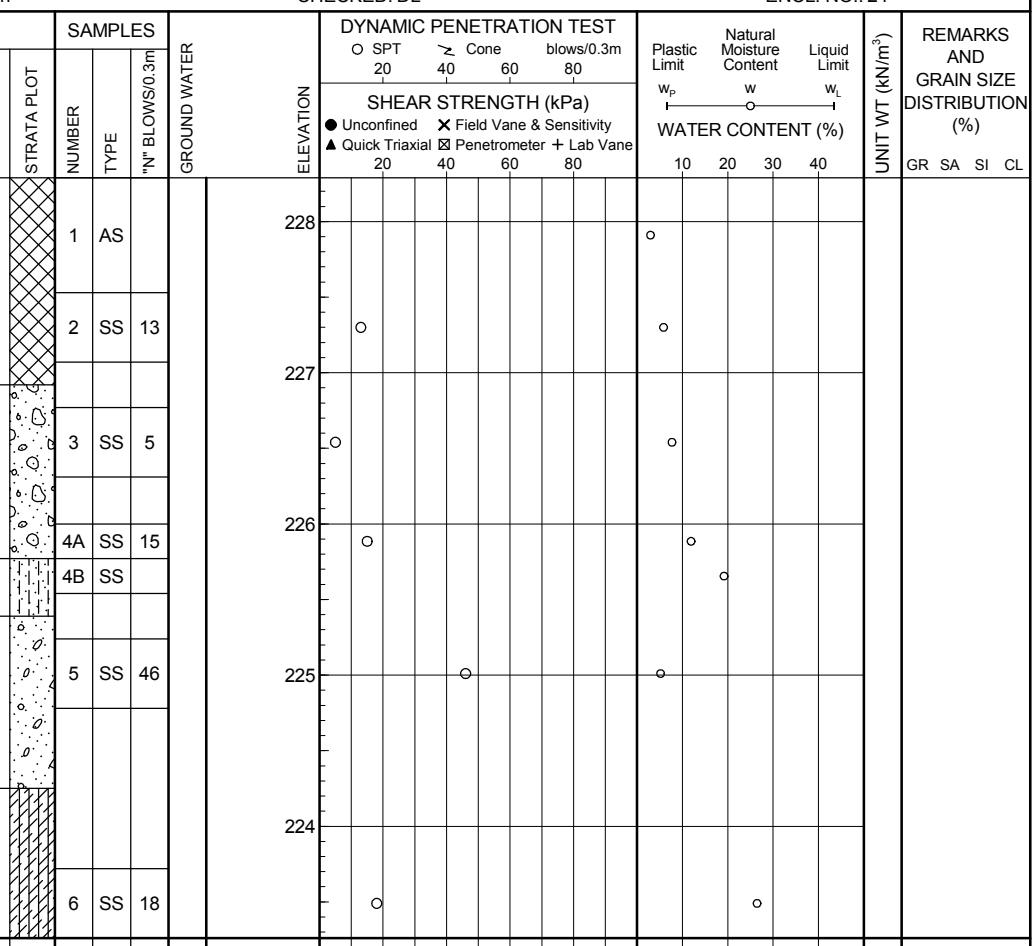
GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH209

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 24

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
228.3 / 0.0	**GRANULAR FILL:** (1400 mm)	1	AS	
		2	SS	13
226.9 / 1.4	**GRAVELLY SAND:** trace silt, brown, moist to wet, loose to compact	3	SS	5
225.8 / 2.5	**SILTY FINE SAND:** trace clay, brown, wet, compact	4A	SS	15
		4B	SS	
225.4 / 2.9	**SANDY GRAVEL:** some silt, trace organics, grey, wet, dense	5	SS	46
224.3 / 4.0	**CLAYEY SILT:** trace sand, grey, very moist, very stiff	6	SS	18
223.3 / 5.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Borehole was open and dry upon completion of drilling.			



UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH210

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW:
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 25

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
225.8 / 0.0	**GRANULAR FILL:** (520 mm)	1	AS	
225.3 / 0.5	**FILL:** sand, some silt, trace gravel, trace organics, brown, moist, loose	2	SS	6
224.5 / 1.4	**GRAVELLY SAND:** trace silt, brown, saturated, compact	3	SS	15
223.7 / 2.1	**FINE SAND:** trace silt, brown, saturated, compact	4	SS	19
222.9 / 2.9	**SAND:** trace to some gravel, trace silt, brown, wet, compact	5	SS	26
		6	SS	18
220.3 / 5.6	**SANDY SILT:** trace clay, trace gravel, grey, saturated, very loose	7A	SS	
219.6 / 6.3	**SILTY CLAY TO CLAYEY SILT:** trace sand, trace gravel, grey, very moist, very soft to stiff	7B	SS	2
218.1 / 7.8	**END OF BOREHOLE**	8	SS	9

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.7 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, ≈ Cone, blows/0.3m; SHEAR STRENGTH (kPa): ● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane

Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L) — WATER CONTENT (%)

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH211

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 26

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
224.2											
224.0 0.0	**ASPHALT CONCRETE:** (40 mm) **GRANULAR BASE/SUBBASE:** (560 mm)		1	AS							48 44 8
223.6											
0.6	**FILL:** sandy silt, some clay, trace gravel, brown, moist, loose		2	SS	7						
1 222.8											
1.4	**FILL:** sand, some silt, trace gravel, pockets of organic silt, brown, moist, loose		3	SS	6						
2 222.0											
2.1	**SILTY SAND:** trace gravel, grey, saturated, compact		4	SS	13						
221.3											
3 2.9	**SAND:** some silt, some gravel, grey, wet, compact		5	SS	29						
4 220.1											
4.0	**SILTY CLAY:** trace sand, layers of silt, grey, wet, firm to stiff		6	SS	8						
5 219.1											
5.0	**END OF BOREHOLE**										

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.5 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.3 mBGS upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH212

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW:
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 27

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.7 / 0.0	**GRANULAR FILL:** (630 mm)	1	AS				41 47 12
222.1 / 0.6	**FILL:** sand and gravel, brown, wet, loose	2	SS	7	222		
221.3 / 1.4	**FILL:** silty sand, trace gravel, some organics, trace to some decay rootlets, containing shell fragments, black, wet, very loose to loose	3	SS	4	221		
220.6 / 2.1	**CLAYEY SILT:** some sand to sandy, trace gravel, grey, wet, firm to stiff	4	SS	8	220		3 24 40 33
		5	SS	9	219		
218.7 / 4.0	**SANDY SILT:** some clay, trace gravel, grey, moist, dense	6	SS	48	218		
217.7 / 5.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 1.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 1.4 mBGS upon completion of drilling.						

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%) (10 20 30 40)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH213

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 28

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
222.3 / 0.0	**GRANULAR FILL:** (760 mm)	1	AS		222		44 47 9
221.5 / 0.8	**FILL:** silty sand, trace clay, trace gravel, pockets of silt, brown, moist to wet, compact	2A	SS	11			
221.2 / 1.1		2B	SS				
220.9 / 1.4	**REWORKED SANDY SILT:** trace clay, trace organics, black, moist, compact				221		
	SANDY SILT TILL: trace to some clay, trace gravel, containing cobbles and boulders, brown to grey, moist, loose to dense	3	SS	8			
		4	SS	23	220		
		5	SS	43	219		
					218		
217.2 / 5.0	--- pockets of silt **END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 4.3 m below ground surface (mBGS) upon completion of drilling. 2) Borehole was dry upon completion of drilling.	6	SS	22			

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%) (10 20 30 40)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + ³, × ³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH214

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 29

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
221.5				
221.4 / 0.1	**ASPHALT CONCRETE:** (50 mm)			
221.0 / 0.5	**GRANULAR BASE/SUBBASE:** (450 mm)	1	SS	28
1	**FILL:** silty sand, trace clay, trace gravel, pockets of silt, moist, brown, compact	2	SS	15
2 / 219.4		3	SS	14
2.1	**FILL:** silty fine sand, containing limestone fragments, containing asphalt fragments, brown, saturated, compact	4	SS	11
218.6				
3 / 2.9	**SILTY FINE SAND:** trace clay, layers of fine sandy silt, organic inclusion, brown to grey, wet, compact	5	SS	19
4 / 217.5				
4.0	**SILTY SAND:** trace gravel, grey, moist, very dense			
216.7		6	SS	50 / 255 mm
4.8	**END OF BOREHOLE**			

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.2 mBGS upon completion of drilling.

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≈ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

ELEVATION: 221, 220, 219, 218, 217

Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

01 - GEOPRO SOIL LOG GEOPRO 17-1797GH BH LOGS 20170817 - SD.GPJ 2017-08-17 14:51

LOG OF BOREHOLE BH215

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 30

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
219.9 / 0.0	**GRANULAR FILL:** (630 mm)	1	AS				
219.3 / 0.6	**FILL:** silty sand, trace gravel, layers of organic silt, brown, wet, loose	2	SS	9	219		
218.5 / 1.4	**SAND:** trace to some silt, trace gravel, grey, wet, compact	3	SS	20	218		
217.8 / 2.1	**SILTY SAND:** trace clay, trace gravel, layers of sand, grey, wet, very dense	4	SS	67			4 61 31 4
217.0 / 2.9	**SAND AND SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, very dense	5	SS	76 / 255 mm	217		
215.9 / 4.0	**SAND AND SILT TILL:** trace clay, trace gravel, layers of sandy silt, layers of silt, containing cobbles and boulders, grey, moist, very dense	6	SS	92 / 230 mm	216		
215.1 / 4.8	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.5 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%) (10 20 30 40)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH301

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 31

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
251.8 / 0.0	**ASPHALT CONCRETE:** (140 mm)			
251.7 / 0.1	**GRANULAR BASE/SUBBASE:** (660 mm)	1	AS	
251.0 / 0.8	**FILL:** clayey silt, trace sand, some organics, trace rootlets, containing woodpieces, black to dark brown, moist, soft to firm	2	SS	4
		3	SS	3
249.7 / 2.1	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown, moist, stiff to very stiff	4	SS	9
		5	SS	22
247.8 / 4.0	**CLAYEY SILT:** trace sand, brown, moist, hard	6	SS	37
246.8 / 5.0	**END OF BOREHOLE**			

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH302

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 32

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
250.1											
250.0 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (680 mm)		1	AS			250				60 32 8
249.4											
0.7	**SANDY SILT:** some clay, trace gravel, brown, moist, loose to compact		2	SS	12		249				
1											
			3	SS	7						
2 / 248.0							248				
2.1	**SAND AND SILT TILL:** trace clay, trace gravel, layers of sand, containing cobbles and boulders, brown, moist, compact to dense		4	SS	25						
3 / 247.0			5A	SS			247				
3.2	**SILTY SAND:** trace clay, trace gravel, layers of sandy silt, brown, moist, dense		5B	SS	41						
246.1							246				
4.0	**SANDY SILT TILL:** some clay, trace gravel, layers of silt, containing cobbles and boulders, brown, moist, compact		6	SS	28						4 30 48 18
245.1											
5.0	**END OF BOREHOLE** Notes: 1) Borehole caved at a depth of 4.0 mBGS upon completion of drilling. 2) Borehole was dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

LOG OF BOREHOLE BH303

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: Mahboob
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-11
REF. NO.: 17-1797GH
ENCL. NO.: 33

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
249.4 / 0.0	**ASPHALT CONCRETE:** (25 mm) **GRANULAR BASE/SUBBASE:** (575 mm)	1	AS	
248.8 / 0.6	**FILL:** clayey silt, trace to some sand, trace gravel, trace organics, dark brown to brown, moist, stiff	2	SS	9
	--- containing cobbles and boulders	3	SS	9
247.3 / 2.1	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, brown, moist, very stiff to hard	4	SS	17
		5	SS	30
245.4 / 4.0	**CLAYEY SILT:** trace sand, grey, moist, hard	6	SS	31
244.4 / 5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.			

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH304

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-19

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 34

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
247.9					
247.8 / 0.0	**ASPHALT CONCRETE:** (25 mm) **GRANULAR BASE/SUBBASE:** (640 mm)	1	AS		
247.2					
0.7 / 247.0	**ORGANIC SILT:** some clay, trace sand, dark brown, moist, loose	2A	SS		247
1 0.9 / 246.5	**SANDY SILT:** some clay, trace gravel, trace organics, brown, moist, loose	2B	SS	7	
1.4	**SANDY SILT TILL TO SAND AND SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist. compact to very dense	3	SS	14	246
2		4	SS	18	
3		5	SS	75 / 280 mm	245
	--- auger grinding				244
4 / 243.2		6	SS	50 / 125 mm	
4.7	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.0 mBGS upon completion of drilling.

GROUND WATER

DYNAMIC PENETRATION TEST: ○ SPT, ≈ Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80

Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)

WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
2	28	49	21

GROUNDWATER ELEVATIONS

Measurement: 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH305

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 35

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
244.7					
244.6 / 0.0	**ASPHALT CONCRETE:** (30 mm)				
	GRANULAR BASE/SUBBASE: (590 mm)	1	AS		
244.1					
0.6	**FILL:** clayey silt, trace organics, pockets of sand, brown, moist, stiff	2A	SS	10	244
243.6		2B	SS		
1.1	**SILTY SAND:** some clay, trace gravel, trace organics, brown, wet, compact to dense	3	SS	17	243
		4	SS	27	242
240.7		5	SS	33	241
4.0	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, grey, moist, very stiff	6	SS	26	240
239.7					
5.0	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 3.1 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.0 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.0 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, ≈ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)
WATER CONTENT (%): 10 20 30 40
UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH306

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-20
REF. NO.: 17-1797GH
ENCL. NO.: 36

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone blows/0.3m) & SHEAR STRENGTH (kPa) (Unconfined, Quick Triaxial, Field Vane & Sensitivity, Penetrometer, Lab Vane)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
238.6 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (590 mm)		1	AS							
238.0 / 0.6	**FILL:** silty sand, trace clay, some organics, dark brown, moist, loose to compact		2	SS	10		238				
237.2 / 1.4	**CLAYEY SILT:** trace sand, trace gravel, brown, moist, stiff		3	SS	12		237				
236.6 / 2.0	**SANDY SILT TILL:** some clay, trace gravel, containing cobbles and boulders, brown, moist, compact to very dense		4	SS	17		236				
235.5 / 3.1	**SAND AND GRAVEL:** trace silt, brown, moist, very dense		5A / 5B	SS	63		235				
234.6 / 4.0	**SILTY SAND:** trace clay, trace gravel, brown, wet, dense		6	SS	33		234				
233.6 / 5.0	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling. 2) Borehole was open and dry upon completion of drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH307

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-24

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 37

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
236.0 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (590 mm)	1	AS		
235.4 / 0.6	**FILL:** silty sand, trace gravel, pockets of organic silt, dark brown, moist	2	SS	23	235
0.8	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist, compact to dense	3	SS	27	234
233.1 / 2.9		4	SS	38	
	SILTY SAND: some clay, trace gravel, brown, wet, compact	5A	SS	15	233
232.7 / 3.4	**SAND:** some silt, trace gravel, brown, wet, compact	5B	SS		
232.0 / 4.0	**CLAYEY SILT:** trace sand, grey, wet, firm	6	SS	7	232 / 231
230.4 / 5.6	**SILTY SAND:** some clay, some gravel, grey, wet, compact	7	SS	11	230
229.5 / 6.6	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 4.6 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.6 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80

Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)

WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

GeoPro CONSULTING LIMITED

LOG OF BOREHOLE BH308

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-24
REF. NO.: 17-1797GH
ENCL. NO.: 38

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	SPT (blows/0.3m)	WATER CONTENT (%)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
230.2 / 0.0	**ASPHALT CONCRETE:** (30 mm)						
	GRANULAR BASE/SUBBASE: (580 mm)	1	AS			~5	
229.6 / 0.6	**FILL:** silty sand, trace clay, trace gravel, pockets of sandy silt, brown, moist, compact	2A	SS	14	~14	~11	
229.2 / 1.0	**SAND AND GRAVEL TO GRAVELLY SAND:** trace silt, brown, moist to wet, compact to dense	2B	SS			~3	
		3	SS	44	~44	~3	
		4	SS	19	~19	~4	
	--- wet	5	SS	21	~21	~11	
226.1 / 4.0	**SILTY CLAY:** trace sand, grey, wet, stiff	6	SS	10	~10	~24	0 5 39 56
225.1 / 5.0	**END OF BOREHOLE**						

Notes:
1) Water encountered at a depth of 3.0 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 2.4 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.

Column headers also include: STRATA PLOT, GROUND WATER, ELEVATION (230, 229, 228, 227, 226), DYNAMIC PENETRATION TEST (○ SPT, Cone, blows/0.3m: 20 40 60 80), SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane: 20 40 60 80), Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L, WATER CONTENT (%) 10 20 30 40, UNIT WT (kN/m^3).

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH309

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-25
REF. NO.: 17-1797GH
ENCL. NO.: 39

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) (Plastic Limit, Natural Moisture Content, Liquid Limit)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
227.0											
226.8 / 0.0	**ASPHALT CONCRETE:** (40 mm)										
	GRANULAR BASE/SUBBASE: (600 mm)		1	AS							
226.3											
0.6	**SAND AND GRAVEL:** trace silt, brown, saturated, compact to very dense		2	SS	17		226				
			3	SS	23		225				
			4	SS	20		224				
			5	SS	54		223				
222.9											
4.0	**CLAYEY SILT:** trace sand, trace gravel, grey, wet, stiff		6	SS	11		222				
222.0											
5.0	**END OF BOREHOLE**										

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 1.8 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
WATER CONTENT (%): Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L (10 20 30 40)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH310

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 40

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
225.2 / 0.0	**ASPHALT CONCRETE:** (20 mm)			
225.2 / 0.0	**GRANULAR BASE/SUBBASE:** (630 mm)	1	AS	
224.5 / 0.7	**PROBABLE FILL:** sand, trace to some gravel, trace silt, trace organics, dark brown, moist to wet, loose to compact	2	SS	13
		3	SS	6
223.1 / 2.1	**SAND:** trace silt, trace gravel, brown, saturated, compact	4	SS	22
		5	SS	20
221.1 / 4.0	**SILT:** some clay to clayey, trace sand, trace gravel, grey, wet, loose	6	SS	9
220.2 / 5.0	**END OF BOREHOLE**			

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 1.8 mBGS upon completion of drilling.
3) Borehole caved at a depth of 2.4 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%) (10 20 30 40)
UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH311

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 41

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
223.7							
223.6 0.0	**ASPHALT CONCRETE:** (40 mm) **GRANULAR BASE/SUBBASE:** (580 mm)	1	AS				
223.1							
0.6	**FILL:** silty sand, trace clay, trace gravel, brown, moist, compact	2	SS	13	223		
1 222.3							
1.4	**SAND:** trace to some gravel, trace clay, trace silt, brown, wet to saturated, very loose to loose	3	SS	4	222		11 78 6 5
2		4	SS	9	221		
220.8							
3 2.9	**SAND AND GRAVEL:** trace silt, brown, saturated, compact	5A	SS	15			
220.4		5B	SS				
3.3	**SILT:** some clay, trace sand, grey, saturated, compact				220		
4 219.6							
4.0	**SILTY CLAY:** trace sand, grey, moist, firm	6	SS	9	219		
4 218.7							
5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.						

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%): 10 20 30 40

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲$^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH312

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-27
REF. NO.: 17-1797GH
ENCL. NO.: 42

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION
222.4					
222.3 / 0.1	**ASPHALT CONCRETE:** (60 mm) **GRANULAR BASE/SUBBASE:** (610 mm)	1	AS		222
221.7 / 0.7	**SAND AND GRAVEL:** trace silt, brown, saturated, very loose to compact	2	SS	14	
		3	SS	4	221
220.2 / 2.1	**SAND:** trace to some silt, trace gravel, brown, saturated, compact	4	SS	22	220
219.5 / 2.9	**SANDY SILT TILL:** trace to some clay, trace gravel, containing cobbles and boulders, grey, moist, compact	5	SS	19	219
218.3 / 4.0	**SAND:** trace silt, trace gravel, grey, saturated, dense	6	SS	38	218
217.3 / 5.0	**END OF BOREHOLE**				

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.1 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.3 mBGS upon completion of drilling.

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80
Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L
WATER CONTENT (%): 10 20 30 40
UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	50	39	11	

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH313

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-27

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 43

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
222.3				
222.2 / 0.1	**ASPHALT CONCRETE:** (45 mm)			
0.4	**GRANULAR BASE/SUBBASE:** (555 mm)	1	AS	
221.7				
0.6	**FILL:** sandy gravel, trace silt, brown, moist, loose	2A	SS	8
221.3		2B	SS	
1.0	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, brown to grey, moist, firm to hard	3	SS	26
		4	SS	37
		5	SS	27
218.2				
4.0	**CLAYEY SILT:** trace sand, grey, very moist, very stiff	6	SS	20
217.2				
5.0	**END OF BOREHOLE** Note: 1) Borehole was open and dry upon completion of drilling.			

GROUND WATER

ELEVATION: 222, 221, 220, 219, 218

DYNAMIC PENETRATION TEST: ○ SPT, ≳ Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane; 20 40 60 80

Plastic Limit, Natural Moisture Content, Liquid Limit; w_P, w, w_L

WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH314

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: JJ
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-26
REF. NO.: 17-1797GH
ENCL. NO.: 44

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m) & SHEAR STRENGTH (kPa)	WATER CONTENT (%) Plastic Limit / Natural Moisture Content / Liquid Limit	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
220.8											
220.6 0.0	**ASPHALT CONCRETE:** (35 mm)										
220.4	**GRANULAR BASE/SUBBASE:** (400 mm)		1	AS							16 68 16
0.4	**FILL:** silty sand, trace gravel, pockets of sand and silt, brown, moist, compact										
1 219.4			2	SS	14		220				
1.4	**FILL:** sand and silt, trace clay, trace gravel, trace organics, layers of clayey silt, brown, wet, compact to dense		3	SS	30		219				
2 218.7											
2.1	**SANDY SILT TO SAND AND SILT:** trace gravel, seams of sand, brown, wet, very dense		4	SS	70		218				
217.9											
3 2.9	**SAND:** trace silt, trace gravel, layers of sandy silt, brown, wet, very dense		5	SS	58		217				
4 216.7											
4.1	**SANDY SILT TO SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		6	SS	72		216				
5 215.8											
5.0	**END OF BOREHOLE**										

Notes:
1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling.
2) Water was at a depth of 3.7 mBGS upon completion of drilling.
3) Borehole caved at a depth of 4.7 mBGS upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH401

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 45

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
250.1 / 0.0	**ASPHALT CONCRETE:** (20 mm) **GRANULAR BASE/SUBBASE:** (660 mm)	1	AS	
249.4 / 0.7	**FILL:** sand and gravel, trace silt, brown, moist			
249.3 / 0.8	**FILL:** silty sand, some gravel, trace clay, brown, moist, dense	2	SS	36
248.7 / 1.5	**ORGANIC SILT:** some clay, black, moist, loose	3A	SS	
248.4 / 1.7	**ORGANIC CLAYEY SILT:** trace sand, dark grey, moist, stiff	3B	SS	9
247.9 / 2.2	**CLAYEY SILT:** trace sand, grey to brown, moist, stiff to hard	4	SS	12
		5	SS	38
246.1 / 4.0	**CLAYEY SILT TILL:** some to trace sand, trace gravel, containing cobbles and boulders, brown to grey, moist, hard	6	SS	66
	--- grey			
	--- layers of silt	7	SS	80
243.0 / 7.2	**CLAYEY SILT:** trace sand, layers of silt, grey, moist, hard	8	SS	71
		9	SS	35

GROUND WATER

DYNAMIC PENETRATION TEST
○ SPT ≳ Cone blows/0.3m
20 40 60 80

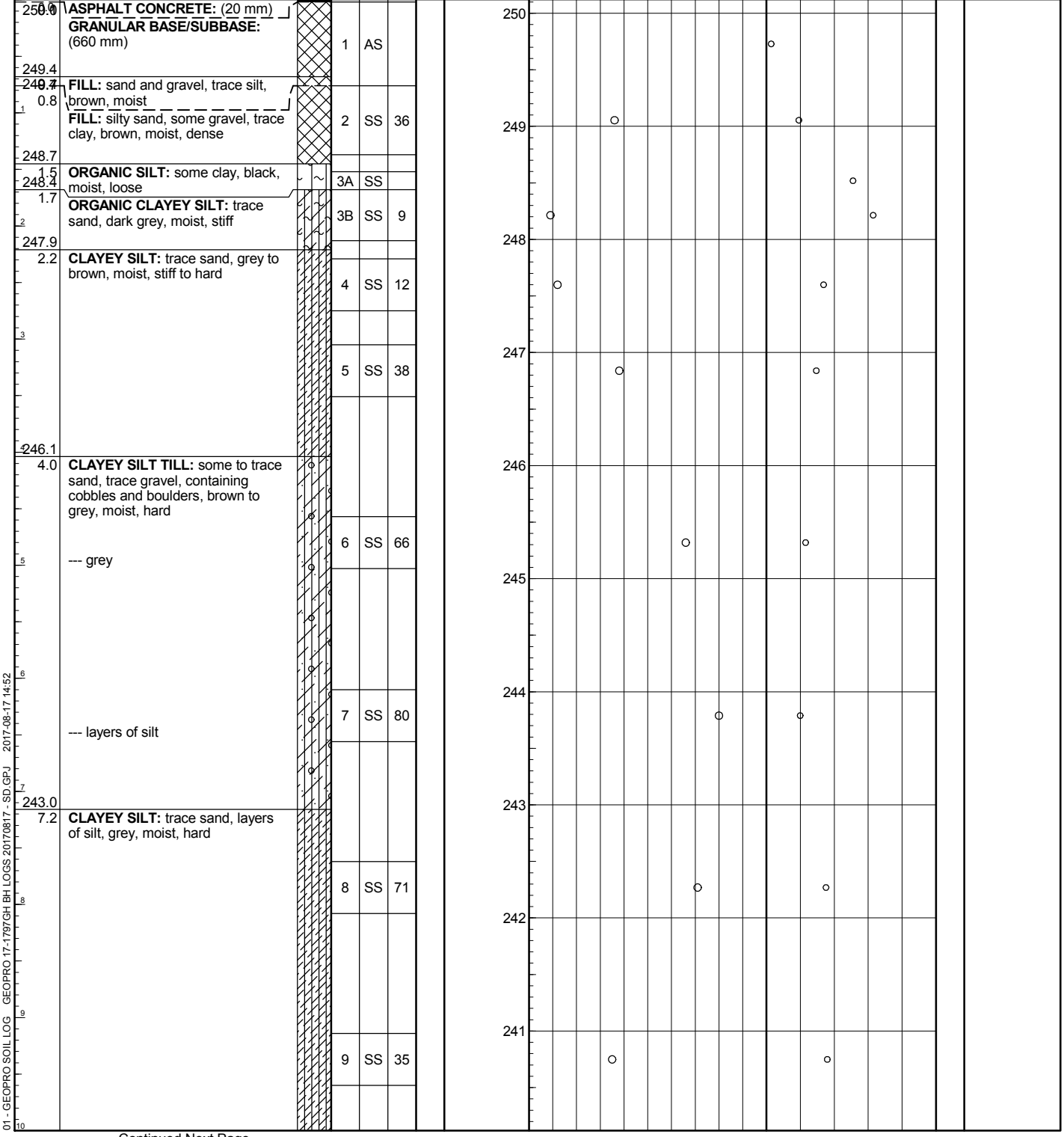
SHEAR STRENGTH (kPa)
● Unconfined ✕ Field Vane & Sensitivity
▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
20 40 60 80

Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

WATER CONTENT (%)
10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL



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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH401

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-18
REF. NO.: 17-1797GH
ENCL. NO.: 45

ELEV / DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	SPT	WATER CONTENT (%)
239.9					240		
10.2	**SAND:** trace silt, trace gravel, grey, wet to saturated, dense to very dense						
11		10	SS	58		○	○
					239		
12					238		
		11	SS	36		○	○
237.5 / 12.7	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 10.7 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 10.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 10.1 mBGS upon completion of drilling.						

Column headings: SOIL PROFILE; SAMPLES; GROUND WATER; STRATA PLOT; DYNAMIC PENETRATION TEST (○ SPT, Cone, blows/0.3m: 20 40 60 80); SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane: 20 40 60 80); Plastic Limit w_P, Natural Moisture Content w, Liquid Limit w_L; WATER CONTENT (%) 10 20 30 40; UNIT WT (kN/m³); REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH402

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL

DIAMETER: 155 mm
DATE: 2017-07-19
REF. NO.: 17-1797GH
ENCL. NO.: 46

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (SPT / Cone, blows/0.3m)	SHEAR STRENGTH (kPa) (Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane)	Plastic Limit / Natural Moisture Content / Liquid Limit — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
249.7											
249.5	**ASPHALT CONCRETE:** (30 mm)				Concrete						
0.0	**GRANULAR BASE/SUBBASE** (570 mm)	1	AS								
249.1						249					
0.6	**ORGANIC CLAYEY SILT:** some sand, trace gravel, brown, moist, stiff to hard	2	SS	37							
248.0		3A	SS								
1.7	**CLAYEY SILT:** trace to some sand, trace gravel, brown, moist, stiff to very stiff	3B	SS	13		248					
247.1		4A	SS	19							
2.6	**SANDY SILT:** some clay, trace gravel, brown, moist to wet, compact	4B	SS		W. L. 247.1 m, Aug 08, 2017	247					
245.7		5	SS	21							
4.0	**CLAYEY SILT TILL:** some sand, trace gravel, containing cobbles and boulders, brown to grey, moist, hard				Bentonite	246					
		6	SS	43		245					2 14 51 33
	--- grey	7	SS	33		244					
						243					
		8	SS	40		242					
241.0											
8.7	**SILTY SAND:** trace gravel, grey, wet, dense					241					
240.3		9A	SS	37							
9.4	**CLAYEY SILT:** trace sand, grey, moist, hard	9B	SS		Sand	240					
					Screen						

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-19

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 46

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	GROUND WATER	ELEVATION
239.6						
10.1	**CLAYEY SILT TILL:** trace sand, trace gravel, containing cobbles and boulders, grey, moist, hard	10	SS	50 / 150 mm	Natural pack	239
11						
238.1						
11.7	**SAND AND SILT:** trace clay, trace gravel, grey, wet, very dense					238
12						
237.4		11	SS	50 / 125 mm		
12.3	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 7.6 m below ground surface (mBGS) during drilling. 2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Readings (mBGS) Date W. L. Depth Aug 8, 2017 2.62					

DYNAMIC PENETRATION TEST: SPT / Cone, blows/0.3m; 20 40 60 80

SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane; 20 40 60 80

Plastic Limit (w_P) | Natural Moisture Content (w) | Liquid Limit (w_L)

WATER CONTENT (%): 10 20 30 40

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH501

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-25
REF. NO.: 17-1797GH
ENCL. NO.: 47

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
226.2						
226.0 / 0.0	**ASPHALT CONCRETE:** (40 mm) **GRANULAR BASE/SUBBASE:** (580 mm)	1	AS		Concrete 226	
225.6						
0.6	**FILL:** silty sand, trace to some organics, pockets of organic silt, containing wood fragments, brown, moist, very loose to compact	2	SS	4		
1					Bentonite 225	
224.5		3A	SS	21	W. L. 224.6 m Aug 08, 2017	
1.8	**SAND AND GRAVEL:** brown, moist, compact	3B	SS			
2 224.1						
2.1	**NO RECOVERY:** likely sand and gravel, very loose	4	SS	3	224	
223.3						
3 2.9	**SAND AND GRAVEL:** trace silt, brown, wet, compact to dense	5	SS	30	Sand 223 Screen	43 47 9 1
4					222	
221.3		6A	SS	19		
5 5.0	**SILT:** trace clay, grey, wet, compact	6B	SS			
220.7					221	
5.6	**CLAYEY SILT TO SILTY CLAY:** trace sand, trace gravel, grey, moist to wet, soft to stiff	7	SS	10	220	
6						
7					Natural pack 219	
	--- sandy	8	SS	14		
8					218	
9						
216.7		9A	SS	3	217	
9.5	**SANDY SILT:** some to trace clay, trace gravel, grey, wet, very loose to very dense	9B	SS			
10						

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m (20 40 60 80)
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane (20 40 60 80)
Plastic Limit w_P — Natural Moisture Content w — Liquid Limit w_L
WATER CONTENT (%) (10 20 30 40)
UNIT WT (kN/m³)

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ▲ε=3% Strain at Failure

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

CLIENT: Ainley Group

PROJECT LOCATION: 7th Line Town of Innisfil, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan

DRILLING DATA

METHOD: Continuous Flight Auger - Auto Hammer | DIAMETER: 155 mm

FIELD ENGINEER: CC | DATE: 2017-07-25

SAMPLE REVIEW: JY | REF. NO.: 17-1797GH

CHECKED: DL | ENCL. NO.: 47

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST: SPT / Cone blows/0.3m; SHEAR STRENGTH (kPa): Unconfined, Field Vane & Sensitivity, Quick Triaxial, Penetrometer, Lab Vane	Plastic Limit / Natural Moisture Content / Liquid Limit; WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SANDY SILT: some to trace clay, trace gravel, grey, wet, very loose to very dense(Continued)						216				
215.4	--- trace clay		10	SS	50 / 125 mm						
10.8	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 4.6 mBGS upon completion of drilling. 3) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Readings (mBGS) Date W. L. Depth Aug 8, 2017 1.68										

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH601

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-28
REF. NO.: 17-1797GH
ENCL. NO.: 48

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3m
221.6				
0.0	**GRANULAR BASE/SUBBASE:** (450 mm)	1	AS	
221.1				
0.5	**SANDY SILT:** trace to some clay, trace gravel, brown to grey, moist, loose to very dense	2	SS	6
		3	SS	23
	--- fine sand layers	4	SS	29
	--- fine sand layers	5	SS	51
	--- grey	6	SS	42
216.0				
5.6	**CLAYEY SILT:** some sand, grey, moist, hard	7	SS	39
	--- fine sand layers			
214.5				
7.1	**FINE SAND TO SILTY FINE SAND:** trace silt to silty, trace clay, trace gravel, grey, wet, very loose to compact	8	SS	3
		9	SS	24

GROUND WATER: Concrete; W. L. 220.2 m Aug 08, 2017; Bentonite; Sand; Screen

DYNAMIC PENETRATION TEST: ○ SPT ≳ Cone blows/0.3m
SHEAR STRENGTH (kPa): ● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane
WATER CONTENT (%): Plastic Limit w_P | Natural Moisture Content w | Liquid Limit w_L

UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
9	64	24	3

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

LOG OF BOREHOLE BH601

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening
CLIENT: Ainley Group
PROJECT LOCATION: 7th Line Town of Innisfil, Ontario
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

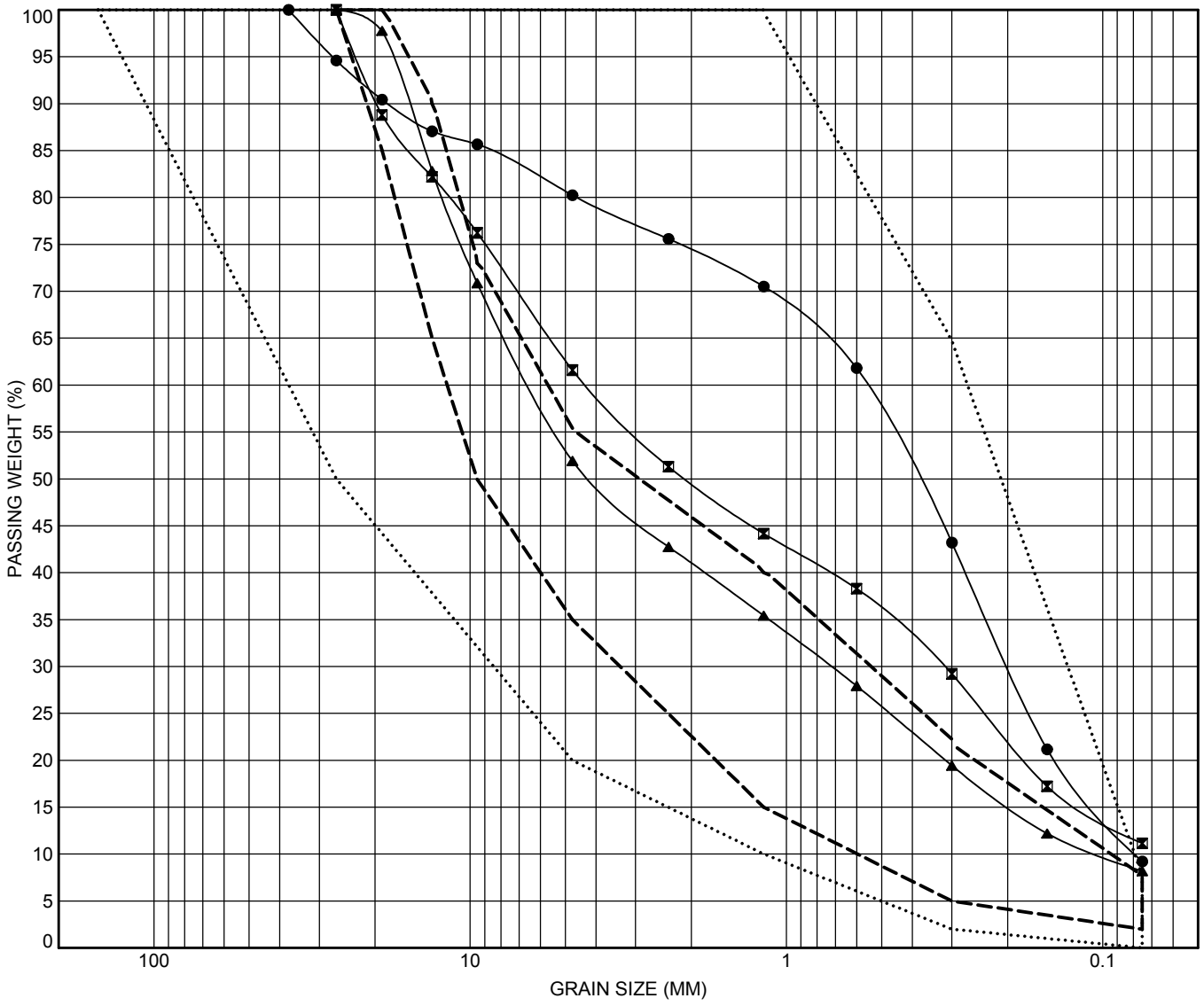
DRILLING DATA
METHOD: Continuous Flight Auger - Auto Hammer
FIELD ENGINEER: CC
SAMPLE REVIEW: JY
CHECKED: DL
DIAMETER: 155 mm
DATE: 2017-07-28
REF. NO.: 17-1797GH
ENCL. NO.: 48

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS/0.3m	GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST (O SPT, Cone blows/0.3m) / SHEAR STRENGTH (kPa) (● Unconfined, ✕ Field Vane & Sensitivity, ▲ Quick Triaxial, ⊠ Penetrometer, + Lab Vane)	Plastic Limit w_P / Natural Moisture Content w / Liquid Limit w_L — WATER CONTENT (%)	UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
11 / 210.4	**FINE SAND TO SILTY FINE SAND:** trace silt to silty, trace clay, trace gravel, grey, wet, very loose to compact(Continued)		10	SS	10	Natural pack	211	O	o		
11.1	**END OF BOREHOLE** Notes: 1) Water encountered at a depth of 6.1 m below ground surface (mBGS) during drilling. 2) 51 mm dia. Monitoring Well was installed in borehole upon completion of drilling. Water Level Readings (mBGS) Date W. L. Depth Aug 8, 2017 1.37										

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ▲ ε=3% Strain at Failure

FIGURES



COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

OPSS1010 GRANULAR A

OPSS1010 GRANULAR B TYPE I

Specimen Identification				D100	D60	D30	D10	%Gravel	%Sand	%Fines
●	**BH201**	**SS1**	**0.00**	**37.5**	**0.561**	**0.198**	**0.079**	**19.8**	**71.0**	**9.2**
⊠	**BH204**	**SS1**	**0.00**	**26.5**	**4.262**	**0.319**		**38.4**	**50.4**	**11.1**
▲	**BH211**	**AS1**	**0.04**	**26.5**	**6.385**	**0.724**	**0.103**	**48.1**	**43.7**	**8.2**

GeoPro CONSULTING LIMITED

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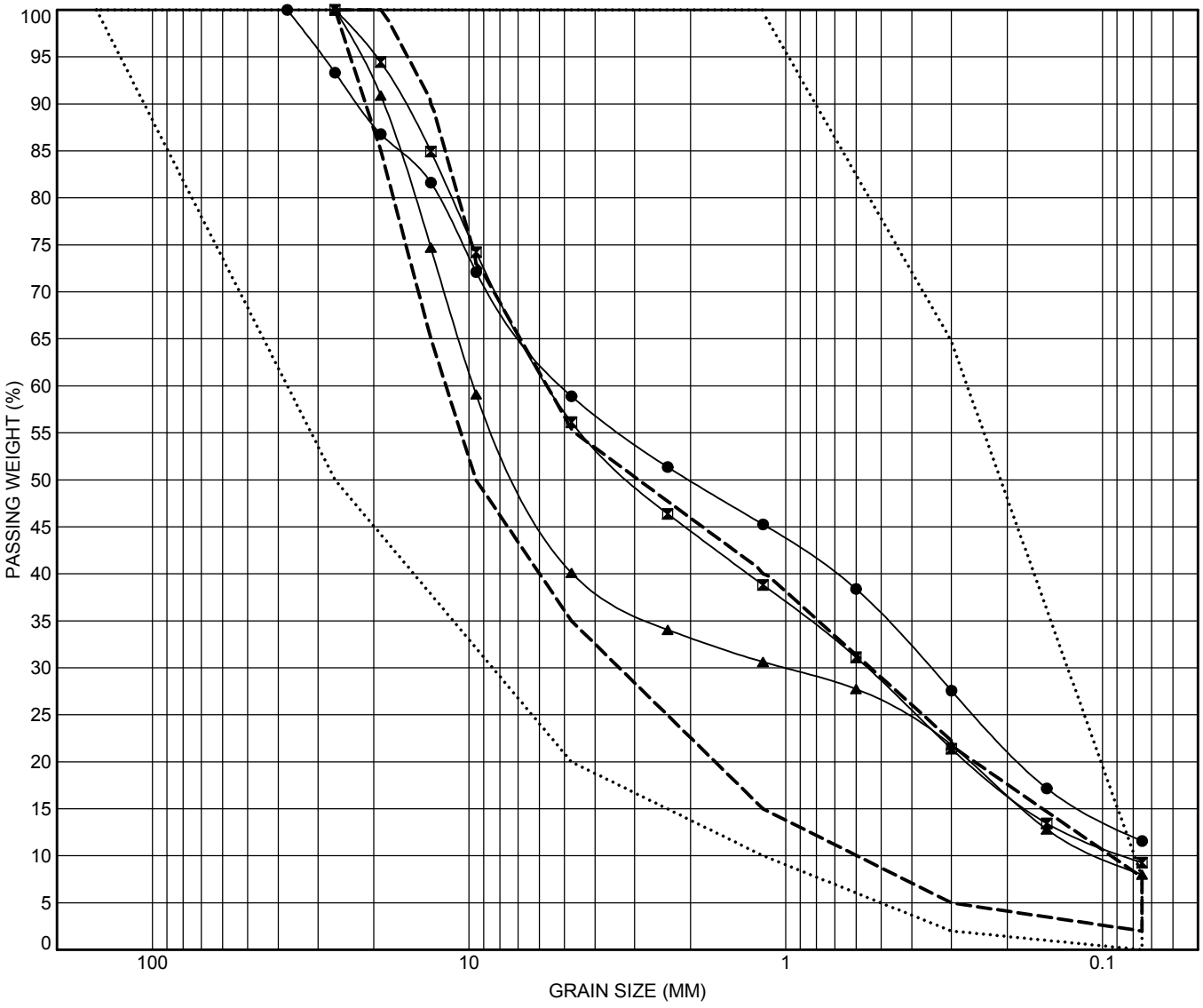
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-26

FIGURE NO.: 1 | TESTED ON: 2017-07-20



COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

OPSS1010 GRANULAR A

OPSS1010 GRANULAR B TYPE I

Specimen Identification				D100	D60	D30	D10	%Gravel	%Sand	%Fines
●	**BH212**	**AS1**	**0.00**	**37.5**	**5.035**	**0.35**		**41.1**	**47.3**	**11.6**
⊠	**BH213**	**AS1**	**0.00**	**26.5**	**5.51**	**0.554**	**0.085**	**43.9**	**46.9**	**9.3**
▲	**BH302**	**AS1**	**0.02**	**26.5**	**9.684**	**1.021**	**0.1**	**59.9**	**32.1**	**8.0**

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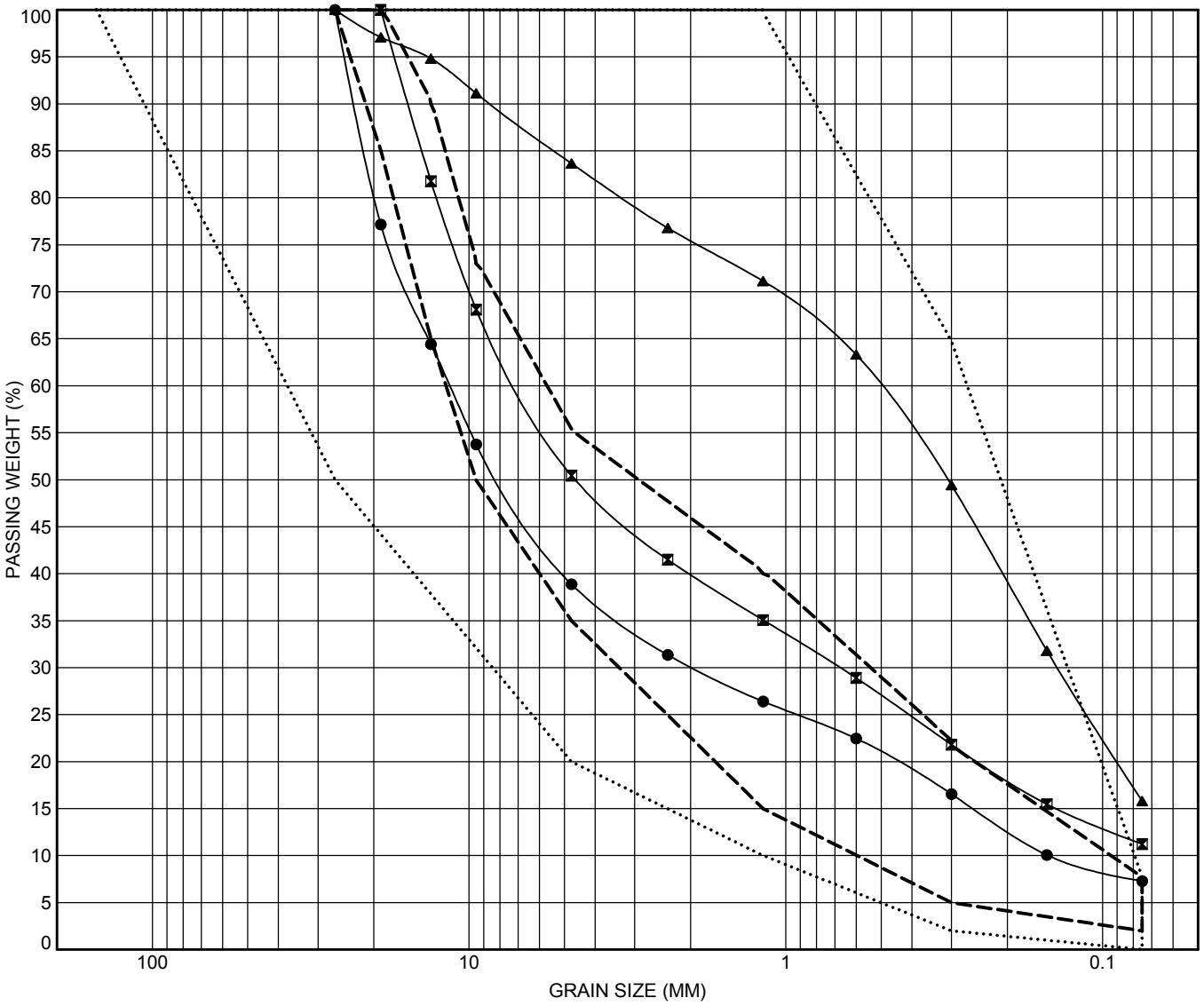
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH	SAMPLED ON: 2017-07-11
FIGURE NO.: 2	TESTED ON: 2017-07-20



COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

OPSS1010 GRANULAR A

OPSS1010 GRANULAR B TYPE I

Specimen Identification				D100	D60	D30	D10	%Gravel	%Sand	%Fines
●	**BH304**	**AS1**	**0.03**	**26.5**	**11.518**	**1.953**	**0.148**	**61.1**	**31.6**	**7.3**
⊠	**BH312**	**AS1**	**0.06**	**19**	**6.912**	**0.677**		**49.6**	**39.2**	**11.2**
▲	**BH314**	**AS1**	**0.04**	**26.5**	**0.508**	**0.139**		**16.3**	**67.8**	**15.8**

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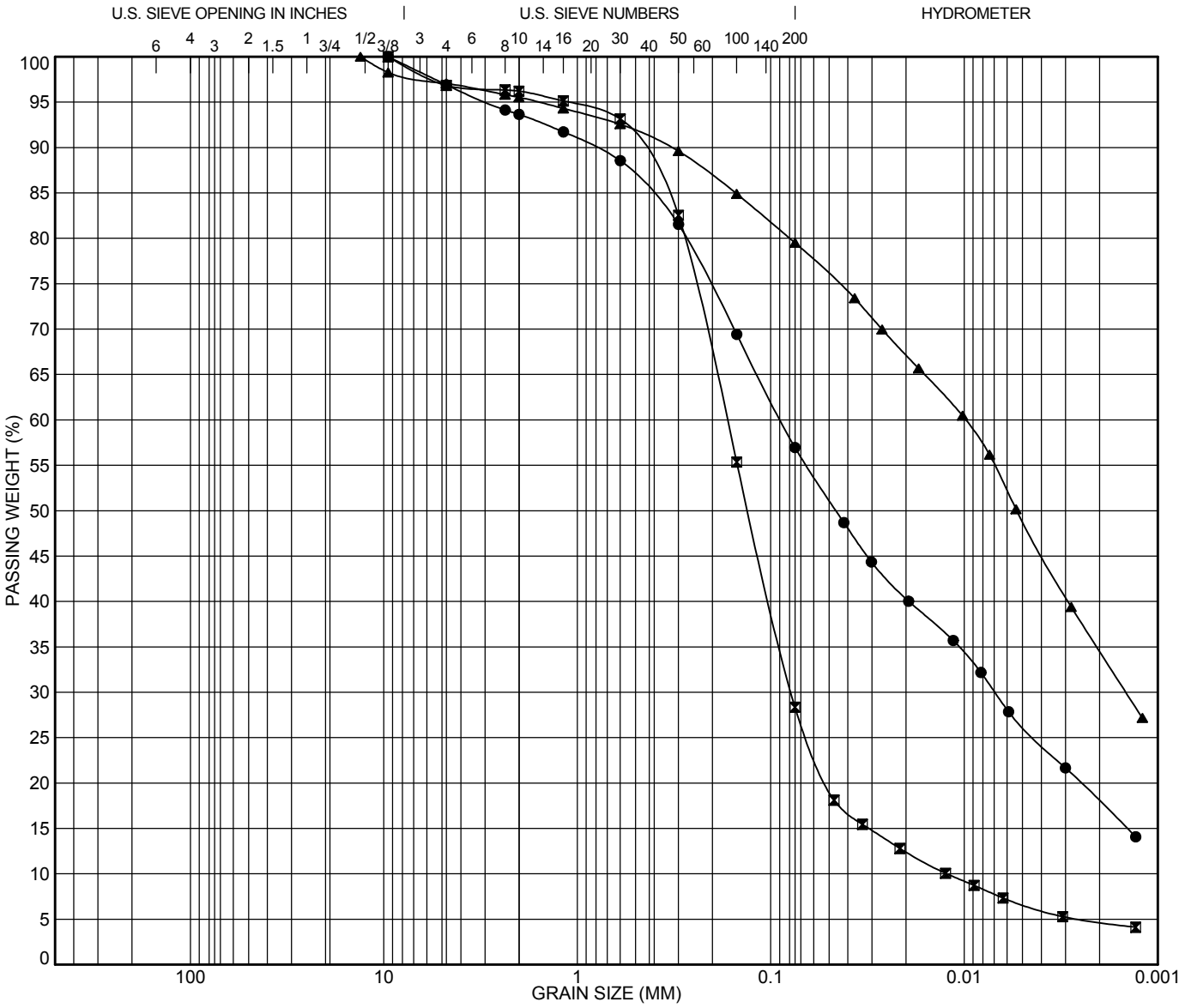
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH	SAMPLED ON: 2017-07-26
FIGURE NO.: 3	TESTED ON: 2017-07-31



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	**BH202**	**SS4**	**2.29**						
⊠	**BH202**	**SS7B**	**6.35**					**2.94**	**13.71**
▲	**BH206**	**SS3**	**1.52**						

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH202**	**SS4**	**2.29**	**9.5**	**0.089**	**0.007**		**3.1**	**39.9**	**39.0**	**18.0**
⊠	**BH202**	**SS7B**	**6.35**	**9.5**	**0.169**	**0.078**	**0.012**	**3.2**	**68.5**	**23.7**	**4.7**
▲	**BH206**	**SS3**	**1.52**	**13.2**	**0.01**	**0.001**		**3.0**	**17.5**	**45.0**	**34.5**

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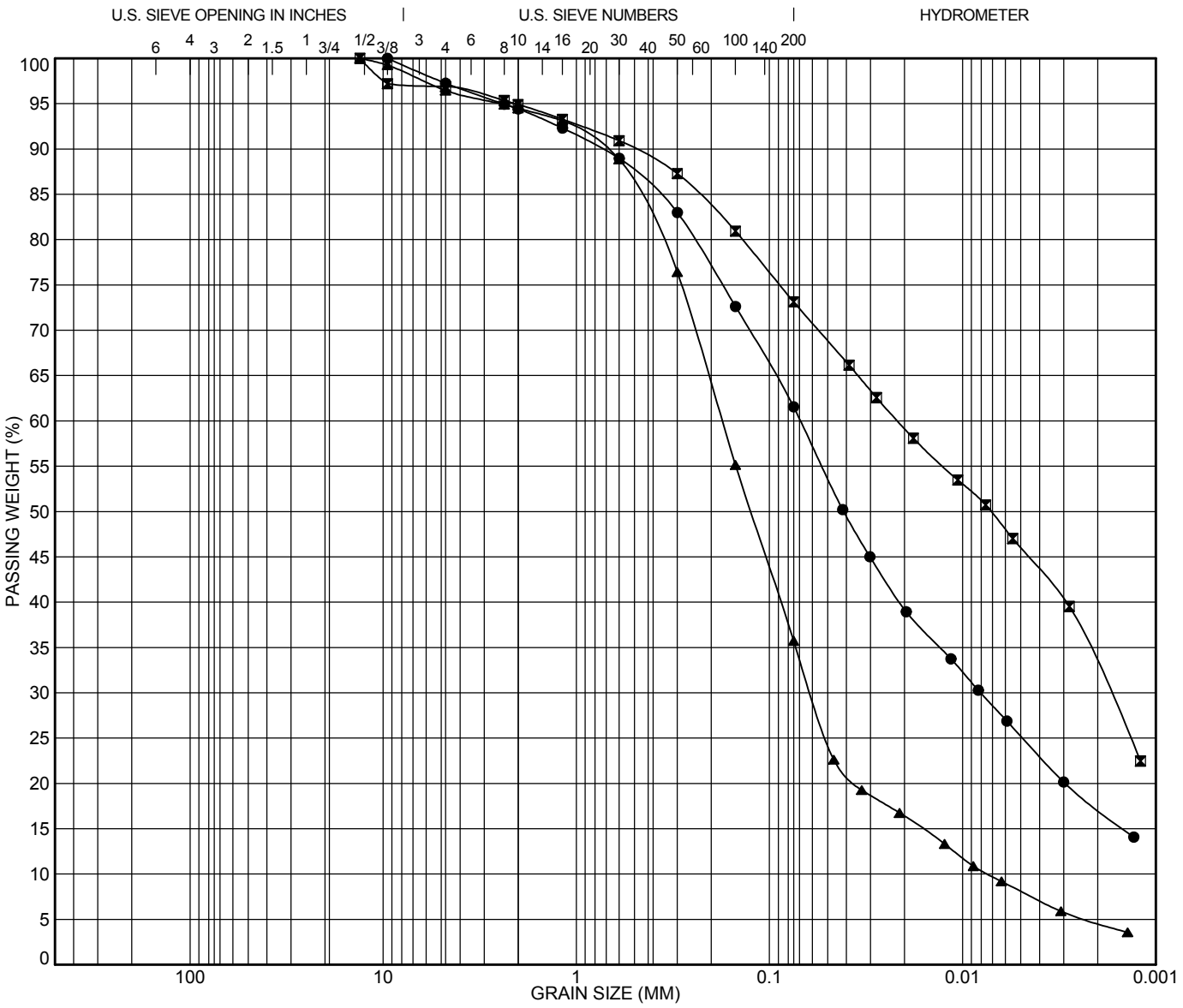
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-20

FIGURE NO.: 4 | TESTED ON: 2017-07-31



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	**BH207**	**SS5**	**3.05**						
⊠	**BH212**	**SS4**	**2.29**						
▲	**BH215**	**SS4**	**2.29**					**2.85**	**23.75**

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH207**	**SS5**	**3.05**	**9.5**	**0.069**	**0.008**		**2.7**	**35.7**	**44.3**	**17.2**
⊠	**BH212**	**SS4**	**2.29**	**13.2**	**0.022**	**0.002**		**3.1**	**23.7**	**40.4**	**32.7**
▲	**BH215**	**SS4**	**2.29**	**13.2**	**0.176**	**0.061**	**0.007**	**3.6**	**60.7**	**31.1**	**4.6**

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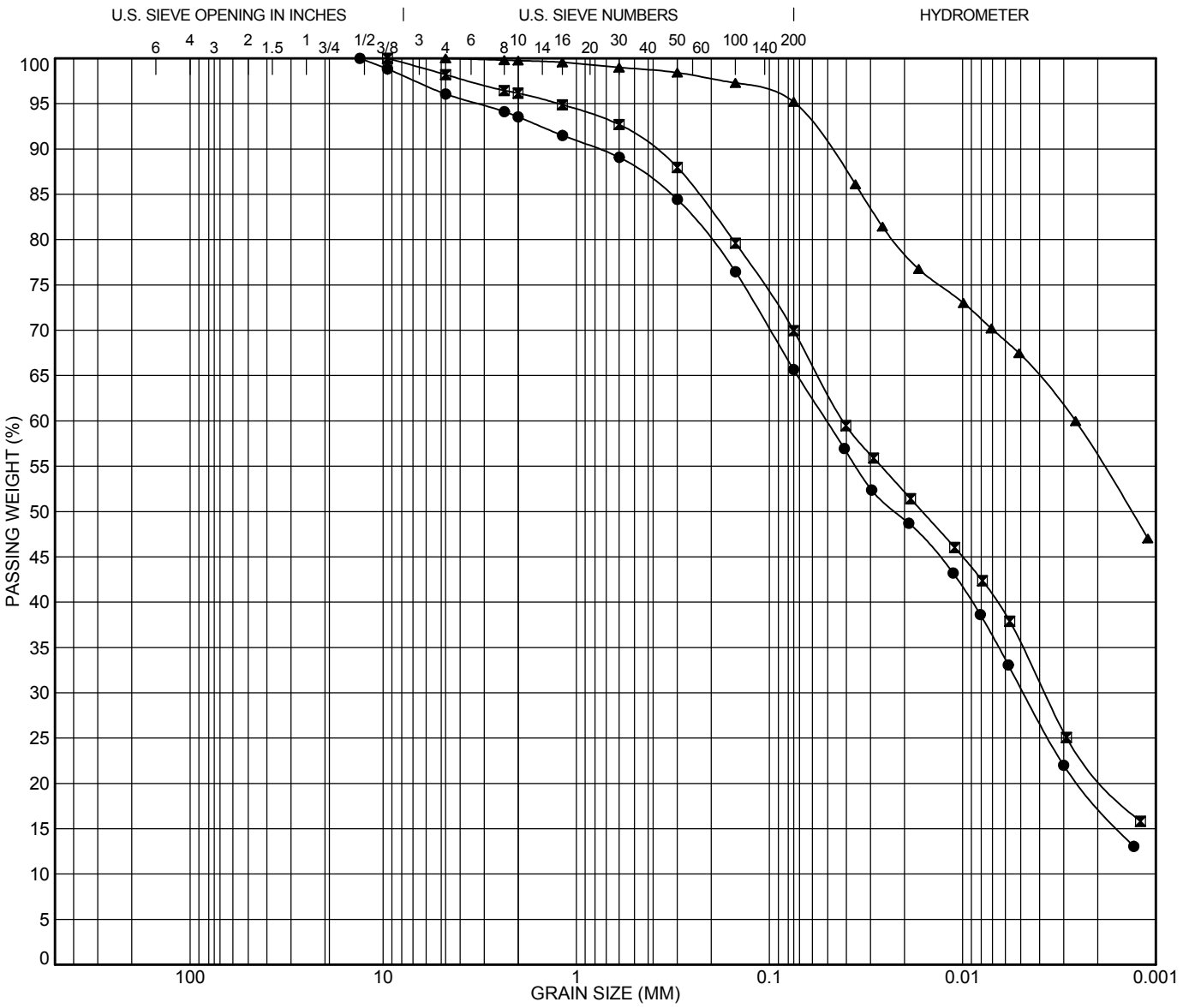
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-26

FIGURE NO.: 5 | TESTED ON: 2017-02-08



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification				Classification	LL	PL	PI	Cc	Cu
●	**BH302**	**SS6**	**4.57**						
⊠	**BH304**	**SS3**	**1.52**						
▲	**BH308**	**SS6**	**4.57**						

Specimen Identification				D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH302**	**SS6**	**4.57**	**13.2**	**0.051**	**0.005**		**3.9**	**30.4**	**48.0**	**17.7**
⊠	**BH304**	**SS3**	**1.52**	**9.5**	**0.041**	**0.004**		**1.8**	**28.2**	**48.8**	**21.2**
▲	**BH308**	**SS6**	**4.57**	**4.75**	**0.003**			**0.0**	**4.8**	**39.2**	**56.0**

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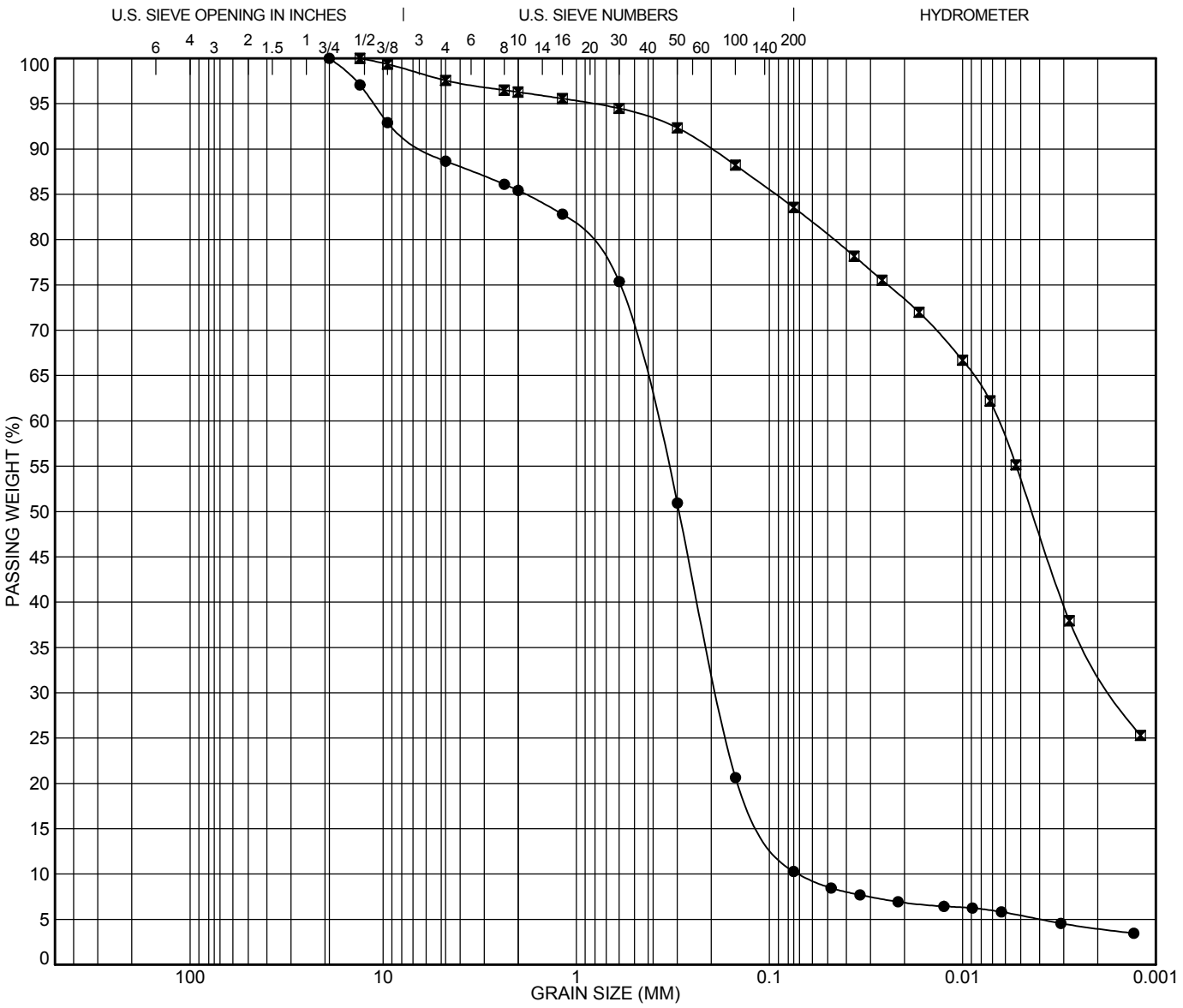
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-24

FIGURE NO.: 6 | TESTED ON: 2017-07-20



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	**BH311**	**SS3**	**1.52**					**1.27**	**5.54**
⊠	**BH402**	**SS6**	**4.57**						

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH311**	**SS3**	**1.52**	**19**	**0.388**	**0.186**	**0.07**	**11.3**	**78.4**	**6.3**	**4.0**
⊠	**BH402**	**SS6**	**4.57**	**13.2**	**0.007**	**0.002**		**2.4**	**14.0**	**50.6**	**32.9**

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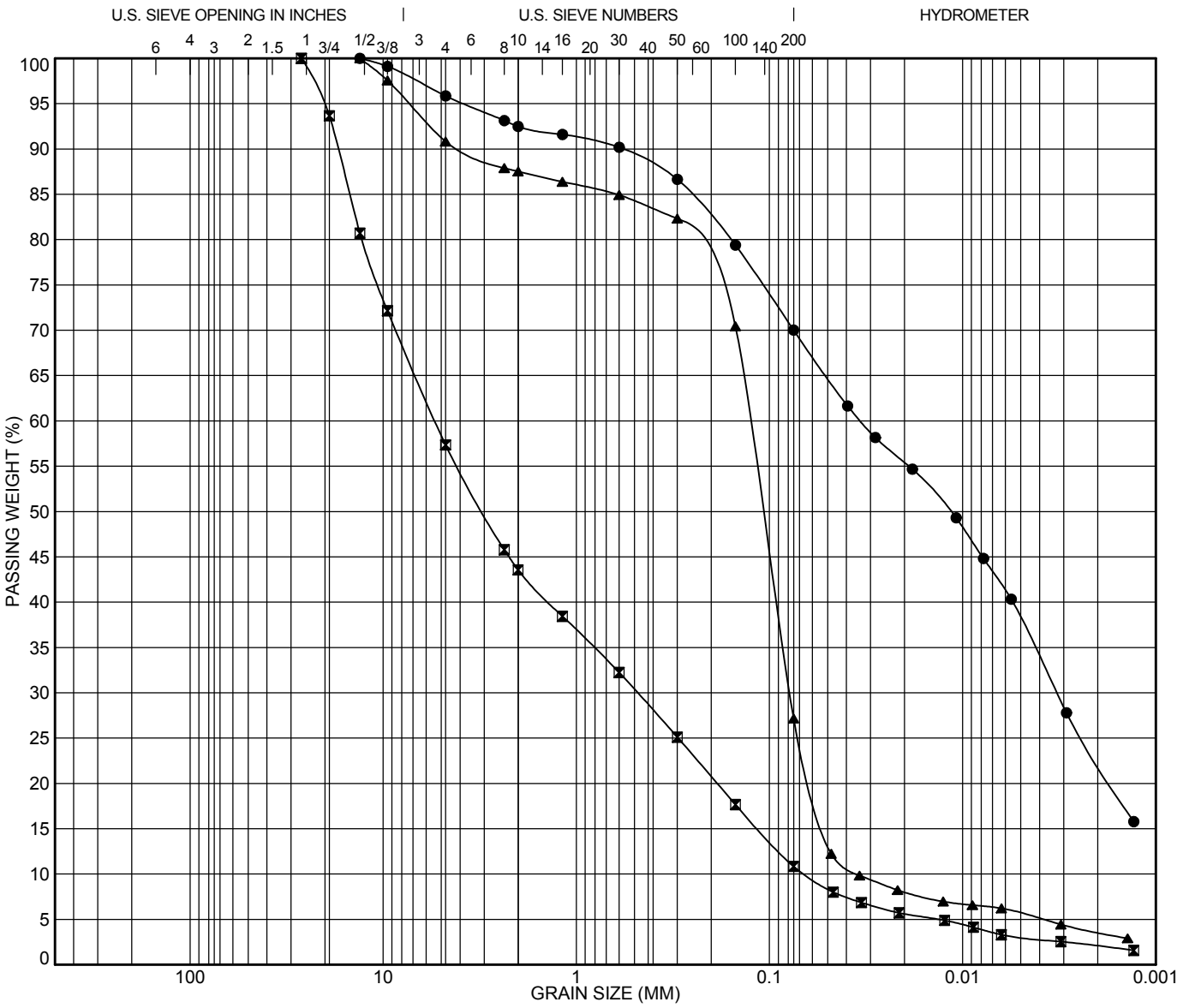
GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-19

FIGURE NO.: 7 | TESTED ON: 2017-07-31



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

	Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	**BH205**	**SS4**	**2.29**						
⊠	**BH501**	**SS5**	**3.05**					**0.66**	**82.43**
▲	**BH601**	**SS9**	**9.14**					**1.39**	**3.62**

	Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH205**	**SS4**	**2.29**	**13.2**	**0.034**	**0.003**		**4.1**	**25.8**	**47.8**	**22.2**
⊠	**BH501**	**SS5**	**3.05**	**26.5**	**5.378**	**0.483**	**0.065**	**42.6**	**46.5**	**8.8**	**2.1**
▲	**BH601**	**SS9**	**9.14**	**13.2**	**0.127**	**0.078**	**0.035**	**9.2**	**63.7**	**23.6**	**3.6**

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GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for 7th Line Improvements & Widening

LOCATION: 7th Line Town of Innisfil, Ontario

PROJECT NO.: 17-1797GH | SAMPLED ON: 2017-07-28

FIGURE NO.: 8 | TESTED ON: 2017-02-08

APPENDIX A

Photograph 1 – 7th Line, looking south, at intersection of 20th Sideroad, showing moderate construction joint.

Photograph 2 – 7th line, looking east, 240 m east from 20th Sideroad, showing moderate to severe alligator cracking, moderate construction joint cracking, slight transverse cracking, and slight pothole.

Photograph 3 – 7th line, looking east, 325 m west from Fox Hill Street, showing severe alligator cracking, slight patching and slight pothole.

Photograph 4 – 7th line, looking east, 140 m west from Fox Hill St, showing moderate to sever alligator cracking and severe pavement edge broken.

Photograph 5 – 7th Line, looking west, 175 m west from Webster Boulevard, showing severe alligator cracking, severe pavement edge broken and slight patching.

Photograph 6 – 7th Line, looking west, 80 m west from Webster Boulevard, showing severe alligator cracking, severe pavement edge broken and cracking, and slight patching.

Photograph 7 – 7th Line, looking west, 210 m east from Webster Boulevard, showing moderate pavement edge broken and slight patching.

Photograph 8 – 7th Line, looking west, 385 m west from Quarry Drive, showing severe edge cracking and severe pavement edge broken, and slight patching.

Photograph 9 – 7th Line, looking east, 170 m west from Quarry Drive, showing severe alligator cracking, slight edge cracking, slight patching, and slight pothole.

Photograph 10 – 7th Line, looking east, 80 m west from Quarry Drive, showing severe alligator cracking, severe pavement edge broken, slight longitudinal cracking and slight patching.

Photograph 11 – 7th Line, looking east, 25 m east from Quarry Drive, showing slight to moderate longitudinal and transverse cracking and moderate to severe edge cracking.

Photograph 12 – 7th Line, looking east, 110 m west from Wingrove Avenue, showing moderate to severe alligator cracking, slight to moderate longitudinal and transverse cracking, moderate edge cracking, slight patching, and slight depression. It was noted that water ponded on the south side shoulder area.

Photograph 13 – 7th Line, looking east, 10 m west of Wingrove Avenue, showing severe alligator cracking, severe longitudinal and transverse cracking, severe edge cracking, and slight to moderate patching. It was noted that water ponded on the south side shoulder area.

Photograph 14 – 7th Line, looking west, 75 m from St Johns Road, showing severe alligator cracking, severe longitudinal and transverse cracking, slight edge cracking and slight patching.

Photograph 15 – 7th Line, looking west, 36 m east from St Johns Rd, showing severe alligator cracking, severe pavement edge broken, slight longitudinal cracking, moderate patching and moderate weathering.

Photograph 16 – 7th Line, looking west, at intersection of Cross Street, showing slight edge cracking.

APPENDIX B

Photo 1 – BH 111

Photo 2 – BH 122

Photo 3 – BH 132

Photo 4 – BH 141

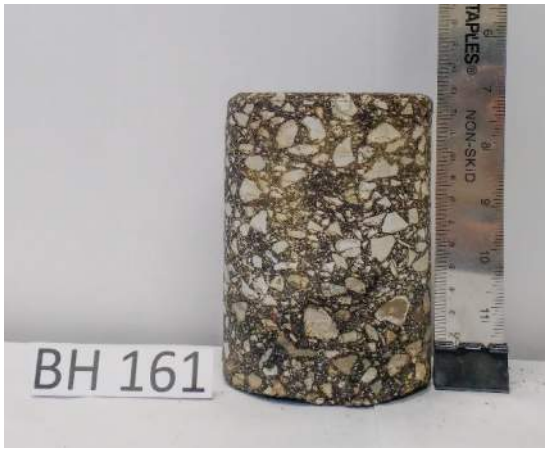


Photo 5 – BH 161

Photo 6 – BH 171

Photo 7 – BH 181

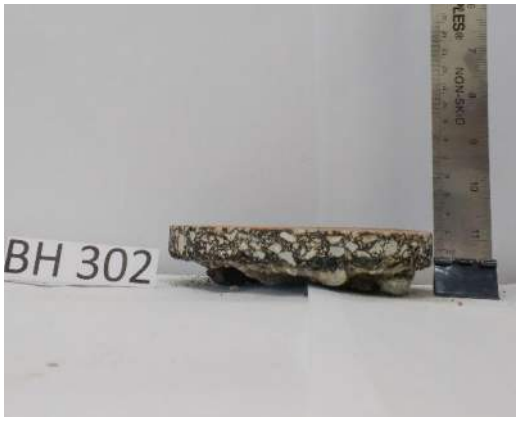


Photo 8 – BH 302

Photo 9 – BH 304

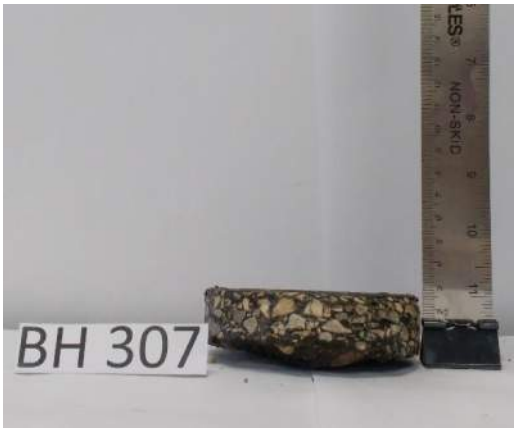


Photo 10 – BH 307

Photo 11 – BH 309

Photo 12 – BH 310

Photo 13 – BH 312

Photo 14 – BH 313

Photo 15 – BH 314

APPENDIX C

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD
40 VOGELL ROAD UNIT 25-27
RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797 GH

AGAT WORK ORDER: 17T245122

ASBESTOS REVIEWED BY: Victoria Szlachta, Asbesto Lab Technician

DATE REPORTED: Aug 14, 2017

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17T245122

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Bulk Asbestos

DATE RECEIVED: 2017-08-02

DATE REPORTED: 2017-08-14

		SAMPLE DESCRIPTION:		BH 111	BH 132	BH 161	BH 302	BH 304	BH 307	BH 310	BH 312
		SAMPLE TYPE:		Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
		DATE SAMPLED:		2017-07-19	2017-07-20	2017-07-27	2017-07-11	2017-07-19	2017-07-24	2017-07-26	2017-07-27
Parameter	Unit	G / S	RDL	8615933	8615935	8615936	8615937	8615938	8615939	8615940	8615941
Asbestos (Bulk)	%		0.5	ND	ND	ND	ND	ND	ND	ND	ND

	SAMPLE DESCRIPTION:		BH 314	
	SAMPLE TYPE:		Asphalt	
	DATE SAMPLED:		2017-07-26	
Parameter	Unit	G / S	RDL	8615942
Asbestos (Bulk)	%		0.5	ND

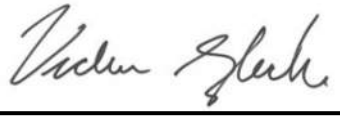
Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8615933-8615942 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected

As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.

Certified By:



AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T245122

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

RPT Date: Aug 14, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Bulk Asbestos															
Asbestos (Bulk)	1	8615942	ND	ND	0.0%	< 0.5									

Certified By:

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T245122

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Asbestos (Bulk)	INORG 93-6010	EPA 600/R-93/116 & NIOSH 9002	PLM

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 17T245122

Cooler Quantity:

Arrival Temperatures:

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Bujing Guan
Address: 40 Vogell Road. Unit 57.
Richmond Hill
Phone: 905-237-8336 Fax: 905-248-3699
Reports to be sent to:
1. Email: bguan@geoproconsulting.ca
2. Email: jessica@geoproconsulting.ca

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐Ind/Com ☐Res/Park ☐Agriculture
Soil Texture *(Check One)* ☐Coarse ☐Fine

☐ Sewer Use
☐Sanitary ☐Storm
Region (Indicate One) ☐MISA

☐ Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 17-1797 GH
Site Location: 7th Line, Town of Innisfil
Sampled By: Clement Chan, Mdhboob, John Jung
AGAT Quote #: GeoPro PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics (☐All Metals ☐153 Metals (excl. Hydrides) ☐Hydride Metals ☐153 Metals (incl. Hydrides))	ORPs: ☐B-HWS ☐Cl⁻ ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☐Hg ☐pH ☐SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐TP ☐NH_3 ☐TKN ☐NO_3 ☐NO_2 ☐NO_3+NO_2	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐Total ☐Aroclors	Organochlorine Pesticides	TCLP: ☐M&I ☐VOCs ☐ABNs ☐B(a)P ☐PCBs	Sewer Use	Asbestos
BH 111	20170719	AM	1																	✓
BH 132	20170720	AM	1																	✓
BH 161	20170727	AM	1																	✓
BH 302	20170711	AM	1																	✓
BH 304	20170719	AM	1																	✓
BH 307	20170724	AM	1																	✓
BH 310	20170726	AM	1																	✓
BH 312	20170727	AM	1																	✓
BH 314	20170726	AM	1																	✓

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
	Aug			2017/8/2	10:30
	2017/8/2	3:35			

Page ____ of ____

N°: T 053951

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

APPENDIX D

TRAFFIC DATA AND ESTIMATED ESALs
7th Line
(From 20th Sideroad to Webster Boulevard)

Year	Annual Average Daily Traffic	Estimated Cumulative Annual ESALs
2021	6,623	-
2022	6,788	16,500
2023	6,958	33,400
2024	7,132	50,800
2025	7,310	68,600
2026	7,493	86,800
2027	7,681	105,500
2028	7,873	124,700
2029	8,069	144,300
2030	8,271	164,400
2031	8,478	185,000
2032	8,690	206,200
2033	8,907	227,900
2034	9,130	250,100
2035	9,358	272,900
2036	9,592	296,200
2037	9,832	320,100
2038	10,077	344,600
2039	10,329	369,700
2040	10,588	395,500
2041	10,852	421,900

Directional Factor (DF)	0.5
Lane Distribution Factor (LDF)	0.9
Combined Truck Factor (CTF)	0.74
Percent Commercial Vehicles	2.0%
Days Per Year For Truck Traffic	365

TRAFFIC DATA AND ESTIMATED ESALs
7th Line
(From Quarry Drive to St. Johns Road)

Year	Annual Average Daily Traffic	Estimated Cumulative Annual ESALs
2021	2,869	-
2022	2,941	3,600
2023	3,014	7,300
2024	3,089	11,100
2025	3,167	15,000
2026	3,246	19,000
2027	3,327	23,000
2028	3,410	27,200
2029	3,495	31,500
2030	3,583	35,900
2031	3,672	40,400
2032	3,764	45,000
2033	3,858	49,700
2034	3,955	54,500
2035	4,054	59,400
2036	4,155	64,500
2037	4,259	69,700
2038	4,365	75,000
2039	4,474	80,400
2040	4,586	86,000
2041	4,701	91,700

Directional Factor (DF)	0.5
Lane Distribution Factor (LDF)	0.9
Combined Truck Factor (CTF)	0.74
Percent Commercial Vehicles	1.0%
Days Per Year For Truck Traffic	365

APPENDIX E

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD
40 VOGELL ROAD UNIT 25-27
RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797

AGAT WORK ORDER: 17T242433

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Aug 02, 2017

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-08-02

		SAMPLE DESCRIPTION:		BH304 SS2	BH305 SS2A	BH306 SS2
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2017-07-20	2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL	8596453	8596456	8596464
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2	2
Barium	µg/g	220	2	101	140	23
Beryllium	µg/g	2.5	0.5	0.6	0.6	<0.5
Boron	µg/g	36	5	8	9	<5
Boron (Hot Water Soluble)	µg/g	NA	0.10	<0.10	<0.10	0.17
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	70	2	23	24	8
Cobalt	µg/g	21	0.5	7.4	8.5	2.3
Copper	µg/g	92	1	14	18	3
Lead	µg/g	120	1	6	6	3
Molybdenum	µg/g	2	0.5	<0.5	<0.5	<0.5
Nickel	µg/g	82	1	16	17	5
Selenium	µg/g	1.5	0.4	0.6	<0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	86	1	30	33	14
Zinc	µg/g	290	5	35	39	14
Chromium VI	µg/g	0.66	0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.57	0.005	0.434	2.08	0.844
Sodium Adsorption Ratio	NA	2.4	NA	1.48	25.3	10.7
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.41	7.99	7.69

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8596453-8596464 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By: Amanjot Bhela

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-08-02

		SAMPLE DESCRIPTION:		BH112 SS2	BH121 SS2	BH131 SS2	BH201 SS2	BH202 SS3	BH203 SS2	BH204 SS2	BH205 SS2B
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-07-18	2017-07-20	2017-07-20	2017-07-11	2017-07-11	2017-07-11	2017-07-19	2017-07-19
Parameter	Unit	G / S	RDL	8596444	8596445	8596446	8596447	8596448	8596449	8596450	8596451
Electrical Conductivity	mS/cm	0.57	0.005	1.64	0.221	0.513	0.592	0.339	1.35	0.905	0.808
Sodium Adsorption Ratio	NA	2.4	NA	18.6	3.06	6.84	7.70	4.59	14.4	7.52	7.27

		SAMPLE DESCRIPTION:		BH206 SS2
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2017-07-19
Parameter	Unit	G / S	RDL	8596452
Electrical Conductivity	mS/cm	0.57	0.005	0.639
Sodium Adsorption Ratio	NA	2.4	NA	4.06

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8596444-8596452 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-08-02

		SAMPLE DESCRIPTION:		BH304 SS2	BH306 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL	8596453	8596464
F1 (C6 to C10)	µg/g	25	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	<5
F2 (C10 to C16)	µg/g	10	10	<10	<10
F3 (C16 to C34)	µg/g	240	50	<50	<50
F4 (C34 to C50)	µg/g	120	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	NA
Moisture Content	%		0.1	20.1	4.9
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		83	104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8596453-8596464 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-08-02

		SAMPLE DESCRIPTION:		BH304 SS2	BH306 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL	8596453	8596464
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.02	<0.02	<0.02
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-08-02

		SAMPLE DESCRIPTION:		BH304 SS2	BH306 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL	8596453	8596464
Bromoform	ug/g	0.05	0.05	<0.05	<0.05
Styrene	ug/g	0.05	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		86	86
4-Bromofluorobenzene	% Recovery	50-140		91	91

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8596453-8596464 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By: N Popnikolof

AGAT Laboratories

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Guideline Violation

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8596444	BH112 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	1.64
8596444	BH112 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	18.6
8596445	BH121 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	3.06
8596446	BH131 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	6.84
8596447	BH201 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.592
8596447	BH201 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.70
8596448	BH202 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	4.59
8596449	BH203 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	1.35
8596449	BH203 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	14.4
8596450	BH204 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.905
8596450	BH204 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.52
8596451	BH205 SS2B	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.808
8596451	BH205 SS2B	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.27
8596452	BH206 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.639
8596452	BH206 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	4.06
8596456	BH305 SS2A	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	2.08
8596456	BH305 SS2A	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	25.3
8596464	BH306 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	0.844
8596464	BH306 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	10.7

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Aug 02, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	8596453	8596453	<0.8	<0.8	NA	< 0.8	104%	70%	130%	100%	80%	120%	70%	70%	130%
Arsenic	8596453	8596453	2	2	NA	< 1	113%	70%	130%	96%	80%	120%	103%	70%	130%
Barium	8596453	8596453	101	106	4.8%	< 2	101%	70%	130%	102%	80%	120%	98%	70%	130%
Beryllium	8596453	8596453	0.6	0.6	NA	< 0.5	98%	70%	130%	92%	80%	120%	98%	70%	130%
Boron	8596453	8596453	8	8	NA	< 5	80%	70%	130%	102%	80%	120%	93%	70%	130%
Boron (Hot Water Soluble)	8596453	8596453	<0.10	<0.10	NA	< 0.10	125%	60%	140%	97%	70%	130%	99%	60%	140%
Cadmium	8596453	8596453	<0.5	<0.5	NA	< 0.5	107%	70%	130%	101%	80%	120%	102%	70%	130%
Chromium	8596453	8596453	23	24	4.3%	< 2	99%	70%	130%	99%	80%	120%	102%	70%	130%
Cobalt	8596453	8596453	7.4	7.7	4.0%	< 0.5	99%	70%	130%	95%	80%	120%	97%	70%	130%
Copper	8596453	8596453	14	14	0.0%	< 1	100%	70%	130%	104%	80%	120%	96%	70%	130%
Lead	8596453	8596453	6	6	0.0%	< 1	106%	70%	130%	102%	80%	120%	95%	70%	130%
Molybdenum	8596453	8596453	<0.5	<0.5	NA	< 0.5	100%	70%	130%	99%	80%	120%	106%	70%	130%
Nickel	8596453	8596453	16	16	0.0%	< 1	107%	70%	130%	101%	80%	120%	100%	70%	130%
Selenium	8596453	8596453	0.6	<0.4	NA	< 0.4	113%	70%	130%	100%	80%	120%	88%	70%	130%
Silver	8596453	8596453	<0.2	<0.2	NA	< 0.2	89%	70%	130%	91%	80%	120%	100%	70%	130%
Thallium	8596453	8596453	<0.4	<0.4	NA	< 0.4	94%	70%	130%	102%	80%	120%	101%	70%	130%
Uranium	8596453	8596453	<0.5	<0.5	NA	< 0.5	105%	70%	130%	105%	80%	120%	102%	70%	130%
Vanadium	8596453	8596453	30	31	3.3%	< 1	93%	70%	130%	88%	80%	120%	93%	70%	130%
Zinc	8596453	8596453	35	35	0.0%	< 5	104%	70%	130%	99%	80%	120%	95%	70%	130%
Chromium VI	8596318		<0.2	<0.2	NA	< 0.2	99%	70%	130%	98%	80%	120%	99%	70%	130%
Cyanide	8591143		<0.040	<0.040	NA	< 0.040	91%	70%	130%	99%	80%	120%	91%	70%	130%
Mercury	8596453	8596453	<0.10	<0.10	NA	< 0.10	99%	70%	130%	96%	80%	120%	97%	70%	130%
Electrical Conductivity	8596453	8596453	0.434	0.435	0.2%	< 0.005	100%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8596453	8596453	1.48	1.53	3.3%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	8588393		7.61	7.67	0.8%	NA	101%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Aug 02, 2017

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	8589118		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	84%	50%	140%	95%	50%	140%
Vinyl Chloride	8589118		< 0.02	< 0.02	NA	< 0.02	86%	50%	140%	92%	50%	140%	92%	50%	140%
Bromomethane	8589118		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	71%	50%	140%	96%	50%	140%
Trichlorofluoromethane	8589118		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	90%	50%	140%	72%	50%	140%
Acetone	8589118		< 0.50	< 0.50	NA	< 0.50	97%	50%	140%	90%	50%	140%	91%	50%	140%
1,1-Dichloroethylene	8589118		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	92%	60%	130%	85%	50%	140%
Methylene Chloride	8589118		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	94%	60%	130%	91%	50%	140%
Trans- 1,2-Dichloroethylene	8589118		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	86%	60%	130%	85%	50%	140%
Methyl tert-butyl Ether	8589118		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	87%	60%	130%	99%	50%	140%
1,1-Dichloroethane	8589118		< 0.02	< 0.02	NA	< 0.02	96%	50%	140%	83%	60%	130%	93%	50%	140%
Methyl Ethyl Ketone	8589118		< 0.50	< 0.50	NA	< 0.50	91%	50%	140%	87%	50%	140%	96%	50%	140%
Cis- 1,2-Dichloroethylene	8589118		< 0.02	< 0.02	NA	< 0.02	91%	50%	140%	90%	60%	130%	91%	50%	140%
Chloroform	8589118		< 0.04	< 0.04	NA	< 0.04	94%	50%	140%	96%	60%	130%	95%	50%	140%
1,2-Dichloroethane	8589118		< 0.03	< 0.03	NA	< 0.03	91%	50%	140%	91%	60%	130%	93%	50%	140%
1,1,1-Trichloroethane	8589118		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	90%	60%	130%	89%	50%	140%
Carbon Tetrachloride	8589118		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	89%	60%	130%	85%	50%	140%
Benzene	8589118		< 0.02	< 0.02	NA	< 0.02	92%	50%	140%	83%	60%	130%	83%	50%	140%
1,2-Dichloropropane	8589118		< 0.03	< 0.03	NA	< 0.03	89%	50%	140%	96%	60%	130%	92%	50%	140%
Trichloroethylene	8589118		< 0.03	< 0.03	NA	< 0.03	81%	50%	140%	83%	60%	130%	80%	50%	140%
Bromodichloromethane	8589118		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	95%	60%	130%	95%	50%	140%
Methyl Isobutyl Ketone	8589118		< 0.50	< 0.50	NA	< 0.50	93%	50%	140%	94%	50%	140%	96%	50%	140%
1,1,2-Trichloroethane	8589118		< 0.04	< 0.04	NA	< 0.04	94%	50%	140%	86%	60%	130%	94%	50%	140%
Toluene	8589118		< 0.02	< 0.02	NA	< 0.02	89%	50%	140%	88%	60%	130%	87%	50%	140%
Dibromochloromethane	8589118		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	100%	60%	130%	96%	50%	140%
Ethylene Dibromide	8589118		< 0.04	< 0.04	NA	< 0.04	87%	50%	140%	93%	60%	130%	84%	50%	140%
Tetrachloroethylene	8589118		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	80%	60%	130%	80%	50%	140%
1,1,1,2-Tetrachloroethane	8589118		< 0.04	< 0.04	NA	< 0.04	85%	50%	140%	95%	60%	130%	84%	50%	140%
Chlorobenzene	8589118		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	91%	60%	130%	83%	50%	140%
Ethylbenzene	8589118		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	98%	60%	130%	90%	50%	140%
m & p-Xylene	8589118		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	73%	60%	130%	75%	50%	140%
Bromoform	8589118		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	98%	60%	130%	96%	50%	140%
Styrene	8589118		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	92%	60%	130%	80%	50%	140%
1,1,2,2-Tetrachloroethane	8589118		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	100%	60%	130%	91%	50%	140%
o-Xylene	8589118		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	82%	60%	130%	80%	50%	140%
1,3-Dichlorobenzene	8589118		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	89%	60%	130%	89%	50%	140%
1,4-Dichlorobenzene	8589118		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	96%	60%	130%	97%	50%	140%
1,2-Dichlorobenzene	8589118		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	85%	60%	130%	95%	50%	140%
1,3-Dichloropropene	8589118		< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	88%	60%	130%	89%	50%	140%
n-Hexane	8589118		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	92%	60%	130%	79%	50%	140%

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Aug 02, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	8593626		< 5	< 5	NA	< 5	75%	60%	130%	86%	85%	115%	83%	70%	130%
F2 (C10 to C16)	8599318		< 10	< 10	NA	< 10	100%	60%	130%	94%	80%	120%	71%	70%	130%
F3 (C16 to C34)	8599318		54	56	NA	< 50	100%	60%	130%	101%	80%	120%	79%	70%	130%
F4 (C34 to C50)	8599318		110	100	NA	< 50	84%	60%	130%	98%	80%	120%	82%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: N Popowkof

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES

AGAT Laboratories

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P &T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T242433

PROJECT: 17-1797

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 17T242433.

Cooler Quantity: 1 layer

Arrival Temperatures: 4.7 | 4.5 | 4.2 | 3.6 | 2.3 | 3.7

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Jessica Yao
Address: 40 Vogell Rd. Unit 57, Richmond Hill
Phone: 905 237 8336 Fax: 905 248 3694
Reports to be sent to:
1. Email: jessica@geoproconsulting.ca
2. Email: bguan@geoproconsulting.ca

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04
Table 1 (Indicate One): ☑ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One): ☒ Coarse ☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ (Indicate One)
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 17-1797
Site Location: 7th Line, Innisfil
Sampled By: Clement
AGAT Quote #: GeoPro PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (exc. Hydrides) ☐ Hydride Metals ☐ 153 Metals (incl. Hydrides))	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☒ EC ☐ FOC ☐ Hg ☐ pH ☒ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☒ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
BH 112 SS2	18/7/17	Am	1	S				X											
BH 121 SS2	20/7/17	Am	1	S				X											
BH 131 SS2	20/7/17	Am	1	S				X											
BH 201 SS2	11/7/17	Am	1	S				X											
BH 202 SS3	11/7/17	Am	1	S				X											
BH 203 SS2	11/7/17	Am	1	S				X											
BH 204 SS2	19/7/17	Am	1	S				X											
BH 205 SS2B	19/7/17	Am	1	S				X											
BH 206 SS2	19/7/17	Am	1	S				X											
BH 304 SS2	20/7/17	Pm	3	S			X					X	X						
BH 305 SS2A	20/7/17	pm	1	S			X												

Samples Relinquished By (Print Name and Sign): Justin Yao	Date: July 24, 17	Time:	Samples Received By (Print Name and Sign):
Samples Relinquished By (Print Name and Sign):	Date: 2017/7/24	Time: 4:32	Samples Received By (Print Name and Sign):
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):

Date: 2017/7/24	Time: 2:15	
Date:	Time:	Page 1 of 2
Date:	Time:	N°: T 055570

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Jessica Yao
Address: 40 Vogell Rd. Unit 57
Richmond Hill
Phone: 905 237 8336 Fax: 905 248 3699
Reports to be sent to:
1. Email: jessica@geoproconsulting.ca
2. Email: bguan@geoproconsulting.ca

Project Information:

Project: 17-1797
Site Location: 7th line, innisfil
Sampled By: Clement
AGAT Quote #: Geo Pro PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 1 *Indicate One*
☑ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☑ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Laboratory Use Only

Work Order #:
Cooler Quantity: 3 jars
Arrival Temperatures: 4.7 | 4.5 | 4.2 / 2.6 | 2.3 | 3.7
Custody Seal Intact: ☐ Yes ☐ No ☑ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y/N	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (incl. Hydrides))	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☒ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
BH 306 SS2	20/7/17	PM	3	S			X					X	X					

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
[signature]	Jul 20, 17		[signature]	20/7/17	2:15
[signature]	2017/7/20	4:30			

Page 2 of 2
N°: T 055567

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD
40 VOGELL ROAD UNIT 25-27
RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797G

AGAT WORK ORDER: 17T240892

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jul 28, 2017

PAGES (INCLUDING COVER): 14

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2017-07-17

DATE REPORTED: 2017-07-28

		SAMPLE DESCRIPTION:		BH301 SS3	BH302 SS2	BH303 SS3
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2017-07-11	2017-07-11	2017-07-11
Parameter	Unit	G / S	RDL	8585455	8585468	8585470
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2	2
Barium	µg/g	220	2	84	44	60
Beryllium	µg/g	2.5	0.5	0.5	<0.5	<0.5
Boron	µg/g	36	5	6	6	8
Boron (Hot Water Soluble)	µg/g	NA	0.10	0.20	0.13	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	70	2	24	12	14
Cobalt	µg/g	21	0.5	6.0	4.6	5.4
Copper	µg/g	92	1	8	9	10
Lead	µg/g	120	1	8	5	4
Molybdenum	µg/g	2	0.5	0.5	<0.5	<0.5
Nickel	µg/g	82	1	11	10	13
Selenium	µg/g	1.5	0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	86	1	34	23	23
Zinc	µg/g	290	5	34	33	24
Chromium VI	µg/g	0.66	0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	0.15	<0.10	<0.10
Electrical Conductivity	mS/cm	0.57	0.005	1.32	1.59	1.23
Sodium Adsorption Ratio	NA	2.4	NA	13.5	25.1	18.5
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.76	8.02	8.05

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

8585455-8585470 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-07-17

DATE REPORTED: 2017-07-28

		SAMPLE DESCRIPTION:		BH201 SS2	BH203 SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-11	2017-07-11
Parameter	Unit	G / S	RDL	8585474	8585475
Electrical Conductivity	mS/cm	0.57	0.005	0.769	0.879
Sodium Adsorption Ratio	NA	2.4	NA	11.7	7.35

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

8585474-8585475 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2017-07-17

DATE REPORTED: 2017-07-28

		SAMPLE DESCRIPTION:		BH301 SS2	BH303 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-11	2017-07-11
Parameter	Unit	G / S	RDL	8585467	8585472
F1 (C6 to C10)	µg/g	25	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	<5
F2 (C10 to C16)	µg/g	10	10	<10	<10
F3 (C16 to C34)	µg/g	240	50	130	<50
F4 (C34 to C50)	µg/g	120	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	NA
Moisture Content	%		0.1	22.9	13.1
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		99	107

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

8585467-8585472 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By: 

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Certificate of Analysis

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-17

DATE REPORTED: 2017-07-28

		SAMPLE DESCRIPTION:		BH301 SS2	BH303 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-11	2017-07-11
Parameter	Unit	G / S	RDL	8585467	8585472
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.02	<0.02	<0.02
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By: NPopnikolof

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Certificate of Analysis

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-17

DATE REPORTED: 2017-07-28

		SAMPLE DESCRIPTION:		BH301 SS2	BH303 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-11	2017-07-11
Parameter	Unit	G / S	RDL	8585467	8585472
Bromoform	ug/g	0.05	0.05	<0.05	<0.05
Styrene	ug/g	0.05	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		87	84
4-Bromofluorobenzene	% Recovery	50-140		92	89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

8585467-8585472 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By: N Popnikolof

AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

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http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8585455	BH301 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	1.32
8585455	BH301 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	13.5
8585468	BH302 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	1.59
8585468	BH302 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	25.1
8585470	BH303 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	1.23
8585470	BH303 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	18.5
8585474	BH201 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.769
8585474	BH201 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	11.7
8585475	BH203 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.879
8585475	BH203 SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.35

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

Soil Analysis

RPT Date: Jul 28, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	8568725		<0.8	<0.8	NA	< 0.8	106%	70%	130%	97%	80%	120%	99%	70%	130%
Arsenic	8568725		4	4	NA	< 1	113%	70%	130%	103%	80%	120%	99%	70%	130%
Barium	8568725		58	59	1.7%	< 2	101%	70%	130%	95%	80%	120%	103%	70%	130%
Beryllium	8568725		<0.5	<0.5	NA	< 0.5	98%	70%	130%	96%	80%	120%	95%	70%	130%
Boron	8568725		8	9	NA	< 5	87%	70%	130%	115%	80%	120%	103%	70%	130%
Boron (Hot Water Soluble)	8585734		<0.10	<0.10	NA	< 0.10	103%	60%	140%	89%	70%	130%	93%	60%	140%
Cadmium	8568725		<0.5	<0.5	NA	< 0.5	101%	70%	130%	101%	80%	120%	97%	70%	130%
Chromium	8568725		15	15	0.0%	< 2	93%	70%	130%	104%	80%	120%	96%	70%	130%
Cobalt	8568725		7.5	7.4	1.3%	< 0.5	99%	70%	130%	101%	80%	120%	91%	70%	130%
Copper	8568725		21	21	0.0%	< 1	102%	70%	130%	112%	80%	120%	98%	70%	130%
Lead	8568725		20	20	0.0%	< 1	108%	70%	130%	103%	80%	120%	95%	70%	130%
Molybdenum	8568725		0.6	<0.5	NA	< 0.5	113%	70%	130%	110%	80%	120%	107%	70%	130%
Nickel	8568725		18	17	5.7%	< 1	110%	70%	130%	109%	80%	120%	94%	70%	130%
Selenium	8568725		<0.4	<0.4	NA	< 0.4	81%	70%	130%	95%	80%	120%	90%	70%	130%
Silver	8568725		<0.2	<0.2	NA	< 0.2	101%	70%	130%	96%	80%	120%	88%	70%	130%
Thallium	8568725		<0.4	<0.4	NA	< 0.4	93%	70%	130%	100%	80%	120%	94%	70%	130%
Uranium	8568725		0.7	0.6	NA	< 0.5	103%	70%	130%	102%	80%	120%	101%	70%	130%
Vanadium	8568725		23	24	4.3%	< 1	106%	70%	130%	107%	80%	120%	100%	70%	130%
Zinc	8568725		87	69	23.1%	< 5	100%	70%	130%	114%	80%	120%	122%	70%	130%
Chromium VI	8584165		<0.2	<0.2	NA	< 0.2	95%	70%	130%	100%	80%	120%	98%	70%	130%
Cyanide	8580947		<0.040	<0.040	NA	< 0.040	91%	70%	130%	105%	80%	120%	108%	70%	130%
Mercury	8568725		<0.10	<0.10	NA	< 0.10	103%	70%	130%	96%	80%	120%	91%	70%	130%
Electrical Conductivity	8586500		0.247	0.237	4.1%	< 0.005	98%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8571668		2.86	3.03	5.8%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	8584490		8.58	8.66	0.9%	NA	101%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD
AGAT WORK ORDER: 17T240892
PROJECT: 17-1797G
ATTENTION TO: Bujing Guan
SAMPLING SITE:
SAMPLED BY:Mahboob

Trace Organics Analysis

RPT Date: Jul 28, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	8584664		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	87%	50%	140%	90%	50%	140%
Vinyl Chloride	8584664		< 0.02	< 0.02	NA	< 0.02	94%	50%	140%	97%	50%	140%	77%	50%	140%
Bromomethane	8584664		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	81%	50%	140%	78%	50%	140%
Trichlorofluoromethane	8584664		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	82%	50%	140%	90%	50%	140%
Acetone	8584664		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	93%	50%	140%	92%	50%	140%
1,1-Dichloroethylene	8584664		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	95%	60%	130%	80%	50%	140%
Methylene Chloride	8584664		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	90%	60%	130%	84%	50%	140%
Trans- 1,2-Dichloroethylene	8584664		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	81%	60%	130%	95%	50%	140%
Methyl tert-butyl Ether	8584664		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	97%	60%	130%	84%	50%	140%
1,1-Dichloroethane	8584664		< 0.02	< 0.02	NA	< 0.02	91%	50%	140%	79%	60%	130%	83%	50%	140%
Methyl Ethyl Ketone	8584664		< 0.50	< 0.50	NA	< 0.50	88%	50%	140%	89%	50%	140%	92%	50%	140%
Cis- 1,2-Dichloroethylene	8584664		< 0.02	< 0.02	NA	< 0.02	99%	50%	140%	98%	60%	130%	98%	50%	140%
Chloroform	8584664		< 0.04	< 0.04	NA	< 0.04	88%	50%	140%	92%	60%	130%	96%	50%	140%
1,2-Dichloroethane	8584664		< 0.03	< 0.03	NA	< 0.03	90%	50%	140%	93%	60%	130%	92%	50%	140%
1,1,1-Trichloroethane	8584664		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	98%	60%	130%	82%	50%	140%
Carbon Tetrachloride	8584664		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	92%	60%	130%	85%	50%	140%
Benzene	8584664		< 0.02	< 0.02	NA	< 0.02	97%	50%	140%	98%	60%	130%	80%	50%	140%
1,2-Dichloropropane	8584664		< 0.03	< 0.03	NA	< 0.03	93%	50%	140%	97%	60%	130%	89%	50%	140%
Trichloroethylene	8584664		< 0.03	< 0.03	NA	< 0.03	92%	50%	140%	86%	60%	130%	86%	50%	140%
Bromodichloromethane	8584664		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	82%	60%	130%	92%	50%	140%
Methyl Isobutyl Ketone	8584664		< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	98%	50%	140%	91%	50%	140%
1,1,2-Trichloroethane	8584664		< 0.04	< 0.04	NA	< 0.04	97%	50%	140%	83%	60%	130%	90%	50%	140%
Toluene	8584664		< 0.02	< 0.02	NA	< 0.02	96%	50%	140%	89%	60%	130%	81%	50%	140%
Dibromochloromethane	8584664		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	99%	60%	130%	91%	50%	140%
Ethylene Dibromide	8584664		< 0.04	< 0.04	NA	< 0.04	96%	50%	140%	84%	60%	130%	93%	50%	140%
Tetrachloroethylene	8584664		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	95%	60%	130%	93%	50%	140%
1,1,1,2-Tetrachloroethane	8584664		< 0.04	< 0.04	NA	< 0.04	96%	50%	140%	98%	60%	130%	85%	50%	140%
Chlorobenzene	8584664		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	90%	60%	130%	82%	50%	140%
Ethylbenzene	8584664		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	95%	60%	130%	89%	50%	140%
m & p-Xylene	8584664		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	75%	60%	130%	73%	50%	140%
Bromoform	8584664		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	84%	60%	130%	93%	50%	140%
Styrene	8584664		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	91%	60%	130%	89%	50%	140%
1,1,2,2-Tetrachloroethane	8584664		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	84%	60%	130%	91%	50%	140%
o-Xylene	8584664		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	81%	60%	130%	89%	50%	140%
1,3-Dichlorobenzene	8584664		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	86%	60%	130%	85%	50%	140%
1,4-Dichlorobenzene	8584664		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	98%	60%	130%	91%	50%	140%
1,2-Dichlorobenzene	8584664		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	91%	60%	130%	82%	50%	140%
1,3-Dichloropropene	8584664		< 0.04	< 0.04	NA	< 0.04	82%	50%	140%	84%	60%	130%	91%	50%	140%
n-Hexane	8584664		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	81%	60%	130%	85%	50%	140%

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

Trace Organics Analysis (Continued)

RPT Date: Jul 28, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	8582484		< 5	< 5	NA	< 5	71%	60%	130%	87%	85%	115%	77%	70%	130%
F2 (C10 to C16)	8581586		< 10	< 10	NA	< 10	116%	60%	130%	94%	80%	120%	84%	70%	130%
F3 (C16 to C34)	8581586		< 50	< 50	NA	< 50	116%	60%	130%	101%	80%	120%	80%	70%	130%
F4 (C34 to C50)	8581586		< 50	< 50	NA	< 50	105%	60%	130%	98%	80%	120%	92%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: N Popowkof

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P &T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T240892

PROJECT: 17-1797G

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Mahboob

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

AGAT Laboratories
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webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 17T240892

Cooler Quantity: ~~4~~ Nil

Arrival Temperatures:

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Jessica
Address: Unit 57, 40 Vogel Rd, Richmond Hill, Ontario
Phone: 905-237-8336 Fax: 905-241-3629
Reports to be sent to:
1. Email: hguan@geoproconsulting.ca
2. Email: jessica@geoproconsulting.ca

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☐ Regulation 153/04
Table / *Indicate One*
☐ Ind/Com
☑ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 17-1797G
Site Location: Innisfil, Ontario
Sampled By: Mahboob
AGAT Quote #: GeoPro PO:
Please note: If quotation number is not provided, client will be billed full price for analysis

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	Metals and Inorganics	O. Reg 153: All Metals ☐ 153 Metals (excl. Hydrides)	Hydride Metals ☐ 153 Metals (incl. Hydrides)	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☑ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	EC and SAR
BH301 SS3	20170711	am	1	Soil			✓														
BH 301 SS2	20170711	am	2											✓	✓						
BH 302 SS2	20170711	am	1				✓														
BH 303 SS3	20170711	pm	1				✓														
BH 303 SS2	20170711	pm	2											✓	✓						
BH 201 SS2	20170711	pm	1																	✓	
BH 203 SS3	20170711	pm	1																	✓	
~~20170711~~																					

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Jessica Guo	Jul 7, 17		[illegible]	2017	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 1 of 1

N°: T 055568

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CLIENT NAME: GEOPRO CONSULTING LTD
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RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797 GH

AGAT WORK ORDER: 17T244333

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Aug 10, 2017

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

Parameter	Unit	G / S	RDL	BH307 SS2&SS3 Soil 2017-07-24 8606729	BH308 SS2 Soil 2017-07-24 8606732	BH309 SS2 Soil 2017-07-25 8606733	BH310 SS2&SS3 Soil 2017-07-26 8606736	BH311 SS2 Soil 2017-07-26 8606737	BH312 SS2&SS3 Soil 2017-07-27 8606740	BH313 SS2 Soil 2017-07-27 8606741	BH314 SS2 Soil 2017-07-26 8606745
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	1	<1	1	<1	<1	1	<1
Barium	µg/g	220	2	18	50	21	51	24	26	87	17
Beryllium	µg/g	2.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	36	5	5	8	<5	6	<5	<5	11	<5
Boron (Hot Water Soluble)	µg/g	NA	0.10	<0.10	0.22	<0.10	0.29	<0.10	<0.10	0.12	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	70	2	6	12	10	12	8	9	17	6
Cobalt	µg/g	21	0.5	2.8	5.0	3.3	3.3	2.2	2.7	6.4	1.9
Copper	µg/g	92	1	5	5	4	5	3	5	10	3
Lead	µg/g	120	1	3	7	2	3	2	2	6	2
Molybdenum	µg/g	2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Nickel	µg/g	82	1	3	6	2	5	3	3	9	2
Selenium	µg/g	1.5	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	86	1	14	25	34	24	17	18	33	15
Zinc	µg/g	290	5	17	39	14	26	12	13	33	9
Chromium VI	µg/g	0.66	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	0.18	0.11	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.57	0.005	0.649	1.19	0.658	0.724	0.286	0.281	0.767	0.219
Sodium Adsorption Ratio	NA	2.4	NA	8.57	20.9	10.6	5.09	5.36	2.67	15.5	3.58
pH, 2:1 CaCl2 Extraction	pH Units		NA	8.03	7.81	7.91	7.53	7.75	7.76	7.84	7.83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8606729-8606745 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By: Amanjot Bhela

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AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

		SAMPLE DESCRIPTION:		BH210 SS2	BH211 SS2	BH212 SS2	BH213 SS2	BH214 SS2	BH142 SS2	BH151 SS2	BH162 SS2
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-07-26	2017-07-26	2017-07-26	2017-07-27	2017-07-26	2017-07-26	2017-07-26	2017-07-27
Parameter	Unit	G / S	RDL	8606748	8606750	8606751	8606752	8606753	8606754	8606755	8606756
Electrical Conductivity	mS/cm	0.57	0.005	0.759	0.806	0.448	0.769	0.275	0.454	0.375	0.407
Sodium Adsorption Ratio	NA	2.4	NA	10.9	11.1	7.00	11.6	5.23	7.94	2.44	10.3

		SAMPLE DESCRIPTION:		BH171 SS2	BH501 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2017-07-26	2017-07-25
Parameter	Unit	G / S	RDL	8606757	8606758
Electrical Conductivity	mS/cm	0.57	0.005	0.156	3.3
Sodium Adsorption Ratio	NA	2.4	NA	3.45	16.6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8606748-8606758 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).

Certified By: Amanjot Bhela

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AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

Parameter	Unit	G / S	RDL	BH307 SS2&SS3 Soil 2017-07-24 8606729	BH309 SS2 Soil 2017-07-25 8606733	BH311 SS2 Soil 2017-07-26 8606737	BH313 SS2 Soil 2017-07-27 8606741	BH314 SS2 Soil 2017-07-26 8606745
F1 (C6 to C10)	µg/g	25	5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	NA	NA	NA	NA
Moisture Content	%		0.1	2.2	5.2	11.4	14.8	10.0
Surrogate	**Unit**	**Acceptable Limits**						
Terphenyl	%	60-140		115	99	119	109	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8606729-8606745 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:

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AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

SAMPLE DESCRIPTION:				BH307 SS2&SS3	BH309 SS2	BH311 SS2	BH313 SS2	BH314 SS2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-07-24	2017-07-25	2017-07-26	2017-07-27	2017-07-26
Parameter	Unit	G / S	RDL	8606729	8606733	8606737	8606741	8606745
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.02	<0.02	<0.02	0.46	0.07	<0.02
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

SAMPLE DESCRIPTION:				BH307 SS2&SS3	BH309 SS2	BH311 SS2	BH313 SS2	BH314 SS2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-07-24	2017-07-25	2017-07-26	2017-07-27	2017-07-26
Parameter	Unit	G / S	RDL	8606729	8606733	8606737	8606741	8606745
m & p-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits						
Toluene-d8	% Recovery	50-140		92	99	98	99	98
4-Bromofluorobenzene	% Recovery	50-140		76	81	76	78	76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8606729-8606745 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

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CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8606729	BH307 SS2&SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	0.649
8606729	BH307 SS2&SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	8.57
8606732	BH308 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	1.19
8606732	BH308 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	20.9
8606733	BH309 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	0.658
8606733	BH309 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	10.6
8606736	BH310 SS2&SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	0.724
8606736	BH310 SS2&SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	5.09
8606737	BH311 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	5.36
8606737	BH311 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - VOCs (Soil)	Toluene	ug/g	0.2	0.46
8606740	BH312 SS2&SS3	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	2.67
8606741	BH313 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.57	0.767
8606741	BH313 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	15.5
8606745	BH314 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	2.4	3.58
8606748	BH210 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.759
8606748	BH210 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	10.9
8606750	BH211 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.806
8606750	BH211 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	11.1
8606751	BH212 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.00
8606752	BH213 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	0.769
8606752	BH213 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	11.6
8606753	BH214 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	5.23
8606754	BH142 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	7.94
8606755	BH151 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	2.44
8606756	BH162 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	10.3
8606757	BH171 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	3.45
8606758	BH501 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.57	3.3
8606758	BH501 SS2	ON T1 S RPI/ICC	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	2.4	16.6

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

Soil Analysis

RPT Date: Aug 10, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	8606732	8606732	<0.8	<0.8	NA	< 0.8	111%	70%	130%	101%	80%	120%	88%	70%	130%
Arsenic	8606732	8606732	1	1	NA	< 1	107%	70%	130%	92%	80%	120%	94%	70%	130%
Barium	8606732	8606732	50	49	2.0%	< 2	99%	70%	130%	105%	80%	120%	95%	70%	130%
Beryllium	8606732	8606732	<0.5	<0.5	NA	< 0.5	99%	70%	130%	95%	80%	120%	94%	70%	130%
Boron	8606732	8606732	8	9	NA	< 5	94%	70%	130%	109%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	8606732	8606732	0.22	0.26	NA	< 0.10	98%	60%	140%	97%	70%	130%	100%	60%	140%
Cadmium	8606732	8606732	<0.5	<0.5	NA	< 0.5	111%	70%	130%	101%	80%	120%	100%	70%	130%
Chromium	8606732	8606732	12	13	8.0%	< 2	104%	70%	130%	100%	80%	120%	97%	70%	130%
Cobalt	8606732	8606732	5.0	5.2	3.9%	< 0.5	110%	70%	130%	103%	80%	120%	102%	70%	130%
Copper	8606732	8606732	5	5	0.0%	< 1	96%	70%	130%	100%	80%	120%	92%	70%	130%
Lead	8606732	8606732	7	7	0.0%	< 1	106%	70%	130%	101%	80%	120%	92%	70%	130%
Molybdenum	8606732	8606732	<0.5	<0.5	NA	< 0.5	112%	70%	130%	111%	80%	120%	119%	70%	130%
Nickel	8606732	8606732	6	7	15.4%	< 1	102%	70%	130%	96%	80%	120%	92%	70%	130%
Selenium	8606732	8606732	<0.4	<0.4	NA	< 0.4	112%	70%	130%	96%	80%	120%	98%	70%	130%
Silver	8606732	8606732	<0.2	<0.2	NA	< 0.2	80%	70%	130%	92%	80%	120%	93%	70%	130%
Thallium	8606732	8606732	<0.4	<0.4	NA	< 0.4	103%	70%	130%	105%	80%	120%	99%	70%	130%
Uranium	8606732	8606732	<0.5	<0.5	NA	< 0.5	111%	70%	130%	103%	80%	120%	103%	70%	130%
Vanadium	8606732	8606732	25	26	3.9%	< 1	116%	70%	130%	100%	80%	120%	105%	70%	130%
Zinc	8606732	8606732	39	39	0.0%	< 5	106%	70%	130%	101%	80%	120%	107%	70%	130%
Chromium VI	8606338		<0.2	<0.2	NA	< 0.2	95%	70%	130%	100%	80%	120%	99%	70%	130%
Cyanide	8607661		<0.040	<0.040	NA	< 0.040	91%	70%	130%	97%	80%	120%	100%	70%	130%
Mercury	8606732	8606732	0.18	0.13	NA	< 0.10	111%	70%	130%	99%	80%	120%	98%	70%	130%
Electrical Conductivity	8606233		0.131	0.132	0.8%	< 0.005	98%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8606732	8606732	20.9	24.1	14.2%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	8606733	8606733	7.91	7.94	0.4%	NA	100%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD
PROJECT: 17-1797 GH
SAMPLING SITE:

AGAT WORK ORDER: 17T244333
ATTENTION TO: Bujing Guan
SAMPLED BY:Clement Chan, John Jung

Trace Organics Analysis

RPT Date: Aug 10, 2017

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	8606421		< 5	< 5	NA	< 5	98%	60%	130%	99%	85%	115%	92%	70%	130%
F2 (C10 to C16)	8494889		< 10	< 10	NA	< 10	104%	60%	130%	90%	80%	120%	78%	70%	130%
F3 (C16 to C34)	8494889		< 50	< 50	NA	< 50	112%	60%	130%	102%	80%	120%	83%	70%	130%
F4 (C34 to C50)	8494889		< 50	< 50	NA	< 50	104%	60%	130%	96%	80%	120%	103%	70%	130%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	8602373		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	97%	50%	140%	95%	50%	140%
Vinyl Chloride	8602373		< 0.02	< 0.02	NA	< 0.02	91%	50%	140%	92%	50%	140%	97%	50%	140%
Bromomethane	8602373		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	82%	50%	140%	97%	50%	140%
Trichlorofluoromethane	8602373		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	94%	50%	140%	91%	50%	140%
Acetone	8602373		< 0.50	< 0.50	NA	< 0.50	82%	50%	140%	89%	50%	140%	82%	50%	140%
1,1-Dichloroethylene	8602373		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	93%	60%	130%	77%	50%	140%
Methylene Chloride	8602373		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	88%	60%	130%	89%	50%	140%
Trans- 1,2-Dichloroethylene	8602373		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	98%	60%	130%	85%	50%	140%
Methyl tert-butyl Ether	8602373		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	60%	130%	92%	50%	140%
1,1-Dichloroethane	8602373		< 0.02	< 0.02	NA	< 0.02	100%	50%	140%	87%	60%	130%	92%	50%	140%
Methyl Ethyl Ketone	8602373		< 0.50	< 0.50	NA	< 0.50	93%	50%	140%	96%	50%	140%	93%	50%	140%
Cis- 1,2-Dichloroethylene	8602373		< 0.02	< 0.02	NA	< 0.02	88%	50%	140%	98%	60%	130%	99%	50%	140%
Chloroform	8602373		< 0.04	< 0.04	NA	< 0.04	81%	50%	140%	97%	60%	130%	86%	50%	140%
1,2-Dichloroethane	8602373		< 0.03	< 0.03	NA	< 0.03	96%	50%	140%	96%	60%	130%	84%	50%	140%
1,1,1-Trichloroethane	8602373		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	81%	60%	130%	90%	50%	140%
Carbon Tetrachloride	8602373		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	91%	60%	130%	93%	50%	140%
Benzene	8602373		< 0.02	< 0.02	NA	< 0.02	84%	50%	140%	86%	60%	130%	90%	50%	140%
1,2-Dichloropropane	8602373		< 0.03	< 0.03	NA	< 0.03	88%	50%	140%	95%	60%	130%	88%	50%	140%
Trichloroethylene	8602373		< 0.03	< 0.03	NA	< 0.03	86%	50%	140%	99%	60%	130%	99%	50%	140%
Bromodichloromethane	8602373		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	91%	60%	130%	89%	50%	140%
Methyl Isobutyl Ketone	8602373		< 0.50	< 0.50	NA	< 0.50	88%	50%	140%	93%	50%	140%	88%	50%	140%
1,1,2-Trichloroethane	8602373		< 0.04	< 0.04	NA	< 0.04	85%	50%	140%	94%	60%	130%	89%	50%	140%
Toluene	8602373		< 0.02	< 0.02	NA	< 0.02	95%	50%	140%	89%	60%	130%	82%	50%	140%
Dibromochloromethane	8602373		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	95%	60%	130%	85%	50%	140%
Ethylene Dibromide	8602373		< 0.04	< 0.04	NA	< 0.04	95%	50%	140%	88%	60%	130%	94%	50%	140%
Tetrachloroethylene	8602373		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	81%	60%	130%	81%	50%	140%
1,1,1,2-Tetrachloroethane	8602373		< 0.04	< 0.04	NA	< 0.04	93%	50%	140%	89%	60%	130%	86%	50%	140%
Chlorobenzene	8602373		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	89%	60%	130%	87%	50%	140%
Ethylbenzene	8602373		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	92%	60%	130%	90%	50%	140%
m & p-Xylene	8602373		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	75%	60%	130%	79%	50%	140%
Bromoform	8602373		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	83%	50%	140%
Styrene	8602373		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	85%	60%	130%	91%	50%	140%
1,1,2,2-Tetrachloroethane	8602373		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	99%	60%	130%	87%	50%	140%
o-Xylene	8602373		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	81%	60%	130%	87%	50%	140%

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Quality Assurance

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AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

Trace Organics Analysis (Continued)

RPT Date: Aug 10, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,3-Dichlorobenzene	8602373		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	84%	60%	130%	96%	50%	140%
1,4-Dichlorobenzene	8602373		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	98%	60%	130%	96%	50%	140%
1,2-Dichlorobenzene	8602373		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	85%	60%	130%	89%	50%	140%
1,3-Dichloropropene	8602373		< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	98%	60%	130%	92%	50%	140%
n-Hexane	8602373		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	89%	60%	130%	87%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

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SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P &T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244333

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:Clement Chan, John Jung

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

AGAT Laboratories

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Mississauga, Ontario L4Z 1Y2
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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17T944333

Cooler Quantity: 1 cooler

Arrival Temperatures: 4.5 4.8 4.1 / 3.5 3.3 3.1

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Bujing Guan
Address: 40 Vogell Road, unit 17
Richmond Hill
Phone: 905-237-8336 Fax: 905-248-3699
Reports to be sent to:
1. Email: bguan@geoproconsulting.ca
2. Email: jessica@geoproconsulting.ca

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 1 (Indicate One)
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☑ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report **Guideline on Certificate of Analysis** ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 17-1797 GH
Site Location: 7th Line, Town of Innisfil
Sampled By: Clement Chan, John Jung
AGAT Quote #: GeoPro PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☑ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☑ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
BH307 SS2 & SS3	20170724	AM	3	S			✓						✓	✓							
BH308 SS2	20170724	AM	1	S			✓														
BH309 SS2	20170725	AM	3	S			✓						✓	✓							
BH310 SS2 & SS3	20170726	AM	1	S			✓														
BH311 SS2	20170726	AM	3	S			✓						✓	✓							
BH312 SS2 & SS3	20170727	AM	1	S			✓														
BH313 SS2	20170727	AM	3	S			✓						✓	✓							
BH314 SS2	20170726	AM	3	S			✓						✓	✓							
BH210 SS2	20170726	AM	1	S							✓										
BH211 SS2	20170726	AM	1	S							✓										
BH212 SS2	20170726	AM	1	S							✓										

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
[signature]	31/07/2017		[signature]	2017/7/31	17:05
[signature]	2017/7/31	24:15			

Page 1 of 2

Nº: T 030813

Document ID: DIS-78-1511.011

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Date Issued: Feb 18, 2016

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: GeoPro Consulting Ltd
Contact: Bujing Guan
Address: 40 Vogell Road, Unit 57
Richmond Hill
Phone: 905-237-8336 Fax: 905-248-3699
Reports to be sent to:
1. Email: bguan@geoproconsulting.ca
2. Email: jessica@geoproconsulting.ca

Project Information:

Project: 17-1797 GH
Site Location: 7th Line, Town of Innisfil
Sampled By: Erika Wang, Clement Chan, John Jung
AGAT Quote #: GeoPro PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 1 *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☑ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Laboratory Use Only

Work Order #: [redacted]
Cooler Quantity: 1 cooler
Arrival Temperatures: 4.5 4.2 4.1 / 3.5 3.3 3.1
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ Total N ☐ pH ☑ SAR ☐ NO_3/NO_2	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
BH213 SS2	20170727	AM	1	S							✓									
BH214 SS2	20170726	AM	1	S							✓									
BH142 SS2	20170726	AM	1	S							✓									
BH151 SS2	20170726	AM	1	S							✓									
BH162 SS2	20170727	PM	1	S							✓									
BH171 SS2	20170726	PM	1	S							✓									
BH501 SS2	20170725	PM	1	S							✓									

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
[signature]	31/07/2017		[signature]	2017/7/31	12:05
[signature]	2017/7/31				

Page 2 of 2
Nº: T 030804

Document ID: DIV 78-1511 011

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APPENDIX F

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEOPRO CONSULTING LTD
40 VOGELL ROAD UNIT 25-27
RICHMOND HILL, ON L4B3N6
(905) 237-8336

ATTENTION TO: Bujing Guan

PROJECT: 17-1797 GH

AGAT WORK ORDER: 17T244334

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Aug 10, 2017

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17T244334

PROJECT: 17-1797 GH

CLIENT NAME: GEOPRO CONSULTING LTD

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Corrosivity Package

DATE RECEIVED: 2017-07-31

DATE REPORTED: 2017-08-10

		SAMPLE DESCRIPTION:		BH207 SS3	BH210 SS5	BH211 SS3	BH213 SS3	BH309 SS5	BH310 SS5
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-07-24	2017-07-24	2017-07-24	2017-07-24	2017-07-24	2017-07-24
Parameter	Unit	G / S	RDL	8606777	8606791	8606793	8606796	8606798	8606802
Sulfide (S2-)	%		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Chloride (2:1)	µg/g		2	41	12	295	148	15	15
Sulphate (2:1)	µg/g		2	5	4	64	4	4	17
pH (2:1)	pH Units		NA	9.11	9.03	8.28	8.31	8.90	9.29
Electrical Conductivity (2:1)	mS/cm		0.005	0.138	0.087	0.632	0.347	0.110	0.097
Resistivity (2:1)	ohm.cm		1	7250	11500	1580	2880	9090	10300
Redox Potential (2:1)	mV		5	197	191	197	192	178	157

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8606777-8606802 EC/Resistivity, pH, Chloride, Sulphate and Redox Potential were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

*Sulphide analyzed at AGAT 5623 McAdam

Certified By: Amanjot Bhela

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244334

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Aug 10, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Corrosivity Package															
Sulfide (S2-)	8606802	8606802	0.05	<0.05	NA	< 0.05	98%	80%	120%						
Chloride (2:1)	8606777	8606777	41	46	11.4%	< 2	93%	80%	120%	99%	80%	120%	100%	70%	130%
Sulphate (2:1)	8606777	8606777	5	5	NA	< 2	98%	80%	120%	103%	80%	120%	103%	70%	130%
pH (2:1)	8606777	8606777	9.11	9.04	0.8%	NA	100%	90%	110%	NA			NA		
Electrical Conductivity (2:1)	8606777	8606777	0.138	0.151	9.0%	< 0.005	98%	90%	110%	NA			NA		
Redox Potential (2:1)	8606777	8606777	197	198	0.5%	< 5	107%	70%	130%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GEOPRO CONSULTING LTD

AGAT WORK ORDER: 17T244334

PROJECT: 17-1797 GH

ATTENTION TO: Bujing Guan

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Sulfide (S2-)	MIN-200-12025	ASTM E1915-09	GRAVIMETRIC
Chloride (2:1)	INOR-93-6004	McKeague 4.12 & SM 4110 B	ION CHROMATOGRAPH
Sulphate (2:1)	INOR-93-6004	McKeague 4.12 & SM 4110 B	ION CHROMATOGRAPH
pH (2:1)	INOR 93-6031	MSA part 3 & SM 4500-H+ B	PH METER
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Resistivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B,SSA #5 Part 3	CALCULATION
Redox Potential (2:1)		McKeague 4.12 & SM 2510 B	REDOX POTENTIAL ELECTRODE

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17T244334

Cooler Quantity: 1 cm

Arrival Temperatures: 4.5 4.8 4.1 / 3.5 3.3 3.1

Custody Seal Intact: ☐ Yes ☐ No ☑ N/A

Notes:

Report Information:

Company: GeoPro Consulting Ltd.
Contact: Bujing Guan
Address: 40 Vogell Road, Unit 57
Richmond Hill
Phone: 905-237-8336 Fax: 905-248-3699
Reports to be sent to:
1. Email: bguan@geoproconsulting.ca
2. Email: jessica@geoproconsulting.ca

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 1 (Indicate One)
☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One): ☑ Coarse ☐ Fine

☐ Sewer Use
☐ Sanitary ☐ Storm
Region _____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 17-1797 GH
Site Location: 7th Line, Town of Innisfil
Sampled By: Clement Chan
AGAT Quote #: GeoPro PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Corrosivity
BH207 SS3	20170724	AM	1	S																	✓
BH210 SS5	20170726	AM	1	S																	✓
BH211 SS3	20170726	AM	1	S																	✓
BH213 SS3	20170727	AM	1	S																	✓
BH309 SS5	20170725	AM	1	S																	✓
BH310 SS5	20170726	AM	1	S																	✓

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
[signature]	31/07/2017		[signature]	2017/7/3	12:50
[signature]	2017/7/31	2:15			

Page 1 of 1

№: T 030805

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LIMITATIONS TO THE REPORT

This report is intended for the Client named and Town of Innisfil only. The report is prepared based on the work has been undertaken in accordance with normally accepted geotechnical engineering practices in Ontario.

The comments and recommendations given in this report are based on information determined at the limited number of the test hole and test pit locations. The boundaries between the various strata as shown on the borehole logs are based on non-continuous sampling and represent an inferred transition between the various strata and their lateral continuation rather than a precise plane of geological change. Subsurface and groundwater conditions between and beyond the test holes and test pits may differ significantly from those encountered at the test hole and test pit locations. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole and test pit locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The report reflects our best judgment based on the information available to GeoPro Consulting Limited at the time of preparation. Unless otherwise agreed in writing by GeoPro Consulting Limited, it shall not be used to express or imply warranty as to any other purposes. No portion of this report shall be used as a separate entity, it is written to be read in its entirety. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated.

The design recommendations given in this report are applicable only to the project designed and constructed completely in accordance with the details stated in this report. Otherwise, our responsibility is limited to interpreting the subsurface information at the borehole or test pit locations.

Should any comments and recommendations provided in this report be made on any construction related issues, they are intended only for the guidance of the designers. The number of test holes and test pits may not be sufficient to determine all the factors that may affect construction activities, methods and costs. Such as, the thickness of surficial topsoil or fill layers may vary significantly and unpredictably; the amount of the cobbles and boulders may vary significantly than what described in the report; unexpected water bearing zones/layers with various thickness and extent may be encountered in the fill and native soils. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and make their own conclusions as to how the subsurface conditions may affect their work and determine the proper construction methods.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GeoPro Consulting Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

Project: 17-1797G-02 June 1, 2018

CLIENT: Ainley Group
ADDRESS: 550 Welham Road, Barrie, ON L4N 8Z7

Attention: Steve Fournier, P.Eng., Senior Engineer

Email: fournier@ainleygroup.com

Re: Addendum to Geotechnical Investigation Report "7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil"

Dear Sirs,

As per your request, GeoPro Consulting limited (GeoPro) conducted a traffic data analysis and pavement structure design for the road reconstruction on the 7th Line within the project limits.

This Addendum should be read together with GeoPro Report No. 17-1797G: "Geotechnical Investigation – 7th Line Widening and Improvements Between 20th Sideroad and Lake Simcoe, Town of Innisfil, Ontario" dated January 15, 2018.

Considering a larger truck percentage during the initial subdivision build out period, this addendum is to provide a pavement structure design for the 7th Line reconstruction based on the provided traffic data including truck percentage and AADT values from the Client.

In the event that recommendations presented in this addendum are contradictory to those presented in January 2018 report; the recommendations in this addendum should supersede.

1. TRAFFIC DATA ANALYSIS

The traffic data on two road sections were provided by the Client in an e-mail dated May 23, 2018.

Section 1: from 20th Sideroad to Webster Boulevard; and

Section 2: from Webster Boulevard to St. Johns Road

The traffic data was interpreted by GeoPro to estimate the number of Equivalent Single Axle Loads (ESALs) for pavement design purposes. Traffic loading repetitions were determined for the 20-year pavement design life period that is considered typical for municipal pavements of this type. On this basis, the ESAL applications during the design period were calculated in accordance with the Appendix D of MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The total design ESALs anticipated over the 20-year design life period at two sections are summarized in the following table:

Parameters		Traffic Data	
		Section 1	Section 2
AADT	Year 2018	7,300	2,200
	Year 2023	14,400	2,550
	Year 2038	18,700	3,430
Commercial Vehicle Percentage	Year (2018 – 2023)	7%	7%
	Year (2023 – 2038)	2%	3%
Estimated Total Design ESALs (20-Year)		1,607,600	383,500

2. PAVEMENT DESIGN

The subgrade soils along the proposed roadway generally consisted of cohensionless sandy/silty soils, glacial till or cohesive clayey silt deposits based on GeoPro's borehole information. The resilient modulus of subgrade has been assumed to be 25 MPa. The pavement designs were developed based on the 1993 AASHTO Guide for Design of Pavement Structures and MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The pavement design parameters are summarized in the following table. The detailed traffic analysis and estimated ESALs for the 20-year pavement design life are given in Appendix A, Traffic Data Analyses.

Design Parameters	Values
Design Life	20 Years
Initial Serviceability Index	4.4
Terminal Serviceability Index	2.2
Reliability Level, %	85
Overall Standard Deviation	0.46
Design Subgrade Resilient Modulus, MPa	25
Design Structure Number	112 (Section 1) 91 (Section 2)
Reconstructed Pavement	
Layer Coefficient of Hot Mix Asphalt	0.42
Layer Coefficient of Granular Base Course	0.14
Layer Coefficient of Granular Subbase Course	0.09
Pulverized Materials	0.12
Drainage Coefficients of Base and Subbase Courses	1.0

Note: No traffic data available for road section from St. Johns Road to Lake Simcoe, we assume it has same traffic and required design structure number as road section from Webster Boulevard to St. Johns Road.

3. DISCUSSION AND RECOMMENDATIONS

This report contains the findings of GeoPro's geotechnical investigation, together with the geotechnical engineering recommendations and comments. These recommendations and comments are based on factual information and are intended only for use by the design engineers. The anticipated construction conditions are discussed, but only to the extent that they may influence design decisions. Construction methods discussed, however, express GeoPro's opinion only and are not intended to direct the contractors on how to carry out the construction. Contractors should also be aware that the data and their interpretation presented in this report may not be sufficient to assess all the factors that may have an effect upon the construction.

The design drawings of the project were not available when this report was prepared. Once the design drawings and detailed site plan are available, this report will be reviewed by GeoPro, and further recommendations will be provided as needed.

3.1 Pavement Structure Recommendations for Road Reconstruction

Based on the traffic data analysis and pavement design results, in conjunction with the minimum pavement structure requirements for this type road by the Town of Innisfil Engineering Design Standards and Specifications, the following pavement structure is recommended for the road full depth reconstruction along 7th Line within the project limits.

Materials		**Thickness of Pavement (mm)**
Hot-Mix Asphalt (OPSS 1150/OPSS.MUNI 1151)	HL 3/SP12.5 "C" Surface Course	40
	HL 8/SP19.0 "C" Binder Course	100 (2 Lifts)
Granular Materials (OPSS.MUNI 1010)	Granular A Base (or 19 mm Crusher Run Limestone)	150
	Granular B Type I (Modified) Subbase	450
Prepared and Approved Subgrade		

The constructed pavement Structural Number is 120, which is greater than the Design Structural Numbers (112/91) for both road sections. As such, the pavement is structurally adequate for the expected traffic loads in the 20-year design period.

The construction procedure may be considered as follows:

- Completely remove the existing asphalt, granular base/subbase materials and any other obviously deleterious materials to the depth required to accommodate the new pavement structure (about 740 mm below the proposed pavement surface);

- The exposed subgrade surface should be graded and compacted to 98 percent of Standard Proctor Maximum Dry Density (SPMDD);
- The prepared subgrade should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft/loose or wet areas or other obviously deleterious materials must be excavated and properly replaced with material similar to the existing subgrade soils or other granular soils approved by the geotechnical engineer;
- All backfill materials should be placed in uniform loose lifts not exceeding 200 mm thickness and compacted to at least 98 percent of SPMDD. The finished subgrade should be provided with a grade of 3 percent towards the positive drainages;
- Place a minimum 450 mm of OPSS.MUNI Granular B Type I (modified) subbase course; place in loose lifts not exceeding 200 mm in thickness, compact to 100 percent of SPMDD;
- Place 150 mm of OPSS.MUNI Granular A base course or 19 mm Crusher Run Limestone compacted to 100 percent of SPMDD; and
- Place 140 mm thickness of hot-mix asphalt (100 mm of OPSS 1150 HL 8 or OPSS.MUNI 1151 SP 19.0 "C" binder course in two lifts and following by one lift of 40 mm of OPSS HL 3 or OPSS 1151 SP12.5 "C" surface course), produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

4. CLOSURE

We trust that this letter report provides sufficient geotechnical engineering information to facilitate the detail design of this project. If you have any questions regarding the contents of this report or require additional information, please do not hesitate to contact this office.

Yours very truly,

GEOPRO CONSULTING LIMITED

DRAFT

Tim Yu, B.Eng., E.I.T.
Geotechnical Group

Draft

Jessica Yao, P.Eng.
Senior Geotechnical Engineer

Draft

David B. Liu, P.Eng., Principal

Attachment:

Appendix A: Traffic Data Analyses

TRAFFIC DATA AND ESTIMATED ESALs
7th Line
(From 20th Sideroad to Webster Boulevard)

Year	Annual Average Daily Traffic	Estimated Cumulative Annual ESALs
2018	7,300	-
2019	8,362	118,900
2020	9,579	255,000
2021	10,973	411,000
2022	12,569	589,700
2023	14,398	794,300
2024	14,651	827,900
2025	14,909	862,100
2026	15,172	896,900
2027	15,439	932,300
2028	15,710	968,300
2029	15,987	1,005,000
2030	16,268	1,042,300
2031	16,554	1,080,300
2032	16,846	1,118,900
2033	17,142	1,158,200
2034	17,444	1,198,200
2035	17,751	1,238,900
2036	18,063	1,280,300
2037	18,381	1,322,500
2038	18,705	1,607,600

Directional Factor (DF)	0.5
Lane Distribution Factor (LDF)	1.0
Combined Truck Factor (CTF)	1.31 / 0.74
Percent Commercial Vehicles	7% / 2%
Days Per Year For Truck Traffic	365

TRAFFIC DATA AND ESTIMATED ESALs

7th Line

(From Webster Boulevard to St. Johns Road)

Year	Annual Average Daily Traffic	Estimated Cumulative Annual ESALs
2018	2,200	-
2019	2,266	37,900
2020	2,334	77,000
2021	2,404	117,200
2022	2,476	158,600
2023	2,550	201,300
2024	2,601	211,800
2025	2,653	222,600
2026	2,707	233,600
2027	2,761	244,800
2028	2,816	256,200
2029	2,872	267,800
2030	2,930	279,700
2031	2,988	291,800
2032	3,048	304,100
2033	3,109	316,700
2034	3,171	329,500
2035	3,235	342,600
2036	3,299	356,000
2037	3,365	369,600
2038	3,433	383,500

Directional Factor (DF)	0.5
Lane Distribution Factor (LDF)	1.0
Combined Truck Factor (CTF)	1.31 / 0.74
Percent Commercial Vehicles	7% / 3%
Days Per Year For Truck Traffic	365

Appendix E

Noise Impact Assessment

Noise Impact Assessment

7th Line Improvements

20th Sideroad to Lake Simcoe

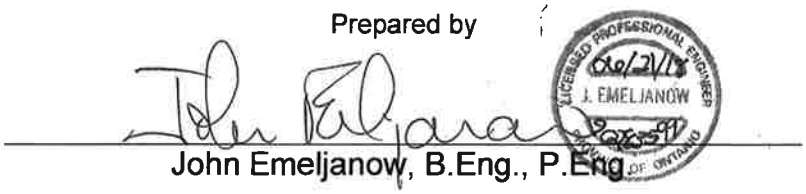
Town of Innisfil
Simcoe County

June 21, 2018
Project: 117-0094

Prepared for

Ainley Group

Prepared by



John Emeljanow, B.Eng., P.Eng.

VALCOUSTICS
Canada Ltd.

Revision History

Version #	Date	Comments
1.0	June 21, 2018	Issued to Client

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Noise Impact Assessment

7th Line Improvements

20th Sideroad to Lake Simcoe

Town of Innisfil
Simcoe County

1.0 INTRODUCTION

There is a proposal to improve 7th Line between 20th Sideroad and Lake Simcoe in the Town of Innisfil. See Figure 1. The proposed roadway improvements will:

- maintain the roadway at two lanes but shift the centreline 2 m to the north between Webster Boulevard and St. Johns Road; and
- widen the road to three lanes between 20th Sideroad and Webster Boulevard and shift the centreline 1 m to the south.

This report summarizes the expected traffic noise impact from the proposed roadway improvements, including the potential impact of construction noise. In addition, the need for noise mitigation based on the requirements of the Ministry of Transportation (MTO)/Ministry of the Environment and Climate Change (MOE) protocol is evaluated.

2.0 ENVIRONMENTAL NOISE GUIDELINES

The MOE does not have noise guidelines specifically relating to the construction or widening of roadways. However, the MOE previously had a protocol with the MTO relating to Provincial Highway Expansions. The protocol stated that the primary objective is to achieve sound exposures not exceeding 55 dBA or the preconstruction ambient sound exposure, whichever is higher, at outdoor receptor locations.

The protocol has been replaced by the MTO *Environmental Guide for Noise*. This guide indicates that noise mitigation needs to be considered where the sound exposure in the rear yard amenity area exceeds 65 dBA or the sound exposure change due to the proposed roadway improvements is greater than 5 dBA.

No mitigation is required where the sound exposure is 65 dBA or less and the sound exposure increase is 5 dBA or less. Where sound barriers are required, investigation into the administrative, economic, and technical feasibility of effective noise mitigation must be done. To be implemented, a sound barrier must be shown to provide at least 5 dBA of sound attenuation.

Based on the MTO/MOE Noise Protocol, where an existing roadway is proposed to be modified/widened adjacent to a Noise Sensitive Area (NSA), the future noise levels without the

proposed improvements are to be compared to the future noise levels with the proposed improvements. A private home is an example of a NSA. The assessment is done at the outdoor amenity area ("Outdoor Living Area" – OLA) (typically backyard) of each NSA. The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements. If noise mitigation is provided, the objective is a minimum 5 dBA reduction. Mitigation will attempt to achieve sound levels as close to, or lower than, the 55 dBA objective level as is technically, economically and administratively feasible.

2.1 DISCUSSION

Note that the 55 dBA sound level objective outlined above is consistent with the 55 dBA sound level objective provided in MOE Publication NPC-300. One of the uses of NPC-300 is to provide noise guidelines for new residential development adjacent to major transportation noise sources, such as busy roadways. NPC-300 requires that the noise assessment be applicable at least 10 years into the future (i.e. for road noise assessment, traffic volumes must be projected at least 10 years into the future).

Background traffic volumes are typically increasing which results in higher and higher sound levels in receptors' rear yards. This "creeping" background sound level is inherently anticipated by the guideline document. Eventually, sound levels will exceed the 55 dBA sound level objective without the need for further noise mitigation.

The 65 dBA threshold used in the MTO Noise Guide presents an upper limit that is still considered acceptable for residential OLAs. Once sound levels exceed this upper threshold, MTO recommends noise mitigation be provided to achieve sound levels as close to the 55 dBA objective as possible.

3.0 NOISE SENSITIVE AREAS

Land uses designated as noise sensitive by the MOE/MTO consist of residential dwellings, hospitals, nursing/retirement homes, etc.

Figures 2 to 8 identify the receptor locations which were analysed in detail. These residential dwellings are representative of the NSAs within the study area. Other dwellings with similar setback and orientation to the noise source will receive similar sound levels and noise impacts. Dwellings further removed from the roadway will receive lower sound exposures due to increased distance attenuation.

Receptor locations were identified on drawings provided by Ainley Group. The receptor locations were confirmed during a site visit to the study area.

It should be noted that any future new residential subdivision developments along the 7th Line corridor will have to carry out noise analyses in accordance with MOE requirements as part of the application process under the Planning Act. These studies would recommend indoor and outdoor noise mitigation measures and the inclusion of noise warning clauses on title of affected properties. These are outside the scope of this study. However, the studies would be done using the future 7th Line roadway design and traffic volumes.

For any residential developments that are currently under construction, they would have had a noise impact assessment done as part of the planning approvals process. Since future traffic

volumes with and without the proposed roadway improvements are the same, the minor noise impact that results from the small shift in road centreline would have essentially no impact on the noise mitigation requirements. Thus, even residential developments that did not consider the proposed roadway improvements as part of their noise study are still expected to be appropriately protected from road noise provided their recommended noise mitigation measures are properly implemented.

4.0 NOISE IMPACT ASSESSMENT

4.1 TRAFFIC DATA

Existing (year 2017) and future (year 2023) traffic information for 7th Line was provided by Ainley Group. AM and PM peak hour traffic volumes were provided. 24-hour traffic volumes were calculated by multiplying the peak hour volumes by 10. The higher of the two values was used in our analysis.

Ainley Group also indicated that 2% of the traffic volume between 20th Sideroad and Webster Boulevard is truck traffic. Between Webster Boulevard and St Johns Road, the percentage of truck traffic increases to 3%. Ainley also indicated that the distribution of heavy to medium trucks along the entire study area is 1/3 medium and 2/3 heavy. It was also assumed that 90% of the traffic would occur during the daytime period (i.e. 0700 to 2300 hours) as is typical for a busy roadway. The road traffic data is summarized in Table 1 and in Appendix A.

4.2 PROCEDURE

Sound levels were calculated using STAMSON V5.04-ORNAMENT, the computerized road traffic noise prediction model of the MOE. This is an accepted approach by the MTO, as outlined in their *Environmental Guide for Noise*.

Using the road traffic data, the daytime ($L_{eq\ Day}$) sound levels at the dwelling façade closest to 7th Line were calculated at each receptor location. To assess the noise impact, the predicted future sound levels with the proposed road improvements were compared to the future daytime sound levels without the proposed road improvements.

Since the ambient sound environment in the vicinity of the NSAs is generally dominated by road traffic on 7th Line, noise sources other than 7th Line were not considered in the analysis. This is a conservative approach since, in the noise impact assessment, these secondary noise sources would tend to reduce the significance of sound exposure changes (i.e., impact) due to the improvement of 7th Line.

4.3 RESULTS

Table 2 shows, for each receptor, the existing sound levels, the future sound levels without the proposed road improvements, the future sound levels with the proposed road improvements, and the resulting noise impact (i.e., change between the future with and without improvements scenarios).

The results presented in Table 2 indicate that the potential noise impacts at all receptors along 7th Line within the study area are less than 1 dBA. The growth in traffic from the existing to the future condition results in up to a 2 dBA sound level increase at most receptors. The future with

roadway improvements sound levels are all well below the 65 dBA threshold. Thus, in accordance with the MTO *Environmental Guide for Noise*, noise mitigation for the receptors is not required.

5.0 CONSTRUCTION NOISE

Construction noise is temporary noise and depends on the type of work required. The impact of construction noise depends on the type of equipment used, number of pieces of equipment, time and duration of operation and the proximity to noise sensitive receivers in question.

5.1 APPLICABLE MUNICIPAL NOISE CONTROL BY-LAWS

7th Line, along the extent of the project, is located in the Town of Innisfil. Therefore, the noise control by-law for the Town of Innisfil (By-law No. 122-16) applies.

5.2 TOWN OF INNISFIL NOISE BY-LAW

The following summarizes the applicable sections of the Town of Innisfil Noise Control By-law (No. 122-16) concerning construction noise:

> *2 g) "The operation of any item of Construction Equipment in a Residential Area, Agricultural Area or Commercial Area without effective muffling devices in good working order and in constant operation" is prohibited at all times.*
>
> Item 12 in Table 4-1: The operation or use of any Construction Equipment in connection with Commercial Construction activities is prohibited if clearly audible in a residential area between 8:00 pm and 7:00 am and all day Saturday, Sunday and Statutory Holidays.

Based on the above, construction of the proposed roadway improvements can only be done between the hours of 7:00 am and 8:00 pm Monday to Friday except on statutory holidays where construction activities are prohibited. If construction work outside of these hours is desired, then an exemption from the by-law would be required. In addition, all pieces of construction equipment must be in good working order and have fully functioning and effective muffling devices.

5.3 RECOMMENDATIONS

- The noise control by-law for the Town of Innisfil (By-law No. 122-16) will be obeyed. Exemptions, where required, will be applied for through the municipality and should be included in the construction contract documents.

- General noise control measures will be referred to, or placed into construction contract documents. The following constraints addressing construction equipment operation and maintenance should be included in the construction contract documents:

  Equipment Maintenance: Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffling systems, properly secured components and the lubrication of moving parts.

  Equipment Operation: Idling of equipment shall be restricted to the minimum necessary to perform the specified work.

Additional noise constraints may be included at the discretion of the Environmental Planner. They could include, for example, the siting of the contractor's yard.

- Any initial complaint from the public will require verification that the general noise control measures agreed to are in effect, any noise concerns will be investigated, and the contractor warned of any problems.

- Notwithstanding compliance with the "general noise control measures", a persistent complaint will require a contractor to comply with the MOECC sound level criteria for construction equipment contained in the MOECC Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.

6.0 CONCLUSION

The proposed roadway improvement of 7th Line between 20 Sideroad and Lake Simcoe will result in insignificant noise impacts of less than 1 dBA. In addition, daytime sound levels will be well below the 65 dBA limit at all receptor locations. Thus, noise mitigation measures are not required as part of the proposed 7th Line improvements in accordance with the MTO Environmental Guide for Noise.

7.0 REFERENCES

1. "Environmental Guide for Noise", Ontario Ministry of Transportation, 2006.

2. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.

3. "Environmental Office Manual – Technical Areas – Noise", Ontario Ministry of Transportation, 1992.

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TABLE 1: EXISTING AND FUTURE TRAFFIC VOLUME DATA

Section of 7th Line	Existing (2017) AADT(1)	Future (2023) AADT(1)	%Medium / %Heavy Trucks	Posted Speed Limit (kph)
20 Sideroad to Fox Hill Street	8,370	13,750	0.67 / 1.33	80/50
Fox Hill Street to Webster Boulevard	8,220	13,290	0.67 / 1.33	50
Webster Boulevard to Quarry Drive	2,570	2,750	1 / 2	50
Quarry Drive to Wingrove Avenue	2,220	2,930	1 / 2	50
Wingrove Avenue to St. Johns Road	1,770	2,550	1 / 2	50
St. Johns Road to Lake Simcoe	400	400	1 / 2	50

Note:

(1) AADT – Annual Average Daily Traffic as derived from information provided by Ainley Group

TABLE 2: NOISE ASSESSMENT RESULTS

Receptor	Existing (2017) $L_{eq\ Day}$ (dBA)	Future (2023) $L_{eq\ Day}$ No Improvements (dBA)	Future (2023) $L_{eq\ Day}$ With Improvements (dBA)	Noise Impact(1) (dBA)
R1	57	59	60	0.2
R2	56	59	59	0.2
R3	51	53	53	0.1
R4	45	47	47	0.0
R5	51	54	54	-0.1
R6	52	54	54	-0.1
R7	49	51	51	-0.2
R8	48	50	50	-0.1
R9	46	46	46	-0.4
R10	46	46	46	-0.4
R11	46	46	46	-0.2
R12	54	54	54	-0.7
R13	54	54	54	-0.7
R14	52	52	52	-0.5
R15	50	51	50	-0.5
R16	50	51	50	-0.4
R17	44	45	45	0.2
R18	46	47	48	0.3
R19	47	48	49	0.3
R20	47	48	48	0.3
R21	42	43	43	-0.1
R22	42	43	43	-0.1
R23	52	53	52	-0.6
R24	49	50	50	-0.4
R25	50	52	51	-0.5

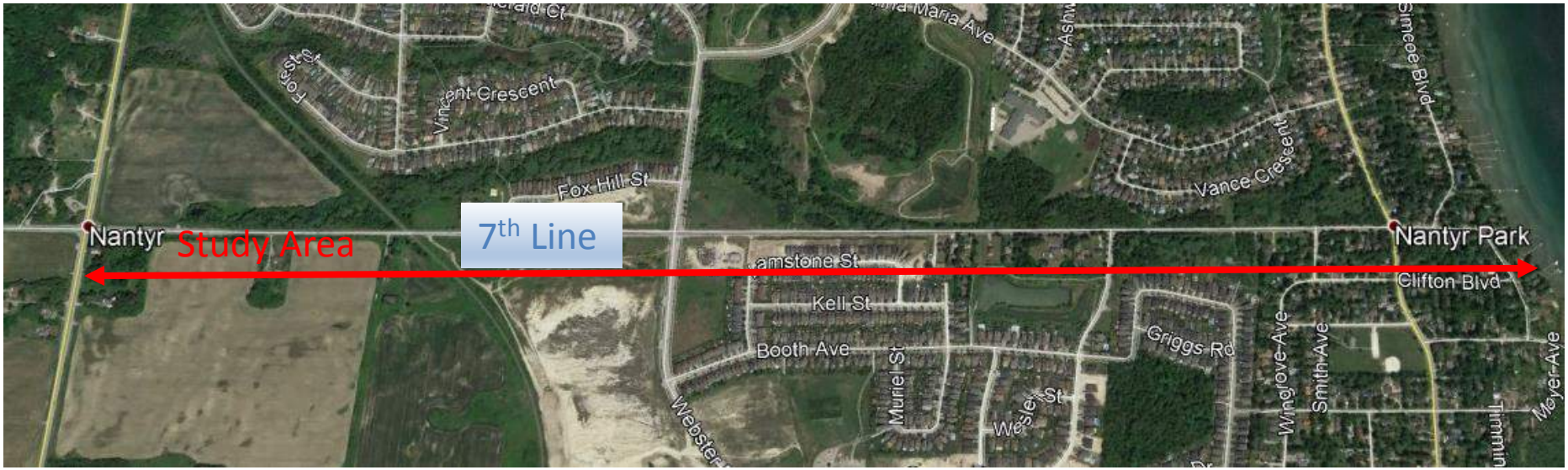
..../cont'd

TABLE 2: NOISE ASSESSMENT RESULTS (continued)

Receptor	Existing (2010) $L_{eq\ Day}$ (dBA)	Future (2023) $L_{eq\ Day}$ No Improvements (dBA)	Future (2023) $L_{eq\ Day}$ With Improvements (dBA)	Noise Impact(1) (dBA)
R26	52	53	53	-0.6
R27	44	44	44	0.0
R28	47	47	47	0.0
R29	47	47	47	0.0
R30	47	47	47	0.0

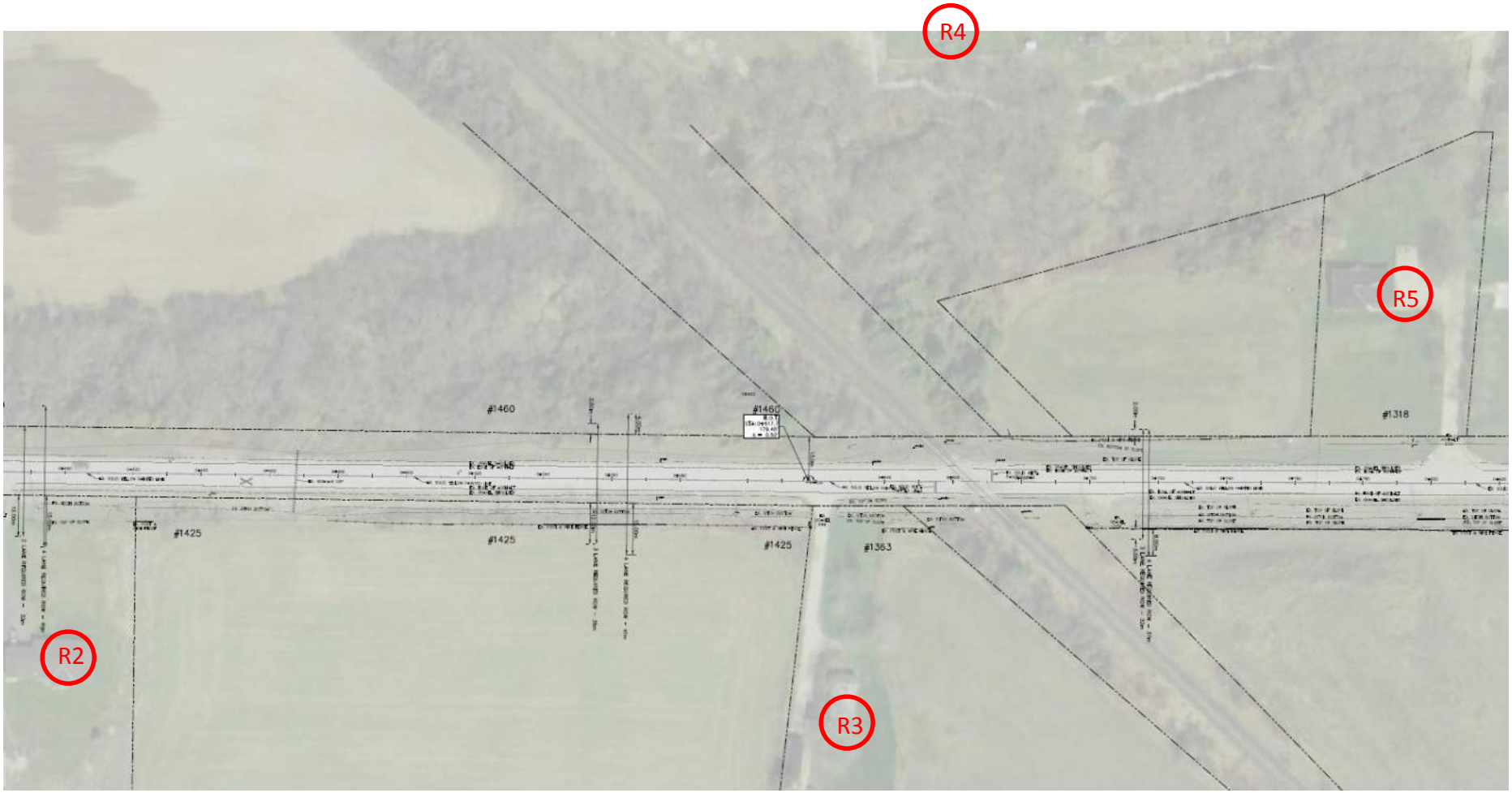
Note:

(1) The predicted noise impact is the difference between the future and the existing scenarios. Where the noise impact is indicated as being negative, this means the sound exposure will be reduced due to the proposed road improvements.



VALCOUSTICS Canada Ltd.	Title Study Area	Date Jan. 29, 2017	Figure 1
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	

VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure 2
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	



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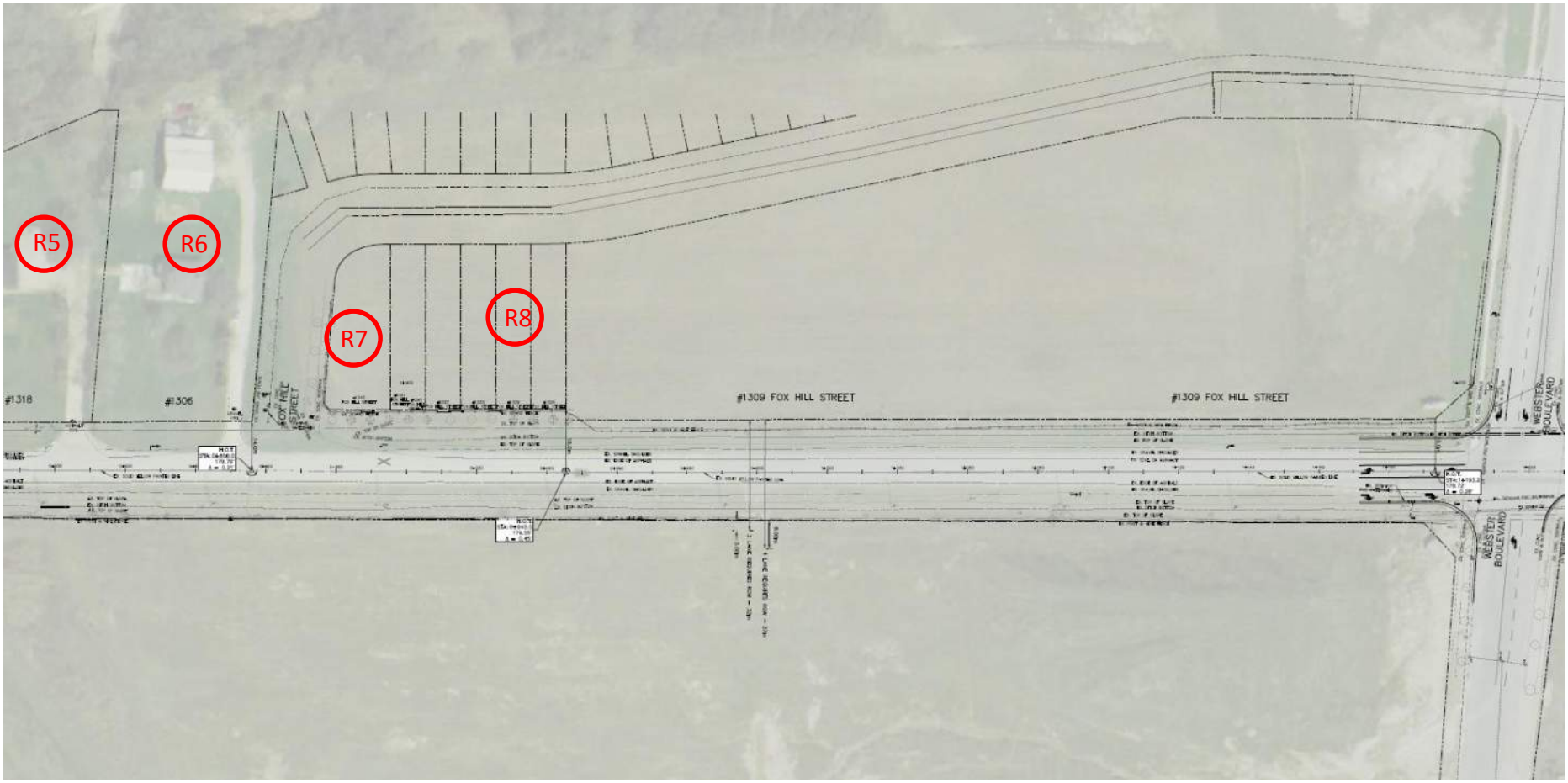
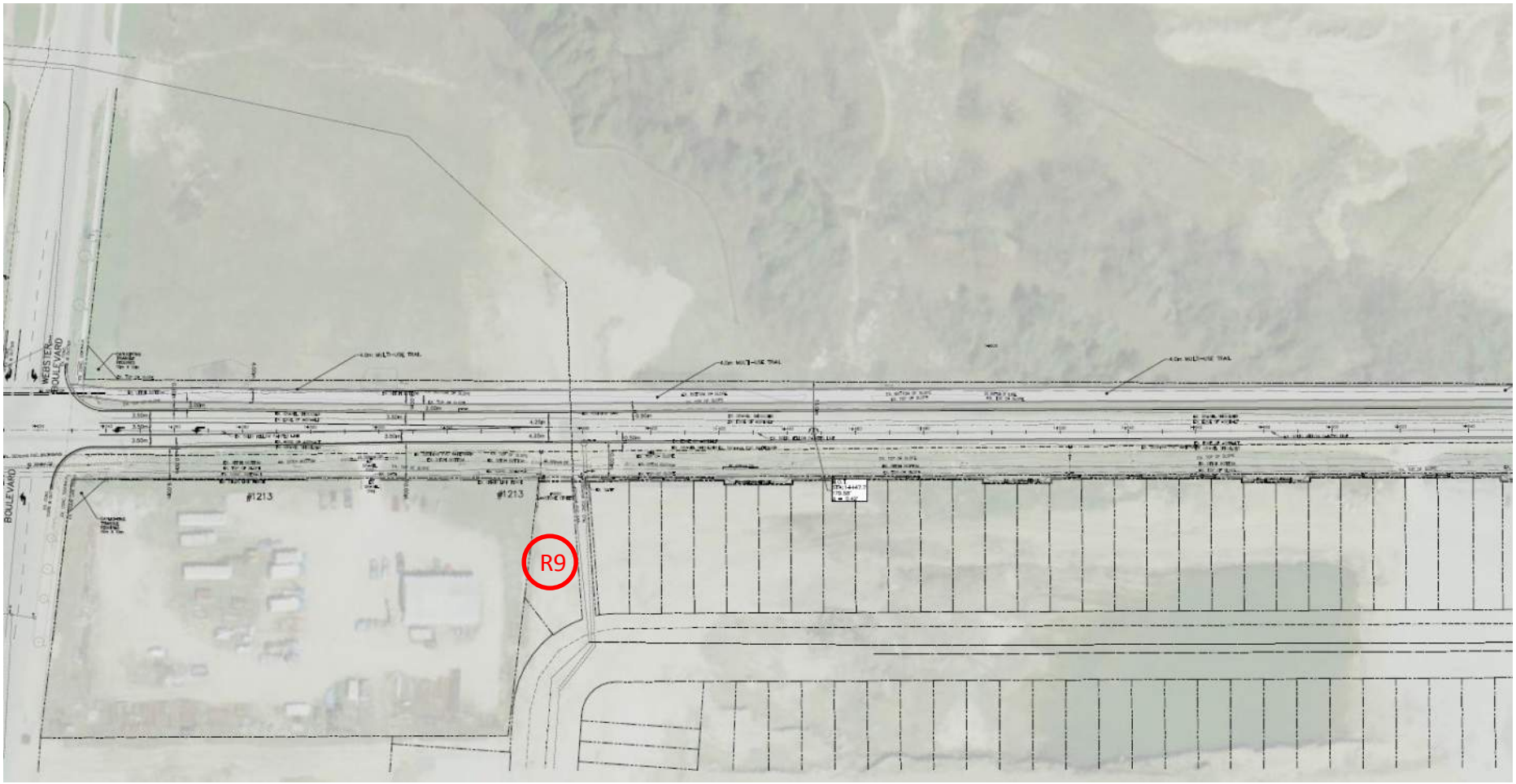
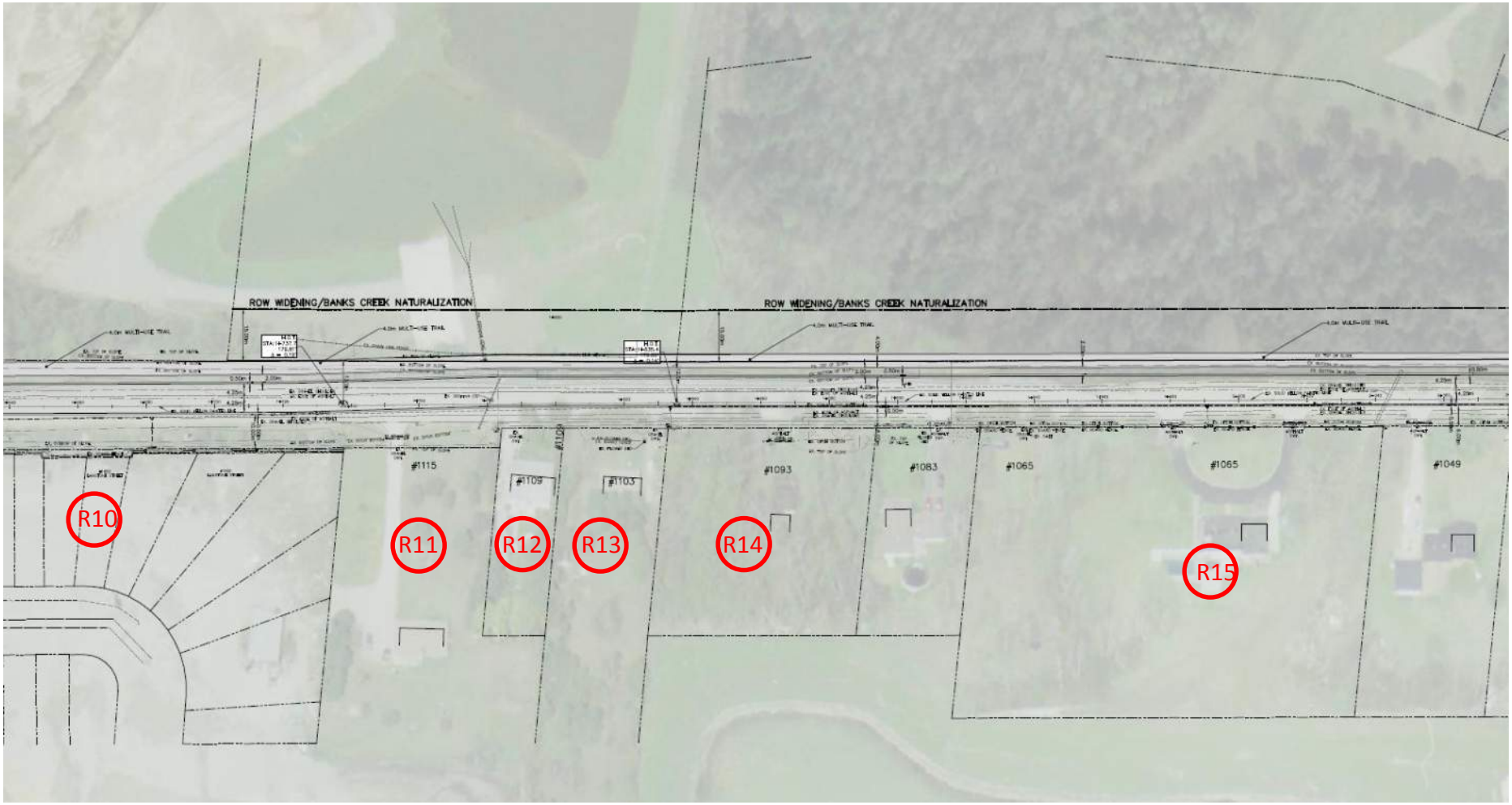


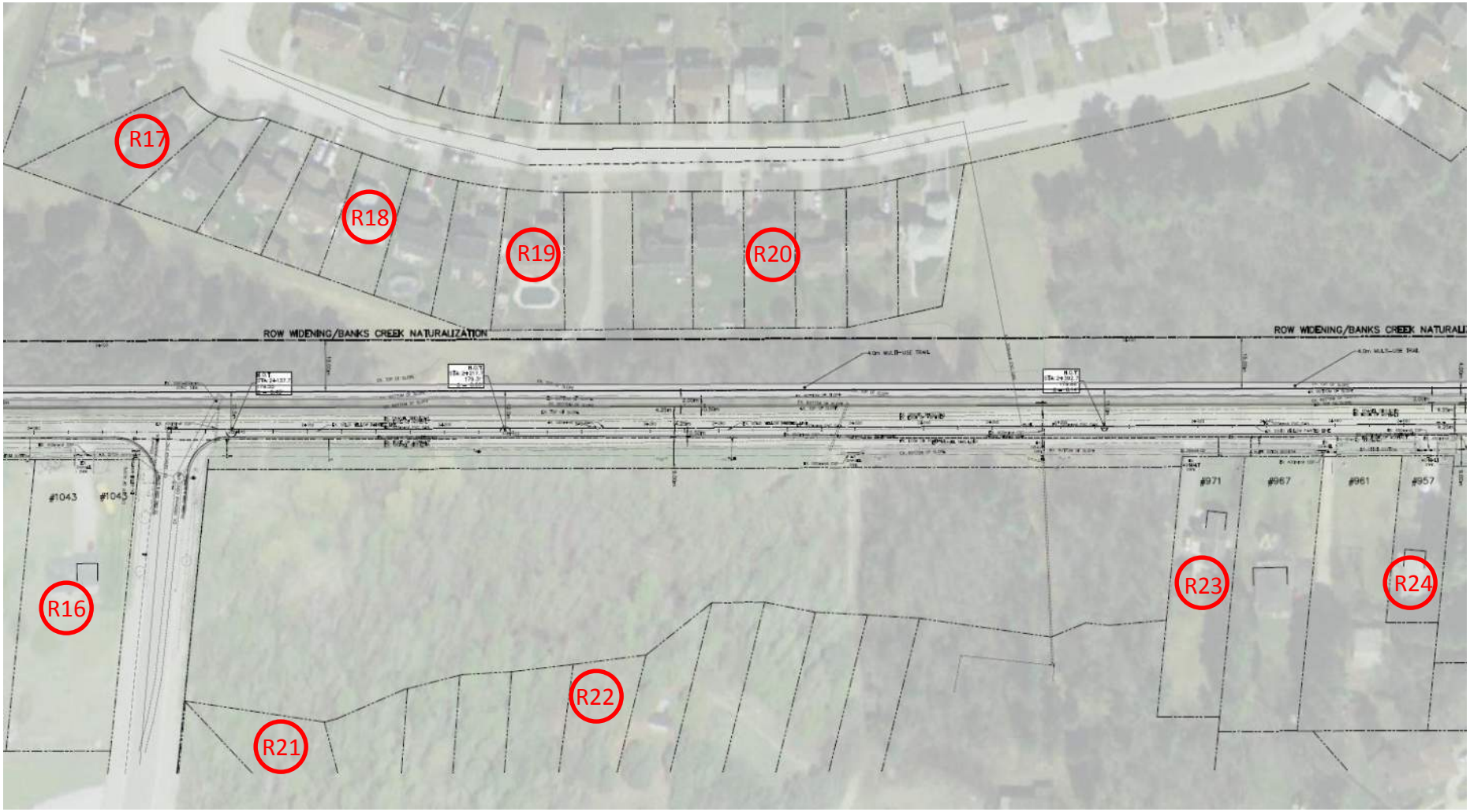
VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure 4
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	



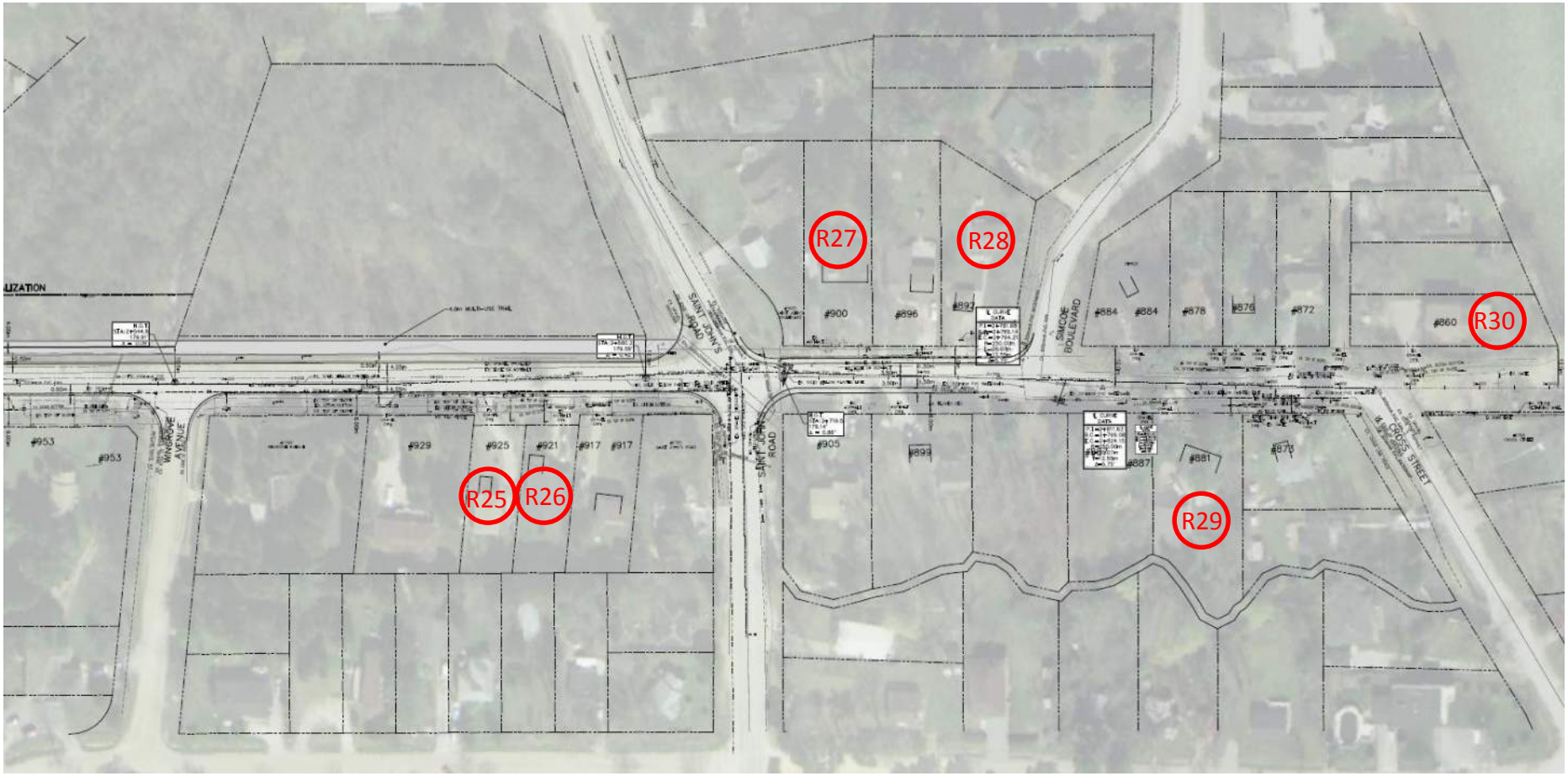
VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure 5
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	



VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure 6
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	



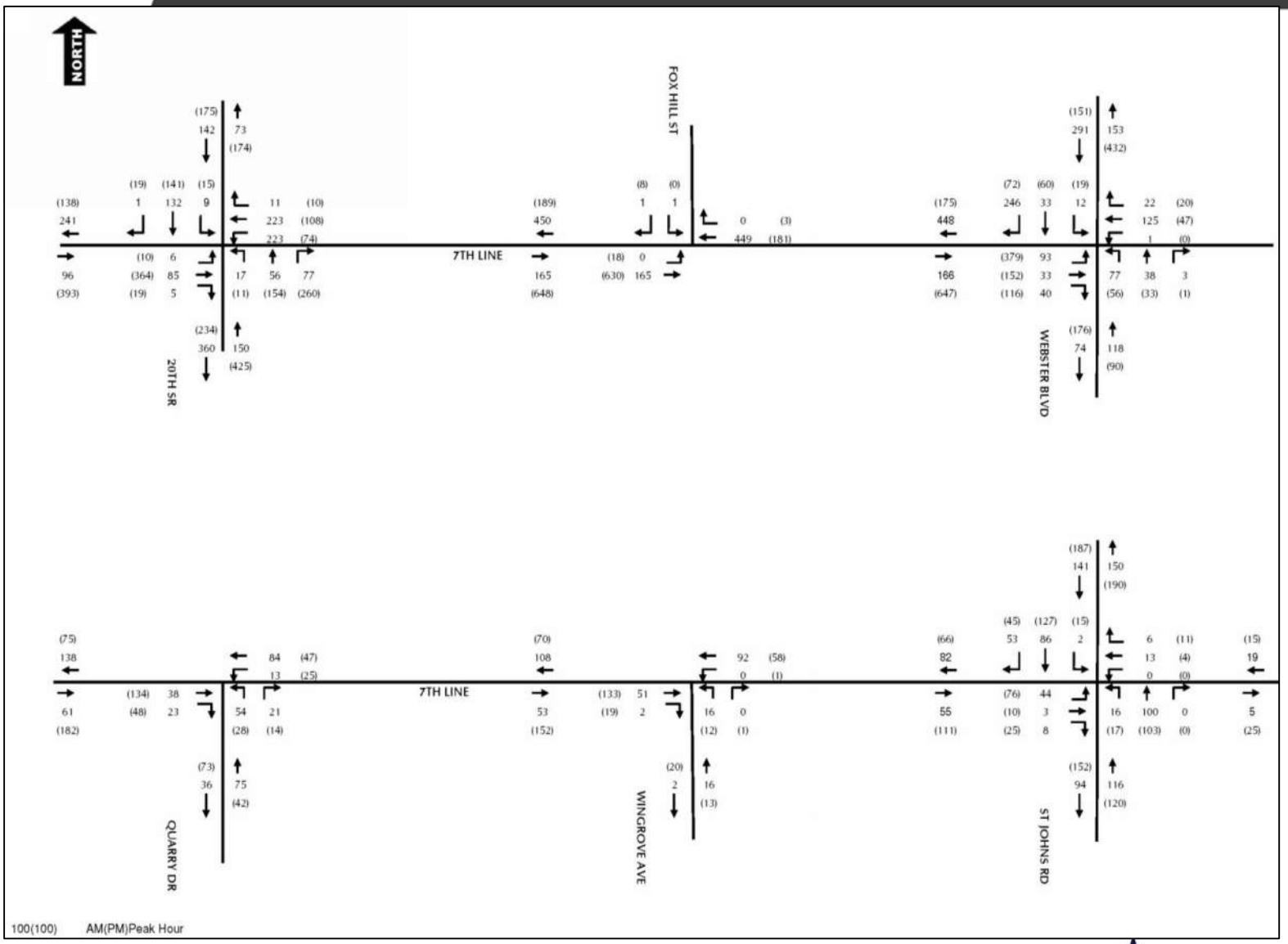
VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure 7
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	



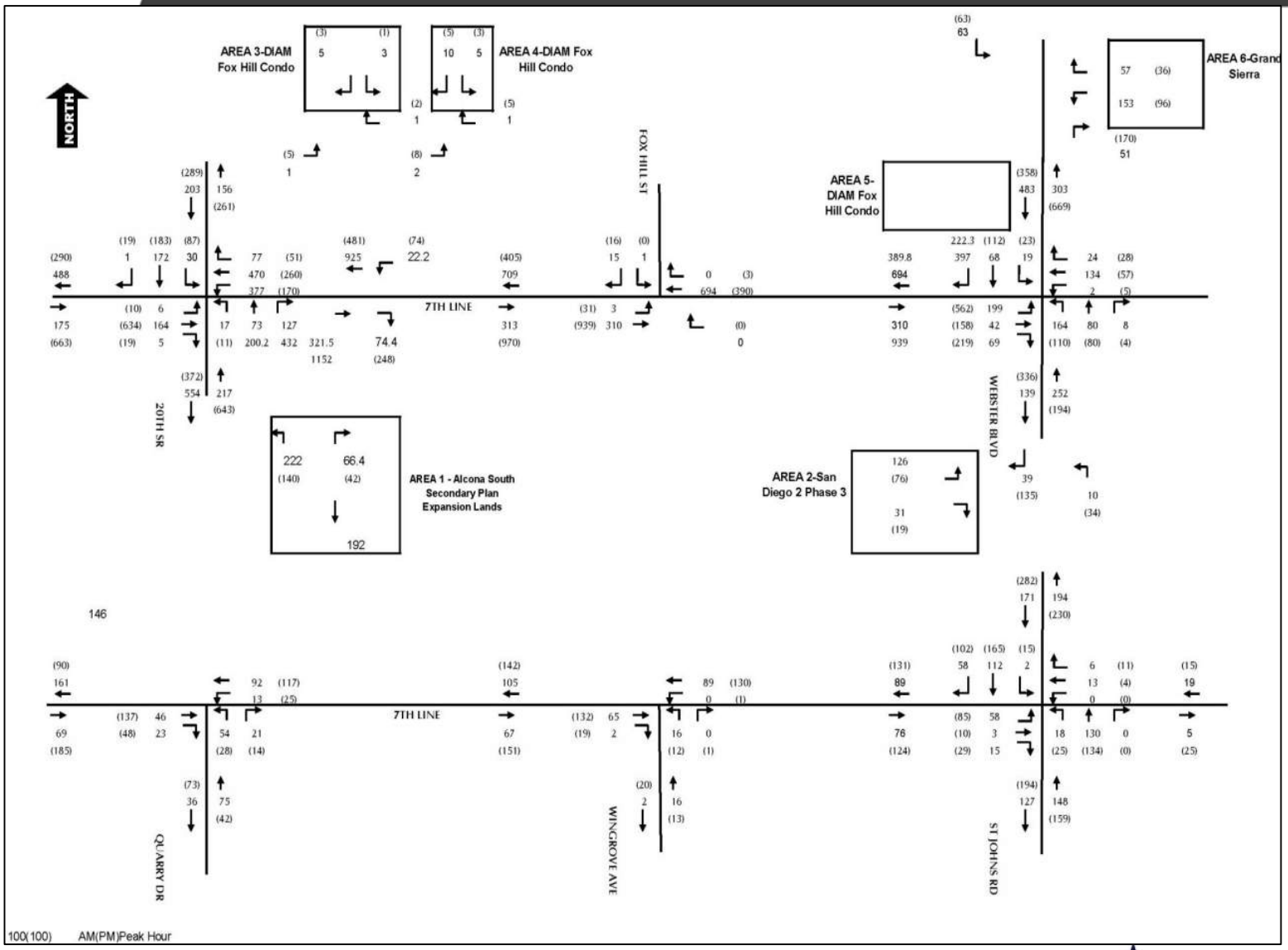
VALCOUSTICS Canada Ltd.	Title Receptors	Date Jan. 29, 2017	Figure **8**
	Project Name 7th Line Improvements – 20 Sideroad to Lake Simcoe	Project No. 117-0094	

APPENDIX A
TRAFFIC DATA

EXISITING 2017 TRAFFIC VOLUMES



PROJECTED TRAFFIC VOLUMES



John Emeljanow

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Tuesday, May 22, 2018 3:53 PM
To: John Emeljanow
Cc: Andrea Potter
Subject: RE: RDS275 Noise Report Comments

John

The time line for the projected traffic is the 5 year build out so say 2023. After 2023 the assumed background growth is 2%. The % trucks for the portion from Webster Boulevard westward to SR 20 is 2 %. The percent trucks to the east of Webster Boulevard to St. Johns Road is 3%. In both cases the trucks were 2/3 heavy and 1/3 light trucks.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: John Emeljanow [mailto:john@valcoustics.com]
Sent: Wednesday, May 16, 2018 10:56 AM
To: Andrea Potter
Cc: Steve Fournier
Subject: RE: RDS275 Noise Report Comments

Andrea:

I have had a quick look at the comments from the Town. To assist with responding to their comments, can you provide the following:

1. The discussion on % commercial vehicles from the geotechnical/pavement design report; and
2. The date applicable to the projected AADT. The information provided to us, as shown below, does not indicate the year the data is applicable to.

Appendix F

Stage 1 Archaeological Assessment

STAGE 1 ARCHAEOLOGICAL ASSESSMENT
7TH LINE IMPROVEMENTS
20TH SIDEROAD TO LAKE SIMCOE
PART OF LOTS 21-25, CONCESSIONS 6-7
(FORMER TOWNSHIP OF INNISFIL)
TOWN OF INNISFIL
COUNTY OF SIMCOE, ONTARIO

ORIGINAL REPORT

Prepared for:

Ainley Group
550 Welham Road
Barrie ON L4N 8Z7

Archaeological Licence #P1066 (Lytle)
Ministry of Tourism, Culture and Sport PIF# P1066-0043-2017
ASI File: 17EA-035

28 June 2018

ASI Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 F 416-966-9723 asiheritage.ca

Stage 1 Archaeological Assessment
7th Line Improvements
20th Sideroad to Lake Simcoe
Part of Lots 21-25, Concessions 6-7
(Former Township of Innisfil)
Town of Innisfil
County of Simcoe, Ontario

EXECUTIVE SUMMARY

ASI was contracted by Ainley Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the 7th Line Improvements from 20th Sideroad to Lake Simcoe in the Town of Innisfil. This project involves improvements to the existing road cross-section and intersections including provisions for active transportation and municipal servicing. The Study Area is approximately 30 hectares.

The Stage 1 background study determined that nine previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 assessment.

In light of these results, the following recommendations are made:

1. The Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey and pedestrian survey, both at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Parts of the Study Area, which could not be confirmed through visual inspection to have been subjected to deep soil disturbance, require test pit survey at intervals according to professional judgement to confirm the extent of disturbance;

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or low and wet conditions. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

ASI

PROJECT PERSONNEL

Senior Project Manager:	Lisa Merritt, MSc. (P094) *Partner / Director* *Environmental Assessment Division*
Project Coordinator:	Sarah Jagelewski, Hon. BA (R405) *Archaeologist / Assistant Manager* *Environmental Assessment Division*
Project Director (Licensee):	Jessica Lytle, MSc (P1066) *Archaeologist / Project Manager* *Environmental Assessment Division*
Project Manager:	Eliza Brandy, MA (R1109) *Archaeologist / Project Manager* *Environmental Assessment Division*
Field Director:	Jessica Lytle
Report Preparation:	Eliza Brandy
Graphics:	Jonas Fernandez, MSc (R281) *Archaeologist / Assistant Manager - Fleet & Geomatics Specialist* *Operations Division*
Report Reviewer:	Lisa Merritt

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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by Ainley Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the 7th Line Improvements from 20th Sideroad to Lake Simcoe in the Town of Innisfil. This project involves improvements to the existing road cross-section and intersections including provisions for active transportation and municipal servicing. The Study Area is approximately 30 hectares (Figure 1).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (1990, as amended in 2009) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (S & G), administered by the Ministry of Tourism, Culture and Sport (MTCS).

In the S & G, Section 1, the objectives of a Stage 1 archaeological assessment are discussed as follows:

- To provide information about the history, current land conditions, geography, and previous archaeological fieldwork of the Study Area;
- To evaluate in detail the archaeological potential of the Study Area that can be used, if necessary, to support recommendations for Stage 2 archaeological assessment for all or parts of the Study Area; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment, if necessary.

This report describes the Stage 1 archaeological assessment that was conducted for this project and is organized as follows: Section 1.0 summarizes the background study that was conducted to provide the historical and archaeological contexts for the project Study Area; Section 2.0 addresses the field methods used for the property inspection that was undertaken to document its general environment, current land use history and conditions of the Study Area; Section 3.0 analyses the characteristics of the project Study Area and evaluates its archaeological potential; Section 4.0 provides recommendations; and the remaining sections contain other report information that is required by the S & G, e.g., advice on compliance with legislation, works cited, mapping and photo-documentation.

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act*, RSO (1990) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (2000 as amended in 2007, 2011 and 2015).

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted by Ainley Group on May 24, 2017.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the

Study Area. A summary is first presented of the current understanding of the Indigenous land use of the Study Area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (BP) (Ferris 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 BP; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 BP and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Ellis et al. 1990, 2009; Brown 1995:13).

Between 3,000-2,500 BP, populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. Exchange and interaction networks broaden at this time (Spence et al. 1990:136, 138) and by approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal harvesting of resources (Spence et al. 1990:155, 164). It is also during this period that maize was first introduced into southern Ontario, though it would have only supplemented people's diet (Birch and Williamson 2013:13–15). Bands likely retreated to interior camps during the winter. It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From approximately 1,000 BP until approximately 300 BP, lifeways became more similar to that described in early historical documents. During the Early Iroquoian phase (AD 1000-1300), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson 1990:317). By the second quarter of the first millennium BP, during the Middle Iroquoian phase (AD 1300-1450), this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al. 1990:343). In the Late Iroquoian phase (AD 1450-1649) this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013).

Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed. By AD 1600, the Huron-Wendat communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. In the 1640s, the traditional enmity between the

Haudenosaunee [1]and the Huron-Wendat (and their Algonkian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat.

After the dispersal, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario, including Teiaiagon, near the mouth of the Humber River; and Ganestiquiagon, near the mouth of the Rouge River. Their locations near the mouths of the Humber and Rouge Rivers, two branches of the Toronto Carrying Place, strategically linked these settlements with the upper Great Lakes through Lake Simcoe. The west branch of the Carrying Place followed the Humber River valley northward over the drainage divide, skirting the west end of the Oak Ridges Moraine, to the East Branch of the Holland River. Another trail followed the Don River watershed.

Due, in large part, to increased military pressure from the French upon their homelands south of Lake Ontario, the Haudenosaunee abandoned their north shore frontier settlements by the late 1680s, although they did not relinquish their interest in the resources of the area, as they continued to claim the north shore as part of their traditional hunting territory. The territory was immediately occupied or re-occupied by Anishinaabek groups, including the Mississauga, Ojibwa (or Chippewa) and Odawa, who, in the early seventeenth century, occupied the vast area extending from the east shore of Georgian Bay, and the north shore of Lake Huron, to the northeast shore of Lake Superior and into the upper peninsula of Michigan. Individual bands were politically autonomous and numbered several hundred people. Nevertheless, they shared common cultural traditions and relations with one another and the land. These groups were highly mobile, with a subsistence economy based on hunting, fishing, gathering of wild plants, and garden farming. Their movement southward also brought them into conflict with the Haudenosaunee.

Peace was achieved between the Haudenosaunee and the Anishinaabek Nations in August of 1701 when representatives of more than twenty Anishinaabek Nations assembled in Montreal to participate in peace negotiations (Johnston 2004:10). During these negotiations captives were exchanged and the Iroquois and Anishinaabek agreed to live together in peace. Peace between these nations was confirmed again at council held at Lake Superior when the Iroquois delivered a wampum belt to the Anishinaabek Nations.

In 1763, following the fall of Quebec, New France was transferred to British control at the Treaty of Paris. The British government began to pursue major land purchases to the north of Lake Ontario in the early nineteenth century, the Crown acknowledged the Mississaugas as the owners of the lands between Georgian Bay and Lake Simcoe and entered into negotiations for additional tracts of land as the need arose to facilitate European settlement.

The eighteenth century saw the ethnogenesis in Ontario of the Métis, when Métis people began to identify as a separate group, rather than as extensions of their typically maternal First Nations and paternal European ancestry (Métis National Council n.d.). Living in both Euro-Canadian and Indigenous societies, the Métis acted as agents and subagents in the fur trade but also as surveyors and interpreters. Métis populations were predominantly located north and west of Lake Superior, however, communities were located throughout Ontario (MNC n.d.; Stone and Chaput 1978:607,608). During the early nineteenth century, many Métis families moved towards locales around southern Lake Huron and Georgian Bay, including Kincardine, Owen Sound, Penetanguishene, and Parry Sound (MNC n.d.). By the mid-twentieth

[1] The Haudenosaunee are also known as the New York Iroquois or Five Nations Iroquois and after 1722 Six Nations Iroquois. They were a confederation of five distinct but related Iroquoian–speaking groups - the Seneca, Onondaga, Cayuga, Oneida, and Mohawk. Each lived in individual territories in what is now known as the Finger Lakes district of Upper New York. In 1722 the Tuscarora joined the confederacy.

century, Indigenous communities, including the Métis, began to advance their rights within Ontario and across Canada, and in 1982, the Métis were federally recognized as one of the distinct Indigenous peoples in Canada. Recent decisions by the Supreme Court of Canada (Supreme Court of Canada 2003, 2016) have reaffirmed that Métis people have full rights as one of the Indigenous people of Canada under subsection 91(24) of the Constitution Act, 1867.

1.2.2 Euro-Canadian Land Use: Township Survey and Settlement

Historically, the Study Area is located in the Former Innisfil Township, Simcoe County in part of Lots 21-25, Concessions 6-7.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the *Ontario Heritage Act* or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 m of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (Archaeological Services Inc. 2006).

Township of Innisfil

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. The township was named after the poetical name for Ireland, Innisfail, by its early settlers. Growth was slow during the first ten years of the township and the first sawmill was not erected until the 1830s and in 1835 a grist mill was constructed. Early settlement focused around Kempenfeldt Bay and the southwestern area of the township was not settled until after 1840. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. The first census of the township recorded a population of only 762 inhabitants, by 1850, the township had a population of 1,807.

Following the connection of the Northern Railway in 1853, the township became an important shipping hub for the lumber industry of central Ontario (Mika and Mika 1981:347–349) With the arrival of the railway a number of communities developed and prospered, Allandale, Lefroy, and Craigvale all boasted stations. On the western border of the township, Thorton was a stop for the Hamilton and Northwestern Railway. The community of St. Paul's was established at the corner of Penetanguishene Road (Yonge Street) and Mapleview Drive, and was centered around St. Paul's Anglican Church (established 1851) and

a schoolhouse as depicted on the 1879 Illustrated Historical Atlas (Belden 1881). The small community consisted of a cluster of houses, and would have been along the main path of anyone travelling between Toronto and Georgian Bay along Penetanguishene Road. Other early post office communities included Barclay, Bramley, Cherry Creek, Fennell, Holly, Innisfil, Killyleagh, Beaumont, Painswick, and Stroud. Today, Innisfil attracts large numbers of tourists and cottagers in the summertime who travel from Toronto via Highway 400 and Yonge Street along an extension which travels the length of the township built in the late seventeenth century by Colonel John Graves Simcoe from York (Toronto) to Lake Simcoe (Mika and Mika 1981: 347-349).

Northern Railway

The Toronto, Simcoe, and Lake Huron Union Rail Road Company was incorporated in 1844 and in 1850 was renamed the Ontario, Simcoe, and Huron Union Rail Road Company. The rail line opened on May 16, 1853, and connected Toronto to Aurora (formerly Matchell's Corners) via a 48 kilometre track (Andreae 1997). The line was expanded with service to Bradford beginning June 13, 1853, and further expanded to Barrie on October 11 1853 (forming the path for the present Barrie rail corridor). In 1858, the company underwent a third name change becoming the Northern Railway Company of Canada. Subsequently, the Ontario, Simcoe & Huron Railway became known simply as the Northern Railway, until 1888 when the ownership amalgamated with the Grand Trunk Railway Company of Canada, at which point the Northern Railway became part of the Grand Trunk Railway. Rail tracks were quickly laid across Ontario, as well as other parts of the country linking settlements and provinces. The population of Canada doubled between 1851 and 1901 but the miles of rail laid increased exponentially from 159 to 18,294 miles (Andreae 1997). The Northern Railway was a major draw factor for businesses in the Counties of York and Simcoe and caused many communities with a station to thrive and those without to dissipate (Town of Newmarket 2012). In 1923, the railway company was again amalgamated, this time with the government-owned Canadian National Railway (CN). Commuter service began on the line in 1972, operated by CN as part of the CN Newmarket Subdivision. This commuter service was taken over by VIA Rail in 1978, and then by GO Transit in 1982. GO Transit continues to operate this commuter service to this day.

According to Hunter (1909) the only settlers before 1837 within the Study Area include William Fields and Peter Gartley on Lot 21, Concession 6, and Robert McConkey on Lot 21, Concession 7. Table 1 details the 1872 Gazetteer of the County of Simcoe settlers listed within the Study Area.

Table 1: Nineteenth-century property owner(s) and historical features(s) within or adjacent to the Study Area

Con #	Lot #	Property Freeholder(s)*
6	21	William McCullough
		James Ralston
	22	Alfred Sawyer
		Andrew Wallace
	23	John Barclay
	24	James Wann
	25	William Dixon
		William McGeeagh
		Lawrence Tebo (H)
7	21	James and William Hastings
		Robert McConkey
		Mrs. Esther Reed
		Hugh Rolley
	22	Thomas Hastings

Con #	Lot #	Property Freeholder(s)*
	23	Elias and Willam Ferrier George Hunter John Irish (H), labourer Gamble Jack
	24	George and Thomas Gibbons William Kelly
	25	None

*names listed with an (H) are householders

A log schoolhouse was built about 1843 in the south part of Lot 20, Concession 7, on William Cross's property, which was in use until 1875, when a stone schoolhouse (first known as Wesley School, later Nantyr) was erected on the north part of Lot 21, Concession 6, on the farm of James Ralston. The log building continued to be in use as a teacher's residence until destroyed by fire a few years later (Town of Innisfil 2010). The schoolhouse now is a listed heritage property on the southeast corner of 7th Line and 20th Sideroad.

1.2.3 Historical Map Review

The 1871 Hogg's Map of the County of Simcoe (Hogg 1871) and the 1881 Illustrated Historical Atlas of the County of Simcoe, Township of Innisfil page (Belden 1881) were examined to determine the presence of historic features within the Study Area during the nineteenth century (Figures 2-3).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases.

In addition, the use of historical map sources to reconstruct/predict the location of former features within the modern landscape generally proceeds by using common reference points between the various sources. These sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historic mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

Table 2: Nineteenth-century property owner(s) and historical features(s) within or adjacent to the Study Area

		1871		*1881*	
Con #	**Lot #**	**Property Owner(s)**	**Historical Feature(s)**	**Property Owner(s)**	**Historical Feature(s)**
6	21	G. Powell	None	None	None
	22	A. Wallace	Northern Railway	None	Northern Railway
	23	J. Nicholson H. Nicholson	None	None	None

		1871		*1881*	
Con #	**Lot #**	**Property Owner(s)**	**Historical Feature(s)**	**Property Owner(s)**	**Historical Feature(s)**
	24	J. Rolston	None	None	None
	25	W. McGrath	None	None	None
7	21	R. Wallace	Northern Railway	Jas Ralston	School, house, Northern Railway
	22	S. Hastings	None	None	None
	23	R. Wallace McConkey	Water saw mill	None	None
	24	None	None	None	None
	25	None	None	None	None

According to the 1871 map, a water saw mill was located within the Study Area on the north side of 7th Line where the creek crossed under the road. The original location of the Nantyr school house is shown on the northwest corner of the 20th Sideroad and 7th Line intersection. The map also illustrates that the railway had been constructed in Innisfil by 1871. The 1881 map does not illustrate the saw mill, however it does show a farmstead located on Lot 21, Concession 7 east of the relocated school house. A church is shown on the former site of the school house in Lot 20. No structures are illustrated east of the railway to the lake.

1.2.4 Twentieth-Century Mapping Review

The 1928 National Topographic Series Barrie Sheet and the 1954 aerial photograph of Innisfil were examined to determine the extent and nature of development and land uses within the Study Area (Figures 4-5).The 1928 map illustrates 15 structures adjacent to the Study Area, including the historical school house on 20th Sideroad. Informal roads are shown near the shore of Lake Simcoe connection to a series of lake-front houses north of the Study Area. The railway is shown in its current alignment with a berm on the north side of the Study Area. A creek roughly follows the course of 7th Line. The 1954 aerial shows the Study Area continued to be surrounded by agricultural fields, and that little development had occurred within the Study Area into the mid-twentieth century except along the lakeshore.

A review of available Google satellite imagery shows that the farmstead on the north side of 7th Line near 20th Sideroad was demolished between 2009 and 2010, however the Study Area west of the railway has remained relatively unchanged since 2004. East of the railway, imagery from 2004 is unavailable. By 2009, residential subdivisions had already been built east of Quarry Drive, and construction was occurring for additional subdivisions along Lambstone Street and Fox Hill Street.

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MTCS through “Ontario’s Past Portal”; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

A Stage 1 property inspection was conducted on June 28, 2017 that noted the Study Area is located along 7th Line, an undeveloped two-lane right-of-way, between 20th Sideroad and the western shore of Lake Simcoe in the settlement of Alcona. Between 20th Sideroad and the GO Transit Barrie railway line the Study Area is surrounded by active agricultural fields. To the south of 7th Line between the railway and Webster Boulevard is an aggregate extraction area. West of Webster Boulevard the Study Area is surrounded by twentieth and twenty-first-century residential development to the Lake Simcoe shore, where 7th Line ends at Cross Street and a small access path to the lake.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow and Warner 1990:Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include: elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The Study Area is within the Peterborough Drumlin Field and Simcoe Lowlands physiographic regions on till and sand plains, and includes a remnant beach and shorecliff (Figure 6). The Peterborough Drumlin Field extends from Simcoe County east to Hastings County and is generally characterized by rolling till plains overlying limestone bedrock. The region is approximately 4,532 square kilometres and contains over 3000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman and Putnam 1984:169). The drumlins are composed of highly calcareous till but there are local differences in composition. The till plains of the regions were formed during the retreat of the Lake Ontario ice lobe of the Laurentide glacier and they indicate directionality of glacial advance and retreat. Till is produced from

the advance of continental glacial ice. Soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil which is characteristic of glaciations (Chapman and Putnam 1984:10, 16).

The Simcoe Lowlands physiographic region consists of low-lying belts of sand plain, which cover an area of 280,000 hectares, bordering Georgian Bay and Lake Simcoe. The area was once inundated by the waters of glacial Lake Algonquin, inland of the present day shorelines. Remnant shoreline features (beaches, shorecliffs, bars, etc.) mark the former water level of Lake Algonquin. Topography is generally flat and subsoil consists of variable sand, gravel, silt and clay deposits as formed on the lake bottom (Chapman and Putnam 1984:177-182). Sand plains and beach ridges are glaciolacustrine features and are products of the Late Wisconsian glacial stage (ca. 25,000-10,000 BP). Sand plains are formed in shallow waters and beach ridges mark the former shorelines (Karrow and Warner 1990:5). The sand plain upon which the study area is situated likely corresponds to shallow water deposits from Lake Algonquin. Boulder pavement has been caused by wave action during preceding high-water phases (Chapman and Putnam 1984:76).

Figure 7 depicts surficial geology for the Study Area. The surficial geology mapping demonstrates that the Study Area is underlain by till, fine-textured glaciolacustrine deposits of silt and clay, and coarse-textured glaciolacustrine deposits of sand and gravel from littoral, foreshore, and basinal deposits (Ontario Geological Survey 2010). Soil drainage is depicted in Figure 8. Soils in the Study Area consist of: Tioga loamy sand, and stony phase, a grey calcareous outwash sand with good drainage; Bondhead sandy loam, stony phase and Guerin loam, stony phase, both light grey calcareous soil with imperfect drainage; and Smithfield clay loam, a calcareous lacustrine varied silt loam and clay with imperfect drainage.

The Study Area is within the Innisfil Creeks subwatershed, adjacent to Lake Simcoe. The subwatershed is located on the western side of the Lake Simcoe watershed, mostly in the Town of Innisfil, and is 107 square kilometres in size, consisting of the following 17 named creeks which drain from agricultural areas through urban areas and into Lake Simcoe: Banks, Belle Aire, Bon Secours, Carson, Cedar, Gilford, Holland River, Innisfil Creeks (small unnamed tributaries), Leonard's, Mooselanka, Moyer, Sandy Cove, Strathallan, Sylvan, Upper Marsh, White Birch, and Wilson (Lake Simcoe Region Conservation Authority 2012).

Lake Simcoe was known to the Huron-Wendat as Ouentironk, or "beautiful water" (Lake Simcoe Region Conservation Authority 2016). Late seventeenth and early eighteenth century French sources refer to Lake Simcoe as Lac Taronto. The etymology of 'Taronto' is debated however it is thought to be derived from the Mohawk word tkaronto which means "where there are trees standing in the water" and may refer to the fish weir at the Narrows between Lake Simcoe and Lake Couchiching (Natural Resources Canada 2007). Lake Simcoe was one of the terminals of the Toronto Carry Place route along the Humber River which was a vital route in fur trade (Williamson 2008:50–52). This passage connected to Lake Ontario at the mouth of the Humber River. Lake Simcoe drains an area of 340,000 ha, subsequently draining into Lake Huron. Lake Simcoe supports a diverse aquatic ecosystem, home to over 50 different species of fish (LSRCA 2012).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude

and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *BbGv*.

According to the OASD, nine previously registered archaeological sites are located within one kilometre of the Study Area (Ministry of Tourism, Culture and Sport 2016). A summary of the sites is provided below.

Table 3: List of previously registered sites within one kilometre of the Study Area

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
BbGv-2	Kirkpatrick	Unknown	Unknown	Unknown 1975
BbGv-33	Beach Road	Euro-Canadian	Homestead	Henry 1998
BbGv-47	Unnamed	Euro-Canadian	Homestead	K. Powers 2010
BbGv-48	Unnamed	Euro-Canadian	Homestead	K. Powers 2010
BbGv-49	Jack	Euro-Canadian	Homestead	ASI 2011
BbGv-50	McCullough	Euro-Canadian	Homestead	ASI 2011
BbGv-51	Ralston 1	Euro-Canadian	Homestead	ASI 2011
BbGv-52	Ralston 2	Euro-Canadian	Homestead	ASI 2011
BbGv-54	Whan	Euro-Canadian	Homestead	ASI 2015
BbGv-56	Davidson	Euro-Canadian	Homestead	ASI 2015

According to the background research, three previous reports detail fieldwork within 50 m of the Study Area.

ASI (2011) conducted a Stage 1 and 2 archaeological assessment of the Previn Court Homes property, consisting of approximately 55 hectares of land that was subject to both pedestrian and test pit survey. During the course of the assessment, one pre-contact findspot and four historical sites, the Jack site (BbGv-49), the McCullough site (BbGv-50), the Ralston 1 site (BbGv-51), and the Ralston 2 site (BbGv-52) were encountered (ASI 2011). The Jack site and the Ralston 2 site were recommended for further archaeological assessment, while the McCullough site and the Ralston 1 site were not deemed to be culturally significant, therefore no further work was recommended.

D.R. Poulton and Associates Inc. conducted a Stage 1 for the Lefroy Belle Ewart Secondary Plan. The initial assessment in 2006 reviewed a large area bounded by 7th Line to the north, 3 Line to the south, 20th Sideroad to the west, and the shoreline of Cook's Bay to the east (DRPA 2006). The Stage 1 Alcona South Secondary Plan was also completed by D.R. Poulton and Associates Inc. (2011) as a result of a number of planning changes to the Town of Innisifl, and reviewed an area generally bounded by Innisfil Beach Road to the north, Belle Aire Beach Road to the south, 20th Sideroad to the west, and St. Johns Road to the east. Both reports determined that the lands contained a moderate to high potential for the recovery of Indigenous and Euro-Canadian historical resources, therefore, Stage 2 archaeological assessments were recommended prior to development, however no detailed assessment, including a property inspection, was completed in either project.

2.0 FIELD METHODS: PROPERTY INSPECTION

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Jessica Lytle (P1066), with Rob Pihl (P057) as an advisor, both of ASI, on June 28, 2017, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It was a visual inspection only and did not include excavation or collection of archaeological resources. Fieldwork was only conducted when weather conditions were deemed suitable, per S&G Section 2. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto the existing conditions of the Study Area in Section 7.0 (Figures 9-10) and associated photographic plates are presented in Section 8.0 (Plates 1-24).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. These data are presented below in Section 3.1. Results of the analysis of the Study Area property inspection are presented in Section 3.2.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (see Table 3);
- Water sources: primary, secondary, or past water source (Innisfil Creeks, Lake Simcoe);
- Early historic transportation routes (7th Line, 20th Sideroad,);
- Proximity to early settlements (church, school, farmsteads); and
- Well-drained soils (Tioga loamy sand)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Town of Innisfil Heritage Register was consulted and one property

within the Study Area is listed under the Ontario Heritage Act: 1497 7th Line, Nantyr Schoolhouse, built 1875.

These criteria are indicative of potential for the identification of Indigenous and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

3.2 Analysis of Property Inspection Results

The property inspection determined that parts of the Study Area exhibit archaeological potential (Plates 2-7, 16-24; Figures 9-12: areas highlighted in green and orange). These areas will require Stage 2 archaeological assessment prior to any development. According the S & G Section 2.1.1, pedestrian survey is required in actively or recently cultivated fields (eg. Plates 2-4, 7). According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (eg. Plates 2-7, 16-24).

Parts of the Study Area, which could not be confirmed through visual inspection to have been subjected to deep soil disturbance, require test pit survey at intervals according to professional judgement to confirm the extent of disturbance, in accordance with the S & G Section 2.1.8 Standard 2 (Plate 9; Figures 9: areas in turquoise).

The remainder of the Study Area has been subjected to deep soil disturbance events from the construction of the ROWs, railway corridor, residential subdivisions and commercial centres, stormwater management pond, and former quarry lands south of 7th Line. According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Plates 1-24; Figures 9-12: areas highlighted in yellow). Some lands within the Study Area are within low and wet conditions, and according to the S & G Section 2.1 do not retain archaeological potential (Figures 9-12: areas highlighted in blue). These areas do not require further assessment.

3.3 Conclusions

The Stage 1 background study determined that nine previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 assessment.

4.0 RECOMMENDATIONS

In light of these results, the following recommendations are made:

1. The Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey and pedestrian survey, both at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Parts of the Study Area, which could not be confirmed through visual inspection to have been subjected to deep soil disturbance, require test pit survey at intervals according to professional judgement to confirm the extent of disturbance;

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or low and wet conditions. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MTCS should be immediately notified.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also advises compliance with the following legislation:

- This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act.*

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

- The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

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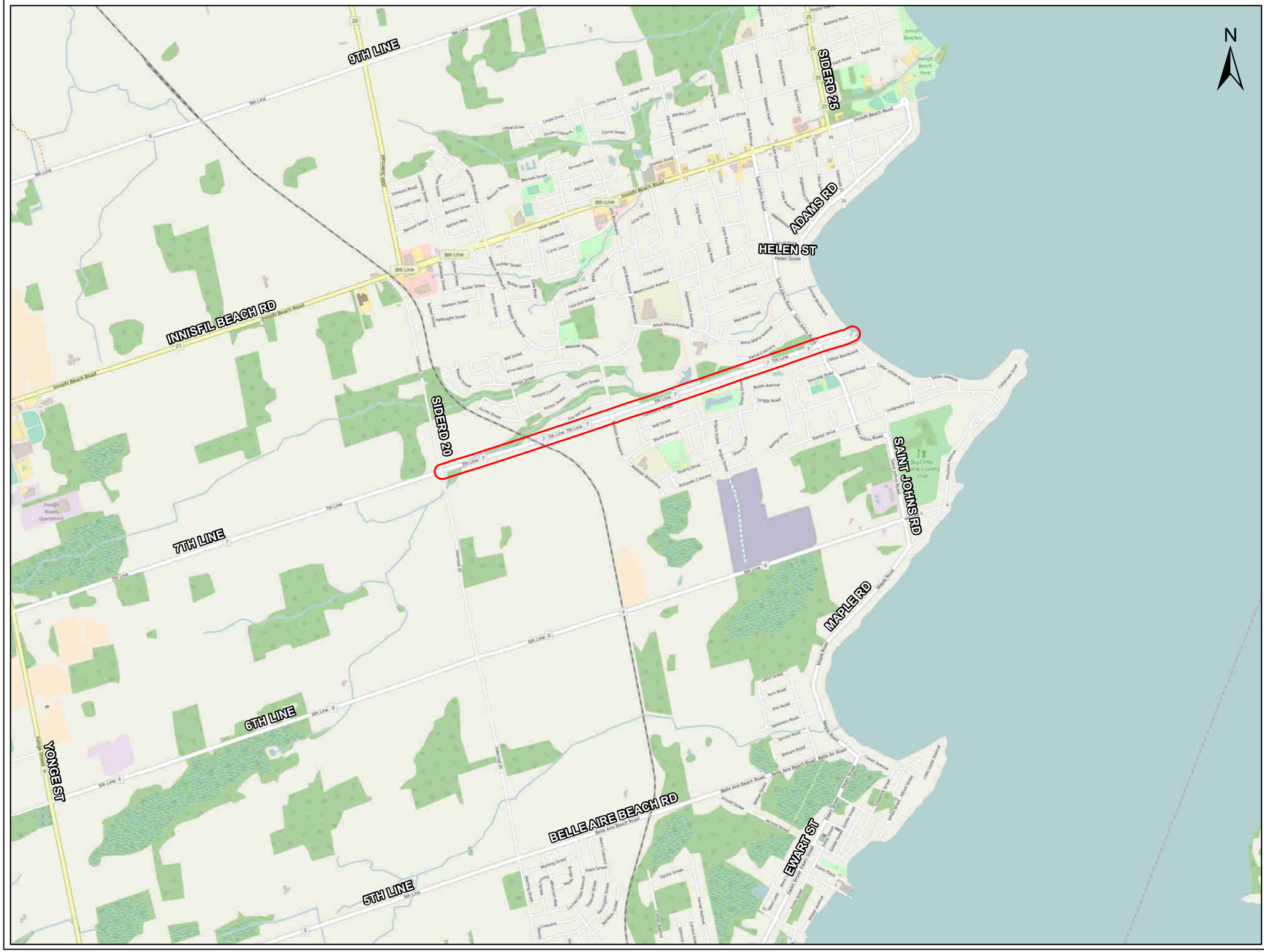
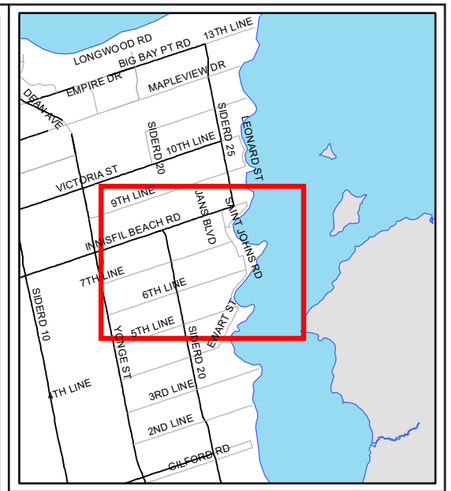
7.0 MAPS





Study Area

BASE:

0 1.5

Kilometres

ASI PROJECT NO.: 17EA-035
DATE: 6/5/2017

DRAWN BY: JF
FILE: 17EA035_fig1

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Figure 1: Location of the Subject Property.

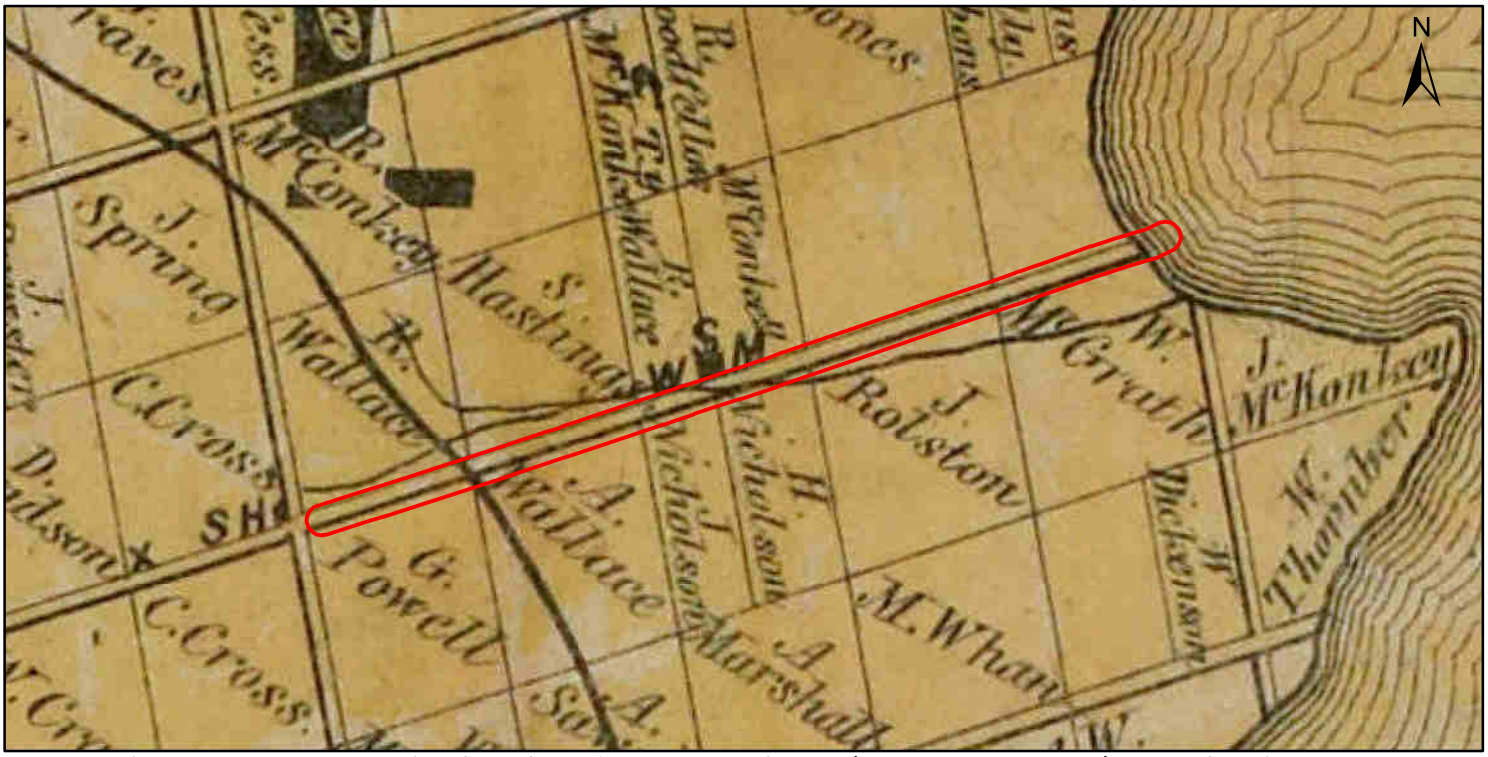

Figure 2: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area (Approximate Location) Overlaid on the 1871 Hogg's Map of the County of Simcoe

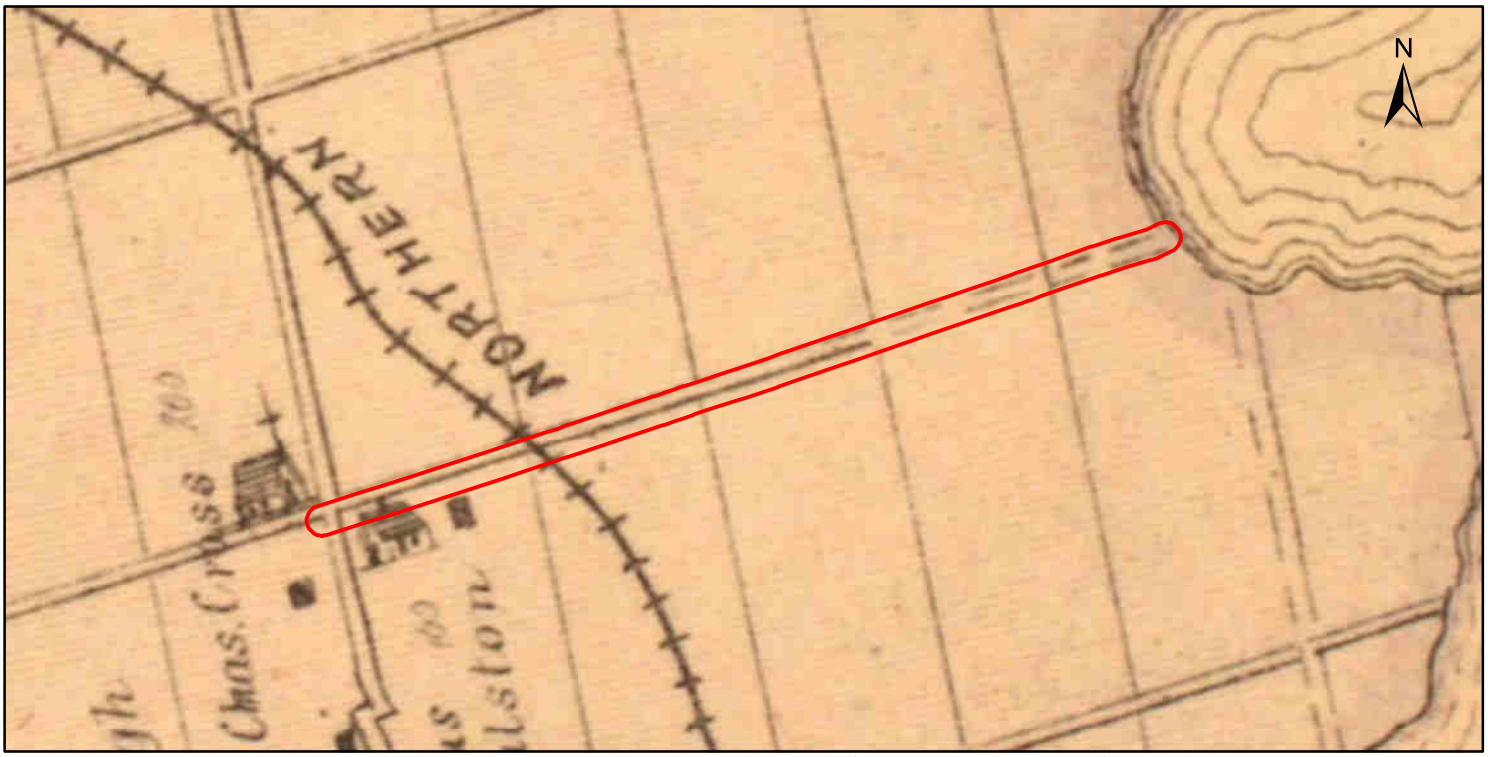

Figure 3: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area (Approximate Location) Overlaid on the 1881 Illustrated Historical Atlas of the Township of Innisfil

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Study Area

Base:
1871 Hogg's Map of the County of Simcoe
1881 Illustrated Historical Atlas of the Township of Innisfil

0 650
Metres

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DATE: 6/27/2017 FILE:

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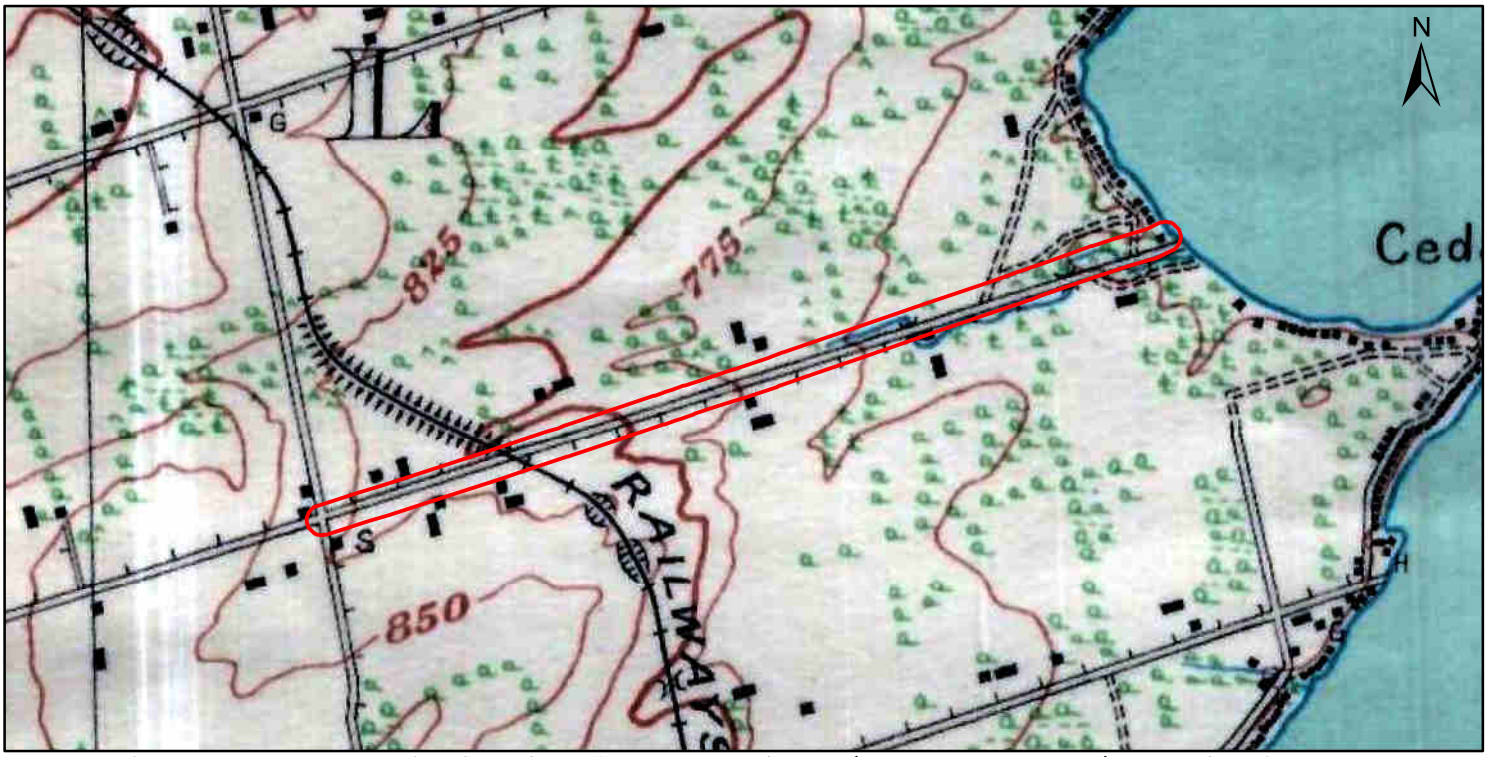

Figure 4: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area (Approximate Location) Overlaid on the 1928 National Topographic Series Barrie Sheet

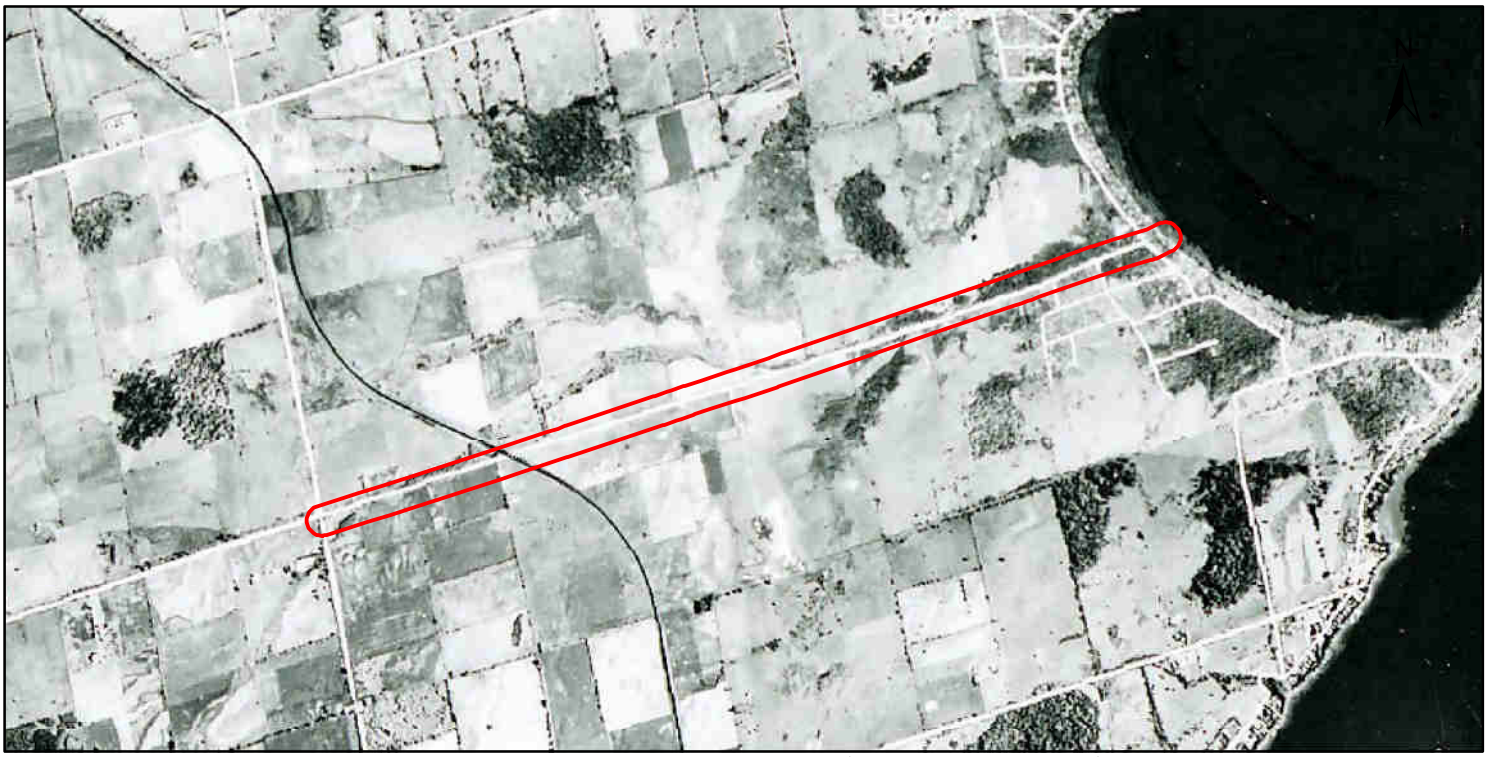

Figure 5: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area (Approximate Location) Overlaid on the 1954 Aerial Photograph of the Town of Innisfil

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Study Area

Base:
1928 National Topographic Series Barrie Sheet
1954 Aerial Photograph of the Town of Innisfil

0 500
Metres

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DATE: 6/27/2017

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FILE: 17EA035_fig4_5_hist

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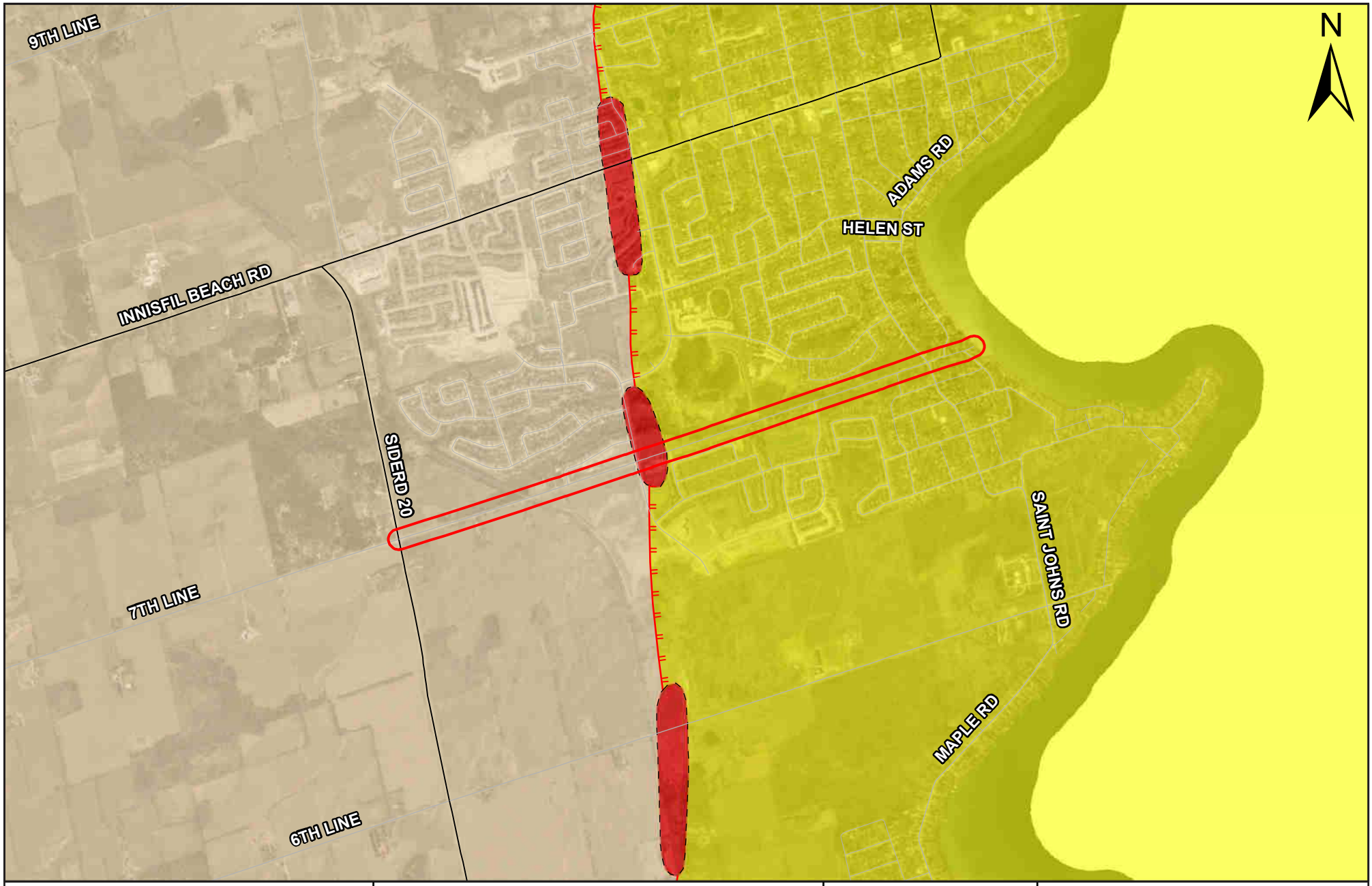

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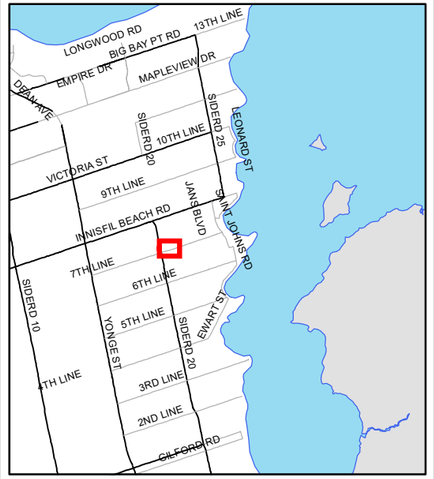
Figure 6: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area – Physiographic Regions



Study Area

Photo Plate

Disturbed - No Stage 2 Required

Low and Wet - No Stage 2 Required

Archaeological Potential - Requires Stage 2 Pedestrian Survey

Archaeological Potential - Requires Stage 2 Test Pit Survey

BASE:

0 150

Metres

ASI PROJECT NO.: 17EA-035
DATE: 06-Jul-17

DRAWN BY: JF & BW
FILE: 17EA035_Fig9_S1

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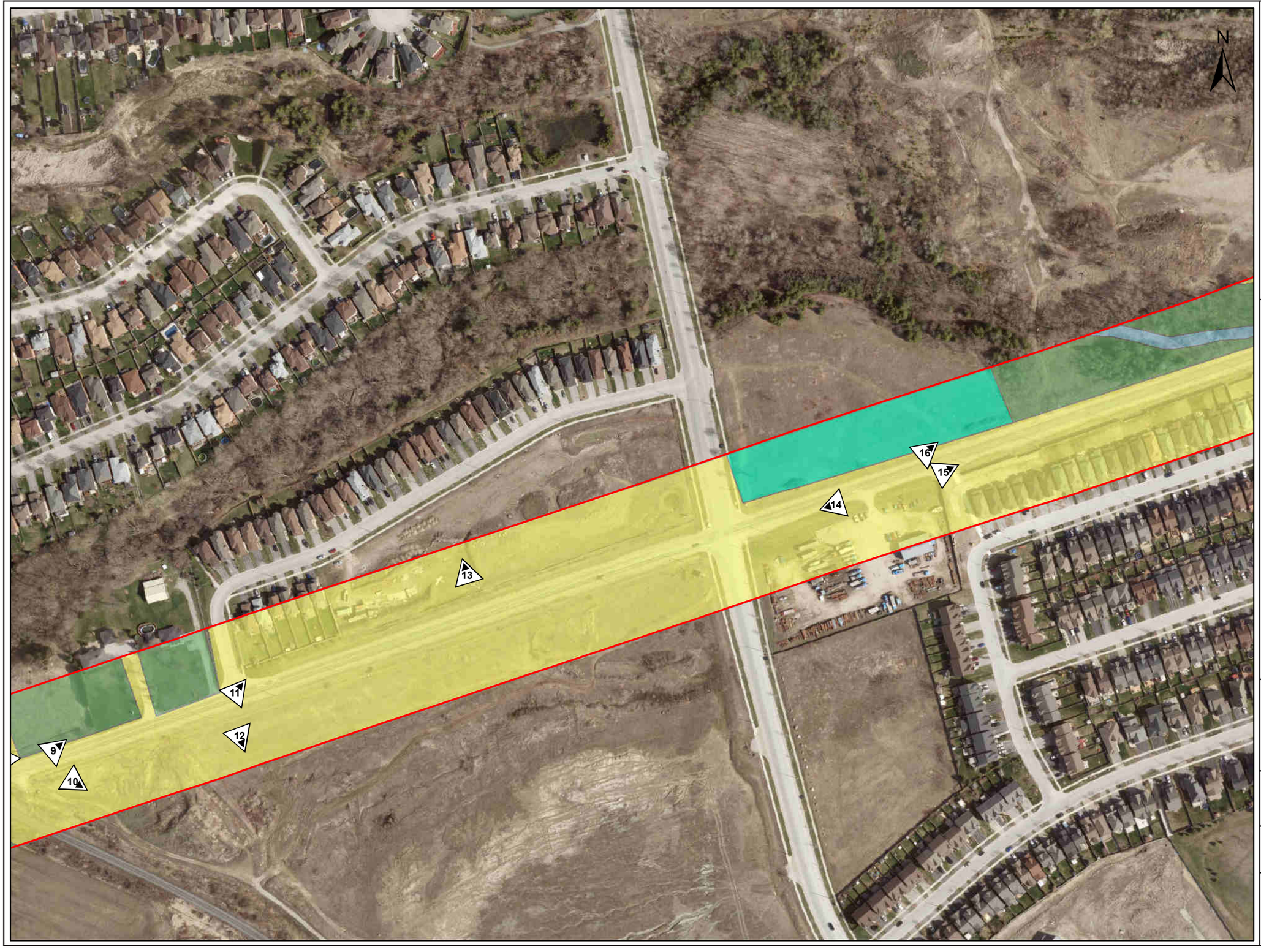
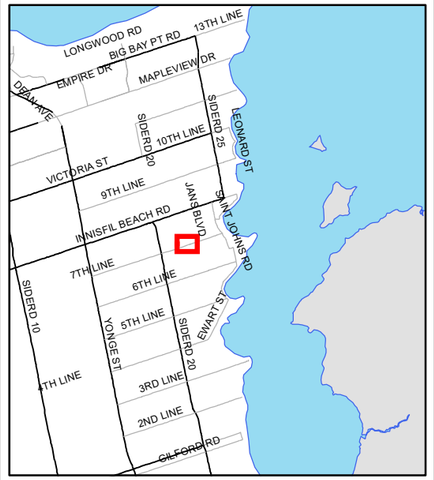
Figure 9: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area – Results of the Property Inspection (Sheet 1)





Study Area

Photo Plate

Disturbed - No Stage 2 Required

Archaeological Potential - Requires Stage 2 Test Pit Survey at Judgmental Intervals

Low and Wet - No Stage 2 Required

Archaeological Potential - Requires Stage 2 Test Pit Survey

BASE:

0 150

Metres

ASI PROJECT NO.: 17EA-035
DATE: 06-Jul-17

DRAWN BY: JF & BW
FILE: 17EA035_Fig10_S2

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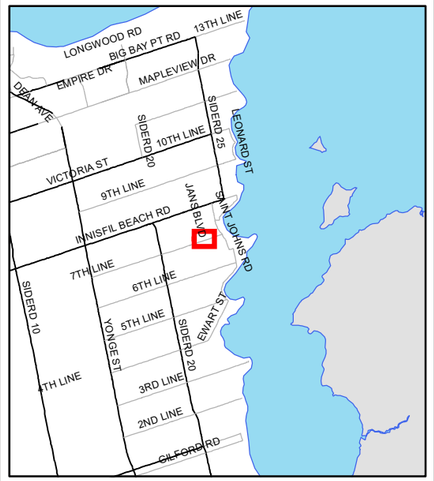
Figure 10: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area – Results of the Property Inspection (Sheet 2)



Study Area

Photo Plate

Disturbed - No Stage 2 Required

Low and Wet - No Stage 2 Required

Archaeological Potential - Requires Stage 2 Test Pit Survey

BASE:

0 150

Metres

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DATE: 06-Jul-17

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FILE: 17EA035_Fig11_S3

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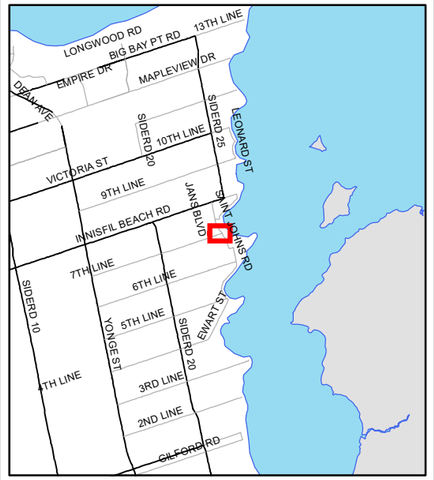
Figure 11: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area – Results of the Property Inspection (Sheet 3)



Study Area

Photo Plate

Disturbed - No Stage 2 Required

Low and Wet - No Stage 2 Required

Archaeological Potential - Requires Stage 2 Test Pit Survey

BASE:

0 150

Metres

ASI PROJECT NO.: 17EA-035
DATE: 06-Jul-17

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Figure 12: 7th Line Improvements 20th Sideroad to Lake Simcoe Study Area – Results of the Property Inspection (Sheet 4)

8.0 IMAGES

Plate 1: Northeast view of 7th Line at 20th Sideroad; Area is disturbed, no Stage 2 required

Plate 2: Southwest view of 7th Line at 20th Sideroad and historic school house; Area south of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 3: Northeast view of 7th Line; Areas on both sides of disturbed ROW exhibit potential, require Stage 2 test pit survey to the south and pedestrian survey to the north

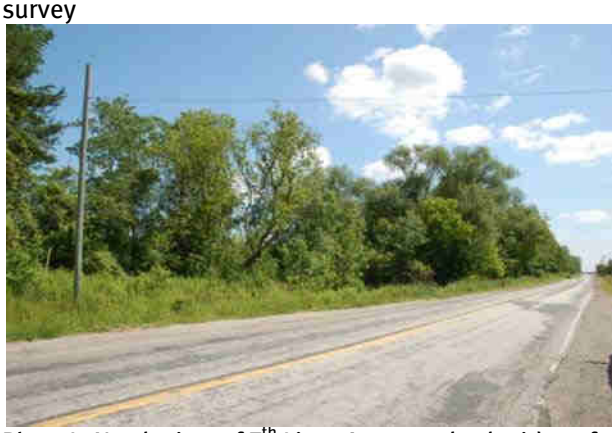

Plate 4: North view of 7th Line; Areas on both sides of disturbed ROW exhibit potential, require Stage 2 test pit survey to the north and pedestrian survey to the south

Plate 5: Southwest view of 7th Line; Areas south of disturbed ROW and beside driveway exhibit potential, require Stage 2 test pit survey

Plate 6: South view of farm lane from 7th Line; Areas on both sides of disturbed driveway exhibit potential, require Stage 2 test pit survey

Plate 7: Northeast view of 7th Line; Areas on both sides of disturbed ROW up to the railway corridor exhibit potential, require Stage 2 test pit survey to the north and south, and pedestrian survey to the south

Plate 8: North view from 7th Line; Area is documented in Google imagery to have been previously disturbed by extensive grading and soil mounding circa 2011. Currently an overgrown meadow.

Plate 9: Northeast view of 7th Line; Areas north of disturbed ROW require Stage 2 judgmental test pit survey

Plate 10: Southeast view from 7th Line; Area is within former quarry lands and is disturbed, no Stage 2 required

Plate 11: North view of 7th Line at Fox Hill St.; Area is disturbed, no Stage 2 required

Plate 12: South view from 7th Line; Area is within former quarry lands and is disturbed, no Stage 2 required

Plate 13: North view of 7th Line towards Fox Hill St.; Area is disturbed, no Stage 2 required

Plate 14: Southwest view of 7th Line towards Webster Blvd.; Area to the south is disturbed, no Stage 2 required; Area to the north requires judgmental Stage 2 test pit survey to confirm disturbance

Plate 15: Northeast view of 7th Line; Area is disturbed, no Stage 2 required

Plate 16: Northeast view of 7th Line; Area north of disturbed ROW exhibits potential, requires judgmental Stage 2 test pit survey to confirm disturbance

Plate 17: Southwest view of 7th Line; Area on both sides of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 18: Northeast view of 7th Line; Area on both sides of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 19: Northeast view of 7th Line; Area south of disturbed ROW requires Stage 2 test pit survey, and area north of disturbed ROW requires Stage 2 test pit between the creek and residential subdivision

Plate 20: Southwest view of 7th Line; Area on both sides of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 21: Northeast view of 7th Line; Area north of the creek exhibits potential, requires Stage 2 test pit survey

Plate 22: Northeast view of 7th Line; Area on both sides of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 23: Northeast view of 7th Line; Area on both sides of disturbed ROW exhibits potential, requires Stage 2 test pit survey

Plate 24: Southwest view of 7th Line from beach access; Areas beyond disturbed ROW exhibit potential, require Stage 2 test pit survey

Appendix G-1

Cultural Heritage Resource Assessment

CULTURAL HERITAGE ASSESSMENT REPORT:

CULTURAL HERITAGE LANDSCAPES AND BUILT HERITAGE RESOURCES

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY
PROPOSED RECONSTRUCTION
7th Line – 20th SIDEROAD to LAKE SIMCOE
TOWN OF INNISFIL
COUNTY OF SIMCOE, ONTARIO

JULY 2017

AINLEY FILE # 17540-1

Revised January, 2018

Revised February, 2018

45 South Front Street, Belleville, ON, K8N 2Y5
TEL: (613) 966-4243 • EMAIL: belleville@ainleygroup.com

WWW.AINLEYGROUP.COM

Table of Contents

EXECUTIVE SUMMARY

Ainley Group Professional Engineers and Planners was contracted by the Town of Innisfil to complete a cultural heritage resource impact assessment as part of a Class Environmental Assessment to reconstruct a segment of the 7th Line. The study area includes the right-of-way along 7th Line between the 20th Sideroad and Lake Simcoe.

Background research and a desktop review of secondary source material indicates that the area has been settled since the 1820's.

The rural character of the 7th Line corridor has already been diminished with the construction of housing developments along both sides of 7th Line east of the rail line. The proposed work for 7th Line consists of road widening and reconstruction, along with intersection turning lane construction. This involves property acquisition for road widening, removal of trees and other vegetative disturbance. Road widening will result in loss of landscape features and will contribute to further loss of contextual value.

Five potential cultural heritage resources were identified during a field review within or adjacent to the study area. Two sites are potential built heritage resources and three are potential cultural heritage landscapes. Of the built heritage sites, one is considered to be of high potential and one of low potential. All three of the cultural heritage landscapes are considered to be of low potential.

The following are specific potential impacts:

The former Nantyr School - 1497 7th Line (BHR1) – The building was constructed in 1875 of river stone. While somewhat altered on the exterior, it retains original features such as a (school) bell tower. It is now a private residence. The site will be altered due to removal of some of the vegetative buffer along 7th Line adjacent to the existing ditch to the east of the site.

Farmstead including dwelling at 1363 7th Line (BHR2) – A dwelling along with outbuildings and a barn are on the site. The dwelling may be 19th century construction. The barn is in poor condition. The site will be altered due to removal of some of the vegetative buffer along 7th Line and road widening.

Stand of lilacs (along north side of 7th Line near east of Webster Boulevard) (CHL1) – The presence of lilac bushes contribute to the rural character of 7th Line. They may lie within the road allowance of the widened road. It may be necessary to remove them, depending on whether road widening encapsulates the stand within its dimensions.

Views along 7th Line East to Lake Simcoe (CHL2) – The views to Lake Simcoe provide a focal point when travelling east along 7th Line. They may be impacted in a minor way, depending on placement of any signage, lights etc. Long-range views should not be significantly impacted.

'Cottage Community' (CHL3) – A remnant 'cottage' community exists at the east end of 7th Line which speaks to the type of development that developed along this end of 7th Line beginning in the late 19th century. There will be removal of vegetation at and near the intersection to create a turning lane, along with property acquisition on the north side which may impact this 'cottage' character.

MITIGATION

The following mitigation measures are proposed, based on potential impacts:

BHR1 - The former school should be viewed as part of an integrated landscape and not simply as a building on a site. Existing vegetation around the site and along the immediate road shoulders should be maintained to the extent possible. The existing heritage plaque to the east of the site should be integrated into road design with provision for a viewing layby and temporary parking location. If the road design cannot accommodate these requirements then the plaque could be moved to a more suitable location selected by the Town. As this property is listed on the Town's Heritage Register and has policy support for designation, it is recommended that a heritage impact assessment be completed prior to road design completion and construction to document existing conditions and identify heritage attributes so that appropriate construction measures and other mitigation can be implemented.

BHR2 –While there will be a loss of vegetation abutting the corridor, there will be no direct impacts to the structures on the property. It is recommended that landscaping be re-established to pre-construction conditions.

CHL1 –It is recommended that efforts be made to conserve the stand of lilacs along the north side of 7th Line near east of Webster Boulevard when implementing road widening and that landscaping include plantings of lilacs and other typical roadside vegetation.

CHL2 – Recognizing that signage, lighting etc. may be required at this corner, it is recommended that efforts be made to conserve this unobstructed view when implementing road widening.

CHL3 –The reconstruction of 7th Line will be limited to resurfacing 7th Line from St. John's Road to Lake Simcoe. As resurfacing only is being completed for the short section of 7th Line that retains a 'cottage character', it is understood that there will be no impacts on the cottage character of the east end of 7th Line. It is recommended that the views through this area to Lake Simcoe and the open space at the east end of 7th Line be maintained.

RECOMMENDATIONS

Although not a requirement for this project, the following items are suggestions that the Town may want to consider at a future date:

- **BHR1** - Incorporate the design motifs of the former school at 1497 7th Line in future commercial development planned at 20th Sideroad and 7th Line, making use of the prominent features of the school bell tower and its river stone construction to visually and physically integrate both the existing school and new development as a 'gateway' corner and to highlight the heritage design aspects of the school. Carry out additional research regarding William Cross and the construction of the Cross house on Lot 20, Concession VI (1737 7th Line) to yield additional history regarding Nantyr that may be useful in its development as a 'gateway' to Alcona.
- **BHR2** - Complete additional research on the farmstead (dwelling and barn) at 1363 7th Line.

1. INTRODUCTION

1.1 Study Purpose and Rationale

The Ainley Group (Ainley) was retained by the Town of Innisfil to complete a cultural heritage resource impact assessment as part of the 7th Line reconstruction Municipal Class Environmental Assessment (Class EA), Schedule "C". The project study area includes the 7th Line between the 20th Sideroad and Lake Simcoe.

The goal of the EA is to provide options for future improvements to the 7th Line between the 20th Sideroad and Lake Simcoe. Much of the study area lies within the settlement area boundary of Alcona. Ongoing growth in Alcona has led to increased vehicular traffic as well as increased demand from pedestrians and cyclists. In addition, population and employment targets to year 2013 have been established by the Province. By 2031, Alcona and its expansion area will accommodate 32,000 people.

In order to accommodate this growth, the Town of Innisfil is concurrently updating its Official Plan and its Transportation Master Plan. The Town's official Plan indicates that Alcona is to be a focus for growth. The Transportation Master Plan has identified the study area for reconstruction as a major collector road with a right-of-way width of 26 metres. The 7th Line is one of three major access corridors into Alcona from Yonge Street. There is an existing Metrolinx rail corridor that crosses the 7th Line within the project study area between the 20th Sideroad and Webster Boulevard. Metrolinx has initiated a Class Environmental Assessment to undertake improvements to the corridor from Toronto to Barrie that include the addition of a second track. There is a potential GO station to be located on the 6th Line between Concessions V and VI in the south-west area of Alcona. Access to the station will be from the 6th Line with the parking area fronting onto the 6th Line as well. The Town's Trails Master Plan has identified the short-term completion of a multi-use trail along this stretch of the 7th Line.

The purpose of this report is to present a built heritage and cultural heritage landscape inventory of existing resources within the study area along 7th Line east of the 20th Sideroad, identify possible impacts resulting from construction, provide recommendations and propose mitigation measures so that changes to the 7th Line that are necessitated by the planned growth to Alcona can be implemented in a way that conserves the heritage value of identified resources while enhancing the Town of Innisfil.

This report contains an inventory and evaluation of potential cultural heritage resources including buildings and landscapes within and adjacent to the corridor of 7th Line to Lake Simcoe, east of 20th Sideroad. The study area includes the east portion of the nineteenth century hamlet of Nantyr located at the intersection of 7th Line and 20th Sideroad, and a residential area east of St. John's Road that originally developed as seasonal cottages. Appendix A contains additional photographs of the study area.

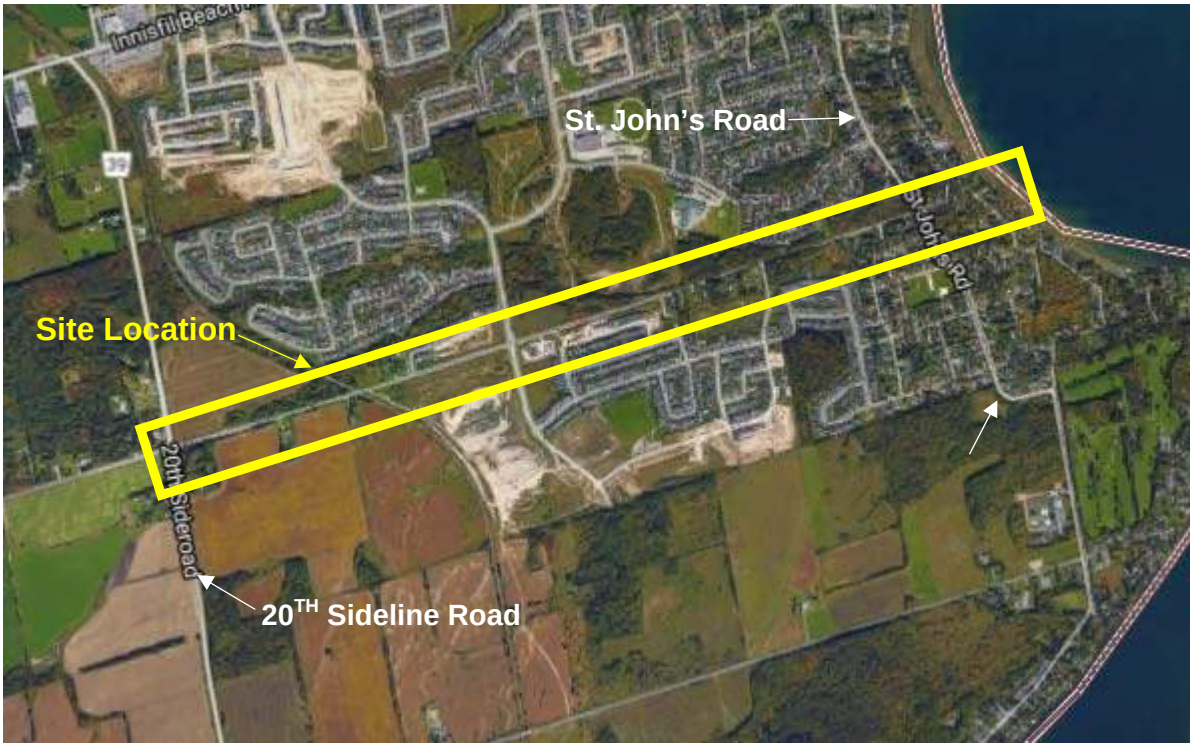

Figure 1: Site Location (Google Maps)

1.2 Data Collection

This study is based on both field observations and a review of existing documents, including the Municipal Heritage Register of the Town of Innisfil. The Register lists one site within the study area as having built heritage value. It is the existing former school (now residence) in Lot 21, Concession VI. The site is not designated. Based on emails with the Ontario Ministry of Tourism, Culture and Sport and a review of Parks Canada's Historic Places, there are no sites within the study area that have been designated as having heritage importance by the Provincial or Federal governments.

The Town`s Heritage Committee is undertaking a heritage sign program. A plaque erected by the Town of Iinnisfil near the school on 7th Line provides information about the old hamlet of Nantyr at the intersection of 7th Line and 20th Sideroad. The Municipal Heritage Committee was contacted for information on the demolished church in Lot 20, Concession VII (just outside the study area but forming part of the old hamlet of Nantyr at 7th Line and 20th Sideroad).

An important resource for this report is the Belden Atlas of Simcoe County of 1881. Many of the entries in the Atlas are the result of local interests having paid for inclusion of pictures and other information. Consequently, some aspects of the community may not appear in it. However, the Atlas shows many features of the Township in 1881.

Local histories along with the digital collection of images of the Innisfil Historical Society were reviewed, as were municipal planning documents that provided context for the larger Environmental Assessment of which this report forms a part.

A windshield survey of properties and landscapes was completed on June 23, 2017, to identify any new cultural heritage resources, to confirm the preliminary identification of resources from the desktop review, to identify any new resources, and to see the identified resource in context. The day was rainy and cloudy. Observations were made from the public roadway only. The site visit confirmed the potential of 1497 7th Line as a cultural heritage resource. Additional potential cultural heritage resources were identified and these are described in this report.

This report recognizes previous reports which addressed the cultural heritage resources in Alcona South including 7th Line. These include the Alcona South Heritage Resource Assessment (November, 2011) by Bray Heritage and the draft Stage 1 Archaeological Assessment of the Alcona South Secondary Plan by D.R. Poulton & Associates (July, 2011).

2. LEGISLATION AND POLICY CONTEXT

2.1 PROVINCIAL POLICIES

Cultural heritage resources are those buildings, structures and landscapes that are valued for the important contribution they make to our understanding of the history of a place, an event, or individuals or groups of people. A cultural heritage assessment considers cultural heritage resources with regard to proposed undertakings within a specific area, pursuant to the *Environmental Assessment Act.*

2.1.1 ENVIRONMENTAL ASSESSMENT ACT (EAA)

Environmental assessments are undertaken under the *Ontario Environmental Assessment Act.* The EAA provides for the protection, conservation and wise management of Ontario's environment. It defines environment broadly and includes natural, social, cultural, economic and built environments. Environmental assessments made under the EAA address the impact of the undertaking on cultural heritage resources.

The *Environmental Assessment Act*, subsection 1(c), which defines "*environment*" to include:

> "…cultural conditions that influence the life of humans or a community as well as
>
> any building, structure, machine or other device or thing made by humans".

Impacts of infrastructure undertakings may affect a cultural heritage resource due to removal or demolition and/or disruption of the character or setting of the cultural heritage resource.

Municipal Class Environmental Assessment (October 2000, as amended 2007) outlines a procedure whereby municipalities can comply with the requirements of the *Environmental Assessment Act*. The Municipal Class EA applies to municipal infrastructure projects including roads, water and wastewater projects.

It identifies potential positive and negative effects of projects such as road improvements and facility expansions or projects to facilitate a new service and includes an evaluation of impacts on the natural and social environment including culture. Projects can vary in their environmental impact. Such projects are classified in terms of schedules. As impacts may vary, projects are classified as A, A+, B, or C. Schedule C projects generally include the construction of new facilities and major expansions to existing facilities.

These projects proceed through a five-phased environmental assessment planning process. The 7th Line assessment is a Schedule C project as it involves the reconstruction and widening of a municipal road.

2.1.2 ONTARIO HERITAGE ACT

The Ontario Heritage Act (2005) (OHA) is the primary legislative vehicle for the preservation of Ontario's cultural heritage. It charges the Minister "to determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario". The Ontario Heritage Act allows for the identification, evaluation, listing and designation of cultural heritage resources through municipal designation bylaws and heritage conservation easement agreements. These identified resources are listed in a Municipal Heritage Register for possible future designation which offers a measure of protection from demolition and alteration under the OHA. Municipal approaches that achieve or exceed the same objective may be used by the municipality to protect resources.

2.1.3 MINISTRY OF TOURISM, CULTURE AND SPORT (MTCS)

The Ministry of Tourism, Culture and Sport has the responsibility under Section 2 of the *Ontario Heritage Act* to determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario. The Ministry has issued three documents to assist in assessing cultural heritage resources as part of an environmental assessment.

1. *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (MTC 1981) states that "when speaking of man-made heritage, we are concerned with the works of man and the effects of his activities in the environment rather than with movable human artifacts or those environments that are natural and completely undisturbed by man".

In addition, environment may be interpreted to include the combination and interrelationships of human artifacts with all other aspects of the physical environment, as well as with the social, economic and cultural conditions that influence the life of the people and communities in Ontario.

The *Guidelines* define cultural heritage landscapes as:

> The use and physical appearance of the land as we see it now is a result of man's activities over time in modifying pristine landscapes for his own purposes. A cultural landscape is perceived as a collection of individual man-made features into a whole. Urban cultural landscapes are sometimes given special names such as townscapes or streetscapes that describe various scales of perception from the general scene to the particular view. Cultural landscapes in the countryside are viewed in or adjacent to natural undisturbed landscapes, or waterscapes, and include such land uses as agriculture, mining, forestry, recreation, and transportation. Like urban cultural landscapes, they too may be perceived at various scales: as a large are of homogeneous character; or as an intermediate sizes farm of homogeneous character or a collection of settings such as a group of farms; or as a discrete example of specific landscape character such as a single farm, or an individual village or hamlet.

The *Guidelines* also define a cultural feature as:

> … an individual part of a cultural landscape that may be focused upon as a part of a broader scene, or viewed independently. The term refers to any man-made or modified object in or on the land or underwater, such as buildings of various types, street furniture, engineering works,

> plantings, and landscaping, archaeological sites, or a collection of such objects seen as a group because of close physical or social relationships.

2. *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* ((MTC 1992) describes the information that the Ministry is looking for when reviewing environmental assessments. This includes documentation of the heritage aspects of the affected environment and an evaluation of how any preferred undertaking and alternatives will affect heritage resources.

3. *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Resources* (MTCS 2016) assists in identifying potential cultural heritage resources by providing a series of screening questions and other considerations to determine how to identify and protect potential cultural heritage resources within a project area subject to environmental assessment.

2.1.4 THE PLANNING ACT

The Planning Act (1990) integrates matters of Provincial interest in Provincial and municipal planning decisions. Municipalities must have regard for matters of Provincial interest when carrying out their responsibilities under the *Act*. One of these Provincial interests concerns the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest (Section 2.d).

2.1.5 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (2014) is issued under the Planning Act and is the 'umbrella' planning policy for the Province. All planning matters must be 'consistent with' the PPS. The PPS requires that *significant built heritage resources* and *significant cultural heritage landscapes* shall be conserved (Section 2.6.1). The PPS includes definitions of 'built heritage resources', 'cultural heritage landscapes' and 'significant', to be used when applying this policy.

A *built heritage resource* is defined as:

> a building, structure, monument, installation, or any manufactured remnant that contributes to a property`s cultural heritage value or interest as identified by a community, including an Aboriginal community (PPS 2014).

A *cultural heritage landscape* is defined as:

> a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. The area may involve features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association (PPS 2014).
>
> Examples may include, but are not limited to farmscapes, historic settlements, parks, gardens, battlefields, main streets and neighbourhoods, cemeteries, trailways, and industrial complexes of cultural heritage value.

Significant is defined as:

> Resources that have been determined to have cultural heritage value or interest for the important contribution they make to our understanding of the history of a place, and event, or a people.

'Significant' has come to include properties that are listed in the Municipal Heritage Register as properties with potential heritage value or that are designated under Part IV or Part V of the Ontario Heritage Act.

2.2 MUNICIPAL POLICIES

2.2.1 OFFICIAL PLAN OF THE TOWN OF INNISFIL

The Town of Innisfil Official Plan (2006 as amended) (Section 6) supports the protection of cultural heritage resources "which are important to the identity and character of the Town" in various ways, including:

- The establishment of a register of built heritage resources,
- The appointment of a heritage committee,
- The addition of identified significant cultural heritage resources and landscapes to the Town's Heritage Register as part of any secondary plan process,
- The need to have regard for known built heritage resources, significant cultural heritage landscapes … in the undertaking of municipal public works, such as roads and infrastructure projects carried out under the Municipal Class Environmental Assessment (EA) process.

2.2.2 ALCONA SOUTH SECONDARY PLAN

The Alcona South Secondary Plan (Section 14.1.2 l) establishes the objective of protecting "significant … built heritage resources and significant cultural heritage landscapes". Section 14.2 outlines the concept of 'gateways' in order "to provide a recognizable landscaped southern and western entrance to Alcona". One of two gateways is to be created at the corner of the 20th Sideroad and 7th Line.

The cultural heritage policies (Section 14.5) of the Alcona South Secondary Plan additionally support:

- The protection and incorporation into development of the designation under Part IV of the Ontario Heritage Act of the school at 1497 7th Line and its retention in situ,
- The maintenance and incorporation of surviving elements of the rural agricultural landscape such as tree lines, fences, hedge rows and associated roadscapes into development "as a framework for development",
- The interpretation of the area's history through interpretive plaques,
- The implementation of zoning to permit a broader range of uses beyond residential in order to ensure preservation of significant cultural heritage sites.

Section 14.5b) states that "significant cultural heritage resources (primarily farmhouses) are shown as an overlay on Schedule B15. These buildings shall be protected and incorporated into new development. Wherever possible, the heritage buildings and adjacent mature trees and vegetation shall be considered as a whole to help conserve elements of the former rural character".

The former school property at 1497 7th Line is the only heritage site in the Secondary Plan within the study area. It is shown on Schedule B15 to the Secondary Plan as 'Heritage Property'.

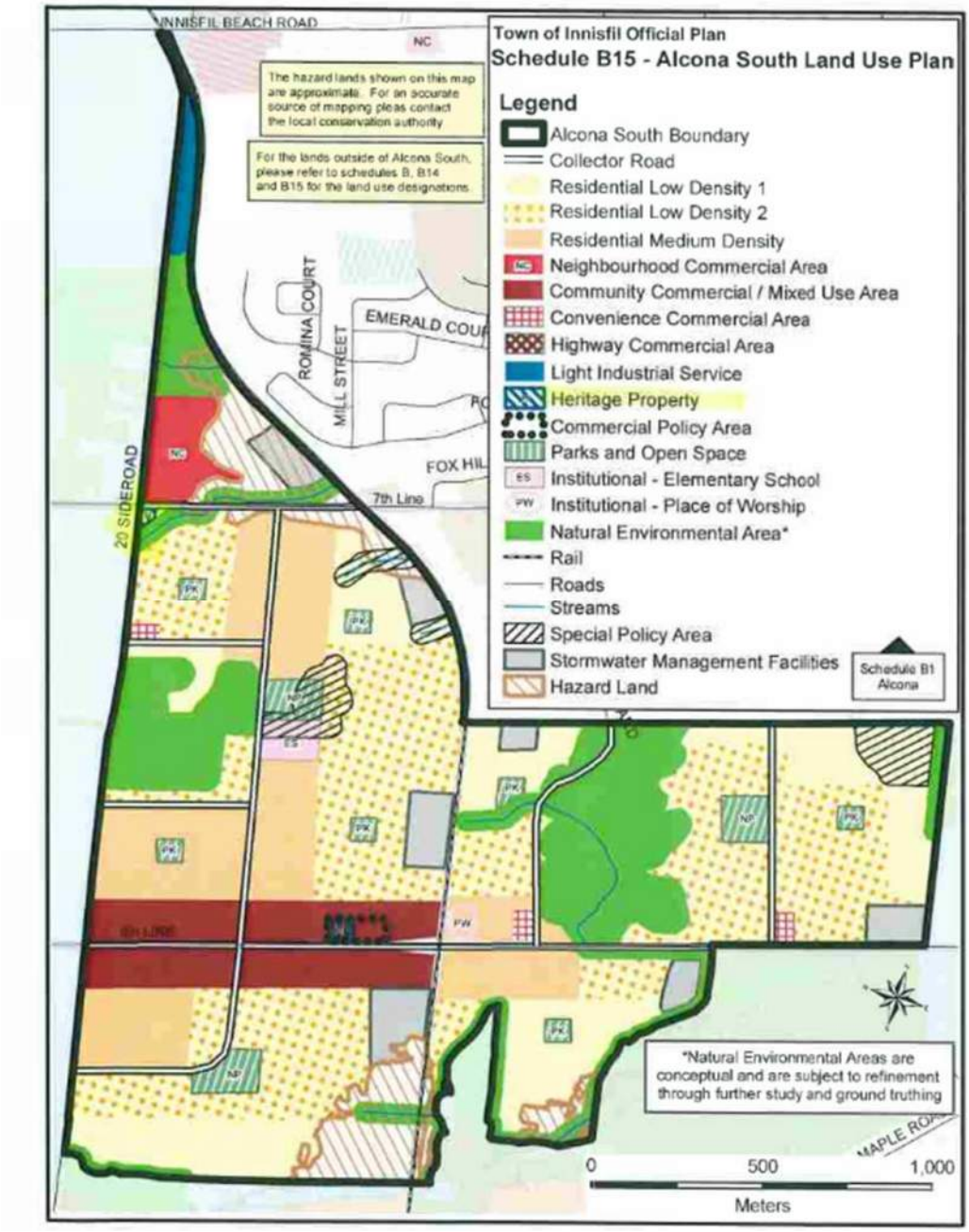

Figure 2: Schedule B15 Alcona South Secondary Plan Land Use

3. INVENTORY OF POTENTIAL BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES

3.1 HISTORICAL CONTEXT

The area comprising the present Town of Innisfil was surveyed in 1820 and laid out in 15 concessions numbered from south to north. Lots were numbered from west to east. Road allowances were provided between concessions at every fifth lot. With few roads constructed at this time, transportation was chiefly by water. Lake Simcoe provided access to the shoreline and sporadic settlement developed along the lakeshore from present-day Barrie south to Holland Landing.

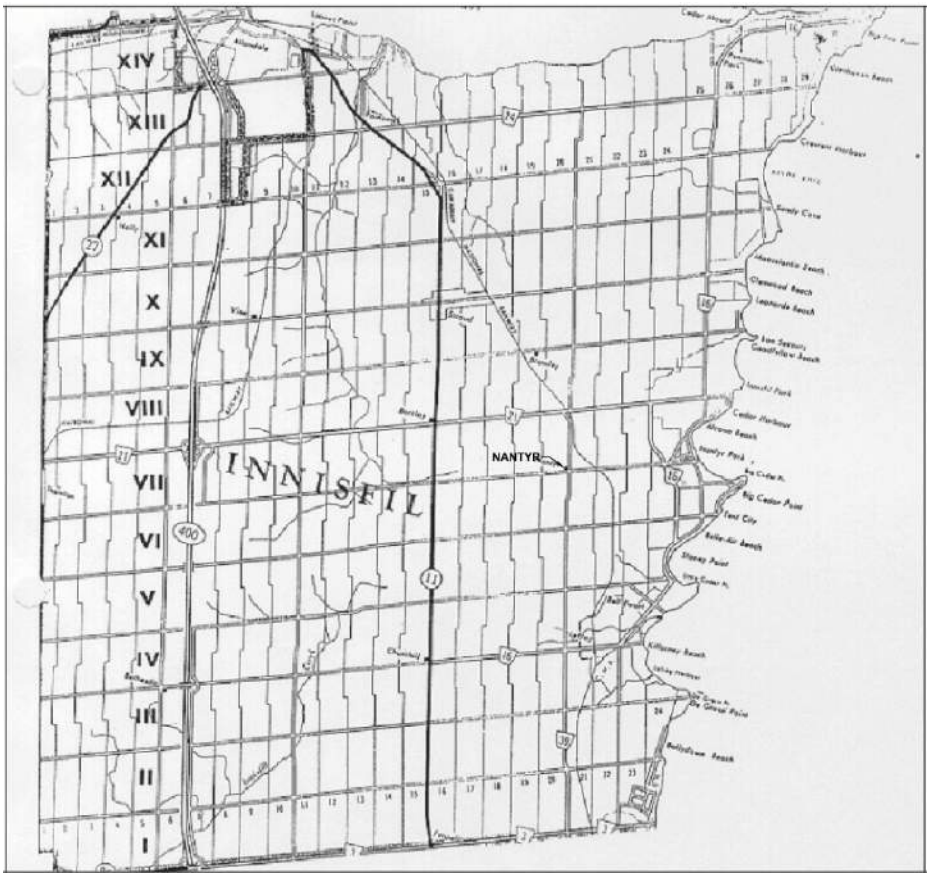

Figure 3: Innisfil Township Showing Hamlet of Nantyr and Numerous Shoreline Communities (Simcoe County Branch, Ontario Genealogical Society – Ontario GenWeb Project)

Yonge Street was completed from York (now Toronto) to Holland Landing in 1796 as a military and settlement road, intended by Lt. Gov. John Graves Simcoe to connect Georgian Bay to York. By 1827, Yonge Street had been extended north and linked Holland Landing and Kempenfelt Bay. The route between Holland Landing and Bradford jogged west around the bay and continued north through Innisfil Township between Lots 25 and 26. This northerly extension of Yonge Street was originally called the

Penetanguishine Road. In 1920, the entire length of the road through (then) Innisfil Township became part of the Provincial highway system as Highway 11.

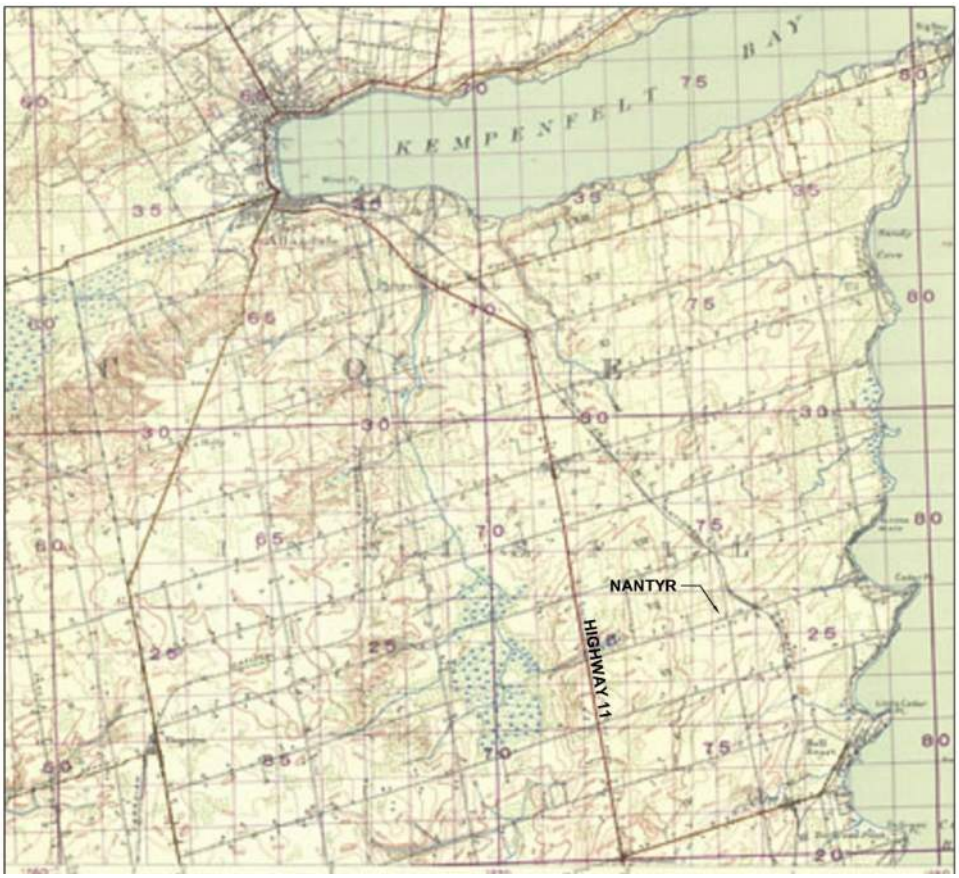

Figure 4: Topographic Map Showing Highway 11 (Dep't of Mines and Resources 1938)

With Yonge Street pushed north to Allandale (now Barrie), settlement progressed. A saw mill and grist mill were built in the Township in the 1830's. The first school was built in 1845. A Methodist church was erected. Andrew Hunter's 1906 *History of Simcoe* County indicates that there was only one pre-1837 settler on the 7th Line east of Yonge Street. By 1842, the population of Innisfil Township was 742. Post offices were established in the area at Bramley, Lefroy and Innisfil, and later at Nantyr. By 1850, the Township had a population of 1807. In this same year, the former Simcoe District became Simcoe County, including the Corporation of the Township of Innisfil. After restructuring in 1994, the Township was renamed the Town of Innisfil.

Settlers continued to arrive chiefly from Scotland and Ireland. One of these settlers was William Cross who came to Innisfil Township in 1832 and settled on Lot 20, Concession VI. According to research provided by the Municipal Heritage Committee, Cross purchased Lot 20, Concession VII (across the 7th in the north-west corner of the intersection of 7th Line and 20th Sideroad) in 1846 from William Selby and then sold one part of the south 1/2 Lot 20, Concession VII to the public school trustees and another part

to Wesleyan Methodist Church Society in 1851. The Methodist church lands were sold to George Scott in 1922.

Figure 5: Approach to CN Rail Crossing Looking East

The Ontario, Simcoe and Huron Railway opened its rail line from Toronto to Bradford in 1853. The company quickly extended it through the Township to Barrie and then to Collingwood. The company was renamed the Northern Railway in 1858 and became part of the Grand Trunk Railway in 1888. The south end of the line from Toronto lay east of Yonge Street and east of 20th Sideroad, traversing the study area and crossing 7th Line before heading west of 20th Sideroad at the 8th Line (now Innisfil Beach Road). The rail line represented a vital link between the Lake Ontario front and the open hinterland of Muskoka. It connected to lake steamers and provided access to local roads to settlements along the Lake Simcoe shoreline. This rail corridor is now part of Metrolinx, providing GO train connections with Toronto while maintaining its historic role in facilitating economic activity in the Town of Innisfil.

By 1871, land ownership along the 7th Line east of 20th Sideroad was divided into twelve parcels, four of which were half-lots owned by three persons and two lots were without named owners. By 1881, there is a building on land owned by James Ralston, located on the south side of 7th Line in Lot 21, Concession VI. Ralston was a farmer who was born in New Brunswick and arrived in the Township in 1854. Innisfil Historical Society information indicates that Ralston occupied the site until 1884 when he moved to the south half of his lot. Ralston also owned 100 acres on the south side of 7th Line further east beyond the rail line and towards Lake Simcoe. No development is shown on this parcel in 1881.

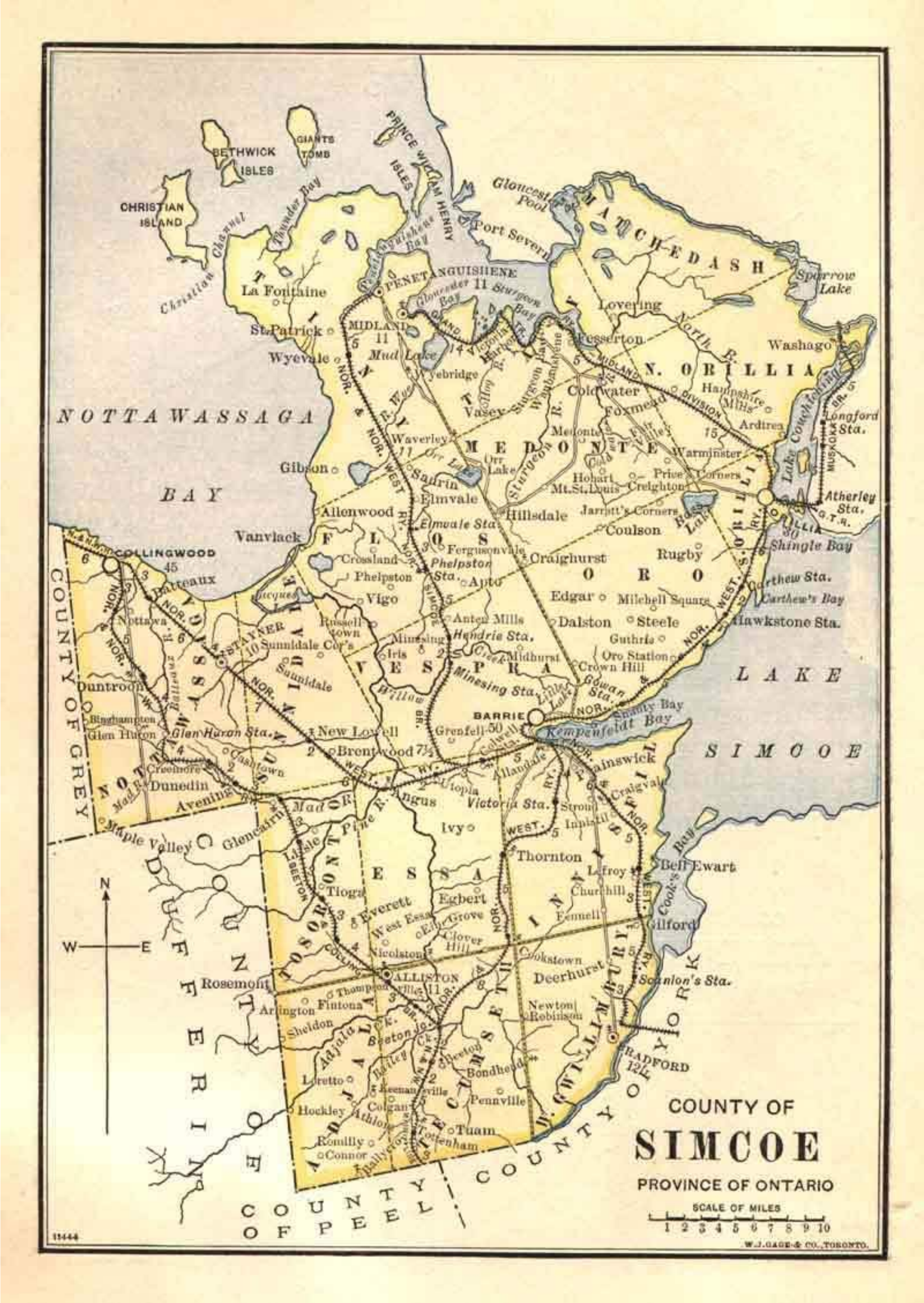
COUNTY OF
SIMCOE
PROVINCE OF ONTARIO
SCALE OF MILES
W.J.GAGE & CO.,TORONTO.
NOTTAWASSAGA
BAY
LAKE
SIMCOE
BARRIE
COLLINGWOOD
PENETANGUISHENE
MIDLAND
ORILLIA
ALLISTON
BRADFORD
COUNTY OF GREY
COUNTY OF PEEL
COUNTY OF DUFFERIN
COUNTY OF YORK
CHRISTIAN ISLAND
BETHWICK ISLES
GIANTS TOMB
MATCHEDASH
MEDONTE
ORO
ESSA
INNISFIL
TECUMSETH
WEST GWILLIMBURY
ADJALA
TOSORONTIO
VESPRA
FLOS
TINY
TAY
SUNNIDALE
NOTTAWASAGA
Kempenfeldt Bay
Cook's Bay
Lake Couchiching
Washago
Atherley Sta.
Stayner
Elmvale
Angus
Thornton
Lefroy
Churchill
Stroud
Craigvale
Painswick
Gilford
Cookstown
Beeton
Tottenham
Bond Head
Creemore
Duntroon
Craighurst
Hillsdale
Coldwater
Victoria Harbour
Port Severn
Waverley
Wyevale
La Fontaine
Vanvlack
Allenwood
Gibson
Dalston
Edgar
Hawkstone Sta.
Shanty Bay
Belle Ewart
11444

Figure 6: Township of Innisfil 1885 Showing Rail Lines in Innisfil Township (Ontario GenWeb Project)

By 1881, several small settlements had grown up in the Township, a result of rail expansion and road construction. One of these was Nantyr, a rural hub at the intersection of 7th Line and 20th Sideroad. The Belden Atlas of 1881 indicates Ralston's dwelling mentioned above, located east of the intersection of 7th Line and 20th Sideroad, a school on the south-east corner of 7th Line and 20th Sideroad on Ralston's land, and a church on the north-west corner of the intersection. Methodism had arrived in the area with the earliest settlers. A Methodist minister lived at White's Corners (later Dalston) as early as 1819 and the first Methodist church in the Township was built in 1841. The church indicated on the 1881 Atlas was possibly an early building that was replaced when a brick church was built in 1907. The church has since been demolished and replaced with a residence.

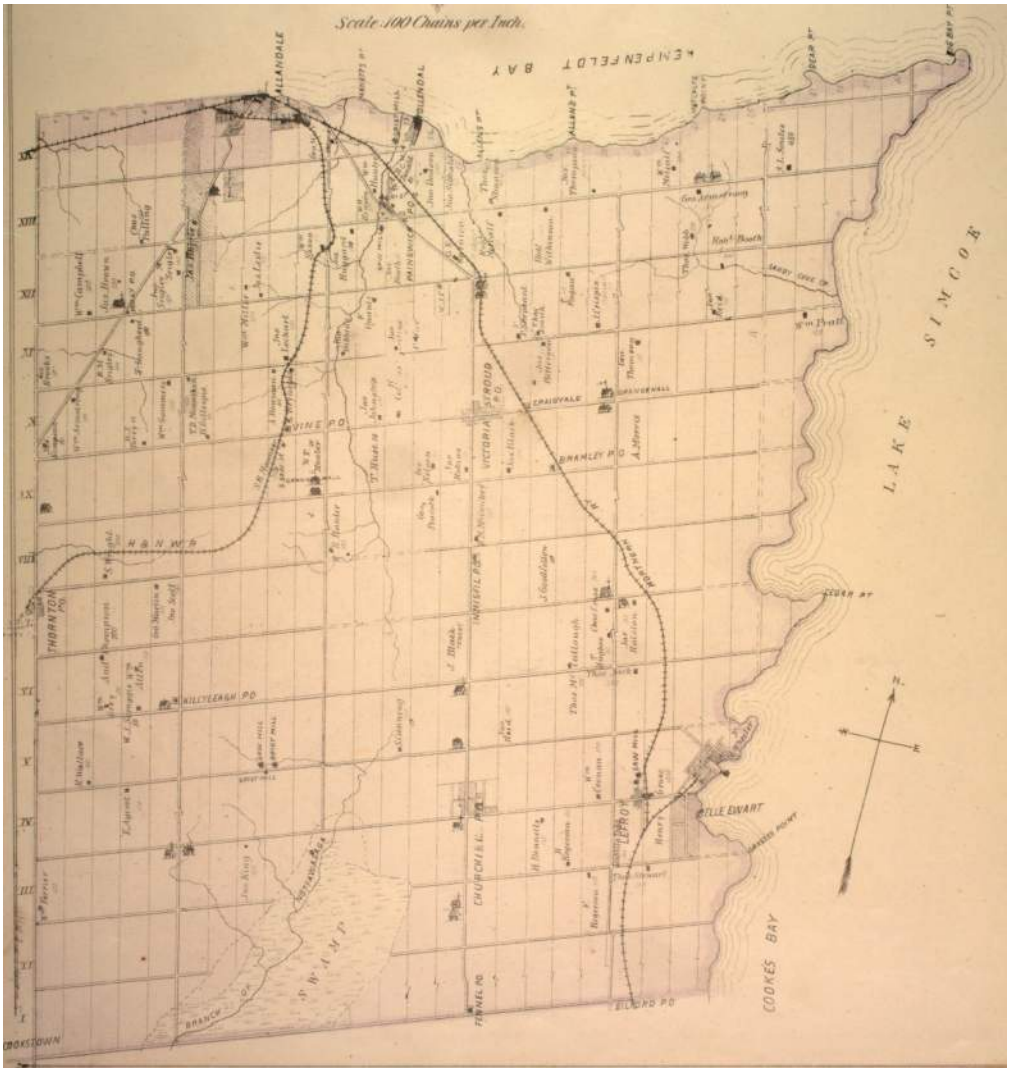

Figure 7: Belden Atlas 1881

The Township has traditionally been populated with many schools, possibly owing to the strong interest in education brought by its numerous Scottish settlers. By 1845, there were about 50 schools in the Township. The Upper Canada Common School Act of 1841 provided funding for an expansion of schools in the 1840's. There were 83 schools in the Township by 1843. As these early log schools were replaced, most were built of brick and had the distinctive school bell tower on top. The former Nantyr School at 7th Line and 20th Sideroad was constructed in 1875 on the Ralston property, built in river stone and topped with a bell tower that remains a feature of the building today. It functioned as a school until it was closed in 1963.

Figure 8: 1497 7th Line – Former Nantyr School (now residence)

A plaque placed by the Town of Innisfil about 200 metres east of the former school on 7th Line describes the history of this small community.

> "Nantyr, named after an estate in Wales, was formerly known as Wesley. A brick church stood here, as part of the Innisfil Methodist circuit. The school began in at the home of William Cross with a 'home class' for boys and another 'home class' for girls. The teacher was paid from contributions made by the families. Cross, whose stone house still survives, later became Innisfil's first reeve. The first log house was built in 1845, followed by the present stone building in 1875. It closed operations as a school in 1963. A post office was opened between 1881 and 1914."

With a church, school and post office, the elements of a settlement at the intersection of 7th Line and 20th Sideroad were in place for a number of years. The elements of a settlement at Nantyr existed for a number of years. However, the locational advantages of communities such as Alcona, Belle

Ewart and Gilroy meant that Nantyr did not develop. The demolition of the Methodist church and the later closure of the school completed the demise of the community.

Figure 9: Heritage Plaque Erected by the Town of Innisfil – 7th Line

Little change took place in the rural agricultural character of the road through the mid-twentieth century. A few residences were built along 7th Line as rural options to life in Alcona but the road remained largely undeveloped. The focus of area settlement continued to be the Lake Simcoe shoreline, as it had been for more than 150 years. Recently, pressures for growth from the community of Alcona have pushed residential development out along 7th Line resulting in construction of several subdivisions and new roads.

3.2 NOTABLE FEATURES OF THE STUDY AREA

1. Views to Lake Simcoe

Enabled by its flat and open topography, the survey of southern Simcoe County was completed on a grid pattern. The 7th Line maintains the straight configuration of that grid pattern. It is a public roadway that crosses Yonge Street from the west and runs east ending at Lake Simcoe in the south end of the

community of Alcona. The fine views toward Lake Simcoe afforded by the straight path to the lake are one of the features of the area, as illustrated in Figure 10.

Figure 10: View to Lake Simcoe Looking East Along 7th Line

2. Former Nantyr School

Most late nineteenth-century schools in the Township had a bell tower similar to that on the Nantyr School. Nonetheless, the bell tower remains a distinctive feature. The Nantyr School is constructed of river stone which is not common in area construction in general, and most nineteenth-century schools in the Township were built of red brick. The Cross house in Lot 20, Concession VI is located about 1.5 km west of the former Nantyr School at 1737 7th Line just west of the study area. It is built of the same stone. The heritage plaque shown in Figure 9 indicates that William Cross, an area resident and former reeve of Innisfil, was deeply involved in developing the first schools in the Township. Some of the design features of the Cross house provide clues as to date of construction. The windows of front door surround and the quoining (contrasting stone) on the façade corners indicate a possible construction date of 1860 to 1880. The Cross dwelling and the former school may have been built about the same time (i.e. in the 1870's) using stone from the same source. William Cross may have been instrumental in its construction.

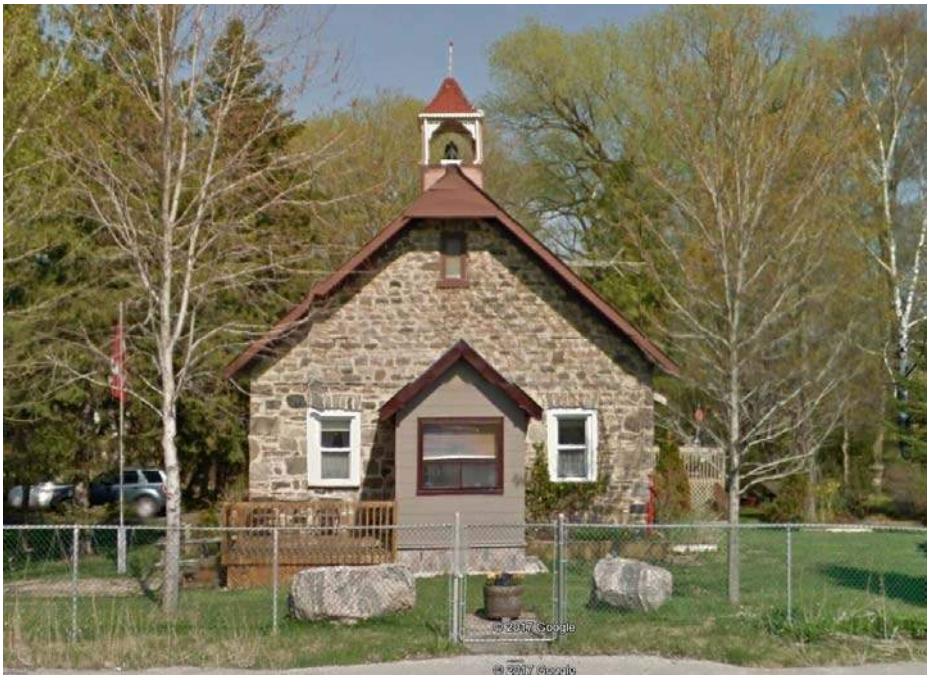

Figure 11: Former School at 1497 7th Line Showing School Bell Tower

3. Changing Character of 7th Line

The few farmsteads laid out along the 7th Line are largely gone. Open fields and treed areas characterize the lands west of the rail line. There are two dwellings in this area including a farmstead with a barn at 1363 7th Line, a modern dwelling at 1425 7th Line, along with the former Nantyr School (now a residence). The one remaining field hedgerow within the study area runs north-south, deep into Lot 21 Concession VI.

Figure 12: Modern Dwelling at 1425 7th Line - Barn at 1363 7th Line in Distance

Subdivision development now occupies much of the lands on each side of 7th Line east of the rail tracks. It is characterized by fences along 7th Line. The Town of Innisfil's Official Plan indicates that 7th Line is to be built out with residential uses and a commercial node at Webster Boulevard and 7th Line. A watercourse flowing to Lake Simcoe lies along much of the area bordering 7th Line east of the rail corridor.

Figure 13: Recent Subdivision Development at Fox Hill Street & 7th Line

4. Lakefront Cottage Development on Lake Simcoe Shoreline

A feature of the settlement patterns within the Town of Innisfil has been lakefront development along Lake Simcoe. The community of Alcona along with hamlets and towns to the north and south of it such as Gilford, Belle Ewart and Big Bay Point developed due to their locational opportunities for moving goods such as timber and wheat through from the interior to other centres, first by water and then rail. Later, the shoreline settlement areas became communities of seasonal homes for cottagers from Toronto in particular. A rough road network at the lakefront including Simcoe Boulevard and Cross Street had developed by the 1920's to accommodate cottage growth. Most of these homes have been converted to permanent dwellings. However, the short segment of 7th Line at its east end running to the lake from St. John's Road continues to have the 'feel' of the old cottage community.

Figure 14: The 'Cottage' Area South of St. John's Road

4. IDENTIFICATION, DESCRIPTION & EVALUATION OF POTENTIAL HERITAGE RESOURCES

4.1 CRITERIA FOR IDENTIFYING POTENTIAL HERITAGE RESOURCES

When identifying heritage resources, reference is made to the following criteria as outlined in Regulation 9/06 of the Ontario Heritage Act. A building or structure or landscape that is identified as 40 years old or older (used as a benchmark) and that meets at least one of the following criteria may be considered for investigation as to possible heritage value. These criteria fall into three categories and are abbreviated and summarized here:

- Design/physical value – displays a high degree of technical, creative, or scientific achievement; high degree of craftsmanship or artistic merit; rare, unique or representative style or construction method,
- Historical/associative value – has a direct association with theme, person or event, demonstrates a theme or pattern in history, has a strong association with the community or person,
- Contextual value – is important in defining and maintaining the character of an area, is a landmark, illustrates significant structures and practices in the development of a community.

Cultural heritage landscapes are defined as geographical areas that can usually be classified as one or a combination of the following: farmsteads or agricultural landscapes, road and streetscapes, waterscapes, railscapes, historic settlements, and cemeteries.

4.2 DESCRIPTION OF POTENTIAL HERITAGE RESOURCES

Applying these criteria when reviewing the 7th Line in both a desktop and field investigation, it can be concluded that the study area of 7th Line east of 20th Sideroad is characterized by a limited number of potential cultural heritage resources.

1. 1497 7th Line – Former Nantyr School - Built Heritage Resource

This site appears on the Town of Innisfil Heritage Register as a property that is listed but not designated under the Ontario Heritage Act. Section 14.5c) of the Town's Official Plan (Alcona South Secondary Plan) indicates the Town's intent to designate it.

This site is recorded in the Town of Innisfil's Municipal Heritage Register as follows:

> *Muth Homestead - 1497 – 7th Line, Innisfil, ON L9S 4G3 Conc. 6, North Part Lot 21*
>
> *Nantyr School, first built as a log structure built about 1843 and was on the north-west corner of the 7th Concession and 20 Sideroad on land owned at the time by William Cross. The log school was used until 1875 when a stone schoolhouse was erected on the south-east corner on the farm of James Ralston. The log building served as a teacher's residence until destroyed by fire a few years later. At first the school was known as Wesley, but later the name was changed to Nantyr. Before there was a regular school, what was known as a home class was run by Mr. Wilson & Mr. Cross who taught the boys, while the girls sat around spinning & weaving.*
>
> *Council approved this listing - CR-327.08 Sept. 17/08.*

On a site visit on June 23, 2017, the site was viewed from the public road only. The building appears to be in good shape. It was noted that a chain link fence surrounds the property and that access (other than a pedestrian gate on the 20th Sideroad) is taken from 7th Line. The front door has been altered with the addition of a wooden porch but the original entrance may be intact within the porch. A metal roof has replaced the original roof and a rear addition has been added. The Stage 1 Archaeological Assessment of the Alcona South Secondary Plan area by D.R. Poulton & Associates Inc. (draft- July 20, 2011) concluded that this school site has a "high potential for as-yet undiscovered (Euro-Canadian) archaeological remains". The former school sits at the busy cross-roads of 7th Line and 20th Sideroad which has recently be reconstructed to an urban section with curb and gutter and traffic signals. 7th Line provides access to the south end of the community of Alcona .

Figure 15: Former School at 1494 7th Line Looking North In Relation to Intersection at 7th Line & 20th Sideroad

2. 1363 7th Line – Farmstead with Dwelling, Barn and Associated Lands - Built Heritage Resource

This residential dwelling house, as shown in Figure 16, is built in a vernacular style with a gable and rear addition. It is 1.5 storeys in height and is clad in siding. The front door is much altered as are the front windows. There are mature trees in the front and side yards. The barn is located directly to the rear of the dwelling and at a distance. It was viewed from the public road only. There is a building showing on the 1881 Belden map within the 100 acres owned by James Ralston in Lot 21, Concession VI. Ralston was born in New Brunswick and settled in the Township of Innisfil in 1854. It is inconclusive as to whether the existing farmstead at 1363 7th Line is the building shown on the 1881 mapping.

Figure 16: Dwelling at 1363 7th Line

3. Stand of Lilacs – East of Webster Boulevard, North Side of 7th Line – Cultural Heritage Landscape

   As illustrated in Figure 17, there is a grouping of lilacs along 7th Line (and on individual private properties on the south side of the road further east) which lends a rural character to the public road. The lilacs represent a discrete example of specific landscape character and form part of surrounding roadside open space and vegetation which border and follow a watercourse.

Figure 17: Lilacs Close to 7th Line at Webster Boulevard

4. View - 7th Line East to Lake Simcoe – Cultural Heritage Landscape

The flat terrain and subsequent survey of the straight road allowance that is 7th Line allow for views to Lake Simcoe as 7th Line travels east to the lake. The lake becomes a focal point around Quarry Drive where the tree break at the end of the road opens to blue water and sky. The view provides a sense of lightness and destination for the journey along 7th Line as can be seen in Figure 18.

Figure 18: View to Lake Simcoe from Quarry Drive Area

5. "Cottage' Community – East of St. John's Road on 7th Line – Cultural Heritage Landscape

This area of approximately 10 dwellings provides a cottage atmosphere as shown in Figure 19 and speaks to the type of development that would have grown up along this end of 7th Line over the period from the late 19th century to WWII. Aspects of the 'cottage' community atmosphere are sandy and narrow road shoulders, lack of concrete curbs and asphalt, rural mailboxes, wooden cladding on dwellings, heavy vegetation along the roadside hiding some of the dwellings, informal landscaping on individual properties including unpaved driveways, and the open view of the lake. The open space left where the original road allowance meets the lake water is often sold as lots when the surrounding lot pattern, access and size of the site provide for a potential lot. The east end of 7th Line continues to provide open access to the Lake Simcoe shoreline within surroundings that recall the cottage era of the shoreline.

Figure 19: Cottage Character Looking West on 7th Line (2 views)

4.3 EVALUATION OF POTENTIAL HERITAGE RESOURCES

Criteria for determining the significance of cultural heritage resources are recommended by the Province. However, municipal approaches that achieve or exceed the same objective may be used. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

In order to rate the potential heritage properties and landscapes identified through both research and site visit, potential has been categorized as high, medium or low.

HIGH potential indicates that the site should be designated under the Ontario Heritage Act.

MEDIUM potential indicates that the site should be considered for further investigation since, while it may have no design/physical value or contextual value, it may require further research to determine if it has historical /associative value.

LOW potential indicates that the site contributes to the context of the area and should therefore be conserved where possible.

The following have been identified as potential cultural heritage resources within the study area for the following reasons:

BHR1 – Former School - 1497 7th Line – The school site has been listed by the Town on its register of heritage properties. The Town's Alcona South Secondary Plan has specifically cited the property for preservation, designation, retention in situ, and integration into future development as part of a 'gateway' to Alcona. The Poulton and Associates Stage 1 Archaeological Assessment (2011) indicates that the site has high potential for findings of Euro-Canadian artifacts. The site is identified by Bray's Heritage Resource Assessment of 2011 as having high potential and was recommended for designation under the OHA. HIGH

BHR2 – Farmstead - 1363 7th Line – The site was assessed by the Bray report as having low potential. It commented on the "large barn in fair condition". The site visit of June 23rd, 2017 noted its current poor condition with most siding removed (revealing its post and beam construction). The dwelling has some design characteristics of a 19th Georgian façade. However, field observation (albeit from the public road only) noted that the front of the house appears to be constructed on pilons (not a foundation). Its location is also closer to the rail tracks than the one indicated on the 1881 Belden Atlas on Lot 20. The only other dwelling along this stretch of 7th Line (at 1425) is a modern dwelling. LOW

CHL1 – Stand of lilacs - East of Webster Boulevard, north side of 7th Line – Stands of lilacs are typical elements of a rural road landscape. LOW

CHL2 – View - This view to Lake Simcoe is an important element of local character. While it may not be unique to the Town or even within Alcona, the view is an important feature of the lakeside identity of the community. LOW

CHL3 – Remnant Streetscape - The 'cottage' community atmosphere evoked at the east end of 7th Line at Lake Simcoe is not unique along the Alcona shore of Lake Simcoe. However, the characteristics of this section of 7th Line that create the 'cottage community' are important to the identity of the community of Alcona. LOW

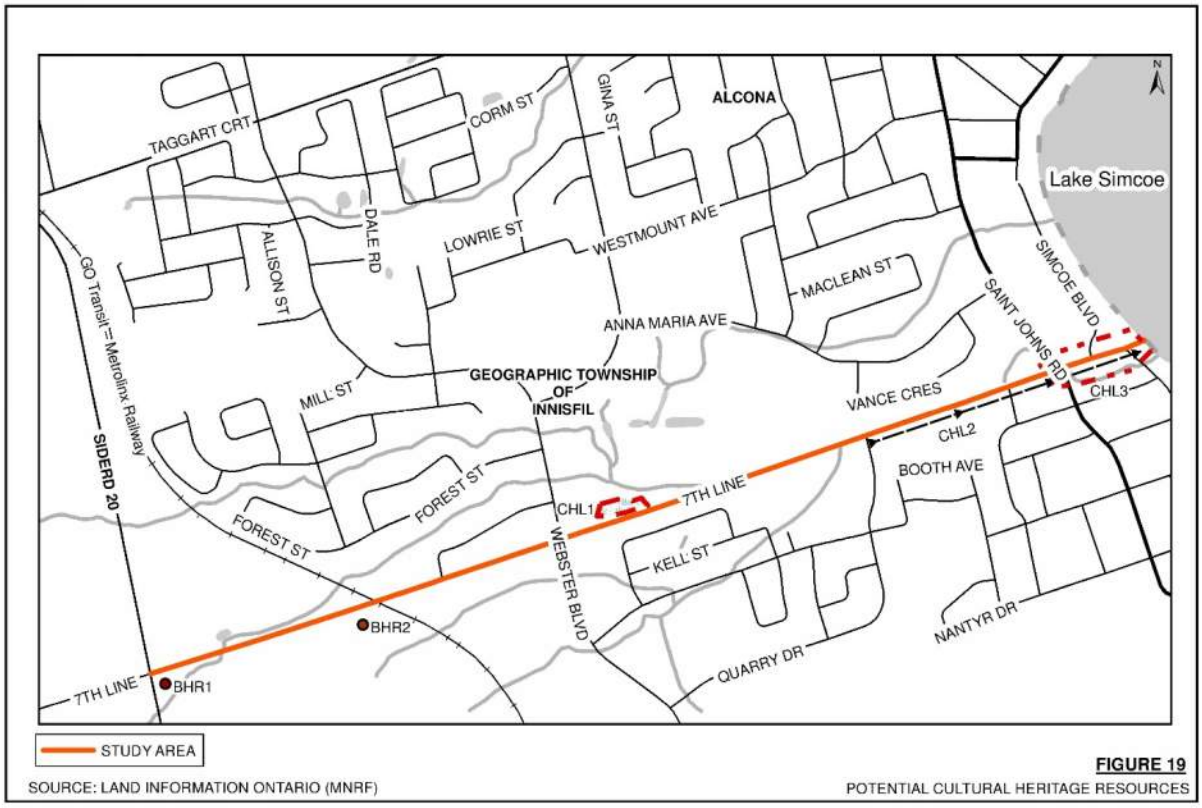

Figure 20: Map of Locations of Potential Heritage Resources

4.4 SUMMARY

This report identifies 1497 7th Line as having high potential for cultural heritage value as significant built heritage for its design/physical value and for its historical/associative value. Other than this site, the cultural heritage resources of the 7th Line are generally of contextual value for their remnant rural landscape sections and features.

The Town of Innisfil has recognized the cultural heritage value of 1497 7th Line in its planning documents. The Town's Official Plan (OP) identifies it for designation under the Ontario Heritage Act, designates it (in the OP) as 'Heritage Property', and identifies it as part of a future 'gateway' to the Town of Alcona.

5. PROPOSED DEVELOPMENT AND POSSIBLE IMPACTS OF RECONSTRUCTION OF 7TH LINE

5.1 POTENTIAL IMPACTS OF A PREFERRED ALTERNATIVE

Environmental assessment is undertaken to provide for the protection, conservation and wise management of Ontario's environment. The Municipal Class EA process identifies potential effects that may result from road improvement projects. As impacts may vary, projects are classified as Schedule A, A+, B or C. The 7th Line reconstruction is classified as a Schedule C project since a widening of the existing corridor is being considered. A Schedule C requires completion of Phases 1 to 5 of the Class EA process.

Possible changes due to reconstruction along the 7th Line include:

- East of St. John's Road - will likely be limited to intersection improvements over about 85 metres of the east leg of the intersection in order to balance the left turn lane on the west leg
- From 20th Sideroad to St. John's Road - may be total road reconstruction from a rural cross-section to an urban cross-section with curb and gutter and storm sewer along the length of the 7th Line in a 26 metre right-of-way
- From 20th Sideroad to Webster Boulevard - may be a four-lane road plus left turn lanes,
- From Webster Boulevard to St. John's Road – may be a two-lane road with left turn lanes at the intersections
- From St. John's Road to Lake Simcoe – the semi-urban cross section will likely be maintained with the addition of a left turn lane, at St. John's Road
- West of 20th Sideroad - may be approximately 200 metres affected to develop the necessary lane balance at the intersection of 20th Sideroad and 7th Line
- At 1497 7th Line - Disturbance may occur approximately 10 metres east of the existing ditch and along the 20th Sideroad frontage a northbound to eastbound right turn lane may be considered
- Some of the dwellings between St. John's Road and Quarry Road may be impacted by road widening
- Acquisition of property and the removal of trees will be required in most locations fronting onto areas of road widening.

However,

- There will likely be no need to disturb the dwellings east of St. John's Road
- There will likely be no need for grade changes at the rail crossing
- Dwellings east of St. John's Road will not likely be impacted by road widening and reconstruction
- There will likely be minimal impacts along 20th Sideroad.

Figure 21: Intersection of St. John's Road & 7th Line Looking West

6. SCREENING FOR POTENTIAL IMPACTS

6.1 ASSESSMENT OF POTENTIAL IMPACTS - SCREENING PROCESS

The impact of proposed development on cultural heritage resources should be assessed against a range of possibilities as outlined in the Ministry of Tourism and Culture's documents including *Screening for Impacts to Built Heritage and Cultural Heritage Landscapes* (MTC 2010) and *Guidelines for Preparing the Cultural Heritage Resource Component of Environmental Assets* (MTCC 1992).

These include:

- Destruction, removal or relocation of any, or any part of any, significant heritage attribute or feature Alteration which means any change in any manner and includes restoration, renovation, repair, or disturbance
- Shadows created that alter the appearance of a heritage attribute or change the exposure or visibility of a natural feature or plantings, such as a garden
- Isolation of a heritage attribute from its surrounding environment, context, or a significant relationship
- Direct or indirect obstruction of significant views or vistas from, within, or to a built or natural heritage feature
- A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site altercation to fill in the formerly open spaces
- Soil disturbance such as a change in grade, or an alteration of the drainage pattern, or excavation, etc.

6.2 POTENTIAL IMPACTS

The rural character of the corridor has already been diminished with the construction of housing developments along both sides of 7th Line east of the rail line. The proposed work for 7th Line consists of road widening and reconstruction, along with possible construction of intersection turning lanes at St. John's Road and at 7th Line and 20th Sideroad. This work involves property acquisition for road widening, removal of trees, and other vegetative disturbance. Road widening will result in loss of landscape features and will contribute to further loss of contextual value.

The following are specific potential impacts:

BHR1 – The site will be altered due to removal of some of the vegetative buffer along 7th Line adjacent to the existing ditch to the east of the site and possibly along 20th Sideroad to provide a northbound right turn lane.

BHR2 – The site will be altered due to removal of some of the vegetative buffer along 7th Line and road widening.

CHL1 – There may be removal of the existing lilac stand on 7th Line, depending on whether road widening encapsulates the stand within its dimensions.

CHL2 – The views to Lake Simcoe along 7th Line may be impacted in a minor way, depending on placement of any signage, lights etc. Long-range views should not be significantly impacted.

CHL3 – There will be removal of vegetation at and near the intersection of St. John's Road and 7th Line. Disturbance will likely be limited to the segment within 85 metres of St. John's Road.

7. MITIGATION

The following mitigation measures are proposed, based on potential impacts:

BHR1 - The former school should be viewed as part of an integrated landscape and not simply as a building on a site. Existing vegetation around the site and along the immediate road shoulders should be maintained to the extent possible. The existing heritage plaque to the east of the site should be integrated into road design with provision for a viewing layby and temporary parking location. If the road design cannot accommodate these requirements then the plaque could be moved to a more suitable location selected by the Town. As this property is listed on the Town's Heritage Register and has policy support for designation, it is recommended that a heritage impact assessment be completed prior to road design completion and construction to document existing conditions and identify heritage attributes so that appropriate construction measures and other mitigation can be implemented.

BHR2 –While there will be a loss of vegetation abutting the corridor, there will be no direct impacts to the structures on the property. It is recommended that landscaping be re-established to pre-construction conditions.

CHL1 –It is recommended that efforts be made to conserve the stand of lilacs along the north side of 7th Line near east of Webster Boulevard when implementing road widening and that landscaping include plantings of lilacs and other typical roadside vegetation.

CHL2 – Recognizing that signage, lighting etc. may be required at this corner, it is recommended that efforts be made to conserve this unobstructed view when implementing road widening.

CHL3 –The reconstruction of 7th Line will be limited to resurfacing 7th Line from St. John's Road to Lake Simcoe. As resurfacing only is being completed for the short section of 7th Line that retains a 'cottage character', it is understood that there will be no impacts on the cottage character of the east end of 7th Line. It is recommended that the views through this area to Lake Simcoe and the open space at the east end of 7th Line be maintained.

8. RECOMMENDATIONS

Although not a requirement for this project, the following items are suggestions that the Town may want to consider at a future date:

BHR1 - Incorporate the design motifs of the former school at 1497 7th Line in future commercial development planned at 20th Sideroad and 7th Line, making use of the prominent features of the school bell tower and its river stone construction to visually and physically integrate both the existing school and new development as a 'gateway' corner and to highlight the heritage design aspects of the school.

- Carry out additional research regarding William Cross and the construction of the Cross house on Lot 20, Concession VI (1737 7th Line) to yield additional history regarding Nantyr that may be useful in its development as a 'gateway' to Alcona.

BHR2 - Complete additional research on the farmstead (dwelling and barn) at 1363 7th Line.

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Google Maps https://www.google.ca/maps/preview

APPENDIX I

PHOTOGRAPHS

CN Rail Crossing 7th Line Looking West

CN Rail Crossing Looking East

Intersection – 7th Line & 20th Sideroad Looking East – Former School in Upper Right

Intersection 7th Line & 20th Sideroad Looking West – Former School on Left

Rural Road Scene – 7th Line – Near West End of Study Area

Subdivision Development near Webster Boulevard

Appendix G-2

Cultural Heritage Impact Assessment

HERITAGE IMPACT ASSESSMENT

1497 7TH LINE
TOWN OF INNISFIL, ONTARIO

DRAFT REPORT

Prepared for:

Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7

ASI File: 17CH-140

May 2018 (Revised August 2018)

ASI Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
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HERITAGE IMPACT ASSESSMENT

1497 7TH LINE
TOWN OF INNISFIL, ONTARIO

EXECUTIVE SUMMARY

ASI was contracted by Ainley Group to prepare a Heritage Impact Assessment (HIA) of the property at 1497 7th Line in the Town of Innisfil, Ontario as part of the 7th Line Improvements Schedule 'C' Municipal Class Environmental Assessment. The proposed alternative involves the with the construction of a northbound right hand turn lane, which will require the encroachment of the 20th Sideroad pavement width on the subject property, which is listed on the Town of Innisfil's Heritage Register.

While an Ontario Regulation 9/06 evaluation of the property determined that it meets the criteria for designation under Part IV of the *Ontario Heritage Act,* the preferred alternative for the proposed undertaking will not result in significant impacts to the identified cultural heritage value of the resource. As such, the following recommendations have been made:

1. This report should be filed with the heritage staff at the Town of Innisfil, the Simcoe County Archives, the Archives of Ontario, and other local heritage stakeholders that may have an interest in this project.

2. Construction activities and staging should be suitably planned and undertaken to avoid impacts to the identified cultural heritage resource. In particular, no-go zones should be established around the structure with temporary fencing adjacent to the limits of work to prevent construction-related impacts. A workplan should be developed, with instructions issued to construction crews in order to prevent any negative impacts to the heritage resource.

ASI

PROJECT PERSONNEL

Senior Project Manager:	Annie Veilleux, MA, CAHP *Senior Heritage Specialist* *Manager, Cultural Heritage Division*
Project Manager:	John Sleath, MA *Cultural Heritage Associate*
Project Administrator	Carol Bella, Hon. BA *Research Archaeologist and Administrative Assistant*
Historical Research:	James Neilson, MES *Cultural Heritage Specialist*
Field Review:	John Sleath
Report Preparation:	John Sleath
Graphics Preparation:	Adam Burwell, MSc *Archaeologist, Geomatics Specialist*
Report Reviewer:	James Neilson
	Joel Konrad, PhD *Assistant Manager, Cultural Heritage Division*

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1.0 INTRODUCTION

ASI was contracted by Ainley Group to prepare a Heritage Impact Assessment (HIA) of the property at 1497 7th Line in the Town of Innisfil, Ontario as part of the 7th Line Improvements Schedule 'C' Municipal Class Environmental Assessment. The proposed alternative involves the encroachment of the 20th Sideroad pavement width on the property at 1497 7th Line due to the construction of a northbound right hand turn lane. The property is listed on the Town of Innisfil's Heritage Register.

The subject property at 1497 7th Line is located on the south east corner of the intersection of 7th Line and 20th Sideroad in the historical crossroads community of Nantyr, present day Town of Innisfil (Figure 1). The property contains a single-storey stone schoolhouse constructed in 1875. The property was listed on the Town of Innisfil's Heritage Register on September 17, 2008 (By-law CR-327.08).

Figure 1: Location map (Base Map: Open Street Maps)

The research, analysis, and site visit was conducted by John Sleath under the project direction of Annie Veilleux, Manager of the Cultural Heritage Division, ASI. The present heritage impact assessment follows the Ministry of Tourism, Culture and Sports' *Ontario Heritage Toolkit* (2006), the Town of Innisfil Terms of Reference for Heritage Impact Assessments (2017) and the *Standards and Guidelines for the Conservation of Historic Places in Canada* (2010). Research was completed to investigate, document and evaluate the property and measure the impact of the proposed development on the existing cultural heritage landscape.

This document will provide:

- a description of the cultural heritage resource, including location, a detailed land use history of the site and photographic documentation;
- an Ontario Regulation 9/06 evaluation of the property
- assessment of impacts of the proposed undertaking;

1.1 Location and Study Area Description

The subject property at 1497 7th Line is located on the south east corner of the intersection of 7th Line and 20th Sideroad in the historical crossroads community of Nantyr, present day Town of Innisfil (Figure 2). The property contains a single-storey stone schoolhouse constructed in 1875. The property was listed on the Town of Innisfil's Heritage Register on September 17, 2008 (By-law CR-327.08).

Figure 2: Aerial photo of the subject property

1.2 Policy Framework

The authority to request this heritage assessment arises from the *Ontario Heritage Act*, *Environmental Assessment Act*, and the Town of Innisfil's *Official Plan*.

The *Ontario Heritage Act* (OHA) enables designation of properties and districts under Part IV and Part V, Sections 26 through 46 and also provides the legislative bases for applying heritage easements to real property.

This cultural heritage assessment considers cultural heritage resources in the context of improvements to specified areas, pursuant to the *Environmental Assessment Act*. This assessment addresses above ground cultural heritage resources over 40 years old. Use of a 40 year old threshold is a guiding principle when conducting a preliminary identification of cultural heritage resources. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this threshold provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than 40 years old, this does not preclude the resource from retaining heritage value.

Road construction has the potential to affect cultural heritage resources in a variety of ways. Impacts can include direct impacts that result in the loss of resources through demolition, or the displacement of resources through relocation and indirect impacts that result in the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting. Potential impacts on identified cultural heritage resources were identified based on the proximity of a resource to the proposed undertaking.

For the purposes of this assessment, the term cultural heritage resources was used to describe both cultural heritage landscapes and built heritage features. A cultural heritage landscape is perceived as a collection of individual built heritage resources and other related features that together form farm complexes, roadscapes, and nucleated settlements. Built heritage features are typically individual buildings or structures that may be associated with a variety of human activities, such as historical settlement and/or patterns of architectural development.

The Ministry of Tourism, Culture and Sport (MTCS) is charged under Section 2 of the *Ontario Heritage Act* with the responsibility to determine policies, priorities, and programs for the conservation, protection, and preservation of the heritage of Ontario and has published two guidelines, under the Ministry of Culture, to assist in assessing cultural heritage resources as part of an environmental assessment: *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992), and *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (1980). Accordingly, both guidelines have been utilized in this assessment process.

The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (Section 1.0) states the following:

> When speaking of man-made heritage we are concerned with the works of man and the effects of his activities in the environment rather than with movable human artifacts or those environments that are natural and completely undisturbed by man.

In addition, environment may be interpreted to include the combination and interrelationships of human artifacts with all other aspects of the physical environment, as well as with the social, economic, and cultural conditions that influence the life of the people and communities in Ontario. The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* distinguish between two basic ways of visually experiencing this heritage in the environment, namely as cultural heritage landscapes and as cultural features.

Within this document, cultural heritage landscapes are defined as the following (Section 1.0):

> The use and physical appearance of the land as we see it now is a result of man's activities over time in modifying pristine landscapes for his own purposes. A cultural landscape is perceived as a collection of individual man-made features into a whole. Urban cultural landscapes are sometimes given special names such as townscapes or streetscapes that describe various scales of perception from the general scene to the particular view. Cultural landscapes in the countryside are viewed in or adjacent to natural undisturbed landscapes, or waterscapes, and include such land uses as agriculture, mining, forestry, recreation, and transportation. Like urban cultural landscapes, they too may be perceived at

> various scales: as a large area of homogeneous character; or as an intermediate sized area of homogeneous character or a collection of settings such as a group of farms; or as a discrete example of specific landscape character such as a single farm, or an individual village or hamlet.

A cultural feature is defined as the following (Section 1.0):

> …an individual part of a cultural landscape that may be focused upon as part of a broader scene, or viewed independently. The term refers to any man-made or modified object in or on the land or underwater, such as buildings of various types, street furniture, engineering works, plantings and landscaping, archaeological sites, or a collection of such objects seen as a group because of close physical or social relationships.

The Minister of Tourism and Culture has also published *Standards and Guidelines for Conservation of Provincial Heritage Properties* (April 2010; Standards and Guidelines hereafter). These Standards and Guidelines apply to properties the Government of Ontario owns or controls that have cultural heritage value or interest. They are mandatory for ministries and prescribed public bodies and have the authority of a Management Board or Cabinet directive. The Town of Innisfil is not on the list of prescribed public bodies.

The *Standards and Guidelines* provide a series of definitions considered during the course of the assessment:

A built heritage resource is defined as the following:

> …one or more significant buildings (including fixtures or equipment located in or forming part of a building), structures, earthworks, monuments, installations, or remains associated with architectural, cultural, social, political, economic, or military history and identified as being important to a community. For the purposes of these Standards and Guidelines, "structures" does not include roadways in the provincial highway network and in-use electrical or telecommunications transmission towers.

A cultural heritage landscape is defined as the following:

> …a defined geographical area that human activity has modified and that has cultural heritage value. Such an area involves one or more groupings of individual heritage features, such as structures, spaces, archaeological sites, and natural elements, which together form a significant type of heritage form distinct from that of its constituent elements or parts. Heritage conservation districts designated under the *Ontario Heritage Act*, villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trails, and industrial complexes of cultural heritage value are some examples.

Additionally, the *Planning Act* (1990) and related *Provincial Policy Statement* (*PPS*), which was updated in 2014, make a number of provisions relating to heritage conservation. One of the general purposes of the *Planning Act* is to integrate matters of provincial interest in provincial and municipal planning decisions. In order to inform all those involved in planning activities of the scope of these matters of

provincial interest, Section 2 of the *Planning Act* provides an extensive listing. These matters of provincial interest shall be regarded when certain authorities, including the council of a municipality, carry out their responsibilities under the *Act*. One of these provincial interests is directly concerned with:

> 2.(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest

Part 4.7 of the *PPS* states that:

> The official plan is the most important vehicle for implementation of this Provincial Policy Statement. Comprehensive, integrated and long-term planning is best achieved through official plans.
>
> Official plans shall identify provincial interests and set out appropriate land use designations and policies. To determine the significance of some natural heritage features and other resources, evaluation may be required.
>
> Official plans should also coordinate cross-boundary matters to complement the actions of other planning authorities and promote mutually beneficial solutions. Official plans shall provide clear, reasonable and attainable policies to protect provincial interests and direct development to suitable areas.
>
> In order to protect provincial interests, planning authorities shall keep their official plans up-to-date with this Provincial Policy Statement. The policies of this Provincial Policy Statement continue to apply after adoption and approval of an official plan.

Those policies of particular relevance for the conservation of heritage features are contained in Section 2- Wise Use and Management of Resources, wherein Subsection 2.6 - Cultural Heritage and Archaeological Resources, makes the following provisions:

> 2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.

A number of definitions that have specific meanings for use in a policy context accompany the policy statement. These definitions include built heritage resources and cultural heritage landscapes.

A *built heritage resource* is defined as "a building, structure, monument, installation or any manufactured remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Aboriginal community" (*PPS* 2014).

A *cultural heritage landscape* is defined as "a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. The area may involve features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association" (*PPS* 2014). Examples may include, but are not limited to farmscapes, historic settlements, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trailways, and industrial complexes of cultural heritage value.

In addition, significance is also more generally defined. It is assigned a specific meaning according to the subject matter or policy context, such as wetlands or ecologically important areas. With regard to cultural heritage and archaeological resources, resources of significance are those that are valued for the important contribution they make to our understanding of the history of a place, an event, or a people (*PPS* 2014).

Criteria for determining significance for the resources are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation (*PPS* 2014).

Accordingly, the foregoing guidelines and relevant policy statement were used to guide the scope and methodology of the cultural heritage assessment. The policies contained within the *PPS* inform the provisions for the Town of Innisfil's heritage policy contained within the Town of Innisfil's Official Plan.

Town of Innisfil Municipal Heritage Policy

The Town of Innisfil's Official Plan (dated July 26, 2006) provides policy direction for development on properties with cultural heritage resources. These policies include:

Section Six: Cultural Heritage and Archaeology

Intent:

Cultural Heritage and Archaeological policies apply to those properties that are of cultural heritage value or interest identified in the Town's registry of properties or those properties and areas identified through a heritage or archaeological analysis. It is intended that those properties and areas identified as having historical or archaeological significance be protected.

Goals:

To protect cultural heritage resources which are important to the identity and character of the Town.

Objectives:

1. To encourage the maintenance, restoration and enhancement of buildings, structures and areas which are considered of significant architectural or historical value.
2. To identify and preserve significant archaeological resources.
3. To identify and conserve significant cultural heritage landscapes.
4. To ensure that new development is sensitive to heritage resources.
5. To encourage and foster public awareness, participation and involvement in the conservation of cultural heritage resources

Policies

6.1 A register of built heritage resources and heritage conservation districts that are of cultural heritage value or interest shall be established by the Town. The register will be kept by the Clerk and shall list all property situated in the municipality that has been designated by the municipality or by the Minister and shall contain, with respect to each property:

- A legal description of the property;
- The name and address of the owner; and
- A statement explaining the cultural heritage value or interest of the property and a description of the heritage attributes of the property.

6.3 The register may also include built heritage resources that have not been designated but that the Town Council or local heritage committee believes to be of cultural heritage value or interest.

6.4 A heritage committee shall be appointed to identify the register of built heritage resources, and shall not contain fewer than five members.

6.5 The heritage committee shall identify the register of built heritage resources based on the criteria provided in Sections 6.6 and 6.7 and may also identify significant cultural heritage landscapes.

6.6 Cultural Heritage Resources generally fall into one of two categories: those of historic value and those of architectural value.

a) Cultural Heritage Resources of historic value can be described as follows:
   - Those that serve as an example of the Town's past social, cultural, political or physical development;
   - Those that serve as an example of outstanding work by a local or national personality; and
   - Those that date from an early or significant period in the Town's development.

b) Cultural Heritage Resources of architectural value can be described as follows:
   - Those that serve as a representative example of style, design or period of building;
   - Those that serve as a representative example of a method of construction which was used during a certain time period or rarely used today;
   - Those that serve as an important Town landmark; and
   - Those that make an important contribution to the area composition or streetscape of which it forms a part.

6.7 Cultural Heritage Resources may also include property or area that is recognized by the Province as being archaeologically significant. By-laws under the Ontario Heritage Act may be passed to designate properties of historical or architectural significance.

6.8 The Town may establish design principles for buildings in proximity to Heritage Conservation Districts or Heritage Conservation buildings.

6.10 Development applications on lands adjoining or contiguous to a protected heritage property shall demonstrate that the heritage attributes of the protected heritage property will be conserved.

6.13 The Town will have regard for known built heritage resources, significant cultural heritage landscapes and known archaeological resources in the undertaking of municipal public works, such as roads and infrastructure projects carried under the Municipal Class Environmental Assessment (EA) process.

1.3 Project Consultation

The following organizations, websites, online heritage documents, and online heritage mapping tools were consulted to confirm the level of significance of the subject property, the location of additional previously identified cultural heritage resources adjacent to the study area, and to request additional information generally:

- The Town of Innisfil's Heritage Register, which includes an inventory of listed and non-designated properties[1]
- The Town of Innisfil's inventory of cultural heritage resources that are designated under Part IV and Part V of the *Ontario Heritage Act* and the *Heritage Properties of Interest*, an inventory of listed properties that are of cultural heritage value or interest to the city;[2]
- Ontario Archives;
- Historical and genealogical records at Ancestry.com.
- The inventory of Ontario Heritage Trust easements;[3]
- The Ontario Heritage Trust's *Ontario Heritage Plaque Guide*, an online, searchable database of Ontario Heritage Plaques;[4]
- *Ontario's Historical Plaques* website;[5]
- Parks Canada's *Canada's Historic Places* website: available online, the searchable register provides information on historic places recognized for their heritage value at the local, provincial, territorial, and national levels;[6]
- Parks Canada's *Directory of Federal Heritage Designations*, a searchable on-line database that identifies National Historic Sites, National Historic Events, National Historic People, Heritage Railway Stations, Federal Heritage Buildings, and Heritage Lighthouses;[7]
- United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites.[8]

In addition, the following stakeholders were contacted to gather information on potential cultural heritage resources, active and inactive cemeteries, and areas of identified Indigenous interest within and/or adjacent to the study area:

- Kevin Jacob, Assistant Clerk, Town of Innisfil (email communication 29 January 2018). Additional historical and structural information was provided and the previous heritage recognition was confirmed.

[1] Reviewed 24 January, 2018 (https://innisfil.ca/getFileByName/HC_InnisfilHeritageRegisterJune2010(2).pdf)
[2] Reviewed 24 January, 2018 (https://innisfil.ca/mygovernment/yourcommittees/HeritageCommittee/MunicipalHeritageRegister)
[3] Reviewed 24 January, 2018 (http://www.heritagetrust.on.ca/en/index.php/property-types/easement-properties)
[4] Reviewed 24 January, 2018 (http://www.heritagetrust.on.ca/Resources-and-Learning/Online-Plaque-Guide.aspx)
[5] Reviewed 24 January, 2018 (www.ontarioplaques.com)
[6] Reviewed 24 January, 2018 (http://www.historicplaces.ca/en/pages/about-apropos.aspx)
[7] Reviewed 24 January, 2018 (http://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx)
[8] Reviewed 24 January, 2018 (http://whc.unesco.org/en/list/)

2.0 HISTORICAL RESEARCH

A review of available primary and secondary source material was undertaken to produce a historical overview of the Subject Property, including a general description of Euro-Canadian settlement and land-use. The following section provides the results of this research.

The subject property is located in Lot 21, Concession 6 in the former Township of Innisfil, County of Simcoe.

2.1 Township and Settlement History

2.1.1 Simcoe County

The area within what is now Simcoe County was first inhabited by the Indigenous Huron-Wendat. European goods reached the area before 1600 and missionaries and Jesuits arrived soon after. Sainte Marie was established in 1639 and became the first European settlement in Upper Canada. In 1798, the County of Simcoe was formed as part of the "Home District." The boundaries of the county were refined in 1821. Almost 20 years later, in 1843, the area was declared a separate district and attained county status in 1850, with Barrie as the county seat. At this time Simcoe County included portions of Grey and Dufferin Counties, and Muskoka and Parry Sound Districts. In 1881, the borders of Simcoe County were again redefined and the present townships of Tiny, Tay, Matchedash, Flos, Medonte, Orillia, Nottawasaga, Sunnidale, Vespra, Oro, Tosorontio, Essa, Innisfil, Adjala, Tecumseth, and West Gwillimbury were contained within. As of the late twentieth century, Simcoe County had two cities, seven towns, and eight villages (Mika and Mika 1983:394-398).

2.1.2 Township of Innisfil

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. The township was named after the poetical name for Ireland, Innis Fáil, by its early settlers. Growth was slow during the first ten years of the township and the first sawmill was not erected until the 1830s and in 1835 a grist mill was constructed. Early settlement focused around Kempenfelt Bay and the southwestern area of the township was not settled until after 1840. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. The first census of the township recorded a population of only 762 inhabitants. By 1850, the township had a population of 1,807.

Following the connection of the Northern Railway in 1853, the township became an important shipping hub for the lumber industry of central Ontario (Mika and Mika 1981:347-349). With the arrival of the railway a number of communities developed and prospered; Allandale, Lefroy, and Craigvale all boasted stations. On the western border of the township, Thornton was a stop for the Hamilton and Northwestern Railway. The community of St. Paul's was established at the corner of Penetanguishene Road (Yonge Street) and Mapleview Drive, and was centered around St. Paul's Anglican Church (established 1851) and a schoolhouse, as depicted on the 1881 *Illustrated Historical Atlas* (Belden 1881). The small community consisted of a cluster of houses and would have been along the main path between Toronto and Georgian Bay along Penetanguishene Road. Other early post office communities included Bramley, Cherry Creek, Fennell, Holly, Killyleagh, Beaumont, Painswick, and Stroud. Today, Innisfil attracts large numbers of tourists and cottagers in the summertime who travel from Toronto via Highway 400 (Mika and Mika 1981:347-349).

2.2 Land Use History

2.2.1 1497 7th Line

The subject property at 1497 7th Line is located in Part Lot 21, Concession 6 in the former Township of Innisfil, Simcoe County.

The Crown patent for Lot 21, Concession 6 was granted to John Arthur in August 1842. The patent was for the north half of the lot (100 acres). In April 1844, the Abstract Index records the sale of the north 100 acres from John Arthur of New York State to William Gartley of Innisfil for a cost of £1 (Instrument no. 5306). Gartley retained the property until September 1863, when the entire north 100 acres were sold to James Rolston of Innisfil for £2,000 (Instrument no. 36310).

The 1871 Census records James Rolston (age 46) as an Ontario-born Presbyterian farmer of Irish decent that lived in Innisfil with his Scotch-born wife Johanna (age 41) and four children Margaret (age 18), William (age 15), Walter (age 11), and Janet (age 6). Sarah Millkinen, an 80-year old widow of Irish ancestry also resided with the Rolston family, though the connection between them is unknown.

The abstract index lists James Rolston as donating a ¾ acre portion of the northwest corner of Lot 21, Concession 6 to the Trustees of School Section No.8 in July 1874 (Instrument no. 75894). Shortly after, the subject structure was built on this ¾ acre parcel for a cost of $1,242.50 by stone mason Rich Cunningham (Town of Innisfil, n.d.). The stone school was constructed to replace a log school located on the northwest corner of 7th Line and 20th Sideroad, depicted in the 1871 *Hogg's Map* (Figure 3). Stanley Spillette was the first schoolmaster of the stone school, where he served for over 20 years (Innisfil Historical Society 1951). The original log school was used as a teacher's residence for several years after the new school was constructed, but was eventually destroyed by fire. The 1881 *Illustrated Historical Atlas* depicts the subject schoolhouse in its present location on the property of Jas. Rolston (Figure 4).

In 1884 James Rolston sold the north 100 acres of Lot 21, Concession 6 to William McCollough, with the exception of the ¾ acre school lot, for a sum of 8500 pounds. Rolston and his family moved onto the southern half of Lot 21, Concession 6 where the family resided into the twentieth century.

The subject structure operated as a school in the Township of Innisfil from its construction in 1874 until it closed in 1963, when a larger five room school was constructed in nearby Lot 16, Concession 4 to accommodate the increasing population of the area. The structure was converted to a private residence in 1963 (Town of Innisfil n.d.).

2.2.2 Mapping

The 1871 *Hoggs's Map of the County of Simcoe* and the 1881 *Simcoe Supplement in the Illustrated Historical Atlas of the Dominion of Canada* were reviewed to examine the subject structure from the nineteenth century (Figures 2 and 3).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. In addition, the use of historical map sources to reconstruct/predict the location of former features within the modern landscape generally proceeds by using common reference points between the various sources. These sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historical mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on

the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

The 1871 *Hogg's Map* (Figure 3) depicts the study area in a rural agricultural context within the Township of Innisfil. Seventh Line and 20th Sideroad are depicted in their present alignment, as is the nearby Northern Railroad to the east (present day GO Barrie rail corridor). G. Powell is listed as the owner of the north half of Lot 21, Concession 6, though the abstract index for this time shows that it was owned by James Rolston, who owned the lot from 1863. The log schoolhouse at the northwest of the intersection is depicted on land owned by C. Cross.

The 1881 *Simcoe Supplement in the Illustrated Historical Atlas of the Dominion of Canada* (Figure 4) depicts the study area in a similar agriculture setting as earlier mapping. Seventh Line, 20th Sideroad, and the Northern Railway are depicted in a similar setting as previously described, with the subject structure illustrated in its present location. A residence is located to the east of the schoolhouse, and Jas. Ralston is listed as the owner. A church is located to the northwest in the location of the former log school, which is shown to be on land owned by Chas. Cross.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. This report presents maps and aerial photographs from 1928, 1943, 1954, and 1994. These do not represent the full range of maps consulted for the purpose of this study but were judged to cover the full range of land uses that occurred in the area during this period.

The 1928 and 1943 topographic maps demonstrate that study area retained its rural agricultural context into the early twentieth century (Figures 5 and 6). The subject schoolhouse is depicted in its extant location, with a farmhouse and outbuilding located to the east. The Canadian National Railways line is depicted in its historical location, and is supported by a series of cuttings south of 7th Line and a large embankment to the north. Residences and farms are illustrated along the length of most roadways within the vicinity.

The 1954 aerial photo demonstrates that the study area continued to feature rural agricultural lands in the mid-twentieth century (Figure 7). All roadways appear in their extant alignment, with a similar number of structures illustrated as in earlier mapping.

The 1994 topographical map confirms the study area is similar in its rural agricultural context as earlier mapping (Figure 8). The general vicinity continues to be sparsely populated, and the intersection of 7th Line and 20th Sideroad is the community of Nantyr.

Figure 3: The subject property overlaid on the 1871 Hogg's Map

(Hogg 1871)

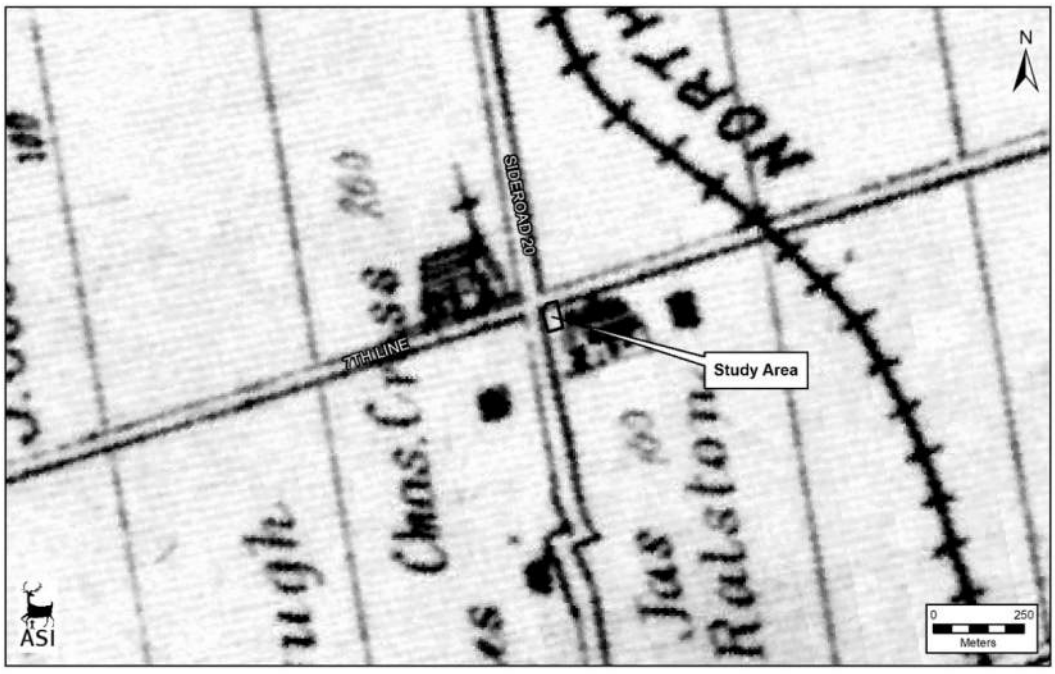

Figure 4: The subject property overlaid on the 1881 *Illustrated Historical Atlas*

(Belden 1881)

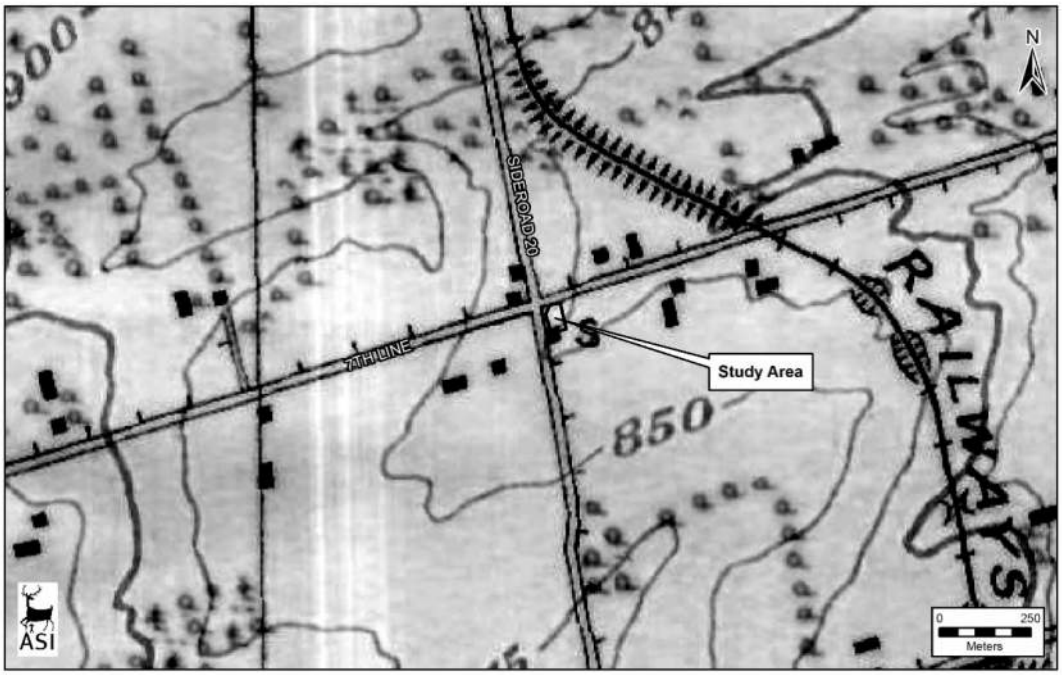

Figure 5: The subject property overlaid on the 1928 topographic map
(Department of National Defence 1928)

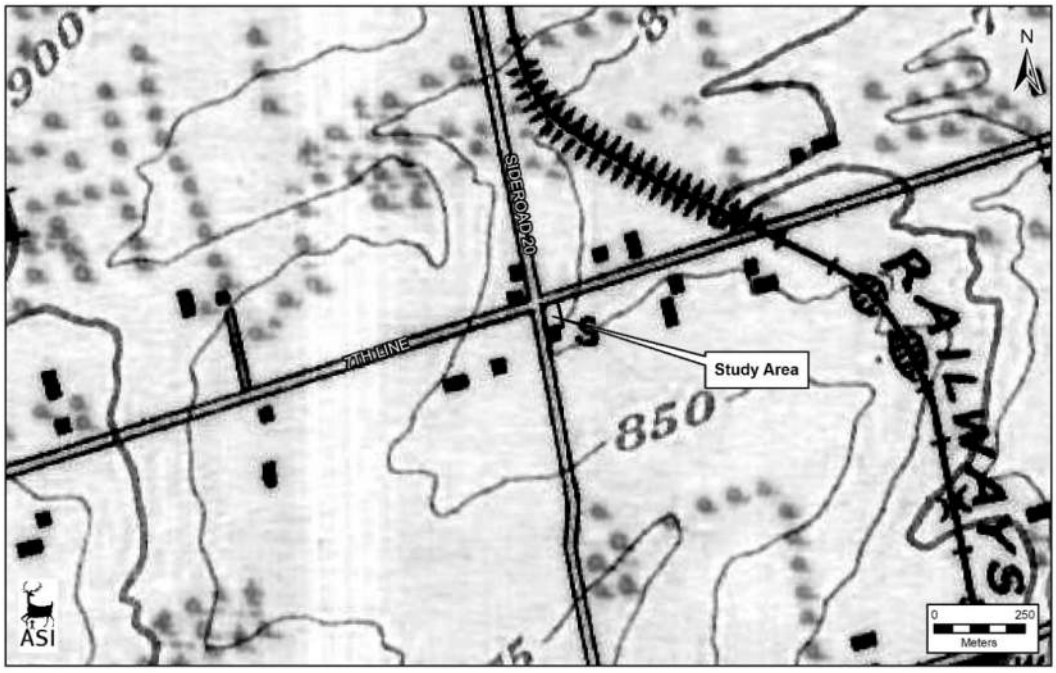

Figure 6: The subject property overlaid on the 1943 topographic map
(Department of National Defence 1943)

Figure 7: The subject property overlaid on the 1954 aerial photograph
(Hunting Survey Corporation 1954)

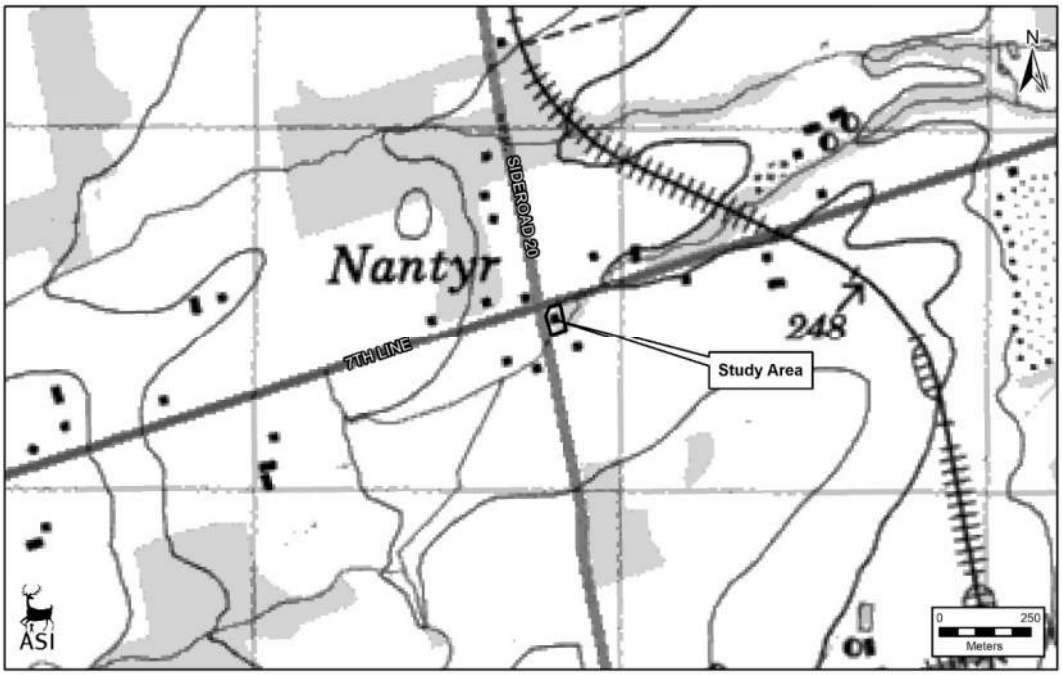

Figure 8: The subject property overlaid on the 1994 topographic map
(Ministry of Energy, Mines, and Resources 1994)

2.2.3 Archival Photographs

Figure 9: Wesley Public School class of 1893, taken in front of the Wesley Methodist Church to the northwest of the schoolhouse. Note first schoolteacher, Mr. S. Spillet at rear.
(Our Stories Innisfil, Plate 4386)

Figure 10: Nantyr School class of 1900, looking northeast. Note the student entrances on the west elevation.
(Our Stories Innisfil, Plate 2120)

Figure 11: Nantyr School class of 1928 standing in front of the south elevation, looking northeast.
(Our Stories Innisfil, Plate 388)

Figure 12: Nantyr School class of 1953 looking southeast. Note the frame addition on the east elevation at rear right.

(Our Stories Innisfil, Plate 175)

3.0 EXISTING CONDITIONS

3.1 Introduction

A field review was conducted by John Sleath, Cultural Heritage Associate of ASI on 18 January 2018, to survey and document the study area and environs. Only the exterior of the structure and the surrounding environs were subject to the field inspection, and no assessment of the interior was conducted.

3.2 1497 7th Line Residential Building (Former Schoolhouse)

The property at 1497 7th Line is an approximately three-quarter acre property containing a residential building and one outbuilding. The residential building is a single storey split field stone schoolhouse constructed in 1875 that was converted into a residential structure after 1963. The exterior walls are 24 inches (60 cm) thick, and were laid by stone mason Rich Cunningham (Town of Innisfil n.d.). The exterior of the building has been altered with frame additions on the west (front) and east (rear) elevations, and original student entrances to the school on the west elevation were converted to windows. Since its construction in 1875, the following modifications were conducted:

- Belfry and vent added in 1897 (Town of Innisfil n.d.);
- Front addition around the main entrance;
- Original separate boys and girls entrances on the west elevation converted to windows at an unknown date (original entrances visible in 1900 photograph, Figure 10);
- A rear addition built at an unknown date in the same location as the former addition);
- Original windows were replaced with modern one-over-one sash varieties; and,
- Conversion of the interior of the structure to convert it from a schoolhouse to a single family residence after 1963.

The subject structure is a single storey split field stone schoolhouse constructed in 1875 that features a gable that was converted into a residential structure after 1963. The structure features a gable roof clad in corrugated metal with a belfry on the west end, a circular vent in the center, and an internal brick chimney at the east end of the roofline. The main entrance is located on the west elevation, a modern frame addition is on the east elevation, and three large windows are located on the north and south elevations. The interior of the structure was not accessed during the field review, and the present description focuses on an examination of the exterior and associated landscape elements.

The front (west) elevation includes the original main entrance to the structure, and fronts on 20th Sideroad. The west elevation features a small frame mudroom enclosure around the main entranceway, which is flanked by a single window on both sides. Based on a review of historical photographs and an examination of the stonework under the northern window, it is clear that these windows were originally doors in the school structure, and were converted to windows at a later date. A class photo from 1900 (Figure 10) depicts two frame enclosures surrounding these doorways, which likely served as separate entrances for boys and girls. The windows (former door openings) are topped with segmental stone arch lintels, and feature simple sills. The gable end near the roof peak features a single window with stone segmental lintel and stone or concrete sill (Plate 1 to Plate 5).

Plate 1: West elevation, looking southeast.

Plate 2: West elevation, looking northeast.

Plate 3: West elevation, with 20th Sideroad in foreground.

Plate 4: West gable end window.

Plate 5: North window on the west elevation. Note the stone infill under the window when it was converted from a door.

The south elevation features three windows with segmental stone arch lintels and stone block sills. The windows are located slightly to the rear of the structure, suggesting that there was originally a vestibule or anteroom at the front entrance of the school. The south elevation of the frame addition on the rear of the structure features an elevated porch with a large sliding patio door (Plate 6 to Plate 8).

Plate 6: South elevation, looking north.

Plate 7: South elevation, looking northwest.

Plate 8: Windows on south elevation, looking north.

The east elevation of the original building is entirely blocked from view by the modern frame addition, with the exception of the peak of the gable end. The internal brick chimney is visible on the east elevation, integrated with the stone masonry exterior walls of the structure. The east addition features a gable roof, concrete foundations, and is clad in wooden siding. The addition features four modern windows and a small mudroom entrance on the east elevation (Plate 9 to Plate 10).

Plate 9: Internal brick chimney at peak of gable end on east elevation, looking west.

Plate 10: East elevation, looking northwest.

The north elevation features a similar arrangement of windows as the south elevation, consisting of three windows with segmental stone arch lintels and stone block sills. The rear addition features one rectangular sliding window (Plates 11-12).

Plate 11: North elevation, looking southwest.

Plate 12: Window on north elevation, looking south.

The roof of the structure is clad in corrugated metal, and features an internal red brick chimney on the east, a metal pipe chimney for a woodstove slightly to the west of center, and a belfry with bell at the west end (Plate 13 to Plate 14).

Plate 13: Belfry at west end of structure, looking north.

Plate 14: Woodstove chimney, looking north.

3.2 Landscape and Surrounding Context

The property is located on the southeast corner of the intersection of 7th Line and 20th Sideroad and is accessed via a driveway off 7th Line. The north and west property limits adjacent to the roadways are bound by chain link fences. The entire property is heavily treed, with mature trees and decorative plantings located on the property margins and interior. The property is bound by 20th Sideroad to the west, 7th Line to the north, a low lying woodlot and creek to the east, and a low lying grassed area to the south (Plate 15 to Plate 16).

Plate 15: 20th Sideroad, looking south from 7th Line with the subject property at left.

Plate 16: 7th Line, looking east with the subject property at right.

Once entering the property from 7th Line, the single outbuilding, a modern garage, is located immediately on the left. Two driveways are visible: one leading southeast to the rear portion of the property and a second driveway which leads southwest to the front of the residence. The north yard between these two driveways consists of a number of established trees and decorative gardens, while the area northeast of the residence features an open area with some established trees (Plate 17 to Plate 20).

Plate 17: Entrance gate off 7th Line and eastern driveway, looking southeast.

Plate 18: West driveway, looking southwest from 7th Line.

Plate 19: North portion of the subject property, with established trees north of the residence obscuring view from 7th Line, looking south.

Plate 20: Subject property east of the entrance drives, with garage at left, looking east.

The south yard consists of a large grass lawn bound by mature trees on the east and south, and decorative coniferous plantings to the west adjacent to a chain link fence and the 20th Sideroad ROW. Based on a review of satellite imagery, this treeline was planted between 2002 and 2008 (Simcoe County Interactive Map n.d.). Based on an examination of the proposed alternative, this chain link fence and coniferous treeline adjacent to the east limit of the 20th Sideroad ROW will be removed as part of the present undertaking (Plate 21 to Plate 25).

Plate 21: South yard, with mature coniferous treeline at left and mature woodlot at right, looking north.

Plate 22: Chain link fence and gate adjacent to 20th Sideroad ditch and ROW, looking southeast.

Plate 23: Established treeline adjacent to 20th Sideroad, looking east.

Plate 24: 20th Sideroad shoulder, with ditch adjacent to subject property at right, looking north.

Plate 25: 20th Sideroad, looking southwest from 7th Line in the location of the proposed turn lane.

4.0 HERITAGE EVALUATION

4.1 Comparative Analysis

The property at 1497 7th Line is one of two nineteenth-century schoolhouses on the Town of Innisfil's Heritage Register. The other nineteenth century school is Cherry Creek School at 5850 Yonge Street in Churchill. The brick school was constructed in 1876 as a replacement to an earlier log schoolhouse constructed in 1847.

Both the subject property at 1497 7th Line and Cherry Creek School at 5850 Yonge Street are both rare examples of nineteenth-century educational institutions in the Town of Innisfil.

4.2 Ontario Regulation 9/06 Evaluation

Table 1: Evaluation of 1497 7th Line using Ontario Regulation 9/06

1. The property has design value or physical value because it:

Ontario Heritage Act Criteria	Yes/No	Analysis
i. is a rare, unique, representative or early example of a style, type, expression, material or construction method;	Yes	The property at 1497 7th Line meets this criterion. The property is a rare and early example of a stone schoolhouse in the Town of Innisfil. While the structure has undergone some modifications to serve as a residence, the main structure and appearance of the late-nineteenth style schoolhouse is retained.
ii. displays a high degree of craftsmanship or artistic merit, or;	No	The property at 1497 7th Line does not meet this criterion. The structure does not exhibit characteristics that represent a high degree of craftsmanship or artistic merit
iii. demonstrates a high degree of technical or scientific achievement.	No	The property at 1497 7th Line does not meet this criterion. The structure does not exhibit characteristics that represent a high degree of technical or scientific achievement

2. The property has historical value or associative value because it:

Ontario Heritage Act Criteria	Yes/No	Analysis
i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community;	Yes	The property at 1497 7th Line meets this criterion. The property is directly associated with the longstanding rural agricultural school system in the Town of Innisfil from the late nineteenth century to mid twentieth century.
ii. yields, or has the potential to yield, information that	No	The property at 1497 7th Line does not meet this criterion.

Table 1: Evaluation of 1497 7th Line using Ontario Regulation 9/06

contributes to an understanding of a community or culture, or;		
iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	No	The property at 1497 7th Line does not meet this criterion. The structure was built by Rich Cunningham, whose contribution to the local community is unknown.
3. The property has contextual value because it:		
Ontario Heritage Act Criteria	Yes/No	Analysis
i. is important in defining, maintaining or supporting the character of an area;	Yes	The property at 1497 7th Line meets this criterion. The structure is associated with the longstanding rural agricultural school system in the Town of Innisfil, and served as an important community hub during the early settlement period of the Town.
ii. is physically, functionally, visually or historically linked to its surroundings, or;	Yes	The property at 1497 7th Line meets this criterion. The structure has occupied the same location in the crossroads community of Nantyr since its construction in 1875, and served as the local school and community hub for nearly a century.
iii. is a landmark.	Yes	The property at 1497 7th Line meets this criterion. The structure has a longstanding association with the crossroads community of Nantyr, and served as a local community hub for nearly a century. While it is not prominent or highly visible due to the dense tree cover on the property, its historical importance to the local community makes it a well-known local site.

5.0 PROPOSED STATEMENT OF SIGNIFICANCE

The property at 1497 7th Line consists of the Nantyr School, a schoolhouse built in 1875. The Nantyr School is a rare and early example of a stone schoolhouse in the Town of Innisfil. While the structure has undergone some modifications to serve as a residence, the main structure and appearance of the late-nineteenth style schoolhouse is retained.

Historically, the school is directly associated with the longstanding rural agricultural school system in the Town of Innisfil from the late nineteenth century to mid twentieth century. The structure has occupied the same location in the crossroads community of Nantyr since its construction in 1875, and served as the local school and important community hub for nearly a century.

Heritage Attributes:

- The location of the Nantyr School on the southeast corner of 7th Line and 20th Sideroad
- The stone materials
- The fenestration with segmentally arched windows
- The belfry

6.0 PROPOSED DEVELOPMENT

6.1 Proposed Work

ASI has evaluated the preferred alternative for the 7th Line Improvements Schedule 'C' Municipal Class Environmental Assessment, dated November 2017 (See Appendix B). The preferred alternative involves minor expansion of the 20th Sideroad pavement width to include a dedicated right turn lane onto 7th Line for northbound vehicular traffic. The preferred alternative involves the expansion of the existing 20th Sideroad pavement width by approximately three metres to the east. A retaining wall is proposed so that there is no need to encroach upon area landscape features including a fenceline, gate, and an established treeline.

The fenceline is a modern chainlink fence that lines the property on the west and north sides, and is not considered to contribute to the heritage value of the structure. The treeline consists of a row of ten established conifers in the southern yard, and are intended to provide privacy and reduce noise from the roadway. Several deciduous trees and additional conifers are located further north, adjacent to the residence and in the north yard. Based on a review of satellite imagery, this treeline was planted between 2002 and 2008 (Simcoe County Interactive Map n.d.) and does not significantly contribute to the heritage character of the subject property.

6.2 Impact Assessment

The preferred alternative involves minor expansion of the 20th Sideroad pavement width to include a dedicated right turn lane onto 7th Line for northbound vehicular traffic and involves the expansion of the existing 20th Sideroad pavement width by approximately three metres to the east. While the property is currently recognized as a listed property on the Town of Innisfil's Heritage Register, the cultural heritage value of the resource lies in the physical and structural attributes of the structure, and its historical and contextual value to the rural agricultural setting. The preferred alternative will not result in any direct impacts to the stone schoolhouse or any landscape elements associated with the nineteenth or early twentieth century functioning as a rural agricultural schoolhouse. Furthermore, no direct impacts are anticipated if construction and staging activities are suitably planned.

7.0 CONCLUSION AND RECOMMENDATIONS

The property at 1497 7th Line is currently listed on the Town of Innisfil's Heritage Register. As part of this report, an evaluation of the cultural heritage value of the property was conducted using the criteria outlined in Ontario Regulation 9/06. It was determined that this property meets the criteria for designation under Part IV of the *Ontario Heritage Act* due to the architectural integrity of the structure, and its historical and contextual value to the rural agricultural setting.

The proposed development requires the expansion of the 20th Sideroad pavement width with grading limits adjacent to a chain link fence, gate, and a twenty-first century treeline. The proposed undertaking is not anticipated to result in any impacts to the identified heritage value of the property at 1497 7th Line.

7.1 Recommendations

The property at 1497 7th Line was added to the Town of Innisfil Heritage Register on September 17, 2008. While an Ontario Regulation 9/06 evaluation of the property determined that the property meets the criteria for designation under Part IV of the *Ontario Heritage Act*, the preferred alternative for the proposed undertaking will not result in significant impacts to the identified cultural heritage value of the resource. As such, the following recommendations:

1. This report should be filed with the heritage staff at the Town of Innisfil, the Simcoe County Archives, the Archives of Ontario, and other local heritage stakeholders that may have an interest in this project.

#

2. Construction activities and staging should be suitably planned and undertaken to avoid impacts to the identified cultural heritage resource. In particular, no-go zones should be established around the structure with temporary fencing adjacent to the limits of work to prevent construction-related impacts. A workplan should be developed, with instructions issued to construction crews in order to prevent any negative impacts to the heritage resource.

8.0 REFERENCES

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APPENDIX A: 1497 7TH LINE – LISTING INFORMATION

TOWN OF INNISFIL

HERITAGE REGISTER

Listed & not Designated

	PROPERTY OWNER / NAME	MUNICIPAL ADDRESS	LEGAL DESCRIPTION	HISTORICAL INFORMATION (Evaluation Sheet Details)	Council Approval
1.	Muth Homestead	1497 – 7th Line, Innisfil, ON L9S 4G3	Conc. 6, North Part Lot 21	Nantyr School, first built as a log structure built about 1843 and was on the north-west corner of the 7th Concession and 20 Sideroad on land owned at the time by William Cross. The log school was used until 1875 when a stone schoolhouse was erected on the south-east corner on the farm of James Ralston. The log building served as a teacher's residence until destroyed by fire a few years later. At first the school was known as Wesley, but later the name was changed to Nantyr. Before there was a regular school, what was known as a home class was run by Mr. Wilson & Mr. Cross who taught the boys, while the girls sat around spinning & weaving.	CR-327.08 Sept. 17/08

APPENDIX B: PROPOSED DEVELOPMENT

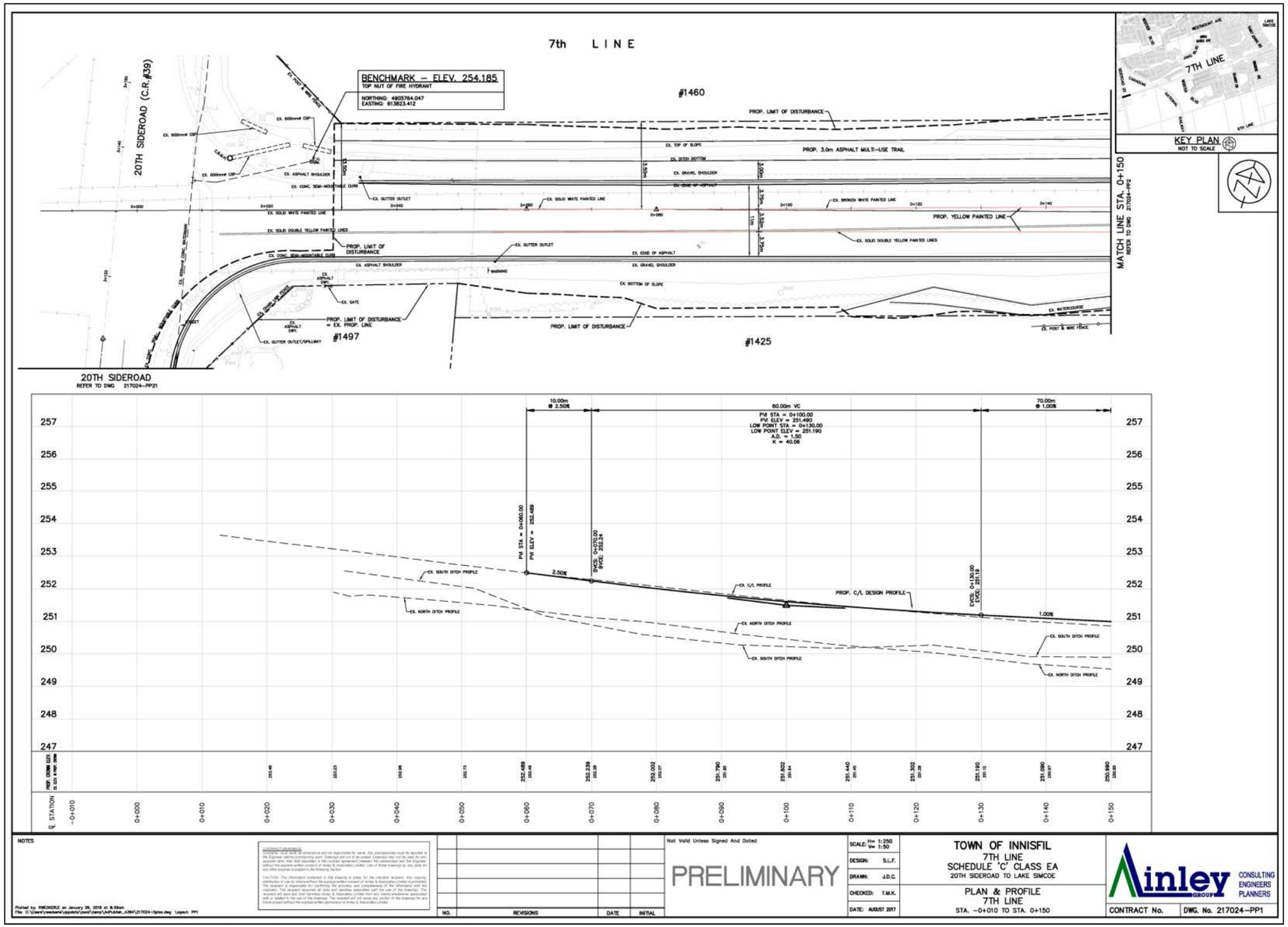


Figure 13: Preliminary Preferred Alternative of the Proposed Undertaking

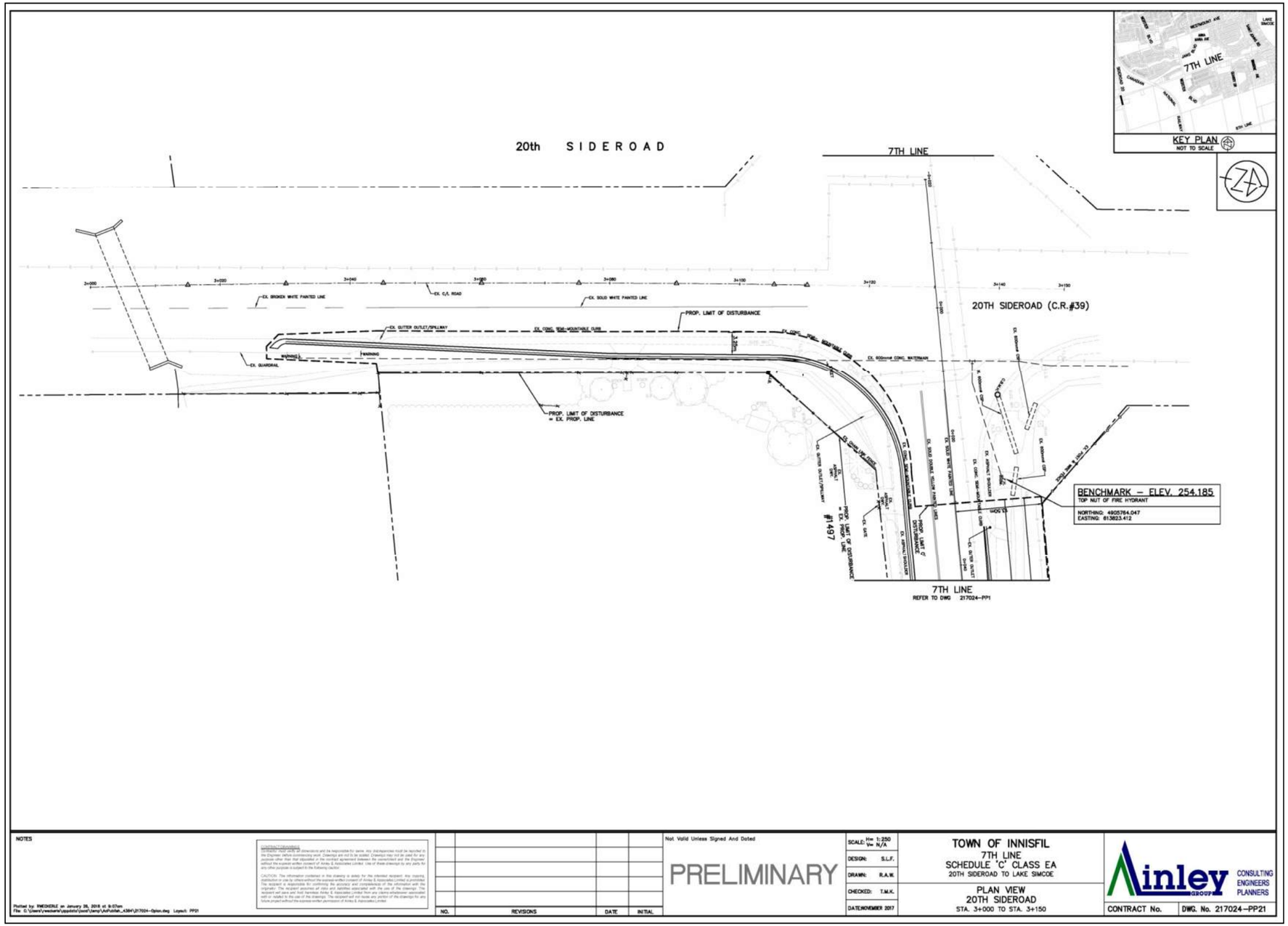
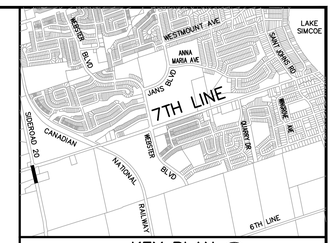


Figure 14: Preliminary Preferred Alternative of the Proposed Undertaking

Appendix H

Recommended Plan

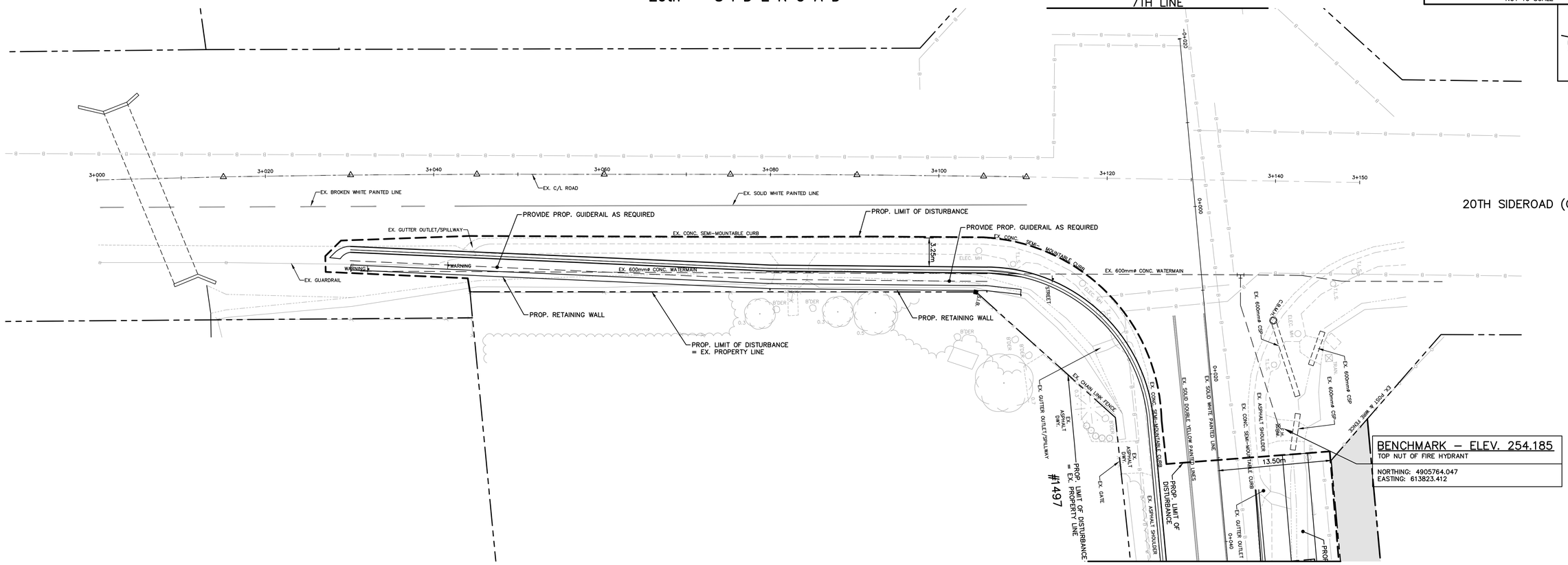


KEY PLAN
NOT TO SCALE

20th SIDEROAD

7TH LINE

20TH SIDEROAD (C.R.#39)



BENCHMARK – ELEV. 254.185
TOP NUT OF FIRE HYDRANT
NORTHING: 4905764.047
EASTING: 613823.412

7TH LINE
REFER TO DWG 217024–PP1

NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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DESIGN:	S.L.F.
DRAWN:	R.A.W.
CHECKED:	T.M.K.
DATE:	NOVEMBER 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN VIEW
20TH SIDEROAD
STA. 3+000 TO STA. 3+150

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024–P20

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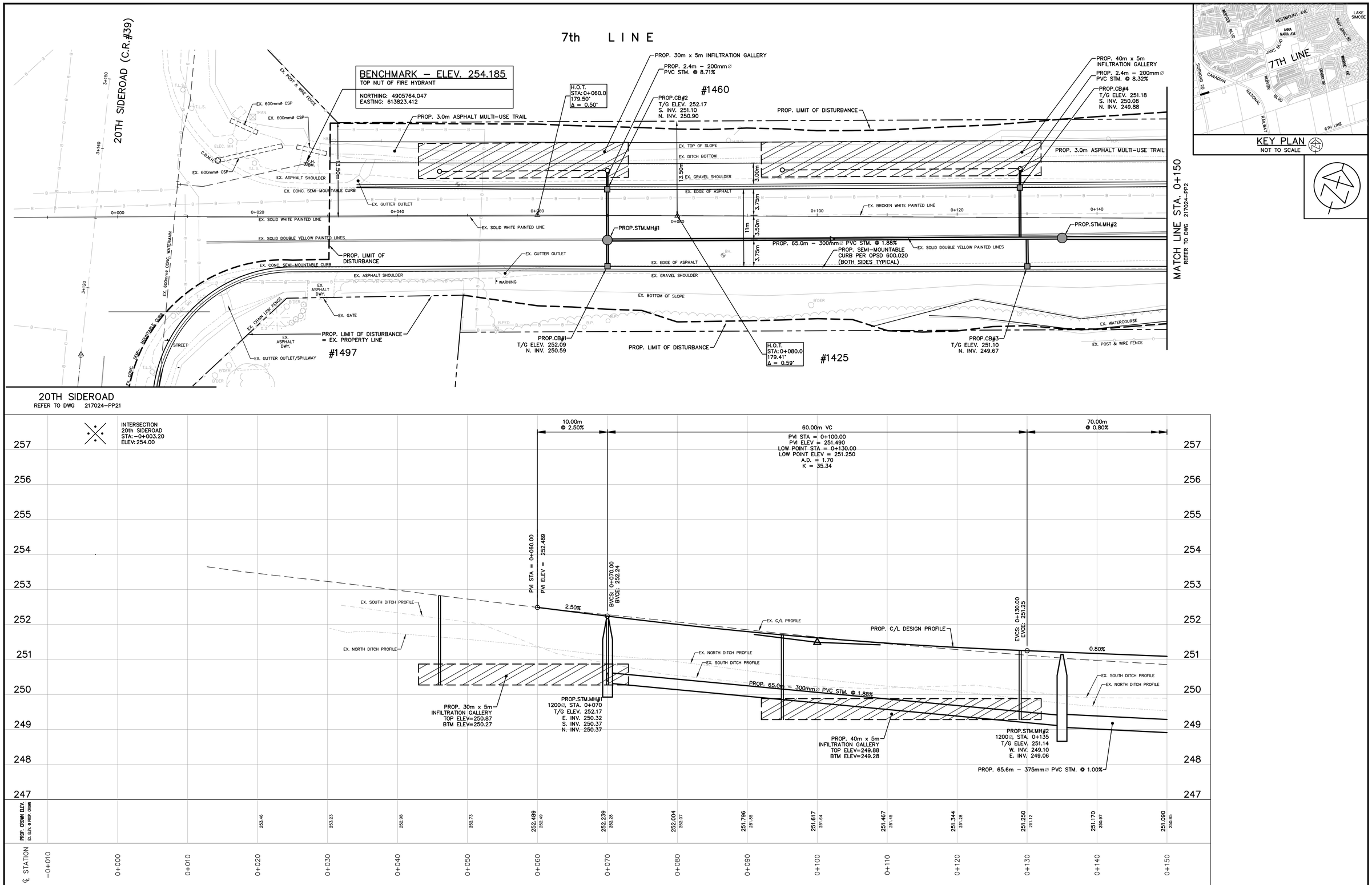

NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:07pm
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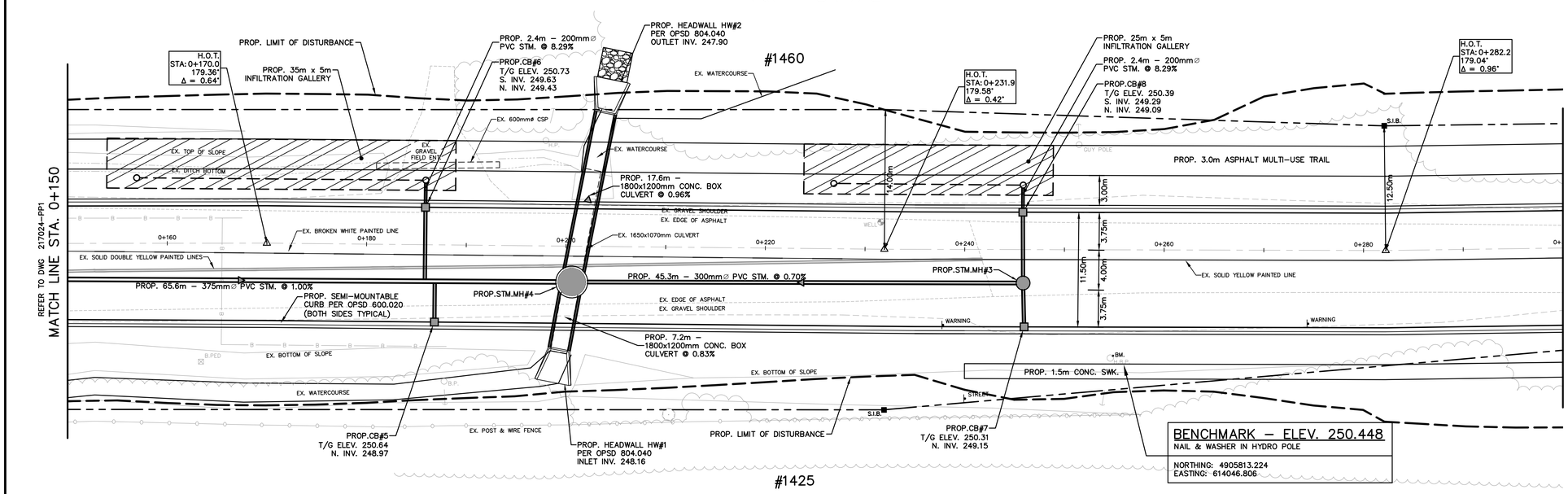
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

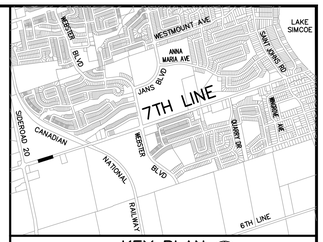
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

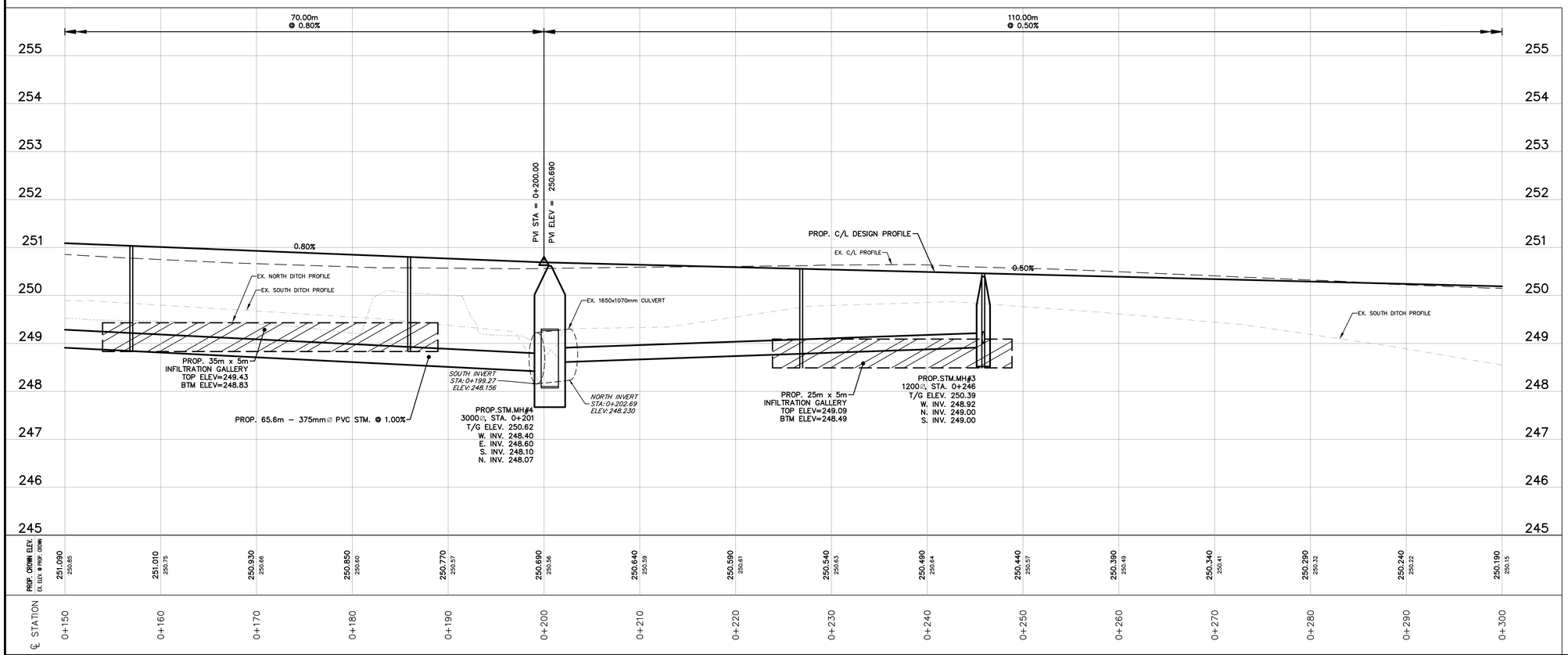
PLAN & PROFILE
7TH LINE
STA. –0+010 TO STA. 0+150

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP1







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DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+150 TO STA. 0+300

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CONTRACT No.

DWG. No. 217024-PP2

Plotted by: RWECKERLE on October 18, 2018 at 2:07pm
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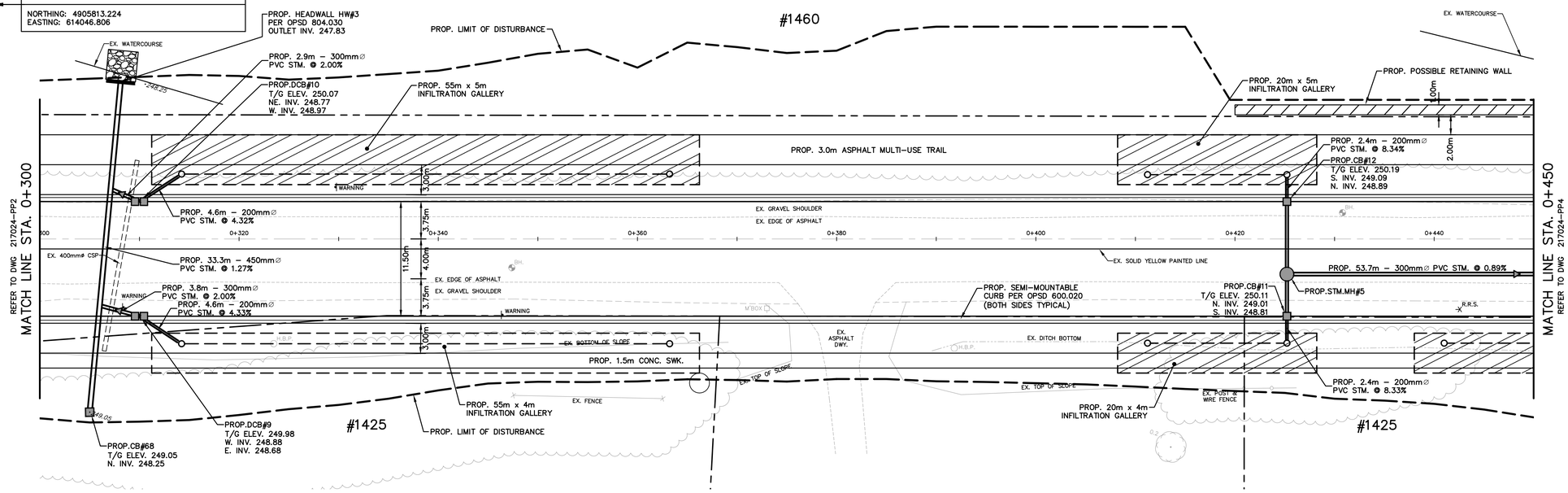
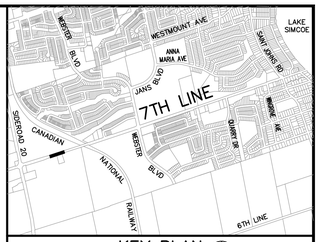
BENCHMARK – ELEV. 250.448
NAIL & WASHER IN HYDRO POLE ON SOUTH SIDE OF ROAD AT APPROX. STATION 0+255.
NORTHING: 4905813.224
EASTING: 614046.806

7th LINE





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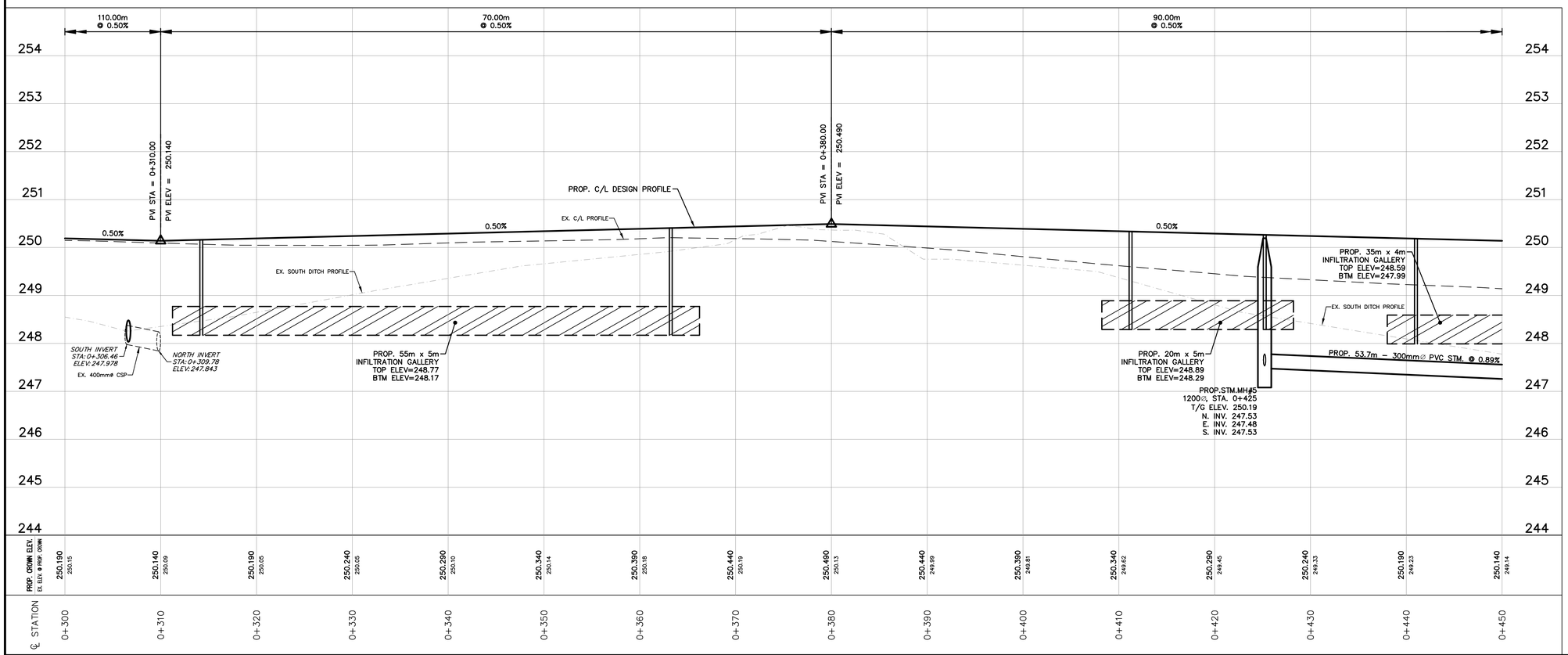

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PRELIMINARY

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DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+300 TO STA. 0+450

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

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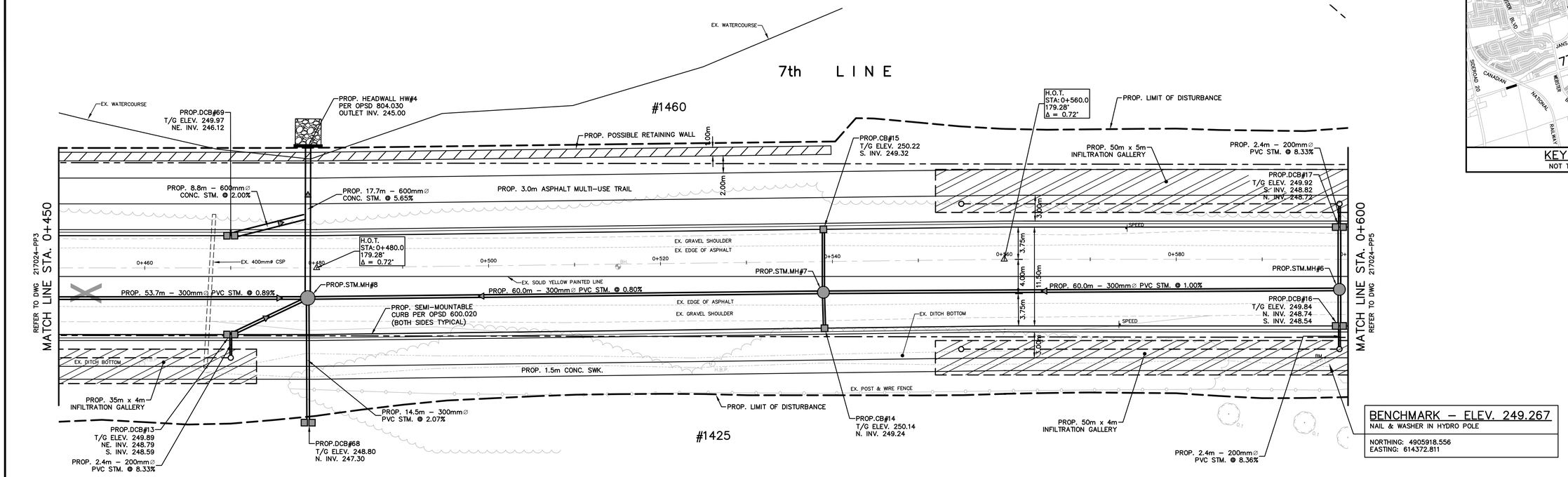

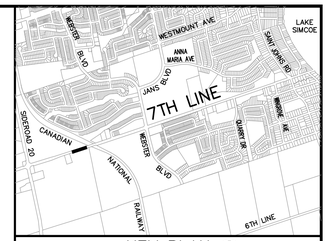

KEY PLAN
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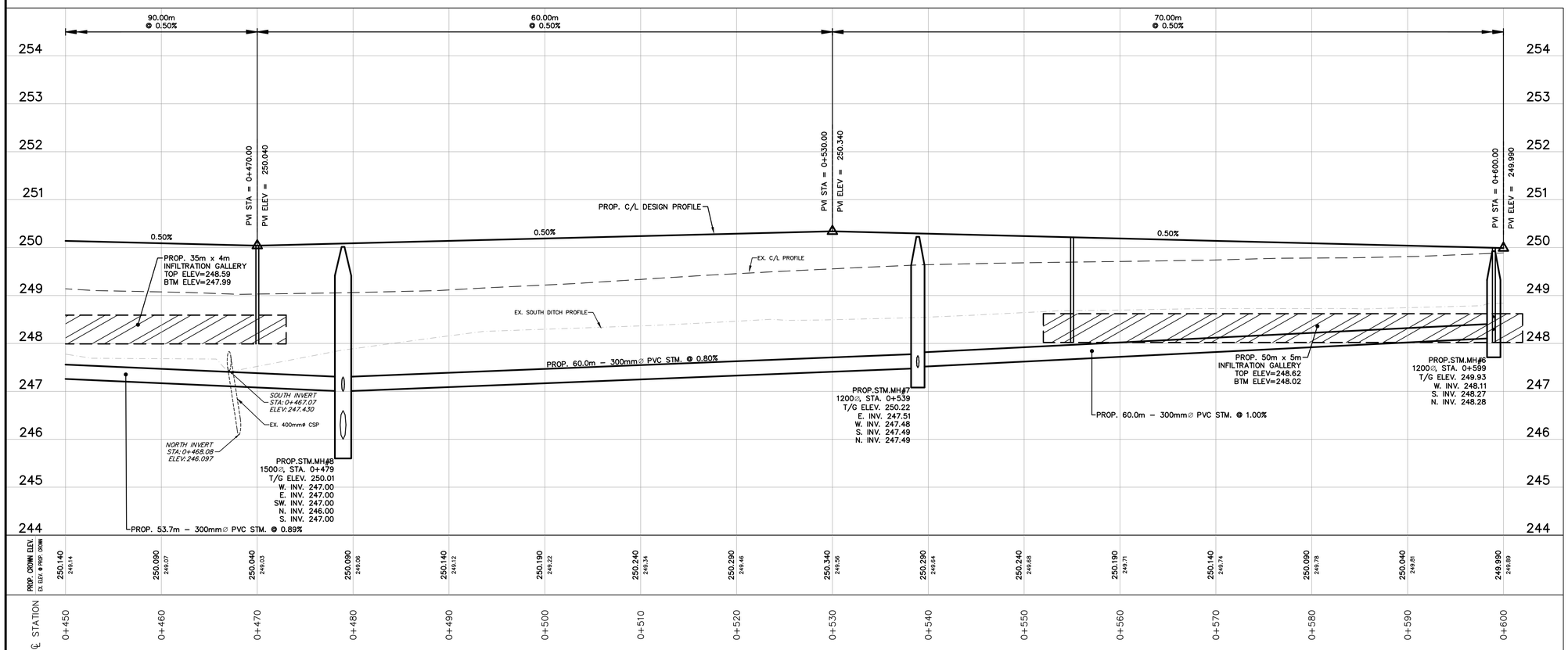
BENCHMARK – ELEV. 249.267

NAIL & WASHER IN HYDRO POLE

NORTHING: 4905918.556
EASTING: 614372.811



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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
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DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+450 TO STA. 0+600

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

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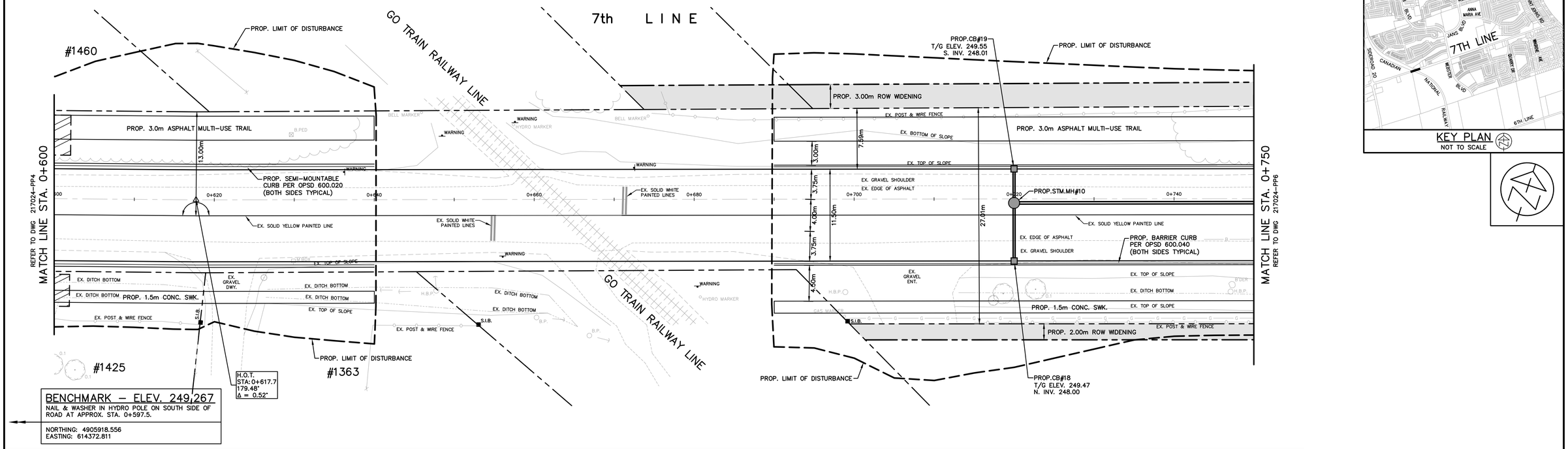

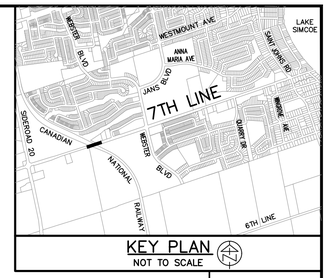

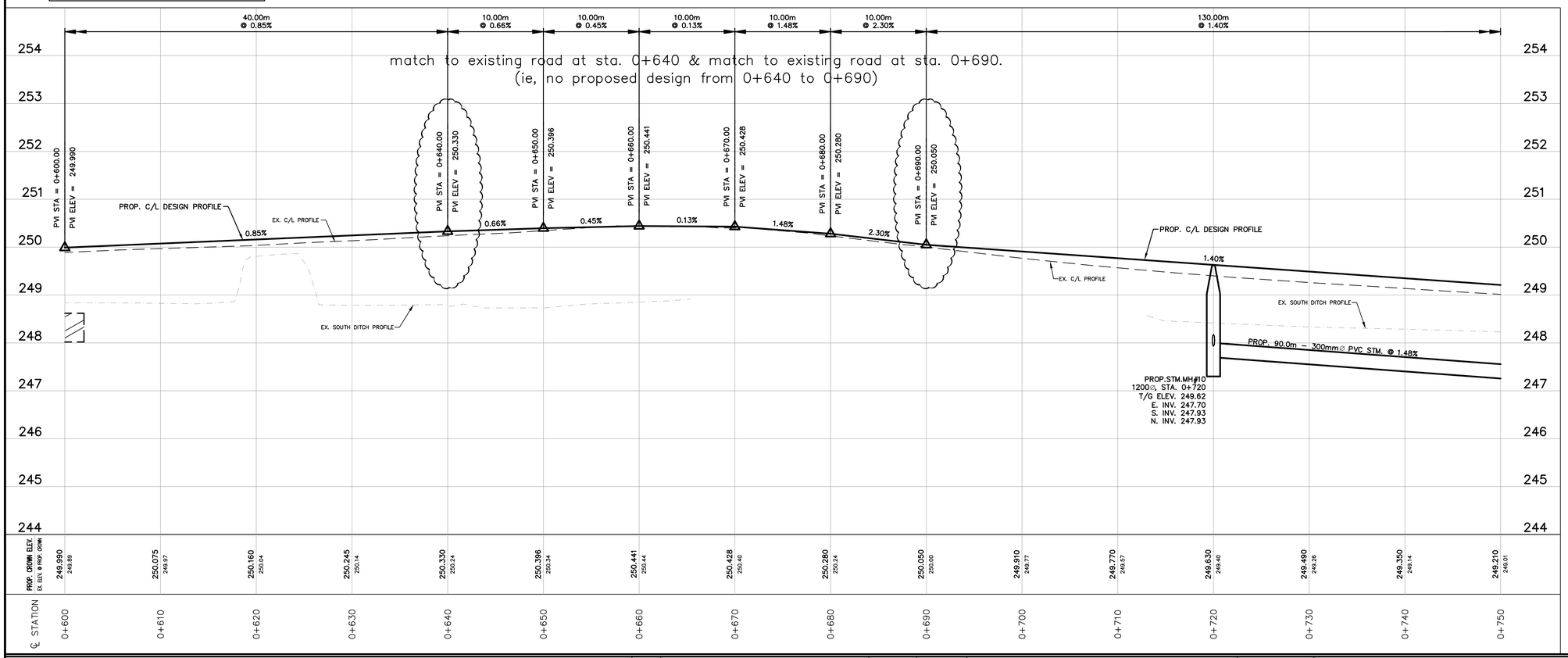

NOTES

NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+600 TO STA. 0+750

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

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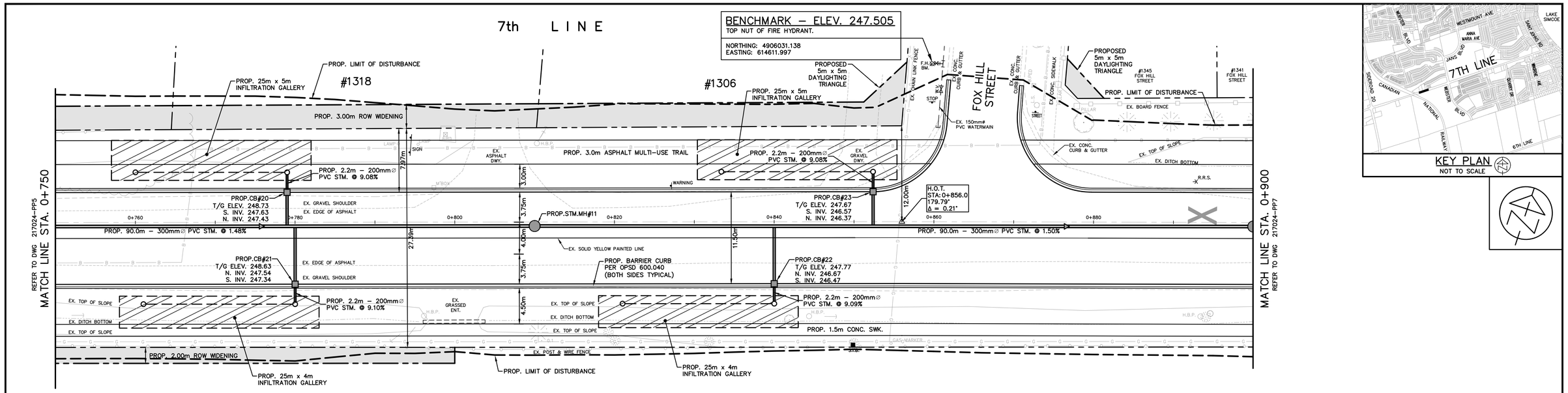
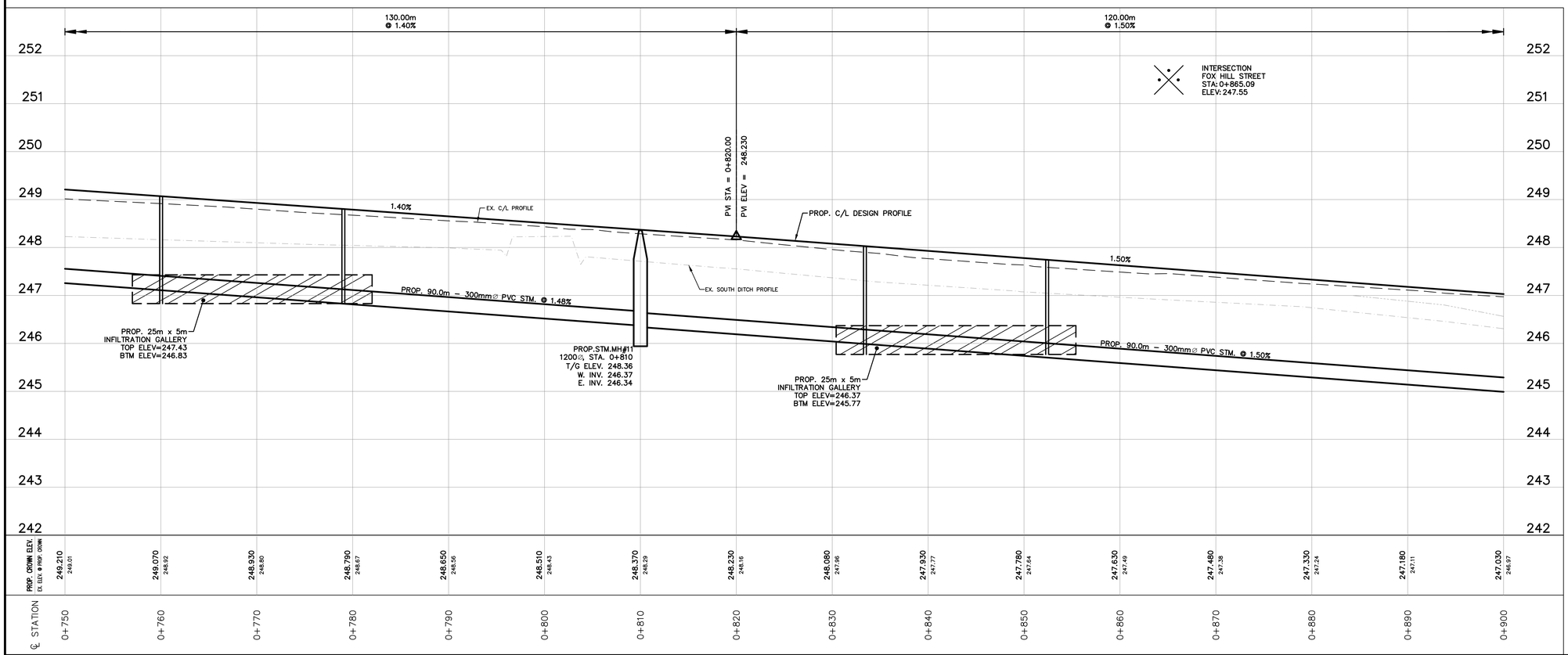




NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+750 TO STA. 0+900

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

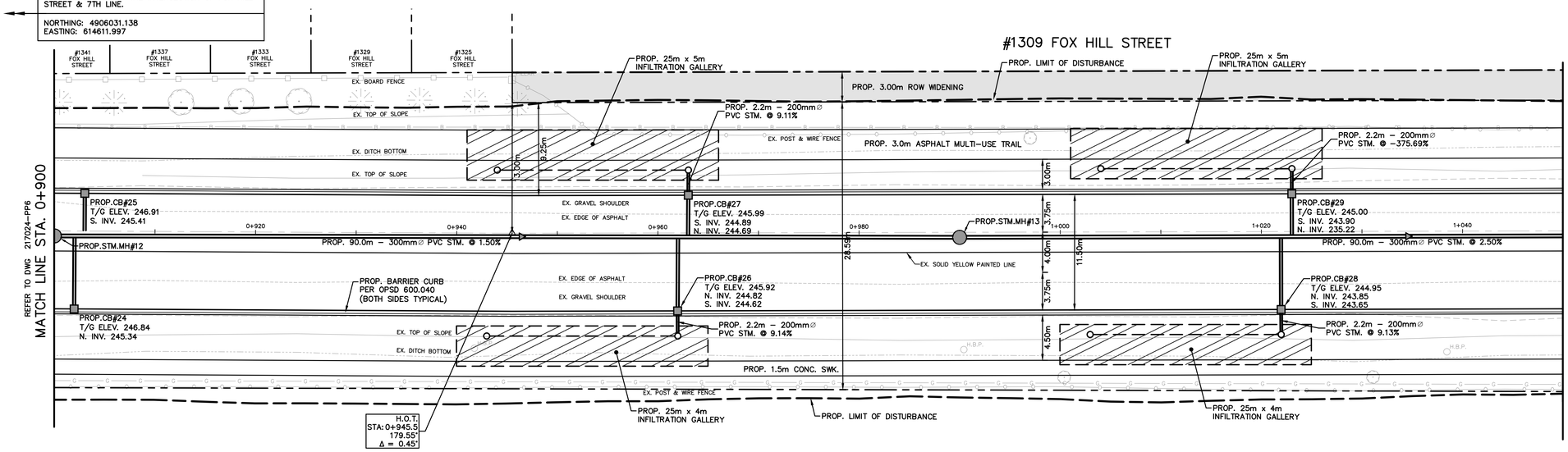
DWG. No. 217024-PP6

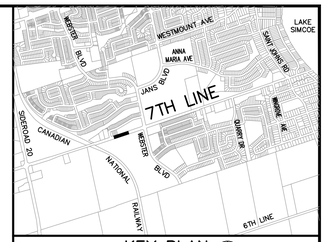
Plotted by: RWECKERLE on October 18, 2018 at 2:09pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP6

BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

NORTHING: 4906031.138
EASTING: 614611.997

7th LINE





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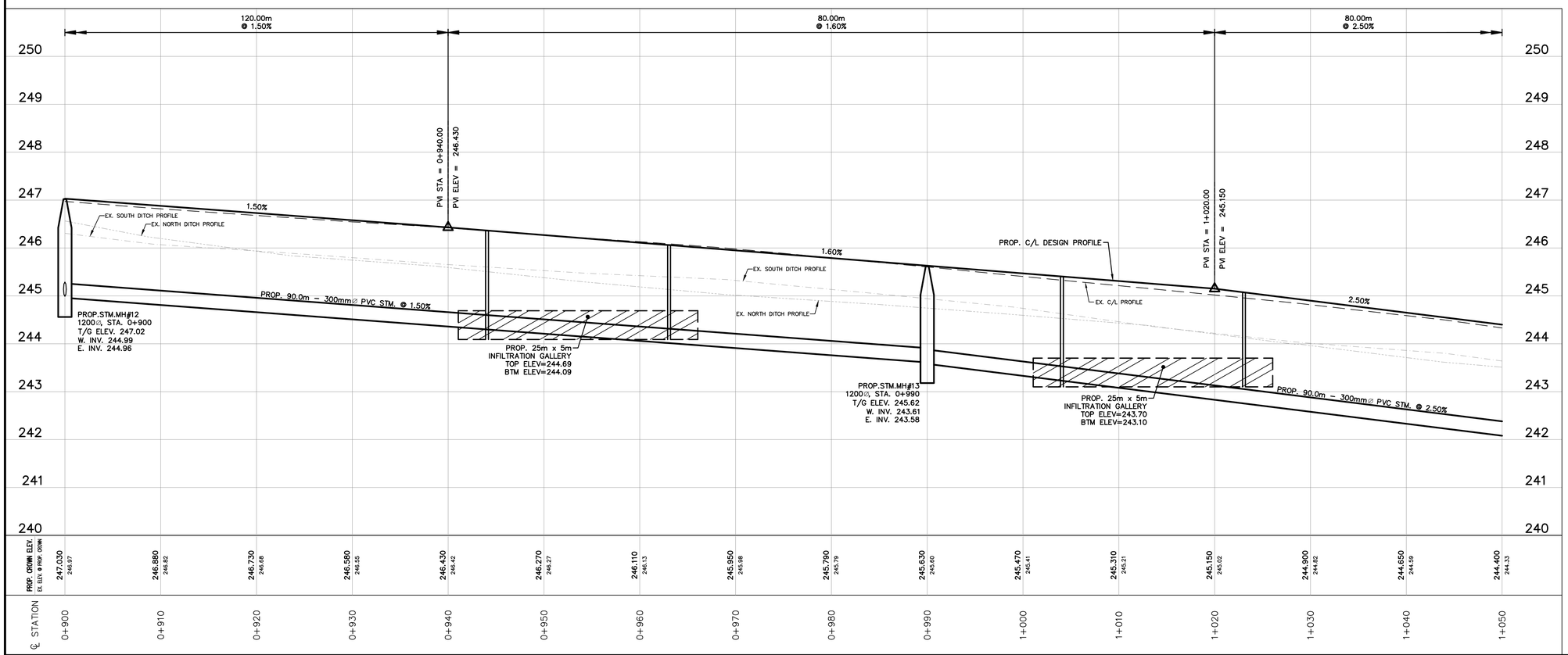


NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 0+900 TO STA. 1+050

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP7

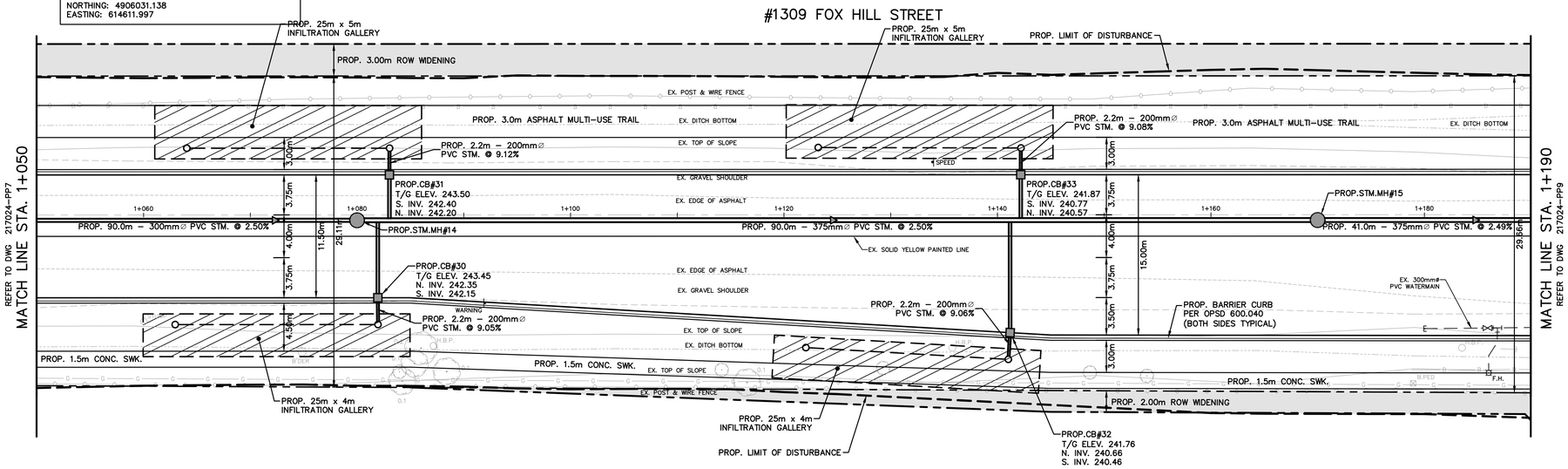
Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP7

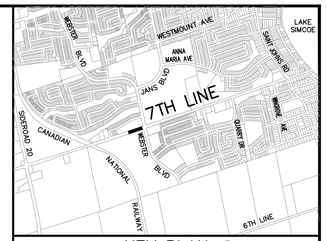
BENCHMARK – ELEV. 247.505
TOP NUT OF FIRE HYDRANT ON THE WEST SIDE OF FOX HILL STREET AT THE INTERSECTION OF FOX HILL STREET & 7TH LINE.

NORTHING: 4906031.138
EASTING: 614611.997

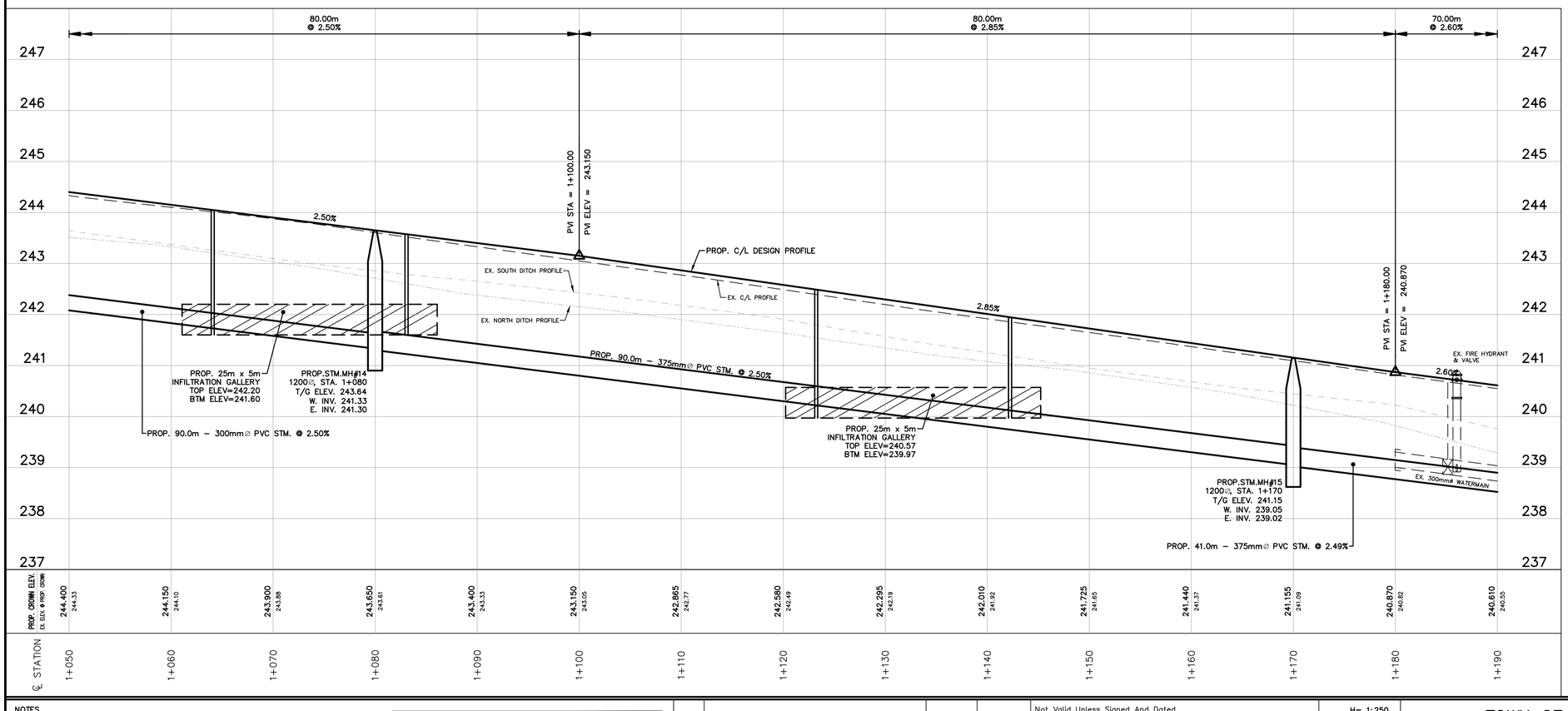
7th LINE

#1309 FOX HILL STREET





KEY PLAN
NOT TO SCALE



NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

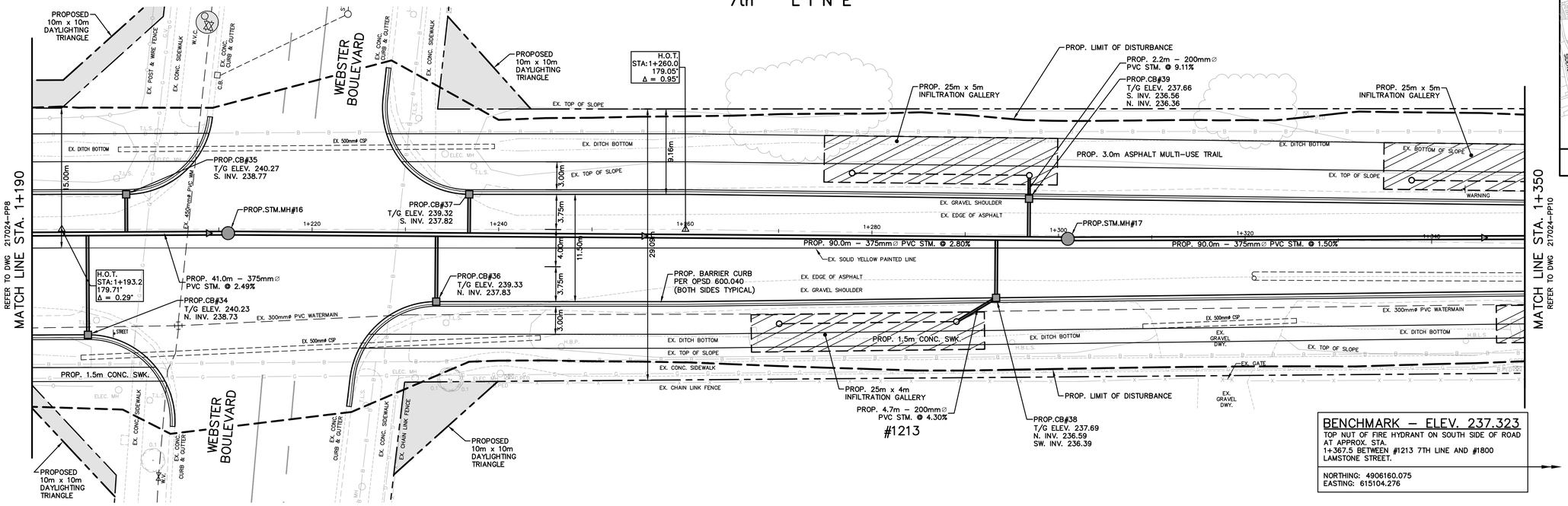
PLAN & PROFILE
7TH LINE
STA. 1+050 TO STA. 1+190

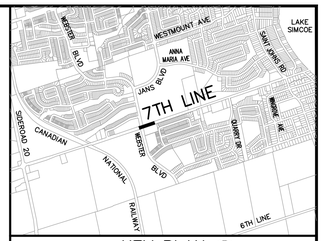
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. | DWG. No. 217024–PP8

Plotted by: RWECKERLE on October 18, 2018 at 2:10pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP8

7th LINE



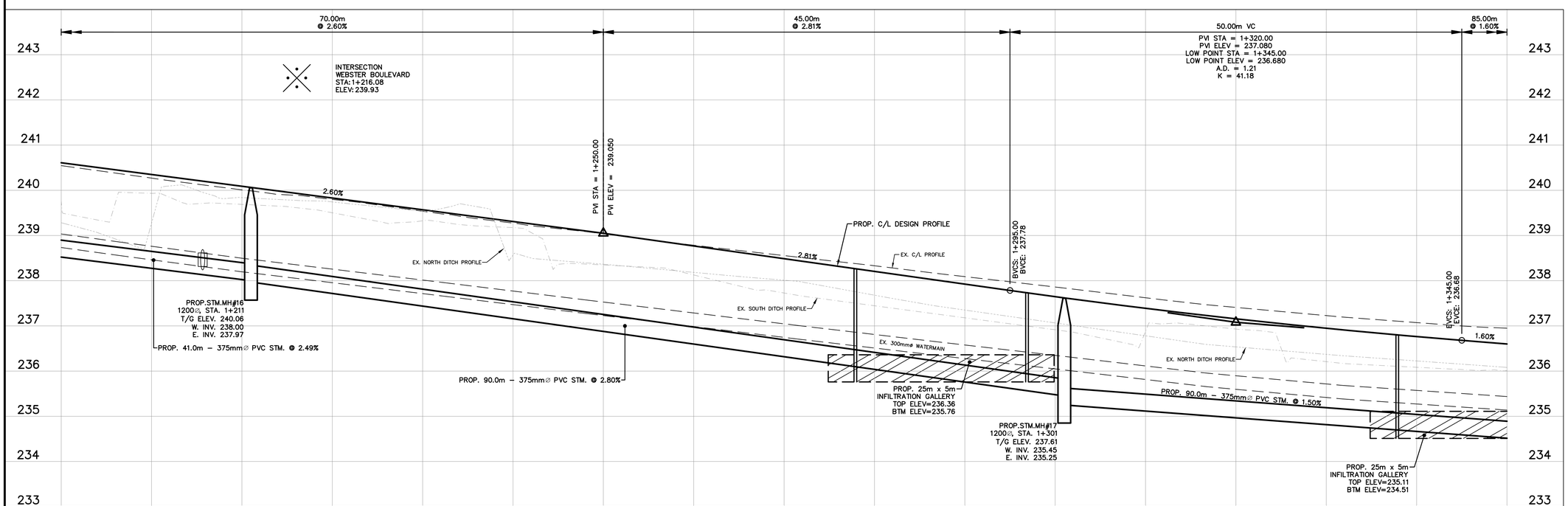


KEY PLAN
NOT TO SCALE

BENCHMARK – ELEV. 237.323

TOP NUT OF FIRE HYDRANT ON SOUTH SIDE OF ROAD AT APPROX. STA. 1+367.5 BETWEEN #1213 7TH LINE AND #1800 LAMSTONE STREET.

NORTHING: 4906160.075
EASTING: 615104.276



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP9

CONTRACT DRAWINGS

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

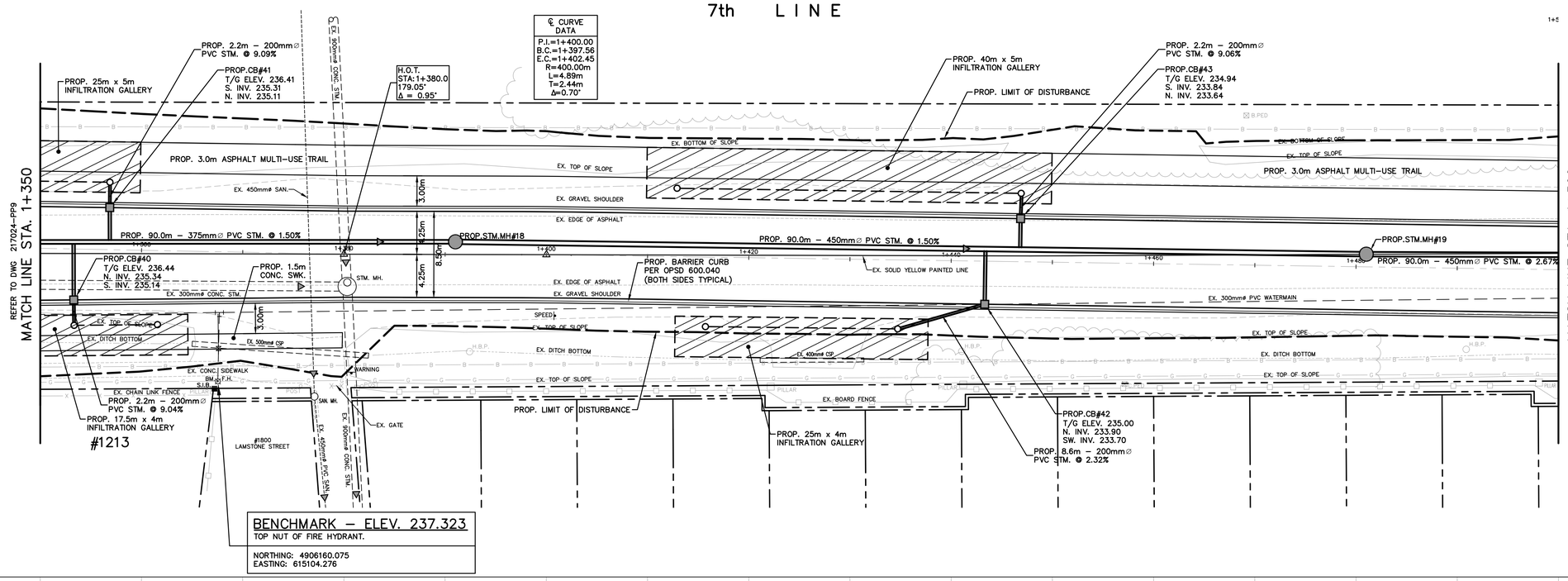
PLAN & PROFILE
7TH LINE
STA. 1+190 TO STA. 1+350

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

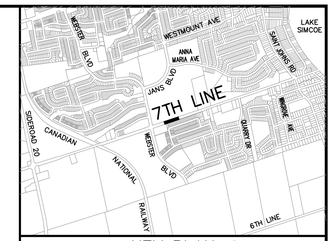
CONTRACT No.

DWG. No. 217024–PP9

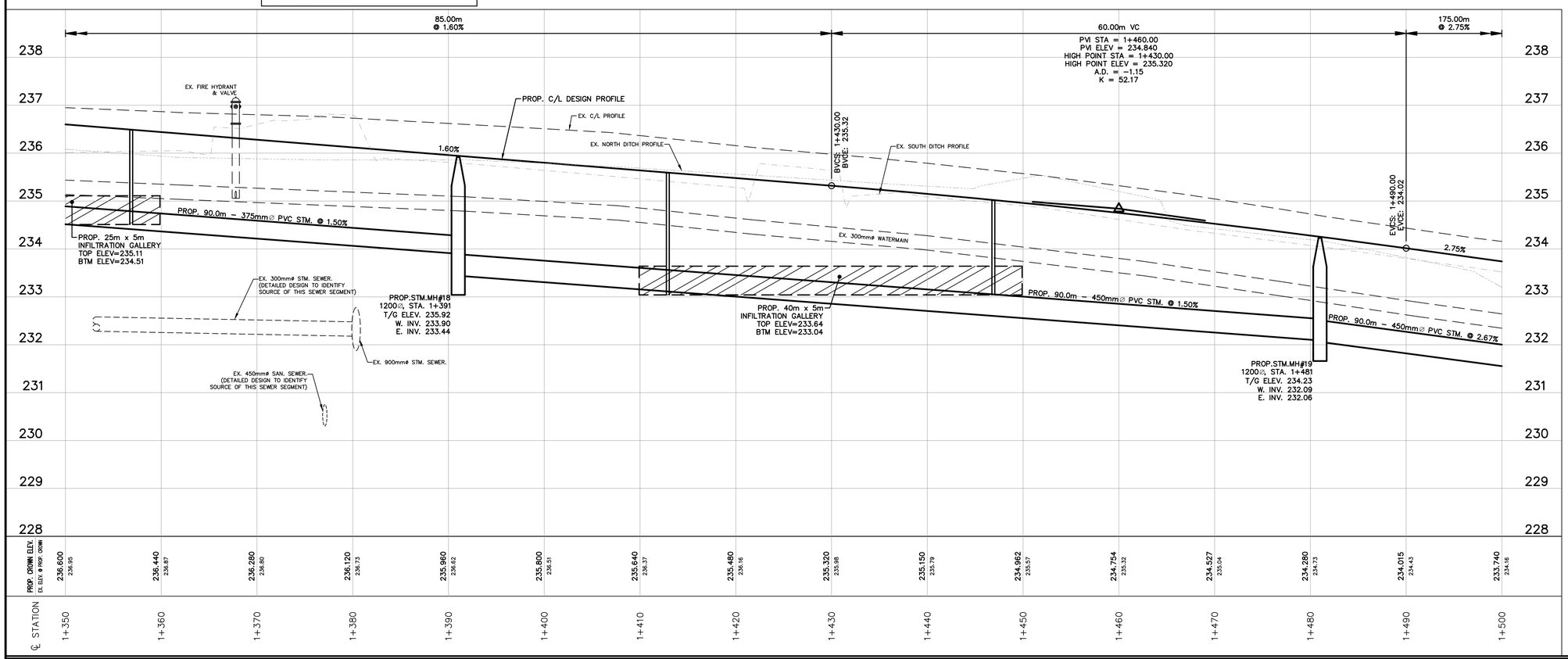
7th LINE



BENCHMARK – ELEV. 237.323
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906160.075
EASTING: 615104.276



KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:11pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP10

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

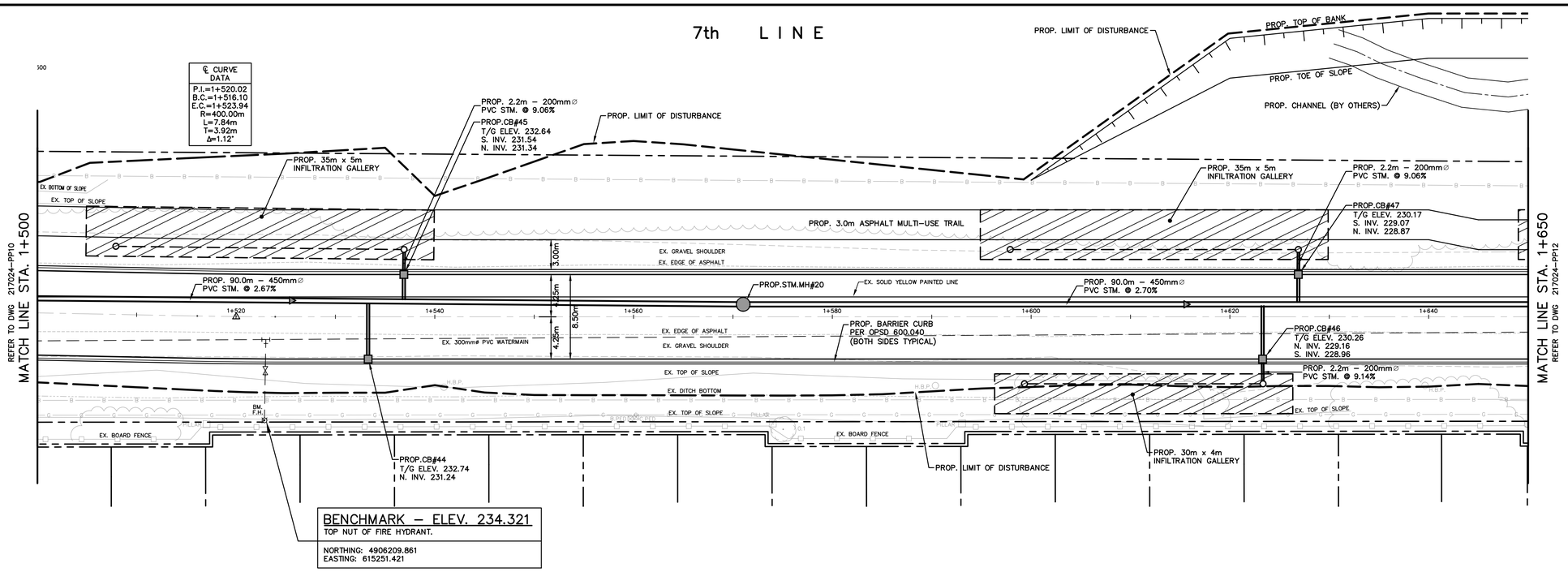
PLAN & PROFILE
7TH LINE
STA. 1+350 TO STA. 1+500

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP10

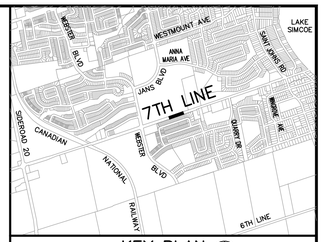
7th LINE



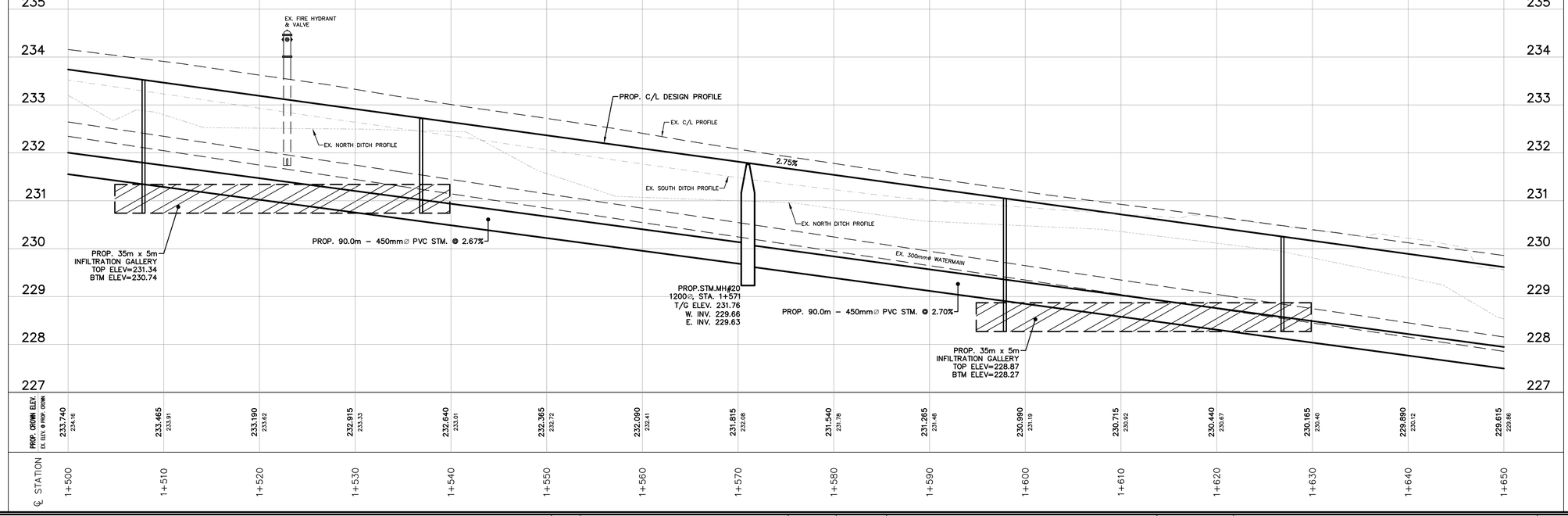
BENCHMARK – ELEV. 234.321

TOP NUT OF FIRE HYDRANT.

NORTHING: 4906209.861
EASTING: 615251.421



KEY PLAN
NOT TO SCALE



NOTES

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL

7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

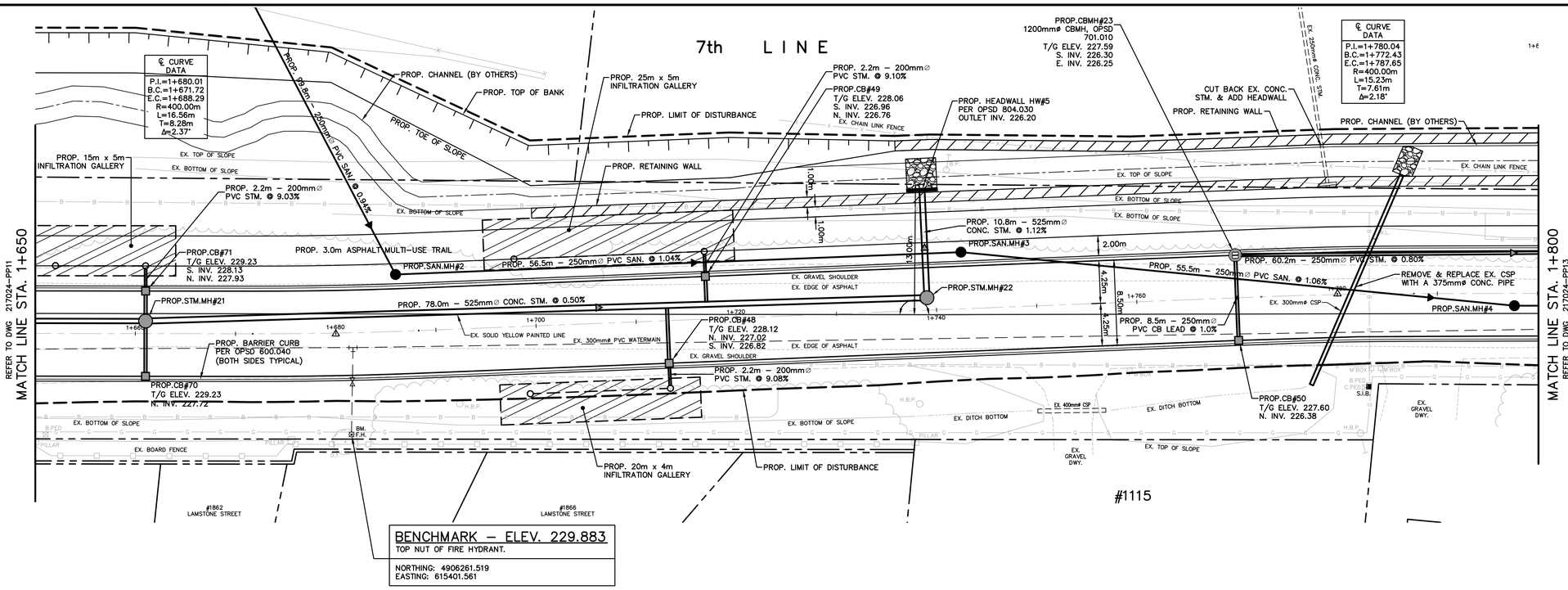
PLAN & PROFILE
7TH LINE
STA. 1+500 TO STA. 1+650

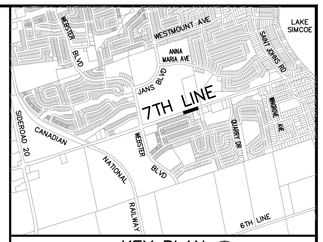
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP11

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP11





KEY PLAN
NOT TO SCALE

NOTES

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

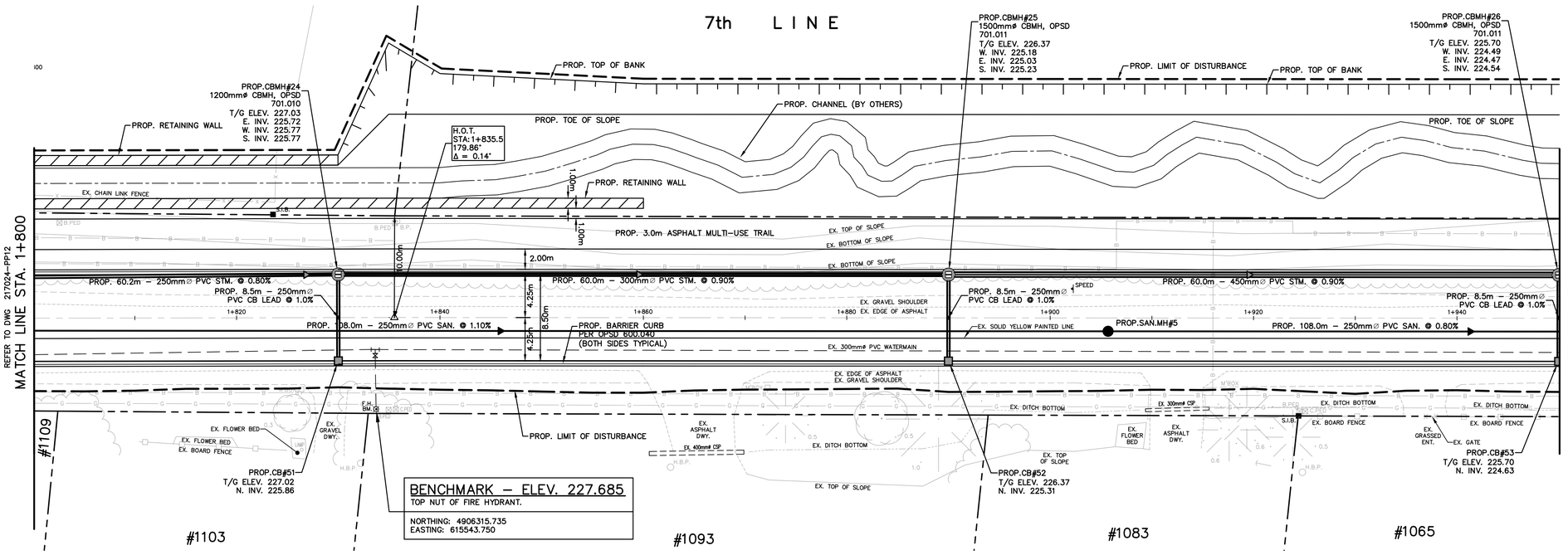
PLAN & PROFILE
7TH LINE
STA. 1+650 TO STA. 1+800

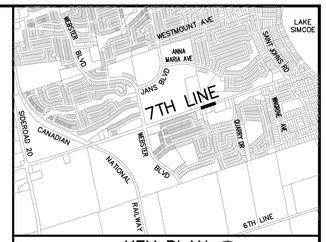
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

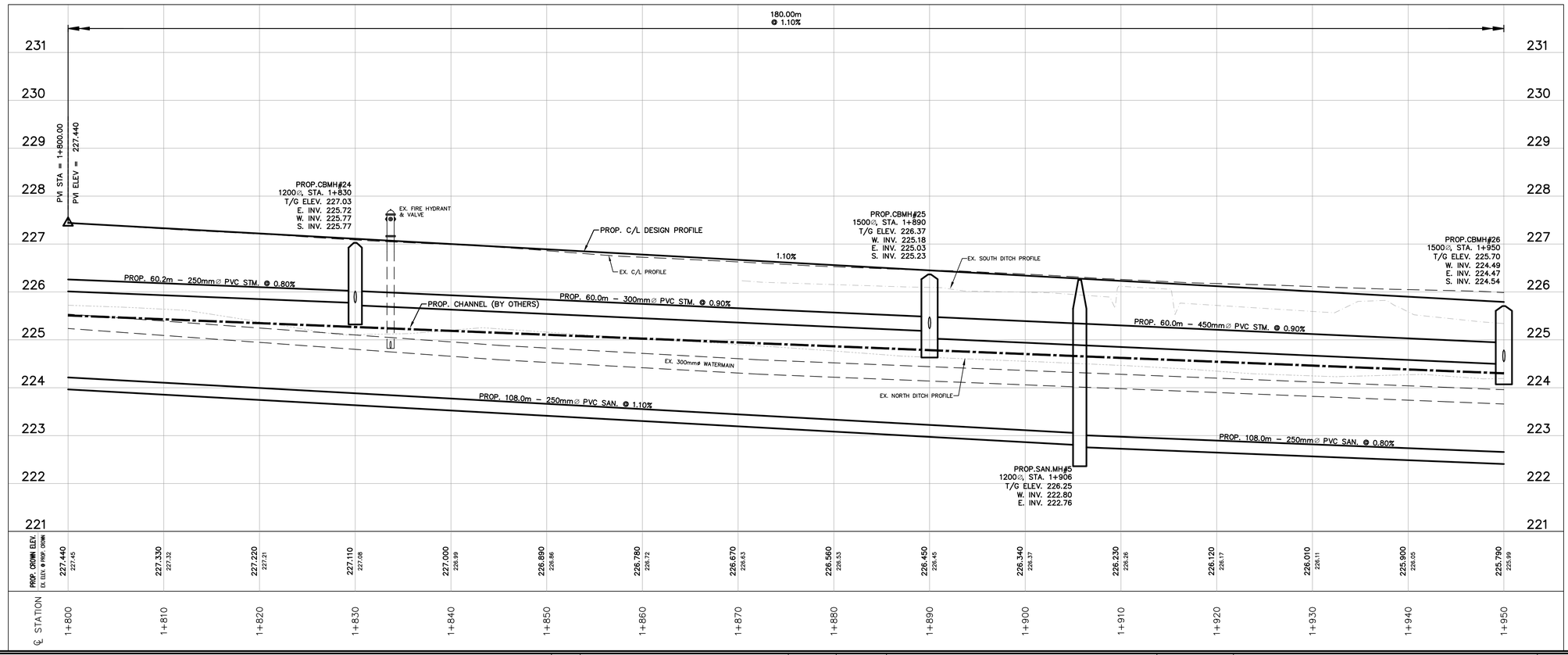
CONTRACT No.

DWG. No. 217024–PP12

Plotted by: RWECKERLE on October 18, 2018 at 2:12pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP12







NOTES

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

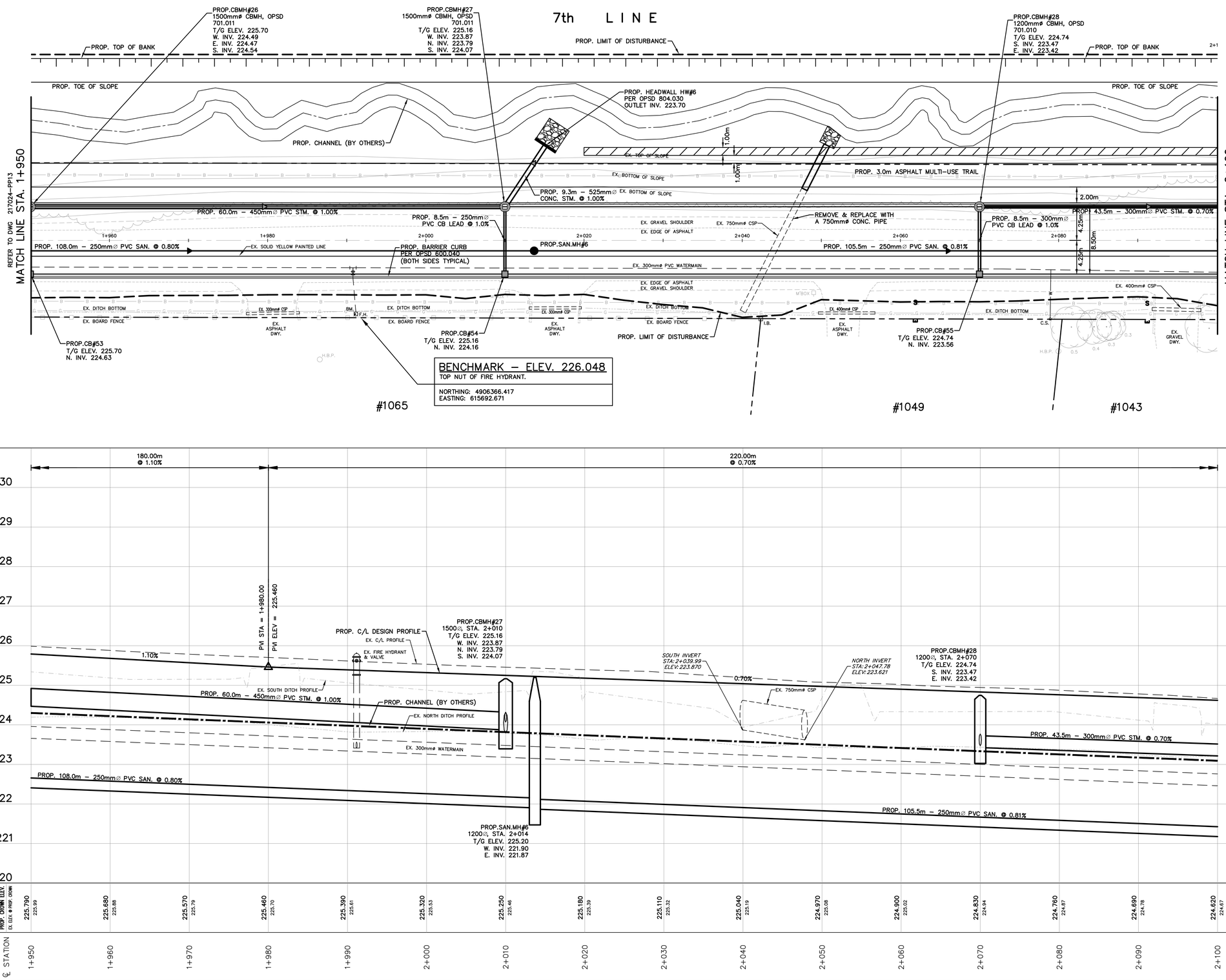
PLAN & PROFILE
7TH LINE
STA. 1+800 TO STA. 1+950

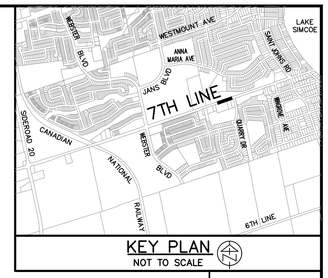
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP13

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP13





NOTES

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

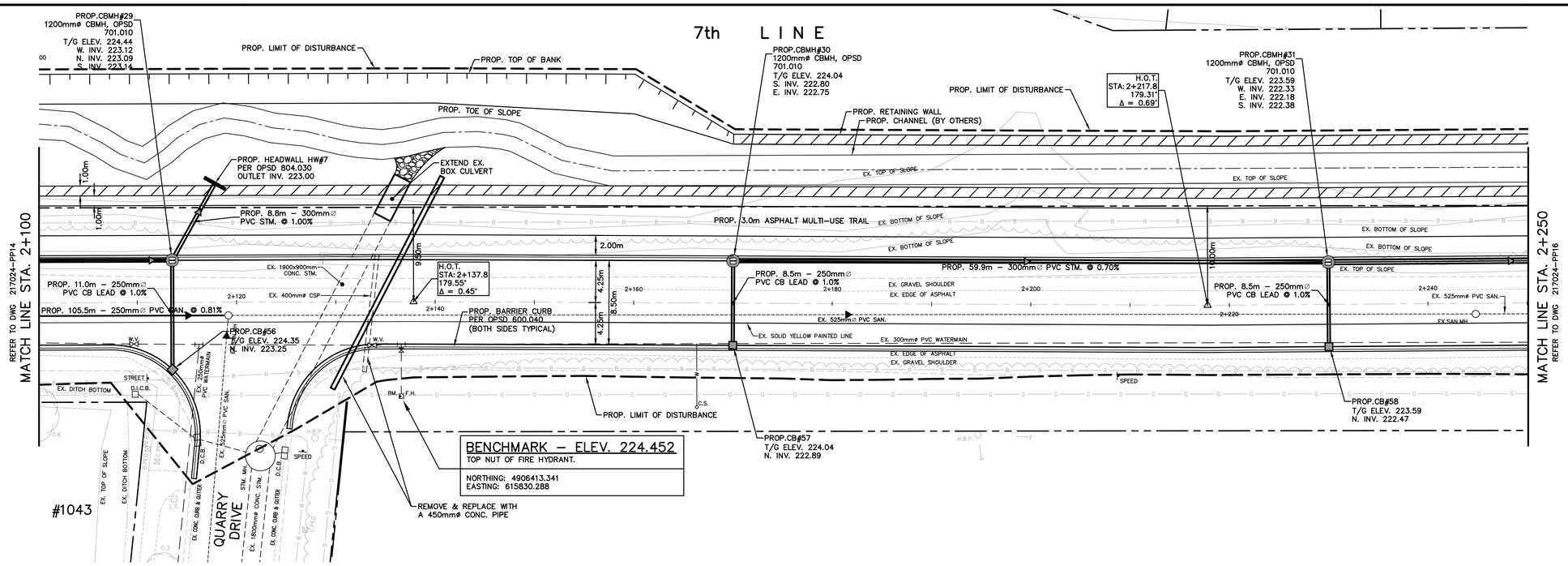
PLAN & PROFILE
7TH LINE
STA. 1+950 TO STA. 2+100

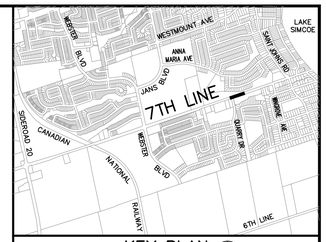
Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No.

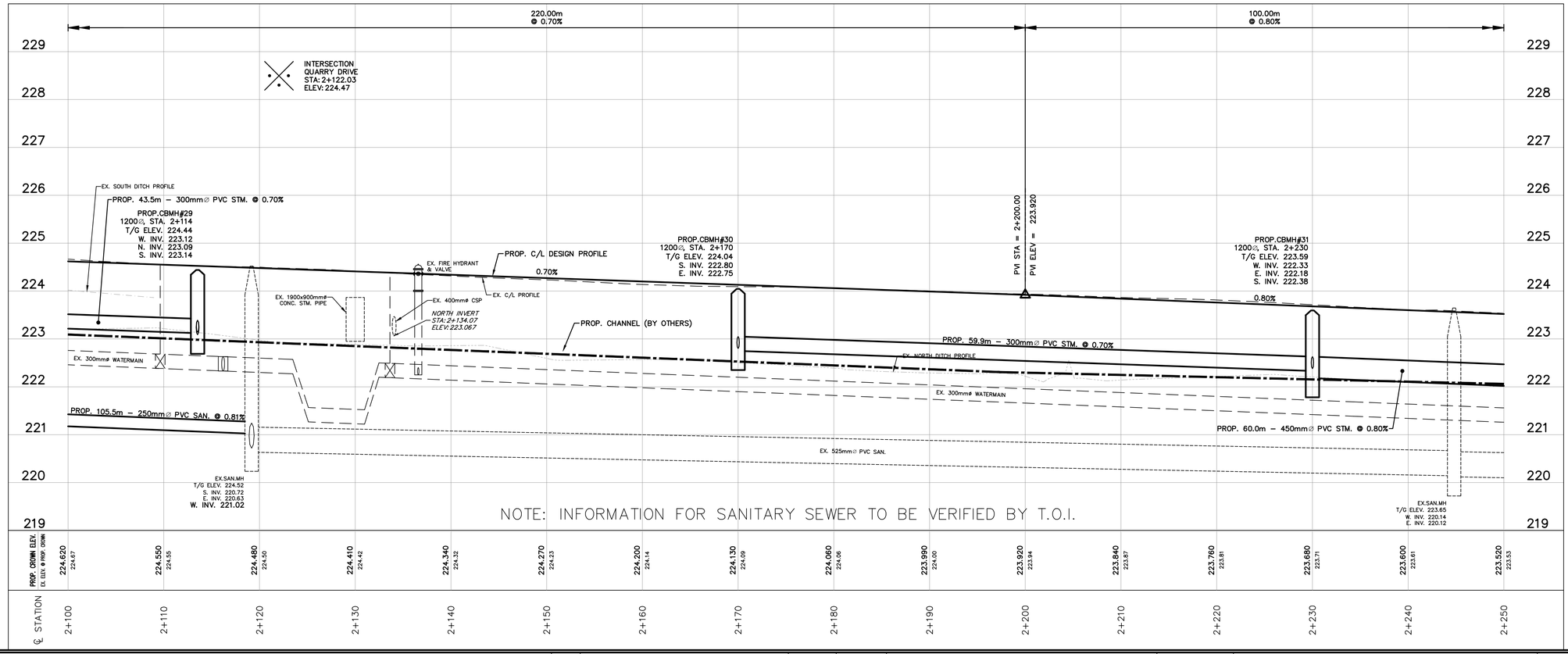
DWG. No. 217024-PP14

Plotted by: RWECKERLE on October 18, 2018 at 2:13pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP14





KEY PLAN
NOT TO SCALE



NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

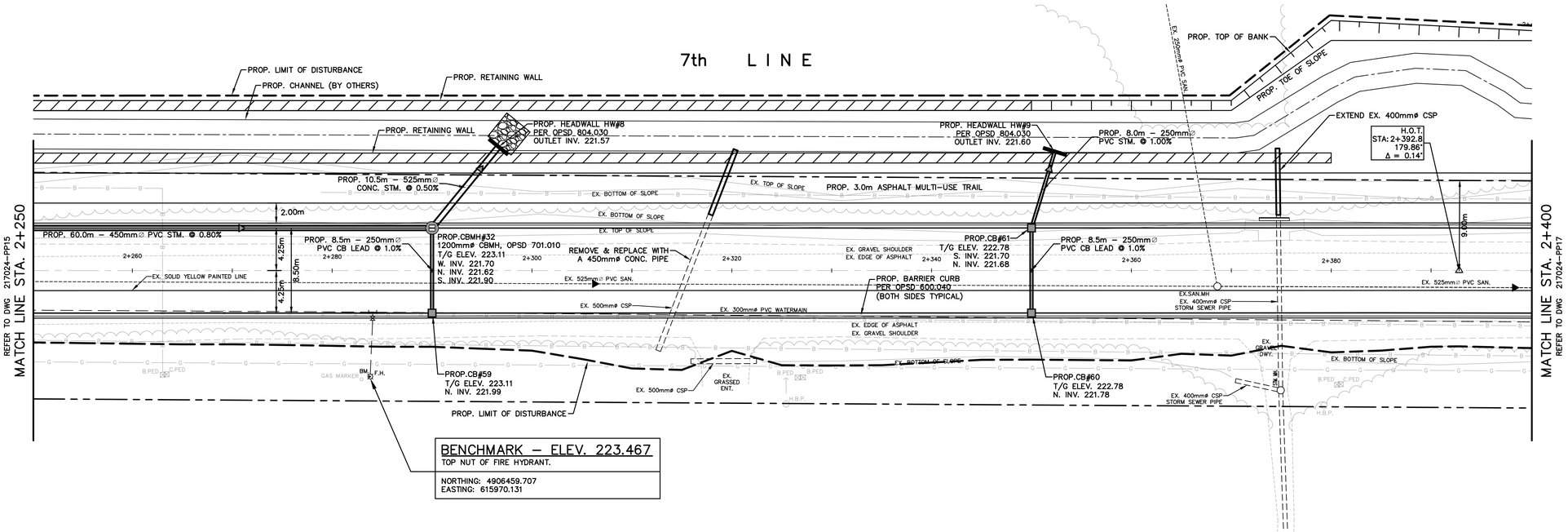
PLAN & PROFILE
7TH LINE
STA. 2+100 TO STA. 2+250

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

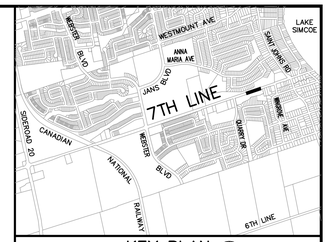
CONTRACT No.

DWG. No. 217024-PP15

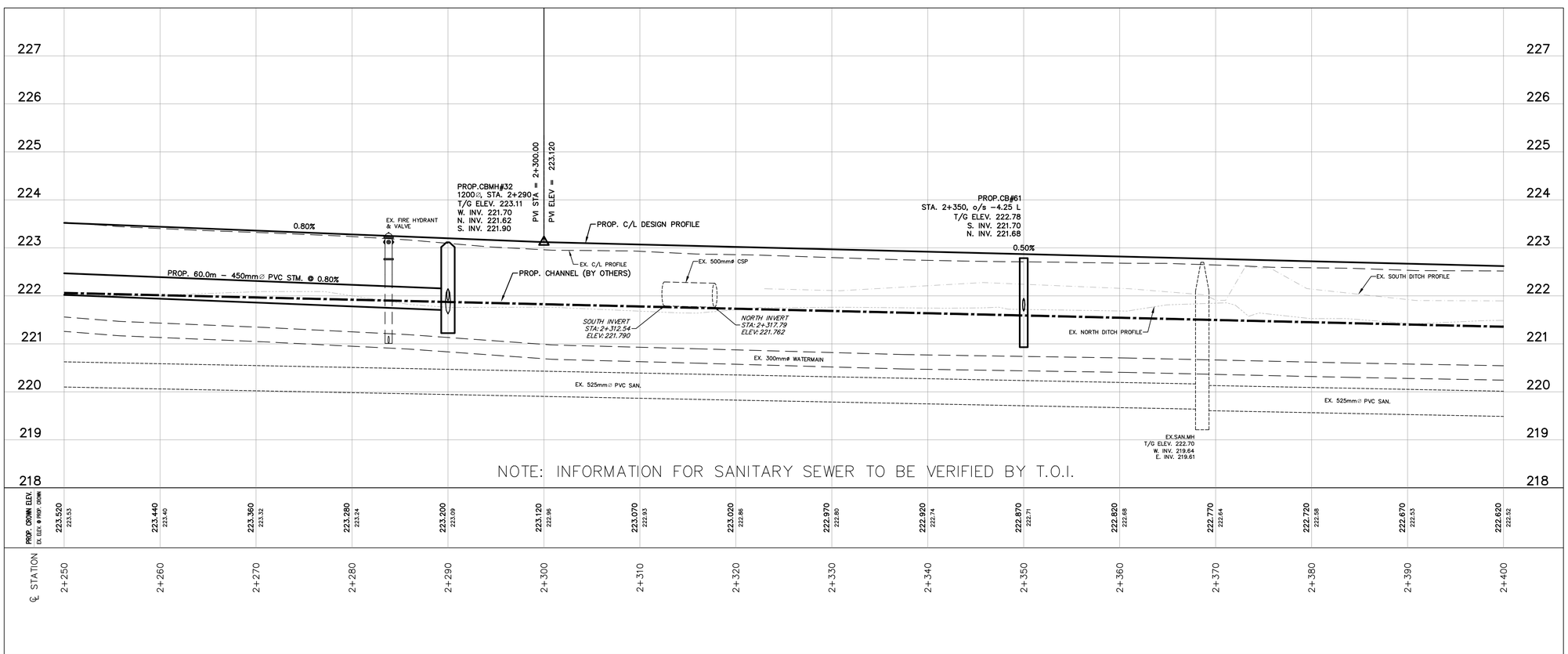
Plotted by: RWECKERLE on October 18, 2018 at 2:14pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP15



BENCHMARK – ELEV. 223.467
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906459.707
EASTING: 615970.131



KEY PLAN
NOT TO SCALE



NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP16

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

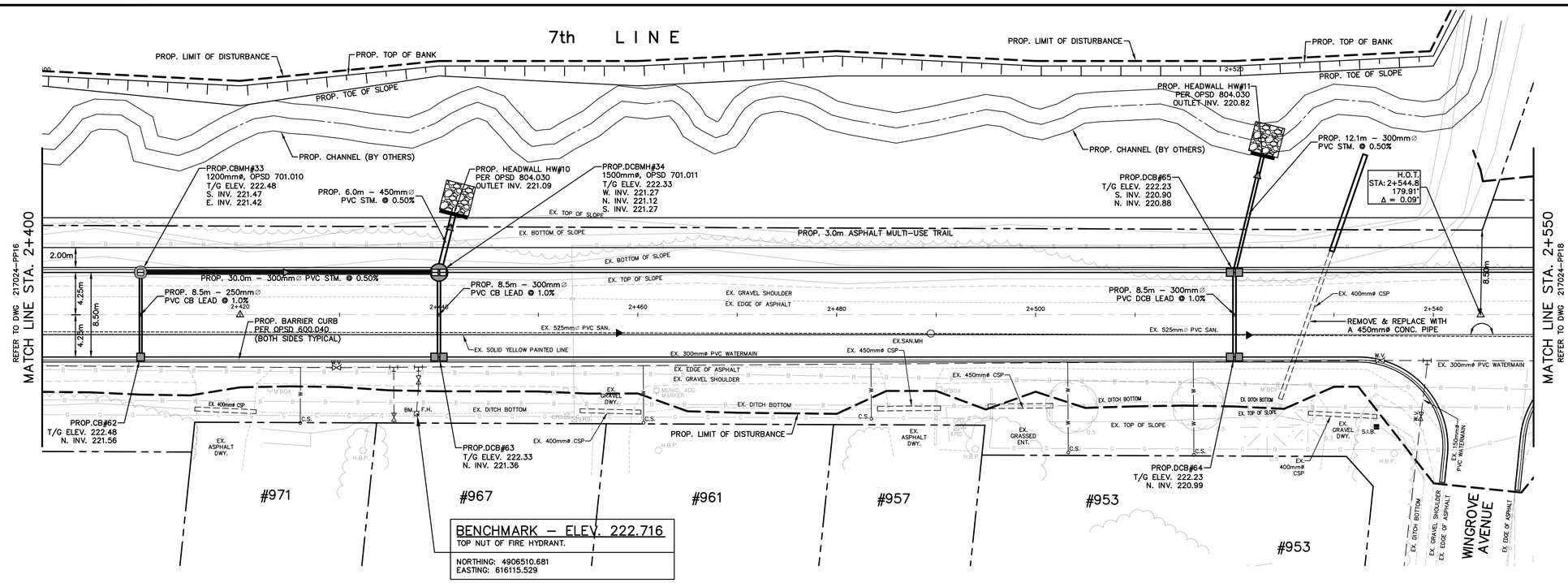
TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

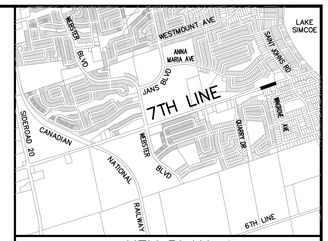
PLAN & PROFILE
7TH LINE
STA. 2+250 TO STA. 2+400

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

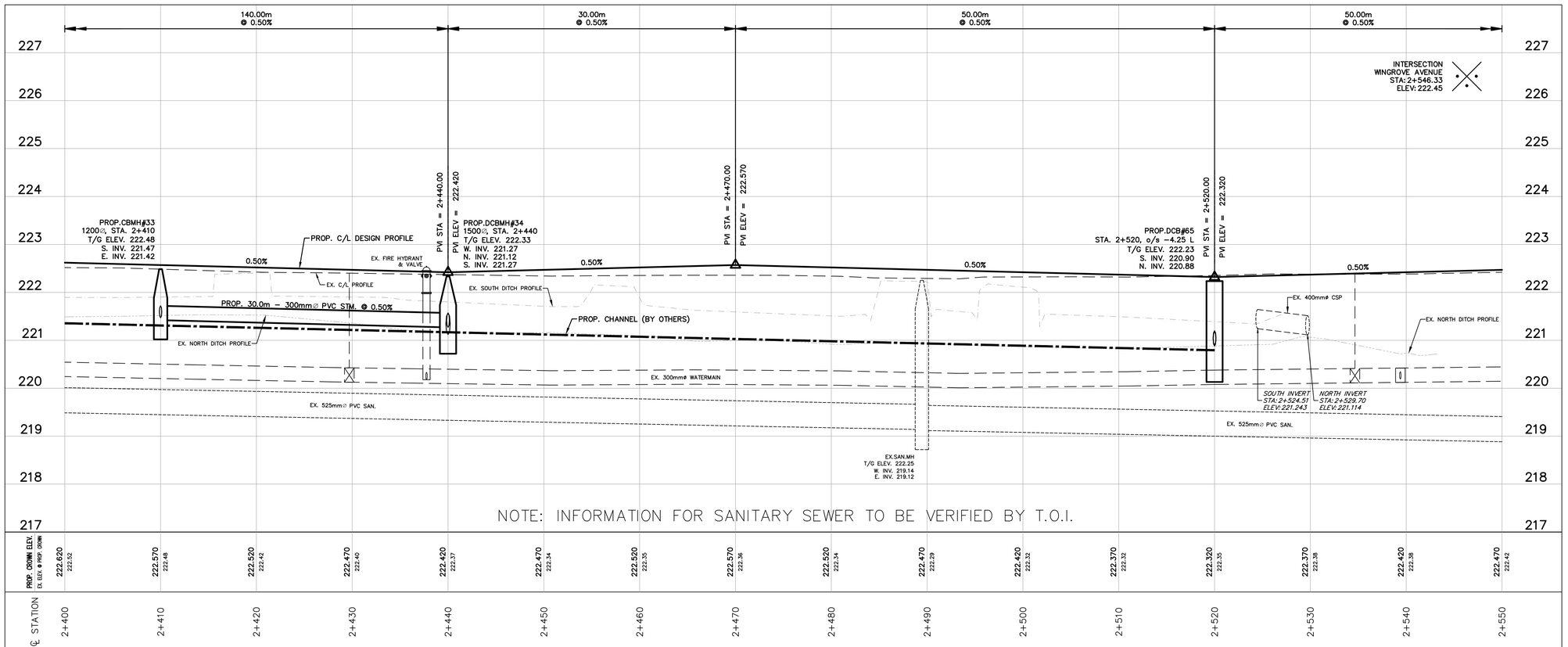
CONTRACT No.

DWG. No. 217024-PP16





KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:15pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP17

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

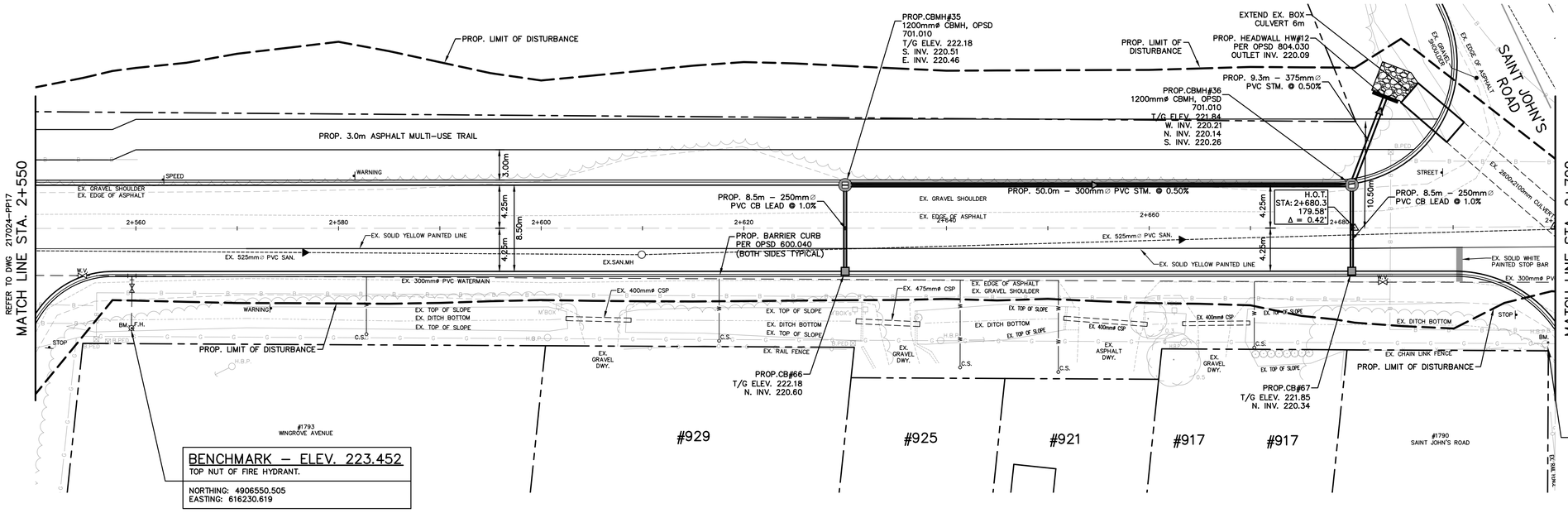
PLAN & PROFILE
7TH LINE
STA. 2+400 TO STA. 2+550

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

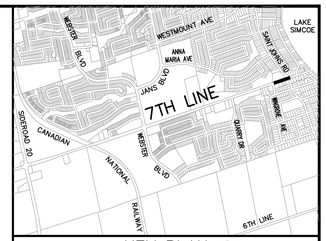
DWG. No. 217024–PP17

7th LINE

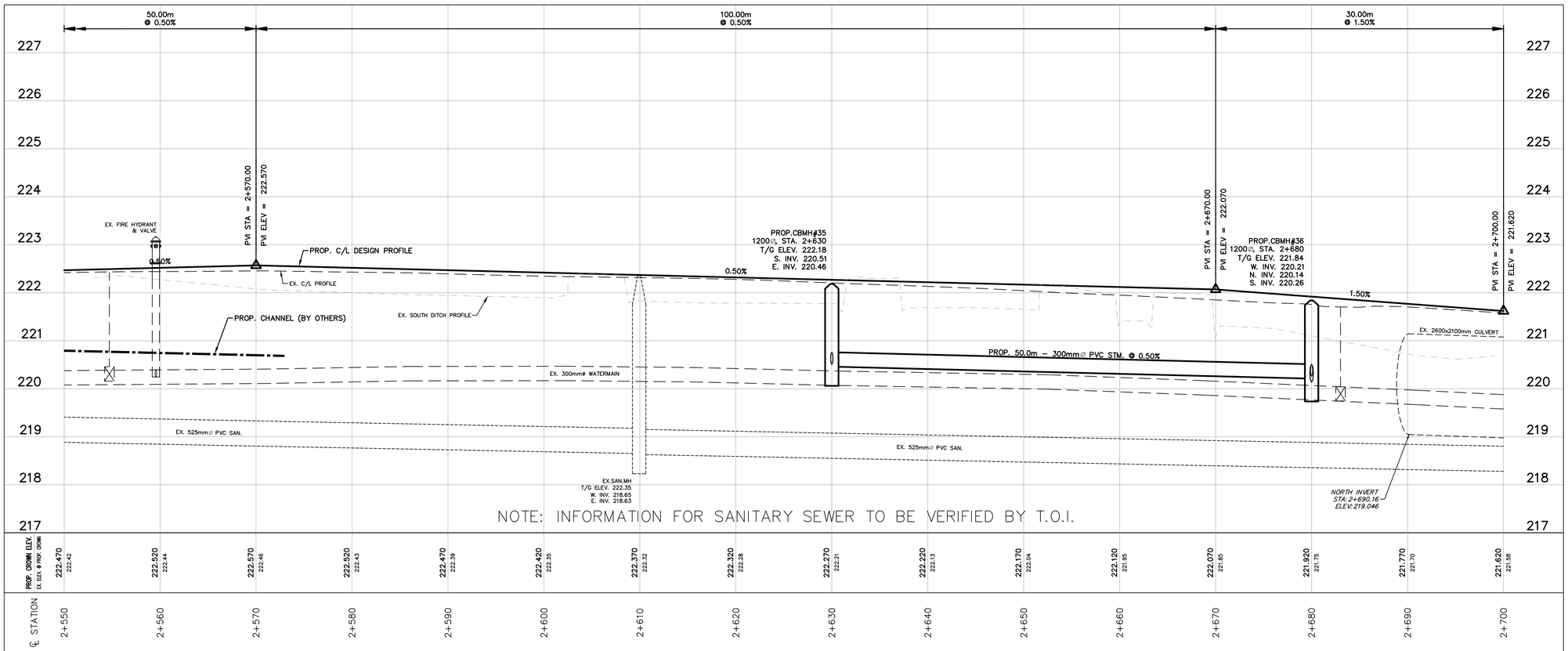


BENCHMARK – ELEV. 223.452
TOP NUT OF FIRE HYDRANT.
NORTHING: 4906550.505
EASTING: 616230.619

BENCHMARK – ELEV. 221.243
NAIL & WASHER IN HYDRO BELL POLE
NORTHING: 4906594.847
EASTING: 616363.173



KEY PLAN
NOT TO SCALE



NOTE: INFORMATION FOR SANITARY SEWER TO BE VERIFIED BY T.O.I.

NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:250 V= 1:50
DESIGN:	S.L.F.
DRAWN:	J.D.C.
CHECKED:	T.M.K.
DATE:	AUGUST 2017

TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

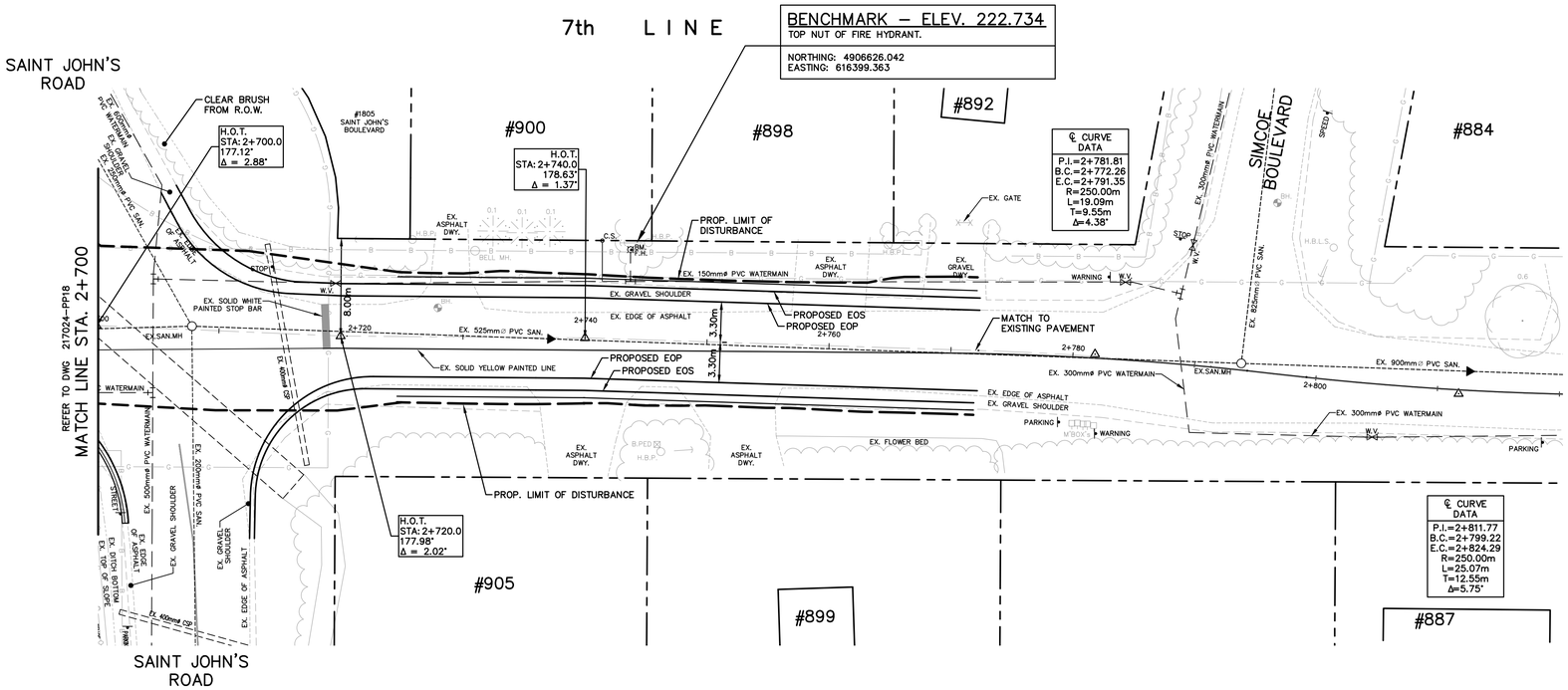
PLAN & PROFILE
7TH LINE
STA. 2+550 TO STA. 2+700

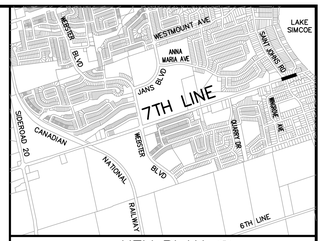
Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No.

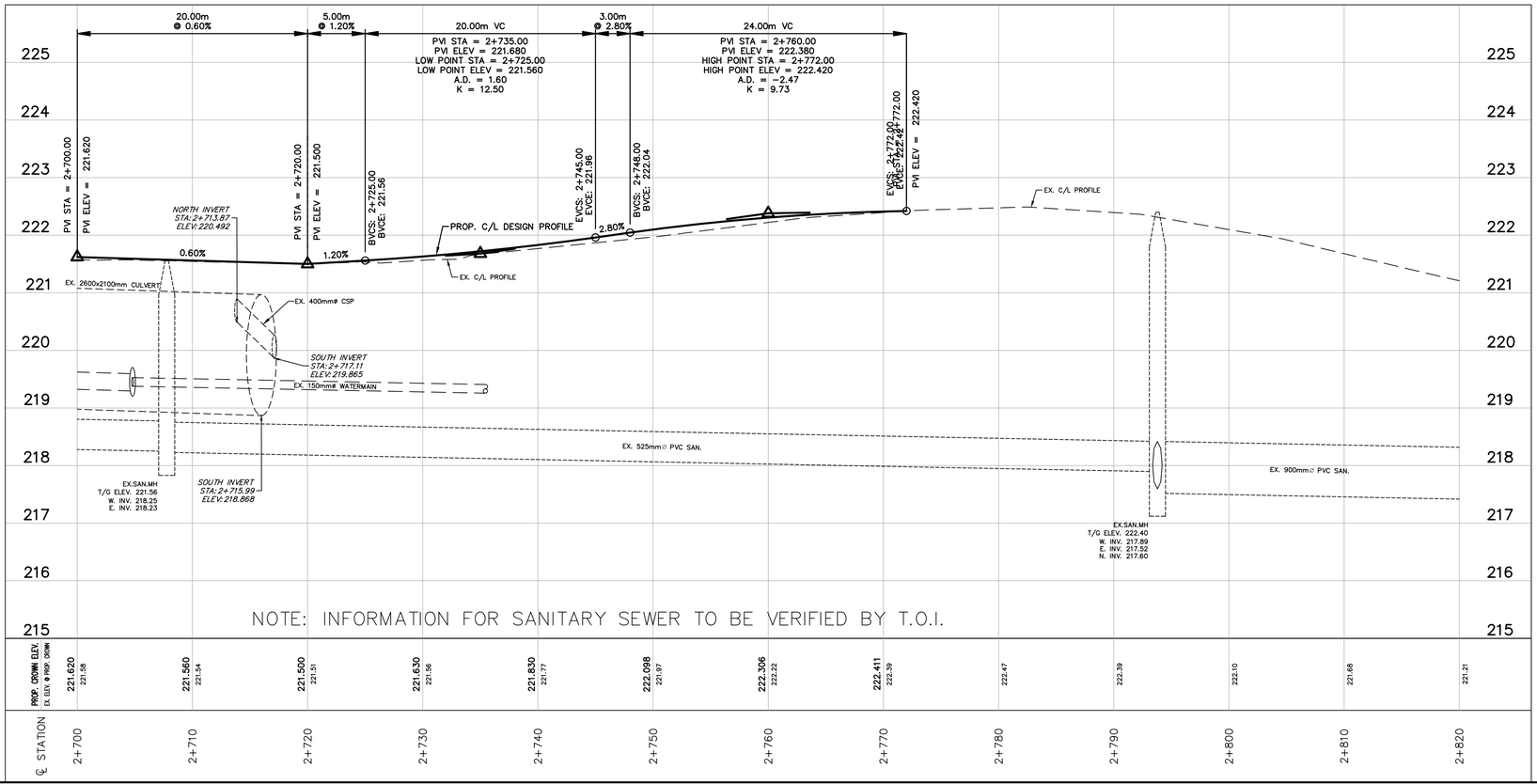
DWG. No. 217024-PP18

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP18





KEY PLAN
NOT TO SCALE



NOTES

Plotted by: RWECKERLE on October 18, 2018 at 2:16pm
File: V:\217024\Drawings\217024-Oplan.dwg Layout: PP19

CONTRACT DRAWINGS

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TOWN OF INNISFIL
7TH LINE
SCHEDULE 'C' CLASS EA
20TH SIDEROAD TO LAKE SIMCOE

PLAN & PROFILE
7TH LINE
STA. 2+670 TO STA. 2+820

Ainley GROUP — CONSULTING ENGINEERS PLANNERS

CONTRACT No.

DWG. No. 217024-PP19

Appendix I

Banks Creek Fluvial Assessment

April 2, 2018
WE 18008

Mr. Steve Fournier P. Eng.
Senior Engineer
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7

Dear Mr. Fournier:

RE: Banks Creek Assessment
7th Line, Town of Innisfil

Water's Edge was authorized by the Ainley Group to undertake an initial assessment of Banks Creek along 7th Line in the Town of Innisfil as part of the 7th Line Class EA project.

The objective of our assessment was to determine suitable channel characteristics for a realigned channel that would be constructed as part of the upgrades to 7th Line. Currently the creek channel is located directly beside the travelled portion of 7th Line and is a safety risk to local traffic.

We have completed our initial assessment of the creek in accordance with the directions provided by the Ainley Group. Current data sources for the analysis include:

- Draft plans prepared by the Ainley Group;
- Ontario Flow Assessment Tool (OFAT);
- Google Earth Aerial Photography;
- Ontario Base Mapping (OBM); and,
- Site inspection.

Banks Creek is a sinuous, typically single thread channel flow west to east and outletting into Lake Simcoe downstream of the Study Area.

The upstream catchment area is approximately 9.02 km^2. **Figure 1** shows the watershed catchment area. The catchment is approximately 18.4% urbanized with the remaining area consisting of forested and agricultural land uses.

Channel morphology and substrate characteristics can change along a watercourse. Hence, it becomes imperative to account for this variation by delineating lengths of a watercourse that exhibit similar planform, substrate, land use, local geology, valley confinement, hydrology and gradient. For this study, the subject reach is located generally along 7th Line from a point where the channel impinges upon the ROW (see **Photograph 1**) to a point where it shifts away from the ROW (see **Photograph 4**). The length of this impingement is approximately 850 metres. The channel can be described as a single threaded channel that is generally confined within distinct bankfull walls through its length. The reach substrate is characterized by small substrate (sands and gravels) in pools and coarse sediments (gravels and cobbles) in riffles. There are also areas where anthropogenic materials have been placed as bank protection and this material may now artificially form part of the substrate. Various culverts and outfalls are directed into the channel along this reach.

No survey work was completed for this initial assessment.

A preliminary belt width assessment was completed for the study reach. This beltwidth assessment was based on observed channel characteristics, regime relationships for stream systems and our database of channel characteristics in Southern Ontario.

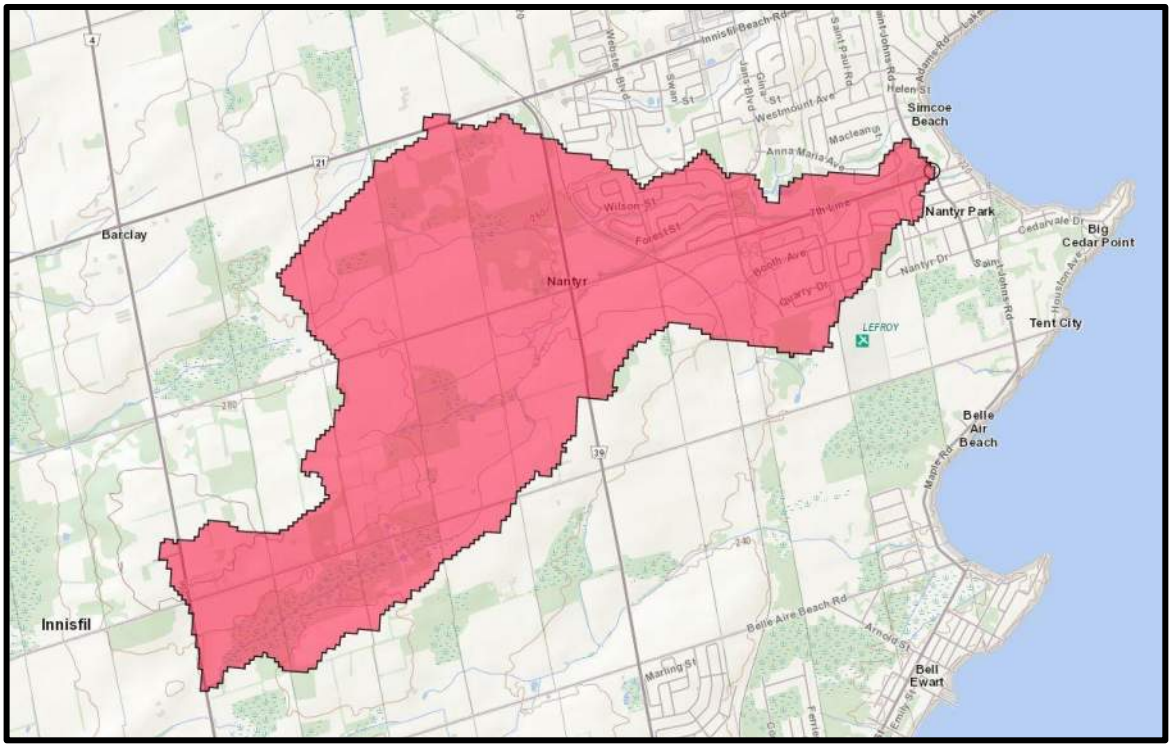


Figure 1: Upstream watershed catchment area

Photograph 1: Point of initial impingement

Photograph 2: Typical channel conditions

Photograph 3: Bank erosion at apex of channel pinchpoint

Photograph 4: Point where channel leaves the ROW

Based on our site inspection and desktop assessment, we note the following:

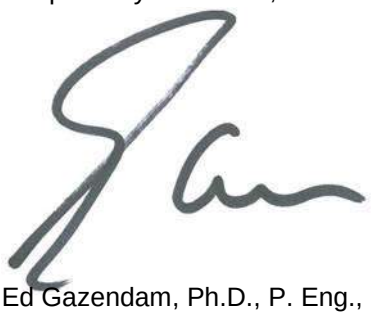
1. The upstream watershed is approximately 9.02 km^2;
2. The observed bankfull channel width is approximately 3 metres (this varies widely along its reach);
3. Based on our database and the upstream watershed area, the channel width should be at least 3.1 metres;
4. Based on this bankfull channel width, the beltwidth should likely range from 15 to 22 metres;
5. The channel is slightly incised into the roadside ditch along most of the reach;
6. Most of the reach banks on the roadside of the channel (i.e. the right bank) are unstable (see **Photograph 2** as typical);'
7. For the most part, the channel is reasonably well-vegetated on the left bank but there is zero to minimal vegetation on the right bank (see **Photograph 2** as well);
8. Residential development on Vance Crescent creates a pinch point for the channel;
9. There is at least one significant erosion point on the left bank which occurs at the apex of the pinch point created by Vance Crescent residential development (see **Photograph 3**);
10. There is approximately 25 metres between the travelled portion of the road the fenceline at this pinchpoint. However, there are also some elevation differences at this location as well. It is likely that the channel will remain pinched at this location due to slopes and road widening. The future channel banks should likely be reinforced with bioengineering solutions (e.g. vegetated riverstone) to limit erosion risk;
11. A historic on-line pond was likely present upstream of the Study Area reach but the embankment and culverts has been partially removed;
12. There are several ATV crossings of the creek which create local channel instabilities and add to the overall erosion and sedimentation in the downstream channel; and,
13. The channel is attempting to meander along this entire reach but is not able to due to the presence of the road and property limits;

Therefore, from a geomorphic perspective, we recommend the following:

1. Based on regime relationships, a channel with a bankfull width of approximately 3 metres should have a meander beltwidth of approximately 15 to 22 metres;
2. A bankfull channel of approximately 3 metres should be located within this beltwidth;
3. A low flow channel of approximately 1 metre should be established within this bankfull channel; and,
4. A full fluvial geomorphic assessment be completed to confirm channel parameters and design recommendations.

Should you have any comments or require clarification on any matter pertaining to the information contained in this report, please do not hesitate to contact Water's Edge.

Respectfully submitted,



Ed Gazendam, Ph.D., P. Eng.,
President, Sr. Geomorphologist
Water's Edge Environmental Solutions Team Ltd.

Appendix J

Consultation Point 1
(Notice of Commencement)

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

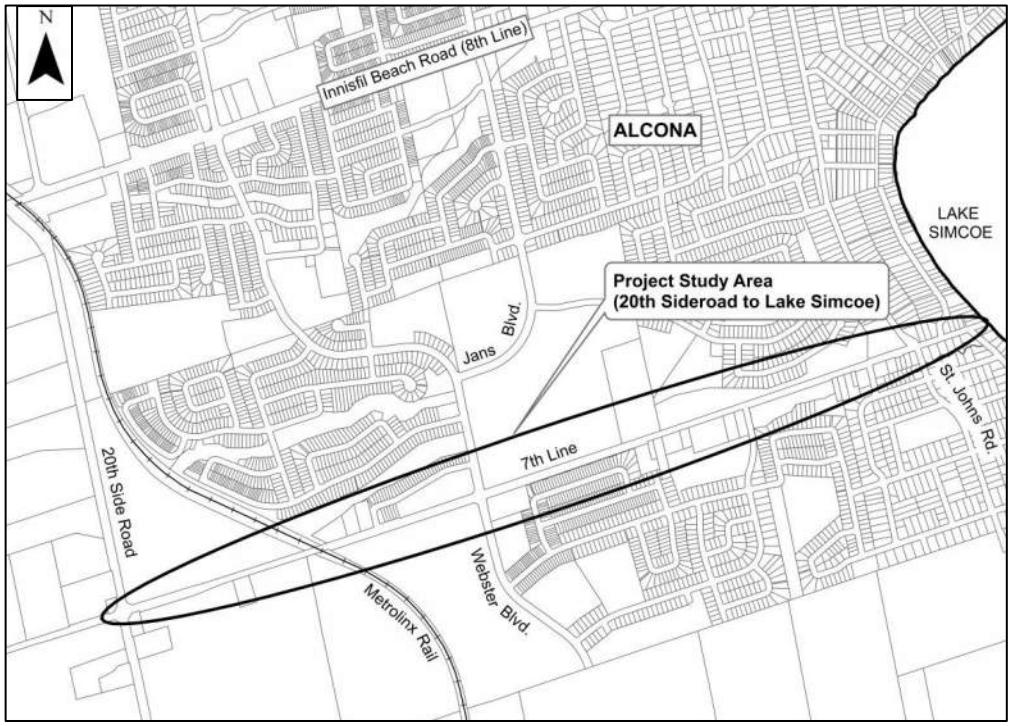
The Project

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study map. This project has been initiated to accommodate future growth in the Alcona area and to address capacity and operational deficiencies affecting the subject corridor. As part of this project, improvements will be made to the existing road cross-section and intersections including provisions for active transportation (i.e. walking, cycling etc.) and municipal servicing.

The Process

This project will follow the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).* Two Public Open Houses will be scheduled during this process and notification will be provided in advance. Interested parties will have the opportunity to review the design alternatives under consideration and to provide input in the selection of the preferred design.

During the course of the project there will be on-going field investigations and data collection in the area of the 7th Line. Public cooperation is greatly appreciated.



Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Project updates and notices will be posted on the Town's website www.innisfil.ca/7thea to inform the public of the Class EA process. With the exception of personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Tel: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371
Fax: 705-726-4391
Email: fournier@ainleygroup.com

This notice first issued April 28, 2017.

MIRIAM KING/POSTMEDIA NETWORK

Denise Tucker of The Barrie Olive Oil Co., at a workshop in Cookstown on April 22.

Developing a taste for oil and vinegar

MIRIAM KING
Postmedia Network

Denise Tucker was still working at her corporate job when she first visited a specialty shop that sold only olive oils and balsamic vinegar.

It was in Niagara Region. Tucker and a friend were planning a winery tour, but the friend first insisted on dropping into the store to sample the olive oil.

"I, quite frankly, was rolling my eyes," Tucker said.

"Within half an hour, I went from rolling my eyes to 'Aha!'"

Tucker ended up buying "bags and bags" of products, and although she went on with the wine tour, she admitted she "couldn't wait to get home" to try her purchases.

Despite her new-found enthusiasm, it wasn't until two years ago she took her it to the next level. In 2015, Tucker walked away from the corporate world and opened The Barrie Olive Oil Co., selling high-quality extra virgin olive oils from around the world – Portugal, Spain, Greece, France, Australia, California – and fine balsamic vinegar from Modena, Italy.

Her first store opened in April 2015; her second, a year later. The Barrie Olive Oil Co. now has 12 employees, dedicated to providing quality products and educating the public on the uses of olive oil in enhancing the flavour of food.

"We're very much interested in the farm-to-table, health-conscious individual," Tucker said – the demographic that has been most interested in her products and the health benefits of pure olive oil.

"It's a different way and a healthier way of enhancing your food," she noted, whether used as a marinade, a dressing or drizzled over fresh food.

On April 22, Tucker was at the Cookstown library with a selection of her company's products, for an olive oil and vinegar workshop – not only a look at the cultural differences around the world and tips that included "10 things you need to know about olive oil," but a tasting.

People can be intimidated when they see 80 flavours of olive oil, from lemon and orange, to chipotle and chocolate. Tasting is the best way to understand the flavours and the potential, Tucker said. "We hope that they leave with an excitement about one or two flavours they really like to use ... We want people to leave our shop with something they can't wait to use."

The Barrie Olive Oil Co. is a sustainable business, she said. The labels are all printed in Canada, and the bottles themselves are "refillable." Bring in a clean, dry bottle and staff at The Barrie Olive Oil Co. will refill it – giving a $1 discount.

Innisfil
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Innisfil, Ontario L9S 1A1
705.436.3710
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Community Bulletin
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APRIL 28, 2017

Notice of Study Commencement

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment

The Project

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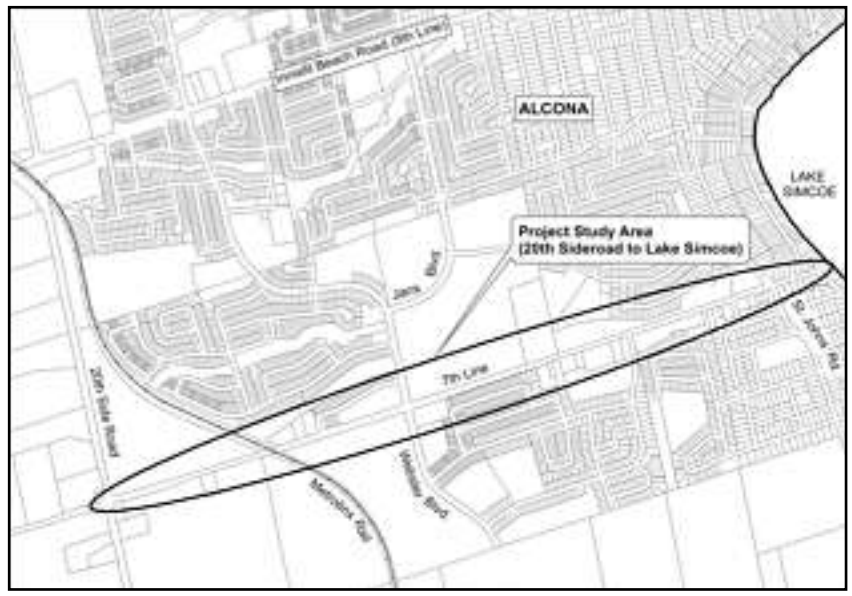

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550 Welham Road
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Tel: 705-726-3371
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Young scientist looks for hands-on solutions

MIRIAM KING
Innisfil Examiner

MIRIAM KING/BRADFORD TIMES
Science fair winner, Emily Goodson, of Cookstown Central Public School.

Emily Goodson might pursue a career in environmental science – or more likely, environmental engineering.

Right now, the Grade 7 student at Cookstown Central Public School is busy revamping her prize-winning science project, to compete in the Canadian National Science Fair in Regina next month.

Her topic? Refreezing the Polar Ice Caps.

It's a personal solution to the melting of the polar ice caused by climate change – a consequence that threatens coastal communities and biodiversity, through rising sea levels.

Emily began by considering "different ways of cooling things," she says. She looked at refrigeration, but decided it was counter-productive: While it cooled, it also required energy and generated heat – ultimately making things worse.

Instead, she turned to the idea of passive cooling, creating a "large cooler" to slow the melt of the ice caps. Her first prototype was a flat cover to protect the ice, but she decided it "wouldn't be a natural environment any more."

Trying different structures, she eventually settled on a dome, made of eco-friendly materials, that would be open to wind, rain and animal migration.

Over the course of her research, "The structure changed a lot," she says. "I wouldn't throw out an idea if it didn't work," but she would use it as a stepping stone to an alternative concept.

She built two scale models, and tested them on ice cubes. The miniaturized domes worked: ice cubes stayed frozen 27 minutes longer, under the domes, than those exposed to open air.

That was the project she presented at the Simcoe County Regional Science and Technology Fair on April 7, which won her Gold in Junior Earth and Environmental Sciences, and the Lakeshead University Environmental Sciences Award of $100.

"I was trying to think of an issue that could be solved by one person – just me," says the 13-year-old. "I like to look into issues of the environment... The hardest part was visualizing how it would be, out in the real world."

Emily proposed domes with a circumference of 84 square metres, constructed in key vulnerable areas to slow the loss of the ice. She even estimated the cost per dome: about $200,000, "Not that much, compared to the cost of a house," to address such a key issue.

Emily will go on to the nationals, May 14 to 21, as part of Team Simcoe County, and plans to consider working on hands-on solutions to ecological issues.

"I enjoy doing stuff in that field," she says. "It's just one of my passions."

A number of other Cookstown Central students excelled at the Simcoe County Regional Science and Technology Fair.

In elementary plant and animal sciences, Emma Mooney of Cookstown Central won a bronze for her study, "Does talking to your horse affect their heart rate?" while Rachael and Rebecca Lange won silver for "Finding protein-packed eggs."

In elementary computer and engineering sciences, Jalen Martin and Jacob Prim won silver with their project, "Coded for bike safety." They also won the OACETT Engineering Technology Award, of $100.

In elementary human and health sciences, Mitchell DeLaire and Kiefer Helleman won bronze with "Sports and stress," Catherine He and Aytal Everstov won silver with "Fat and food;" and Kaylyn Wilkinson won gold, for "Nutrition for Type 2 diabetics." Wilkinson also won the Dr. Mary L. Ellins Memorial Award of $100.

In junior human and health sciences, Olivia Hupponen won honourable mention with "What is madness?"

In elementary earth and environmental sciences, Thea Harder won bronze for "Our ozone layer."

In elementary physics and math sciences, Daniel Reilly won honourable mention with "The need for speed."

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Community Bulletin
Page 2 of 2

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MAY 5, 2017

Notice of Study Commencement

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment

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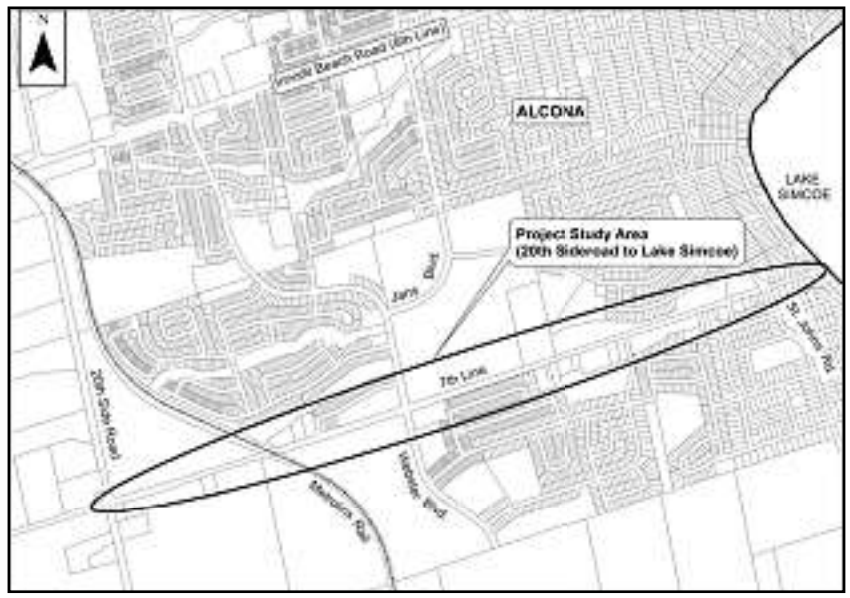

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550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Agency and Indigenous Community Contact List and Letters

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Study Commencement
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	rob.dobos@ontario.ca
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment and Climate Change	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment and Climate Change	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Mr.	Tom	Chrzan	Director, Regional Services Branch	Ministry of Tourism, Culture & Sport	400 University Avenue	2nd Floor	Toronto, ON	M7A 2R9	416-314-6680	tom.chrzan@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	carol.neumann@ontario.ca
Mr.	Malcolm	Mackay	Transportation Planner	Metrolinx/GO Transit	97 Front Street West	2nd Floor	Toronto, ON	M5J 1E6	416-202-5988	malcolm.mackay@gotransit.com
Mr.	Bernard	Au	Transportation Planner, Planning and Policy	Metrolinx/GO Transit	97 Front Street West	4th Floor	Toronto, ON	M5J 1E6	416-202-5764	bernard.au@metrolinx.com
Mr.	Derrick	Toigo	Senior Vice President Rail Infrastructure Team	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-0262	Derrick.Toigo@infrastructureontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Ms.	Monique	Mousseau	Regional Manager-Environmental Affairs, Programs Branch	Transport Canada	4900 Yonge Street	Suite 300	Toronto, ON	M2N 6A5	416-9522-0485	moussem@tc.gc.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Mr.	Charles	Burgess	Senior Planner	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x299	c.burgess@lsrca.on.ca
Ms.	Carla	Ladd	CAO	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	carla.ladd@barrie.ca
Mr.	Richard	Forward	General Manager of Infrastructure	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	richard.forward@barrie.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Emergency Services										
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Ms.	Donna	Danyluk	Communications Representative	Royal Victoria Regional Health Centre	201 Georgian Drive		Barrie, ON	L4M 6M2	705-728-9090 ext. 41610	danylukd@rvh.on.ca
Mr.	Jon	Pegg	Fire Chief	Innisfil Fire Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	jpegg@innisfil.ca
Ms.	Candace	Stefanec	Administration Coordinator	Innisfil, Fire and Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	cstefanec@innisfil.ca
Ms.	Sue	Dawson	Deputy Fire Chief, Communications & Business Services	City of Barrie, Fire & Emergency Service Department	P.O. Box 400		Barrie, ON	L4M 4T5	705-739-4220, ext. 3221	sue.dawson@barrie.ca

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Study Commencement
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	Andrew	Fletcher	Chief of Police	South Simcoe Police Service	2137 Innisfil Beach Road		Innisfil, ON	L9S 1A2	705-436-2141	andrew.fletcher@southsimcoepolice.ca
Mr.	Tom	Sinclair	Staff Sergeant	City of Barrie Police Service	29 Sperling		Barrie, ON	L4M 6K9	705-725-7025 ext. 2110	tsinclair@barriepolice.ca
Ms.	Jessica	Lawson	Research, Planning and Analysis Section, Business Management Bureau	Ontario Provincial Police, Operational Policy and Strategic Planning Bureau	777 Memorial Avenue	3rd Floor	Orillia, ON	L3V 7V3	705-329-6903	jessica.lawson@opp.ca
Special Interest Groups										
Ms.	Mary-Ellen	Madeley	Manager	Greater Innisfil Chamber of Commerce	8034 Yonge Street		Innisfil, ON	L9S 1L6	705.431.4199	
Ms.	Diana	Robinson	President	Cookstown and District Chamber of Commerce	P.O.Box 1102		Cookstown, ON	L0L 1L0	705.458.7007	
Mr.	Richard	Boken		Bayview Beach Ratepayers Association	219 Bayshore Road		Churchill, ON	L0L 1K0	705.456.6731	
Mr.	Don	Avery		Innisfil District Association	P.O. Box 7057		Innisfil, ON	L9S 1A8		
Ms.	Janet	Deacon		Alcona Beach Club Inc.	2044 25th Sideroad		Innisfil, ON	L9S 1Z2		
Ms.	Barb	Taylor-Reid		Degrassi Cove Association	10 Glengrove Avenue West		Toronto, ON	M4R 1N4		
Mr.	Nick	Torkos		Innisfil Creek Golf Course	239 Reive Blvd.		Cookstown, ON	L0L 1L0	705.458.4653	
Mr.	Kevin	Jacob	Assistant Clerk	Innisfil Heritage Committee	2101 Innisfil Beach Road		Innisfil, ON	L9S 1A1	705.436.3740 x 2414	kjacob@innisfil.ca
Ms.	Kathleen	Gardiner		Gilmore and Gilmore Professional Corporation	458 Victoria Street E		Alliston, ON	L9R 1J8		kathleen.gardiner@guknires.ca
Mr.	John	La Brie	Director, Physical Resources	Georgian College	1 Georgian Drive		Barrie, ON	L4M 3X9	705.728.1968 x 5213	
Mr.	John	Goodfellow	Landowner Liaison	BonSecour Track and Trail Snowmobile Club	660 9th Line		Innisfil, ON	L9S 3Y5	705-436-3719	bonsecour@rogers.com
Mr.	Brendan	Matheson	Board Chair	Barrie Cycling Club	P.O. Box 1363		Barrie, ON	L4M 5R4	705-717-6349	brendan@barriecycling.com
Ms.	Jen	Eaton	Sports Coordinator	Ontario Cycling Association	2-2015 Pan Am Blvd	1-416-855-1717	Milton, ON	L9T 8Y9		jen.eaton@ontariocycling.org
Ms.	Leah	Emms	Member Service Representative for Peel, Simcoe & York	Ontario Federation of Agriculture	Simcoe County Administration Centre	1110 Highway #26	Midhurst, ON	L0L 1X0	1-866-660-5511	leah.emms@ofa.on.ca
Consultants & Developers										
				Alriz Development Ltd.	265 King Street North		Alliston, ON	L9R 1N3		
Ms.	Winnie	Luk	General Counsel	Diam Fox Hill Property Inc. (Radiance)	199 Advanced Blvd., Suite 212		Brampton, ON	L6T 4N2	905 497 6993	wluk@diam.ca
Ms.	Angela	Orsi		Orsi Developments (Grand Sierra)	P.O. Box 215		Newmarket, ON	L3Y 4X1	905.778.1550	
Mr.	Marcello	Polsinelli		Maple Lane Lands & Dev Co Ltd. (Wallace Mills)	P.O. Box 2489, Station B		Richmond Hill, ON	L4E 1A6	905.773.9639	maple.lane@rogers.com
Mr.	Luigi	Fortini		Letizia Homes Ltd.	P.O. Box 1146		Bradford, ON	L3Z 2B5	905.252.7035	ouac@rogers.com
Mr.	Phil	Hammell		Mariposa Homes (Skivereen)	650 Harvie Settlement Road		Orillia, ON	L3V 0Y7	705.329.3330	phammell@mariposahomes.ca
Mr.	Ernie	Rinomato		Country Homes (Alcona Downs)	741 Rowntree Dairy Road		Woodbridge, ON	L4L 5T9	416.213.7191	ernie@countryhomes.ca
Mr.	Lou	Kelly		Green Acres	7886 Highway 11		Innisfil, ON	L9S 1L4	705.436.5111	homelife-barrie@rogers.com
Ms.	Wanda	Leblanc		Innisbrook Developments Inc.	18 Brownlee Drive		Bradford, ON	L3Z 2A4	905.252.7035	wandaleblanc@rogers.com
Mr.	Diego	Rizzardo		SanDiego Homes	1101 Quarry Drive		Innisfil, ON	L9S 4X1	705.436.5775	diego@sandiego-homes.ca
Attn:	Office Manager			Tri-Os Properties Alcona Inc.	2275 Lakeshore Blvd., W., Suite 400		Toronto, ON	M8V 3Y3		
Mr.	Kerry	Judges		Woodland Park Development	67 Barrie Drive		Barrie, ON	L4N 7P1	705.725.0952	kerry.judges@gmail.com
Mr.	Hugh	Johnston		Crisdawn Construction Inc. (Pratt D'Amico)	27 Clapperton Street, Suite 300		Barrie, ON	L4M 3E6	705.722.4500	hjohnston@prattdevelopment.ca
Mr.	Nisio	Rizzardo		Previn Court Homes	265 King Street North, Box 1, Compartment 9		Alliston, ON	L9R 1N3		

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Study Commencement
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Aboriginal Consultation										
Att: Consultation Unit				Ministry of Indigenous Relations & Reconciliation (MIRR)	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(INAC (formerly AANDC) not contacted for this project as project is not on Aboriginal lands)				~~Indigenous & Northern Affairs Canada Consultation Unit (formerly Aboriginal Affairs & Northern Development Canada)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1-800-567-9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct) 613-798-1488 (Secretary)	Prefers digital - bhart@metisnation.org & copy to consultation@metisnation.org
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Mr.	Allen	Vallee	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 400	Midland, ON	L4R 4K6	705-526-6335	
First Nation Communities (as per ATRIS Search April 19, 2017)										
Chief	Joanne	Rogers		Aamjiwnaang First Nation	978 Tashmoo Avenue		Sarnia, ON	N7T 7H5	519-336-8410	jrogers@aamjiwnaang.ca
Chief	James Robert	Marsden		Alderville First Nation	P.O. Box 46		Roseneath, ON	K0K 2X0	905-352-2011	jbmarsden@alderville.ca
Chief	Patsy	Corbiere		Aundeck-Omni-Kaning First Nation	R.R. #1, COMP 21		Little Current, ON	P0P 1K0	705-368-2228	corbierep@aokfn.com
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Thomas	Bressette		Chippewas of Kettle and Stony Point	6247 Indian Lane		Kettle & Stony Point First Nation, ON	N0N 1J1	519-786-2125	Thomas.bressette@kettlepoint.org
Chief	Greg	Nadjiwon		Chippewas of Nawash First Nation	R.R. #5		Wiarton, ON	N0H 2T0	519-534-1689	chiefsdesk@nawash.ca
Chief	Rodney	Noganosh		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Chief	Leslie	White-eye		Chippewas of the Thames First Nation	R.R. #1		Muncey, ON	N0L 1Y0	519-289-5555	lwhite-eye@cottfn.com
Chief	Phyllis	Williams		Curve Lake First Nation	General Delivery		Curve Lake, ON	K0L 1R0	705-657-8045	PhyllisW@curvelake.ca
Chief	Lori	Carr		Hiawatha First Nation	R.R.#2		Keene, ON	K0L 2G0	705-295-4421	chiefcarr@hiawathafn.ca
Chief	Linda	Debassige		M'Chigeeng First Nation	P.O. Box 333	53 Hwy 551	M'Chigeeng, ON	P0P 1G0	705-377-5362	chief@mchigeeng.ca
Chief	Kelly	Larocca		Mississauga's of Scugog Island First Nation	22521 Island Road		Port Perry, ON	L9L 1B6	905-985-3337	klarocca@scugogfirstnation.com dmowat@scugogfirstnation.com
Chief	Stacey	LaForme		Mississaugas of the Credit First Nation	R.R.#6		Hagersville, ON	N0A 1H0	905-768-1133	stacey.laforme@newcreditfirstnation.com
Chief	Abram	Benedict		Mohawks of Akwesasne	P.O. Box 579		Cornwall, ON	K6H 5T3	613-575-2250	abram.benedict@akwesasne.ca
Chief	Donald	Maracle		Mohawks of the Bay of Quinte First Nation	R.R. #1		Deseronto, ON	K0K 1X0	613-396-3424	rdonm@mbq-tmt.org
Chief	Barron	King		Moose Deer Point First Nation	P.O. Box 119		MacTier, ON	P0C 1H0	705-375-5209	chief@moosedeerpoint.com
Chief	Lester	Anoquot		Saugeen First Nation	R.R.#1		Southhampton, ON	N0H 2L0	519-797-2781	lanaquot@saugeenfirstnation.ca
Chief	Andrew	Aguonie		Sheguiandah First Nation	P.O. Box 101		Sheguiandah, ON	P0P 1W0	705-368-2781	andrew.aguonie@sheguiandahfn.ca
Chief	Gail Ava	Hill		Six Nations of the Grand River First Nation	P.O. Box 5000		Ohsweken, ON	N0A 1M0	519-445-2201	avahill@sixnations.ca
Chief	Phillip Angus	Franks		Wahta Mohawk First Nation	P.O. Box 260		Bala, ON	P0C 1A0	705-762-2354	phillip.franks@wahtamohowakcouncil.ca
Chief	Daniel	Miskokomon		Walpole Island First Nation	R.R.#3		Wallaceburg, ON	N8A 4K9	519-627-1481	daniel.miskokomon@wifn.org
Chief	Warren L.	Tabobondung		Wasauksing First Nation	P.O. Box 250		Parry Sound, ON	P2A 2X4	705-746-2531	chief@wasauksing.ca
Chief	Irene	Kells		Zhiibaahaasing First Nation	36 Sagon		Zhiibaahaasing, ON	P0P 1X0	705-283-3963	zhiiband@manitoulin.net
Utilities										
Mr.	Rob	Real		Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321	
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Tony	Dominguez		Rogers	1 Sperling Drive		Barrie, ON	L4N 6B8	705-737-4660 xt 6907	tony.dominguez@rci.rogers.com
Mr.	Tom	Jedemann		Enbridge Gas	101 Honda Blvd		Markham, ON	L6C 0M6	905-927-3184	tom.jedemann@enbridge.com

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

SAMPLE AGENCY LETTER

May 8, 2017 File #217024

Environment Canada - Environmental Protection Operations Division
Ontario Region
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Mr. Dobos,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Ministry of Indigenous Relations & Reconciliation (MIRR)
160 Bloor St. East
9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Mr. Tucker,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Ms. Davis,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Georgian Bay Metis Council
355 Cranston Crescent
P.O. Box 400
Midland, ON L4R 4K6

Attn: Mr. Allen Vallee
President

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Mr. Vallee,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5

Attn: Chief Joanne Rogers

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Rogers,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Alderville First Nation
P.O. Box 46
Roseneath, ON K0K 2X0

Attn: Chief James Robert Marsden

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Marsden,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Aundeck-Omni-Kaning First Nation
R.R. #1, COMP 21
Little Current, ON P0P 1K0

Attn: Chief Patsy Corbiere

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Corbiere,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief McQue-King,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Chippewas of Georgina Island
R.R. #2
P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Big Canoe,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Chippewas of Kettle and Stony Point
6247 Indian Lane
Kettle & Stony Point First Nation, ON N0N 1J1

Attn: Chief Thomas Bressette

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Bressette,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Chippewas of Nawash First Nation
R.R. #5
Wiarton, ON N0H 2T0

Attn: Chief Greg Nadjiwon

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Nadjiwon,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Noganosh,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Chippewas of the Thames First Nation
R.R. #1
Muncey, ON N0L 1Y0

Attn: Chief Leslie White-eye

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief White-eye,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Curve Lake First Nation
General Delivery
Curve Lake, ON K0L 1R0

Attn: Chief Phyllis Williams

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Williams,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Hiawatha First Nation
R.R.#2
Keene, ON K0L 2G0

Attn: Chief Lori Carr

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Carr,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

M'Chigeeng First Nation
P.O. Box 333
53 Hwy 551
M'Chigeeng, ON P0P 1G0

Attn: Chief Linda Debassige

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Debassige,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Yours truly,

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Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Mississauga's of Scugog Island First Nation
22521 Island Road
Port Perry, ON L9L 1B6

Attn: Chief Kelly Larocca

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Larocca,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Mississaugas of the Credit First Nation
R.R.#6
Hagersville, ON N0A 1H0

Attn: Chief Stacey LaForme

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief LaForme,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Mohawks of Akwesasne
P.O. Box 579
Cornwall, ON K6H 5T3

Attn: Chief Abram Benedict

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Benedict,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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Project Manager

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C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Mohawks of the Bay of Quinte First Nation
R.R. #1
Deseronto, ON K0K 1X0

Attn: Chief Donald Maracle

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Maracle,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Moose Deer Point First Nation
P.O. Box 119
MacTier, ON P0C 1H0

Attn: Chief Barron King

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief King,

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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Saugeen First Nation
R.R.#1
Southhampton, ON N0H 2L0

Attn: Chief Lester Anoquot

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Anoquot,

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C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
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E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Sheguiandah First Nation
P.O. Box 101
Sheguiandah, ON P0P 1W0

Attn: Chief Andrew Aguonie

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Aguonie,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Six Nations of the Grand River First Nation
P.O. Box 5000
Ohsweken, ON N0A 1M0

Attn: Chief Gail Ava Hill

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Hill,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Wahta Mohawk First Nation
P.O. Box 260
Bala, ON P0C 1A0

Attn: Chief Phillip Angus Franks

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Franks,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Walpole Island First Nation
R.R.#3
Wallaceburg, ON N8A 4K9

Attn: Chief Daniel Miskokomon

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Miskokomon,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Wasauksing First Nation
P.O. Box 250
Parry Sound, ON P2A 2X4

Attn: Chief Warren L. Tabobondung

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Tabobondung,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

May 8, 2017 File #217024

Zhiibaahaasing First Nation
36 Sagon
Zhiibaahaasing, ON P0P 1X0

Attn: Chief Irene Kells

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Chief Kells,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Jody Marks

From: Andrea Potter <potter@ainleygroup.com>
Sent: July-11-17 11:14 AM
To: Tony Muscat (tonymuscat@rogers.com)
Cc: Carolina Cautillo; Magdalena Koehler (mkoehler@innisfil.ca); Steve Fournier
Subject: Town of Innisfil 7th Line Improvements Class EA File No. 217024
Attachments: 217024 Innisfil 7th Line C1 Notice April 2017 FINAL.pdf

Hello Mr. Muscat,

As discussed this morning, our office issued the attached notice May 8, 2017 to a number of Aboriginal Agencies and communities. Prior to issue of this notice we utilized the Aboriginal and Treaty Rights Information System (ATRIS) website provided by Indian and Northern Affairs Canada (formerly Aboriginal Affairs and Northern Development Canada) to establish an appropriate Aboriginal contact list for this project. We also contacted the MOECC for direction in this regard as they have now taken over this responsibility from the Ministry of Aboriginal Affairs.

While the Moon River Metis Council was not identified on the ATRIS list, the MOECC did recently advise that your office may have an interest in this project. Please find attached a copy of the initial notice issued for this project. We have added you to the project contact list and you will be notified in advance of the first Public Open House tentatively scheduled for September 2017.

Please also confirm that the mailing list below is correct:

Moon River Metis Council
B26360 Cedarhurst Beach Road
R.R. 1
Beaverton, ON L0K 1A0

If you have any questions or require anything further please feel free to give me a call.

Regards,

Andrea Potter, B.E.S.
Environmental Planner
Ainley
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

Resident Mail Out

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 8, 2017. File #217024

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Resident / Property Owner / Tenant:

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). Please refer to the attached notice for additional details regarding the project.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic & Transportation
A. Potter Ainley Group, Environmental Planner

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TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

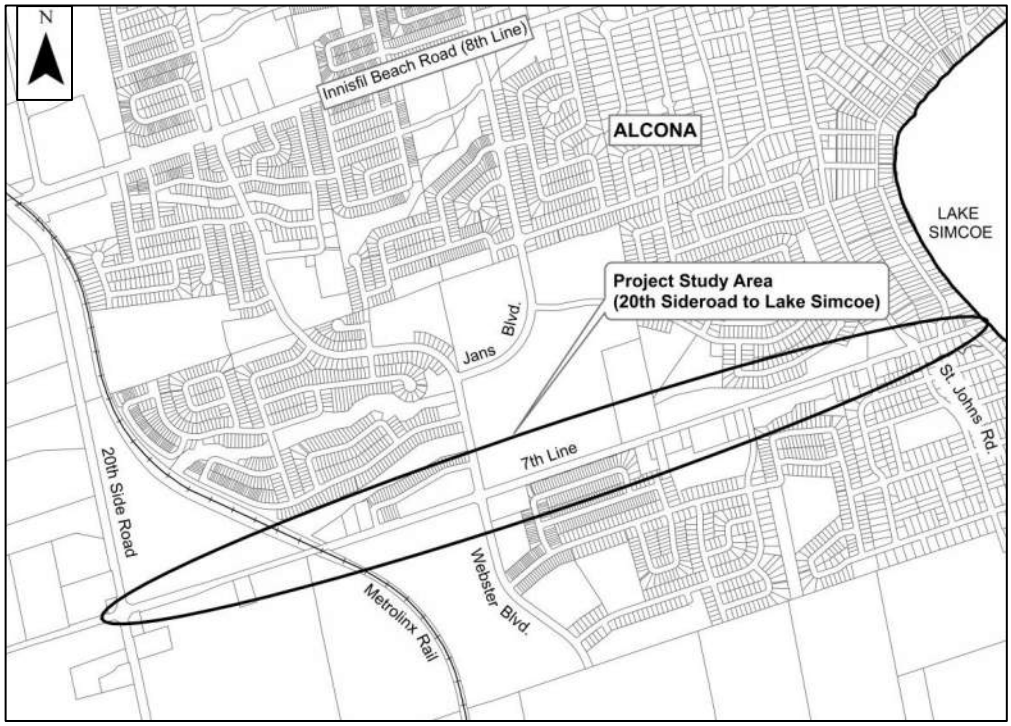
The Project

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study map. This project has been initiated to accommodate future growth in the Alcona area and to address capacity and operational deficiencies affecting the subject corridor. As part of this project, improvements will be made to the existing road cross-section and intersections including provisions for active transportation (i.e. walking, cycling etc.) and municipal servicing.

The Process

This project will follow the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).* Two Public Open Houses will be scheduled during this process and notification will be provided in advance. Interested parties will have the opportunity to review the design alternatives under consideration and to provide input in the selection of the preferred design.

During the course of the project there will be on-going field investigations and data collection in the area of the 7th Line. Public cooperation is greatly appreciated.



Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Project updates and notices will be posted on the Town's website www.innisfil.ca/7thea to inform the public of the Class EA process. With the exception of personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Tel: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371
Fax: 705-726-4391
Email: fournier@ainleygroup.com

This notice first issued April 28, 2017.

Comments Received From Agencies

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: May-12-17 9:26 AM
To: 'Andrea Potter'
Subject: FW: NEATS 44703: Class EA - 7th Line Improvements, Innisfil ON
Attachments: NEATS 44703 Class EA - 7th Line Improvements, Innisfil ON.pdf

FYI and file

Regards,

Steve Fournier, P.Eng.
Senior Engineer

550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: EnviroOnt [mailto:EnviroOnt@tc.gc.ca]
Sent: May-11-17 2:03 PM
To: mkoehler@innisfil.ca; fournier@ainleygroup.com
Subject: NEATS 44703: Class EA - 7th Line Improvements, Innisfil ON

Greetings,

Thank you for your correspondence. Please note that Monique Mousseau is no longer the appropriate contact for the Environmental Assessment Program. Please direct all correspondence to our Environmental Co-ordinator at EnviroOnt@tc.gc.ca.

Please note Transport Canada **does not** require receipt of all individual or Class EA related notifications. We are requesting project proponents to self-assess if their project:

1. Will interact with a federal property and/or waterway by reviewing the Directory of Federal Real Property, available at at www.tbs-sct.gc.ca/dfrp-rbif/; **and**
2. Will require approval and/or authorization under any Acts administered by Transport Canada* available at http://www.tc.gc.ca/eng/acts-regulations/menu.htm.

Projects that will occur on federal property prior to exercising a power, performing a function or duty in relation to that project, will be subject to a determination of the likelihood of significant adverse envionrmental effects, per Section 67 of the *Canadian Environmental Assessment Act, 2012*.

If the aforementioned does not apply, the Environmental Assessment program should not be included in any further correspondence and will not receive a response. If there is a role under the program, correspondence should be forwarded *electronically* to: EnviroOnt@tc.gc.ca with a **brief description of Transport Canada's expected role**.

*Below is a summary of the most common Acts that have applied to projects in an Environmental Assessment context:

- ***Navigation Protection Act (NPA)*** – the Act applies primarily to works constructed or placed in, on, over, under, through, or across scheduled navigable waters set out under the Act. The Navigation Protection Program administers the NPA through the review and authorization of works affecting scheduled navigable waters. Information about the Program, NPA and approval process is available at: http://www.tc.gc.ca/eng/programs-621.html. Enquiries can be directed to NPPONT-PPNONT@tc.gc.ca or by calling (519) 383-1863.

- ***Railway Safety Act (RSA)*** – the Act provides the regulatory framework for railway safety, security, and some of the environmental impacts of railway operations in Canada. The Rail Safety Program develops and enforces regulations, rules, standards and procedures governing safe railway operations. Additional information about the Program is available at: https://www.tc.gc.ca/eng/railsafety/menu.htm. Enquiries can be directed to RailSafety@tc.gc.ca or by calling (613) 998-2985.

- ***Transportation of Dangerous Goods Act (TDGA)*** – the transportation of dangerous goods by air, marine, rail and road is regulated under the TDGA. Transport Canada, based on risks, develops safety standards and regulations, provides oversight and gives expert advice on dangerous goods to promote public safety. Additional information about the transportation of dangerous goods is available at: https://www.tc.gc.ca/eng/tdg/safety-menu.htm. Enquiries can be directed to TDG-TMDOntario@tc.gc.ca or by calling (416) 973-1868.

- ***Aeronautics Act*** – Transport Canada has sole jurisdiction over aeronautics, which includes aerodromes and all related buildings or services used for aviation purposes. Aviation safety in Canada is regulated under this Act and the Canadian Aviation Regulations (CARs). Elevated Structures, such as wind turbines and communication towers, would be examples of projects that must be assessed for lighting and marking requirements in accordance with the CARs. Transport Canada also has an interest in projects that have the potential to cause interference between wildlife and aviation activities. One example would be waste facilities, which may attract birds into commercial and recreational flight paths. The *Land Use In The Vicinity of Aerodromes* publication recommends guidelines for and uses in the vicinity of aerodromes, available at: https://www.tc.gc.ca/eng/civilaviation/publications/tp1247-menu-1418.htm. Enquires can be directed to CASO-SACO@tc.gc.ca or by calling 1 (800) 305-2059 / (416) 952-0230.

Please advise if additional information is needed.

Thank you,

Environmental Assessment Program, Ontario Region
Transport Canada / Government of Canada / 4900 Yonge St., Toronto, ON M2N 6A5
EnviroOnt@tc.gc.ca / Facsimile : (416) 952-0514 / TTY: 1-888-675-6863

Programme d'évaluation environnementale, Région de l'Ontario
Transports Canada / Gouvernement du Canada / 4900, rue Yonge, Toronto, ON, M2N 6A5
EnviroOnt@tc.gc.ca / télécopieur: (416) 952-0514

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: June-27-17 11:07 AM
To: 'Andrea Potter'
Subject: FW: 7th Line Improvements Schedule C Class EA
Attachments: moecc_initial comments_7th line improvements_innisifl_june27_2017.pdf

Andrea

Please add this to the correspondence file.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley Group
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: Liu, Chunmei (MOECC) [mailto:Chunmei.Liu@ontario.ca]
Sent: June-27-17 10:56 AM
To: mkoehler@innisfil.ca; fournier@ainleygroup.com
Cc: Hood, Cindy (MOECC); Martin, Paul (MOECC)
Subject: 7th Line Improvements Schedule C Class EA

Please find attached a letter as our comments for the above-noted project.

Please note – MOECC is in the process of developing an internal protocol to provide proponents with a list of potentially interested Aboriginal communities that should be notified of and invited to participate in Environmental Assessment studies. Please disregard the section in the attached letter directing proponents to contact the Ministry of Aboriginal Affairs (now Ministry of Indigenous Relations and Reconciliation). MOECC has developed a list of potentially interested Aboriginal communities that must be notified of the proposed project and invited to participate in consultation activities. These communities are as follows:

- Chippewas of Georgina Island First Nation
- Beausoleil First Nation
- Chippewas of Rama First Nation
- Moon River Métis council

- Georgian Bay Métis council
(Note: notices to these two Métis councils should be copied to the Métis Nation of Ontario main office.)

If you have any questions regarding these comments, please feel free to contact me for further discussion.

Thanks,

Chunmei Liu | Environmental Resource Planner | Environmental Assessment Coordinator |Central Region, Ontario Ministry of the Environment | 5775 Yonge Street, 8th Flr | Toronto, Ontario M2M 4J1
Tel: 416-326-4886 | Fax: 416-325-6347 | Email: Chunmei.Liu@ontario.ca | Website: http://www.ene.gov.on.ca/


Please consider the environment before printing this email

Ministry of the Environment and Climate Change

Central Region
Technical Support Section

5775 Yonge Street, 8th Floor
North York, OntarioM2M 4J1

Tel.: (416) 326-6700
Fax: (416) 325-6347

Ministère de l'Environnment et de l'Action en Matière de Changement Climatique

Région du Centre
Section d'appui technique

5775, rue Yonge, 8ième étage
North York, Ontario M2M 4J1

Tél. : (416) 326-6700
Téléc. : (416) 325-6347

June 27, 2017 File No.: EA 01-06-05

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1

RE: 7th Line Improvements
Town of Innisfil
Class Environmental Assessment
Response to Notice of Study Commencement

Dear Mr. Koehler:

This letter acknowledges that the Town of Innisfil is conducting a Class Environmental Assessment (EA) study for improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This study is following the approved environmental planning process for a Schedule C project under the *Municipal Engineers Association (MEA) Municipal Class EA (October 2000, as amended in 2007 & 2011)*.

The "Areas of Interest" document attached provides guidance regarding the ministry's interests with respect to the Class EA process. Please identify the areas of interest which are applicable to the proposed project and ensure they are addressed.

Failure to properly follow the Class EA process is an offence under the *Environmental Assessment Act.* It may also result in the ministry withholding/revising an approval provided under the Act and/or the Minister issuing a Part II Order for the project.

Please forward our office the Notice of Completion and Environmental Study Report (ESR) when completed. Should your team have any questions regarding the above, please contact me at 416-326-4886.

Yours sincerely,

Chunmei Liu
Environmental Resource Planner and EA Coordinator
Air, Pesticides and Environmental Planning

c. C. Hood, Manager, Barrie District Office, MOECC
S. Fournier, Project Manager, Ainley Group
Central Region EA File
A & P File

AREAS OF INTEREST

Please check off each applicable area after these areas have been considered / addressed.

☐ **Ecosystem Protection and Restoration**

- Any impacts to ecosystem form and function must be avoided where possible. The Project File/ESR should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:

    - Areas of Natural and Scientific Interest (ANSIs)
    - Rare Species of flora or fauna
    - Watercourses
    - Wetlands
    - Woodlots

  Please consult with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, the proponent may consider the provisions of the Rouge Park Management Plan if applicable.

☐ **Surface Water**

- The Project File/ESR must include a sufficient level of information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the Project File/ESR and utilized when designing stormwater control methods. We recommend that a Stormwater Management Plan should be prepared as part of the Class EA process that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the Ontario Water Resources Act (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the Project File/ESR should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the Project File/ESR.

- If the potential construction or decommissioning of water wells is identified as an issue, the Project File/ESR should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the Project File/ESR. In particular, a Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 litres per day.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, an air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization, a quantification of air quality impacts by determining emission rates and conducting dispersion modelling, and an assessment of effects. The assessment will compare to all available standards for any contaminants of concern. Please contact this office during the scoping process to confirm the appropriate level of assessment.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The Project File/ESR should consider the potential impacts of increased noise levels during the operation of the undertaking due to potentially higher traffic volumes resulting from this project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Servicing and Facilities

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with the Environmental Approvals Access and Service Integration Branch (EAASIB) to determine whether a new or amended ECA will be required for any proposed infrastructure.

- Please refer to the ministry's "D-Series" guidelines – Land Use Compatibility to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Contamination and Soils

- Any current or historical waste disposal sites should be identified in the Project File/ESR. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites.

- Since the removal or movement of soils may be required, the ministry's document "Management of Excess Soil – A Guide for Best Management Practices" should be followed regarding all activities related to soil management. If potential contamination involved at the site, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the ministry's District Offices for further consultation if contaminated sites are present.

- The location of any underground storage tanks should be investigated in the Project File/ESR. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- The Project File/ESR should identify any underground transmission lines in the study area. The owners should be consulted to avoid impacts to this infrastructure, including potential spills.

Mitigation and Monitoring

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- All waste generated during construction must be disposed of in accordance with ministry requirements.

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the Project File/ESR and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly. The proponent's construction and post-construction monitoring plans should be documented in the Project File/ESR.

Planning and Policy

- The Provincial Policy Statement (2014) contains policies that protect Ontario's natural heritage, such as significant ANSIs, watercourses and wetlands. Applicable policies should be referenced in the ESR/Project File, and the proponent should demonstrate how this

proposed project is consistent with these policies, including describing measures that prevent and minimize potential impacts.

- Parts of the study area may be subject to the Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Greenbelt Plan, Lake Simcoe Protection Plan, Source Protection Plans, or Growth Plan for the Greater Golden Horseshoe. The Project File/ESR should demonstrate how the proposed study adheres to the relevant policies in these plans.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. The Master Plan should clearly indicate the selected approach for conducting the plan, in particular by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. In addition, any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the *Environmental Assessment Act* (EAA), although the plan itself would not be.

- The Project File/ESR should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making. The Project File/ESR must also demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all public consultation efforts undertaken during the planning process. Additionally, the Project File/ESR should identify all concerns that were raised and how they have been addressed throughout the planning process. The Class EA also directs proponents to include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment. The Project File/ESR should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments) such that all potential impacts can be identified and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the Project File/ESR.

- Please include in the Project File/ESR a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including the ministry's PTTW and ECAs, conservation authority permits, and approval under the *Canadian Environmental Assessment Act* (CEAA).

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. Please review all the available guides and reference any relevant information in the Project File/ESR.

Aboriginal Communities

- The proposed project may have the potential to affect Aboriginal communities who hold or claim Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. The Crown has a duty to consult First Nation and Métis communities when it knows about established or credibly asserted Aboriginal or treaty rights, and contemplates decisions or actions that may adversely affect them.

- Although the Crown remains responsible for ensuring the adequacy of consultation with potentially affected Aboriginal communities, it may delegate procedural aspects of the

consultation process to project proponents.

- The environmental assessment process requires proponents to consult with interested persons and government agencies, including those potentially affected by the proposed project. This includes a responsibility to conduct adequate consultation with First Nation and Métis communities.

- The ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process.

- Where the Crown's duty to consult is triggered in relation to your proposed project, the ministry is delegating the procedural aspects of rights-based consultation to proponents through this letter.

- Steps that proponents may need to take in relation to Aboriginal consultation for the proposed projects are outlined in the "Aboriginal Consultation Information" checklist below. Please complete the checklist contained, and keep related notes as part of the consultation record. Doing so will help assess the project's potential adverse effects on Aboriginal or treaty rights.

- Please contact the Director, Environmental Approvals Branch if the proposed project may adversely affect an Aboriginal or treaty right, consultation has reached an impasse, or if a Part II Order request/elevation request has been submitted. The ministry will then assess the extent of any Crown duty to consult in the circumstances, and will consider whether additional steps should be taken and what role proponents will be asked to play in them.

ABORIGINAL CONSULTATION INFORMATION

Consultation with Interested Persons under the Ontario Environmental Assessment Act

Proponents subject to the Ontario *Environmental Assessment Act* are required to consult with interested persons, which may include First Nations and Métis communities. In some cases, special efforts may be required to ensure that Aboriginal communities are made aware of the project and are afforded opportunities to provide comments. Direction about how to consult with interested persons/communities is provided in the Code of Practice: Consultation in Ontario's Environmental Assessment Process available on the Ministry's website:

https://www.ontario.ca/environment-and-energy/consultation-ontarios-environmental-assessment-process

As an early part of the consultation process, proponents are required to contact the Ontario Ministry of Aboriginal Affairs' Consultation Unit and visit Aboriginal Affairs and Northern Development Canada's Aboriginal and Treaty Rights Information System (ATRIS) to help identify which First Nation and Métis communities may be interested in or potentially impacted by their proposed projects.

ATRIS can be accessed through the Aboriginal Affairs and Northern Development Canada website: http://sidait-atris.aadnc-aandc.gc.ca/atris_online/

For more information in regard Aboriginal consultation as part of the Environmental Assessment process, refer to the Ministry's website:

www.ontario.ca/government/environment-assessments-consulting-aboriginal-communities

You are advised to provide notification directly to all of the First Nation and Métis communities who may be interested in the project. You should contact First Nation communities through their Chief and Band Council, and Metis communities through their elected leadership.

Rights-based consultation with First Nation and Métis Communities

Proponents should note that, in addition to requiring interest-based consultation as described above, certain projects may have the potential to adversely affect the ability of First Nation or Métis communities to exercise their established or credibly asserted Aboriginal or treaty rights. In such cases, Ontario may have a duty to consult those Aboriginal communities.

Activities which may restrict or reduce access to unoccupied Crown lands, or which could result in a potential adverse impact to land or water resources in which harvesting rights are exercised, may have the potential to impact Aboriginal or treaty rights. For assistance in determining whether your proposed project could affect these rights, please refer to the attached "Preliminary Assessment Checklist: First Nation and Métis Community Interest."

If there is likely to be an adverse impact to Aboriginal or treaty rights, accommodation may be required to avoid or minimize the adverse impacts. Accommodation is an outcome of consultation and includes any mechanism used to avoid or minimize adverse impacts to Aboriginal or treaty rights and traditional uses. Solutions could include mitigation such as adjustments in the timing or geographic location of the proposed activity. Accommodation may in certain circumstances involve the provision of financial compensation, but does not necessarily require it.

For more information about the duty to consult, please see the Ministry's website at:

www.ontario.ca/government/duty-consult-aboriginal-peoples-ontario

The proponent must contact the Director, Environmental Approvals Branch if a project may adversely affect an Aboriginal or treaty right, consultation has reached an impasse, or if a Part II Order or an elevation request is anticipated; the Ministry will then determine whether the Crown has a duty to consult.

The Director of the Environmental Approvals Branch can be notified either by email with the subject line "Potential Duty to Consult" to EAASIBgen@ontario.ca or by mail or fax at the address provided below:

Email:	EAASIBGen@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Approvals Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

Delegation of Procedural Aspects of Consultation

Proponents have an important and direct role in the consultation process, including a responsibility to conduct adequate consultation with First Nation and Métis communities as part of the environmental assessment process. This is laid out in existing environmental assessment codes of practice and guides that can be accessed from the Ministry's environmental assessment website at: www.ontario.ca/environmentalassessments

The Ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process. Where the Crown's duty to consult is triggered, various additional procedural steps may also be asked of proponents as part of their delegated duty to consult responsibilities. In some situations, the Crown may also become involved in consultation activities.

Ontario will have an oversight role as the consultation process unfolds but will be relying on the steps undertaken and information you obtain to ensure adequate consultation has taken place. To ensure that First Nation and Métis communities have the ability to assess a project's potential to adversely affect their Aboriginal or treaty rights, Ontario requires proponents to undertake certain procedural aspects of consultation.

The proponent's responsibilities for procedural aspects of consultation include:

- Providing notice to the elected leadership of the First Nation and/or Métis communities (e.g., First Nation Chief) as early as possible regarding the project;
- Providing First Nation and/or Métis communities with information about the proposed project including anticipated impacts, information on timelines and your environmental assessment process;
- Following up with First Nation and/or Métis communities to ensure they received project information and that they are aware of the opportunity to express comments and concerns about the project. If you are unable to make the appropriate contacts (e.g. are unable to

contact the Chief) please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office for further direction.

- Providing First Nation and/or Métis communities with opportunities to meet with appropriate proponent representatives to discuss the project;
- Gathering information about how the project may adversely impact the relevant Aboriginal and/or Treaty rights (for example, hunting, fishing) or sites of cultural significance (for example, burial grounds, archaeological sites);
- Considering the comments and concerns provided by First Nation and/or Métis communities and providing responses;
- Where appropriate, discussing potential mitigation strategies with First Nation and/or Métis communities;
- Bearing the reasonable costs associated with these procedural aspects of consultation, which may include providing support to help build communities' capacity to participate in consultation about the proposed project.
- Maintaining a Consultation Record to show evidence that you, the proponent, completed all the steps itemized above or at a minimum made meaningful attempts to do so.
- Upon request, providing copies of the Consultation Record to the Ministry. The Consultation Record should:
    - summarize the nature of any comments and questions received from First Nation and/or Métis communities
    - describe your response to those comments and how their concerns were considered
    - include a communications log indicating the dates and times of all communications; and
    - document activities in relation to consultation.

Successful consultation depends, in part, on early engagement by proponents with First Nation and Métis communities. Information shared with communities must be clear, accurate and complete, and in plain language where possible. The consultation process must maintain sufficient flexibility to respond to new information, and we trust you will make all reasonable efforts to build positive relationships with all First Nation and Métis communities contacted.
If you need more specific guidance on Aboriginal consultation steps in relation to your proposed project, or if you feel consultation has reached an impasse, please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office.

Preliminary Assessment Checklist: First Nation and Métis Community Interests and Rights

In addition to other interests, some main concerns of First Nation and Métis communities may pertain to established or asserted rights to hunt, gather, trap, and fish – these activities generally occur on Crown land or water bodies. As such, projects related to Crown land or water bodies, or changes to how lands and water are accessed, may be of concern to Aboriginal communities.

Please answer the following questions and keep related notes as part of your consultation record. "Yes" responses will indicate a potential adverse impact on Aboriginal or treaty rights.

Where you have identified that your project may trigger rights-based consultation through the following questions, you should arrange for a meeting between you and the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office to provide an

early opportunity to confirm whether Ontario's duty to consult is triggered and to discuss roles and responsibilities in that event.

	YES	NO
1. Are you aware of concerns from First Nation and Métis communities about your project or a similar project in the area? The types of concerns can range from interested inquiries to environmental complaints, and even to land use concerns. You should consider whether the interest represents on-going, acute and/or widespread concern.		
2. Is your project occurring on Crown land, or is it close to a water body? Might it change access to either?		
3. Is the project located in an open or forested area where hunting or trapping could take place?		
4. Does the project involve the clearing of forested land?		
5. Is the project located away from developed, urban areas?		
6. Is your project close to, or adjacent to, an existing reserve? Projects in areas near reserves may be of interest to the First Nation and Métis communities living there.		
7. Will the project affect First Nations and/or Métis ability to access areas of significance to them?		
8. Is the area subject to a land claim? Information about land claims filed in Ontario is available from the Ministry of Aboriginal Affairs; information about land claims filed with the federal government is available from Aboriginal Affairs and Northern Development Canada.		
9. Does the project have the potential to impact any archaeological sites?		

Comments Received From Indigenous Communities

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: June-02-17 3:43 PM
To: 'Andrea Potter'
Subject: FW: Town of Innisfil - 7th Line Improvements - Schedule 'C' Municipal Class Environmental Assessment - Notice of Study Commencement

Andrea

Please update the file with the contact information listed below.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: Hollie Nolan [mailto:hollien@ramafirstnation.ca] **On Behalf Of** Chief Rodney Noganosh
Sent: June-02-17 1:31 PM
To: mkoehler@innisfil.ca; Fournier@ainleygroup.com
Cc: Shawna McKenzie
Subject: re: Town of Innisfil – 7th Line Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Study Commencement

Dear Magdalena & Steve;

Thank you for your letter re: Town of Innisfil – 7th Line Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Study Commencement.

Please be advised that we reviewed your letter. I have shared it with Council and we've forwarded the information to Karry Sandy McKenzie, Williams Treaties First Nation Process Co-ordinator/Negotiator. Ms. McKenzie will review your letter and take the necessary action if required. In the interim, should you wish to contact Ms. McKenzie directly, please do so at k.a.sandy-mckenzie@rogers.com

Thank you,

Chief Rodney Noganosh

Hollie Nolan
Executive Assistant to the Chief, Administration
Chippewas of Rama First Nation
(ph) 705-325-3611,1216
(cell)
(fax) 705-325-0879
(url) www.ramafirstnation.ca

Please consider the environment before printing this e-mail.

Andrea Potter

From: Megan DeVries <Megan.DeVries@mncfn.ca>
Sent: July-05-17 3:09 PM
To: Andrea Potter
Cc: 'Magdalena Koehler'; 'Carolina Cautillo'; 'Steve Fournier'; Fawn Sault
Subject: RE: Town of Innisfil 7th Line Improvements File No. 217024

Yes, that would be fine.

Megan.

From: Andrea Potter [mailto:potter@ainleygroup.com]
Sent: Wednesday, July 05, 2017 2:13 PM
To: Megan DeVries
Cc: 'Magdalena Koehler'; 'Carolina Cautillo'; 'Steve Fournier'; Fawn Sault
Subject: RE: Town of Innisfil 7th Line Improvements File No. 217024

Thanks Megan. Would you prefer that we remove MNCFN from the project contact list?

Regards,

Andrea Potter, B.E.S.
Environmental Planner

Ainley
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

From: Megan DeVries [mailto:Megan.DeVries@mncfn.ca]
Sent: July-05-17 12:08 PM
To: Andrea Potter
Cc: Magdalena Koehler; Carolina Cautillo; Steve Fournier; Fawn Sault
Subject: RE: Town of Innisfil 7th Line Improvements File No. 217024

Hello Andrea,

Thank you for the email. As discussed on the phone this morning, please note that the project in question is **outside of MNCFN treaty territory**. We apologize for the confusion. MNCFN will not require FLR participation in the upcoming fieldwork associated with the EA.

Sincerely,
Megan.

Megan DeVries, M.A.
Archaeological Coordinator

Department of Consultation and Accommodation (DOCA)
Mississaugas of the New Credit First Nation (MNCFN)
6 First Line Road, Unit 1, RR#6, Hagersville, ON N0A 1H0
P: 905-768-4260 | M: 289-527-2763
http://www.mncfn.ca

From: Andrea Potter [mailto:potter@ainleygroup.com]
Sent: Wednesday, July 05, 2017 11:22 AM
To: Megan DeVries
Cc: Magdalena Koehler; Carolina Cautillo; Steve Fournier
Subject: Town of Innisfil 7th Line Improvements File No. 217024

Hi Megan,

Please see the email below and the attached letter previously submitted by MNCFN.

From our discussion today I understand that the subject project may actually be outside of the treaty area. It would be greatly appreciated if you could please confirm and advise if MNCFN would still like to continue to receive correspondence regarding the project and whether coordination with a Field Liaison Representative is still required.

Regards,

Andrea Potter, B.E.S.
Environmental Planner

Ainley
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

From: Magdalena Koehler [mailto:mkoehler@innisfil.ca]
Sent: June-23-17 10:00 AM
To: Andrea Potter (potter@ainleygroup.com)
Cc: Steve Fournier, P.Eng.
Subject: FW: the 7th Line Improvements Schedule C Municipal Class Environmental Assessment dated May 11th, 2017

See attached.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: DOCA [mailto:DOCA@mncfn.ca]
Sent: June 23, 2017 9:58 AM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Cc: Fawn Sault <Fawn.Sault@mncfn.ca>
Subject: the 7th Line Improvements Schedule C Municipal Class Environmental Assessment dated May 11th, 2017

Thank you for the notification sent to The Mississaugas of the New Credit First Nation (MNCFN) regarding *the 7th Line Improvements Schedule C Municipal Class Environmental Assessment dated May 11th, 2017*. We have reviewed the document you have provided and determined that, at this time, MNCFN has a **low level** of concern about the project. ***Please see the attached letter for more information***.

Respectfully, we ask that you immediately notify MNCFN if there are any changes to the project as they may impact MNCFN's interests. Additionally, MNCFN requests a copy of all associated environmental and/or archaeological reports. These can be electronic copies, if you prefer. Furthermore, MNCFN employs Field Liaison Representatives who **must** be on location whenever any fieldwork for environmental and/or archaeological assessments is undertaken. If additional work is scheduled, please notify us as soon as possible so that we may work together to discuss and arrange for MNCFN's participation.

Sincerely,

Karissa Johnson
Archaeological/Environmental Assistant

Mississaugas of the New Credit First Nation
Department of Consultation & Accommodation
6 First Line Rd.,Unit 1 R.R. #6 Hagersville, ON N0A 1H0
Phone: (905) 768-4260 Fax: (905) 768-9751

Email:doca@mncfn.ca
http://www.mncfn.ca

June 23, 2017

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
mkoehler@innisfil.ca

Dear Ms. Koehler,

We are the Mississaugas of the New Credit First Nation (MNCFN), the descendants of the Mississaugas of the River Credit. Our traditional territory extends from the Rouge River Valley in the east, across to the headwaters of the Thames River, down to Long Point on Lake Erie, and back along the shores of Lake Erie, the Niagara River, and Lake Ontario to the Rouge River Valley. It encompasses present-day London, Hamilton, and Toronto, as well as our communal lands. Our traditional territory has defined and sustained us as a First Nation for countless generations, and must continue to do so for all our generations to come.

Thank you for your notification on *the 7th Line Improvements Schedule C Municipal Class Environmental Assessment on May 11, 2017.* The Mississaugas of the New Credit First Nation (MNCFN) has various treaty rights across its traditional territory, including the area contemplated by your project. For further information, please see our website, http://www.newcreditfirstnation.com/. MNCFN continues to exercise treaty rights which include, but are not limited to, rights to harvest, fish, trap and gather species of plants, animals and insects for any purpose including food, social, ceremonial, trade and exchange purposes. The MNCFN also has the right to use the water and resources from the rivers, creeks and lands across the MCNFN traditional territory.

At this time, MNCFN *does not* have a high level of concern regarding the proposed project and therefore, by way of this letter, approves the continuation of this project. However, MNCFN requests that you continue to notify us about the status of the project. **In addition, we respectfully ask you to immediately notify us if there are any changes to the project as they may impact MNCFN's interests and that you please provide us with a copy of all associated**

environmental and archaeology reports. This includes, but is not limited to changes related to the scope of work and expected archaeological and environmental impacts.

Additionally, MNCFN employs Field Liaison Representatives ("FLRs") to act as official representatives of the community and who are answerable to MNCFN Chief and Council through the Department of Consultation and Accommodation. The FLRs' mandate is to ensure that MNCFN's perspectives and priorities are considered in the field and to enable MNCFN to provide timely, relevant, and meaningful comment on the Project. Therefore, **it is MNCFN policy that FLRs are on location whenever any fieldwork for environmental and/or archaeological assessments are undertaken.** It is expected that the proponent will cover the costs of this FLR participation in the fieldwork. Please also provide the contact information of the person, or consultant, in charge of organizing this work so they may facilitate the participation of the MNCFN FLRs.

Nothing in this letter shall be construed as to affect the Aboriginal or Treaty rights and hence shall not limit any consultation and accommodation owed to MNCFN by the Crown or any proponent, as recognized by section 35 of the Constitution Act, 1982, of any other First Nation.

MNCFN reserves the right in relation to any development project or decision, to decide whether it supports a project and to: comment to regulators, participate in regulatory processes and hearings, seek intervener funding or status, or to challenge and seek remedies through the courts.

MNCFN expects all proponents to act according to the following best practices:

- Engage early in the planning process, before decisions are made
- Provide information in meaningful and understandable formats.
- Convey willingness to transparently describe the project and consider any MNCFN concerns.
- Recognize the significance of cultural activities and traditional practices of the MNCFN
- Demonstrate a respect for MNCFN knowledge and uses of land and resources.
- Understand the importance of youth and elders in First Nation communities.
- Act with honour, openness, transparency and respect.
- Be prepared to listen and allow time for meaningful discussion.

Sincerely,

Fawn D. Sault
Consultation Manager
MNCFN Department of Consultation and Accommodation
cc – Mark LaForme; Director, Department of Consultation and Accommodation

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

TO	SEEN
JAM	
USLF	
AEP	
FILE NO. 217024	

12 June, 2017

Steve Fournier
550 Welham Road
Barrie Ontario L4N 8Z7

Dear Steve Fournier,

RE: 7th Line Improvements

I would like to acknowledge receipt of your correspondence, which was received on 5/10/2017 regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Curve Lake First Nation. Our First Nation's Territory is incorporated within the Williams Treaties Territory and is the subject of a claim under Canada's Specific Claims Policy. We strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator, 8 Creswick Court, Barrie, ON L4M 2S7, with a copy of your proposal as your obligation to consult to also extend to the other First Nations of the Williams Treaties.

If you do not have a copy of Curve Lake First Nation's Consultation and Accommodation Standards they are available at http://www.curvelakefirstnation.ca/services-and-departments/lands-rights-resources/consultation.php. Hard copies are available upon request.

Although we have not conducted exhaustive research nor have we the resources to do so, Curve Lake First Nation Council is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights.

Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

Curve Lake First Nation also has available, trained Archaeological Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent.

If any new, undisclosed or unforeseen issues should arise, that has potential for anticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights we require that we be notified regarding these as well.

Thank you for recognizing the importance of consultation and respecting your duty to consult obligations as determined by the Supreme Court of Canada.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact our Lands and Resources Consultation Liaisons by email, Kaitlin Hill at KaitlinH@curvelake.ca , or by phone at 705-657-8045.

Yours sincerely,

Chief Phyllis Williams
Curve Lake First Nation

AAMJIWNAANG FIRST NATION

978 Tashmoo Avenue
Sarnia, Ontario N7T 7H5
Ph.: 519-336-8410
Fax: 519-336-0382

June 2, 2017

Our File #: 2017-0043

Ainley & Associates Limited
550 Welham Road
Barrie, ON
L4N 8A7

Attention: Steve Fournier, P. Eng.
Project Manager

Re: Town of Innisfil
7th Line Impprovements
Schdule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Dear Ms. Searle:

Thank you for the information regarding the above noted project dated May 8, 2017. The information has been into our consultation system by our staff.

After review and consideration, the project location is not within Aamjiwnaang First Nation's Traditional Territory. Therefore, we are not interested in full consultation in relation to this project at this time. Nor shall this letter be considered consultation of a First Nation group, please contact other neighbouring Indigenous communities for comments regarding 7th Line Improvement. Should the project have any changes, please forward any and all relevant information pertaining to this project to:

Chief Joanne Rogers
Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, Ontario, N7T 7H5
Office: (519) 336-8410

Sharilyn Johnston
Environmental Coordinator
Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, Ontario, N7T 7H5
Office: (519) 336-8410
Email: sjohnston@aamjiwnaang.ca

"Saving our Home and Native Land"

AAMJIWNAANG FIRST NATION

978 Tashmoo Avenue
Sarnia, Ontario N7T 7H5
Ph.: 519-336-8410
Fax: 519-336-0382

Aamjiwnaang First Nation is committed to facilitating a flexible, clear, and reasonable process for reviewing information in relation to the proposed project and will participate fully in responding to the information provided. This letter does not abrogate or derogate Aamjiwnaang First Nation's continuing ability to assert and exercise its Aboriginal Rights and Title to all parts for its Reserve and Traditional Territory.

Sincerely,

Courtney Jackson

Courtney Jackson
Environment Worker
Aamjiwnaang First Nation

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: July-07-17 1:47 PM
To: 'Andrea Potter'
Subject: FW: Notice of Study Commencement Schedule C MCEA - Town of Innisfil
Attachments: 17-07-07 WFN Response - No Concerns Town of Innisfil 7th Line Improvements MCEA Notice of Study Commencement.pdf

Andrea

Please add the attached to the correspondence file. They do not need to be kept up t date on the project.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley GROUP
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: Daniella Baker [mailto:ccc@wasauksing.ca]
Sent: July-07-17 1:13 PM
To: fournier@ainleygroup.com
Cc: Jennifer Predie
Subject: Notice of Study Commencement Schedule C MCEA - Town of Innisfil

Good afternoon,

Please find attached a letter from Wasauksing First Nation in regards to the above.

Should you have any questions or require any further information, please do not hesitate to contact me at the information provided below.

Sincerely,

Daniella Baker
Community Consultation Coordinator
Wasauksing First Nation
T: (705)746-2531 Ext. 2248

C: (705)988-2204
F: (705)746-5984
ccc@wasauksing.ca
www.wasauksing.ca

WASAUKSING FIRST NATION

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P.O. Box 250
Parry Sound, Ontario
P2A 2X4

Phone:
(705) 746-2531
Fax:
(705) 746-5984

Chief
Warren Tabobondung

Chief Councillor
Vince Chechock

Councillors
Alexander Zyganiuk
Brent Tabobandung
Dave Rice
Theresa McInnes

July 7, 2017

Mr. Steve Fournier, P.Eng., Project Manager
Ainley and Associates Limited
550 Welham Road
Barrie, Ontario
L4N 8Z7

Dear Mr. Fournier,

RE: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement

Thank you for your notification dated May 8, 2017 in regards to the Notice of Study Commencement. Wasauksing First Nation does not have any concerns and/or comments to submit in response to the project and we do not wish to continue to receive information and/or updates.

Once again, thank you for engaging with Wasauksing First Nation and should you have any questions or require any further information, please do not hesitate to contact me via email ccc@wasauksing.ca or telephone (705) 746-2531 ext. 2248.

Respectfully,

Daniella Baker
Community Consultation Coordinator

Comments Received From the Public

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: May-12-17 2:48 PM
To: 'Andrea Potter'
Subject: FW: File #217024, 7th Line

Andrea
Please update the contact information for the person listed below.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley GROUP
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: [redacted]
Sent: May-12-17 1:48 PM
To: fournier@ainleygroup.com
Subject: File #217024

Good afternoon,
Further to your letter dated May 8th to the attention of [redacted], it would be greatly appreciated if you could kindly change your records regarding our proper mailing address.
Please see below (i.e. we need the [redacted] included otherwise mail goes astray).

Thank you very much,

[redacted]

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: June-06-17 2:33 PM
To: 'Andrea Potter'
Subject: FW: 7th Line Improvements- Environmental Assessment
Attachments: 7th Line Improvements-Schedule C-Environmental Assessment-May 8, 2017.pdf

Andrea

Please add this contact to the notification list

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley Group
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: [redacted]
Sent: June-06-17 11:35 AM
To: 'Magdalena Koehler'
Cc: Fournier@ainleygroup.com; [redacted]
Subject: 7th Line Improvements- Environmental Assessment

Magdalena,

We recently received notice of the Town commencement of The Schedule 'C' Municipal Class Environmental Assessment to facilitate improvements to 7th Line from Lake Simcoe to 20th Side Road.

We represent [redacted] and [redacted] for two land parcels on the south side of 7th Line [redacted], more specifically for [redacted] with respect to [redacted] remaining interest in the [redacted] with respect to their land holdings bounded by [redacted]

We wish to be included in the distribution of all notifications and to participate during the EA process as the subject lands will require the installation of infrastructure that should be considered as part of the 7th Line Improvement review process.

We would be most pleased to meet with the Town and/or the Town consultant Ainley on this matter, at your convenience.

[redacted]

[redacted]

[redacted]

[redacted]

Disclaimer:
The accompanying files are supplied as a matter of courtesy. The data is supplied "as is" without warranty of any kind either expressed or implied. Any person(s) or organization(s) making use of or relying upon this data, is responsible for confirming its accuracy and completeness. [redacted] is not responsible for edited or reproduced versions of this digital data.

Response Provided

Andrea Potter

From: Magdalena Koehler <mkoehler@innisfil.ca>
Sent: June-15-17 1:30 PM
To: [redacted]
Cc: Fournier@ainleygroup.com; [redacted] Andrea Potter (potter@ainleygroup.com)
Subject: RE: 7th Line Improvements- Environmental Assessment

Hello [redacted]

You were added to the distribution list as the Owner's representative - please note that we will be holding an Open House in September 2017 for all the adjacent owners/stakeholders which you are welcomed to attend (you will be circulated on the notice).

Also, note that the InnServices is undertaking Master Servicing Plan update which you may also be interested in, their information should be posted on the website.

The subject property is outside of the settlement boundary. In the future, when your client's land gets draft plan approval all 7th Line improvements/contributions will be dictated by the conditions.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: June 6, 2017 11:35 AM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Cc: Fournier@ainleygroup.com; [redacted]
Subject: 7th Line Improvements- Environmental Assessment

Magdalena,

We recently received notice of the Town commencement of The Schedule 'C' Municipal Class Environmental Assessment to facilitate improvements to 7th Line from Lake Simcoe to 20th Side Road.

We represent [redacted] for two land parcels on the south side of 7th Line [redacted] with respect to [redacted] remaining interest in the [redacted] with respect to their land holdings bounded by 2[redacted] lands.

We wish to be included in the distribution of all notifications and to participate during the EA process as the subject lands will require the installation of infrastructure that should be considered as part of the 7th Line Improvement review process.

We would be most pleased to meet with the Town and/or the Town consultant Ainley on this matter, at your convenience.

Regards,

[redacted]

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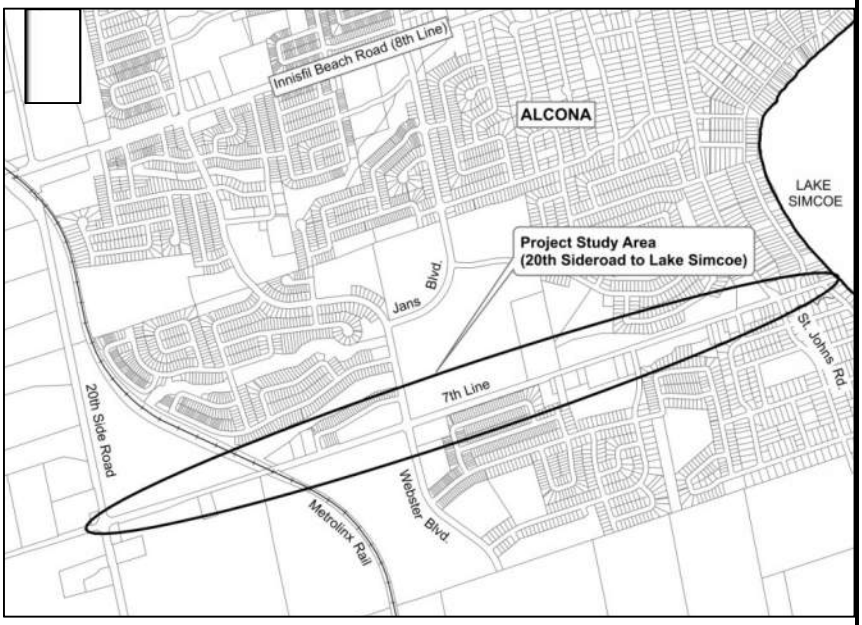
Appendix K

Consultation Point 2
(Notice of Public Open House No. 1)

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

The Project

The Town of Innisfil has initiated a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study map. This project has been initiated to accommodate future growth in the Alcona area and to address capacity and operational deficiencies affecting the subject corridor. As part of this project, improvements will be made to the existing road cross-section and intersections including provisions for active transportation (i.e. walking, cycling etc.) and municipal servicing.



This undertaking is classified as a Schedule 'C' project in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Public Open House No. 1

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Date: **Wednesday, October 11, 2017.**
Time: **4:00 p.m. to 7:00 p.m.**
Location: **Town Hall Community Rooms**
2101 Innisfil Beach Road
Innisfil, ON

Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Open House No. 1 will be **October 25, 2017.** If you are unable to attend the PIC, presentation material will be available on the Town's website at www.innisfil.ca/7thea after October 11, 2017. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Except for personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Innisfil

2101 Innisfil Beach Road
Innisfil, Ontario L9S 1A1
705.436.3710
Office Hours:
Monday to Friday
8:30am to 4:30pm

Community Bulletin

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SEPTEMBER 22, 2017

Upcoming Council Meetings

Wednesday, October 4, 2017
- 6:00 p.m. – Special Council Meeting
  Bill 68 Information Session
- 7:00 p.m. – Regular Council Meeting

Wednesday, October 18, 2017
- 7:00 p.m. – Regular Council Meeting

Upcoming Board/Committee Meetings

Innisfil Accessible Advisory Committee (IAAC)
October 10, 2017 at 1 p.m., Community Rooms B & C

Innisfil Heritage Committee Meeting
October 12, 2017 at 7 p.m., Community Rooms B & C

Library Board
October 16, 2017 at 7 p.m., Innisfil ideaLAB & Library, Lakeshore Branch

Police Services Board Meeting
October 16, 2017 at 7 p.m., Community Rooms B & C

Committee of Adjustment Hearing
October 19, 2017 at 6:30 p.m., Council Chambers

Meetings subject to change. Please visit the Town's website to view the most updated listing.

Public Open House

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

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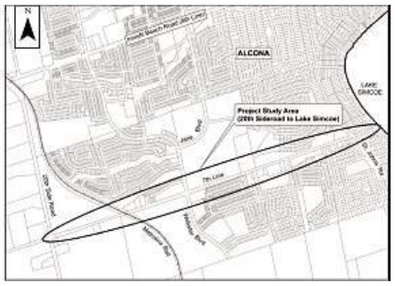

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Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Innisfil
2101 Innisfil Beach Road
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705.436.3710
Office Hours:
Monday to Friday
8:30am to 4:30pm

Community Bulletin

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SEPTEMBER 29, 2017

Upcoming Council Meetings

Wednesday, October 4, 2017
- 6:00 p.m. – Special Council Meeting - Bill 68 Information Session
- 7:00 p.m. – Regular Council Meeting

Wednesday, October 18, 2017
- 7:00 p.m. – Regular Council Meeting

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October 10, 2017 at 1 p.m.,
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October 16, 2017 at 7 p.m.,
Innisfil ideaLAB & Library, Lakeshore Branch

Committee of Adjustment Hearing
October 19, 2017 at 6:30 p.m.,
Council Chambers

Police Services Board Meeting
October 23, 2017 at 6 p.m.,
South Simcoe Police North Division,
Community Room

Meetings subject to change. Please visit the Town's website to view the most updated listing.

Employment Opportunities

- Operations – Rink Helper
  (Seasonal part-time student position)
  (closes October 3, 2017)

Public Open House

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

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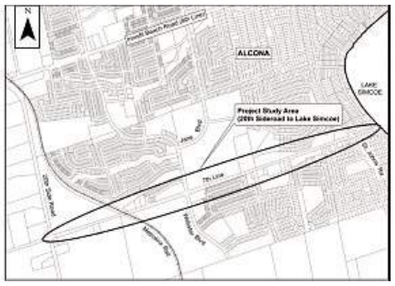

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Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
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Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
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Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Notice of Public Open House and Public Meeting

"OUR PLACE" INNISFIL PLAN

How will we make "Our Place" an even better place to live in?
Come and learn about the Town's new Official Plan!
Ask questions. Provide comments. This will affect you.
When and where?

Public Open House	**Public Meeting**
November 1, 2017	November 8, 2017
5:00 – 7:00 pm	6:30pm
Town Hall Community Rooms	Town Hall Council Chambers
2101 Innisfil Beach Road	2101 Innisfil Beach Road

Purpose To receive comments on the Town's proposed new "Our Place" Official Plan, including policies for the Innisfil Heights Employment Area from the "Our Jobs" process.

Effect New policies to enhance place making and guide development in "Our Place" Innisfil, including the Innisfil Heights Employment Area, to the year 2031.

Subject Lands All land within the Town of Innisfil.

More Information? www.innisfil.ca/ourplace (The draft document should be available by October 20, 2017)

Who to contact? Paul Pentikainen, Senior Policy Planner
Email: ourplace@innisfil.ca
Phone: 705.436.3740 x3326

WHAT HAPPENS AT THE OPEN HOUSE?

Staff and consultants will be there to give you details about the newest draft of the Town's new "Our Place" Official Plan as well as the "Our Jobs" project focused on the Innisfil Heights Employment Area. There will be no formal presentations so you can drop-in at any time to speak to staff and consultants and ask questions. No decisions will be made at the Open House.

WHAT HAPPENS AT THE PUBLIC MEETING?

There will be a formal presentation from consultants regarding the Town's new "Our Place" Official Plan as well as outcomes from the "Our Jobs" process focused on the Innisfil Heights Employment Area. The public then be able to ask questions and make comments. No decisions will be made at the Public Meeting.

WHAT HAPPENS AFTER THE PUBLIC MEETING?

Staff will consider all comments from the Open House and Public Meeting, along with any written submissions, before making any further changes to the documents before they are presented to Council at a future Council Meeting (tentatively targeted for December 2017). This is when Council will decide on adopting the final "Our Place" Official Plan.

After the Official Plan has been adopted by Town Council, it must still be approved by the County of Simcoe before it takes full effect.

HOW DO I SUBMIT COMMENTS IF I CAN'T MAKE IT TO THE OPEN HOUSE OR PUBLIC MEETING?

Email: ourplace@innisfil.ca
Mail: Town Clerk: Lee Parkin,
2101 Innisfil Beach Road, Innisfil,
Ontario L9S 1A1
Online Survey: Link will be available at www.innisfil.ca/ourplace after October 20, 2017
Visit: Town Hall during regular business hours
Phone: 705.436.3740 x3326

WHAT ELSE SHOULD I KNOW?

i. The Open House and Special Public Meeting are statutory in accordance with the Ontario Planning Act.
ii. If a person or public body does not make oral submissions at a public meeting or make written submissions to the Town of Innisfil before this matter is passed, the person or public body is not entitled to appeal the decision of the Town of Innisfil to the Ontario Municipal Board.
iii. If a person or public body does not make oral submissions at a public meeting or make written submission to the Town of Innisfil before this matter is passed, the person or public body may not be added as a party to the hearing of an appeal before the Ontario Municipal Board unless in the opinion of the Board, there is reasonable grounds to do so.
iv. If you wish to be notified of the decision of Town Council in respect to this matter, you must make a written request to the Town Clerk: Lee Parkin, 2101 Innisfil Beach Road, Innisfil, Ontario L9S 1A1 or send an email to ourplace@innisfil.ca.
v. For more information about these matters, including preserving your appeal rights, please contact Planning Services at ourplace@innisfil.ca or 705.436.3710 or in person at 2101 Innisfil Beach Road, Innisfil, Ontario during regular business hours.

Dated at the Town of Innisfil this 25th day of September, 2017.

Lee Parkin, Clerk
Town of Innisfil
2101 Innisfil Beach Road
Innisfil, Ontario
L9S 1A1

Innisfil
2101 Innisfil Beach Road
Innisfil, Ontario L9S 1A1
705.436.3710
Office Hours:
Monday to Friday
8:30am to 4:30pm

Community Bulletin

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OCTOBER 6, 2017

Upcoming Council Meetings

Wednesday, October 18, 2017

- 6:00 p.m. – Special Council Meeting - Zoning By-Law Amendment for 0 Harbour Street
- 6:30 p.m. – Special Council Meeting - Zoning By-law Amendment for San Diego 2, Phase 3
- 7:00 p.m. – Regular Council Meeting

Wednesday, November 1, 2017

- 7:00 p.m. – Regular Council Meeting

Upcoming Board/Committee Meetings

Innisfil Accessible Advisory Committee (IAAC)
October 10, 2017 at 1 p.m.,
Community Rooms B & C

Innisfil Heritage Committee Meeting
October 12, 2017 at 7 p.m.,
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Library Board
October 16, 2017 at 7 p.m.,
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Community Room

Meetings subject to change. Please visit the Town's website to view the most updated listing.

Public Open House

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

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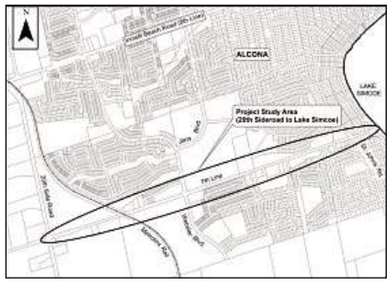

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Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
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Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Notice of Public Open House and Public Meeting

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November 1, 2017	**November 8, 2017**
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Town Hall Community Rooms	Town Hall Council Chambers
2101 Innisfil Beach Road	2101 Innisfil Beach Road

Purpose	To receive comments on the Town's proposed new "Our Place" Official Plan, including policies for the Innisfil Heights Employment Area from the "Our Jobs" process.
Effect	New policies to enhance place making and guide development in "Our Place" Innisfil, including the Innisfil Heights Employment Area, to the year 2031.
Subject Lands	All land within the Town of Innisfil.
More Information?	www.innisfil.ca/ourplace (The draft document should be available by October 20, 2017)
Who to contact?	Paul Pentikainen, Senior Policy Planner Email: ourplace@innisfil.ca Phone: 705.436.3740 x3326

WHAT HAPPENS AT THE OPEN HOUSE?
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WHAT ELSE SHOULD I KNOW?
i. The Open House and Special Public Meeting are statutory in accordance with the Ontario Planning Act.
ii. If a person or public body does not make oral submissions at a public meeting or make written submissions to the Town of Innisfil before this matter is passed, the person or public body is not entitled to appeal the decision of the Town of Innisfil to the Ontario Municipal Board.
iii. If a person or public body does not make oral submissions at a public meeting or make written submission to the Town of Innisfil before this matter is passed, the person or public body may not be added as a party to the hearing of an appeal before the Ontario Municipal Board unless in the opinion of the Board, there is reasonable grounds to do so.
iv. If you wish to be notified of the decision of Town Council in respect to this matter, you must make a written request to the Town Clerk: Lee Parkin, 2101 Innisfil Beach Road, Innisfil, Ontario L9S 1A1 or send an email to ourplace@innisfil.ca.
v. For more information about these matters, including preserving your appeal rights, please contact Planning Services at ourplace@innisfil.ca or 705.436.3710 or in person at 2101 Innisfil Beach Road, Innisfil, Ontario during regular business hours.

Dated at the Town of Innisfil this 25th day of September, 2017.

Lee Parkin, Clerk
Town of Innisfil
2101 Innisfil Beach Road
Innisfil, Ontario
L9S 1A1

Agency and Indigenous Community Contact List and Letters

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	rob.dobos@ontario.ca
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment and Climate Change	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment and Climate Change	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Mr.	Tom	Chrzan	Director, Regional Services Branch	Ministry of Tourism, Culture & Sport	400 University Avenue	2nd Floor	Toronto, ON	M7A 2R9	416-314-6680	tom.chrzan@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	carol.neumann@ontario.ca
Mr.	Jeff	Bateman	Manager of Rail Corridor Management	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-0101	jeff.bateman@gotransit.com
Ms.	Tania	Gautam	Project Manager Environmental Programs & Assessments	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-4904	Tania.Gautam@metrolinx.com
Mr.	Adam	Snow	Third Party Officer	Metrolinx	97 Front Street West		Toronto, ON	M5J 1E6	416-528-4864	adam.snow@gotransit.com
Mr.	Brandon	Gaffoor	Rail Corridors Management Office	Metrolinx	97 Front Street West		Toronto, ON	M5J 1E6	416-528-4864	brandon.gaffoor@metrolinx.com
Mr.	Derrick	Toigo	Senior Vice President Rail Infrastructure Team	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-0262	Derrick.Toigo@infrastructureontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Mr.	Charles	Burgess	Manager of Planning	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x299	c.burgess@lsrca.on.ca
Ms.	Ashlea	Brown	Senior Environmental Regulations Analyst	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281	A.Brown@lsrca.on.ca
Mr.	Tom	Hogenbirk	Manager of Engineering	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x240	t.hogenbirk@lsrca.on.ca
Ms.	Kate	Lillie	Ecologist	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x527	k.lillie@lsrca.on.ca
Ms.	Carla	Ladd	CAO	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	carla.ladd@barrie.ca
Mr.	Richard	Forward	General Manager of Infrastructure	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	richard.forward@barrie.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Emergency Services										
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Ms.	Donna	Danyluk	Communications Representative	Royal Victoria Regional Health Centre	201 Georgian Drive		Barrie, ON	L4M 6M2	705-728-9090 ext. 41610	danylukd@rvh.on.ca
Mr.	Jon	Pegg	Fire Chief	Innisfil Fire Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	jpegg@innisfil.ca
Ms.	Candace	Stefanec	Administration Coordinator	Innisfil, Fire and Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	cstefanec@innisfil.ca
Ms.	Sue	Dawson	Deputy Fire Chief, Communications & Business Services	City of Barrie, Fire & Emergency Service Department	P.O. Box 400		Barrie, ON	L4M 4T5	705-739-4220, ext. 3221	sue.dawson@barrie.ca
Mr.	Andrew	Fletcher	Chief of Police	South Simcoe Police Service	2137 Innisfil Beach Road		Innisfil, ON	L9S 1A2	705-436-2141	andrew.fletcher@southsimcoepolice.ca
Mr.	Tom	Sinclair	Staff Sergeant	City of Barrie Police Service	29 Sperling		Barrie, ON	L4M 6K9	705-725-7025 ext. 2110	tsinclair@barriepolice.ca
Ms.	Jessica	Lawson	Research, Planning and Analysis Section, Business Management Bureau	Ontario Provincial Police, Operational Policy and Strategic Planning Bureau	777 Memorial Avenue	3rd Floor	Orillia, ON	L3V 7V3	705-329-6903	jessica.lawson@opp.ca
Special Interest Groups										
Ms.	Mary-Ellen	Madeley	Manager	Greater Innisfil Chamber of Commerce	8034 Yonge Street		Innisfil, ON	L9S 1L6	705.431.4199	
Ms.	Diana	Robinson	President	Cookstown and District Chamber of Commerce	P.O.Box 1102		Cookstown, ON	L0L 1L0	705.458.7007	
Mr.	Richard	Boken		Bayview Beach Ratepayers Association	219 Bayshore Road		Churchill, ON	L0L 1K0	705.456.6731	
Mr.	Don	Avery		Innisfil District Association	P.O. Box 7057		Innisfil, ON	L9S 1A8		
Ms.	Janet	Deacon		Alcona Beach Club Inc.	2044 25th Sideroad		Innisfil, ON	L9S 1Z2		
Ms.	Barb	Taylor-Reid		Degrassi Cove Association	10 Glengrove Avenue West		Toronto, ON	M4R 1N4		
Mr.	Nick	Torkos		Innisfil Creek Golf Course	239 Reive Blvd.		Cookstown, ON	L0L 1L0	705.458.4653	
Mr.	Kevin	Jacob	Assistant Clerk	Innisfil Heritage Committee	2101 Innisfil Beach Road		Innisfil, ON	L9S 1A1	705.436.3740 x 2414	kjacob@innisfil.ca
Ms.	Kathleen	Gardiner		Gilmore and Gilmore Professional Corporation	458 Victoria Street E	P.O. Box 250	Alliston, ON	L9R 1J8	705-435-4339	kathleen.gardiner@guknires.ca
Mr.	John	La Brie	Director, Physical Resources	Georgian College	1 Georgian Drive		Barrie, ON	L4M 3X9	705.728.1968 x 5213	
Mr.	John	Goodfellow	Landowner Liaison	BonSecour Track and Trail Snowmobile Club	660 9th Line		Innisfil, ON	L9S 3Y5	705-436-3719	bonsecour@rogers.com
Mr.	Brendan	Matheson	Board Chair	Barrie Cycling Club	P.O. Box 1363		Barrie, ON	L4M 5R4	705-717-6349	brendan@barriecycling.com
Ms.	Jen	Eaton	Sports Coordinator	Ontario Cycling Association	2-2015 Pan Am Blvd	1-416-855-1717	Milton, ON	L9T 8Y9		jen.eaton@ontariocycling.org
Ms.	Leah	Emms	Member Service Representative for Peel, Simcoe & York	Ontario Federation of Agriculture	Simcoe County Administration Centre	1110 Highway #26	Midhurst, ON	L0L 1X0	1-866-660-5511	leah.emms@ofa.on.ca
Consultants & Developers										
				Alriz Development Ltd.	265 King Street North		Alliston, ON	L9R 1N3		
Ms.	Winnie	Luk	General Counsel	Diam Fox Hill Property Inc. (Radiance)	199 Advanced Blvd., Suite 212		Brampton, ON	L6T 4N2	905 497 6993	wluk@diam.ca
Ms.	Angela	Orsi		Orsi Developments (Grand Sierra)	P.O. Box 215		Newmarket, ON	L3Y 4X1	905.778.1550	
Attn:	Office Manager			Maple Lane Lands & Dev Co Ltd. (Wallace Mills)	3565 King Road	Unit 109	King City, ON	L7B 1M3	705.833.1937	maple.lane@rogers.com
Mr.	Luigi	Fortini		Letizia Homes Ltd.	P.O. Box 1146		Bradford, ON	L3Z 2B5	905.252.7035	ouac@rogers.com
Mr.	Phil	Hammell		Mariposa Homes (Skivereen)	650 Harvie Settlement Road		Orillia, ON	L3V 0Y7	705.329.3330	phammell@mariposahomes.ca

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	Ernie	Rinomato		Country Homes (Alcona Downs)	111 Strada Drive		Woodbridge, ON	L4L 5V9	416.213.7191	
Mr.	Lou	Kelly		Green Acres	7886 Highway 11		Innisfil, ON	L9S 1L4	705.436.5111	homelife-barrie@rogers.com
Ms.	Wanda	Leblanc		Innisbrook Developments Inc.	18 Brownlee Drive		Bradford, ON	L3Z 2A4	905.252.7035	wandaleblanc@rogers.com
Mr.	Diego	Rizzardo		SanDiego Homes	1101 Quarry Drive		Innisfil, ON	L9S 4X1	705.436.5775	diego@sandiego-homes.ca
Ms.	Tanya	Roehrich	Property Manager	Trinity Development Group Inc	3250 Bloor Street West	Suite 1000	Etobicoke, ON	M8X 2X9	(416) 255-8800	troehrich@trinity-group.com
Mr.	Kerry	Judges		Woodland Park Development	67 Barrie Drive		Barrie, ON	L4N 7P1	705.725.0952	kerry.judges@gmail.com
Mr.	Hugh	Johnston		Crisdawn Construction Inc. (Pratt D'Amico)	27 Clapperton Street, Suite 300		Barrie, ON	L4M 3E6	705.722.4500	hjohnston@prattdevelopment.ca
Mr.	Nisio	Rizzardo		Previn Court Homes	265 King Street North, Box 1, Compartment 9		Alliston, ON	L9R 1N3		
Mr.	Rosario	Sacco		Urban Ecosystems	7050 Weston Road	Suite 705	Woodbridge, ON	L4L 8G7	905-856-0629	rosario@urbanecosystems.com
Aboriginal Consultation *(contact list updated as per MOECC email June 27, 2017)*										
Att: Consultation Unit				Ministry of Indigenous Relations & Reconciliation (MIRR)	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(INAC (formerly AANDC) not contacted for this project as project is not on Aboriginal lands)				~~Indigenous & Northern Affairs Canada Consultation Unit (formerly Aboriginal Affairs & Northern Development Canada)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1-800-567-9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct) 613-798-1488 (Secretary)	Prefers digital - bfrant@metisnation.org & copy to consultation@metisnation.org
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Mr.	Allen	Vallee	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 4	Midland, ON	L4R 4K6	705-526-6335	
Mr.	Tony	Muscat	President Interim	Moon River Metis Council	B26360 Cedarhurst Beach Road	R.R. 1	Beaverton, ON	L0K 1A0	705-426-1381	tonymuscat@rogers.com
First Nation Communities										
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Rodney	Noganosh		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Chief	Phyllis	Williams		Curve Lake First Nation	General Delivery		Curve Lake, ON	K0L 1R0	705-657-8045	PhyllisW@curvelake.ca
Utilities										
Mr.	Tom	Panak	Capital Engineer	InnServices Utilities Inc.	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-436-3710	tpanak@innservices.co
Mr.	Kent	Constable	Operations Supervisor	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321	kentc@innpower.ca
Mr.	Michael	Davison	Engineering Manager	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321 x208	michaeld@innpower.ca
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Andrew	Fournier		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	andrew.fournier@bell.ca
Mr.	Anothony	Zita	Planning Analyst	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822 416-427-9620 cell	Anthony.Zita@enbridge.com
Mr.	Meetpal	Chhina	Supervisor	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822	meetpal.chhina@enbridge.com
Mr.	Graham	McPherson	Planning	Rogers	1 Sperling Drive		Barrie, ON	L4M 6B8	705-737-4660 x6914	Graham.McPherson@rci.rogers.com

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017.

SAMPLE AGENCY LETTER

File No. 217024

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Mr. Dobos,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Ministry of Indigenous Relations & Reconciliation (MIRR)
160 Bloor St. East
9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Mr. Tucker,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Ms. Davis,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Georgian Bay Metis Council
355 Cranston Crescent
P.O. Box 4
Midland, ON L4R 4K6

Attn: Mr. Allen Vallee
President

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Mr. Vallee,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

S:\217024\Class EA\03. Consultation\04-C2 Notice of PIC No. 1\217024 Innisfil 7th Line C2 POH1 Agency Letter Sept 2017 FINAL.doc

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Moon River Metis Council
B26360 Cedarhurst Beach Road
R.R. 1
Beaverton, ON L0K 1A0

Attn: Mr. Tony Muscat
President Interim

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Mr. Muscat,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Chief McQue-King,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Chippewas of Georgina Island
R.R. #2
P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Chief Big Canoe,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Chief Noganosh,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Curve Lake First Nation
General Delivery
Curve Lake, ON K0L 1R0

Attn: Chief Phyllis Williams

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Chief Williams,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

S:\217024\Class EA\03. Consultation\04-C2 Notice of PIC No. 1\217024 Innisfil 7th Line C2 POH1 Agency Letter Sept 2017 FINAL.doc

Resident Mail Out

'SAMPLE'

[redacted]

Dear [redacted]

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment

The Town of Innisfil has initiated a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The Town of Innisfil recently held the first of two Public Open Houses on October 11, 2017 regarding the above noted project. While advance notification was provided to directly affected residents on the 7th line, published in two editions of the local paper and advertised on social media, your municipality would like to make certain that you are aware of the project since the alternative solutions as presented may have the potential to extend onto the municipally owned open space that abuts the rear of your property.

Please refer to the attached notice for additional details regarding the project. Please note that the Public Open House material is currently available on the Town's website at . As indicated, a second Public Open House is planned for this project in the new year which will provide additional opportunity for comment. As you have been added to the project contact list, advance notification will be provided.

[redacted]@[redacted]yg[redacted]p[redacted]

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

September 18, 2017. File No. 217024

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

Dear Resident / Property Owner / Tenant:

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Open House.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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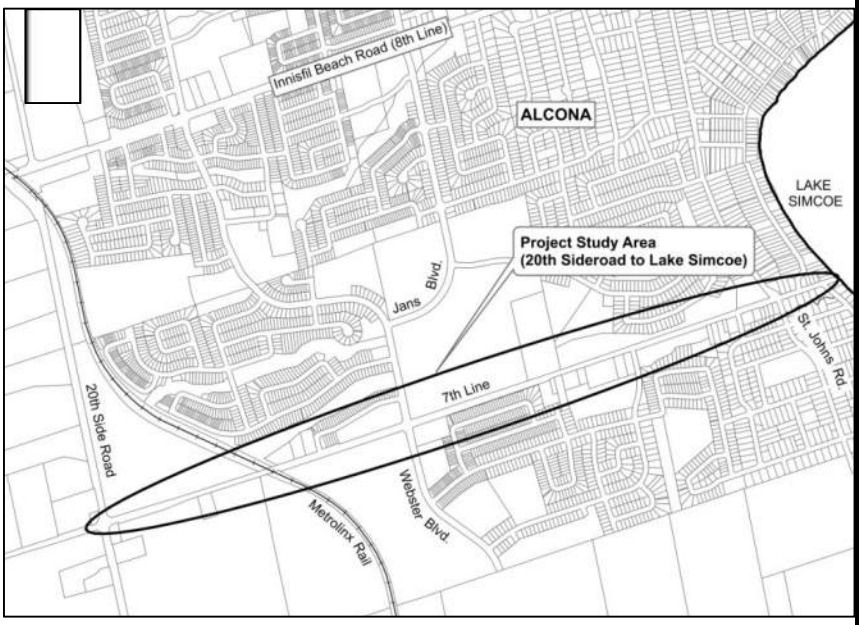
TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 1

The Project

The Town of Innisfil has initiated a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study map. This project has been initiated to accommodate future growth in the Alcona area and to address capacity and operational deficiencies affecting the subject corridor. As part of this project, improvements will be made to the existing road cross-section and intersections including provisions for active transportation (i.e. walking, cycling etc.) and municipal servicing.



This undertaking is classified as a Schedule 'C' project in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Public Open House No. 1

An interactive, drop-in style Public Open House has been arranged to introduce the project and to allow all interested parties an opportunity to review the alternative solutions under consideration and to address any identified deficiencies. Members of the Project Team will be in attendance and available to answer any questions. This meeting is the first of two Public Open Houses planned for this project. Public Open House No. 1 has been scheduled as follows:

Date: **Wednesday, October 11, 2017.**
Time: **4:00 p.m. to 7:00 p.m.**
Location: **Town Hall Community Rooms**
2101 Innisfil Beach Road
Innisfil, ON

Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Open House No. 1 will be **October 25, 2017.** If you are unable to attend the PIC, presentation material will be available on the Town's website at www.innisfil.ca/7thea after October 11, 2017. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Except for personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Comments Received From Agencies

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: September-25-17 1:43 PM
To: 'Andrea Potter'
Cc: 'Magdalena Koehler'
Subject: FW: Notice of Open House - CAO's Office Innisfil 7th Line EA

Andrea

Please update our city of Barrie contact info as per note provided below.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley Group
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: Deborah Ferrier [mailto:Deborah.Ferrier@barrie.ca]
Sent: September-25-17 11:58 AM
To: fournier@ainleygroup.com
Subject: Notice of Open House - CAO's Office

Greetings Steve,
Further to your communications to Carla Ladd of September 18th regarding the Town of Innisfil 7th Line Improvements, Schedule 'C' MCEA, Notice of Public Open House No. 1, please be advised that Carla Ladd retired the end of June 2017. Please update your records to reflect Michael Prowse, our new CAO.
Regards,

Deborah Ferrier
Executive Assistant to the CAO/City Manager

Barrie
City of Barrie: City Hall, 70 Collier Street, P.O. Box 400, Barrie ON, L4M 4T5
Office: 705-739-4220 ext 4751
www.barrie.ca

Comments Received From Indigenous Communities

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: October-04-17 4:28 PM
To: 'Andrea Potter'
Subject: FW: Town of Innisfil - 7th Line Improvements - Schedule 'C' Municipal Class Environmental Assessment - Notice of Public Open House No. 1

Please file with correspondence

Regards,

Steve Fournier, P.Eng.
Senior Engineer

Ainley Group
550 Welham Road
Barrie, Ontario, L4N 8Z7
fournier@ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Fax: (705) 726-4391
Cell: (705) 794-0555

From: Hollie Nolan [mailto:hollien@ramafirstnation.ca] **On Behalf Of** Chief Rodney Noganosh
Sent: October-04-17 10:45 AM
To: Fournier@ainleygroup.com
Cc: mkoehler@innisfil.ca
Subject: re: Town of Innisfil – 7th Line Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Public Open House No. 1

Dear Steve;

Thank you for your letter re: Town of Innisfil – 7th Line Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Public Open House No. 1.

Please be advised that we reviewed your letter. I have shared it with Council and we've forwarded the information to Karry Sandy McKenzie, Williams Treaties First Nation Process Co-ordinator/Negotiator. Ms. McKenzie will review your letter and take the necessary action if required. In the interim, should you wish to contact Ms. McKenzie directly, please do so at k.a.sandy-mckenzie@rogers.com

Thank you,

Chief Rodney Noganosh

Hollie Nolan
Executive Assistant to the Chief, Administration

Chippewas of Rama First Nation
(ph) 705-325-3611,1216
(cell)
(fax) 705-325-0879
(url) www.ramafirstnation.ca

Comments Received From the Public

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Streetlights from Webster to St. Johns

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address

Telephone # E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

Jodi Moore

From: Magdalena Koehler [mkoehler@innisfil.ca]
Sent: October-24-17 4:54 PM
To: [redacted]
Cc: Andrea Potter (potter@ainleygroup.com); Steve Fournier, P.Eng.
Subject: RE: 7th Line EA assessment

Hello [redacted]

Thank you for bringing your concerns to my attention.

One of the Class Environmental Assessment's objective is to consult the Residents regarding the proposed alternatives, thus all comments or concerns are taken into consideration. Also, the Class EA follows the process designed to protect the environment as a whole.

The preferred alternative does not anticipate widening of the 7th Line between Webster Boulevard and the lake, traffic trips warrant two travel lanes only. Thus, we do not anticipate on widening the Right of Way in that section - I will refer you to the slides 'Alternative Solutions Under Consideration - Alternative 5' for details.

We do plan for connectivity and accommodating of pedestrians, bicycles, thus a 4.0-3.0 wide multi use trail running along the north side of the entire length of the 7th Line study area is preferred. Moreover, to improve the health of the creek we are proposing to shift the Bank's Creek to the north, and meander it through the open space, so it doesn't run along the road. A Naturalization Plan would be completed with the consultation of the Conservation Authority as we progress with the Class Environmental Assessment. One of the studies completed requires as to protect the cottage view closer to the Lake Simcoe.

You can find the material presented at the 1st Public Open House on the project's website: www.innisfil.ca/7thea . The 2nd POH for the Residents is projected for early 2018.

I hope this information addresses your concern.

Regards,
Magdalena

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

-----Original Message-----
From: [redacted]
Sent: October 20, 2017 10:35 PM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: 7th Line EA assessment

Good day, I am a resident of 16 years in Innisfil in the area of the 7th Line and wanted to ensure my voice was heard. Unfortunately I was unable to attend the meeting.

I am deeply concerned as the area running from Webster to the Lake contains a stream in which we regularly see, especially in the spring, fish and turtles. Fish are jumping in the stream constantly in spring.

We are very concerned about the impact on the stream with widening the road.

We also enjoy the nice country road to the beach with forest and stream and feel traffic should be encouraged to flow along main roads, IBR, and the redesigned 6th Line.

Widening the road would encourage increased traffic becoming a danger to the children and residents who walk along this road regularly and the habitat in the stream.

Thank you!

[redacted]

Sent from my iPhone

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

**A way stop needed at the intersection of 7th line & St. John's (cannot see north travelling traffic when making a left turn from 7th line)*

As long as all studies regarding wildlife, agricultural & historical have been done & adhered to, the preferred seems it will work

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

I WAS SHOCKED TO SEE THAT A RESIDENTIAL DEVELOPMENT WOULD BE CONSTRUCTED IN WHAT I WAS TOLD BY SAN DIEGO HOMES AS CONSERVATION LAND THAT WOULD NEVER BE BUILT ON!

BUILDERS SHOULD BE FINED FOR MISLEADING BUYERS!!

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

From: Magdalena Koehler
To: [redacted]
Cc: Andrea Potter (potter@ainleygroup.com); Jodi Moore
Subject: RE: 7th line
Date: October-12-17 10:06:42 PM

Hello [redacted],

Yes, we have initiated the process of Class Environmental Assessment for the 7th Line improvements, the objective is to consult the affected residents, receive comments and to determine best alternative for the 7th Line improvements, thus you not receiving the notice was an omission on our part, caused by the residents of [redacted] not having directly access to 7th – we will be adding the residents living on the south side of [redacted] to the mailing list.

We advertise the Notices and Public Open Houses in the newspaper and promote the POHs on social media as well. POH#2 is scheduled for January of 2018.

I'm including a link to the project website where we also post all documents: Notices and Public Open House material which will have the info on all the studies undertaken and alternatives under consideration: www.innisfil.ca/7thea

Hope that helps.

Regards,
Magdalena

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]]
Sent: October 11, 2017 6:57 PM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: 7th line

Hello
My name is [redacted] I live on [redacted] in alcona. It has come to my attention that the town has planned changes to the 7th line.
My back yard [redacted] the 7th line and i will be directly affected by any changes made.
I find it curious, to say the least ,why the town did not inform those of us who will be affected

directly , by way of a notice to our homes.
Since we payed a premium for these lots, the potential for these changes to negatively effect our homes value is very real !
What guarantees does the plan have to avoid this from happening?
I wish to be informed of this process directly!!!
Please send all information and future study's, environmental, property values , effects of changes , Noise pollution!, and all and any info that will arise during this process.

Thanking you

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Great presentation. Very informative.
Road widenings will definitely be needed in the near future when all of the adjoining developments are registered.

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Thank you for this time.
We are in favor of Alternative #5
Keeping the forest (Green Space)
protected & the "Cottage feel" is very
important.

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
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Name [redacted]

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Andrea Potter

From: [redacted]
Sent: November-07-17 11:25 PM
To: Magdalena Koehler
Subject: Re: 7th line question

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks for the prompt answer on why and what is happening in our growing community. We did read it in the Innisfil Examiner a few weeks ago .
Like many who came here in the past 15 years or so we are unhappy with the rapid growth and many of our neighbors have moved on to smaller places. We were against the plan for a town of 116,000 or so as proposed the mayor and council way back when Jackson was mayor.

Having the lines repainted which is is i guess is a quick fix but very necessary and helpful when driving. The roads here are getting a lot better and and that is good.

The tax bills as you have alluded to is too high even with the millions we receive from Georgian Downs. We simply have too many sunshine people and our own police force which is too costly and we hope is revisited to make the OPP the police force that is more economical. I know this is not your problem but some on councilors I do feel this way.

Hope that we can get the job done without the big cost.
[redacted]

On Thursday, October 12, 2017 9:19 PM, Magdalena Koehler <mkoehler@innisfil.ca> wrote:

Good evening [redacted]

Do not worry about the 7th Line closure, the construction is projected for 2021, thus 6th Line will certainly be open by that time. Currently we are in the Environmental Assessment stage which is mandated by the province.

Here are the projected timelines:
Environmental Assessment completion – 2018
Detailed Design completion – 2018-2019
Property Acquisition – 2020
Utility relocation – 2021
Construction – 2021-2022

Repaving would be a “bandage fix”, so not an economical solution.

4 travel lanes are proposed for the section between 20th & Webster Blvd. only, to accommodate the existing and future traffic trips from the upcoming developments. Section of the 7th Line west of 20th, so towards the Yonge Street is projected for improvement within next 10-15 years.

6th Line will have a GO Station in approximately 3-5 years, thus 4 lanes are also warranted in the vicinity, not through the entire length, to accommodate the commuters and the Sleeping Lion development located to the east.

I understand your frustration about high taxes – after I pay all my taxes and bills it is hard to save or spend because not too much left. However, the 7th Line project is substantially funded by developments, currently ongoing and future.

I hope I addressed all your concerns. Also, I'm attaching link to the 7th Line EA where we upload all the info/documents www.innisfil.ca/7thea

Warm Regards,
Magdalena

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: October 12, 2017 3:06 PM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Cc: Richard Simpson <rsimpson@innisfil.ca>
Subject: 7th line question

Ms. Koehler.

My family has a big problem with all of the road closures in this area. And it seems it is about to happen again at the 7th line.

We sincerely hope this will not be even started until the 6th line is completed! Plus why the need for a 4 lane road on the 7th line?
Wouldn't repaving it be sufficient?

Isn't the 6th line going to have 4 lanes extending to the 20th Side Road? Why not extend this to Yonge Street?
Surely that would take care of all the traffic south of the 8th line.

One other thing..... the speed of increased spending by this Town Council is mind boggling for seniors on fixed incomes!

Yours for an affordable Innisfil,

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
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Ainley Group

COMMENT SHEET – PLEASE PRINT

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Concerned over the loss of privacy on the 7th. Behind [redacted] the Cedars create most of the privacy

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Capital Project Manager
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Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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- VERY IMPRESSIVE!
- OPTION #5 SEEMS TO BE THE BEST - MOST ADVANTAGES
  - LEAST IMPACT
- VERY FORWARD LOOKING

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- Informative Display.
- Glad to see the Multi-Use Trails - keep our Green Space!
- Most of the development is West of St. Johns, however, the intersection at the 7th Line + St. Johns should be a major concern as it has very poor sightlines, in particular the South-West corner. There will be an increase of traffic at this intersection. Add to this the fact that there are currently no stops on St. Johns between 1BR. and Ewart St. to slow or stop traffic. A traffic light should be considered; or at the least a flashing 4-Way Stop.

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Name [redacted]

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Thank you for this work!

- My two main concerns are:
  - Proper + responsible management of existing waterways and streams within the auspices of the NSRCA + Town EA
  - Allocating green space / greenbelt lands to proposed developments – especially the

Please submit this Comment Sheet by **October 25, 2017** to either:

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Name [redacted]

Mailing Address [redacted]

Telephone # [redacted]

E-mail Address [redacted]

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Grand Sierra Development, where both an existing stormwater management pond resides & a proposed trail may exist, connecting 7th to Anna Maria & Nanty High School.

Among Grady has very few Greenlands and the opportunity exists, here (#6) and other developments to allow/encourage green space & responsible land use.

Please leave this area blank.

From:	Magdalena Koehler
To:	Andrea Potter (potter@ainleygroup.com); Jodi Moore; Steve Fournier, P.Eng.
Subject:	FW: 7th line improvements
Date:	October-29-17 12:45:35 PM
Attachments:	image003.jpg image002.jpg image001.jpg

Hello,

For our records: response to a Resident below.

Thanks,
Magda

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: October 26, 2017 8:45 PM
To: Steven Montgomery <smontgomery@innisfil.ca>
Cc: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: RE: 7th line improvements

Thank you for the information.

Much appreciated, Steve.

On Oct 26, 2017 4:23 PM, "Steven Montgomery" <smontgomery@innisfil.ca> wrote:

> Hi [redacted]
>
> The mixed use commercial area is really a 'potential' mixed use commercial area at this point, which in the short term is proposed to be rezoned 'Future Development'. The current Official Plan does not allow mixed use or commercial uses on the block of land proposed at the SW corner of Webster Boulevard and 7th Line. However the proposed new Official Plan, which is currently before Council for consideration, with open houses scheduled for November 1 and a Public Meeting November 8th, does.
>
> There will be a concept plan and rezoning required in the future for this block, which requires a

future Public Meeting in order to be rezoned from 'Future Development'. We would anticipate uses such as townhouses and low rise apartments on this block, combined with such potential commercial uses as retail, personal services, grocery stores, pharmacies, medical offices, live/work units with residential on the upper floor of commercial uses, places of worship, parkettes and other uses in accordance with the new Official Plan. These uses are all potential uses in the new Official Plan but would have to be refined through a future rezoning. Attached is a Staff Report for the recent Public Meeting on October 18, with more information.

If you have any questions please do not hesitate to contact me.

Regards,

Steven Montgomery, BURPl. (Hons.), MCIP, RPP
Senior Planner

705-436-3740, Ext. 3310
1-888-436-3710 (toll free)
705-436-7120 (fax)
smontgomery@innisfil.ca

Town of Innisfil
2101 Innisfil Beach Road
Innisfil ON L9S 1A1
www.innisfil.ca

cid:image012.jpg@01D076C5.46E39820

From: Magdalena Koehler
Sent: October-26-17 3:44 PM
To: [redacted]
Cc: Steven Montgomery
Subject: RE: 7th line improvements

Hello [redacted],

I'm copying our Senior Planner who will be able to speak to the land use in detail, as that is not my area of expertise.

Yes, our second Public Open House for the 7th Line improvements will be held in early 2018.

Thanks,
Magda

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: October 26, 2017 11:57 AM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: 7th line improvements

Hello, Ms. Magdalena Koehler,

I was wondering if we could discuss the plans for San Diego 2 future development at southwest corner of 7th line and Webster blvd. I am a resident on [redacted]

What is community commercial/ mixed consist of?

I read you are having an additional public meeting on this project, however I would appreciate any information you can give.

I appreciate your time and would like to thank you!

Kind regards,

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
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Ainley Group

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Please print all responses. Use back of page if necessary.

I spoke with Steve Fournier and he informed me he would make a personal visit to my home [redacted] to discuss the implecation of this project and how it will affect my property with this proposed project of 4 lanes and a sidewalk!

Question: How much land will I loose?
The moving & relocating of my garage?
New entrance, fencing & trees etc. ect.?

How will I be compensated?

Please submit this Comment Sheet by **October 25, 2017** to either:

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Innisfil, ON L9S 1A1
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Name [redacted]

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Telephone # [redacted] E-mail Address [redacted]

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- I WONDER the IMPACT of 4 LANES MERGING INTO 2 AGAIN AT the 7TH AND 20TH?
- ALSO WHERE ARE WE DIRECTING them to?
- WILL there BE IMPROVEMENTS 7TH + YONGE to the 10TH?
- UNTIL WE HAVE 4 LANES ON the 6TH AND A CLOVERLEAF AT the 400 WHAT IMPACT WILL this HAVE?

Please submit this Comment Sheet by **October 25, 2017** to either:

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- MIX of lanes 4 + transition, works only if extended from 20th to Yonge St. for traffic flow
- Need naturalized areas, forested parkland greenspace in this area - possible LEGAND SEARN Space beside Nature TRAIL - Wide Open Space.
- USE LID STORMWATER. - VISIT LSRC site for project improvements in Newmarket - great examples. ST. GARDENS
- Improve Intersection of ST. John's + 7th POOR SIGHT LINE. - important fish habitat stream.

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Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address

Telephone # [redacted] E-mail Address [redacted]

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[redacted]

TO	SEEN
JAM	
~~LSLF~~	

FILE NO. 217024

October 25, 2017

Ms. Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Road
Innisfil, ON L9S 1A1

Dear Ms. Koehler:

RE: 7Th Line Environmental Assessment

We are the owner of the lands located at [redacted] and we write on the behalf of an abutting property owner, [redacted] whose property along with ours forms the [redacted]

Having reviewed the slides presented at the first public meeting, we present our preliminary comments and concerns as follows:

Creek Re-alignment

Should the Bank Creek be re-aligned toward the east of our lands, or flows increased, we would like to ensure that those downstream modifications do not affect the flows and regional floodlines upstream and consequently affecting our developable land. Furthermore, we would oppose any re-alignment of the creek [redacted] given that the [redacted] and any affects moving the creek would have on [redacted]

Road widening

Given that the section of the 7th Line is more established on both sides of the road from Webster Blvd to St. John's Side Road, compared to that of the section between Webster Blvd and the 20th Side Road, we would suggest limiting widening and impacts in this area as much as possible.

We note that our medium density residential blocks are physically constrained by the [redacted] infrastructure (a 750mm Conc storm pipe and 450mm PVC sanitary pipe running though our lands from [redacted].

Therefore, we are highly opposed to any widening that requires a strip of frontage.

To decrease the cross-section, we would recommend that Multi-Use Trail be decreased substantially from the proposed 4.0m but maintain a sufficient separation buffer from the roadway. We'd prefer sidewalk on the north side of the 7th Line from Webster and westwards. The MUT could go on the south side and

converting that small stretch of existing sidewalk (east of Webster Blvd) into MUT. Since the proposal does not include a sidewalk from Webster Blvd. eastwards, the new centerline of the road could be off set to the center line of the Right of Way as another way of reducing the width of the cross section.

We'd also suggest maintaining the two lanes throughout the section between Webster Blvd and St. John's Side Road and maintaining the 50 km/h speed limit. We would like the traffic to be slower and safer with the added benefit of less noise pollution to the existing area.

From the railway track and west, the speed lime could be increased and we would support the 4 lane design in this section.

Storm Pond

Slide 27 shows a proposed SWM pond on [redacted] We would oppose this due to the above mentioned constraints this area has and the impacts on the development that this causes.

Future Services

Slide 26 correctly shows a sanitary sewer that needs to be extended from Quarry Drive to our site. We would like to also like to advise that a future 200 PVC watermain may need to cross the road at the end of our [redacted] (along side the existing sanitary and storm sewers) and tie into the existing 300 watermain to create a loop from the watermain on Webster Blvd, if required.

Future Trail

Slide 23 shows a future proposed trail. Although we are unsure if the trail goes through our lands, either way, we oppose this trail. The Alcona Developers' Group already have a proposed trail that links through the open space block in this draft plan. Furthermore, this trail is shown on what would be the [redacted] This alleyway does not comply with CEPTED principles. Furthermore, this trial is not identified on the Innisfil Trails Mater Plan, November 2016. However, we would be willing to analyze other pedestrian linkages.

We thank you for considering our comments and would be willing to meet to discuss further.

Yours Truly,

[redacted]

cc – S. Fournier, Ainley

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AT LEAST THREE LANES 20 – ST JOHN
- MOVE WATER COURSE ON NORTH-
FIX WATER COURSE ALONG ST JOHN TO LAKE
POSSIBLE PROBLEM PREVENT STORMWATER WITH
EXPANSION

Please submit this Comment Sheet by **October 25, 2017** to either:

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Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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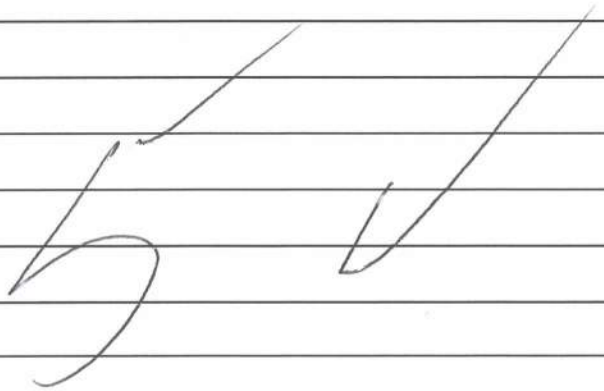

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Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Ainley Group

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Please print all responses. Use back of page if necessary.

My concern is the S/E corner of 7th Line & 20th Sideroad = around the O'Nantys School (old historic bldg/a home.)
– leaving this property by car is dangerous at most times.
– the speed along 20th from 6th Line N. to 7th should be reduced to 60 (and they will still go 70!)
The metal rail along the farm field on the 20th opposite the School, should be along the school property!

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 – Oct 11, 2017
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Alternative 5 looks good. Currently there is a trail between the houses on Vance Crescent and Bank's Creek that many people use to access St. Francis Catholic School. It would be good if the multi-purpose trail connected to the trail to the school (a bridge over the creek?).

* 7th line & St. John's is a busy intersection with only a two-way stop. Turning north onto St. John's is often a blind turn (dangerous!). A 4-way stop would be much safer.

Please submit this Comment Sheet by **October 25, 2017** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
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Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Response Provided

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

December 21, 2017. File No. 217024

"By Email Only"

Att: [redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"Streetlights from Webster Blvd to St. Johns Road."**

   RESPONSE: Street lights will be provided as part of the street urbanization along with storm sewer, curb and gutter and multi-use trail within the section of 7th Line extending from Webster Boulevard to St. John's Road.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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E-mail barrie@ainleygroup.com

December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"4 way stop needed at the intersection of 7th line and St.Johns (cannot see north travelling traffic when making a left turn from 7th line)."**

   RESPONSE: A traffic analysis was completed for this location which determined that neither traffic signals nor auxiliary turn lanes are warranted for this intersection. As part of this project, the sight lines at the intersection of St. John's and 7th Line were reviewed. Following a site visit, it was determined that the limited sight lines can be addressed by cutting back some of the existing vegetation at that intersection within the road allowance. The matter has been referred to the municipality's Public Works Department who will take appropriate action to improve the sight lines at that intersection.

2. **"As long as all studies regarding wildlife, agricultural and historical have been done and adhered to. The preferred seems it will work."**

   RESPONSE: This undertaking is being completed as a Schedule 'C' project in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). This project will follow an approved planning and design process under the Environmental Assessment Act that requires that consideration be given to environmental impacts and that any negative effects are properly mitigated, as necessary. The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments. Please note that a number of studies have been initiated to establish an inventory of the existing conditions within the project study area and to identify any sensitive environmental features that need to be given consideration in the design of the project. The Lake Simcoe Region Conservation

Authority (LSRCA) is also being actively consulted and is providing input into the design of the project and in the development of appropriate mitigation.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

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December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]:

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"I was shocked to see that a residential development would be constructed in what I was told by San Diego Homes as conservation land that would never be built on! Builders should be fined for misleading buyers!!"**

   RESPONSE: The draft plan approved residential development located at the northeast quadrant of the intersection of Webster Boulevard & 7th Line does provide open space on lands abutting Bank's Creek (on the south side of the development) amongst 308 single family units, 46 street townhouses, 50 condo townhouses on the subject lands.

2. **As per telephone call with Jodi Moore (Ainley Group) December 12, 2017 – Could the Grand Sierra Development leave a row of trees abutting the 7th Line?**

   RESPONSE: The design of the 7th Line will attempt to minimize the loss of existing vegetation and a landscaping plan will be developed during the detailed design phase that will provide for the planting of boulevard trees. However, we are also looking at naturalizing Banks Creek where it is directly adjacent to 7th Line. We will be weighing the pros and cons of that naturalization with Lake Simcoe Region Conservation Authority (LSRCA).

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

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December 21, 2017. File No. 217024

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted],

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"Concerned over the loss of privacy on the 7th, behind [redacted]. The cedars create most of the privacy."**

   RESPONSE: As presented at POH 1, Alternative 5 proposing a variation in the number of lanes (i.e. 2, 3 and 4 lanes), is the preliminary preferred solution. At the present time, the tree line providing the screening appears to be outside the limit of disturbance and will remain.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

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December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"Most of the development is West of St.Johns, however, the intersection at the 7th line and St. Johns should be a major concern as it has very poor sightlines, in particular the South-West corner. There will be an increase of traffic at this intersection. Add to this the fact that there are currently no stops on St.Johns between IBR and Ewart St to slow or stop traffic. A traffic light should be considered; or at the least a flashing 4 way stop."**

   RESPONSE: A traffic analysis was completed for this location which determined that neither traffic signals nor auxiliary turn lanes are warranted for this intersection. As part of this project, the sight lines at the intersection of St. John's and 7th Line were reviewed. Following a site visit, it was determined that the limited sight lines can be addressed by cutting back some of the existing vegetation at that intersection within the road allowance. The matter has been referred to the municipality's Public Works Department who will take appropriate action to improve the sight lines at that intersection.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

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December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]
Email: [redacted]

[redacted] **Town of Innisfil 7th Line Improvements**
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"Proper and responsible management of existing water ways and streams within the auspices of the LSRCA and Town EA"**

   RESPONSE: This undertaking is being completed as a Schedule 'C' project in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015). This project will follow an approved planning and design process under the Environmental Assessment Act that requires that consideration be given to environmental impacts and that any negative effects are properly mitigated, as necessary. The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments. Please note that a number of studies have been initiated to establish an inventory of the existing conditions within the project study area and to identify any sensitive environmental features that need to be given consideration in the design of the project. The Lake Simcoe Region Conservation Authority (LSRCA) is also being actively consulted and is providing input into the design of the project and in the development of appropriate mitigation.

2. **"Allocating green space / green belt lands to proposed developments – especially the Grand Sierra development, where both an existing storm water management pond resides and a proposed trail may exist, connecting 7th to Anna Maria and Nantyr High School. Simcoe County has very few Green lands and the opportunity exists there (#6) and other developments to allow/encourage green space and responsible land use."**

RESPONSE: Please note that the focus of this project is the 7th Line corridor and any comments regarding the addition of green space to area developments is outside the scope of this Class EA. For your information, the Grand Sierra residential development approved draft plan does provide open space along Bank's Creek on the south side of the development.

The proposed multi-use trail on the north side of 7th Line will provide an opportunity to link the trail system between the 7th Line and Anna Maria Avenue. A Secondary Trail is proposed within the Grand Sierra residential development and the Town owned lands as per the Town's Trail Master Plan. This trail is outside of the scope of this Class EA and was shown on the Public Open House (POH) material for information purposes only. It will be constructed as part of the development or as a separate capital project. The Active Innisfil Trail Master Plan can be accessed at the following location: https://innisfil.ca/mygovernment/planningforourfuture/ActiveInnisfil

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]
Email: [redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"I wonder the impact of the 4 lanes merging into 2 again at the 7th and 20th? Also where are we directing them to? Will there be improvements, 7th and Yonge to the 10th?"**

   RESPONSE: The transition from the four lane alternative to two lanes as you proceed westward across the intersection of 20th Sideroad and 7th Line would have the curb lane of the westbound traffic on 7th Line turning right onto the 20th Sideroad northbound lane. There will be a single westbound through lane across 20th Sideroad. Eastbound on 20th Sideroad through the intersection is a single through lane and the second eastbound lane is developed from the right turn lane for northbound traffic on the 20th Sideroad to proceed east on 7th Line. Therefore the lane balance is maintained across the intersection east to west. At this time based on additional traffic information received we are focusing more on a two lane road with left turn lane between Webster Boulevard and 20th Sideroad.

2. **"Until we have 4 lanes on the 6th and a Clover leaf at the 400 what impact will this have?"**

   RESPONSE: Our traffic analysis indicates there will be a heavy left turn movement for westbound traffic on 7th Line to turn south onto 20th Sideroad and this movement is provided with a separate left turn lane. The anticipated destination of this heavy

movement is to the 6th Line and the proposed Go Station or westward on 6th Line to Highway 400.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

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December 21, 2017. File No. 217024

"By Email Only"

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"Mix of lanes, 4 and transition, works only if extended from 20th to Yonge St for traffic flow"**

   RESPONSE: The transition from four lanes to two lanes as you proceed westward across the intersection of 20th Sideroad and 7th Line will have the curb lane of the westbound traffic on 7th Line turning right onto the 20th Sideroad northbound lane. There will be a single westbound through lane across 20th Sideroad. Eastbound on 20th Sideroad through the intersection is a single through lane and the second eastbound lane is developed from the right turn lane for northbound traffic on the 20th Sideroad to proceed east on 7th Line. Therefore the lane balance is maintained across the intersection east to west.

2. **"Need naturalized areas, forested parkland green space in this area – possible Grand Sierra space beside Nature Trail – wide open space."**

   RESPONSE: Please note that the focus of this project is the 7th Line corridor and any comments regarding the addition of green space to area developments is outside the scope of this Class EA. For your information, the Grand Sierra residential development approved draft plan does provide open space along Bank's Creek on the south side of the development.

3. **"Use LID stormwater – visit LSCRA site for project improvements in Newmarket – great examples. St. Gardens."**

   RESPONSE: The LSRCA is being actively consulted and is providing input into the design of the project and in the development of appropriate mitigation. LSRCA is also an active member of this project's Technical Advisory Committee. Low Impact Development measures will be implemented where possible.

4. **"Improve intersection of St. Johns and 7th. Poor site line.."**

   RESPONSE: As part of this project, the sight lines at the intersection of St. John's and 7th Line were reviewed. Following a site visit, it was determined that the limited sight lines can be addressed by cutting back some of the existing vegetation at that intersection within the road allowance. The matter has been referred to the municipality's Public Works Department who will take appropriate action to improve the sight lines at that intersection.

5. **"…important fish habitat stream."**

   RESPONSE: As part of this project, a natural heritage review was completed that included a review of fish and fish habitat. The design is attempting to minimize impacts to existing watercourses and mitigation will be developed to reduce the potential to impact fish and fish habitat.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

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December 21, 2017. File No. 217024

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"Should the Bank Creek be re-aligned toward the [redacted] our lands, or flow increased, we would like to ensure that those downstream modifications do not affect the flows and regional flood lines upstream and consequently affecting our [redacted] Furthermore, we would oppose any re-alignment of the creek northerly [redacted] given that the storm water pond exists and any affects moving the creek would have on [redacted]."**

   RESPONSE: A stormwater management report will be prepared and the design of the Bank's Creek channel will endeavor to maintain the status quo for floodlines. We are actively consulting the Lake Simcoe Region Conservation Authority (LSRCA) regarding improvements to Bank's Creek. They have expressed some interest in the naturalization of the channel where there is sufficient room. It is understood that in areas of limited room, such as the area near the existing Sierra Homes stormwater management pond and just east where the Vance Crescent lots back onto the 7th Line, that the opportunity for channel naturalization will be limited.

2. **"Given that the section of the 7th Line is more established on both sides of the road from Webster Boulevard to St.Johns Side Road, compared to the section between Webster Boulevard and 20th Sideroad, we would suggest limiting widening and impacts in this area as much as possible. We note that our [redacted] are physically constrained by the creek and existing infrastructure (a 750mm Conc storm pipe and 450mm PVC sanitary pipe running through our lands from [redacted]). Therefore, we are highly opposed to any widening that requires a strip of frontage. To decrease the cross-section, we would recommend that Muliti-Use Trail be decreased substantially from the**

proposed 4.0m but maintain a sufficient separation buffer from the roadway. We'd prefer sidewalk on the north side of the 7th Line from Webster and westward. The MUT could go on the south side and converting that small stretch of existing sidewalk (east of Webster Blvd) into MUT. Since the proposal does not include a sidewalk from Webster Blvd. Eastwards, the new centerline of the road could be offset to the centre lime of the right of way as another way of reducing the width of the cross section. We'd also suggest maintaining the two lanes throughout the section between Webster Blvd and St.Johns road and maintaining the 50 km/h speed limit. We would like the traffic to be slower and safer with the added benefit of less noise pollution in the existing area. From the railway track and west, the speed limit could be increased and we would support the 4 lane design in this section."

RESPONSE: Our current design strategy for the portion between the 7th Line from Webster Boulevard to St. Johns Road, on the south side of the road, requires little or no additional right-of-way. We have shifted the centerline within the right of way to minimize impacts on the north and south side of the road. On the north side of the road the addition of the multi-use trail will require extension of the right-of-way limit into the Town owned parkland area. At this time it does not appear that we will be extending into developable areas of the Grand Sierra property. The current design strategy proposes a two lane road from Webster Boulevard to St. Johns Road with a left turn lane at the approach to Webster Boulevard and a multi-use trail on the north side. A sidewalk is also proposed on the south side that extends to the Previn Court pedestrian entrance (approximately 150 metres east of Webster Boulevard). At this time it appears that we do not need additional property from the planned development in the northeast quadrant of the Webster Boulevard and 7th Line intersection. Regarding speed limits, at this time we are proposing a speed limit of 60 km/h from the 20th Sideroad to the Metrolinx crossing and a 50 km/h posted speed limit east of the railway crossing to the lake.

3. **"Slide 27 shows a proposed SWM pond on [redacted]. We would oppose this due to the above mentioned constraints this area has and the impacts on the development that this causes."**

   RESPONSE: Please note that the locations as presented at the Public Open House are preliminary. We will give your comments consideration as we proceed through this process and continue with the preliminary design of the stormwater requirements.

4. **"Slide 26 correctly shows a sanitary sewer that needs to be extended from Quarry Drive to our site. We would like to also like to advise that a future 200 PVC watermain may need to cross the road at the end of our [redacted] (alongside the existing sanitary and storm sewers) and tie into the existing 300 watermain to create a loop from the watermain on Webster blvd, if required."**

   RESPONSE: We acknowledge your comment regarding the watermain. We will request that InnServices runs its water distribution model to determine if a looped system is required between Webster Boulevard and the 7th Line, along your proposed cul-de-sac.

5. **Slide 23 shows a future proposed trail. Although we are unsure if the trail goes through our lands, either way, we oppose this trail. The Alcona Developers' Group already have a proposed trail that links through the open space block in this draft plan. Furthermore, this trail is shown on what would be the rear yard of future houses. This alleyway does not comply with CEPTED principles. Furthermore, this trail is not identified on the Innisfil Trails Master Plan, Novemeber 2016. However, we would be willing to analyze other pedestrian linkages."**

   RESPONSE: The proposed multi-use trail along the north side of the 7th Line provides an opportunity for improved connectivity with Anna Maria Avenue. The routing of the north / south link is not part of this Class EA. The diagram as shown at the Public Open House was schematic and meant to show a possible future connection.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]
Email: [redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concerns/comments below and provide an associated municipal response:

1. **"At least three lanes 20 – St. John".**

   RESPONSE: Based on existing and future traffic capacity requirements, the design team has confirmed that three lanes is necessary for only a portion of the corridor extending from the 20th Sideroad to just east of Webster Boulevard. For the remainder of the study area a two lane cross-section will satisfactorily accommodate future traffic volumes. Extending three lanes for the full length of the corridor is unnecessary and would require additional property acquisition at certain locations which will have an increased potential for impact.

2. **"Move water course on North. Fix water course along St. John to Lake"**

   RESPONSE: This project is reviewing the watercourse from approximately west of Quarry Road to St. John's Road. At the present time the location immediately abuts the roadway and this project is giving consideration to shifting the watercourse north in this general area to increase the separation distance between the watercourse and the roadway which will be an improvement over existing conditions. The Lake Simcoe Region Conservation Authority (LSRCA) is providing input into the design of this project including any improvements to the watercourse. The segment of the watercourse east of St. Johns Road to the lake is outside the limits of the current project.

3. **"Possible problem Previn storm water with expansion."**

   RESPONSE: Issues related to the Previn Court Subdivision are outside the scope of this Class EA; however, the design of the next phase of the Previn Court subdivision will take into account any necessary stormwater requirements.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

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December 21, 2017. File No. 217024

[redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"My concern is the S/E corner of 7th Line and 20th Sideroad around the Nantyr School (old historic building / a home!). Leaving this property by car is dangerous at most times."**

   RESPONSE: At this time, the alternatives being investigated along the school's frontage on 7th Line may leave the existing driveway unaffected.

2. **"The speed along 20th, from 6th line north to 7th should be reduced to 60 (and they will still go 70!)."**

   RESPONSE: Speed limits along 7th Line from the 20th Side Road heading east to the railway corridor will be 60 km/hr. From the railway corridor east to St.Johns Road the speed limit will be 50 km/hr.

3. **The metal rail line (guiderail) along the farm field on the 20th, opposite the school, should be along the school property!"**

   RESPONSE: The preliminary analysis indicates that a right-turn lane is required on the 20th Sideroad which may require extension of the guiderail northwards across the frontage of the property at 1497 7th Line (i.e. Nantyr School).

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

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December 21, 2017. File No. 217024

"By Email and Mail"

[redacted]
Email: [redacted]

Re: Town of Innisfil 7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 1 Response to Comments Received

Dear [redacted]

We thank you for your interest in the 7th Line improvements Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Innisfil and for submitting a comment. For ease of discussion, we have highlighted your main concern/comment below and provide an associated municipal response:

1. **"Alternative 5 looks good. Currently there is a trail between the houses on Vance Crescent and Bank's Creek that many people use to access St. Francis Catholic School. It would be good if the multi-use trail connected to the trail to the school (a bridge over the creek?)"**

   RESPONSE: The proposed multi-use trail along the north side of the 7th Line provides an opportunity for improved connectivity with Anna Maria Avenue. The routing of the north / south link is not part of this Class EA. A Secondary Trail is proposed within the Grand Sierra residential development and the Town owned lands as per the Town's Trail Master Plan. This trail is outside of the scope of this Class EA and was shown on the Public Open House (POH) material for information purposes only. It will be constructed as part of the development or as a separate capital project. The Active Innisfil Trail Master Plan can be accessed at the following location:
   https://innisfil.ca/mygovernment/planningforourfuture/ActiveInnisfil

2. **"7th Line and St. Johns is a busy intersection with only a 2 way stop. Turning north onto St. Johns is often a blind turn (dangerous!). A 4 way stop would be much safer."**

   RESPONSE: A traffic analysis was completed for this location which determined that neither traffic signals nor auxiliary turn lanes are warranted for this intersection. As part of this project, the sight lines at the intersection of St. John's and 7th Line were reviewed. Following a site visit, it was determined that the limited sight lines can be addressed by cutting back some of the existing vegetation at that intersection within the road allowance. The matter has been referred to the municipality's Public Works

Department who will take appropriate action to improve the sight lines at that intersection.

Please note that a second Public Open House is planned for this project that will provide additional opportunity for comment. As soon as the date for the second public meeting has been confirmed, you will be notified.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Ms. Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca.

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Public Open House No. 1
Presentation Material

TOWN OF INNISFIL
7TH Line Improvements
Municipal Class Environmental Assessment
Schedule 'C'
PUBLIC OPEN HOUSE NO. 1

Innisfil

Date: Wednesday, October 11, 2017

Time: 4:00 p.m. to 7:00 p.m.

Location: Town Hall Community Rooms
2101 Innisfil Beach Road
Innisfil, ON

Ainley GROUP
CONSULTING ENGINEERS & PLANNERS

WELCOME

Your Input is Appreciated!

- Please review the display material and feel free to discuss the project with members of the study team in attendance.
- All POH material will be available for download from the Town's website at www.innisfil.ca/7thea on October 11, 2017.
- We invite you to provide any comments, in writing, on the Comment Sheet provided.

PLEASE SIGN IN

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT

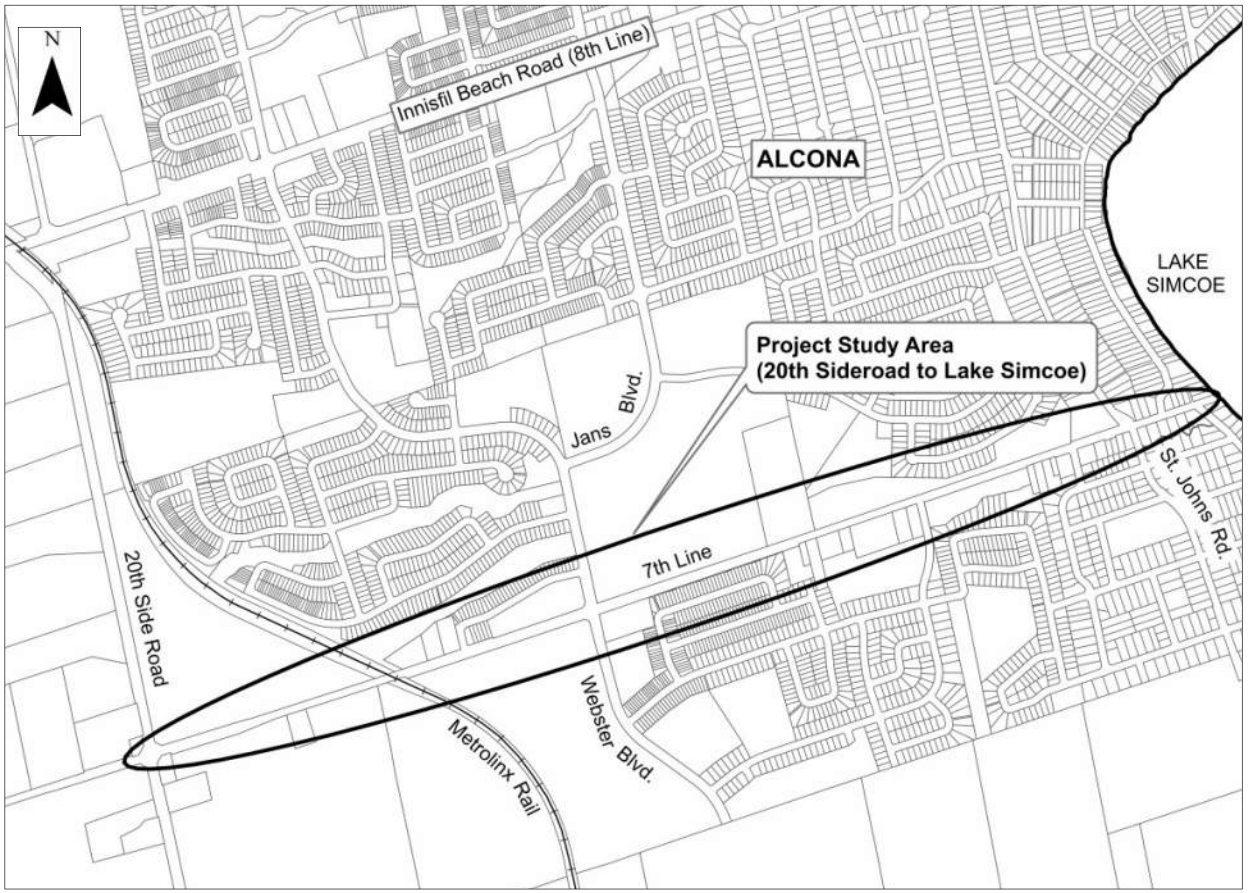
Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

INTRODUCTION

This public meeting will present the following information:

- Project Background
- Project Study Area
- The Municipal Class Environmental Assessment Process
- Problem / Opportunity
- Alternative solutions under consideration
- Evaluation of Alternatives
- Next Step in process

PROJECT STUDY AREA



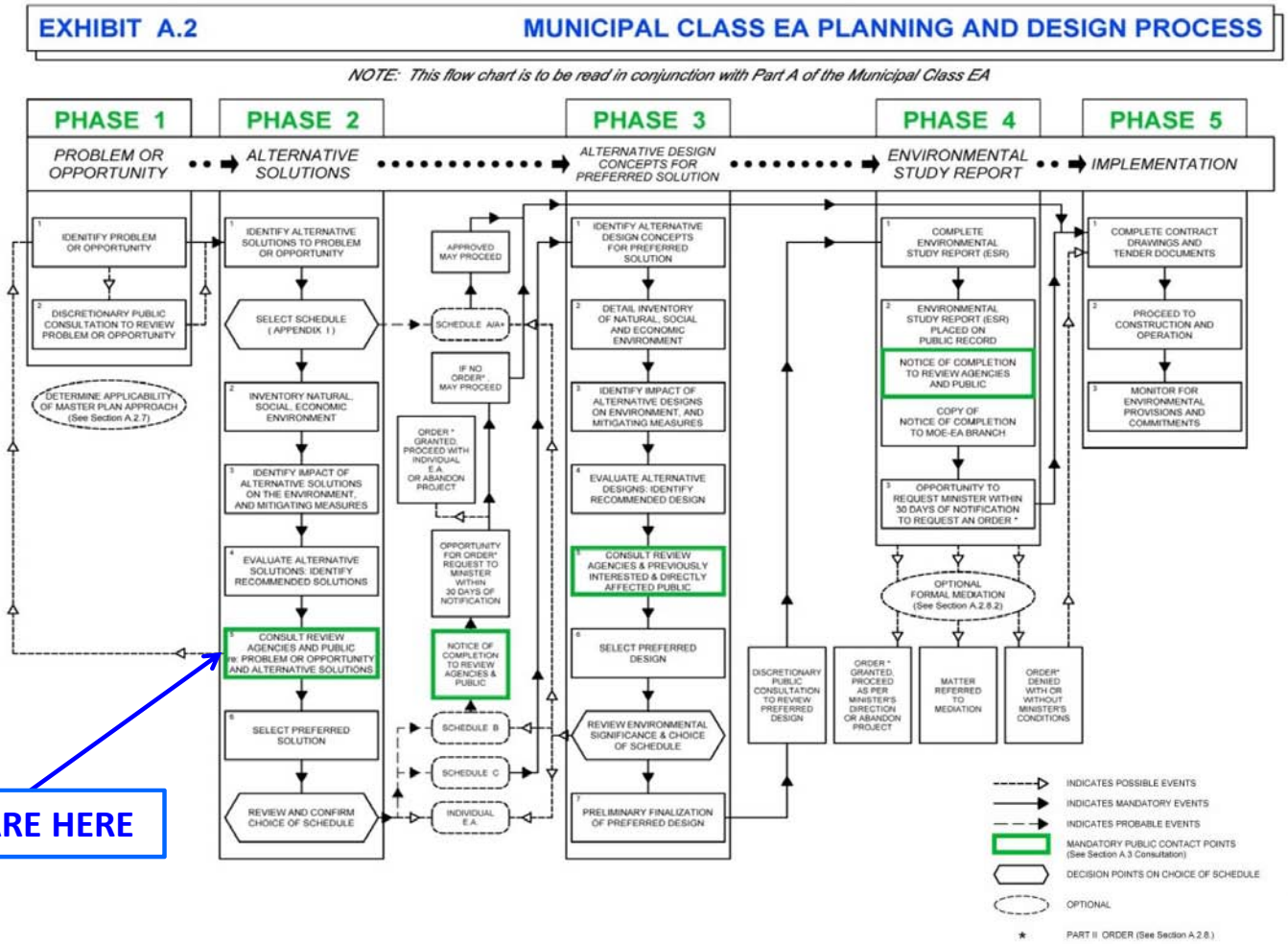
The study area includes the 7th Line, extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km.

MUNICIPAL CLASS EA PROCESS

- A Municipality is required to conduct a Municipal Class Environmental Assessment (Class EA) before this type of infrastructure improvement project can be undertaken.
- A Class EA follows an approved process designed to protect the environment (physical, natural, social and economic) and to ensure compliance with the Ontario Environmental Assessment Act.
- The purpose of the Ontario Environmental Assessment Act (EA Act) is to provide for *"…the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment."* The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments.
- The process requires the evaluation of potential solutions and design concepts so as to select a suitable approach that will address the problem/opportunity, but also keep impacts to a minimum.

MUNICIPAL CLASS EA PROCESS

- Based on the scope of work proposed this project is classified as a Schedule 'C' in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).
- A Schedule 'C' project requires completion of Phases 1 to 5.
- We are currently in Phase 2 of the process.



WE ARE HERE

BACKGROUND INFORMATION

- The Province of Ontario, through its *Growth Plan for the Greater Golden Horseshoe* (2017), has allocated a population of 56,000 for the Town of Innisfil by the year 2031. The existing population is approximately 37,000.
- Alcona is designated as a Primary Settlement Area in the aforementioned Growth Plan and a large portion of the forecasted population for the municipality will be directed to this community.
- The Town of Innisfil is currently updating both its Official Plan (2009) and Transportation Master Plan (2013) to accommodate the growth anticipated for the municipality.
- Ongoing growth in Alcona has led to increased vehicular traffic as well as increased demand from pedestrians and cyclists.
- The Transportation Master Plan indicates that the subject segment of the 7th Line is to be reconstructed as a major collector road with a right-of-way width of 26 metres.

FUTURE DEVELOPMENT

There are a number of developments planned within the area of the project as illustrated in the figure below:

Area No.	Description	No. of Units
1	Alcona South Secondary Plan Expansion Lands	912
2	San Diego 2 Phase 3	466
3	DIAM Fox Hill Condo	22
4	DIAM Fox Hill Condo	40
5	DIAM Fox Hill Condo	78
6	Grand Sierra	404

PROBLEM / OPPORTUNITY

Problem

- The Town of Innisfil has initiated this Municipal Class Environmental Assessment (Class EA) to accommodate future growth in the Alcona area and to address traffic capacity and operational deficiencies affecting the subject corridor.

Opportunities

- Addressing the problem also provides an opportunity to:
  - ✓ Provide for active transportation (i.e. walking, cycling etc.) and improve safety;
  - ✓ Address pavement structure deficiencies;
  - ✓ Address drainage and stormwater management concerns; and
  - ✓ Accommodate long term municipal servicing requirements.

EXISTING CORRIDOR

- **Current Road Conditions:** The existing pavement structure is in poor condition. Alligator cracking, longitudinal and transverse cracking, edge cracking and pavement edge cracking are severe in some locations. Ride quality is considered to be fair to poor.
- **Road Cross-section**: The existing corridor provides two travel lanes that range in width from 3.5 m to 3.75 m and 2.5 m wide gravel shoulders.
- **Active Transportation**: There are no existing sidewalks or bicycle lanes on either side of the corridor for the full extent of the study area.
- **Speed Limit:** The existing speed limit from the 20th Sideroad to the railway corridor is 80 km/hr. The speed limit reduces to 50 km/hr from the railway corridor east to Lake Simcoe.

Existing Pavement Structure Deterioration

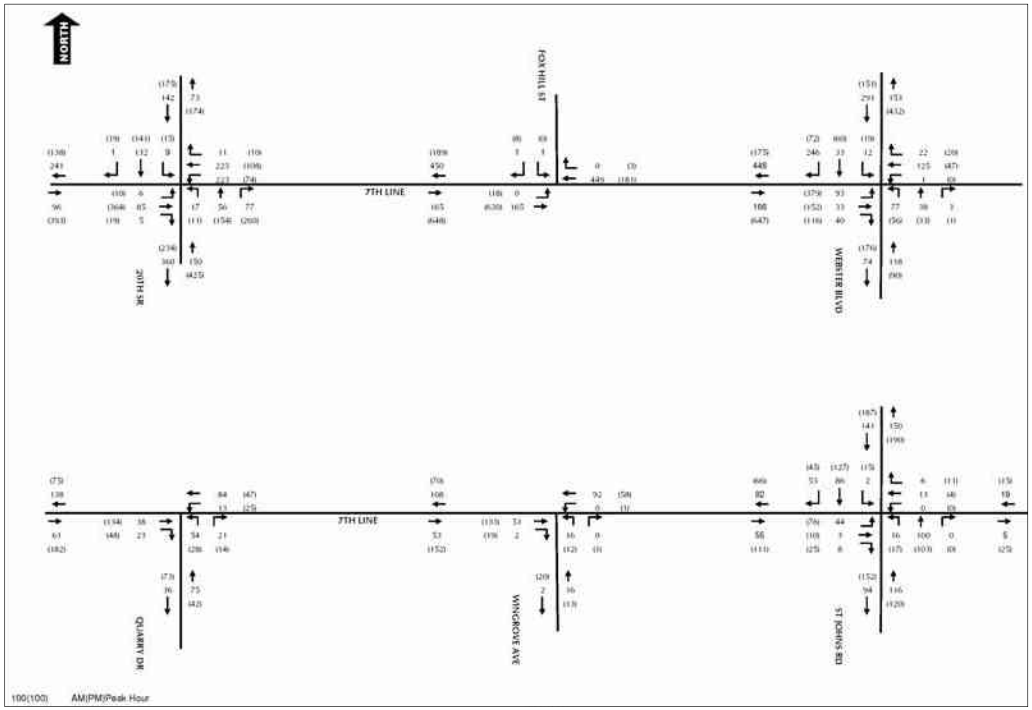
Existing 7th Line Corridor with Gravel Shoulders and No Sidewalks

- **Intersection Control:** Signal controlled Intersections are located at the 20th Sideroad and Webster Boulevard. All remaining intersections are stop controlled.
- **Railway Crossing:** There is an existing Metrolinx rail corridor that crosses the 7th Line within the project study area approximately 650 m east of the 20th Sideroad. Metrolinx has initiated a Transit Project Assessment Process in accordance with the Environmental Assessment Act to undertake improvements to the corridor from Toronto to Barrie that include the addition of a second track and electrification.

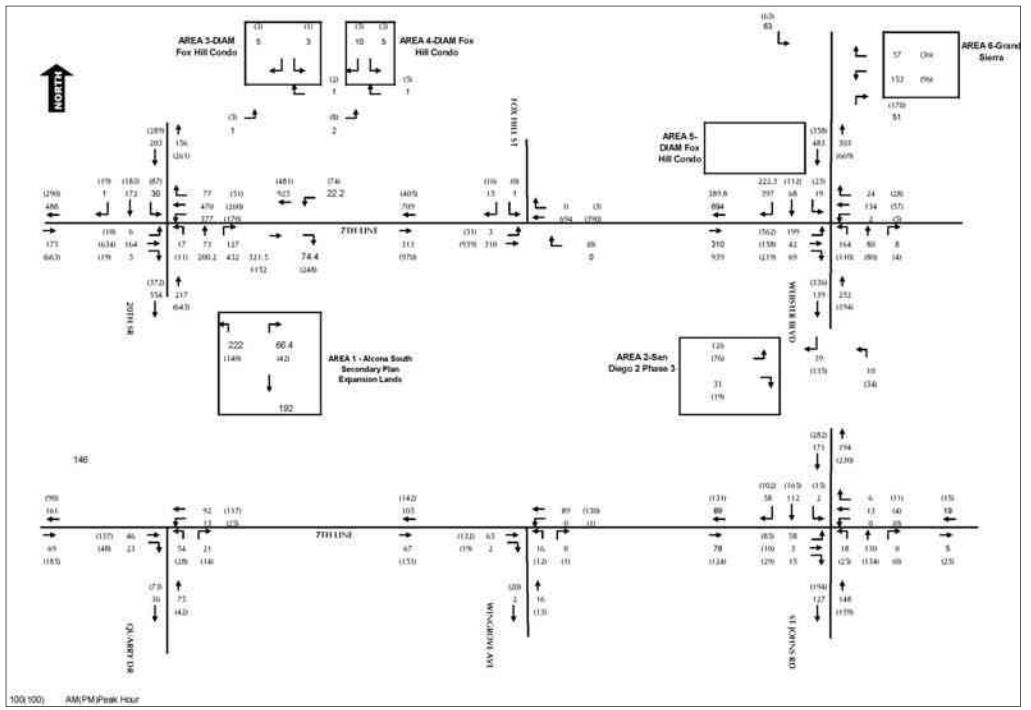
Existing Metrolinx Railway Corridor East of 20th Sideroad

TRAFFIC PROJECTIONS

Existing 2017 Traffic Volumes



Projected Traffic Volumes



INTERSECTION OPERATIONS

2017 Intersection Operations (Existing)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
7th Line & 20th Sideroad	all	signal	13.2	B		23.4	C	
	EBL		13.4	B	0.02	12.4	B	0.02
	EBT-R		14.2	B	0.17	18.0	B	0.64
	WBL		10.3	B	0.36	11.1	B	0.21
	WBT-R		9.4	A	0.28	9.0	A	0.15
	NBL		18.3	B	0.04	17.4	B	0.03
	NBT-R		18.4	B	0.31	37.4	D	0.87
	SBL		18.6	B	0.03	27.4	C	0.09
	SBT-R		17.7	B	0.27	16.9	B	0.31
7th Line & Fox Hill St	EBL	free	0	A	-	7.6	A	0.01
	SB	stop	11.6	B	0.00	9.3	A	0.01
7th Line & Webster Blvd	all	signal	12.2	B		13.7	B	
	EB		8.5	A	0.25	13.0	B	0.77
	WB		8.3	A	0.19	5.2	A	0.07
	NBL		18.6	B	0.27	20.0	C	0.20
	NBT-R		11.3	B	0.08	16.1	B	0.10
	SBL		11.6	B	0.02	16.6	B	0.05
	SBT-R		14.8	B	0.62	17.9	B	0.41
7th Line & Quarry Dr.	NB	stop	9.6	A	0.10	10.1	B	0.06
	WBL	free	7.4	A	0.01	7.6	A	0.02
7th Line & Wingrove Ave.	NB	stop	9.4	A	0.02	9.7	A	0.02
	WBL	free	0	A	-	7.5	A	0.00
7th Line & St Johns Road	NBL	free	7.7	A	0.01	7.8	A	0.01
	EB	stop	11.1	B	0.09	12.3	B	0.20
	WB		10.6	B	0.03	9.7	A	0.02
	SBL	free	7.4	A	0.00	7.5	A	0.01

Projected Traffic Intersection Operations (Existing) Configuration

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
7th Line & 20th Sideroad	all	signal	14.1	B		66.6	E	
	EBL		6.8	A	0.02	11.0	B	0.02
	EBT-R		7.6	A	0.19	28.9	C	0.87
	WBL		14.3	B	0.70	186.6	F	1.28
	WBT-R		11.5	B	0.63	13.8	B	0.42
	NBL		17.2	B	0.06	14.5	B	0.03
	NBT-R		20.5	C	0.51	110.9	F	1.15
	SBL		17.5	B	0.11	93.5	F	0.94
	SBT-R		19.5	B	0.42	16.8	B	0.35
7th Line & Fox Hill St	EBL	free	9.1	A	0.01	8.2	A	0.03
	SB	stop	14.1	B	0.04	12.0	B	0.03
7th Line & Webster Blvd	all	signal	24.9	C		162.7	F	
	EB		26	C	0.82	214.2	F	1.45
	WB		10.7	B	0.28	5.7	A	0.10
	NBL		28.8	C	0.77	114.5	F	1.02
	NBT-R		22	C	0.15	21	C	0.25
	SBL		9.6	A	0.05	20.1	C	0.09
	SBT-R		30.1	C	0.89	92.9	F	1.07
7th Line & Quarry Dr.	NB	stop	9.6	A	0.10	10.1	B	0.06
	WBL	free	7.4	A	0.01	7.6	A	0.02
7th Line & Wingrove Ave.	NB	stop	9.4	A	0.02	9.7	A	0.02
	WBL	free	0	A	-	7.5	A	0.00
7th Line & St Johns Road	NBL	free	7.7	A	0.01	7.8	A	0.01
	EB	stop	11.1	B	0.09	12.3	B	0.20
	WB		10.6	B	0.03	9.7	A	0.02
	SBL	free	7.4	A	0.00	7.5	A	0.01

Projected Traffic Intersection Operations with Improvements

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
7th Line & 20th Sideroad	all	signal	11.9	B		24.5	C	
	EBL		6.4	A	0.02	12.3	B	0.02
	EBT-R		7.2	A	0.19	31.4	C	0.88
	WBL		13.4	B	0.69	14.3	B	0.56
	WBT-R		10.8	B	0.62	6.9	A	0.30
	NBL		17.4	B	0.06	25.9	C	0.06
	NBT-R		18.1	B	0.18	31.9	C	0.60
	NBR		0.01	A	0.09	22.2	C	0.65
	SBL		17.7	B	0.10	30.3	C	0.48
	SBT-R		19.9	B	0.44	32.5	C	0.61
7th Line & Fox Hill St	EBL	free	9.1	A	0.01	8.2	A	0.03
	SB	stop	14.1	B	0.04	11.9	B	0.03
7th Line & Webster Blvd	all	signal	11.0	B		13.6	B	
	EB-L		12.4	B	0.49	10.3	B	0.71
	EBT-R		10.3	B	0.20	6.5	A	0.40
	WBL		9.4	A	0.01	14.8	B	0.02
	WBT-R		10.5	B	0.24	15.5	B	0.13
	NBL		10.4	B	0.38	27.9	C	0.51
	NBT-R		10.1	B	0.11	25.2	C	0.28
	SBL		9.6	A	0.05	24.0	C	0.10
	SBT		9.9	A	0.12	25.9	C	0.37
	SBR		0.1	A	0.24	0.10	A	0.16
7th Line & Quarry Dr.	NB	stop	9.6	A	0.10	10.1	B	0.06
	WBL	free	7.4	A	0.01	7.6	A	0.02
7th Line & Wingrove Ave.	NB	stop	9.4	A	0.02	9.7	A	0.02
	WBL	free	0	A	-	7.5	A	0.00
7th Line & St Johns Road	NBL	free	7.7	A	0.01	7.8	A	0.01
	EB	stop	11.1	B	0.09	12.3	B	0.20
	WB		10.6	B	0.03	9.7	A	0.02
	SBL	free	7.4	A	0.00	7.5	A	0.01

NOTE:
LOS – Level of Service
S – Seconds
v/c – volume to capacity

Level of Service 'A': Free flow of traffic
Level of Service 'B': Reasonably free flow of traffic
Level of Service 'C': Stable flow, at or near free flow of traffic
Level of Service 'D': Approaching unstable flow of traffic
Level of Service 'E': Unstable flow of traffic, operating at capacity
Level of Service 'F': Traffic flow breakdown

BACKGROUND STUDIES

- A number of studies have been initiated as part of this Municipal Class EA to inventory the existing project study area and to identify any sensitive environmental features and / or areas of constraint. These studies include the following:
  - ✓ Stage 1 Archaeological Assessment
  - ✓ Built Heritage and Cultural Heritage Landscape Assessment
  - ✓ Natural Heritage Review
  - ✓ Geotechnical Investigation
  - ✓ Hydrogeological Investigation
- The exhibits that follow present additional details regarding the preliminary results of the above noted investigations.

EXISTING NATURAL ENVIRONMENT

Aquatic/Fisheries (Including Species at Risk)

- Bank's Creek is a coldwater watercourse that provides direct fish habitat. Background information indicates that a number of species are present, including Brook Trout. Consultation with the Ministry of Natural Resources and Forestry is currently underway to confirm the species present.
- The watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area.
- Any work with the potential to impact this watercourse will likely require a review by the Department of Fisheries and Oceans (DFO)

Wildlife (Including Species at Risk)

- Woodland areas adjacent the corridor may be considered habitat for endangered bat species and significant bat maternity roosting habitat. If habitat potential is confirmed then mitigation and compensation may be required in accordance with the Endangered Species Act.
- No areas adjacent the corridor function as significant amphibian breeding habitat.
- No SAR birds were observed during breeding bird surveys and there is limited potential to impact SAR birds.

Vegetation (Including Species at Risk)

- One Butternut Tree (Endangered) was observed east of the 20th Sideroad on the north side of 7th Line. Any work within the 50 m buffer area has the potential to impact this species. A Butternut Tree Health Assessment will be a required during detailed design as well as consultation with the MNRF to confirm the need for a permit under the Endangered Species Act.
- Tree removal associated with this project may be subject to the policies of the LSRCA Ecological Offsetting Plan (May 2017) and may require compensation.

Groundwater

- The study area is not located within a wellhead protection area. The nearest wellhead protection area is more than 600m north of the study area.
- There are a 24 wells located within the estimated zone of influence of construction dewatering.

Designated Areas

- A large portion of the project study area is within the Lake Simcoe Region Conservation Authority Regulation Area.
- This project is not within the Greenbelt Area, the Oak Ridges Moraine Area or the Niagara Escarpment Plan Area.

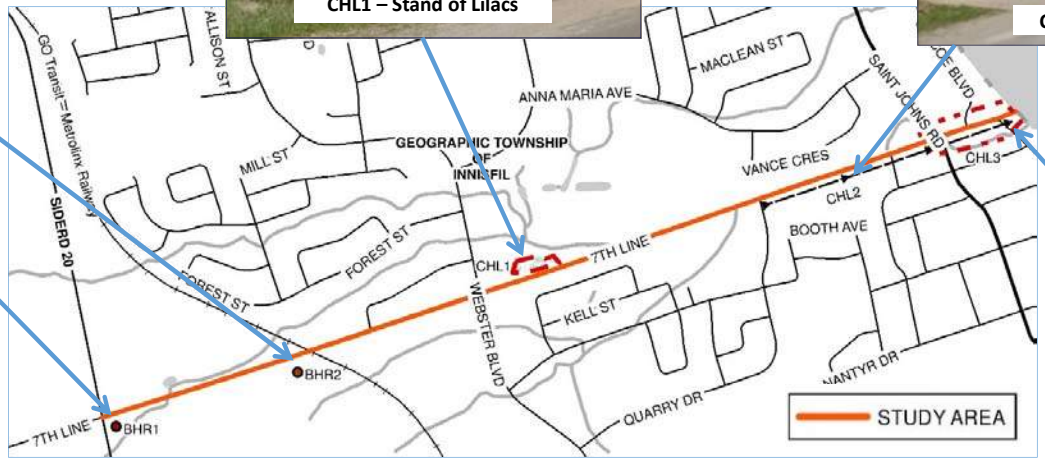
EXISTING CULTURAL ENVIRONMENT


BHR2- 1363 7th line


CHL1 – Stand of Lilacs


CHL3 – Cottage Community


BHR1 - 1497 7th Line




CHL2 – View to Lake Simcoe

BUILT HERITAGE AND CULTURAL HERITAGE LANDSCAPES			
Site	Location	Resource Potential	Mitigation/Recommendations
Built Heritage			
BHR1	1497 7th Line Former Nantyr School	High	This site is not formally designated under the Ontario Heritage Act, but it is included on the Town's Heritage Registry. A Cultural Heritage Impact Assessment is recommended for this site.
BHR2	1363 7th Line Farmstead with Barn	Low	Landscaping should be untaken to offset the loss of any mature vegetation to be impacted by construction.
Cultural Heritage Landscapes			
CHL1	Stand of Lilacs	Low	Efforts should be made to conserve this landscape feature when implementing road widening and include plantings of lilacs and other typical roadside vegetation.
CHL2	View to Lake Simcoe	Low	Efforts should be made to conserve this unobstructed view when implementing road widening.
CHL3	Cottage Community	Low	Efforts should be made to conserve this landscape and its contributing elements when implementing intersection improvements.

ARCHAEOLOGICAL
• A Stage 1 Archaeological assessment has been completed for the project study area. This assessment determined that parts of the study area exhibit archaeological potential and other areas do not on account of deep and extensive land disturbance or low and wet conditions.
• A Stage 2 assessment is recommended for localized areas. This will be initiated when the maximum footprint of the alternative solutions is defined.

EXISTING SOCIO-ECONOMIC ENVIRONMENT

Land Use:

- The 7th Line is one of three major access corridors into Alcona from Yonge Street.
- Land use within the study area is primarily residential. A number of larger residential lots front directly onto the corridor and several existing large subdivisions are located to the north and south of Line 7. There is one commercial development located in the southeast quadrant of the intersection of 7th Line and Webster Boulevard.
- Lands west of the railway corridor to the 20th Sideroad are within the Alcona South Secondary Plan area. While these lands are currently used for agricultural purposes, they form part of the Alcona Expansion Area and will eventually be developed.
- Lands east of the railway corridor to Lake Simcoe are within the limits of the Alcona Settlement Area.
- There are several schools in the area; however, none that front directly onto the 7th Line. There are no hospitals or emergency service facilities in proximity to the project.

Recreational Facilities:

- There is one municipal park (i.e. Anna Maria Park) located on the north side of the 7th Line east of St. John's Road.
- There are no existing sidewalks or trails on the 7th Line, but the municipality, through the new Active Transportation Plan is planning to provide for cyclists and pedestrians through the addition of new trails and improved connectivity with existing trails.

Tourism:

- At the eastern limits of the study area there is a public access to Simcoe Beach of Lake Simcoe.

PHASE 2 ALTERNATIVE SOLUTIONS

During Phase 2 of the Class EA process, alternative solutions are developed to address the identified deficiencies. The following are the alternative solutions under consideration for this project:

ALTERNATIVE 1 - "Do Nothing"

- This option proposes no changes or modifications to existing infrastructure within the study area.

ALTERNATVE 2 – Two lanes

- Reconstruct 7th Line to a two lane **urban cross-section* with two 4.25 m wide travel lanes for the entire project length.

ALTERNATVE 3 – Three Lanes

- Reconstruct 7th Line to a two lane urban cross-section with two 3.75 m wide travel lanes and one 4.0 m wide continuous centre turn lane for the entire project length.

ALTERNATVE 4 – Four lanes

- Reconstruct 7th line to a four lane urban cross-section with four 3.75 m wide travel lanes and a 4.0 m wide left turn lane, where required.

ALTERNATIVE 5 – A Combination of the Above

- Some combination of Alternatives 2 through 4.

NOTE:

Alternatives 2 to 5 also propose:

- Intersection and servicing improvements (i.e. water, sanitary and storm sewer)
- Provisions for Active Transportation (i.e. pedestrians & cyclists)

Urban Cross-section: To urbanize a road means to replace the existing ditch system with curb and gutter and storm sewer similar to that competed for Innisfil Beach Road east of the 25th Sideroad, as illustrated in the adjacent photo.

Innisfil Beach Road East of 25th Sideroad

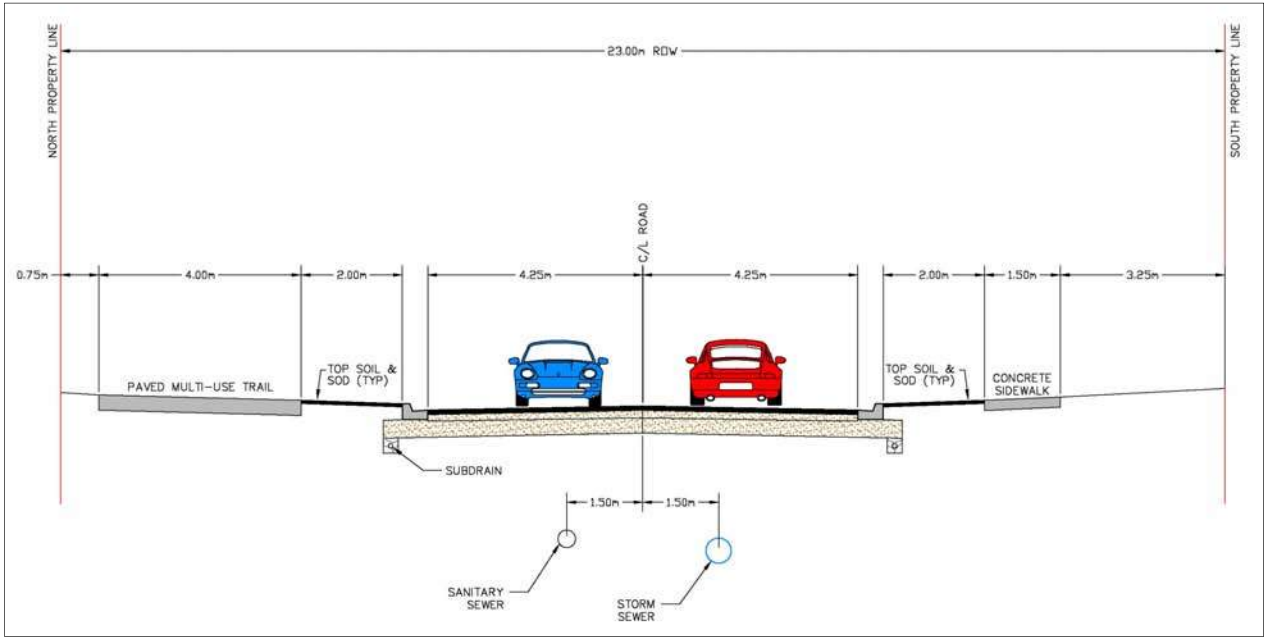
ALTERNATIVE 1 – DO NOTHING

7TH Line Looking West Towards Webster Blvd.

7TH Line Looking Towards Railway Crossing

- The 'Do Nothing' alternative proposes no changes or modifications. The existing corridor would function 'as is' with no improvements.
- The 'Do Nothing' alternative is used as a benchmark to gauge the potential for environmental impact.

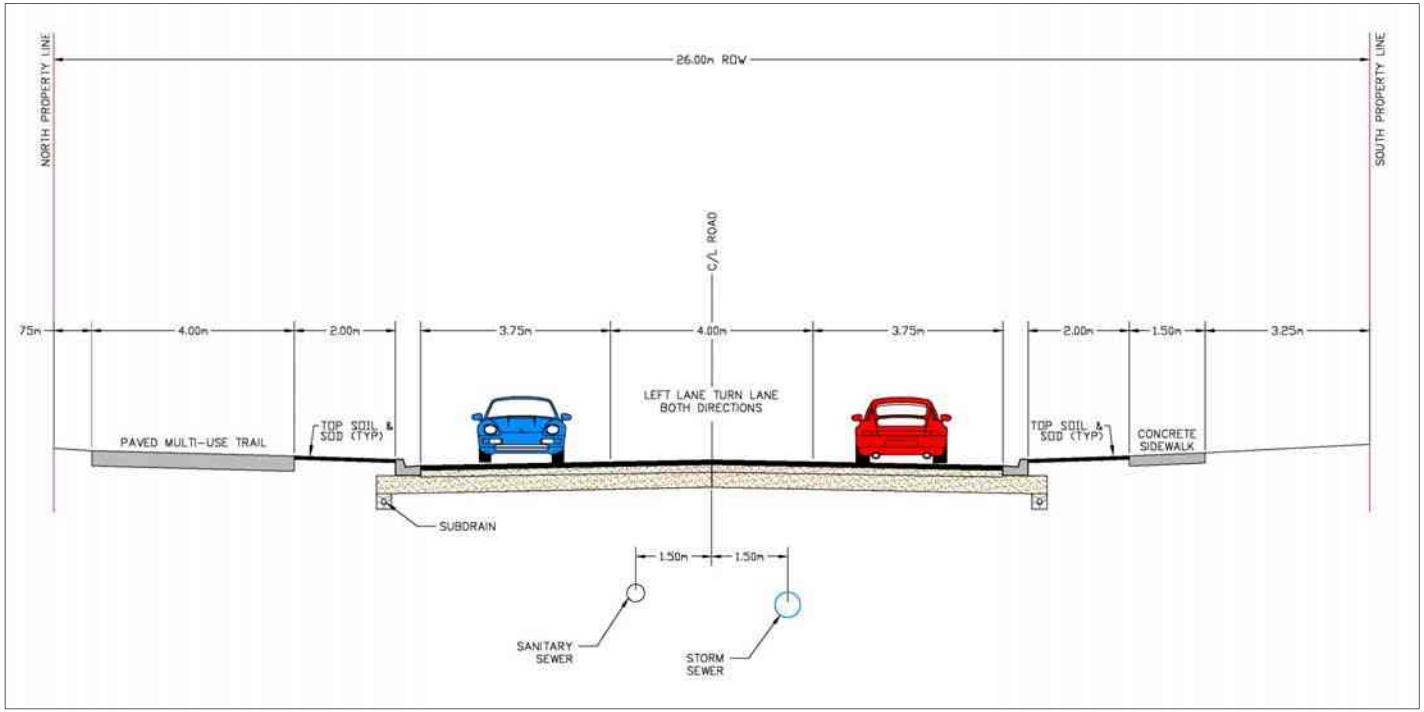
ALTERNATIVE 2 – TWO LANES



Reconstruct 7th Line to an urban cross-section providing:

- Two 4.25 m wide travel lanes
- 4.0 m wide paved multi-use trail on north side of corridor from 20th Sideroad to St. John's Road.
- 1.5 m sidewalk on south side of corridor from 20th Sideroad to just east of Webster Boulevard.
- Servicing Improvements
- Intersection Improvements

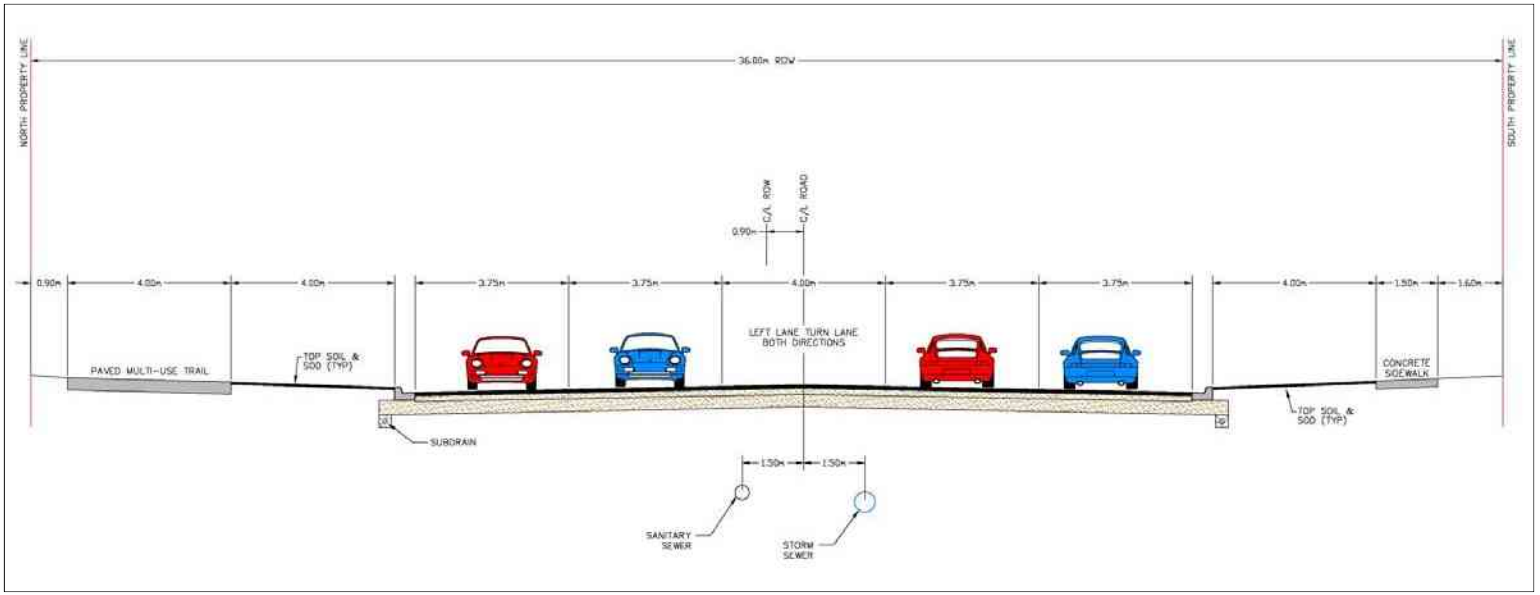
ALTERNATIVE 3 – THREE LANES



Reconstruct 7th Line to an urban cross-section providing:

- Two 3.75 m wide travel lanes and one 4.0 m continuous centre turn lane
- 4.0 m wide paved multi-use trail on north side of corridor from 20th Sideroad to St. John's Road.
- 1.5 m sidewalk on south side of corridor from 20th Sideroad to just east of Webster Boulevard.
- Servicing Improvements
- Intersection Improvements

ALTERNATIVE 4 – FOUR LANES



Reconstruct 7th Line to an urban cross-section providing:

- Four 3.75 m wide travel lanes and one 4.0 m continuous centre turn lane
- 4.0 m wide paved multi-use trail on north side of corridor from 20th Sideroad to St. John's Road.
- 1.5 m sidewalk on south side of corridor from 20th Sideroad to just east of Webster Boulevard.
- Sanitary and storm sewer
- Intersection improvements

ALTERNATIVE 5 – COMBINATION

This option proposes a combination of Alternatives 2 to 4. Based on capacity requirements two, three and four lanes are proposed for certain segments of the corridor.

Two 4.25 m wide travel lanes.

Two 3.75 m wide travel lanes and a 3.5 m wide left turn lane

Four 3.75 m wide travel lanes from the 20th Sideroad to Webster Boulevard and one 4.0 m centre turn lane, where required.

Also includes….

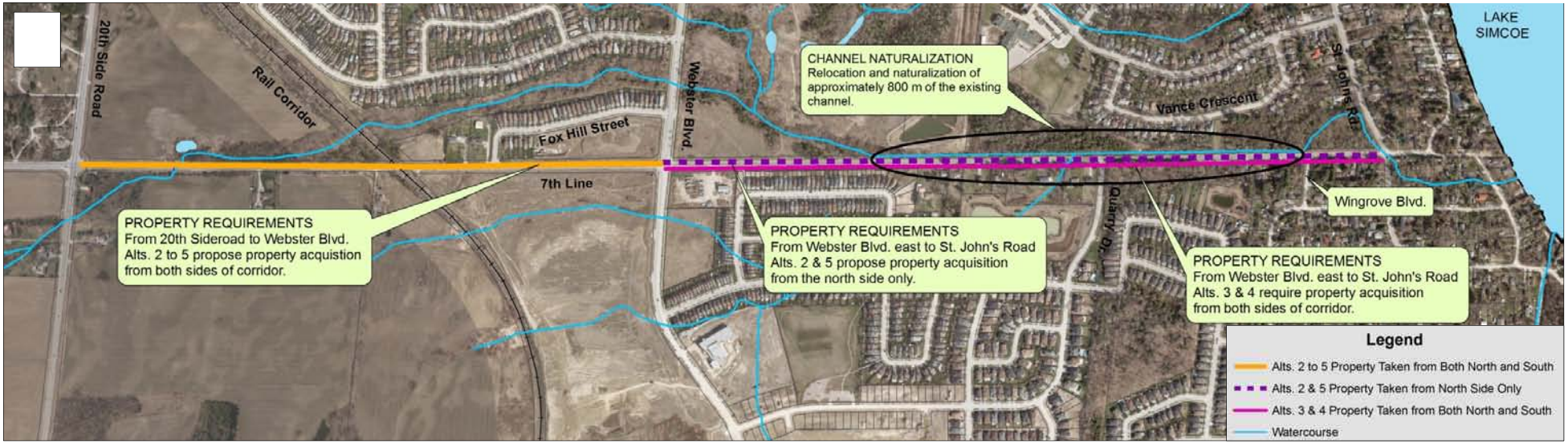
- A 4.0 m wide paved multi-use trail on north side of corridor from 20th Sideroad to St. John's Road.
- A 1.5 m sidewalk on the south side of corridor from 20th Sideroad to just east of Webster Boulevard.
- Servicing Improvements
- Intersection Improvements

ACTIVE TRANSPORTATION

Alternatives 2 to 5 propose the same improvements to active transportation as follows:

- 4.0 m wide paved multi-use trail on north side of corridor from 20th Sideroad to St. John's Road.
- 1.5 m sidewalk on south side of corridor from 20th Sideroad to just east of Webster Boulevard.

PROPERTY REQUIREMENTS



Bank's Creek Naturalization:

- Bank's Creek is less than 3.0 m from the gravel shoulder of the road for a large section of the study area.
- Alternatives 2-5 propose improvements to the existing channel from east of Webster Boulevard to Wingrove Boulevard as shown.
- To improve existing conditions, it is proposed that approximately 800 m of the existing channel be shifted north to increase the separation distance between the channel and the roadway. Naturalization of the channel would also be completed as part of the improvements.

REFER TO ROLL PLAN DRAWING AND TYPICAL CROSS-SECTIONS FOR ADDITIONAL DETAILS REGARDING PROPERTY IMPACTS

Property Requirements:

- Alternatives 2 to 5 all require property from the 20th Sideroad to St. John's Road to accommodate the proposed multi-use trail. An increased amount (potentially 15 m) will also be required from just east of Webster Boulevard to approximately Wingrove Blvd. to accommodate channel naturalization. Additional details are provided below:

  From 20th Sideroad to Webster Boulevard:

  - Alternatives 2 to 5 propose property acquisition from both sides of the corridor.

  From Webster Boulevard to St. John's Road:

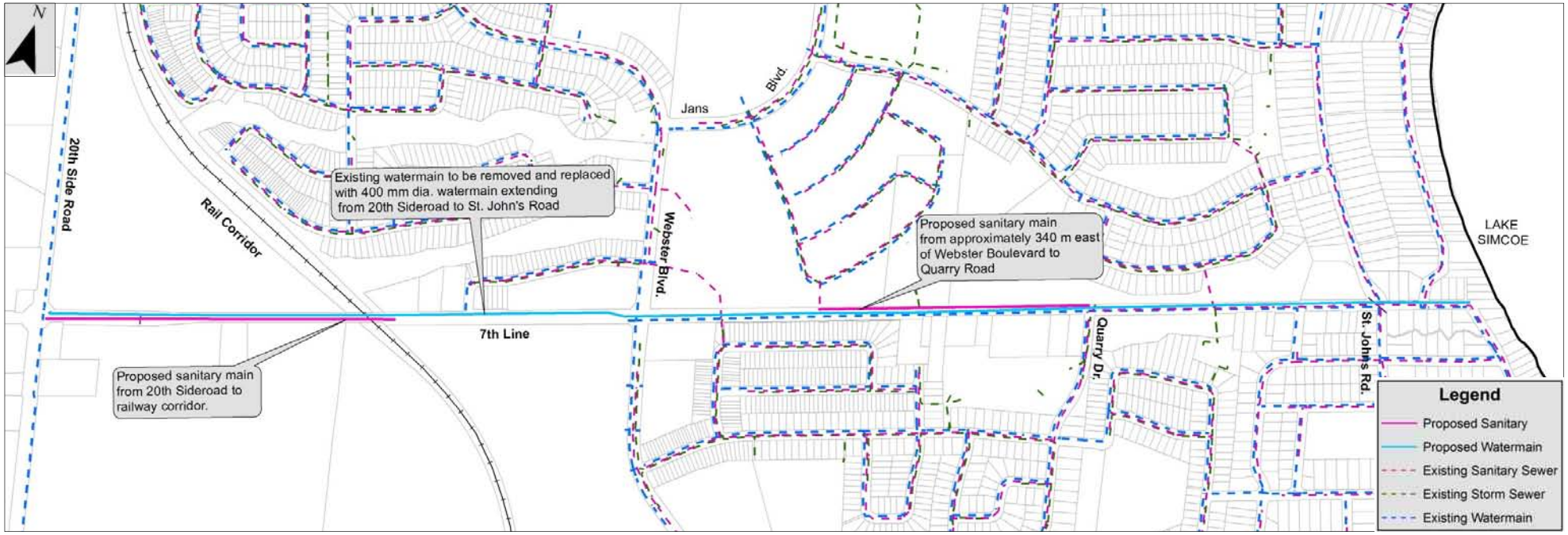
  - Alternatives 2 and 5 propose property acquisition from only the north side of the corridor, except in localized areas to accommodate culvert crossings and / or special features.
  - Alternatives 3 and 4 require property acquisition from both sides of the corridor.
- Alternative 2 requires the least amount of property in comparison to Alternatives 3, 4 & 5; however, the Alternative 5 cross-section can be reduced, where necessary, to minimize impacts to adjacent properties.

INTERSECTION IMPROVEMENTS

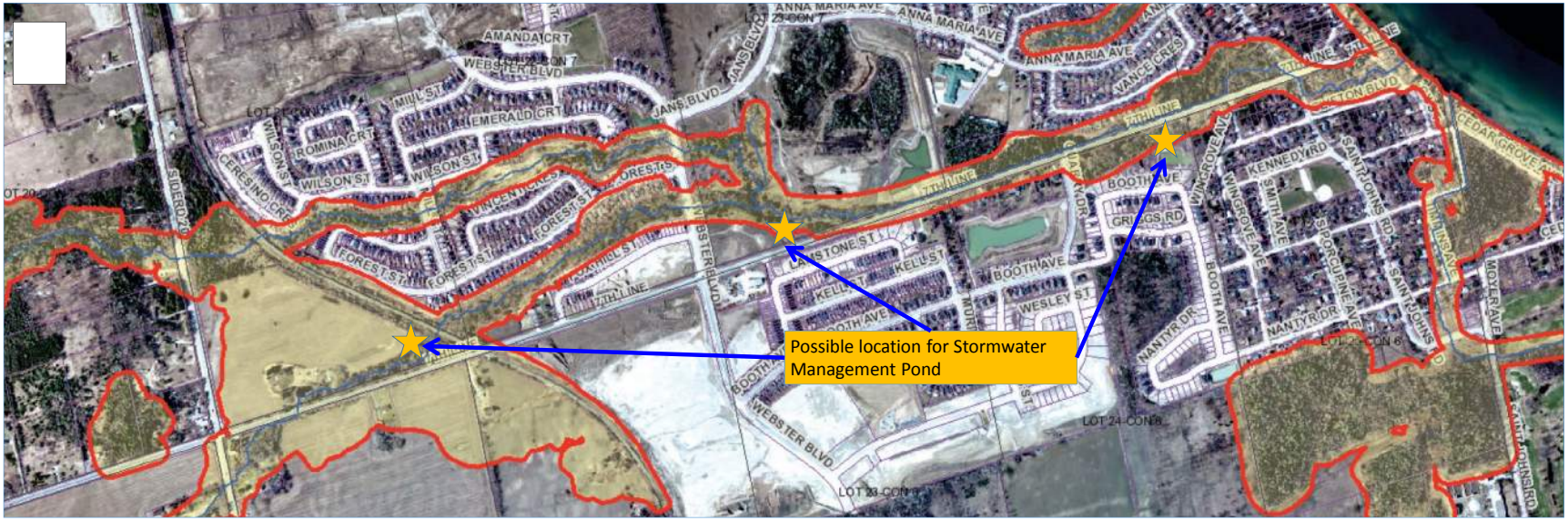
Alternatives 2 to 5 all propose intersection improvements as illustrated below:

SERVICING IMPROVEMENTS

- There are existing sanitary sewer and watermain within the limits of the study area.
- Alternatives 2-5 propose the construction of new segment(s) of sanitary sewer as illustrated below as an improvement or extension of the existing infrastructure.
- Existing watermain on 7th Line will be removed and replaced from the 20th Sideroad to St. John's Road.



STORMWATER MANAGEMENT



LSRCA Regulated Area

Source: Lake Simcoe Region Conservation Authority Regulation Mapping

- As illustrated above a large portion of the project study area is within an area regulated by the Lake Simcoe Region Conservation Authority (LSRCA). A permit will be required from the LSRCA prior to construction.
- Stormwater management for the project will need to address water balance, quality control, quantity control, cut and fill balance in the floodplain; and meet the requirements of the Lake Simcoe Protection Plan.
- The above map identifies several possible locations where a stormwater management pond could be constructed to assist in addressing water quality and quantity. This project will also attempt to implement Low Impact Development (LID) measures.

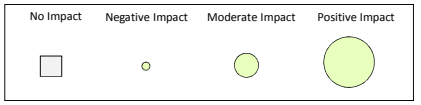
EVALUATION MATRIX PART A

The table below provides a simplified, visual comparison of the potential for each alternative to impact the study area environment (physical, natural, socio-economic and cultural). An increased number of larger circles indicates that an alternative will have a reduced potential for negative impact.

EVALUATION CRITERIA	ALT 1 Do Nothing	ALT 2 Two Lanes	ALT 3 Three Lanes	ALT 4 Four Lanes	ALT 5 Combination	DESCRIPTION OF EFFECTS
TECHNICAL ENVIRONMENT						
Future Traffic Capacity Will the alternative address capacity requirements						Alt. 1 proposes no changes so the corridor would continue to function 'as is'. Alt. 2 does not provide sufficient capacity. Alt. 3 will provide sufficient capacity for only portions of the study area. Alt. 4 proposes 4 lanes and will provide more capacity than required for some segments of the corridor. Alt. 5 proposes a combination so it will more efficiently address capacity requirements.
Active Transportation Will the alternative provide for pedestrians and cyclists						Alt. 1 proposes no improvements so this alternative will not accommodate active transportation. Alts. 2-5 include provisions to address active transportation requirements.
Safety Will the alternative address safety concerns						Alt. 1 proposes no improvements so the corridor will continue to function 'as is'. Alt. 2 proposes two lanes which is significantly under capacity for the segment between the 20th Sideroad and Webster Blvd. which may not improve safety. Alts. 3-5 will improve safety.
Municipal Services (sanitary, water, storm) Will the alternative accommodate servicing requirements.						Alt. 1 proposes no changes to existing municipal services and is considered to have a negative impact in this regard since it will not accommodate future development. Alts. 2-5 propose improvements to existing servicing and will accommodate future development and are therefore considered to have a positive impact.
Utilities Will the alternative impact existing utilities (i.e. relocation)						Alt. 1 proposes no improvements so there is no impact to utilities from this option. Alt. 2 proposes two lanes similar to the existing so there is minimal potential to impact existing utilities. Alt. 4 proposes the widest cross-section so there is increased potential for impacts in this regard. Alt. 5 proposes some combination of Alts. 2-4 and therefore the cross-section could potentially be adjusted at certain locations to minimize impacts to utilities, as required.
NATURAL ENVIRONMENT						
Terrestrial Wildlife (including Species at Risk) Potential to impact area wildlife and SAR						Alt. 1 proposes no improvements so there is no potential to impact area widlife. Alt. 4 proposes the widest cross-section so this option will have the greatest potential for impact. Alts. 2 and 3 require this least amount of expansion beyond the right-of-way and are considered to have a moderate potential for impact in comparison to the other alternatives. Alt. 5 proposes some combination of Alts. 2-4 and there is the potential that the cross-section could be adjusted at certain locations to minimize impacts to lands adjacent the corridor.
Fisheries / Aquatic Potential to impact fish habitat and aquatic features						Alt. 1 proposes no improvements so there is no potential to impact area watercourses or fish habitat. Alt. 4 proposes the widest cross-section so this option will have the greatest potential for impact. Alts. 2 and 3 require this least amount of expansion beyond the right-of-way and are considered to have a moderate potential for impact in comparison to the other alternatives. Alt. 5 proposes some combination of Alts. 2-4 and there is the potential that the cross-section could be adjusted at certain locations to minimize impacts to the adjacent watercourse.
Vegetation Potential to impact existing vegetation						Alt. 1 proposes no improvements so there is no potential to impact existing vegetation. Alt. 4 proposes the widest cross-section so this option will have the greatest potential for impact. Alts. 2 and 3 require this least amount of expansion beyond the right-of-way and are considered to have a moderate potential for impact in comparison to the other alternatives. Alt. 5 proposes some combination of Alts. 2-4 and there is the potential that the cross-section could be adjusted at certain locations to minimize impacts to existing vegetation.
Surface Water / Drainage Potential to impact surface water and area drainage						Alt. 1 proposes no improvements and therefore any issues with existing drainage will continue. Alts. 2-5 propose improvements to existing drainage infrastructure and are considered to result in a positive impact in this regard.
Groundwater Potential to impact area groundwater resources						Alt. 1 proposes no construction so there is no potential to impact area groundwater. As Alts. 2-5 propose a reconstruction of the existing corridor and there is potential to impact groundwater during construction dewatering.

EVALUATION MATRIX PART B

The table below provides a simplified, visual comparison of the potential for each alternative to impact the study area environment (physical, natural, socio-economic and cultural). An increased number of larger circles indicates that an alternative will have a reduced potential for negative impact.



EVALUATION CRITERIA	ALT 1 Do Nothing	ALT 2 Two Lanes	ALT 3 Three Lanes	ALT 4 Four Lanes	ALT 5 Combination	DESCRIPTION OF EFFECTS
SOCIAL ENVIRONMENT						
Land Use Planning Objectives Is alternative in accordance with planning objectives						Alt. 1 proposes no improvements which will not address future development and is therefore not in accordance with land use planning objectives. Alt. 2 does not address capacity requirements . Alt. 3 provides sufficient capacity for only portions of the study area. Alts. 4 and 5 will provide the necessary capacity and operational improvements accommodate development planned for the area and is in accordance with land use planning objectives.
Property Impacts Will the alternative require property acquisition						Alt. 1 proposes no construction so no property is required. Alt. 4 has the widest cross-section and therefore the greatest impacts in this regard. Alts. 2, 3 and 5 will have a moderate impact.
Aesthetics Will the alternative impact the area visually						Alts. 2-5 propose improvements and urbanization of the corridor which will improve the overall appearance of the area by addressing the deteriorating condition of the existing pavement and adding boulevard trees and landscaping. Alt. 1 proposes no improvements so the corridor will continue to deteriorate and this option will therefore have a negative impact in this regard.
Residential Will the alternative impact area residences and access						As Alts. 2-5 propose reconstruction there will be temporary impacts during the construction period relating to property access; however, measures can be implemented to minimize impacts. As Alt. 1 proposes no construction there will be no impacts in this regard.
Areas Businesses Will the alternative impact area commercial operations						As Alts. 2-5 propose reconstruction there will be temporary impacts during the construction period relating to property access; however, measures can be implemented to minimize impacts. As Alt. 1 proposes no construction there will be no impacts in this regard.
Noise and Vibration Will the alternative impact noise levels during construction and the long term						Alt. 1 does not propose construction so noise will not be an issue . Alt. 2 proposes the same number of lanes as existing so there will be only minor noise impacts during construction. Alts. 3-5 propose an increase in the number of lanes so there may be an increase in noise (this will be confirmed through a Noise Impact Study).
Air Quality Will the alternative impact air quality						Alt. 1 does not propose any improvements so over the long term congestion could impact air quality. Alt. 2 proposes the same number of lanes as existing and it is not expected that there would be a significant change in air quality over existing conditions. Alt. 3-5 propose an increase in the number of lanes; however, it is not expected that this would result in significant impacts to air quality.
CULTURAL ENVIRONMENT						
Archaeological Will the alternative impact area archaeological resources						Since the study area has been subject to previous disturbance it is unlikely that the area has any remaining archaeological potential; however, a Stage 2 archaeological assessment will be completed to confirm the existence of any significant resources. Alts. 2-5 are expected to have a similar potential for impact in this regard.
Built Heritage & Cultural Heritage Landscapes Will the alternative impact area built heritage resources						As Alt. 1 does not propose construction there is no potential to impact area built heritage resources. Alts. 2 & 3 are expected to have a similar impact in this regard. As Alt. 4 proposes the widest cross-section there is increased potential for impact. As Alt. 5 proposes some combination of Alts. 2-4 there is the potential that the cross-section could be adjusted, as necessary, to minimize impacts.
ECONOMIC ENVIRONMENT						
Property Acquisition Costs Will the alternative require property acquisition						Since Alt. 1 proposes no improvements there will be no costs in this regard. Alt. 2 will have the least amount of property acquisition of the options under consideration. Alts. 3 & 5 will have a moderate impact in this regard. Alt. 4 will require the most amount of property acquisition.
Construction Costs Will the alternative be expensive to construct						Alt. 4 proposes the widest cross-section and is expected to be the most costly of the alternatives under consideration.
Operating & Maintenance Costs Will the alternative be expensive to maintain						Alt. 1 propose no improvements, but it will incur greater operating/maintenance costs over time as compared to Alts. 2-5 as the infrastructure continues to deteriorate. Alts. 4 & 5 may have higher operating/maintenance costs associated with the four lane cross-section in comparison to Alts. 2 & 3.

PRELIMINARY PREFERRED SOLUTION

The Municipality considers **Alternative 5 (A combination of Alternatives 2-4)** as the Preliminary Preferred Solution for the following reasons:

- This option will more efficiently address future traffic capacity requirements since the cross-section can be increased where needed and reduced where not required.
- It will provide for Active Transportation (i.e. pedestrians and cycling)
- It may be possible to reduce the width of the road cross-section at certain areas which may reduce the need for property acquisition, minimize utility relocation and reduce the potential to impact natural features (i.e. vegetation, the watercourse, fish and fish habitat etc.).
- Costs associated with property acquisition and construction costs will be more reasonable.

Please note that the above selection may change following the receipt of public and agency input.

PROJECT SCHEDULE AND FUNDING

FUNDING

This is a growth related project and it will therefore be funded by area development.

PRELIMINARY PROJECT SCHEDULE

- EA complete 2018
- Detailed Design complete 2018-2019
- Property Acquisition 2020
- Utility Relocation 2020-2021
- Road Construction 2021-2022

The above timing will be subject to funding and the receipt of all necessary approvals.

WHAT'S NEXT?

- The project team will review the comments received following completion of this Public Open House and select a Preferred Solution.
- The project will then move into Phase 3 of the Class EA process.
- A second Public Open House will be scheduled at a future date to identify the Preferred Solution and to present the alternative design concepts developed to implement the Preferred Solution.
- Advance notification of Public Open House No. 2 will be provided.

COMMENTS

- All POH material will be available for download from the Town's website at www.innisfil.ca/7thea on October 11, 2017.
- We invite you to provide any comments, in writing, on the Comment Sheet provided.
- All comments are to be submitted by October 25, 2017 to either of the following members of the Project Team:

Ms. Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Mr. Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Thank you for your attendance at this meeting!
We appreciate your participation.

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT

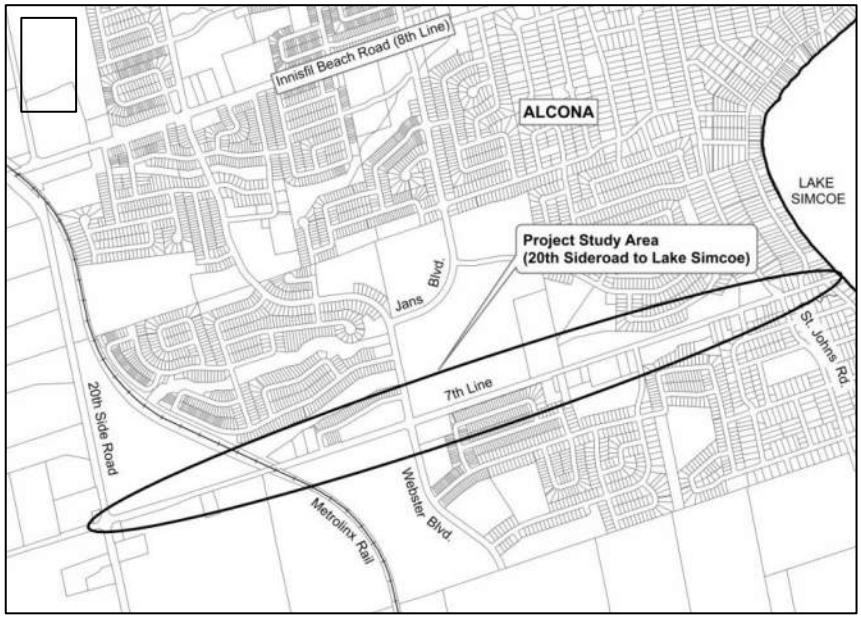
Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

Appendix L
Consultation Point No. 3
(Public Open House No. 2)

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Background

In April 2017, the Town of Innisfil initiated a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study area map. The municipality hosted a Public Open House on October 11, 2017 to present the alternative solutions under consideration to address capacity and operational deficiencies affecting the subject corridor.



Subsequent to a review of comments received, the Town of Innisfil has selected the final Preferred Solution which proposes three lanes from the 20th Sideroad to approximately 200 m east of Webster Boulevard and two lanes from east of Webster Boulevard to St. John's Road. Servicing and intersection improvements will also be completed.

Public Open House No. 2

A second interactive, drop-in style Public Open House is now scheduled to allow all interested parties an opportunity to review the proposed alternative design concepts developed for the Preferred Solution and to discuss the project further with the study team. Public Open House No. 2 is scheduled as follows:

Date: **Wednesday, March 28, 2018.**
Time: **4:00 p.m. to 7:00 p.m.**
Location: **Town Hall Community Rooms**
2101 Innisfil Beach Road
Innisfil, ON

Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Open House No. 2 will be **April 11, 2018.** If you are unable to attend the Public Open House, presentation material will be available on the Town's website at www.innisfil.ca/7thea after March 28, 2018. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Except for personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Jody Marks

From: Magdalena Koehler <mkoehler@innisfil.ca>
Sent: March-09-18 11:45 AM
To: Jodi Moore
Cc: Carolina Cautillo; Capital Engineering Co-op User 1; Steve Fournier; Andrea Potter
Subject: RE: 217024 - POH No.2 Notice for Newspaper

Hi Jodi,

Yes, the Notice is with communications now and will be published March 15th and March 22nd

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: Jodi Moore <moore@ainleygroup.com>
Sent: March 9, 2018 11:35 AM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Cc: Carolina Cautillo <ccautillo@innisfil.ca>; Capital Engineering Co-op User 1 <capeng1@innisfil.ca>; Steve Fournier <fournier@ainleygroup.com>; Andrea Potter <potter@ainleygroup.com>
Subject: 217024 - POH No.2 Notice for Newspaper

Magda,

Could you please confirm the attached notice has been sent to the Newspaper (Innisfil Journal) to be published in the March 16th and March 23rd issue.

Thank you,
Jodi Moore
Environmental Planning Assistant

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 239

Agency and Indigenous Community Contact List and Letters

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	rob.dobos@ontario.ca
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment and Climate Change	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment and Climate Change	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Mr.	Tom	Chrzan	Director, Regional Services Branch	Ministry of Tourism, Culture & Sport	400 University Avenue	2nd Floor	Toronto, ON	M7A 2R9	416-314-6680	tom.chrzan@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	carol.neumann@ontario.ca
Mr.	Jeff	Bateman	Manager of Rail Corridor Management	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-0101	jeff.bateman@gotransit.com
Ms.	Tania	Gautam	Project Manager Environmental Programs & Assessments	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-4904	Tania.Gautam@metrolinx.com
Mr.	Adam	Snow	Third Party Officer	Metrolinx	97 Front Street West		Toronto, ON	M5J 1E6	416-528-4864	adam.snow@gotransit.com
Mr.	Brandon	Gaffoor	Rail Corridors Management Office	Metrolinx	335 Judson Street		Toronto, ON	M8Z 1B2	416.202.7294	brandon.gaffoor@metrolinx.com
Mr.	Derrick	Toigo	Senior Vice President Rail Infrastructure Team	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-0262	Derrick.Toigo@infrastructureontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Mr.	Charles	Burgess	Manager of Planning	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x299	c.burgess@lsrca.on.ca
Ms.	Ashlea	Brown	Senior Environmental Regulations Analyst	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281	A.Brown@lsrca.on.ca
Mr.	Tom	Hogenbirk	Manager of Engineering	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x240	t.hogenbirk@lsrca.on.ca
Ms.	Kate	Lillie	Ecologist	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x527	k.lillie@lsrca.on.ca
Ms.	Michael	Prowse	CAO	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	michael.prowse@barrie.ca
Mr.	Richard	Forward	General Manager of Infrastructure	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	richard.forward@barrie.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Emergency Services										

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Ms.	Donna	Danyluk	Communications Representative	Royal Victoria Regional Health Centre	201 Georgian Drive		Barrie, ON	L4M 6M2	705-728-9090 ext. 41610	danylukd@rvh.on.ca
Mr.	Jon	Pegg	Fire Chief	Innisfil Fire Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	jpegg@innisfil.ca
Ms.	Candace	Stefanec	Administration Coordinator	Innisfil, Fire and Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	cstefanec@innisfil.ca
Ms.	Sue	Dawson	Deputy Fire Chief, Communications & Business Services	City of Barrie, Fire & Emergency Service Department	P.O. Box 400		Barrie, ON	L4M 4T5	705-739-4220, ext. 3221	sue.dawson@barrie.ca
Mr.	Andrew	Fletcher	Chief of Police	South Simcoe Police Service	2137 Innisfil Beach Road		Innisfil, ON	L9S 1A2	705-436-2141	andrew.fletcher@southsimcoepolice.ca
Mr.	Tom	Sinclair	Staff Sergeant	City of Barrie Police Service	29 Sperling		Barrie, ON	L4M 6K9	705-725-7025 ext. 2110	tsinclair@barriepolice.ca
Ms.	Jessica	Lawson	Research, Planning and Analysis Section, Business Management Bureau	Ontario Provincial Police, Operational Policy and Strategic Planning Bureau	777 Memorial Avenue	3rd Floor	Orillia, ON	L3V 7V3	705-329-6903	jessica.lawson@opp.ca
Special Interest Groups										
Ms.	Mary-Ellen	Madeley	Manager	Greater Innisfil Chamber of Commerce	8034 Yonge Street		Innisfil, ON	L9S 1L6	705.431.4199	
Ms.	Diana	Robinson	President	Cookstown and District Chamber of Commerce	P.O.Box 1102		Cookstown, ON	L0L 1L0	705.458.7007	
Mr.	Richard	Boken		Bayview Beach Ratepayers Association	219 Bayshore Road		Churchill, ON	L0L 1K0	705.456.6731	
Mr.	Don	Avery		Innisfil District Association	P.O. Box 7057		Innisfil, ON	L9S 1A8		
Ms.	Janet	Deacon		Alcona Beach Club Inc.	2044 25th Sideroad		Innisfil, ON	L9S 1Z2		
Ms.	Barb	Taylor-Reid		Degrassi Cove Association	10 Glengrove Avenue West		Toronto, ON	M4R 1N4		
Mr.	Nick	Torkos		Innisfil Creek Golf Course	239 Reive Blvd.		Cookstown, ON	L0L 1L0	705.458.4653	
Mr.	Kevin	Jacob	Assistant Clerk	Innisfil Heritage Committee	2101 Innisfil Beach Road		Innisfil, ON	L9S 1A1	705.436.3740 x 2414	kjacob@innisfil.ca
Ms.	Kathleen	Gardiner		Gilmore and Gilmore Professional Corporation	458 Victoria Street E	P.O. Box 250	Alliston, ON	L9R 1J8	705-435-4339	kathleen.gardiner@guknires.ca
Mr.	John	La Brie	Director, Physical Resources	Georgian College	1 Georgian Drive		Barrie, ON	L4M 3X9	705.728.1968 x 5213	
Mr.	John	Goodfellow	Landowner Liaison	BonSecour Track and Trail Snowmobile Club	660 9th Line		Innisfil, ON	L9S 3Y5	705-436-3719	bonsecour@rogers.com
Mr.	Brendan	Matheson	Board Chair	Barrie Cycling Club	P.O. Box 1363		Barrie, ON	L4M 5R4	705-717-6349	brendan@barriecycling.com
Ms.	Jen	Eaton	Sports Coordinator	Ontario Cycling Association	2-2015 Pan Am Blvd	1-416-855-1717	Milton, ON	L9T 8Y9		jen.eaton@ontariocycling.org
Ms.	Leah	Emms	Member Service Representative for Peel, Simcoe & York	Ontario Federation of Agriculture	Simcoe County Administration Centre	1110 Highway #26	Midhurst, ON	L0L 1X0	1-866-660-5511	leah.emms@ofa.on.ca
Consultants & Developers										
				Alriz Development Ltd.	265 King Street North		Alliston, ON	L9R 1N3		
	DIAM Fox Hill Property Inc.				85 Prologis Boulevard	Suite 1	Mississauga, ON	L5W 0G4		
Mr.	Frank	Orsi		Orsi Developments (Grand Sierra)	P.O. Box 215		Newmarket, ON	L3Y 4X1	905-778-1818	frank@newerahomes.ca
Mr.	Manni	Chauhan	G Force Planners	1550 Meyerside Dr	Unit 7		Mississauga, ON	L5T 1V4		gforceplanners@gmail.com
Attn:	Office Manager			Maple Lane Lands & Dev Co Ltd. (Wallace Mills)	3565 King Road	Unit 109	King City, ON	L7B 1M3	705.833.1937	maple.lane@rogers.com
Mr.	Luigi	Fortini		Letizia Homes Ltd.	P.O. Box 1146		Bradford, ON	L3Z 2B5	905.252.7035	ouac@rogers.com
Mr.	Phil	Hammell		Mariposa Homes (Skivereen)	650 Harvie Settlement Road		Orillia, ON	L3V 0Y7	705.329.3330	phammell@mariposahomes.ca
Mr.	Ernie	Rinomato		Country Homes (Alcona Downs)	111 Strada Drive		Woodbridge, ON	L4L 5V9	416.213.7191	

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Public Open House No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	Lou	Kelly		Green Acres	7886 Highway 11		Innisfil, ON	L9S 1L4	705.436.5111	homelife-barrie@rogers.com
Ms.	Wanda	Leblanc		Innisbrook Developments Inc.	18 Brownlee Drive		Bradford, ON	L3Z 2A4	905.252.7035	wandaleblanc@rogers.com
Mr.	Diego	Rizzardo		SanDiego Homes	1101 Quarry Drive		Innisfil, ON	L9S 4X1	705.436.5775	diego@sandiego-homes.ca
Ms.	Tanya	Roehrich	Property Manager	Trinity Development Group Inc	3250 Bloor Street West	Suite 1000	Etobicoke, ON	M8X 2X9	(416) 255-8800	troehrich@trinity-group.com
Mr.	Kerry	Judges		Woodland Park Development	67 Barrie Drive		Barrie, ON	L4N 7P1	705.725.0952	kerry.judges@gmail.com
Mr.	Hugh	Johnston		Crisdawn Construction Inc. (Pratt D'Amico)	27 Clapperton Street, Suite 300		Barrie, ON	L4M 3E6	705.722.4500	hjohnston@prattdevelopment.ca
Mr.	Nisio	Rizzardo		Previn Court Homes	265 King Street North, Box 1, Compartment 9		Alliston, ON	L9R 1N3		
Mr.	Rosario	Sacco		Urban Ecosystems	7050 Weston Road	Suite 705	Woodbridge, ON	L4L 8G7	905-856-0629	rosario@urbanecosystems.com
Mr.	Edward	Tjeerdsma		R.J Burnside	3 Ronell Crescent		Collingwood, ON	L9Y 4J6	705 797 4263	edward.tjeerdsma@rjburnside.com
Ms.	Julie	Bottos		SCS Consulting Group	30 Centurian Drive	Suite 100	Markham, ON	L3R 8B8	(905) 475-1900 (ext. 2369)	jbottos@scsconsultinggroup.com
Ms.	Sherri	Meibom		SCS Consulting Group	30 Centurian Drive	Suite 100	Markham, ON	L3R 8B8	905 475 1900 ext 2369	smeiboom@scsconsultinggroup.com
Aboriginal Consultation *(contact list updated as per MOECC email June 27, 2017)*										
Att: Consultation Unit				Ministry of Indigenous Relations & Reconciliation (MIRR)	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(INAC (formerly AANDC) not contacted for this project as project is not on Aboriginal lands)				~~Indigenous & Northern Affairs Canada Consultation Unit (formerly Aboriginal Affairs & Northern Development Canada)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1-800-567-9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct)	Prefers digital - briant@metisnation.org
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Mr.	Allen	Vallee	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 4	Midland, ON	L4R 4K6	705-526-6335	
Mr.	Tony	Muscat	President Interim	Moon River Metis Council	B26360 Cedarhurst Beach Road	R.R. 1	Beaverton, ON	L0K 1A0	705-426-1381	tonymuscat@rogers.com
First Nation Communities										
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Rodney	Noganosh		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Ms.	Holly	Nolan	Executive Assistant to the Chief	Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-3253611 ext. 1216	hollien@ramafirstnation.ca
Ms.	Karry	Sandy-McKenzie	Co-ordinator/Negotiator	Williams Treaties First Nation						k.a.sandy-mckenzie@rogers.com
Chief	Phyllis	Williams		Curve Lake First Nation	Government Service Building	22 Winookeeda Street	Curve Lake, ON	K0L 1R0	705-657-8045	PhyllisW@curvelake.ca
Ms.	Kaitlin	Hill	Land and Resources Consultation Liaisons	Curve Lake First Nation	Government Service Building	22 Winookeeda Street	Curve Lake, ON	K0L 1R0	705-657-8045	kaitlinh@curvelake.ca
Ms.	Courtney	Jackson	Environmental Worker	Ammjiwnaang FN	978 Tashmoo avenue		Sarnia, ON	N7T 7H5	519 336 8410	
Chief	Joanne	Rogers		CC: to above address						chief@aamjiwnaang.ca
Ms.	Sharilyn	Johnson	Environmental Coordinator	CC: to above address						sjohnston@aamjiwnaang.ca
Utilities										
Mr.	Tom	Panak	Capital Engineer	InnServices Utilities Inc.	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-436-3710	tpanak@innservices.co
Mr.	Kent	Constable	Operations Supervisor	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321	kentc@innpower.ca
Mr.	Michael	Davison	Engineering Manager	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321 x208	michaeld@innpower.ca
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Andrew	Fournier		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	andrew.fournier@bell.ca
Mr.	Anothony	Zita	Planning Analyst	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822 416-427-9620 cell	Anthony.Zita@enbridge.com
Mr.	Meetpal	Chhina	Supervisor	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822	meetpal.chhina@enbridge.com
Mr.	Graham	McPherson	Planning	Rogers	1 Sperling Drive		Barrie, ON	L4M 6B8	705-737-4660 x6914	Graham.McPherson@rci.rogers.com

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018.

File No. 217024

SAMPLE AGENCY LETTER

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Mr. Dobos,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of Public Open House No. 2.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Ministry of Indigenous Relations & Reconciliation
160 Bloor St. East
9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Mr. Tucker,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Davis,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Georgian Bay Metis Council
355 Cranston Crescent
P.O. Box 4
Midland, ON L4R 4K6

Attn: Mr. Allen Vallee
President

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Mr. Vallee,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Moon River Metis Council
B26360 Cedarhurst Beach Road
R.R. 1
Beaverton, ON L0K 1A0

Attn: Mr. Tony Muscat
President Interim

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Mr. Muscat,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief McQue-King,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of an upcoming Public Open House scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of Public Open House No. 2.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Chippewas of Georgina Island
R.R. #2
P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief Big Canoe,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief Noganosh,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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pc: M. Koehler Town of Innisfil, Capital Project Manager
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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Ms. Holly Nolan
Executive Assistant to the Chief

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Nolan,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

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S. Fournier

Steve Fournier, P. Eng.
Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Williams Treaties First Nation

Attn: Ms. Karry Sandy-McKenzie
Co-ordinator/Negotiator

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Sandy-McKenzie,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Curve Lake First Nation
Government Service Building
22 Winookeeda Street
Curve Lake, ON K0L 1R0

Attn: Chief Phyllis Williams

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief Williams,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Curve Lake First Nation
Government Service Building
22 Winookeeda Street
Curve Lake, ON K0L 1R0

Attn: Ms. Kaitlin Hill
Land and Resources Consultation Liaisons

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Hill,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5

Attn: Ms. Courtney Jackson
Environmental Worker

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Jackson,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner
J. Rogers Ammjiwnaang First Nation, Chief
S. Johnson Ammjiwnaang First Nation, Environmental Coordinator

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Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5

Attn: Chief Joanne Rogers

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief Rogers,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner
C. Jackson Ammjiwnaang First Nation, Environmental Worker
S. Johnson Ammjiwnaang First Nation, Environmental Coordinator

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550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5

Attn: Ms. Sharilyn Johnson
Environmental Coordinator

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Ms. Johnson,

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner
C. Jackson Ammjiwnaang First Nation, Environmental Worker
J. Rogers Ammjiwnaang First Nation, Chief

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Resident Mail Out

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018. File No. 217024

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Resident / Property Owner / Tenant:

The Town of Innisfil has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager Roads, Traffic, & Transportation
A. Potter Ainley Group, Environmental Planner

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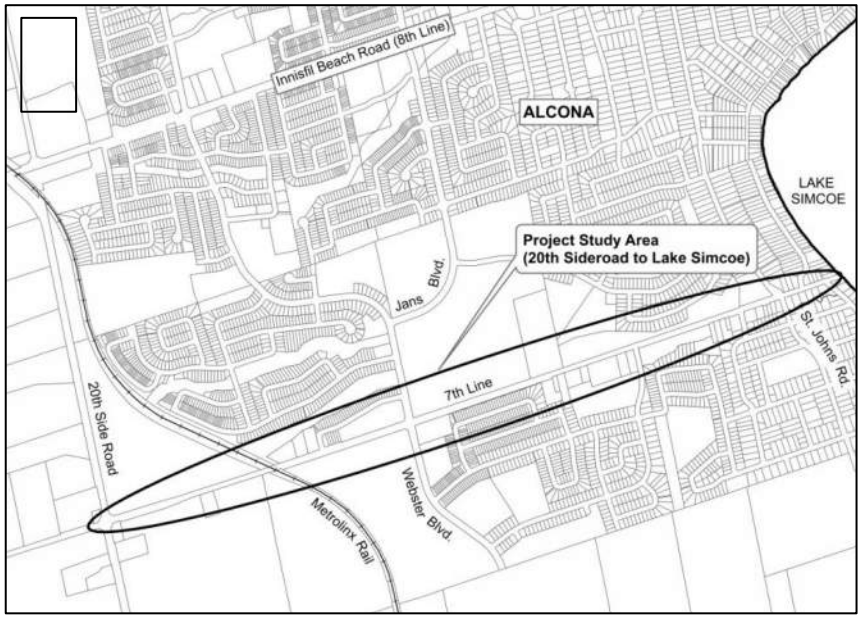
TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Background

In April 2017, the Town of Innisfil initiated a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study area map. The municipality hosted a Public Open House on October 11, 2017 to present the alternative solutions under consideration to address capacity and operational deficiencies affecting the subject corridor.



Subsequent to a review of comments received, the Town of Innisfil has selected the final Preferred Solution which proposes three lanes from the 20th Sideroad to approximately 200 m east of Webster Boulevard and two lanes from east of Webster Boulevard to St. John's Road. Servicing and intersection improvements will also be completed.

Public Open House No. 2

A second interactive, drop-in style Public Open House is now scheduled to allow all interested parties an opportunity to review the proposed alternative design concepts developed for the Preferred Solution and to discuss the project further with the study team. Public Open House No. 2 is scheduled as follows:

Date: **Wednesday, March 28, 2018.**
Time: **4:00 p.m. to 7:00 p.m.**
Location: **Town Hall Community Rooms**
2101 Innisfil Beach Road
Innisfil, ON

Comments Invited

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Open House No. 2 will be **April 11, 2018.** If you are unable to attend the Public Open House, presentation material will be available on the Town's website at www.innisfil.ca/7thea after March 28, 2018. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. Except for personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Comments Received

Chippewas of RAMA
First Nation

5884 Rama Road, Suite 200
Rama, Ontario L3V 6H6
T 705.325.3611 F 705.325.0879

A Proud Progressive First Nation Community

March 15, 2018

Steve Fournier
Ainley & Associates Ltd.
550 Welham Road,
Barrie, Ontario
L4N 8Z7

RE: Town of Innisfil, 7th Line Improvements, Schedule C Municipal Class Environment Assessment

Dear Steve,

On behalf of the Chippewas of Rama First Nation, thank you for your notice of March 7th, 2018, regarding the upcoming Public Open House for this project.

Please continue to keep us informed about this project as the study moves along and advise of any concerns you encounter as you move forward.

At this time, we have no questions or comments related to this project.

Please address future correspondence to our Community Consultation Worker. At this time, the position is vacant but we should be filling this in the near future.

Again, thank you for bringing this information to our attention so we can address consultation as needed.

Sincerely,

Cathy Edney
Acting Community Consultation Worker

MAR 1 2 2018

CONSULTING ENGINEERS PLANNERS

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 • Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 7, 2018.

File No. 217024

Cathy
Jeff
Kerry Sandy-McKenzie

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2

Dear Chief Noganosh,

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Yours truly,

AINLEY & ASSOCIATES LIMITED

S. Fournier

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler — Town of Innisfil, Capital Project Manager
C. Cautillo — Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
A. Potter — Ainley Group, Environmental Planner

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TOWN OF INNISFIL
7th Line Improvementa
Schedule 'C' Municipel Claaa Envlronmental Asseasment
Notice of Public Open House No. 2

Background

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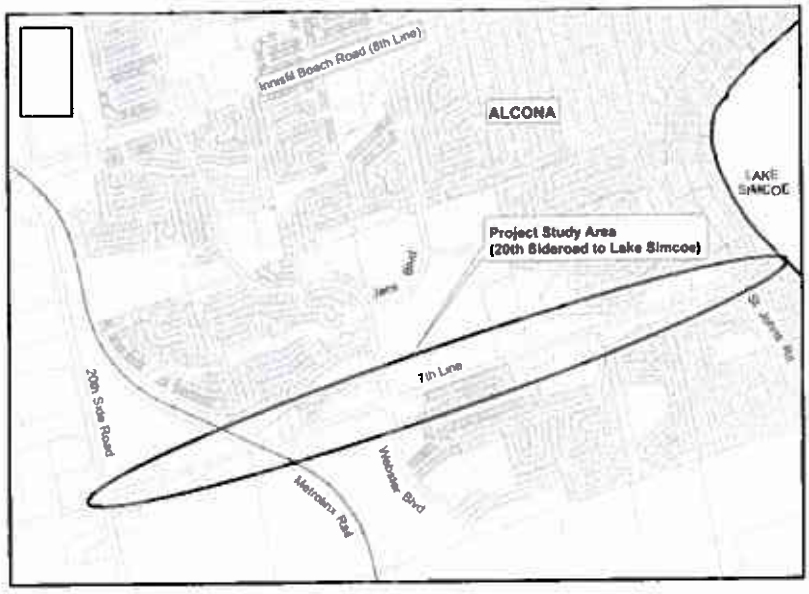

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Megdalena Koehler, C.E.T., CAPM
Capltal Project Manager
Town of Inniafil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Emall: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Menager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fex: 705-726-4391
Emall: fournier@ainleygroup.com

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Wednesday, April 04, 2018 2:30 PM
To: Jodi Moore
Subject: FW: 7th Line construction

Jodi

Please file the message below with 7th Line comments received

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: [redacted]
Sent: April-03-18 6:40 PM
To: fournier@ainleygroup.com
Subject: 7th Line construction

Steve,

I reside on the [redacted] close to the lake. During heavy rains the creek to the rear of our property floods its banks and makes a mess of adjoining properties.

The cause of this problem is the restriction placed on the water flow by the small bridge on Lakeshore Road. For the most part of the year it is not a great problem, (the flooding) however, once is enough considering the damage it can cause.

Since a major undertaking regarding road work seem incomplete without also repairing the associated bridge problem, I suggest that this too be included in the construction project.

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 2 – March 28, 2018
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Plant tall trees to replace one's cutting down.
Keep as many trees behind the houses. *reason bought house*

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name

Mailing Address

Telephone # E-mail Address

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-3740 ext. 3226.

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Tuesday, March 20, 2018 9:35 AM
To: Jodi Moore
Cc: Andrea Potter
Subject: FW: Innisfil 7th Line Improvements FN 217024
Attachments: 2018 Comments 7th Line File 217024.doc

Jodi

Please add to correspondence received for 7th Line

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: [redacted]
Sent: March-17-18 9:38 AM
To: mkoehler@innisfil.ca; ccaulitto@innisfil.ca
Cc: fournier@ainleygroup.com; [redacted]
Subject: Innisfil 7th Line Improvements FN 217024

Please find attached our letter of proposal for a multi-use trail to be considered in the pending roadway improvements.

Thank you for the opportunity to comment.

Yours in outdoor recreation and active lifestyles,

on behalf of the Executive and Members
[redacted]

[redacted]

March 15, 2018

Magdalena Koehler
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd
Innisfil ON L9S 1A1

Re: 7th Line Improvements, File No. 217024

The [redacted] would like to comment regarding the 7th Line Improvements from the 20th Sideroad to Lake Simcoe.

With the County of Simcoe reconstruction of Innisfil Beach Road from 5th Sideroad to 20th Sideroad, in the design and construction, a multi-use trail is proposed in the rebuild. If the 7th line improvements included this type of trail, in the future, it could interconnect northbound on 20th Sideroad.

These sections of trail could be the start of a complete interconnecting Town multi-trail system; as well as, being part of a County-wide trail network.

As for the benefit for the Innisfil residents, this trail addition could result in connecting the lakeshore community via Innisfil's 20th Sideroad. In time, establishing 'spur links' could connect the villages of Churchill and Stroud, the Innisfil Heights and Hwy 400 neighbourhood to tie all points to the Innisfil Recreation Center (aka YMCA).

In closing, as a [redacted] we propose a multi-use trail to run parallel to the roadway. It is hoped that other potential users realize the opportunity at hand and add their support to the future recreational trails.

We thank you for the opportunity to comment.

Yours in outdoor recreation and active lifestyles

[redacted]

cc via email:
Ainley Group
Mayor Gord Wauchope

The vision of the Simcoe County Trail Strategy is "To create a world class network of multipurpose passive-use trails that connects the County's communities while providing linkages to natural, cultural, and tourism assets to increase visitation, recreational and active transportation opportunities, thereby improving the quality of life for County residents and visitors."

[redacted]

[redacted]

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Tuesday, December 19, 2017 4:27 PM
To: Andrea Potter; Jodi Moore
Subject: FW: [redacted]

Andrea

Please file the message received from [redacted]

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: [redacted]
Sent: December-19-17 3:37 PM
To: fournier@ainleygroup.com
Subject: [redacted]

Dear Steve Fournier.

It was very good of you to take the time to give [redacted] a personal visit, regarding the future development of the road at the 20th and 7th line of Innisfil.

I would like to express to you, the importance of the School House property owned [redacted].
It is [redacted]
Not only his home, the property and all his trees.
[redacted] has a regard and treats all his trees, and especially the one's along the side of the 20th and to his gate on the 7th line, as his "Babies".

Progress and future development we know about.

But, how unfortunate to have and to love a property from the middle 1960"s to present day (2018) and to reach an age of close to 80 years old and now, to be in a situation to be expected to sit back and watch it taken away.

Progress, how sad for the home owner.

Surely there must be a better solution.

Sincerely,

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 2 – March 28, 2018
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley GROUP

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Preference Design Alternative 3
however would prefer
only 2 LANES WEBSTER TO STJOHN
WOULD WANT MASSIVE TREE PLANTING
BOULEVARD ALONG 7th LINE.

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Andrea Potter

From: Magdalena Koehler <mkoehler@innisfil.ca>
Sent: Sunday, February 11, 2018 5:00 PM
To: Steve Fournier, P.Eng.; Andrea Potter (potter@ainleygroup.com); Jodi Moore
Cc: Carolina Cautillo; Scott MacKenzie; Capital Engineering Co-op User 1
Subject: FW: 217024 - 7th Line T.O.I.
Attachments: Letter against Widening.pdf

Hello Ainley Team,

For ESR - letter from [redacted] re widening.

The response will be discusses internally. [redacted] can you save this under Correspondence.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: January 31, 2018 1:27 PM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Cc: [redacted]
Subject: FW: 217024 - 7th Line T.O.I.

Hi Magdalena,
I have put our response to the Proposal for Road Widening on lands owned by [redacted].
Regards

[redacted]

From: [redacted]
Sent: January 30, 2018 12:40 PM
To: 'Magdalena Koehler' <mkoehler@innisfil.ca>
Cc: Scott MacKenzie <smackenzie@innisfil.ca>
Subject: RE: 217024 - 7th Line [redacted]

Hi,
Should have something with you this week
Regards

[redacted]

From: Magdalena Koehler [mailto:mkoehler@innisfil.ca]
Sent: January 24, 2018 12:02 PM
To: [redacted] Scott MacKenzie <smackenzie@innisfil.ca>
Cc: [redacted]
Subject: RE: 217024 - 7th Line [redacted]

Hello [redacted],

I'm just following on your response to the 7th Line Class EA property requirement plans.

In terms of the schedule: we are in Phase 3 now.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: January 11, 2018 5:58 PM
To: Scott MacKenzie <smackenzie@innisfil.ca>
Cc: Magdalena Koehler <mkoehler@innisfil.ca>; [redacted]
Subject: RE: 217024 - 7th Line [redacted]

Hi Scott,
I was expecting your call today regarding the response to the EA process.
Please be aware that we are in the process of finalizing our response. However as there are a number of consultants involved this is taking more time than anticipated.
We are preparing the response and will likely send it by next week.
Regards

[redacted]

From: Scott MacKenzie [mailto:smackenzie@innisfil.ca]
Sent: December 5, 2017 5:28 PM
To: [redacted]
Cc: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: FW: 217024 - 7th Line T.O.I.

Hi [redacted]

Please see attached for property requirements along the 7th Line that has come up during the EA process. I didn't see your name on the attendance sign in sheet at the open house on October 11, 2017. Did you attend? If you recall, I mentioned it to you at our October 10, 2017 meeting.

Do you have time for a call tomorrow to discuss, say at 4pm? Magdalena and myself can call you.

Thanks,

Scott

Scott MacKenzie, P.Eng.
Development Engineer

705-436-3740 Ext. 3242
1-888-436-3710 (toll free)

From: Magdalena Koehler
Sent: November 27, 2017 1:50 PM
To: Scott MacKenzie <smackenzie@innisfil.ca>
Cc: Nancy Zhou <nzhou@innisfil.ca>
Subject: FW: 217024 - 7th Line [redacted]

Hi Scott,

Property Requirement Plans for [redacted] are ready – can you forward to [redacted] we can have a conference call after.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: Rudy Weckerle [mailto:weckerle@ainleygroup.com]
Sent: November 15, 2017 4:50 PM
To: Magdalena Koehler <mkoehler@innisfil.ca>; Carolina Cautillo <ccautillo@innisfil.ca>
Cc: Tammy Kalimootoo <kalimootoo@ainleygroup.com>; Steve Fournier (fournier@ainleygroup.com) <fournier@ainleygroup.com>
Subject: RE: 217024 - 7th Line T.O.I.

Magdalena,
Please see attached pdf's, one set showing the Limit of Disturbance, while the other set does not show the Limit of Disturbance.

Regards,

Rudy Weckerle, CET
Design Technologist
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 226

[redacted]

Hello Magdalena,

I do apologize for the delay in responding to your communication regarding the Preliminary Property Requirement Plans for [redacted] identifying the Limit of Disturbance and Road widening that is proposed along the southern limits of the [redacted] property in Innisfil.

Figure 1-Site

Currently the lands, that are the subject of a Road Widening proposal, are owned by DIAM Fox Hill Property Inc. These lands include Block 209, 211 and 212, on Registered Plan 51M-701, Town of Innisfil. These lands were purchased from Maple Lane, Lands and Development Co. Ltd., in December 2016 as an approved Draft Plan of Common Element Condominium with 85 Units. The County of Simcoe and Town of Innisfil, granted Draft Plan Approval to the Common Element Condominium Town Homes on these Lands on February 10, 2010. Since then DIAM Fox Hill Property Inc have obtained extensions for clearing conditions from the Town of Innisfil and the County of Simcoe. Till date (subject to minor changes to the Draft Approved Plan relating to the Tied Parcels of Land (POTL's)) that status quo has not been affected.

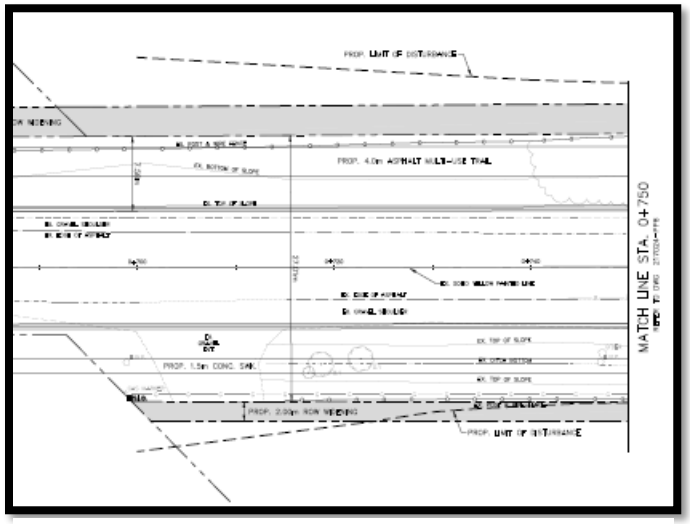

Figure 2-Road widening proposal and Area of Disturbance

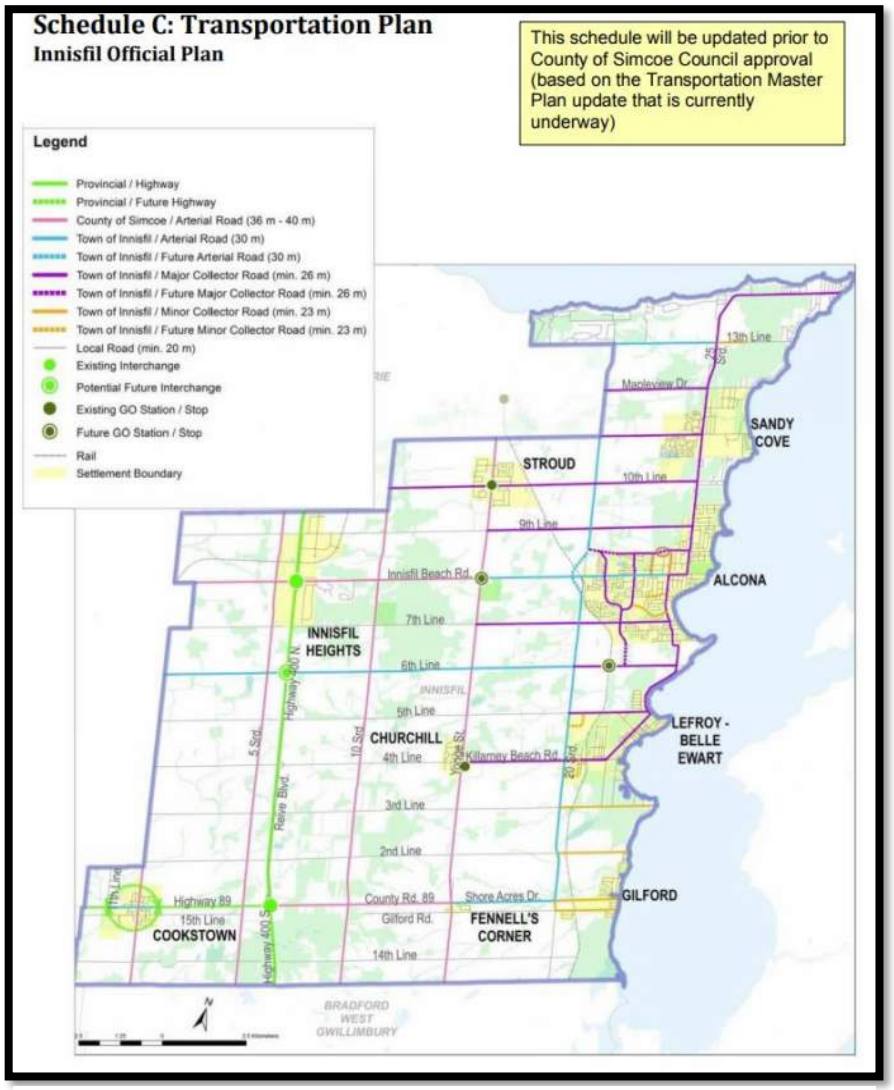

Figure 3-Transportation Plan OP

On December 5, 2017 we were informed through an e-mail that the DIAM properties are subject to an EA Study that proposes, on a preliminary basis, a road widening and road disturbance areas on their properties. We were also informed that all affected landowners were invited to a Public Meeting to be held on October 10, 2017 at Innisfil. My clients and the owners of the property on Fox Hill Street were not sent the invitation to attend at their current and valid address and therefore were unaware of the meeting till a few days prior to the Public meeting when they were informed casually, informally and verbally by Town Staff.

As such adequate time was not given to DIAM to attend the public meeting as per the policy related to an EA process. This resulted in our not being able to voice our opinion at the meeting. I am however, grateful for this chance to submit our views on the EA process, in so much, as it relates to our property. Through this letter we will try to highlight the impact of the preliminary proposal by the Study Group (Ainley Group) that the road widening and road disturbance proposal will have on the Approved Draft Plan of Common Element Condominium and my client's business.

Before we begin to present the impacts, a road widening will have on our project, we stand firmly against such a move by the Town and the Study Group. We request that the Town find other avenues to adjust their proposal that would leave the DIAM Fox Hill Properties and the Draft Plan of Common Element Condominium untouched.

Here are some of our arguments against the proposal.

1. **Lands are Draft Plan Approved**

The Lands were Draft Approved in the year 2010 as a Common Element Condominium with 85 Parcels of Tied Lands (POTL's). These lands were purchased in 2016 at a premium due to that approval. The Draft Plan of Condominium approval is current as extensions have been approved for clearance of conditions. At the time of approval, no widening was required as the 7th Line was build out at 27m as per the OP policies at that time. After the purchase of the lands from Maple Lane, Lands and Development Co. Ltd., the present owner has installed a sales centre with a permit, sold more than 60% of the lots along 7th Line and invested vast amount of monies in fixed, variable, economic, opportunity and capital costs, that would be sunk if the project was to be impacted so drastically at this stage due to the widening. It is a matter of grave concern if the group tasked with the EA study does not take into account the repercussions of their recommendations to this property and the project approved on these lands.

2. **Official Plan**. The widening is not mentioned in the Official Plan. In the OP Schedule C: Transportation Plan, the 7th Line is Major Collector Road with a minimum 26m ROW. The 7th line has not been singled out for an EA Study or for Road widening. The OP was approved and Final in 2017 and has the most current policies**.**

3. **Project Impact:** The compilation is as received from various consultants and client.

3.1. DIAM Fox Hill Properties Inc.- Changes to the project due to road widening will alter the very principles of profitability under which the lands were purchased. The changes to FSI, design, sales potential, loss of Image and reputation to DIAM brand and potential legal claims could mean the abandonment of the project as it could become non-viable. We currently have nearly 45% of the project sold and all of these units are facing 7th Line. The resultant widening would mean cancellation of these sales, resulting in loss of revenue, marketing efforts, financial loss in terms of construction, consulting and design costs gone into the project so far and irate customers giving DIAM a negative advertising in the community as a developer. Added to this cost would be the cost of redesigning the project, cancel the sales, yet honor the real estate commission commitments on the sales already made, re-align the marketing campaigns, delay the further sales till the project is re-designed and marketing efforts lined up. In addition, we have already hired staff to support the project at various levels and all these factors cost money, time and efforts. This, if, the project can be salvaged. The impact it will have, has both monetary and non-monetary angles but definitely monetary loss will be huge and might make us drop the project and lose the money that we have invested in the project so far. This amount is in the tens of millions

3.2. Consultants and Works- We have reviewed the project against various documents and reports and find that most of the recommendations by consultants will be impacted.

3.2.1. Landscaping-The consultant had a quick review of what a 3m widening/re-alignment would look like with regard to the Landscape Plan planting proposal. In short, it would eliminate all the Landscape planting along the 7th Line frontage of the site. Should the location of the towns be adjusted by 3m north to accommodate the widening, there would be a difficulty in providing sufficiently sized community amenity areas for the 200+ (100 units x 2 residents per) residents that will live at this site.
In addition, each of the units would have a diminished amenity area for each of the lots, which in turn may be difficult to sell in comparison to other developments that would offer a fuller backyard play space. He was also convinced that there would be insufficient space for trees interior to the site. There would be sufficient space made for driveway asphalt and pedestrian walkways however, there would be diminished space to grow interior planting, and thereby not meeting many of the Engineering Design Standards and Specifications Manual requirements (Section 8). We would also have concerns about the vehicle circulation within the site and even the economic viability of the project given this late request for a 3m road widening dedication but these can be more fully investigated by the other consultants. And on top damage to the brand is extremely significant.

3.2.2. Legal Consultant-All Agreements will need to be terminated prior to 31st August 2018 failing which the Vendor will require to honor the agreement. The EA study and Council approval will need to be in place for a decision of termination by that date. In case of failure the Vendor will need to enter into the binding agreements of purchase and sale and deliver units as per the agreement. In short, the legal implications are tremendous and may run into losses that cannot be estimated at this time.

3.2.3. Architect-The total loss of 1070m^2 in terms of GFA will result in a reduction of 6 housing units and reduced number of units and setbacks, reversal of sales, loss of lands and associated

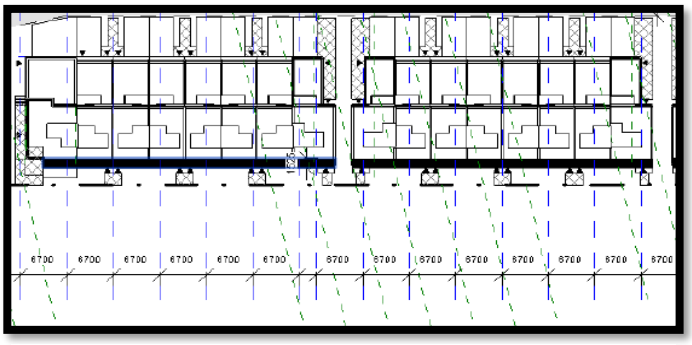

Figure 4-East Block Reductions due to Road Widening

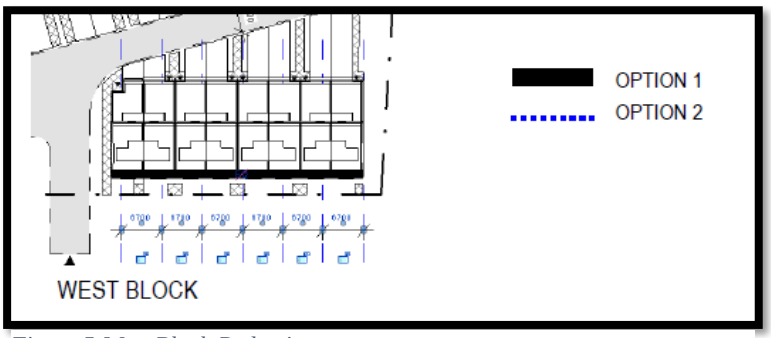

Figure 5-West Block-Reductions

changes to studies reports, documents, marketing strategies, time and effort will run into millions of dollars. The Town may also not approve the setbacks as it will impact the quality of living for future owners and all sales may fail causing abandonment of project.

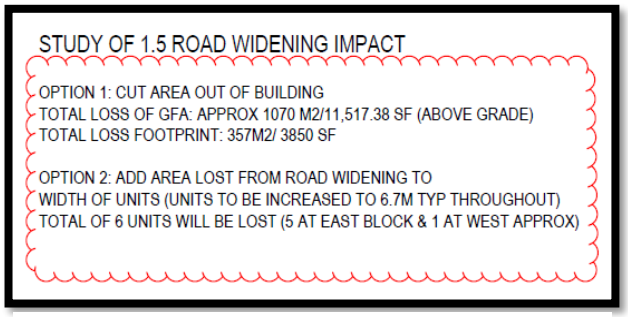

Figure 6-GFA and Impact to area and units

3.2.4. Engineering- The Engineering Consultant has informed that with specific regard to the proposed Right-of-Way widening by the Town of Innisfil on the 7th Line along the section east of the Metrolinx corridor to Webster Boulevard, the impacts to the DIAM Developments Radiance Condominium Development (Draft approved Blocks 209, 211 & 212) from a development engineering perspective are as follows. As the impact to draft plan of condominium stemming from the proposed widening of 7th Line is generally unknown at this time, this summary should not be considered exhaustive of all potential revisions required. With this proposed Right-of-Way widening, it is presumed by R.J. Burnside & Associates Limited (Burnside) that his will impact the internal site density as well as the internal street alignment, requiring a fully revised draft plan for Blocks 209, 211 & 212.

The engineering implications of this would require full revision, limited to the re-grading of internal roads and lots, realignment and redesign of proposed servicing arrangement, revision to the proposed infiltration galleries (and subsequent SWM report), minor revision to proposed erosion and sediment control design and provisional truck turning analysis as required, in support of revised draft plan preparation. In terms of external design revisions, this series of revisions would be limited to the grading design revisions along the 7th Line frontage of Blocks 209, 211 & 212. A subsequent item that will be impacted by the proposed Right-of-Way widening is the cost of works estimate (to be included in the site plan agreement). As this has been completed to date based on the approved draft plan, this will require full revision following the re-design work mentioned above.

The reversal of the entire process of Draft Plan Approval will most likely be required with changes to the internal street alignment being the common elements. This reversal and re-application is likely to cost DIAM dearly in costs, time and reputation.

3.2.5. Planning- The planning process for the draft approval of the Common Element Condominium started before 2010 and Draft approval was granted in 2010. Currently due to change of ownership the project has moved forward rapidly. An application for Part Lot Control exemption to permit the creation of the parcels of tied lands is being proposed as also the application for an amendment to the zoning bylaw.

A permit for a sales centre was procured and constructed. Sales of 45% of total units have been made and we are working proactively with the Town to finalize all pending conditions of the Draft Approval. Necessary extensions have been procured to keep the approval from lapsing. An application for extension to Feb 2019 is with the Town for approval.

Since 2010 to October 2017 no reference was made on a move by the Town to undertake an EA study which could likely impact the project by way of a road widening. As such all proposals related to parcels and units on the land have been made on the basis of existing Town policies and consultations with staff.

From a Planning perspective the implications are tremendous. A road widening could potentially affect the Approved Common Elements and require re-applying for a Draft Plan of Condominium anew. If this was to happen, the client may be faced with tremendous pressure to abandon the project or face incredible losses and challenges that may make the project non-viable as costs rise above the market price of the product he gets approval for in future.

Were the road widening imposed on the client through expropriation, the cost in compensation could run into tens of millions of dollars and litigation. I personally do not believe that the Town can require the Client to part with the lands for road widening out of goodwill or as part of the development approval process as the project is Draft approved without the road widening. Nether the Schedule ‘C’ Class EA Study is mentioned for 7th line in the Official Plan nor the road widening.

In view of the above, and on behalf of DIAM Fox Hill Properties Inc., I am required to inform you that we do not support the Schedule C Class EA preliminary proposal to:

1. Widen the Road by 3m onto DIAM Fox Hill Properties through the EA process nor require DIAM Fox Hill Properties to gratuitously transfer lands for road widening due to any current or future Planning application.

2. Re-define the daylight triangle at the intersection of Webster and 7th Line to include any areas within the Draft Approved Plan of Common Element Condominium. The daylight triangle has already been given at this intersection and is part of the approved plan

Thank you,

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 2 – March 28, 2018
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

- Security/Safty: you are opening the area directly behind My home to way more people traffic. And possable theft security/Safty issues: Not addressed in your plans.
- Forest/environment: Makes no-sense to "clean cut" linearly or esticaly!
- I paid a premium for this lot: - devalue my home.
- Privacy: You are elimating all the privacy the area now provides.
- Noise: By clear cutting you are increasing the noise Level greatly. Trees as they are, provide buffer from road, people & other noise.
- I am not impressed with the Lack of consideration for those of us directly effected.

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-3740 ext. 3226.

Andrea Potter

From: Magdalena Koehler <mkoehler@innisfil.ca>
Sent: Monday, March 12, 2018 5:14 PM
To: Jodi Moore; Andrea Potter (potter@ainleygroup.com); Steve Fournier, P.Eng.
Subject: FW: 7th Line
Attachments: Notice FINAL.pdf

Hello,

Correspondence with the Resident - for the ESR.

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: Magdalena Koehler
Sent: March 9, 2018 12:26 PM
To: [redacted]
Subject: RE: 7th Line

Hello [redacted]

The 7th Line is undergoing the Class Environmental Assessment and yes, at this time we determined that widening is required/justified. The preferred alternative is to have 3 lanes from the 20th SR to just east of the intersection with Webster Blvd. and keep it two lanes east towards St. Johns.

We are hosting a Public Open House where all information will be available for Residents' review and comments. I'm attaching the notice, so you could attend if you wish.

The 5 year plan involves detail design, utility relocation and reconstruction of the road.

Also, the information from the POH No. 1 that was hosted in October 2017 is available on the website http://www.innisfil.ca/7thea

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
705-436-3740 Ext. 3226
1-888-436-3710 (toll free)

From: [redacted]
Sent: March 8, 2018 10:20 AM
To: Magdalena Koehler <mkoehler@innisfil.ca>
Subject: 7th Line

To: Magdalena Koehler, C.E.T., CAPM, Town of Innisfil

As a homeowner on the [redacted]e, I am curious to know what the plans are for this line, specifically between the 20th SR and St Johns Rd. From the surveyors this past summer I learned that there might be plans to bury or relocate Innisfil Creek. No doubt, your top priority would be to widen the road. What are the plans for the next 5 years?

Thank you for your response.

[redacted]

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 2 – March 28, 2018
4:00 p.m. to 7:00 p.m. – Town Hall Community Rooms

Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

PHASE 2

DESIGN ALT. # 1

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Innisfil

Town of Innisfil
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Ainley GROUP

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I'M IN FAVOUR OR #1 DESIGN ALTERNATIVE
- I LIKE HAVING SIDEWALK & MULTI-USE TRAIL
- I LIKE THE ENVIRONMENTAL IMPROVEMENT TO BANK CREEK

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
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Innisfil, ON L9S 1A1
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Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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- Security :- more people have access to my back yard !!!
- privacy :- this plan totally eliminates privacy. I paid a premium for this lot!
- Loss of house value !!
- Makes no-sense to clear cut a mature treed area - no-sense financially - or ethically
You are about to destroy the natural beauty of my property !!

Please submit this Comment Sheet by **April 11, 2018** to either:

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Capital Project Manager
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Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

[redacted]

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Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Tuesday, April 03, 2018 2:41 PM
To: 'Carolina Cautillo'
Cc: Jodi Moore; Andrea Potter
Subject: RE: 7th line improvements resident comments from open house

Carolina

Yes, we will file it with the other comments received and treat it as such and prepare a response for the Town's review.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: Carolina Cautillo [mailto:ccautillo@innisfil.ca]
Sent: April-03-18 9:18 AM
To: Steve Fournier; Andrea Potter; Jodi Moore; Nathanael Couperus
Cc: Magdalena Koehler
Subject: FW: 7th line improvements resident comments from open house

Hi folks,

As the below is correspondence related to the EA, did you want to provide the response?

Thanks

Carolina Cautillo
Project Manager, Roads, Traffic, & Transportation
705-436-3740 Ext. 3256
1-888-436-3710 (toll free)
ccautillo@innisfil.ca

From: [redacted]
Sent: April 2, 2018 4:10 PM
To: Carolina Cautillo <ccautillo@innisfil.ca>
Subject: 7th line improvements resident comments from open house

Carolina, I have a concern from a resident about clear cutting behind Vance Crescent for road improvements. To my knowledge there is no widening of the road their or sidewalk if I remember correctly? Can you advise if there is a sidewalk going in on the North side of 7th from St. John's to Webster? There is no place on the town website for updates or drawings for residents to put in comments.

[redacted]

Town of Innisfil Customer Service
705-436-3710 / 1-888-436-3710
inquiry@innisfil.ca

Innisfil

Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Open House No. 2 – March 28, 2018
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Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

PHASE 2 PREFERRED SOLUTION -
DESIGN ALTERNATIVE #1
WITH FULLY URBAN CROSS SECTION

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Innisfil

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COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Please do PHASE 2 PREFERRED SOLUTION with design alternative I. WITH URBAN CROSS SECTION Whatever you decide Please give us a Multi Use 3 M Path from ST JOHNS TO 20TH side Road,

[redacted]

Good Work!!!

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Monday, April 02, 2018 5:10 PM
To: Jodi Moore
Cc: Andrea Potter
Subject: FW: 7th Line Improvements EA - [redacted]
Attachments: RE: Hazard Lands Designation - Watercourse #5 Alcona south

Jodi

Please file for response preparation and ESR

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

From: [redacted]
Sent: March-31-18 12:20 PM
To: Fournier@ainleygroup.com
Cc: 'Magdalena Koehler'; [redacted]
Subject: 7th Line Improvements EA - [redacted] Comments

Steve,

As you are aware, the [redacted] lands, which are included in the OPA No1 development area, are located on the south side of 7th line between 20th Sideroad and the [redacted].
Please be advised, that per instructions from our client, we are currently proceeding with preliminary engineering design work for this property in preparation for draft plan approval submission.

Further to our discussions at the 7th Line Improvements EA Public Meeting No2 of March 28, 2018 in the Town Hall Community Room, we respectfully wish to provide, on behalf of [redacted] the following comments:

7th line Road Plan & Profile Drawings

At our recent meeting we noticed that Ainley Group has prepared preliminary plan & profile drawings for 7th line.
We would appreciate receiving a digital copy of the preliminary plan & profile drawings, for coordination purposes with our preliminary engineering design work for this property.

We are also prepared to discuss with the Town the oversizing and cost sharing of the proposed Previn Court (Alriz developments) Northerly SWM Pond to address 7th Line SWM requirements

7th line Road Spill Condition

As you are aware, C.C. Tatham & Associates Ltd. was commissioned in year 2011 by the Town of Innisfil to prepare a Master Drainage Plan(MDP) in support of OPA No 1.
The MDP identified that under existing Regional Storm flow conditions the capacity of the culverts under the rail line are exceeded causing water to back up to a point where it will spill over the tracks in the vicinity of the 7th Line and lands just south of the 7th Line. The low point in the tracks has been surveyed at ~250.39 just south of the 7th Line which results in the maximum backwater elevation of 250.60 .

It was our understanding that Hazard Land Policy wording was included in the MDP to address Watercourse #5 (Bank's Creek) backwater condition, as follows:
"To the extent the 7th Line road profile controls flood elevations the reconstruction of the 7th Line should be completed to consider the potential backwater condition to ensure safe access/egress conditions are met."

To assist you on this matter, attached please find a copy of the C.C. Tatham & Associates Ltd. email to LSRCA dated Jan 1, 2012, for your information and file.

Please confirm that the current road design identified on the preliminary plan & profile drawings for 7th line addresses the existing Backwater / Spill condition and ensures that safe access/egress conditions are met.

7th line Road Watermain Installation west of the Railway

It was our understanding at the 7th Line Improvements EA Public Meeting No1 that a watermain was proposed to be extended within the 7th Line right of way west of the railway lands to service OPA No1 development area.
We now have been advised at Public Meeting No2 that the subject 7th Line watermain installation has been deleted because it was not identified as an option in the Innisfil Water and Wastewater Master Servicing Plan (MSP)Update EA currently in process.
We attended the Innisfil Water and Wastewater Master Servicing Plan Update EA Public Meeting No2 of March 20, 2018 in the Town Council Chamber and we are aware that the MSP Update inadequately only identified one option for servicing the OPA No 1 lands.
We are currently providing comments, on behalf of [redacted]), to InnServices Utilities Inc. / C.C. Tatham & Associates Ltd. and requesting that additional watermain options, such as the 7th Line watermain extension installation, be included in the MSP Update EA process, so that all options have been considered.
It is premature and inappropriate at this time to conclude that the 7th Line watermain installation is not a viable option to service the OPA No1 lands and therefore exclude identifying this watermain within the 7th Line Improvements EA process.

We are of the position that the 7th Line watermain installation is a viable option for servicing the OPA No1 lands and therefore we respectfully request that the 7th Line watermain installation west of the railway corridor be identified on the 7th Line Improvements EA drawings.

We would be most pleased to meet with yourself and/or Town staff to discuss these comments in more detail, at your convenience.

Regards,

[redacted]

Disclaimer:
The accompanying files are supplied as a matter of courtesy. The data is supplied "as is" without warranty of any kind either expressed or implied. Any person(s) or organization(s) making use of or relying upon this data, is responsible for confirming its accuracy and completeness. [redacted] is not responsible for edited or reproduced versions of this digital data.

Innisfil

Town of Innisfil
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Ainley Group

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

CHOICE DESIGN ALTERNATIVE ~~#~~ 3
WITH OUR PROPERTY [redacted] THE
TREES WE HATE THE FACT THAT ANY OF
THIS IS GOING TO BE REMOVED.
HAVING BOUGHT THERE 27 YEARS AGO IT
WAS THE PRIME SELLING FEATURE ON THIS
HOUSE.
CAN THE EXISTING CREEK NOT BE LEFT WHERE
IT IS & MOVE THE DEVELOPMENT SOUTH? APPEARS
TO BE AMPLE ROOM ON SOUTH SIDE TO
ACCOMODATE THIS WITHOUT DISTURBING THE CREEK
& TREES? A MULTI USE TRAIL IS NOT →

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address

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REQUIRED IN THIS AREA, THE PAVED SHOULDERS ARE SUFFICIENT.

IF THE TOWN GOES AHEAD WITH THEIR CHOICE, WE WILL REQUIRE A PRIVACY FENCE TO BE PAID FOR BY THE TOWN + INSTALLED,

INCREASED TRAFFIC NOISE COMING OFF OF QUARRY WILL ONLY BE LOUDER WITH THE REMOVAL OF TREES.

Please leave this area blank.

Innisfil

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Ainley GROUP

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I WOULD LIKE TOO ADD MY VOICE OF OPPOSITION TO CLEAR CUTTING A SECTION OF MATURE TREES TO WIDEN THE 7TH LINE. I BELIEVE THERE MUST BE BETTER WAYS TO MINIMIZE THE NUMBER OF TREES BEING CUT DOWN FOR THIS PURPOSE. THE TREES ACT AS A NATURAL NOISE BARRIER NEVER MIND THE POTENTIAL DAMAGE TO THE LIVE STREAM ALONG THE EDGE OF THE TREE LINE I HAVE LIVED IN THE AREA FOR ALMOST 30 YEARS AND DO NOT WISH TOO SEE SUCH A DRASTIC CHANGE MADE TO THIS NATURAL AREA

Please submit this Comment Sheet by **April 11, 2018** to either:

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Capital Project Manager
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Innisfil, ON L9S 1A1
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Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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COMMENT SHEET – PLEASE PRINT

APRIL 6/18

Please print all responses. Use back of page if necessary.

DESIGN ALTERNATIVE 3 WITH TWO LANE RURAL CROSS-SECTION FROM WEBSTER BLVD. TO ST JOHN'S RD., PROVIDING 1.5M PAVED SHOULDERS IN LIEU OF MULTI-USE TRAIL AND 1.0M GRAVEL SHOULDERS, IS THE BEST SOLUTION AND KEEPS IMPACTS TO A MINIMUM.

BANKS CREEK CURRENTLY PROVIDES ADEQUATE STORM WATER DRAINAGE DURING WET SEASONS AND INCLEMENT WEATHER.

THE ONTARIO ENVIRONMENTAL ASSESSMENT ACT AFFIRMS THAT PROTECTION OF CONSERVATION MUST BE PROVIDED. TRILLIUMS, BATS, PILEATED WOOD PECKERS AND MANY OTHER VEGETATION AND WILDLIFE SPECIES THAT CURRENTLY RESIDE IN THE NATURAL ENVIRONMENT LOCATED ON THE NORTH SIDE OF THE 7TH LINE WILL BE IMPACTED THE LEAST.

→

Please submit this Comment Sheet by **April 11, 2018** to either:

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
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Fax: 705-726-4391
Email: fournier@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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RESIDENTS WHO OWN ADJACENT PROPERTIES WILL CONTINUE TO MAINTAIN SOME OF THEIR TRANQUIL NATURAL ENVIRONMENT AND PRIVACY.

Please leave this area blank.

TOWN OF INNISFIL
Customer Service

APR 0 6 2018

RECEIVED

Andrea Potter

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: Tuesday, April 03, 2018 2:36 PM
To: [redacted]
Cc: 'Magdalena Koehler'; 'Carolina Cautillo'; Andrea Potter
Subject: RE: 7th line EA

[redacted]

I will check with Town staff, it should be uploaded today or tomorrow.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

-----Original Message-----
From: [redacted]
Sent: April-02-18 8:04 PM
To: [redacted]
Cc: fournier@ainleygroup.com; mkoehler@innisfil.ca
Subject: Re: 7th line EA

Hello,

I just checked again and the updated plans still don't seem to be up on the Innisfil.ca website. I was actually looking for a link to the comment sheet that was available at the open house to direct my neighbours to. Is that something that can be added to the website quickly? Or is there another way for people who didn't make it there last week to submit feedback?

Thank you,

[redacted]

> On Mar 29, 2018, at 4:44 PM, Garrett Wright <garrettdwright@hotmail.com> wrote:

>
> Hi Steve,
>
> It was good to meet with you last night at the open house information session.
> As you may have sensed, there were a few of us that live on [redacted] (that back onto 7th line) that are not too happy with a few of the proposed ideas regarding the creek. You said that all the slides from the boards last night would be on the website. I am not able to find anything besides the 5 month old initial ideas from the meeting back in October. Do you have a link to the updated plans that were presented last night. If you are able to either send me the link, or perhaps email me the presentation slides directly that would be greatly appreciated.
>
> I tried calling you today, left a message and got no reply. I am worried that with this being a long weekend (possibly Monday too?) my time to educate my neighbours that were not able to attend, have them digest the information, and make intelligent comments by the April 11th deadline is a little short.
>
> Please feel free to contact me by email or phone to let me know when and where I can access the information.
>
> [redacted]
> Sent from my iPhone

Innisfil

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Ainley GROUP

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Please print all responses. Use back of page if necessary.

See attached letter.

Please submit this Comment Sheet by **April 11, 2018** to either:

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Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
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Name

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To Magdalena Koehler and Steve Fournier;

I would like to express my strong disagreement with some of the proposed design options for the 7th Line improvements.

My specific concerns are the cutting down (clear cutting) of the trees on the north side of 7th line and south of Vance Crescent. Guessing from google maps, the area of concern is the approximately 120 m of trees from behind 993 Vance Cres to 1019 Vance Cres. As far as I can tell, this is the only area in the scope of the project where the limit of disturbance (of Design Alternative 1) completely removes a stand of trees.

Living pretty much [redacted] of this clear cutting would drastically change the look, the feel, and the overall enjoyment of our back yard.

We bought our house a little over two years ago, and were overjoyed with what we had found - a nice house on a quiet crescent surrounded by trees and green space. Even though Innisfil is not quite as densely populated as some of the regions to the south, sitting in the back yard in the summer makes us feel like we are truly escaping something. It is quiet because of the noise reduction the trees provide, it is shady and cool because the trees are so large, it is private because of the visual barrier the trees provide of the road, and it is relaxing because of the birds singing and squirrels running. Simply put, we love it.

We would lose all of this if the "re-naturalization" goes ahead. I realize that landscaping will be done to improve the area once construction is complete, but it would take decades to get back to the density of vegetation that we have now.

On top of this, I have several other concerns.

One would be privacy/security with increased foot traffic and decreased visual barriers.

Another would be property value. As mentioned before, one of the main selling features of this house was the backyard and the view and lack of view of the road it provided. I feel like these changes would decrease property value until such time that the vegetation filled back in. One never knows what will or won't be developed around their home as time goes on, but with the property in question being too small for houses, and being under the control of the Lake Simcoe Region Conservation Authority we never imagined we would lose the vegetation that was a significant factor in our decision to purchase our home.

My third concern would be over disturbance to the soil, and the ability to regrow the same type of vegetation. Judging first hand from my property, and stories from the neighbours, (not to mention the washout further up the creek) the soil around here is very sandy. Removing vegetation and the associated root structures, to me, opens

the door to more erosion. This seems like it would make things like creating a meandering creek, and the reestablishment of trees difficult. I am, by no means an expert on this though, so you can take this for what it is worth.

On the whole, I do feel like this project will offer my family and I something positive. My mother in law lives on [redacted] is likely where my children will go to school, and we routinely access the waterfront from the end of 7th line. We will definitely use this stretch of 7th a lot over the coming years and having something like a dedicated bike lane would make me feel much safer than the current gravel shoulders. I am not even opposed to the separate multi-use trail. I just feel like an amendment can be made for this small stretch of the project. Possibly using Design 1 for most of the project, but for this 120 m stretch, using something more in line with Design 3. When talking about a 3 km stretch of road, it is hard to find one solution that works for the whole thing. That is why the clear winner for Phase 2 was "Alternative 5 – A Combination of the Above". Nothing makes sense as a blanket solution for the whole 3 kilometre distance, so please don't force one.

There was mention at the meeting on March 28th of retaining walls, adjustment to the lane/trail spacing, and adjusting the slopes of the creek bed walls, all of which could be used to reduce the impact for this small percentage of the entire project. Also the travel lanes for design alternative 1 are 4.25 m wide from Webster Blvd to St. John's Rd. In the other design alternatives the lanes are 3.5 m wide for this section. The extra 1.5 metres seems unnecessary and this width could be reduced to minimize the impact to the north side of the corridor for this stretch of 7th Line.

Please consider these options.

Feel free to contact me for further thoughts, or clarification of anything included in this letter at any time.

[redacted]

From: [redacted]
To: Steve Fournier, P.Eng.
Cc: "Carolina Cautillo"; "Magdalena Koehler"; Jody Marks; Tammy Kalimootoo [redacted]
Subject: RE: 7th Line Cut fill within floodplain
Date: Tuesday, February 05, 2019 10:41:41 AM

Hi Steve, thank you for the information you provided last week regarding the proposed floodplain cut required to compensate for the 7th Line road widening.

Based on the drawings provided, it appears that there are widenings required on both the north and south side of 7th Line between 20th Sideroad and the Metrolinx railway. How much of the ~3500 to 5000 m^3 of fill in the floodplain is located on the north vs. south side of 7th Line and why is the compensating floodplain cut only being proposed on the north side of 7th Line?

Under the future lowered Regional floodplain scenario [redacted]), we understand that a floodplain cut volume of only approximately 600 to 900 m^3 is required. Our client is amenable to providing this cut within their lands in the general location indicated [redacted] **as long as it does not increase the floodplain footprint** (or decrease the developable area) on their property. Any required floodplain cut balance volume that is not able to be realized within the post culvert improvement floodplain limits should be accommodated elsewhere (i.e. on the lands located to the south of 7th Line).

The proposed [redacted] improvements will reduce the Regional Storm floodplain limits on (and therefore provide a benefit to) the lands north and south of 7th Line. In addition, it will reduce the amount of and depth of Regional Storm flooding on 7th Line, providing a benefit to the Town. [redacted]

Please advise when a meeting with the Town can be arranged.

Thank you,
[redacted]

[redacted]

From: Steve Fournier, P.Eng. <fournier@ainleygroup.com>
Sent: February 1, 2019 2:24 PM
To: [redacted]
Cc: 'Carolina Cautillo' <ccautillo@innisfil.ca>; 'Magdalena Koehler' <mkoehler@innisfil.ca>; 'Jody Marks' <marks@ainleygroup.com>; Tammy Kalimootoo <kalimootoo@ainleygroup.com>
Subject: 7th Line Cut fill within floodplain

[redacted]

We attach a schematic of proposed cut fill areas and some notes on the comparison of the two flood levels. Please call when you have had an opportunity to review the material.

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

Response Provided

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3451 P Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

October 22, 2018 File No. 217024

'SAMPLE' COVER LETTER

[redacted]

Re: Town of Innisfil
7th Line Improvements Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Open House No. 2
Response to Comments Received

Dear [redacted]:

As you know the Town of Innisfil hosted Public Open House No. 2 earlier this year to provide information pertaining to proposed improvements to the 7th Line. Following that meeting a number of comments were submitted by area residents and interested parties. We received some great feedback on the options under consideration and on the proposed improvements in general.

The Project Team reviewed all comments received at the time of their submission. The proposed improvements were re-visited in view of the comments received. Supplementary field work was also completed and additional meetings were held with key agencies (i.e. Lake Simcoe Region Conservation Authority) and other stakeholders to discuss the project further.

Following POH No. 2 and a review of comments received, Design Alternative 1 as presented at POH No. 2 has been selected as the Preferred Design. As such, a three lane urban cross-section will be constructed from the 20th Sideroad to east of Webster Boulevard consisting of two 3.75 m wide travel lanes, one 4.0 m wide continuous centre turn lane, a 3.0 m multi-use trail on the north side and a 1.5 m sidewalk on the south side. A two lane urban cross-section will be constructed from east of Webster Boulevard to St. John's Road that will provide two 4.25 m wide travel lanes and a 3.0 m wide multi-use trail on the north side of the corridor. In an effort to improve the quality of Bank's Creek and the associated fish habitat, an approximately 1.0 km length of the watercourse will be shifted north. Naturalization of the channel will be completed providing an increased separation distance between the roadway and the creek resulting in improved fish habitat.

We recognize that you submitted a comment regarding the project following POH No. 2 and we provide this correspondence to provide an update regarding the project and to provide a formal response to address your concerns. Please find attached a summary of the comment(s) that you submitted and the associated municipal response.

An Environmental Study Report is being prepared for this project and will be made available for a 30-day public review period. A Notice of Completion will be issued to provide information pertaining to the filing of the Environmental Study Report and to identify available viewing locations.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc:

	M. Koehler	Town of Innisfil, Capital Project Manager
	C. Cautillo	Town of Innisfil, Project Manager, Roads, Traffic, & Transportation
	J. Marks	Ainley Group, Environmental Planning Assistant

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C1: "I reside on the*** [redacted] ***close to the lake. During heavy rains the creek to the rear of our property floods its banks and makes a mess of adjoining properties. The cause of this problem is the restriction placed on the water flow by the small bridge on Lakeshore Road. For the most part of the year it is not a great problem, (the flooding) however, once is enough considering the damage it can cause. Since a major undertaking regarding road work seems incomplete without also repairing the associated bridge problem, I suggest that this too be included in the construction project."***

   RESPONSE: A separate Class Environmental Assessment has been initiated to complete improvements to the subject bridge. For more information please contact the Project Manager:

   Ms. Amber Leal,
   Email: aleal@innisfil.ca
   Tel: 705-436-3740 ext. 3246.

COMMENTS SUBMITTED FOLLOWING PIC NO. 2

RESPONDENT NAME: [redacted]

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1. ***C3: "The [redacted] would like to comment regarding the 7th Line Improvements from the 20th Sideroad to Lake Simcoe. With the County of Simcoe reconstruction of lnnisfil Beach Road from 5th Sideroad to 20th Sideroad, in the design and construction, a multi-use trail is proposed in the rebuild. If the 7th line improvements included this type of trail, in the future, it could interconnect northbound on 20th Sideroad. These sections of trail could be the start of a complete interconnecting Town multi-trail system; as well as, being part of a County-wide trail network. As for the benefit for the lnnisfil residents, this trail addition could result in connecting the lakeshore community via lnnisfil's 20th Sideroad. In time, establishing 'spur links' could connect the villages of Churchill and Stroud, the lnnisfil Heights and Hwy 400 neighbourhood to tie all points to the lnnisfil Recreation Center (aka YMCA). In closing, as a [redacted], we propose a multi-use trail to run parallel to the roadway. It is hoped that other potential users realize the opportunity at hand and add their support to the future recreational trails."***

   RESPONSE: Design Alternative 1 as presented at POH No. 2 has been selected as the Preferred Design. As such, a 3.0 m multi-use trail will be constructed on the north side of the corridor from the 20th Sideroad to St. John's Road. This is in accordance with the Town's Trail Master Plan (November 2016) and will contribute to improved trail connectivity in the area of Alcona.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C4: "It was very good of you to take the time to give*** [redacted] ***and I, a personal visit, regarding the future development of the road at the 20th and 7th line of Innisfil. I would like to express to you, the importance of the School House property owned by*** [redacted]***. It is*** [redacted]***, treasure and his home. Not only his home, the property and all his trees.*** [redacted] ***has a regard and treats all his trees, and especially the one's along the side of the 20th and to his gate on the 7th line, as his "Babies". Progress and future development we know about. But, how unfortunate to have and to love a property from the middle 1960"s to present day (2018) and to reach an age of close to 80 years old and now, to be in a situation to be expected to sit back and watch it taken away. Progress, how sad for the home owner. Surely there must be a better solution."***

   RESPONSE: As you know the subject property is located in the southeast quadrant of the intersection of 7th Line and 20th Sideroad. The 7th Line abuts the property on the north side and the 20th Sideroad abuts the property at the west side. Following POH No. 1, the Preferred Solution was modified slightly to reflect comments received and updated traffic analysis data for future developments in the area. The number of required lanes at the west end of the study area was reduced from four lanes to three lanes and the width of the multi-use trail was also reduced from 4.0 m to 3.0 m. These design alterations eliminate the need to acquire property from [redacted] abutting the 7th Line. The design at this location can be contained within the existing municipal right-of-way.

   As you mentinoed, the Ainley Group Project Manager, Mr. Steve Fournier, personally met with [redacted] on site to discuss potential impacts associated with this project. For impacts resulting from the 20th Sideroad improvements, it was agreed that the design should consider a retaining wall and guide rail so as to eliminate encroachment beyond the property line from the 20th Sideroad. The drawing was revised and Mr. Fournier visited with [redacted] a second time on March 20th, 2018 to confim that this alteration would eliminate impacts to his property. This revised design was reflected in each of the Design Options presented at Public Open House No. 2 on March 28, 2018.

   Following POH No. 2 and a review of comments received, Design Option 1 has been selected as the Preferred Design. In summary, improvements as proposed with Option 1 will not require encroachment onto Mr. Muth's property from either the 7th Line or from the 20th Sideroad.

COMMENTS SUBMITTED FOLLOWING PIC NO. 2

RESPONDENT NAME: [redacted]

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1. ***"Preference is Design Alternative 3 however, would prefer only 2 lanes Webster to St.John."***

   RESPONSE: Following POH No. 2 and a review of comments received, Design Alternative 1 as presented at POH No. 2 has been selected as the Preferred Design. As such, a three lane urban cross-section will be constructed from 20th Sideroad to east of Webster Boulevard and a two lane urban cross-section will be constructed from east of Webster Boulevard to St. John's Road.

2. **C6: "Would want massive tree planting along 7th Line."**

   RESPONSE: It is acknowledged that some vegetation removal will be required to accommodate the improvements proposed. Please keep in mind that during detailed design a Landscaping Plan will be developed that will assist in replacing some of the vegetation to be removed. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C7: Security/safety: you are opening this area directly*** [redacted] ***to way more people traffic and possible theft. This is not addressed in your plans.***

   Forest/environment: Make no sense to 'clear cut' financially or aesthetically. I paid a premium for this lot – devalue my home. Privacy: You are eliminating all the privacy the area now provides.

   Noise: by clear cutting you are increasing the noise level immensely. Trees as they are provide buffer from road; people and other noise. I am not impressed with the lack of consideration for those of us directly affected."

   RESPONSE: The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. During the course of this Class EA the watercourse was assessed and confirmed to provide permanent, direct fish habitat. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, Design Alternative 1 has been selected as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain. Given the proposed retaining wall and remaining existing vegetation a privacy fence will not be required.

   Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and the lands in the municipal park on the south side of the retaining wall be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

   The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of your home and the area will continue to provide privacy and maintain the aesthetics of the area.

   With regard to noise, please note that as part of this Class EA a noise assessment was completed to determine the potential for impact from the proposed improvements. The noise assessment concluded that the improvement of 7th Line between 20 Sideroad and Lake Simcoe will result in insignificant noise impacts of less than 1 dBA. Daytime sound levels are expected to be below 65 dBA and noise mitigation measures are not required in accordance with Provincial guidelines.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***Design Alt # 1 is preferred.***

RESPONSE: As indicated in the accompanying letter, Design Alternative 1 has been selected as the Preferred Design.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C10: "I'm in favour of # 1 Design Alternative, I like having sidewalk and Multi use trail, I like the environmental improvement to Banks Creek."***

   RESPONSE: As indicated in the accompanying letter, Design Alternative 1 has been selected as the Preferred Design.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C11: Security: now people have access to my [redacted]! Privacy: this plan totally eliminates privacy, I paid a premium for this lot. Loss of house value!!! Makes no sense to clear cut a mature treed area – no sense financially or aesthetically. You are about to destroy the natural area of my property***

   RESPONSE: The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. During the course of this Class EA the watercourse was assessed and confirmed to provide permanent, direct fish habitat. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, the municipality has selected Design Alternative 1 as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain. Given the proposed retaining wall and remaining existing vegetation a privacy fence will not be required.

   Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and the lands in the municipal park on the south side of the retaining wall be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

   The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of your home and the area will continue to provide privacy and maintain the aesthetics of the area.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C12: "I have a concern from a resident about clear cutting behind Vance Crescent for road improvements. To my knowledge there is no widening of the road there or sidewalk if I remember correctly?"***

   RESPONSE: The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. During the course of this Class EA the watercourse was assessed and confirmed to provide permanent, direct fish habitat. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, the municipality has selected Design Alternative 1 as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain. Given the proposed retaining wall and remaining existing vegetation a privacy fence will not be required.

   Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and the lands in the municipal park on the south side of the retaining wall be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

   The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of your home and the area will continue to provide privacy and maintain the aesthetics of the area.

   With regard to noise, please note that as part of this Class EA a noise assessment was completed to determine the potential for impact from the proposed improvements. The noise assessment concluded that the improvement of 7th Line between 20 Sideroad and Lake Simcoe will result in insignificant noise impacts of less than 1 dBA. Daytime sound levels are expected to be below 65 dBA and noise mitigation measures are not required in accordance with Provincial guidelines.

2. ***C13: "Can you advise if there is a sidewalk going in on the North side of 7th from St. John's to Webster?"***

RESPONSE: As indicated, Design Option 1 has been selected as the Preferred Design. As such, there will be a 3.0 m multi-use trail on the north side and a 1.5 m sidewalk on the south side of the corridor from the 20th Sideroad to east of Webster Boulevard and a 3.0 m wide multi-use trail on the north side of the corridor from east of Webster Boulevard to St. John's Road.

3. ***"There is no place on the town website for updates or drawings for residents to put in comments."***

RESPONSE: Please note that the presentation material from both Public Open House No. 1 and 2 are available on the municipality's website www.innisfil.ca/7thea. The direction for the submission of comments was identified on the POH material.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C14: "Phase 2 Preferred Solution – Design Alternative 1 with fully urban cross-section."***

RESPONSE: As indicated in the accompanying letter, Design Alternative 1 has been selected as the Preferred Design.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C15: "Please do Phase 2 preferred solution with design alternative 1 with urban cross section. Whatever you decide please give us a multi-use 3m path from St. Johns to 20th Sideroad. Good Work!!!"***

   RESPONSE: Comment Noted. Design Option 1 has been selected as the Preferred Design and as such, a 3.0 m multi-use trail will be constructed as part of this project from the 20th Sideroad to St. John's Road.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C18: "I would like to add my voice of opposition to clear cutting a section of mature trees to widen the 7th Line. I believe there must be a better way to minimize the number of trees being cut down for this purpose. The trees act as a natural noise barrier nevermind the potential damage to the live stream along the edge of the tree line. I have lived in the area for almost 30 years and do not wish to see such a drastic change made to this natural area."***

   RESPONSE: The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. During the course of this Class EA the watercourse was assessed and confirmed to provide permanent, direct fish habitat. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, Design Alternative 1 has been selected as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain. Given the proposed retaining wall and remaining existing vegetation a privacy fence will not be required.

   Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and the lands in the municipal park on the south side of the retaining wall be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

   The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of your home and the area will continue to provide privacy and maintain the aesthetics of the area.

   With regard to noise, please note that as part of this Class EA a noise assessment was completed to determine the potential for impact from the proposed improvements. The noise assessment concluded that the improvement of 7th Line between 20 Sideroad and Lake Simcoe will result in insignificant noise impacts of less than 1 dBA. Daytime sound levels are expected to be below 65 dBA and noise mitigation measures are not required in accordance with Provincial guidelines.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C19: "Alternative 3 with two lane rural cross section from Webster Blvd. to St.Johns Rd., providing 1.5m paved shoulders in lieu of multi-use trail and 1.0 m gravel shoulders, is the best solution and keeps impacts to a minimum. Bank's Creek currently provides adequate storm water drainage during wet seasons and inclement weather."***

   RESPONSE: Design Alternative 1 as presented at POH No. 2 has been selected as the Preferred Design. As such, a 3.0 m multi-use trail will be constructed on the north side of the corridor from the 20th Sideroad to St. John's Road. This is in accordance with the Town's Trail Master Plan (November 2016) and will contribute to improved trail connectivity in the area of Alcona. The proposed urbanization of the corridor will provide improvements to stormwater management in terms of water quality and quantity.

2. ***C20: "The Ontario Environmental Assessment Act affirms that protection of conservation must be provided. Trilliums, bats, pileated wood peckers and many other vegetation and wildlife species that currently reside in the natural environment located on the north side of the 7th Line will be impacted the least. Residents who own adjacent properties will continue to maintain some of their tranquil natural environment and privacy."***

   RESPONSE: As part of this Class EA the subject study area was assessed in accordance with Provincial Policy and guidelines to establish an inventory of the natural heritage features present. The area was reviewed for the presence of wildlife (i.e. birds, mammals, reptiles, and amphibians) and their habitat and included a Species at Risk (SAR) screening for both terrestrial and aquatic species. Area vegetation was also reviewed for Species at Risk (i.e. Butternut Tree) and to determine if there are any areas that function as Significant Wildlife Habitat and / or if there are any vegetated areas that could be considered Significant Woodlands. During the field survey habitat types were compared with the habitat of Species at Risk reported to be present within the area. Bank's Creek was also assessed for the presence of fish and fish habitat. It was through this review that Bank's Creek was identified as providing direct fish habitat and subsequently discussions commenced with the Lake Simcoe Region Conservation Authority (LSRCA) on a possible rehabilitation of the watercourse. The potential to impact area natural heritage features is being given consideration as part of this Class EA process and in accordance with the Ontario Environmental Assessment Act.

   The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, Design Alternative 1 has been selected as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain.

Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and a portion of the municipal park will be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of the Vance Crescent homes and the area will continue to provide privacy and maintain the aesthetics of the area.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C24: "I just checked again and the updated plans still don't seem to be up on the Innisfil.ca website. I was actually looking for a link to the comment sheet that was available at the open house to direct my neighbours to. Is that something that can be added to the website quickly? Or is there another way for people who didn't make it there last week to submit feedback?"***

   RESPONSE: POH 1 material was available after October 11, 2017. POH 2 information was uploaded on April 2, 2018.

COMMENTS SUBMITTED FOLLOWING POH NO. 2

RESPONDENT NAME: [redacted]

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1. ***C26: "I would like to express my strong disagreement with some of the proposed design options for the 7th Line improvements. My specific concerns are the cutting down (clear cutting) of the trees on the north side of 7th line and south of Vance Crescent. Guessing from google maps, the area of concern is the approximately 120 m of trees from behind 993 Vance Cres to 1019 Vance Cres. As far as I can tell, this is the only area in the scope of the project where the limit of disturbance (of Design Alternative 1) completely removes a stand of trees. Living pretty much [redacted] of this clear cutting would drastically change the look, the feel, and the overall enjoyment of our back yard. We bought our house a little over two years ago, and were overjoyed with what we had found - a nice house on a quiet crescent surrounded by trees and green space. Even though Innisfil is not quite as densely populated as some of the regions to the south, sitting in the back yard in the summer makes us feel like we are truly escaping something. It is quiet because of the noise reduction the trees provide, it is shady and cool because the trees are so large, it is private because of the visual barrier the trees provide of the road, and it is relaxing because of the birds singing and squirrels running. Simply put, we love it. We would lose all of this if the "re-naturalization" goes ahead. I realize that landscaping will be done to improve the area once construction is complete, but it would take decades to get back to the density of vegetation that we have now. On top of this, I have several other concerns. One would be privacy/security with increased foot traffic and decreased visual barriers.***

   Another would be property value. As mentioned before, one of the main selling features of this house was the backyard and the view and lack of view of the road it provided. I feel like these changes would decrease property value until such time that the vegetation filled back in. One never knows what will or won't be developed around their home as time goes on, but with the property in question being too small for houses, and being under the control of the Lake Simcoe Region Conservation Authority we never imagined we would lose the vegetation that was a significant factor in our decision to purchase our home.

   RESPONSE: The impacts to area vegetation are not solely for accommodating road improvements. Bank's Creek currently abuts the corridor and the watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road for a large section of the study area. During the course of this Class EA the watercourse was assessed and confirmed to provide permanent, direct fish habitat. As such, Bank's Creek is currently a ditch and the improvements proposed will increase the separation distance from the roadway and create a more naturalized channel which will ultimately improve water quality and fish habitat.

   Following POH No. 2 and a review of comments received, Design Alternative 1 was selected as the Preferred Design. However, the design has been modified, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation. This includes the construction of a retaining wall at certain key locations that will allow a strip of existing mature vegetation to remain.

Please keep in mind that the municipal park area that abuts a number of Vance Crescent homes will continue to remain as parkland and the lands in the municipal park on the south side of the retaining wall be utilized to create a naturalized watercourse to improve Bank's Creek. While some vegetation will need to be removed during construction, a Landscaping Plan will be developed during the detailed design phase to provide for restoration of the area, including the re-planting of vegetation. Please also note that a permit will be required from the Lake Simcoe Region Conservation Authority (LSRCA) to complete the works proposed which will include woodland compensation in accordance with the LSRCA's Ecological Offsetting Plan.

The design modifications as discussed will assist in minimizing the loss of vegetation that abuts the rear yard of your home and the area will continue to provide privacy and maintain the aesthetics of the area.

With regard to noise, please note that as part of this Class EA a noise assessment was completed to determine the potential for impact from the proposed improvements. The noise assessment concluded that the improvement of 7th Line between 20 Sideroad and Lake Simcoe will result in insignificant noise impacts of less than 1 dBA. Daytime sound levels are expected to be below 65 dBA and noise mitigation measures are not required in accordance with Provincial guidelines.

2. ***C27: "My third concern would be over disturbance to the soil, and the ability to regrow the same type of vegetation. Judging first hand from my property, and stories from the neighbours, (not to mention the washout further up the creek) the soil around here is very sandy. Removing vegetation and the associated root structures, to me, opens the door to more erosion. This seems like it would make things like creating a meandering creek, and the re-establishment of trees difficult. I am, by no means an expert on this though, so you can take this for what it is worth."***

   RESPONSE: Sediment and erosion control will be addressed during construction through the implementation of appropriate mitigation. During detailed design a Landscaping Plan will be developed to provide for restoration post construction, including the re-planting of vegetation. The existing conditions at the site will be considered in the selection of suitable vegetation for the area.

3. ***C28: "On the whole, I do feel like this project will offer my family and I something positive. My mother in law lives on the [redacted] is likely where my children will go to school, and we routinely access the waterfront from the end of 7th line. We will definitely use this stretch of 7th a lot over the coming years and having something like a dedicated bike lane would make me feel much safer than the current gravel shoulders. I am not even opposed to the separate multi-use trail. I just feel like an amendment can be made for this small stretch of the project."***

   RESPONSE: As indicated, Design Option 1 as presented at POH No. 2 has been selected as the Preferred Design. This design will provide a 3.0 m multi-use trail on the north side of the corridor from 20th Sideroad to St. John's Road as well as a sidewalk on the south side of the corridor for a segment of the project limits. These measures will provide improved safety for active transportation (i.e. pedestrians and cyclists) in the area.

4. ***C29: "Possibly using Design 1 for most of the project, but for this 120 m stretch, using something more in line with Design 3. When talking about a 3 km stretch of road, it is hard to find one solution that works for the whole thing. That is why the clear winner for Phase 2 was "Alternative 5 - A Combination of the Above". Nothing makes sense as a blanket solution for the whole 3 kilometre distance, so please don't force one. There was mention at the meeting on March 28th of retaining walls, adjustment to the lane/trail spacing, and adjusting the slopes of the creek bed walls, all of which could be used to reduce the impact for this small percentage of the entire project. Also the travel lanes for design alternative 1are 4.25 m wide from Webster Blvd to St. John's Rd. In the other design alternatives the lanes are 3.5 m wide for this section. The extra 1.5 metres seems unnecessary and this width could be reduced to minimize the impact to the north side of the corridor for this stretch of 7th Line. Please consider these options."***

   RESPONSE:

   As you have indicated Alternative 5 (Combination) was selected as the Preferred Solution following POH No. 1 during Phase 2 of the Class EA process. Following POH No. 2 and a review of comments received, Design Alternative 1 was selected as the Preferred Design to implement that solution as part of Phase 3 of the Class EA process. This option gives consideration to the developed nature of the eastern half of the project limits by reducing the road cross-section from three to two lanes in an attempt to minimize impacts, but is also strikes a balance in efficiently addressing future traffic capacity requirements, but also providing for Active Transportation (i.e. pedestrians and cycling). As indicated, the design has also been modified further, where possible, at a couple of locations along the corridor to minimize the loss of existing vegetation through the construction of retaining walls.

Public Open House No. 2
Presentation Material

TOWN OF INNISFIL
7TH Line Improvements
Municipal Class Environmental Assessment
Schedule 'C'
PUBLIC OPEN HOUSE NO. 2

Innisfil

Date: Wednesday, March 28, 2018.

Time: 4:00 p.m. to 7:00 p.m.

Location: Town Hall Community Rooms
2101 Innisfil Beach Road
Innisfil, ON

Ainley GROUP
CONSULTING ENGINEERS & PLANNERS

WELCOME

Your Input is Appreciated!

- Please review the display material and feel free to discuss the project with members of the study team in attendance.
- All POH material will be available for download from the Town's website at www.innisfil.ca/7thea after March 28, 2018.
- We invite you to provide any comments, in writing, on the Comment Sheet provided.

PLEASE SIGN IN

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

INTRODUCTION

This public meeting will present the following information:

- Background Information & Project Study Area
- Problem / Opportunity
- The Municipal Class Environmental Assessment Process
- Public Open House No. 1 Update Including Selection of the Final Preferred Solution
- Alternative design concepts developed for the Preferred Solution
- Evaluation of the design alternatives
- Preliminary Preferred Design Alternative
- Next Step in process

PROBLEM / OPPORTUNITY

Problem

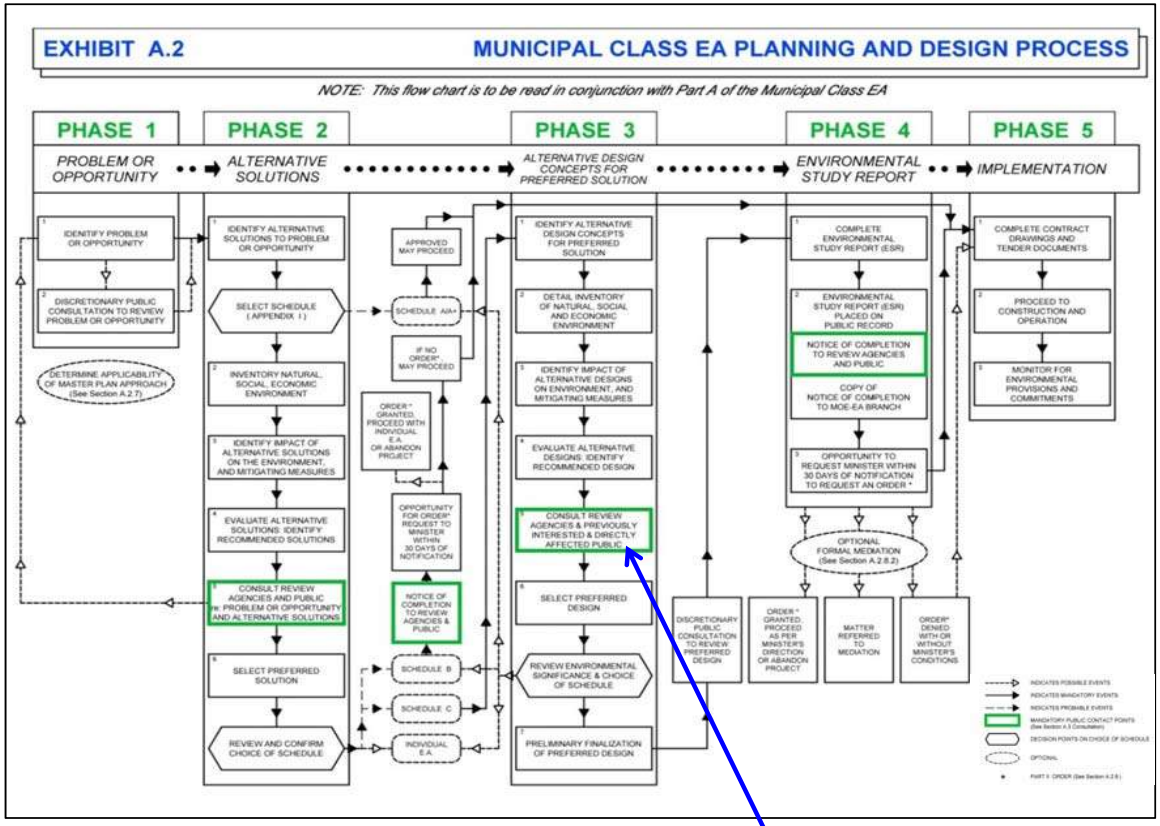
- The Town of Innisfil has initiated this Municipal Class Environmental Assessment (Class EA) to undertake improvements to the 7th Line to accommodate future growth in the Alcona area and to address traffic capacity and operational deficiencies affecting the subject corridor.

Opportunities

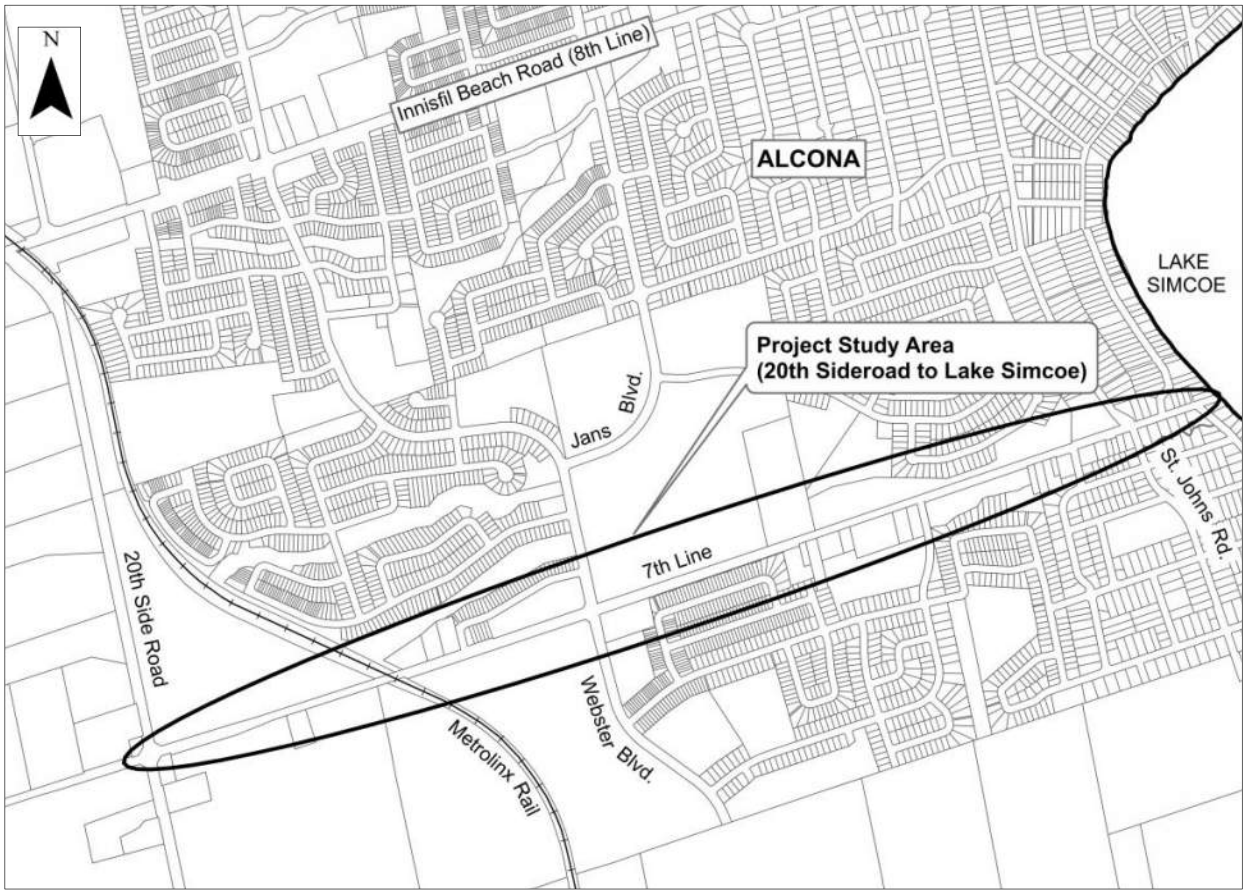
- Addressing the problem also provides an opportunity to:
  - ✓ Provide for active transportation (i.e. walking, cycling etc.) and improve safety;
  - ✓ Address pavement structure deficiencies;
  - ✓ Address drainage and stormwater management concerns;
  - ✓ Accommodate long term municipal servicing requirements; and
  - ✓ Rehabilitate portions of Bank's Creek.

MUNICIPAL CLASS EA PROCESS

- A municipality is required to conduct a Municipal Class Environmental Assessment before this type of infrastructure improvement project can proceed to construction. A Municipal Class Environmental Assessment follows an approved planning process designed to protect the environment and to ensure compliance with the Ontario Environmental Assessment Act.
- The purpose of the Ontario Environmental Assessment Act (EA Act) is to provide for "…the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment." The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments.
- The process requires the evaluation of potential solutions and design concepts so as to select a suitable approach that will address the problem/opportunity, but also keep impacts to a minimum.
- Based on the scope of work proposed this project is classified as a Schedule 'C' in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015) and requires completion of Phases 1 to 4, with implementation in Phase 5.
- POH No. 1 was held October 11, 2017 during Phase 2 where the Town presented the alternative solutions under consideration.
- We are currently in Phase 3 of the Class EA process. Tonight's meeting will identify the Preferred Solution selected at the close of Phase 2 and the design alternatives currently under consideration to implement that solution.



PROJECT STUDY AREA



The study area includes the 7th Line, extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km.

PUBLIC OPEN HOUSE NO. 1 UPDATE

At Public Open House No. 1 (October 11th, 2017) the Town of Innisfil presented several alternative solutions to address the deficiencies affecting the corridor as follows:

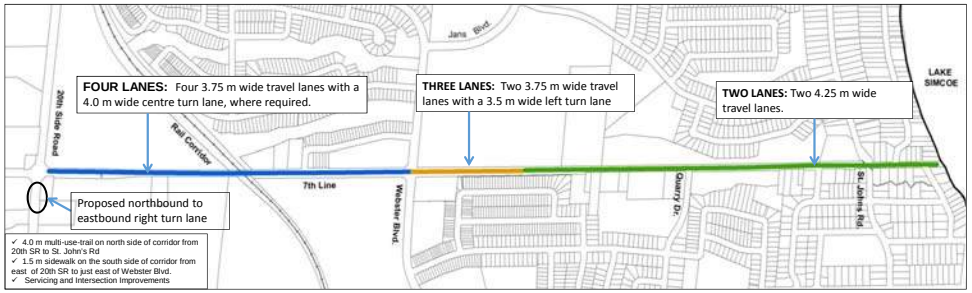
- ALTERNATIVE 1 ("Do Nothing"): This option proposes no changes or modifications to existing infrastructure within the study area.
- ALTERNATVE 2 (Two lanes): Reconstruct 7th Line to a two lane urban cross-section with two travel lanes for the entire project length.
- ALTERNATVE 3 (Three Lanes): Reconstruct 7th Line to a two lane urban cross-section with two travel lanes and one continuous centre turn lane for the entire project length.
- ALTERNATVE 4 (Four lanes): Reconstruct 7th line to a four lane urban cross-section with four travel lanes and a left turn lane, where required.
- ALTERNATIVE 5 (Combination): Some combination of Alternatives 2 through 4.

Note: Each of the above alternatives also included intersection and servicing improvements.

At POH No. 1 Alternative 5 was identified as the Preliminary Preferred Solution. It consisted of the following:

- Four lanes from 20th Sideroad to Webster Boulevard, three lanes from the 20th Sideroad to east of Webster Boulevard, and two lanes from east of Webster Boulevard. to St. John's Road.
- A 4.0 m wide paved multi-use trail on north side of 7th Line from 20th Sideroad to St. John's Road and a 1.5 m sidewalk on the south side of 7th Line from 20th Sideroad to just east of Webster Boulevard.
- Servicing and Intersection Improvements.

ALTERNATIVE 5



SELECTION OF PREFERRED SOLUTION

- Subsequent to a review of comments received, the Town of Innisfil has selected ALTERNATIVE 5 as the final Preferred Solution; however, following POH No. 1, Alternative 5 was modified slightly to reflect comments received and the results of updated traffic analysis data for future developments in the area.
- The number of required lanes at the west end of the study area was reduced from four lanes to three lanes. The width of the multi-use trail was also reduced from 4.0 m to 3.0 m.
- The rationale for the selection of Alternative 5 is further detailed below:

ALTERNATIVE SOLUTIONS PRESENTED AT POH 1		RATIONALE FOR SELECTION
ALTERNATIVE 1 'DO NOTHING'	✖	This alternative is not being carried forward because it does not address capacity or operational deficiencies and does not accommodate future development.
ALTERNATIVE 2 – TWO LANES **Reconstruct 7th Line to an urban cross-section with two travel lanes for the entire length.**	✖	This alternative is not being carried forward because it does not address capacity and operational deficiencies. An increase in the number of lanes would be required at some point in the future.
ALTERNATIVE 3 – THREE LANES **Reconstruct 7th Line to an urban cross-section with two travel lanes and one continuous centre turn lane for the entire length.**	✖	This option will address capacity and operational deficiencies, but traffic analysis has confirmed that three lanes is not warranted for the full length of the project. Three lanes at the east end of the study area will require property acquisition and result in increased impacts to adjacent properties. This alternative was therefore not carried forward.
ALTERNATVE 4 – FOUR LANES **Reconstruct 7th line to an urban cross-section with four travel lanes and a left turn lane, where required.**	✖	While this alternative will fully address capacity and operational deficiencies, traffic analysis indicates that four lanes for the entire project length is not warranted within the design horizon. This alternative has the largest construction footprint and will require property acquisition and utility relocation. It has an increased potential to impact existing natural heritage features (i.e. vegetation, the watercourse, fish and fish habitat etc.) and will be the most costly option to implement. This alternative was therefore not carried forward.
ALTERNATIVE 5 – COMBINATION **Some combination of Alternatives 2 through 4.**	✓	**PHASE 2 PREFERRED SOLUTION:** • **This option will more efficiently address future traffic capacity requirements since the cross-section is increased only where needed and reduced where not required.** • **It will fully provide for Active Transportation (i.e. pedestrians and cycling).** • **Increasing the number of lanes to three, only where necessary, will reduce the need for property acquisition, minimize utility relocation and reduce the potential to impact natural features (i.e. vegetation, the watercourse, fish and fish habitat etc.).** • **Costs associated with property acquisition and construction costs will be more reasonable.**

PHASE 3 ALTERNATIVE DESIGN CONCEPTS

As part of Phase 3 of the Class EA process various alternative design concepts are developed to implement the Preferred Solution selected at the close of Phase 2. The design alternatives currently under consideration are identified below:

PREFERRED SOLUTION
ALTERNATVE 5 (COMBINATION)

- Three lanes from the 20th Sideroad to east of Webster Boulevard.
- Two lanes from east of Webster Boulevard to St. John's Road.
- Multi-use Trail and Sidewalks.
- Servicing and Intersection Improvements.

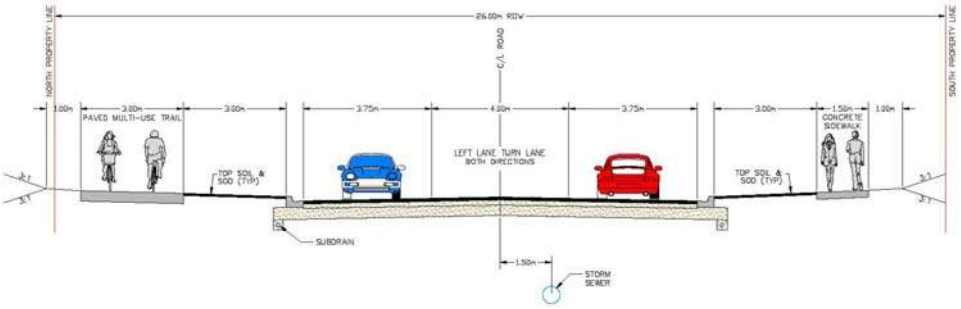
DESIGN ALTERNATIVES DEVELOPED FOR THE PREFERRED SOLUTION

DESIGN DETAILS	DESIGN ALTERNATIVE 1 Two / Three Lane Urban Cross-section with Multi-use Trail and Sidewalk	DESIGN ALTERNATVE 2 Two / Three Lane Urban and Rural Cross-section with Bike Lanes and Limited Sidewalks	DESIGN ALTERNATIVE 3 Two / Three Lane Urban & Rural Cross-section with Limited Bike Lanes and Sidewalks
Road Cross-Section	▪ 3 Lane urban cross-section from 20th Sideroad to approximately 200 m east of Webster Boulevard. ▪ 2 Lane urban cross-section from east of Webster Blvd. to St. John's Road.	▪ 3 lane rural cross-section from 20th Sideroad to Metrolinx rail corridor. ▪ 3 lane urban cross-section from Metrolinx rail corridor to east of Webster Blvd. ▪ 2 lane urban cross-section from east of Webster Boulevard to St. John's Road.	▪ Three lane rural cross-section from 20th Sideroad to Metrolinx rail corridor. ▪ Three lane urban cross-section from Metrolinx rail corridor to east of Webster Blvd. ▪ Two lane rural cross-section with paved shoulders from east of Webster Boulevard to St. John's.
Sidewalks	▪ 1.5 m sidewalk from the pedestrian entrance to Lamstone Street to just east of the 20th Sideroad.	▪ 1.5 m sidewalk from Metrolinx rail corridor to St. John's Rd. on the south side only.	▪ 1.5 m sidewalk from the pedestrian entrance to Lamstone Street to Metrolinx rail corridor.
Multi-use Trail	▪ 3.0 m paved multi-use trail on the north side of corridor from 20th Sideroad to St. John's Road.	▪ Not Included	▪ Not Included
Dedicated Bike Lanes	▪ Not Included	▪ 1.5 m dedicated bike lanes from Metrolinx rail corridor to St. John's Road.	▪ 1.5 m dedicated bike lane s from Metrolinx rail corridor to east of Webster Boulevard.
Bank's Creek Improvements	▪ Naturalization of Bank's Creek and extensive shift (i.e. approximately 12.0 m) of watercourse northwards to provide increased separation distance between roadway and creek and improved fish habitat.	▪ Naturalization of Bank's Creek and moderate shift (i.e. approximately 8.0 m) northwards to provide improved separation distance between roadway and creek and improved fish habitat.	▪ Minor shift (approximately 4.0 m) of Bank's Creek to the north to accommodate reconstruction, but creek will continue to run parallel to roadway as a ditch.

DESIGN ALTERNATIVE 1

Fully Urbanized Cross-section with Multi-use Trail + Bank's Creek Naturalization

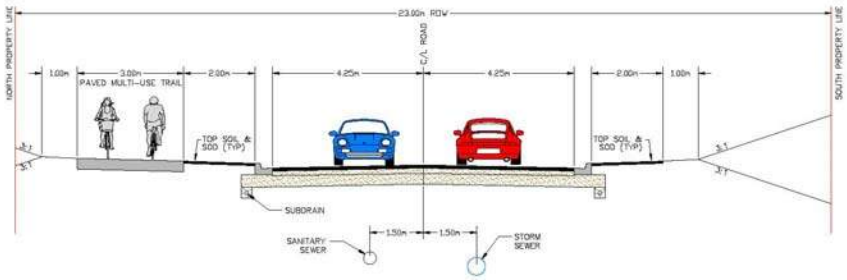
Three Lane Urban Cross-Section
From 20th Sideroad to East of Webster Blvd.



Reconstruct this segment to a 3 lane urban cross-section providing:

- Two 3.75 m wide travel lanes
- One 4.0 m wide continuous centre turn lane
- 3.0 m multi-use trail north side with 3.0 m offset from back of curb.
- 1.5 m sidewalk south side with 3.0 m offset from back of curb.

Two Lane Urban Cross-Section
From Webster Blvd. to St. John's Rd.



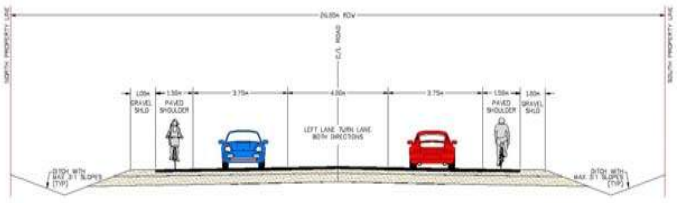
Reconstruct this segment to a 2 lane urban cross-section providing:

- Two 4.25 m wide travel lanes
- 3.0 m multi-use trail north side with 2.0 m offset from back of curb.
- No sidewalks.

DESIGN ALTERNATIVE 2

Intermediate Cross-section

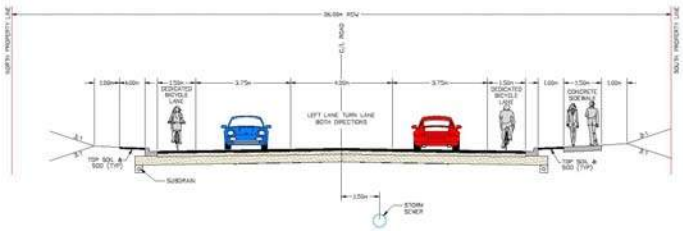
Three Lane Rural Cross-Section From 20th Sideroad to Metrolinx Rail Corridor



Reconstruct this segment to a 3 lane rural cross-section providing:

- Two 3.75 m wide travel lanes
- One 4.0 m wide continuous centre turn lane
- 1.5 m paved shoulders in lieu of multi-use trail
- 1.0 m gravel shoulders

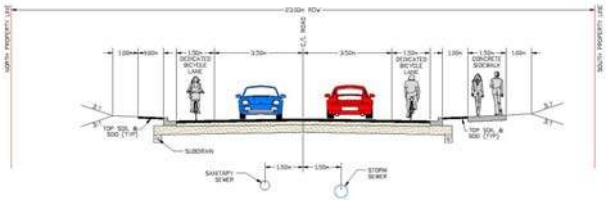
Three Lane Urban Cross-Section From Metrolinx Rail Corridor to East of Webster Blvd.



Reconstruct this segment to a 3 lane urban cross-section providing:

- Two 3.75 m wide travel lanes
- One 4.0 m wide continuous centre turn lane
- 1.5 m sidewalk south side
- 1.5 m dedicated bike lanes both sides of corridor in lieu of multi-use trail

Two Lane Urban Cross-Section From Webster Blvd. to St. John's Rd.

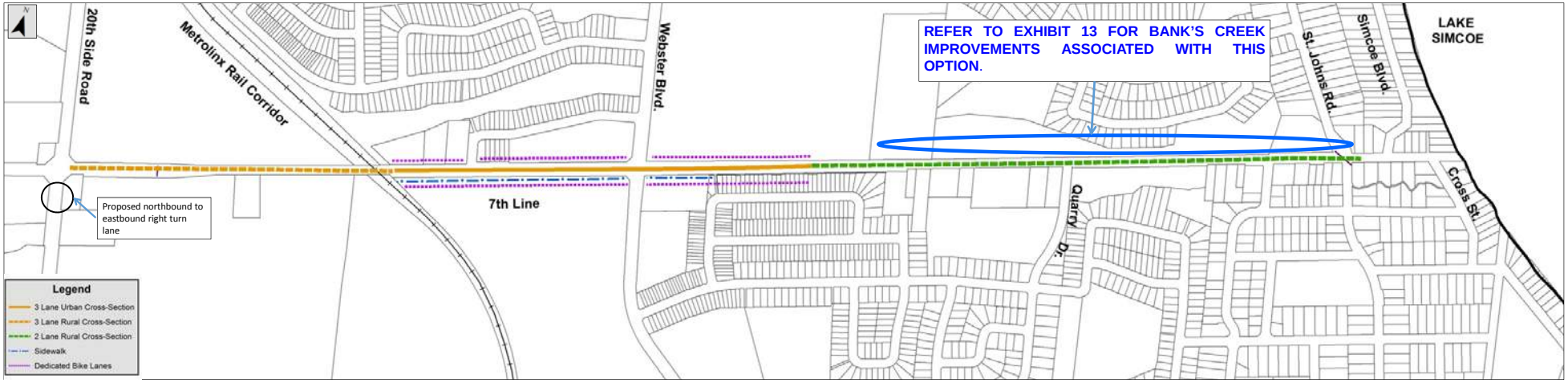


Reconstruct this segment to a 2 lane urban cross-section providing:

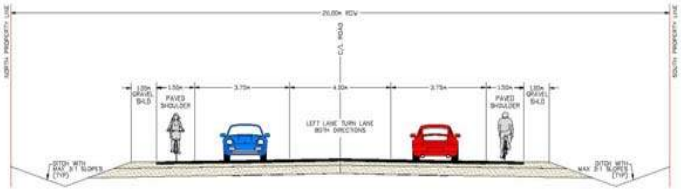
- Two 3.50 m wide travel lanes
- 1.5 m sidewalk south side
- 1.5 m dedicated bike lanes both sides of corridor in lieu of multi-use trail
- 1.0 m boulevard

DESIGN ALTERNATIVE 3

Minimum Cross-section



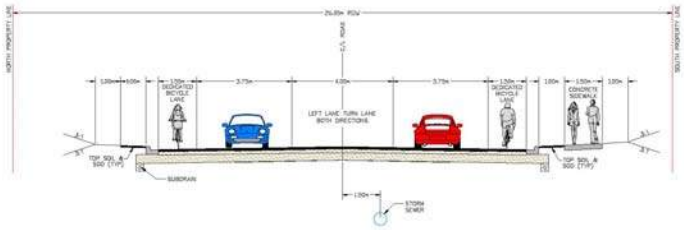
Three Lane Rural Cross-Section From 20th Sideroad to Metrolinx Rail Corridor



Reconstruct this segment to a 3 lane rural cross-section providing:

- Two 3.75 m wide travel lanes
- One 4.0 m wide continuous centre turn lane
- 1.5 m paved shoulders in lieu of multi-use trail
- 1.0 m gravel shoulders

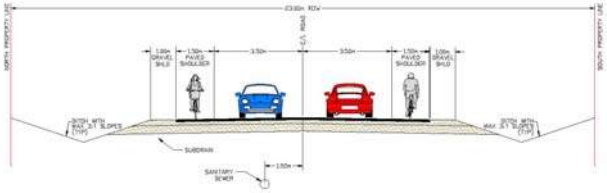
Three Lane Urban Cross-Section From Metrolinx Rail Corridor to East of Webster Blvd.



Reconstruct this segment to a 3 lane urban cross-section providing:

- Two 3.75 m wide travel lanes
- One 4.0 m wide continuous centre turn lane
- 1.5 m dedicated bike lanes in lieu of multi-use trail

Two Lane Rural Cross-Section From Webster Blvd. to St. John's Rd.



Reconstruct this segment to a 2 lane rural cross-section providing:

- Two 3.5 m wide travel lanes
- 1.5 m paved shoulders in lieu of multi-use trail
- 1.0 m gravel shoulders

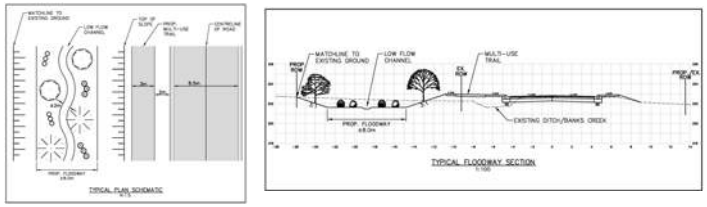
BANK'S CREEK IMPROVEMENTS

Bank's Creek

- A portion of Bank's Creek flows immediately adjacent to the 7th line on the north side of the corridor, as illustrated below.
- The watercourse top-of-bank is less than 3.0 m from the gravel shoulder of the road and is essentially a ditch, as illustrated in Figure 1.
- Bank's Creek is a coldwater watercourse that provides direct fish habitat. The proximity of this watercourse to the roadway can negatively impact fish and fish habitat.

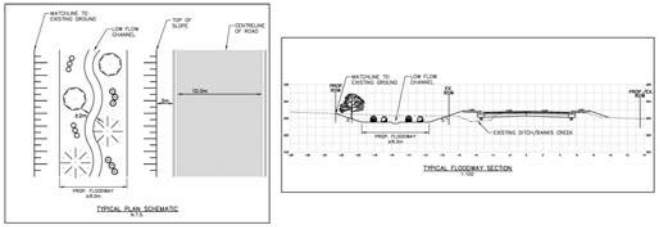
Figure 1
Existing Bank's Creek

Bank's Creek Improvements Associated with Design Alternative 1



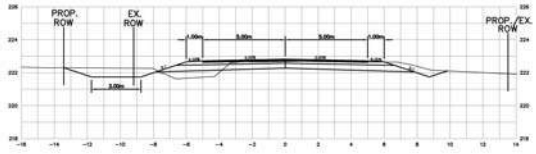
- In an effort to improve the quality of Bank's Creek and the associated fish habitat, Design Alternative 1 proposes a shift of approximately 1.0 km of the watercourse north for a distance of approximately 12.0 m.
- Naturalization of the channel will be completed including an increased separation distance between the roadway and the creek resulting in improved fish habitat.
- While this will improve the watercourse it will require extensive vegetation removals; however, landscaping can be completed post construction to assist in re-naturalizing the area.
- A Department of Fisheries and Oceans (DFO) Authorization will be required to complete these improvements.

Bank's Creek Improvements Associated with Design Alternative 2



- With Design Alternative 2 a 1.0 km (approximate) segment of watercourse would need to shift approximately 8.0 m north to accommodate the reconstruction.
- Naturalization of the channel would be completed; however, the separation distance between the watercourse and roadway would not be as extensive as Design Alternative 1.
- This will improve the watercourse and the associated fish habitat and it will not require as extensive vegetation removals as Design Alternative 1.
- A Department of Fisheries and Oceans (DFO) Authorization will be required to complete these improvements.

Bank's Creek Improvements Associated with Design Alternative 3



(Typical Cross-Section)

- For Alternative 3, the construction footprint is reduced in comparison to the other design alternatives so as to minimize impacts to adjacent properties and natural heritage features.
- A 1.0 km (approximate) segment of watercourse would need to shift approximately 4.0 m north to accommodate the reconstruction. The watercourse would continue to be located immediately adjacent to the roadway post construction.
- A DFO Authorization will be required to complete the relocation of the watercourse.

PROPERTY REQUIREMENTS

From 20th Sideroad to Metrolinx Rail Corridor

- All three alternatives require approximately +/- 6.0 m of property from both the north and south sides of the corridor.

From Metrolinx to Webster Boulevard

- All three alternatives require approximately +/- 3.0 m of property from the south side of the corridor.
- All three alternatives require approximately +/- 3.0 m from the north side of 7th Line from Metrolinx to just west of Fox Hill Street.

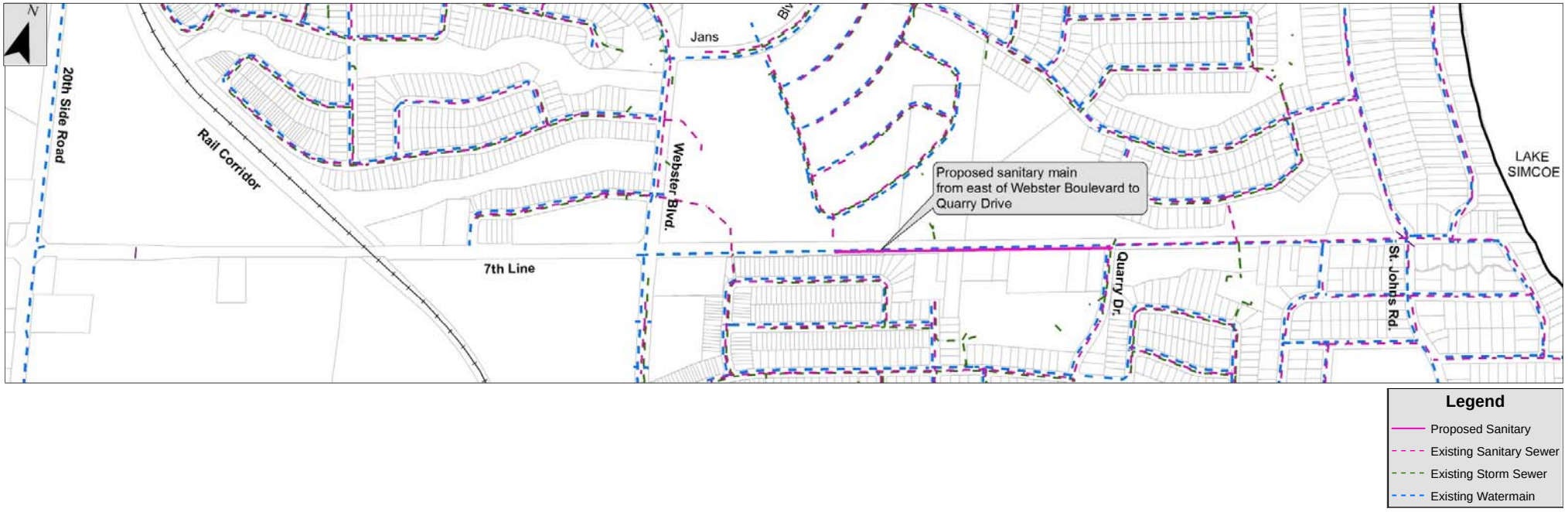
From Webster Boulevard to St. John's Road

- Alternative 1 will require approximately +/- 12.0 m of property from the north side of 7th Line.
- Alternative 2 will require approximately +/- 12.0 m of property from the north side of 7th Line.
- Alternative 3 will require approximately +/- 4.0 m of property from the north side of 7th Line

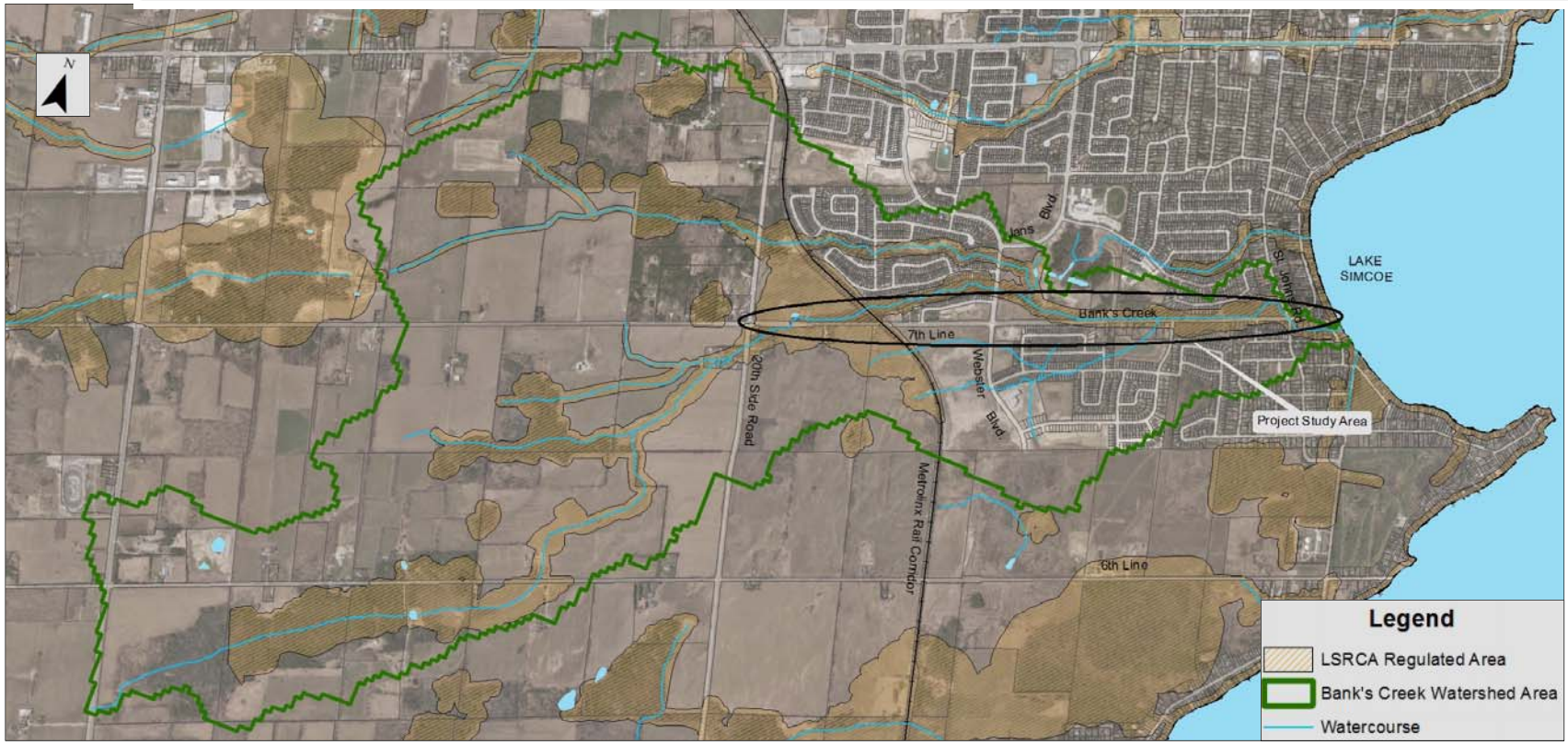
REFER TO ROLL PLAN DRAWING AND TYPICAL CROSS-SECTIONS FOR ADDITIONAL DETAILS REGARDING PROPERTY IMPACTS

SERVICING IMPROVEMENTS

- There are existing sanitary sewer and watermain within the limits of the study area.
- As illustrated below, a new segment of sanitary sewer is proposed from east of Webster Boulevard to Quarry Drive.
- Existing watermain on 7th Line will be preserved.



STORMWATER MANAGEMENT



- A large portion of the project limits is within an area regulated by the Lake Simcoe Region Conservation Authority (LSRCA). A permit will be required from the LSRCA prior to construction.
- The above map shows the Bank's Creek Watershed Area illustrating that an area of approximately 900 ha drains through the study area.
- Given the above, stormwater management is a key component that will need to be addressed in the design for this corridor.

STORMWATER MANAGEMENT

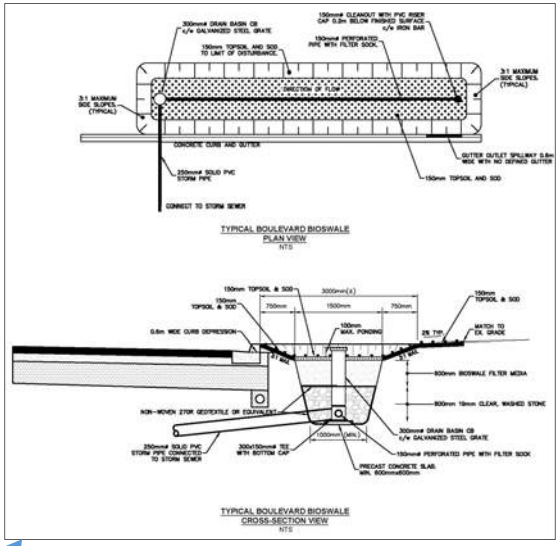
There are four key parts to stormwater management that need to be addressed to meet the requirements of the Lake Simcoe Protection Plan. These include water balance, quality control, quantity control, and cut / fill balance in the floodplain as detailed below:

1. **Balance Cut/Fill in Floodplain:** The above map illustrates the general area (schematic only) needed in the northeast quadrant of 7th Line and 20th Sideroad to balance cut/fill in the floodplain. The subject area will have to be re-graded towards the creek. Alternative 1 requires an excavation of approximately 3000 m^3.

2. **Quality Control through Stormwater Infrastructure within the Corridor:** This will include storm sewers and catch basins. Stormwater quality will be controlled through catch basin filters, grassed swales, and stormwater ponds as well as the implementation of Low Impact Development (LID) measures, where possible.

3. **Control Runoff from Post-development to Pre-development Rates:** The above map identifies several possible locations where a stormwater management pond could be constructed to assist in addressing water quality and quantity. It is proposed to either purchase property for a standalone pond to accommodate roadway runoff or to incorporate it into stormwater ponds required for adjacent land development proposals.

4. **Control of the First 25 mm Flush from Impervious Area:** As per LSRCA requirements, the proposed road design will need to assimilate the first 25mm flush from the corridor during a rain event. This can be addressed through infiltration galleries constructed in the boulevard as illustrated in the above map. An infiltration gallery is further detailed in the adjacent figure. Providing this feature for approximately 1/6 the length of the project would meet the requirement.



INFILTRATION GALLERY TYPICAL DETAIL

ENVIRONMENTAL CONSTRAINTS

NATURAL ENVIRONMENT

Fisheries/Aquatic:
- Bank's Creek is a coldwater watercourse that provides direct fish habitat.

Wildlife (Including Species at Risk):
- Potential endangered bat habitat is located in adjacent woodlands.
- No areas adjacent to the corridor function as significant amphibian breeding habitat.
- No SAR birds were observed during breeding bird surveys and there is limited potential to impact SAR birds.

Vegetation:
- One Butternut Tree (Endangered) is located east of the 20th Sideroad on the north side of 7th Line.
- Tree removals may be subject to the policies of the LSRCA Ecological Offsetting Plan (May 2017) and may require compensation.

Surface Water:
- Bank's Creek crosses the study area in three locations and runs parallel to the corridor for a large segment.

Groundwater:
- The study area is not located within a wellhead protection area.
- There are a 24 wells located within the estimated zone of influence of construction dewatering.

Designated Areas:
- A large portion of the project study area is within the Lake Simcoe Region Conservation Authority Regulation Area.
- This project is not within the Greenbelt Area, the Oak Ridges Moraine Area or the Niagara Escarpment Plan Area.

CULTURAL ENVIRONMENT

Built Heritage and Cultural Heritage Landscapes:

A Cultural Heritage Resource Assessment was completed for the project study area which identified the following five cultural heritage resources:

Built Heritage Resources (BHR):
- BHR1 (1497 7th Line Former Nantyr School): Property not formally designated under the Ontario Heritage Act, but is included on the Town's Heritage Registry. A Cultural Heritage Impact Assessment was completed for this location and mitigation established for its protection during construction.
- BHR2 (1363 7th Line Farmstead with Barn): There will be no direct impacts to the structure(s), but some minor loss of vegetation.

Cultural Heritage Landscapes (CHL):
- CHL1: Stand of Lilacs
- CHL2: Views to Lake Simcoe
- CHL3: The 'cottage community' located east of St. John's Rd.

Archaeological:
- A Stage 1 Archaeological assessment has been completed for the project study area.
- The review determined that parts of the study area exhibit archaeological potential and other areas do not on account of deep and extensive land disturbance or low and wet conditions. A Stage 2 will be completed for localized areas.

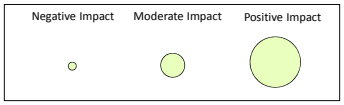
SOCIO-ENVIRONMENT

Land Use:
- Land use within the study area is primarily residential with a number of lots fronting directly onto the corridor at the east end.
- Lands west of the railway corridor to the 20th Sideroad are within the Alcona South Secondary Plan area. While these lands are currently used for agricultural purposes, they form part of the Alcona Expansion Area and will eventually be developed.
- Lands east of the railway corridor to Lake Simcoe are within the limits of the Alcona Settlement Area.
- There is one municipal park (i.e. Anna Maria Park) located on the north side of the 7th Line, east of St. John's Road.

Tourism:
- At the eastern limits of the study area there is a public access to Simcoe Beach of Lake Simcoe.

EVALUATION MATRIX PART A

The table below provides a simplified, visual comparison of the potential for each design alternative to impact the study area environment (physical, natural, socio-economic and cultural). An increased number of larger circles indicates that an alternative will have a reduced potential for negative impact.



FULLY URBANIZED CROSS-SECTION (LARGEST FOOTPRINT) WITH MULTI-USE TRAIL + BANK'S CREEK NATURALIZATION + EXTENSIVE SHIFT OF BANK'S CREEK

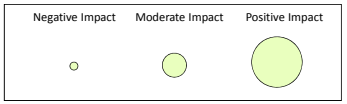
INTERMEDIATE FOOTPRINT + BANK'S CREEK NATURALIZATION + MODERATE SHIFT OF BANK'S CREEK

SMALLEST FOOTPRINT + MINOR SHIFT OF BANK'S CREEK

EVALUATION CRITERIA	DESIGN ALT 1	DESIGN ALT 2	DESIGN ALT 3	DESCRIPTION OF EFFECTS
TECHNICAL ENVIRONMENT				
Future Traffic Capacity Will the alternative address capacity requirements?				All three options will equally address traffic capacity requirements.
Active Transportation Will the alternative provide for pedestrians and cyclists?				Design Alt. 1 will fully provide for active transportation since it provides both a multi-use trail and a sidewalk. Design Alts. 2 & 3 provide bike lanes as paved shoulders within the corridor and sidewalks.
Safety Will the alternative address safety concerns?				All three design alternatives will equally address safety.
Municipal Services (sanitary, water, storm) Will the alternative accommodate servicing requirements?				All three design alternatives will equally address servicing requirements.
Utilities Will the alternative impact existing utilities (i.e. relocation)?				Design Alt. 1 will have the largest construction footprint and will require utility relocation. Design Alts. 2 & 3 will have a moderate impact in this regard.
NATURAL ENVIRONMENT				
Terrestrial Wildlife (including Species at Risk) Potential to impact area wildlife and SAR				As Design Alt. 1 will have the largest construction footprint and proposes more extensive channel relocation it will have an increased potential to impact area wildlife through loss of vegetation and disruption during construction; however, mitigation can be utilized to keep impacts to a minimum. Design Alts. 2 and 3 will have more moderate impacts in this regard.
Fisheries / Aquatic Potential to impact fish habitat and aquatic features				While there will be temporary impacts during construction with any of the alternatives, Design Alt. 1 proposes naturalization and a relocation of Bank's Creek providing an increased separation distance from the roadway resulting in improved fish habitat. Alt. 3 will continue to flow immediately beside the corridor post construction. Design Alt. 2 will provide naturalization of the channel but the separation distance between the road and the watercourse will not be as extensive as Design Alt. 1.
Vegetation Potential to impact existing vegetation				Design Alt. 1 has the largest footprint and will require extensive vegetation removals to accommodate the channel naturalization and will therefore have greatest impact to area vegetation. Design Alts. 2 & 3 will have a moderate impact in this regard.
Surface Water / Drainage Potential to impact surface water and area drainage				Design Alt. 1 will have the most positive impact in this regard since it proposes full urbanization and includes a stormwater management pond for quality and quantity control. Design Alt. 2 also proposes urbanization but does not include a stormwater pond. Design Alt. 3 proposes a small segment of urbanization and will utilize mainly ditch drainage with no stormwater management pond.
Groundwater Potential to impact area groundwater resources				The study area is not within a wellhead protection area. All three options will have a low potential to impact area groundwater.
Climate Change How does the alternative impact climate change and how does climate change impact the alternative?				All three options are expected to have a similar impact on climate change. While the improvements proposed will address capacity deficiencies, the anticipated increase in vehicle emissions is not expected to be significant or result in substantial increases in green house gases over existing conditions. While vegetation removal is required landscaping will be completed post construction which will contribute to replacement of vegetative cover necessary to assist in the removal of carbon dioxide. The stormwater management improvements (i.e. urbanization & storm ponds) as well as the use of Low Impact Development measures (i.e. infiltration galleries) will assist in maintaining infiltration and reducing the impacts from increased temperature s and extreme rain events.
Air Quality Will the alternative impact air quality?				All three design alternatives propose an increase in the number of lanes at the west end of the study area only, in an area that is largely vacant. The improvements proposed are not expected to result in a significant change in air quality over existing conditions.

EVALUATION MATRIX PART B

The table below provides a simplified, visual comparison of the potential for each alternative to impact the study area environment (physical, natural, socio-economic and cultural). An increased number of larger circles indicates that an alternative will have a reduced potential for negative impact.



DESIGN ALT 1: FULLY URBANIZED CROSS-SECTION (LARGEST FOOTPRINT) WITH MULTI-USE TRAIL + BANK'S CREEK NATURALIZATION + EXTENSIVE SHIFT OF BANK'S CREEK

DESIGN ALT 2: INTERMEDIATE FOOTPRINT + BANK'S CREEK NATURALIZATION + MODERATE SHIFT OF BANK'S CREEK

DESIGN ALT 3: SMALLEST FOOTPRINT + MINOR SHIFT OF BANK'S CREEK

EVALUATION CRITERIA	DESIGN ALT 1	DESIGN ALT 2	DESIGN ALT 3	DESCRIPTION OF EFFECTS
SOCIAL ENVIRONMENT				
Land Use Planning Objectives Is alternative in accordance with planning objectives?				All three alternatives propose improvements that will address future development requirements and are therefore in accordance with land use planning objectives; however, Design Alt. 1 is more compatible with future development expansion westwards.
Property Impacts Will the alternative require property acquisition?				Design Alt. 1 proposes the widest construction footprint and will require the most amount of property. Design Alts. 2 & 3 will require less property acquisition than Design Alt. 1.
Aesthetics Will the alternative impact the area visually?				All three alternatives propose a reconstruction which will improve the overall appearance of the area by addressing the deteriorating condition of the existing pavement and by adding boulevard trees and landscaping.
Residential Will the alternative impact area residences and access?				As all three alternatives propose a reconstruction there will be temporary impacts during the construction period relating to property access; however, measures can be implemented to minimize impacts.
Areas Businesses Will the alternative impact area commercial operations?				As all three alternatives propose a reconstruction there will be temporary impacts during the construction period; however, measures can be implemented to minimize impacts.
Noise and Vibration Will the alternative impact noise levels during construction and the long term?				All three alternatives propose an increase from two to three lanes at the west end of the study limits, in an area that is largely vacant. It is not expected that the proposed improvements will result in a significant increase in noise. The application of standard noise mitigation during construction will assist in reducing noise impacts during the construction period.
CULTURAL ENVIRONMENT				
Archaeological Will the alternative impact area archaeological resources?				A Stage 1 archaeological report has confirmed that all lands within the municipal right-of-way have been subject to previous disturbance and are therefore cleared of archaeological concerns. A Stage 2 assessment is being completed for localized areas outside of the existing municipal right –of-way that will be subject to construction.
Built Heritage & Cultural Heritage Landscapes Will the alternative impact area built heritage resources?				There will be no direct impacts to built heritage resources with any of the alternatives. Cultural Heritage Landscapes may be temporarily affected during construction; however, mitigation will assist in keeping impacts to a minimum.
ECONOMIC ENVIRONMENT				
Property Acquisition Costs Will the alternative require property acquisition?				All three design alternatives will require property acquisition; however, Design Alt. 1 will be the most extensive.
Construction Costs Will the alternative be expensive to construct?				Design Alt. 1 will be the most costly to implement. Design Alts. 2 & 3 will be less costly and are expected to be relatively similar.
Operating & Maintenance Costs Will the alternative be expensive to maintain?				All three design alternatives will have similar operating and maintenance costs.

PRELIMINARY PREFERRED DESIGN ALTERNATIVE

The Municipality considers **DESIGN ALTERNATIVE 1** as the **PRELIMINARY PREFERRED DESIGN CONCEPT** for the following reasons:

- This option will more efficiently address future traffic capacity requirements.
- It will provide for Active Transportation (i.e. pedestrians and cycling)
- It will provide improvements to Bank's Creek including improved to fish habitat.
- The proposed urbanization of the corridor will provide improvements to stormwater management in terms of water quality and quantity.

Note: The above selection may change following the receipt of public and agency input.

MITIGATION

The following mitigation will assist in reducing the potential for negative impacts during construction and post construction:

Aquatic Wildlife (Including Species at Risk)
- Obtain necessary approvals from the Lake Simcoe Region Conservation Authority (LSRCA), the Ministry of Natural Resources and Forestry (MNRF) and Department of Fisheries and Oceans (DFO).
- Application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.).

Terrestrial Wildlife (Including Species at Risk)
- Minimize vegetation removals and impacts to habitat.
- Complete vegetation removals outside of the active season for breeding birds in accordance with the Migratory Birds Convention Act and the Migratory Birds Regulations so as to avoid impacting migratory birds, including Species at Risk.

Surface Water
- Obtain a permit from the LSRCA for all work within the LSRCA regulated area.
- Application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.).
- Complete water taking (consumptive use, surface water diversions etc.) in accordance with the requirements of the Ontario Water Resources Act and the Environmental Protection Act.

Groundwater
- Complete water taking (groundwater) in accordance with the requirements of the Ontario Water Resources Act and the Environmental Protection Act.
- Implement Low Impact Development (LID) measures, where possible, to assist in water quality and quantity control.

Air Quality
- Utilize standard best management practices during construction to minimize impacts to air quality (i.e. covering stockpiles, utilizing dust suppressants; and ensuring that all equipment pollution control devices are operational and properly maintained).

Climate Change
- Implement Low Impact Development (LID) measures where possible.
- Minimize vegetation removal. Restore vegetation post construction through landscaping.
- Encourage alternative forms of transportation (i.e. cycling, transit, walking and etc.).

Vegetation (Including Species at Risk)
- Re-stabilize and re-vegetate exposed surfaces as soon as possible following construction.
- Define limits of construction with fencing to minimize intrusion into unnecessary areas.

Archaeological/Built Heritage
- Minimize direct impacts to heritage structures (i.e. BHR1 & BHR2).
- BHR2 – re-establish landscaping.
- CHL1 – Incorporate the planting of lilacs and other typical vegetation into the landscaping design.
- CHL2 – maintain the unobstructed view to Lake Simcoe.
- CHL3 – maintain the 'cottage community' east of St. John's Road.
- Complete Stage 2 Archaeological Assessment.

Noise
- Complete construction in accordance with municipal noise by-law.
- Utilize standard noise mitigation measures to minimize potential for impact (i.e. construction equipment to comply with the noise emission standards; equipment to be in good repair & fitted with functioning mufflers; maximize the separation distance between construction staging areas and nearby receptors to the greatest extent possible).

Adjacent Land Use
- Use of grading techniques to minimize potential for impact to adjacent properties.
- Use of traffic management measures (i.e. construction staging, detours etc.) to minimize impacts to local traffic and to maintain access during construction.
- Providing advance notice to property owners regarding temporary access closures during construction.

Utilities/Servicing
- Advance contact with utility companies during detail design process to develop re-location strategies.
- Ongoing communication with utility companies during construction.

PROJECT SCHEDULE AND FUNDING

FUNDING

This is a growth related project and it will therefore be funded by area development.

PRELIMINARY PROJECT SCHEDULE

- EA complete 2018
- Detailed Design complete 2018-2019
- Property Acquisition 2020
- Utility Relocation 2020-2021
- Road Construction 2021-2022

The above timing will be subject to funding and the receipt of all necessary approvals.

WHAT'S NEXT?

- The project team will give consideration to all comments received following completion of this Public Open House and will confirm selection of the Preferred Design Alternative.

- The project will then move into Phase 4 of the Class EA process. An Environmental Screening Report (ESR) will be prepared to document the Class EA process and made available for a 30 day public review period.

- A Notice of Completion will be issued that will identify the final Preferred Design Alternative, the start of the 30 day review period and the locations available to review the ESR document. The notice will also provide instructions for submitting a Part II Order (i.e. bump up) request.

- Once the 30 day public review period ends and there are no further objections or requests for a Part II Order, the Class EA process is considered complete. The project can then move forward to Phase 5 involving the completion of detailed design and construction at a future date.

COMMENTS

- All POH material will be available for download from the Town's website at www.innisfil.ca/7thea on March 28, 2018.
- We invite you to provide any comments, in writing, on the Comment Sheet provided.
- All comments are to be submitted by April 11, 2018 to either of the following members of the Project Team:

Ms. Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Phone: 705-436-3740 ext. 3226
1-888-436-3710 (toll free)
Email: mkoehler@innisfil.ca

Mr. Steve Fournier, P.Eng.
Project Manager
Ainley Group
550 Welham Road
Barrie, Ontario L4N 8Z7
Tel: 705-726-3371 ext. 249
Fax: 705-726-4391
Email: fournier@ainleygroup.com

Thank you for your attendance at this meeting!
We appreciate your participation.

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record. For more information about the collection, please contact Magdalena Koehler, Town of Innisfil, 705-436-37040 ext. 3226.

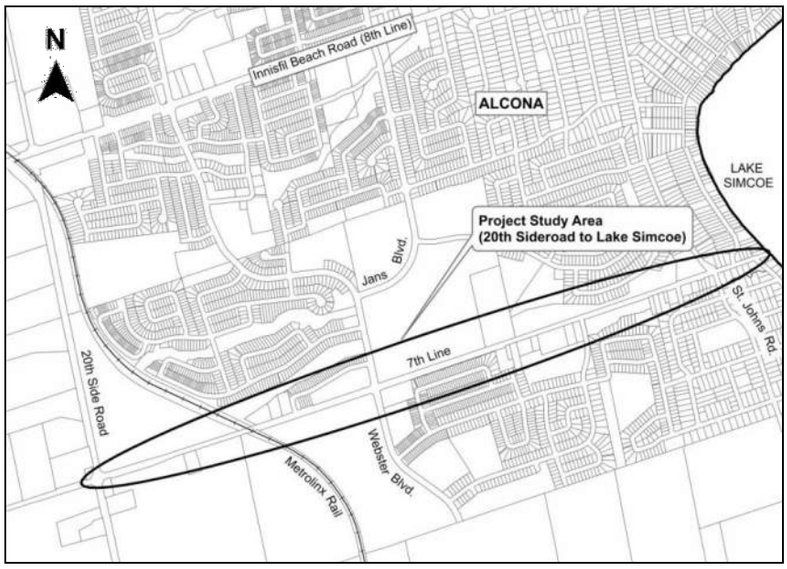
Appendix M

Consultation Point No. 4
(Notice of Completion)

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Background

In April 2017, the Town of Innisfil initiated a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study area map. The municipality hosted a Public Open House on March 28, 2018 to present the alternative design concepts under consideration for the Preferred Solution.



Subsequent to a review of comments received from all stakeholders, the Town of Innisfil has selected Design Option 1 as the final Preferred Design which proposes an urban cross section for the length of the 7th Line from 20th Sideroad to St. Johns Road. Addition of multi-use trails and sidewalks will also be completed. The selected Design Option proposes to realign 910 m of Banks Creek northward, on average a distance of 8.0 m.

ENVIRONMENTAL STUDY REPORT

In accordance with Phase 4 of the Schedule 'C' Municipal Class EA process, an Environmental Study Report (ESR) has been prepared to document the Class EA process completed for this undertaking and by this Notice is being placed in the public record for a 30 day public review and comment period. A digital copy of the ESR will be available on the Town of Innisfil's website on April 11, 2019 at www.innisfil.ca/7thea. A hard copy of the document will also be available for review during regular business hours on or after April 11, 2019 at the following locations:

Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Hours:
Mon. to Fri. 8:30- 4:30 pm
Sat. 9:00 a.m. – 12.00 p.m.

Innisfil IdeaLAB & Library
967 Innisfil Beach Road
Innisfil, ON L9S 1V3
Hours: Tues. to Fri. 9:30 a.m. - 9:00 p.m.
Sat. 10:00 a.m. - 5:00 p.m.
Sun. 1:00 p.m. – 5:00 p.m.

If you have any outstanding concerns regarding this project, please contact Ms. Magdalena Koehler of the Town of Innisfil (contact information below) by **May 11, 2019**. If concerns regarding this project cannot be resolved with the municipality, a person or party may request that the Minister of Environment make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual environmental assessments. To submit a Part II Order request, please complete the Ministry of the Environment, Conservation and Parks (MECP) *Part II Order Request Form* available on the Town of Innisfil's website on or after April 11, 2019 at www.innisfil.ca/7thea. The form must be submitted by **May 11, 2019** to the Minister of Environment, Conservation and Parks and a duplicate copy of the request must also be forwarded to the Director, Environmental Assessment and Permissions Branch and Ms. Magdalena Koehler of the Town of Innisfil at the addresses shown below:

Minister
Ministry of the Environment, Conservation and Parks
Ferguson Block, 77 Wellesley St. W, 11th Floor
Toronto ON M7A 2T5
Fax: 416-314-8452
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave W, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
mkoehler@innisfil.ca

If no Part II Order requests are received by 4:00p.m. **May 11, 2019**, the Town of Innisfil intends to proceed with detailed design. Construction is planned for 2021/2022, subject to funding and the receipt of necessary approvals. Please note that ALL personal information included in a Part II Order submission - such as name, address, telephone number and property location - is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry's Freedom of Information and Privacy Coordinator at 416-327-1434.

This notice issued April 11 & 18 2019.

Agency and Indigenous Community Contact List and Letters

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Completion
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	rob.dobos@ontario.ca
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment, Conservation and Parks	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment, Conservation and Parks	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Mr.	Tom	Chrzan	Director, Regional Services Branch	Ministry of Tourism, Culture & Sport	400 University Avenue	2nd Floor	Toronto, ON	M7A 2R9	416-314-6680	tom.chrzan@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	carol.neumann@ontario.ca
Mr.	Jeff	Bateman	Manager of Rail Corridor Management	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-0101	jeff.bateman@gotransit.com
Ms.	Tania	Gautam	Project Manager Environmental Programs & Assessments	Metrolinx	20 Bay Street		Toronto, ON	M5J 2W3	416-202-4904	Tania.Gautam@metrolinx.com
Mr.	Adam	Snow	Third Party Officer	Metrolinx	97 Front Street West		Toronto, ON	M5J 1E6	416-528-4864	adam.snow@gotransit.com
Mr.	Brandon	Gaffoor	Rail Corridors Management Office	Metrolinx	335 Judson Street		Toronto, ON	M8Z 1B2	416.202.7294	brandon.gaffoor@metrolinx.com
Mr.	Derrick	Toigo	Senior Vice President Rail Infrastructure Team	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-0262	Derrick.Toigo@infrastructureontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Mr.	Charles	Burgess	Manager of Planning	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x299	c.burgess@lsrca.on.ca
Ms.	Ashlea	Brown	Senior Environmental Regulations Analyst	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281	A.Brown@lsrca.on.ca
Mr.	Tom	Hogenbirk	Manager of Engineering	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x240	t.hogenbirk@lsrca.on.ca
Ms.	Kate	Lillie	Ecologist	Lake Simcoe Region Conservation Authority	120 Bayview Parkway	Box 282	Newmarket, ON	L3Y 4X1	905-895-1281 x527	k.lillie@lsrca.on.ca
Mr.	Michael	Prowse	CAO	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	michael.prowse@barrie.ca
Mr.	Richard	Forward	General Manager of Infrastructure	City of Barrie	70 Collier Street	P.O. Box 400	Barrie, ON	L4M 4T5	705-739-4220	richard.forward@barrie.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Emergency Services										

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Completion
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Ms.	Donna	Danyluk	Communications Representative	Royal Victoria Regional Health Centre	201 Georgian Drive		Barrie, ON	L4M 6M2	705-728-9090 ext. 41610	danylukd@rvh.on.ca
Mr.	Jon	Pegg	Fire Chief	Innisfil Fire Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	jpegg@innisfil.ca
Ms.	Candace	Stefanec	Administration Coordinator	Innisfil, Fire and Rescue Services	c/o Innisfil Town Office	2101 Innisfil Beach Rd.	Innisfil, ON	L9S 1A1	705-436-2763	cstefanec@innisfil.ca
Ms.	Sue	Dawson	Deputy Fire Chief, Communications & Business Services	City of Barrie, Fire & Emergency Service Department	P.O. Box 400		Barrie, ON	L4M 4T5	705-739-4220, ext. 3221	sue.dawson@barrie.ca
Mr.	Andrew	Fletcher	Chief of Police	South Simcoe Police Service	2137 Innisfil Beach Road		Innisfil, ON	L9S 1A2	705-436-2141	andrew.fletcher@southsimcoepolice.ca
Mr.	Tom	Sinclair	Staff Sergeant	City of Barrie Police Service	29 Sperling		Barrie, ON	L4M 6K9	705-725-7025 ext. 2110	tsinclair@barriepolice.ca
Ms.	Jessica	Lawson	Research, Planning and Analysis Section, Business Management Bureau	Ontario Provincial Police, Operational Policy and Strategic Planning Bureau	777 Memorial Avenue	3rd Floor	Orillia, ON	L3V 7V3	705-329-6903	jessica.lawson@opp.ca
Special Interest Groups										
Ms.	Mary-Ellen	Madeley	Manager	Greater Innisfil Chamber of Commerce	8034 Yonge Street		Innisfil, ON	L9S 1L6	705.431.4199	
Ms.	Diana	Robinson	President	Cookstown and District Chamber of Commerce	P.O.Box 1102		Cookstown, ON	L0L 1L0	705.458.7007	
Mr.	Richard	Boken		Bayview Beach Ratepayers Association	219 Bayshore Road		Churchill, ON	L0L 1K0	705.456.6731	
Mr.	Don	Avery		Innisfil District Association	P.O. Box 7057		Innisfil, ON	L9S 1A8		
Ms.	Janet	Deacon		Alcona Beach Club Inc.	2044 25th Sideroad		Innisfil, ON	L9S 1Z2		
Ms.	Barb	Taylor-Reid		Degrassi Cove Association	10 Glengrove Avenue West		Toronto, ON	M4R 1N4		
Mr.	Nick	Torkos		Innisfil Creek Golf Course	239 Reive Blvd.		Cookstown, ON	L0L 1L0	705.458.4653	
Mr.	Kevin	Jacob	Assistant Clerk	Innisfil Heritage Committee	2101 Innisfil Beach Road		Innisfil, ON	L9S 1A1	705.436.3740 x 2414	kjacob@innisfil.ca
Ms.	Kathleen	Gardiner		Gilmore and Gilmore Professional Corporation	458 Victoria Street E	P.O. Box 250	Alliston, ON	L9R 1J8	705-435-4339	kathleen.gardiner@guknires.ca
Mr.	John	La Brie	Director, Physical Resources	Georgian College	1 Georgian Drive		Barrie, ON	L4M 3X9	705.728.1968 x 5213	
Mr.	John	Goodfellow	Landowner Liaison	BonSecour Track and Trail Snowmobile Club	660 9th Line		Innisfil, ON	L9S 3Y5	705-436-3719	bonsecour@rogers.com
Mr.	Brendan	Matheson	Board Chair	Barrie Cycling Club	P.O. Box 1363		Barrie, ON	L4M 5R4	705-717-6349	brendan@barriecycling.com
Ms.	Jen	Eaton	Sports Coordinator	Ontario Cycling Association	2-2015 Pan Am Blvd	1-416-855-1717	Milton, ON	L9T 8Y9		jen.eaton@ontariocycling.org
Ms.	Leah	Emms	Member Service Representative for Peel, Simcoe & York	Ontario Federation of Agriculture	Simcoe County Administration Centre	1110 Highway #26	Midhurst, ON	L0L 1X0	1-866-660-5511	leah.emms@ofa.on.ca
Consultants & Developers										
				Alriz Development Ltd.	265 King Street North		Alliston, ON	L9R 1N3		
				DIAM Fox Hill Property Inc.	85 Prologis Boulevard	Suite 1	Mississauga, ON	L5W 0G4		
Mr.	Frank	Orsi		Orsi Developments (Grand Sierra)	P.O. Box 215		Newmarket, ON	L3Y 4X1	905-778-1818	frank@newerahomes.ca
Mr.	Manni	Chauhan	G Force Planners	1550 Meyerside Dr	Unit 7		Mississauga, ON	L5T 1V4		gforceplanners@gmail.com
Attn:	Office Manager			Maple Lane Lands & Dev Co Ltd. (Wallace Mills)	3565 King Road	Unit 109	King City, ON	L7B 1M3	705.833.1937	maple.lane@rogers.com
Mr.	Luigi	Fortini		Letizia Homes Ltd.	P.O. Box 1146		Bradford, ON	L3Z 2B5	905.252.7035	ouac@rogers.com
Mr.	Phil	Hammell		Mariposa Homes (Skivereen)	650 Harvie Settlement Road		Orillia, ON	L3V 0Y7	705.329.3330	phammell@mariposahomes.ca
Mr.	Ernie	Rinomato		Country Homes (Alcona Downs)	111 Strada Drive		Woodbridge, ON	L4L 5V9	416.213.7191	

Town of Innisfil
7th Line Improvements Schedule 'C' Class EA
Notice of Completion
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Mr.	Lou	Kelly		Green Acres	7886 Highway 11		Innisfil, ON	L9S 1L4	705.436.5111	homelife-barrie@rogers.com
Ms.	Wanda	Leblanc		Innisbrook Developments Inc.	18 Brownlee Drive		Bradford, ON	L3Z 2A4	905.252.7035	wandaleblanc@rogers.com
Mr.	Diego	Rizzardo		SanDiego Homes	1101 Quarry Drive		Innisfil, ON	L9S 4X1	705.436.5775	diego@sandiego-homes.ca
Ms.	Tanya	Roehrich	Property Manager	Trinity Development Group Inc	3250 Bloor Street West	Suite 1000	Etobicoke, ON	M8X 2X9	(416) 255-8800	troehrich@trinity-group.com
Mr.	Kerry	Judges		Woodland Park Development	67 Barrie Drive		Barrie, ON	L4N 7P1	705.725.0952	kerry.judges@gmail.com
Mr.	Hugh	Johnston		Crisdawn Construction Inc. (Pratt D'Amico)	27 Clapperton Street, Suite 300		Barrie, ON	L4M 3E6	705.722.4500	hjohnston@prattdevelopment.ca
Mr.	Nisio	Rizzardo		Previn Court Homes	265 King Street North, Box 1, Compartment 9		Alliston, ON	L9R 1N3		
Mr.	Rosario	Sacco		Urban Ecosystems	7050 Weston Road	Suite 705	Woodbridge, ON	L4L 8G7	905-856-0629	rosario@urbanecosystems.com
Mr.	Edward	Tjeerdsma		R.J Burnside	3 Ronell Crescent		Collingwood, ON	L9Y 4J6	705 797 4263	edward.tjeerdsma@rjburnside.com
Ms.	Julie	Bottos		SCS Consulting Group	30 Centurian Drive	Suite 100	Markham, ON	L3R 8B8	(905) 475-1900 (ext. 2369)	jbottos@scsconsultinggroup.com
Ms.	Sherri	Meibom		SCS Consulting Group	30 Centurian Drive	Suite 100	Markham, ON	L3R 8B8	905 475 1900 ext 2369	smeiboom@scsconsultinggroup.com
Aboriginal Consultation *(contact list updated as per MOECC email June 27, 2017)*										
Att: Consultation Unit				Ministry of Indigenous Affairs	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(CIRNAC (formerly INAC) not contacted for this project as project is not on Aboriginal lands)				~~Crown-Indigenous Relations and Northern Affairs Canada (formerly Indigenous & Northern Affairs Canada Consultation Unit)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1-800-567-9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct)	Prefers digital - bhart@metisnation.org & copy to consultation@metisnation.org
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Mr.	Allen	Vallee	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 4	Midland, ON	L4R 4K6	705-526-6335	
Mr.	Tony	Muscat	President Interim	Moon River Metis Council	B26360 Cedarhurst Beach Road	R.R. 1	Beaverton, ON	L0K 1A0	705-426-1381	tonymuscat@rogers.com
First Nation Communities										
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
	Sharday	James	Executive Assistant to the Chief	Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-3253611 ext. 1216	hollien@ramafirstnation.ca
Ms.	Karry	Sandy-McKenzie	Co-ordinator/Negotiator	Williams Treaties First Nation						k.a.sandy-mckenzie@rogers.com
Chief	Phyllis	Williams		Curve Lake First Nation	Government Service Building	22 Winookeeda Street	Curve Lake, ON	K0L 1R0	705-657-8045	PhyllisW@curvelake.ca
Ms.	Kaitlin	Hill	Land and Resources Consultation Liaisons	Curve Lake First Nation	Government Service Building	22 Winookeeda Street	Curve Lake, ON	K0L 1R0	705-657-8045	kaitlinh@curvelake.ca
Ms.	Courtney	Jackson	Environmental Worker	Aamjiwnaang FN	978 Tashmoo avenue		Sarnia, ON	N7T 7H5	519 336 8410	
Chief	Joanne	Rogers		CC: to above address						chief@aamjiwnaang.ca
Ms.	Sharilyn	Johnson	Environmental Coordinator	CC: to above address						sjohnston@aamjiwnaang.ca
Utilities										
Mr.	Tom	Panak	Capital Engineer	InnServices Utilities Inc.	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-436-3710	tpanak@innservices.co
Mr.	Kent	Constable	Operations Supervisor	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321	kentc@innpower.ca
Mr.	Michael	Davison	Engineering Manager	Innpower	7251 Yonge Street		Innisfil, ON	L9S 0J3	705-431-4321 x208	michaeld@innpower.ca
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Andrew	Fournier		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	andrew.fournier@bell.ca
Mr.	Anothony	Zita	Planning Analyst	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822 416-427-9620 cell	Anthony.Zita@enbridge.com
Mr.	Meetpal	Chhina	Supervisor	Enbridge Gas	6 Colony Court		Brampton, ON	L6T 4E4	905-458-3822	meetpal.chhina@enbridge.com
Mr.	Graham	McPherson	Planning	Rogers	1 Sperling Drive		Barrie, ON	L4M 6B8	705-737-4660 x6914	Graham.McPherson@rci.rogers.com

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019

'SAMPLE' AGENCY LETTER

File No. 217024

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Dobos,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Ministry of Indigenous Affairs
160 Bloor St. East
9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Tucker,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Davis,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Georgian Bay Metis Council
355 Cranston Crescent
P.O. Box 4
Midland, ON L4R 4K6

Attn: Mr. Allen Vallee
President

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Vallee,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Moon River Metis Council
B26360 Cedarhurst Beach Road
R.R. 1
Beaverton, ON L0K 1A0

Attn: Mr. Tony Muscat
President Interim

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Muscat,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief McQue-King,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Chippewas of Georgina Island
R.R. #2
P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Big Canoe,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Sharday James
Community Consultation Worker

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Sharday James,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Williams Treaties First Nation
k.a.sandy-mckenzie@rogers.com

Attn: Ms. Karry Sandy-McKenzie
Co-ordinator/Negotiator

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Sandy-McKenzie,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Curve Lake First Nation
Government Service Building
22 Winookeeda Street
Curve Lake, ON K0L 1R0

Attn: Chief Phyllis Williams

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Williams,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Curve Lake First Nation
Government Service Building
22 Winookeeda Street
Curve Lake, ON K0L 1R0

Attn: Ms. Kaitlin Hill
Land and Resources Consultation Liaisons

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Hill,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Aamjiwnaang First Nation
978 Tashmoo avenue
Sarnia, ON N7T 7H5

Attn: Ms. Courtney Jackson
Environmental Worker

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Jackson,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
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pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

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Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Aamjiwnaang First Nation
978 Tashmoo avenue
Sarnia, ON N7T 7H5

Attn: Chief Joanne Rogers

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Rogers,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Aamjiwnaang First Nation
978 Tashmoo avenue
Sarnia, ON N7T 7H5

Attn: Ms. Sharilyn Johnson
Environmental Coordinator

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Johnson,

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager, Roads, Traffic, & Transportation

Resident Letter

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

March 28, 2019 File No. 217024

Re: Town of Innisfil
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Resident / Property Owner / Tenant:

Please be advised the Town of Innisfil has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Side Road to Lake Simcoe, a distance of approximately 3.0 km. Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Magdalena Koehler of the Town of Innisfil, at 705-436-3740 ext. 3226 or via email at mkoehler@innisfil.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Steve Fournier, P. Eng.
Project Manager

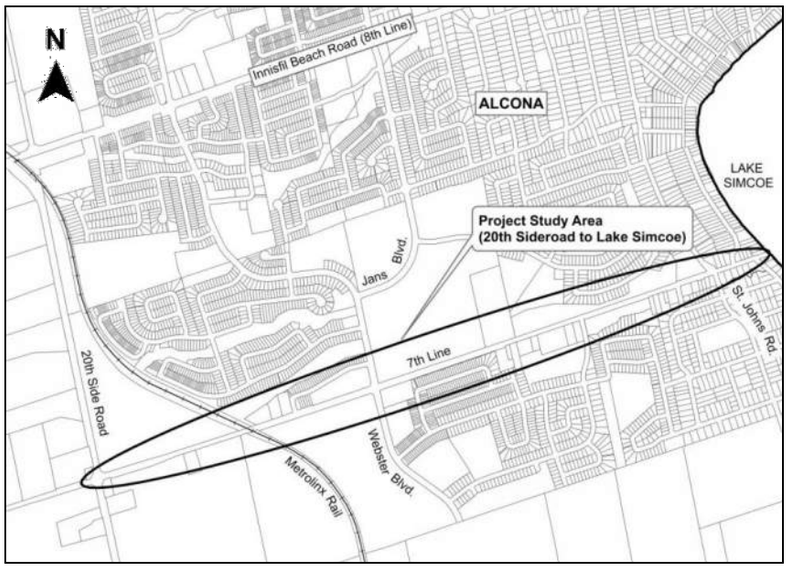
Tel: 705-726-3371 ext. 249
Email: fournier@ainleygroup.com

pc: M. Koehler Town of Innisfil, Capital Project Manager
C. Cautillo Town of Innisfil, Project Manager Roads, Traffic, & Transportation

TOWN OF INNISFIL
7th Line Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Background

In April 2017, the Town of Innisfil initiated a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to facilitate improvements to the 7th Line extending from the 20th Sideroad to Lake Simcoe, a distance of approximately 3.0 km, as illustrated in the accompanying study area map. The municipality hosted a Public Open House on March 28, 2018 to present the alternative design concepts under consideration for the Preferred Solution.



Subsequent to a review of comments received from all stakeholders, the Town of Innisfil has selected Design Option 1 as the final Preferred Design which proposes an urban cross section for the length of the 7th Line from 20th Sideroad to St. Johns Road. Addition of multi-use trails and sidewalks will also be completed. The selected Design Option proposes to realign 910 m of Banks Creek northward, on average a distance of 8.0 m.

ENVIRONMENTAL STUDY REPORT

In accordance with Phase 4 of the Schedule 'C' Municipal Class EA process, an Environmental Study Report (ESR) has been prepared to document the Class EA process completed for this undertaking and by this Notice is being placed in the public record for a 30 day public review and comment period. A digital copy of the ESR will be available on the Town of Innisfil's website on April 11, 2019 at www.innisfil.ca/7thea. A hard copy of the document will also be available for review during regular business hours on or after April 11, 2019 at the following locations:

Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
Hours:
Mon. to Fri. 8:30- 4:30 pm
Sat. 9:00 a.m. – 12.00 p.m.

Innisfil IdeaLAB & Library
967 Innisfil Beach Road
Innisfil, ON L9S 1V3
Hours: Tues. to Fri. 9:30 a.m. - 9:00 p.m.
Sat. 10:00 a.m. - 5:00 p.m.
Sun. 1:00 p.m. – 5:00 p.m.

If you have any outstanding concerns regarding this project, please contact Ms. Magdalena Koehler of the Town of Innisfil (contact information below) by **May 11, 2019**. If concerns regarding this project cannot be resolved with the municipality, a person or party may request that the Minister of Environment make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual environmental assessments. To submit a Part II Order request, please complete the Ministry of the Environment, Conservation and Parks (MECP) *Part II Order Request Form* available on the Town of Innisfil's website on or after April 11, 2019 at www.innisfil.ca/7thea. The form must be submitted by **May 11, 2019** to the Minister of Environment, Conservation and Parks and a duplicate copy of the request must also be forwarded to the Director, Environmental Assessment and Permissions Branch and Ms. Magdalena Koehler of the Town of Innisfil at the addresses shown below:

Minister
Ministry of the Environment, Conservation and Parks
Ferguson Block, 77 Wellesley St. W, 11th Floor
Toronto ON M7A 2T5
Fax: 416-314-8452
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave W, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

Magdalena Koehler, C.E.T., CAPM
Capital Project Manager
Town of Innisfil
2101 Innisfil Beach Rd.
Innisfil, ON L9S 1A1
mkoehler@innisfil.ca

If no Part II Order requests are received by 4:00p.m. **May 11, 2019**, the Town of Innisfil intends to proceed with detailed design. Construction is planned for 2021/2022, subject to funding and the receipt of necessary approvals. Please note that ALL personal information included in a Part II Order submission - such as name, address, telephone number and property location - is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry's Freedom of Information and Privacy Coordinator at 416-327-1434.

This notice issued April 11 & 18 2019.

Appendix N

External Agency Meeting Minutes

Lake Simcoe Region Conservation Authority
Meeting Minutes

Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
550 Welham Road, Barrie, ON L4N 8Z7
Tel: (705) 726-3371 o Fax: (705) 726-4391
Email: barrie@ainleygroup.com

LSRCA MEETING

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: January 12, 2018

TIME: 10:00 a.m. – 11:15 a.m.

LOCATION: LSRCA Office at 120 Bayview Parkway, Newmarket, Ontario L3Y 3W3

PRESENT:
Tom Hogenbirk – LSRCA, Manager of Engineering (TH)
Frank Pinto – LSRCA, Infrastructure Regulations Analyst (FP)
Brad Baker – Azimuth, Terrestrial Ecologist (BB)
Magdalena Koehler – Town of Innisfil, Capital Project Manager (MK)
Carolina Cautillo – Town of Innisfil, Project Manager (CC)
Andrea Potter – Ainley Group, Environmental Planner (AP)
Steve Fournier – Ainley Group, Project Manager (SF)
Nathanael Couperus – Ainley Group, Engineering Assistant (NC)

DISTRIBUTION: All Present

1.0 Introductions

2.0 Presentation of Preliminary Design

- Ainley Group (Ainley) presented the proposed Class EA Phase 2 Preferred Solution highlighting the three lane and two lane configurations and locations of the proposed 3m wide multi-use trail and the limits of disturbance. Gradeline match points were reported at 20th Sideroad, Metrolinx, Webster Boulevard, and St. John's Road.

3.0 Cross-Sections of Limit of Disturbance

- Ainley presented key cross-sections along the preferred alternative. Discussion centred around tie-in points to existing properties, size of Banks Creek channel, Banks Creek "pinch points", necessary property acquisition areas, and road platform widths.

4.0 Discussion on Cut and Fill Balance in Flood Plain

- Ainley provided a summary of the rough cut/fill calculations performed to date:
  - Webster Boulevard to St. John's Road ~1800m^3 of cut;
  - 20th Sideroad to Metrolinx ~ 6600m^3 of fill; and
  - From Metrolinx to Webster the proposed preferred alternative is assumed to be above the Regional Floodplain.

- LSRCA recommended to limit the amount of fill in the project as much as possible.
- LSRCA desires a cut/fill balance of 0 across the project or a surplus of cut.
- Ainley mentioned that a cut/fill optimization has not yet been performed and for example one could reduce the 3:1 fill slopes between 20th Sideroad and Metrolinx to 2.5:1 to limit the amount of fill in the floodplain.
- LSRCA asked what the elevation of the 7th Line and Metrolinx crossing is.
  Ainley responded that an existing elevation of 250.44m is at this location.
  It was further discussed that the model in this area may not be representative of recent work performed by the LSRCA in the area with the models.
- LSRCA is going to inquire internally about improvements made to the models in the area and pass these along to Ainley if there are any available.

5.0 Proposed platform for Bank's Creek naturalization from Webster Boulevard to St. Johns Road

- Ainley noted that approximately 15m wide section of trees would have to be removed to provide space for the 8m wide bottom width channel naturalization. There was consideration to reduce this channel width to save on removals.
- LSRCA dictated that the size of the Banks Creek section may depend on the amount of cut needed in the flood plain for the project and it may be necessary to provide a wider floodway where feasible.

6.0 LSRCA recommendations for water quality and water quantity

- Ainley mentioned that in order to satisfy LSRCA 2016 Guideline 2.2.2.1 (volume control for linear infrastructure) approximately 550m^3 of storage would need to be provided.
- Ainley mentioned that in order to reduce the flows from increased impervious area a storage of ~1000m^3 may be necessary (this was calculated through Modified Rational Method).

- LSRCA requested that peak flows for all storm events be maintained or decreased.
- LSRCA requested that floodplain storage be maintained or increased.
  - Both of these measures are important to protect downstream lives and properties.

- Ainley asked whether the LSRCA thought that the 8m bottom width channel was enough, too much, or not enough to satisfy their concerns.
  LSRCA responded that the width of the channel may be governed by the need for floodplain storage.

- Ainley mentioned that the Town may be able to purchase property west of the Metrolinx land that would be used for quantity control and floodplain storage.

- LSRCA mentioned that a filter strip with underdrain or a bioretention cell design could be incorporated into the 3m boulevard.
- LSRCA suggested that an effort could be made to connect CBs to the bioretention cells. It was recommended to check the Grey to Green Retrofit Guide for Road Right-of-Ways for examples.

- The Town asked whether there are grants available to perform these LID improvements.
- LSRCA mentioned that there are people within their organization who can discuss those possibilities further.

7.0 Environmental Update

- The potential for the Department of Fisheries and Oceans (DFO) to review the current plan and provide input was discussed; however, Brad Baker (Azimuth) advised that the Fisheries Biologist (Sara Murphy) has indicated that the DFO normally does not review plans until the 60% design stage.
- Ainley Group noted that the key environmental concerns relate to fisheries, a Butternut Tree (Species at Risk Endangered) located northeast of the intersection of the 20th Sideroad and 7th Line and potential SAR bat habitat in the study area.
- Azimuth noted that any vegetation communities identified as FOD may provide bat habitat. The next step is to undertake a bat snag density survey as this will confirm which locations do provide bat habitat. Once that is complete, the next step would be an acoustical survey. This can only be done in June. The schedule will need to be monitored closely so as not to miss that window.
- Azimuth mentioned that a DNA test will be performed on the Butternut tree to confirm if it is a pure butternut or hybrid as this will determine what can be done in that area.
- Ainley is to meet with the Azimuth Fisheries Biologist next week to discuss the project.
- Azimuth is currently finalizing their draft report. It will be forwarded to the LSRCA once available.

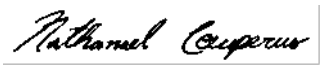
8.0 Class EA Process

- The next Technical Advisory Committee (TAC) meeting will be scheduled in the next two weeks. Public Information Centre No. 2 is scheduled for late February.
- Ainley mentioned that potential Phase 3 design alternatives under consideration for the next PIC may include the following:
    - A 1.5m bike lane on the road to replace the 3.0m Multi-Use trail.
    - Revisit the rural cross-section in locations to limit the amount of fill in the floodplain
    - An option that proposes no relocation of Bank's Creek.

9.0 Action Items

- LSRCA is going to inquire internally about improvements made to the models in the area and pass these along to Ainley if there are any available.
- **Please note – LSRCA sent confirmation of a change in Regional water surface elevation west of the GO tracks from 252.71masl to 250.50masl on January 26, 2017. This will be used for cut/fill balance calculations on 7th Line.**
- Azimuth to forward draft report to LSRCA when available.
- Ainley to incorporate today's discussions in the material to be presented at the next TAC meeting. Notification of the next TAC meeting will be sent out on Monday. Ainley typically provides 2 weeks notice.

Minutes prepared by:
Ainley & Associates Limited



Nathanael Couperus, MASc, EIT
Engineering Assistant

S:\217024\Meeting Agendas & Minutes\07-LSRCA Meeting\01 - LSRCA Meeting Minutes 1 Jan-12-2018_Final.docx

Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
550 Welham Road, Barrie, ON L4N 8Z7
Tel: (705) 726-3371 • Fax: (705) 726-4391
Email: barrie@ainleygroup.com

LSRCA MEETING

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: August 16 , 2018

TIME: 2:00 – 3:30pm

LOCATION: LSRCA Office at 120 Bayview Parkway, Newmarket, Ontario L3Y 3W3

PRESENT:
Tom Hogenbirk – LSRCA
Taylor Stevenson – LSRCA
Shauna Fernandes - LSRCA
Sara Murphy – Azimuth
Jim Broadfoot - Azimuth
Magdalena Koehler – Town of Innisfil
Carolina Cautillo – Town of Innisfil
Sheena Briggs – Town of Innisfil
Steve Fournier – Ainley Group
Jody Marks – Ainley Group

DISTRIBUTION:
All Present
Andrea Potter – Ainley Group

1.0 Introductions

2.0 Presentation of Preferred Solution

- During Slide 8 of presentation LSRCA asked if any residents along 7th Line are on private wells. If so, this would be a factor that may influence the location of the LID boulevards. Ainley Group responded there are two private wells in use that are known, one is on the property of the old school house and the other is farm house between Metrolinx and 20th SR. Ainley will check into the depths of these private wells to see if they would be affected by the concentrated infiltration from the LID boulevards.
- During Slide 11 of presentation LSRCA asked what the permanent loss of trees would be. Ainley Group informed that after restoration works the permanent loss of trees would be approximately 0.4ha.
- At the conclusion of Ainley Group's presentation LSRCA was asked to consider the following:
    - What are LSRCA's thoughts on the merits of trying to rehabilitate this portion of Bank's Creek?
    - What flexibility, if any, would they permit in the timing of the provision of additional runoff storage to control flow post to pre?
    - What will the LSRCA be seeking as compensation for the loss of wooded area?
    - Are there aspects of quality and quantity control above and beyond the points presented that need to be included?

3.0 Proposed platform for Bank's Creek naturalization from Webster Boulevard to St. Johns Road

- LSRCA asked if Bank's Creek could be realigned without the need for constructing retaining walls – noting that the drawings indicated the height of the retaining walls to be 6 feet. Ainley Group noted that the retaining walls would be counter sunk and be at a height of approximately 3-4 feet above ground. LSRCA expressed their preference to minimize the amount of retaining wall adjacent to the creek.
- Azimuth informed that Water's Edge was brought into the project to determine if there was enough physical space to realign the channel to provide adequate hydrologic function – especially in the section in proximity to the residents of Vance Crescent. Retaining walls have been recommended by Ainley Group to be built at any pinch points along the realigned channel where the houses on Vance Crescent are close to the channel and where it passes by existing storm water management (SWM) pond.
- The residents of Vance Crescent have been very vocal in opposing the channel improvements along 7th Line, as they fear the loss of privacy to their backyards due to tree removal. Having heard their reservations, Ainley Group has attempted to strike a balance; where the channel realignment is wide enough for proper hydrologic function, but also not so extreme as to reduce amount of dense woodlot to be removed for rehabilitation work.
- LSRCA recommended that detail design of the channel realignment consider more natural retaining structures such as vegetated revetments or crib walls for the areas that are not considered a pinch point. LSRCA is concerned over the entire length of the channel realignment having a concrete retaining wall, as they prefer natural infrastructure which better aids the system to establish and sustain over time.
- LSRCA asked if there is watermain or sanitary servicing running along 7th Line to be installed and if it will require cutting through naturalization areas. Ainley Group responded that yes there is an existing watermain, and a requirement to extend the sanitary sewer westbound and then northward to service Sierra Homes development. If the road works occur before the developer's then the Township would install servicing across Bank's Creek via tunnelling (underground), crossing the sanitary to the north side of the watercourse and cap it off there.
- Ainley Group noted that on the south side of 7th Line between Webster Blvd. and St. John's Road, the road work would tie into the existing driveways and the existing ditch would remain as is.

4.0 Review of LSRCA Requirements

- Ainley Group brought forward the point of what flexibility, if any, would LSRCA permit in the timing of the provision of additional runoff storage to control flow post to pre. The future housing developments along 7th Line would create SWM ponds that could be utilized to incorporate the post to pre requirements of the 7th Line improvements. However, the road improvements may go ahead well before the housing developments, this means that the timing for restoring post to pre would be postponed. LSRCA responded that they would not permit postponing this requirement. Large storm systems are occurring more and more frequently. To wait multiple years to restore post to pre flow conditions is too risky as one large storm event could cause considerable damage. LSRCA suggested that the design could incorporate more LID features in the boulevards to help with achieving post to pre runoff storage needs.

5.0 Environmental Considerations

- LSRCA asked if Azimuth had any updated Ecological Land Classification (ELC) data for the area surrounding 7th Line, as it was noted in Azimuth's summary that there was a small pocket of woodland swamp.
- Azimuth responded that previous ELC mapping of the areas have indicated deciduous swamp but looking at recent aerial images the ELC will be updated to reflect a deciduous forest.

- LSRCA asked for a copy of the ELC mapping once field verified, Azimuth agreed.
- LSRCA asked if the culverts that cross 7th Line have been assessed in terms of habitat connectivity.
- Ainley Group indicted that the culvert just east of 20th Side Road is to be replaced with a slightly larger culvert. No changes are proposed for the culvert near Webster Boulevard and Quarry Road other than extensions, and no changes other than a 6m extension are proposed to the culvert near St. John's Road as it was recently replaced by the Town.
- There is a box culvert located at the SWM pond by Quarry Road and an extension will be added to it through the road widening work. LSRCA noted that the location of the box culvert is the area where the potential swamp habitat is located, and the box culvert provides important connectivity for amphibian crossing. Hence, the importance of having this swamp habitat confirmed through ELC.
- Ainley Group asked LSRCA for details regarding mitigation requirements for loss of woodland habitat. LSRCA responded that when working with municipalities the land used for compensation must be municipal land. The LSRCA follows their ecological offsetting plan, with the ratio for woodland habitat being 2:1 replacement.
- Town of Innisfil asked LSRCA what characteristics they look at for appropriate land to be used for compensation. LSRCA responded that it being public land is the biggest criteria, it is acceptable to add onto natural areas or pre-existing habitat restoration works. Having the compensation work done within that same area or sub watershed of the project work is also ideal.

6.0 Species at Risk

- LSRCA asked Azimuth what they determined the quality of the surrounding woodland habitat to be. Azimuth responded that the woodland is mainly deciduous and mixed forest units, the main species present being poplar, ash, and sugar maple. Azimuth has done extensive snag density surveys of surrounding forest areas to determine any impacts to SAR bats.
- Based on Azimuth's surveys for SAR bat habitat, they will consult with the Ministry of Natural Resources and Forest (MNRF). In their opinion they do not anticipate the requirement to obtain a SAR permit from the MNRF and that the MNRF is anticipated to agree that a Letter of Advice would be suitable for the activities proposed. MNRF consultation is required, however Azimuth anticipates that MNRF will concur that mitigation options for SAR protection (such as timing restrictions) would be suitable considering the land uses and suitable habitat for bats beyond the study area.
- On top of the timing window for migratory birds (April – August) the restriction for bat breeding would be May – end of October. Therefore, tree removal and trimming will need to be scheduled during the winter months to mitigate contraventions for migratory birds and potential SAR.
- LSRCA asked Azimuth what class of woodland the affected areas were and what the results of the breeding bird surveys were. Azimuth indicated that the woodland has been classified as mid-range and that the breeding bird survey results showed limited to no sensitive species present. The Eastern Wood-Peewee (currently listed as Special Concern) was observed during the surveys but Azimuth suggests that the overall impact of this project to the special concern species is expected to be none. The woodland corridors affected by this project are too narrow for there to be occurrences of sensitive avian species.
- LSRCA asked if there had been any observations of turtles throughout the project area and if 7th Line had any observed road kill occurrences. Azimuth responded that there had not been any observations of turtles present throughout the project area nor known high animal mortality along the road. The Town noted that there have been a couple records of deer being hit by vehicles at the eastern end of 7th Line.
- Ainley Group noted that this is preliminary design, and that details identifying footprint site alterations and compensation requirements would need to be refined in detail design. At this stage, the Preliminary Design will ensure that the LSRCA's recommendations for natural heritage protection

are carried forward into the Detail Design stage, to ensure that the details regarding site restoration and ecological offsetting plans are developed in future stages of the project.

7.0 Project Schedule

- Ainley asked LSRCA how much detail in the design is needed at this point for LSRCA to provide feedback. LSRCA responded by asking when Ainley and the Town foresee the actual permit being submitted to LSRCA. Ainley estimates that the permit application would be submitted during the year 2020-21.
- Cost estimate to include costs associated with the Letter of Credit (LOC) that will form part of the DFO Authorization request for the re-alignment of Bank's Creek was discussed. The Letter of Credit is required prior to issuance of approvals, and will require that the municipality secure costs for the entire project prior with their financial institution prior to project start. Suggestion from Azimuth to build the larger expense items first to allow for re-evaluation of the LOC and reduce the total amount of the LOC, as a strategy for reducing the interest incurred to the extent possible.
- LSRCA asked about the project staging and construction phases. The Town of Innisfil replied that construction is planned to occur over a 2 year timeframe and that traffic patterns would favour starting with the western end of 7th Line between 20th Side Road and Webster Boulevard.
  The next and final Technical Advisory Committee (TAC) meeting will be scheduled in the next three to four weeks. Ainley will try to incorporate the comments from LSRCA given during today's meeting into the material for the TAC meeting.

8.0 Action Items

- Ainley will check into the depths of any private wells along 7th Line project area to see if they would be affected by the concentrated infiltration from the LID boulevards.
- Ainley to reduce the extent of the retaining wall where possible along rehabilitated channel.
- Ainley to increase the frequency, if possible, of LID boulevards to meet the requirements of post to pre runoff.
- Ainley to address cut-fill balance due to LSRCA rejecting the proposal of additional excavation within the floodplain to the north of Bank's Creek between Metrolinx and 20 Side Road.
- Azimuth to forward updated ELC data of the project area to LSRCA once field verified.
- Ainley to arrange final TAC meeting.

Minutes prepared by:
Ainley & Associates Limited

Jody Marks
Environmental Planning Assistant

From: Tom Hogenbirk
To: Steve Fournier, P.Eng.
Cc: "Magdalena Koehler"; Jody Marks; Taylor Stevenson
Subject: RE: Town of Innisfil 7th Line
Date: Tuesday, January 29, 2019 3:56:51 PM

Steve: Please be advised that we are in receipt of the following:

Drainage Strategy Summary dated November 12th , 2018 by Ainley and Associates
Ainley and Associates response letter with updated drawings dated January 18th , 2019.

We have reviewed the recent submission and now can confirm that the proposed Drainage Strategy for 7th Line is now generally acceptable.

As noted in your January 18th letter, further information and analysis will be provided for our review at the detailed design and permitting stage.

Regards

Tom

Tom Hogenbirk, P.Eng.
Manager, Engineering
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281, ext. 240 | 1-800-465-0437
t.hogenbirk@LSRCA.on.ca | www.LSRCA.on.ca
Twitter: @LSRCA
Facebook: LakeSimcoeConservation

Please note: The LSRCA Board of Directors have approved a change to our Fees Policy. The new fees will take effect on January 1, 2019. Please click here for the new fee schedule.

From: Steve Fournier, P.Eng. [mailto:fournier@ainleygroup.com]
Sent: January 18, 2019 4:32 PM
To: Tom Hogenbirk
Cc: 'Magdalena Koehler'; 'Jody Marks'
Subject: Town of Innisfil 7th Line

Tom

We provide the attached response to the comments provided by LSRCA. Hard copy will follow

shortly. Is it acceptable to provide 11x17 size drawings instead of full size folded to 8 1/2 x 11?

Regards,

Steve Fournier, P.Eng.
Senior Engineer

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 249
Cell: (705) 794-0555

Ainley & Associates Limited
550 Welham Road, Barrie, Ontario, L4N 8Z7
Tel: (705) 726-3371 ▪ Fax: (705) 726-4391
E-mail barrie@ainleygroup.com

January 18, 2019 File #218004

"BY EMAIL"

LSRCA
120 Bayview Parkway
Newmarket, ON
L3Y 3W3

Attn: **Mr. T. Hogenbirk**
Manager of Engineering

Ref: **7th Line Schedule C Municipal Class EA**
Response to Comments Received on Drainage Strategy Summary

Dear Mr. Hogenbirk:

Thank you for the comments provided on our summary of drainage feature strategy for the proposed reconstruction of 7th Line in Innisfil between 20th Side Road and St. Johns Road. We provide the attached drawings and following comments as a response. As previously noted we are in the preliminary design stage and not all details have been finalized but we trust that additional information and described additions to the drawings will confirm the overall strategy is sound and can be refined in detailed design.
Changes to the Plan and Profile drawings include addition of groundwater levels (marked in red) as found in the Geotechnical Investigation prepared by Geo Pro for this project. The detail of the infiltration gallery has been modified to reflect the comments received (additions are in red) and features obtained from MOE SWMPD Manual Section 4.5.8.

1. ***The concept of the proposed compensating cut in the existing field is acceptable. We would need a complete permit application, detailed drawings (including a topographic survey) and Landowner's Authorization. This work would need to be done at the same time as or prior to the road works.***

   Agreed. Discussions with the land owner are in progress and property acquisition will require agreement on the location of the area to be excavated. Property acquisition will be done as part of detailed design. The actual cut fill balance quantity will be derived from the detailed design although we believe we have been conservative in our preliminary design estimate.

2. ***A flood plain analysis will need to be provided for the pre and post development conditions, demonstrating that there will not be any negative impacts on adjacent lands as a result of the road works.***

   As noted in previous discussions with LSRCA it is acknowledged that permits will be required for fill within a regulated area and that application to DFO will be required for alteration of Banks Creek as proposed between Webster Boulevard and St. John's

Road. The design criteria of cut fill balance with in the floodplain, retention of first 25 mm flush from increased impermeable area, maintain post to pre runoff and quality control have all been accommodated in the preliminary design.

3. ***A. More information will need to be provided regarding the design of the infiltration trenches including the following:***
   - ***a) A plan showing the proposed trenches in relation to the drinking water wells in the area. These trenches will need to be sufficiently separated from these wells to avoid impacts.***
   - ***b) Confirmation that the bottom of the trenches will be set above the annual high ground water levels.***
   - ***c) Sizing calculations for the trench as per Section 4.5.8 of the 2003 MOE SWMPD Manual.***
   - ***d) Calculated infiltration rates based on in-situ testing.***
   - ***e) Reduced assumed infiltration rate by applying a longevity factor of 2.5***.

There are two drinking water wells along the project limits. One is for the old school house in the SE quadrant of the intersection. The depth of the well is approximately 12 metres and is positioned approximately 80 metres from the nearest infiltration gallery (the most westerly one on the north side of 7th Line). For an uncased well the minimum requirement would be 30 metres. (MOE SWMPD Sect. 4.5.8 Location/setback). We assume there is a second well for the house on the south side of 7th Line at #1425 7th Line (driveway at Station 0+300) but it did not show up in the well search by Geo Pro. The front of the house is set back 40 metres from the south ROW limit.

The base of the galleries, except for the three most eastern ones have been given set with 1 metre or greater clearance to the groundwater level as measured by Geo Pro in the geotechnical investigation. The groundwater levels have been added to the plan and profile drawings. The three eastern galleries can be modified in detailed design or deleted and the combined volume (110 m^3) added to the Sierra Pond expansion.

In general the sizing of the infiltration galleries is conservative and in keeping with section 4.5.8 of the MOE SWMPD manual. We have assumed pea gravel with void ratio of 0.33rather than 50 mm minus stone with a void ration of 0.4. If during detailed design it is necessary to increase the volume by 20% then 50 mm minus stone can be specified. Or if 50 mm stone is found to be more economical at that time then it can replace the pea gravel. The depth of the storage layer has been limited to 0.6 metres. For sandy silts (sandy loam Table 4.4 MOE SWMPD) with a percolation rate of approximately 25 mm/hr the drawdown time for 600 mm is 24 hours (Eqn. 4.2 MOE SWMPD). Considering a 48 hr drawdown can be considered this also provides flexibility for the detailed design. The MOE manual suggests catchment areas for infiltration galleries should be less than 2 ha. For these galleries the catchment area varies between 0.06 and 0.12 ha.

In situ testing of percolation rates will be carried out in detailed design. At this time typical values for the general soil type are applied. There was no way of knowing

where the galleries were to be positioned at the beginning of the project when the geotechnical investigation was undertaken or even if infiltration galleries would form part of the SWM strategy. By being conservative in our design of these galleries we are confident they can be accommodated in the detailed design. They may be a bit bigger or a bit smaller but they will be feasible.

For example consider the 40 m long infiltration gallery on the north side of 7th Line at Station 0+120. It has a catchment area of approximately 900 sq. m. of which 660 m is impermeable. This is a 345 m increase in the impermeable area for this segment of road over the pre-improvement condition. The first 25 mm flush off the new impermeable area is therefore 8.6 m^3. The volume of the gallery is 5m x 40m x 0.6m x 33% =40 m^3. The gallery is substantially oversized above the quality control requirement in order to address the post to pre runoff requirement. The post to pre runoff control volume estimate was presented in the previous information package as well at the previous TAC meetings. The other aspect considered in the design is can the runoff make it to the gallery. The gallery is fed by a single CB. A typical CB capacity on a road with 2% crown is conservatively approximated as 0.025 m^3/sec (Chart E4-7A MTO Drainage Manual Vol. 2). Over the 900 sq. m catchment area with an average runoff co-efficient of 0.8 the rainfall intensity that can be accommodated is $Q=CiAx2.78x10^{-3}$ and solving for "i" it is approximately 125 mm/hr. This is well within the rainfall intensity curve for t_c of 10 minutes for small storm events and well within the 30 minute t_c rainfall intensity for large storm events. The 0.25 m^3/sec is well within the capacity of the 200mm lead to the gallery at 1% grade. So the runoff does make it to the gallery.

4. ***The use of infiltration trenches for peak flow control would be subject to the requirements listed in Appendix B of the LSRCA's Technical guidelines for SWM submissions :***
https://www.lsrca.on.ca/Shared%20Documents/permits/swm_guidelines.pdf
It may be more feasible to build live storage into the trench i.e. storage above the invert of the CB lead and model this accordingly. Increased CB capacity would need to be implemented to ensure capture of flows for up to and including the 1:100 year event.

Providing the storage through live underground storage is still an alternative that could be pursued in detailed design but providing throttled backflow drainage to the storm sewer will require greater depth for the storm sewer and for the relatively small catchment areas result in orifice controls of unacceptably small diameter. We still suggest that the current infiltration gallery strategy is more robust and provides more flexibility in application.

Appendix B refers to 1 m clearance to groundwater, which we provide, and a percolation rate greater than 15 mm/hr and considering the predominant soil as sandy silts this will be met and confirmed with additional testing during detailed design. In the example provided above the volume provided is 40 m^3 for the 100 year post to pre control and the 25 mm flush requirement is 8.6 m^3. The 8.6 m represents a depth of approximately 0.15 m in the gallery which can easily be infiltrated within the 24 hours even at greatly reduced percolation rates and 2.5

times that volume is less than the total volume available in the gallery. During detailed design an adaptive monitoring program can be developed for the proposed galleries to be implemented by the Town following construction.

5. ***The caps of the riser pipes are to be perforated to allow easier backflow of water into the trench via the 200 mm solid PVC pipes***

   The bottoms of the risers should be anchored

   Distribution pipes in infiltration trenches should be no more than 1.2 metres apart and spread evenly across the width of the trench

   Typical infiltration trenches contain 50 mm clear stone rather than the 19 mm diameter stone shown to ensure a porosity of 0.4. If 19 mm is the desired stone size, documentation is to be provided demonstrating that sufficient porosity will be obtained

   In the attached infiltration gallery typical detail perforated caps have been added to the risers and the risers have been anchored. Changes to the detail have been shown in red. Since we are not relying on infiltration as part of the volume calculations we suggest that the single perforated pipe for the 5 metre gallery width is sufficient or the issue can be revisited in detailed design. As discussed above the switch to 50 mm clear stone can be revisited in detailed design. We have assumed "P" gravel with a void ratio of 0.33. The decision to switch may be due to a required adjustment in the size of the gallery or purely an economic decision.

6. *The annual high ground water level elevation is to be shown at each of the infiltration trenches on the profile*.

The soils logs and groundwater levels from the Geo Pro investigation have been added to the drawings. Site specific bore holes and groundwater measurements can be made during detailed design. We have attached 11x17 copies of the plan and profile drawings.

We trust the above fully address the comments received and confirms that the proposed drainage strategy as presented in the preliminary design is sufficiently conservative and robust that it can be accommodated in detailed design. Please call if you have further questions or comments on the material provided.

Yours truly,
AINLEY & ASSOCIATES LIMITED

S. Fournier P.Eng.
Senior Project Engineer

Technical Advisory Committee
Meeting Minutes

CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
550 Welham Road, Barrie, ON L4N 8Z7
Tel: (705) 726-3371 • Fax: (705) 726-4391
Email: barrie@ainleygroup.com

TECHNICAL ADVISORY COMMITTEE
MEETING NO. 1

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: May 30, 2017

TIME: 3:00 p.m. – 4:00 p.m.

LOCATION: Town of Innisfil Operations Building, 7375 Yonge Street

PRESENT:
Magdalena Koehler, Town of Innisfil, Capital Project Manager (MK)
Carolina Cautillo, Town of Innisfil, Project Manager (CC)
Meaghan Bowman, Town of Innisfil, Co-op Student (BM)
Dan Cole, Town of Innisfil, Operations Supervisor (DC)
Scott MacKenzie, Town of Innisfil, Development Engineer (SM)
Tania Gautam, Metrolinx, Project Manager Env. Programs & Assessments (TG)
Ashlea Brown, LSRCA, Senior Environmental Regulations Analysis (AB)
Graham McPerson, Roger, Planning (GM)
Steve Fournier, Ainley Group, Project Manager (SF)
Andrea Potter, Ainley Group, Environmental Planner (AP)

DISTRIBUTION: All Present + Tammy Kalimootoo (Ainley Group) + TAC Contact List

1.0 Introductions

- SF briefly introduced the Project Team noting that the key Town contacts would be Carolina Cautillo and Magdalena Koehler. For the Ainley Group the two main contacts will be Steve Fournier as the Project Manager with Andrea Potter as the Class EA lead.
- A TAC Contact List was circulated to all for review during the meeting. Attendees were asked to fill in any blanks and to remove any contacts within their organization confirmed not to be working on this project.

2.0 Presentation

- Following the introductions, SF completed a 20 minute power point presentation to provide an overview of the project. The presentation identified the Project Team reporting structure, scope of work, project limits, the Municipal Class EA process, existing conditions, key challenges, environmental considerations and studies currently underway.
- A hard copy of the presentation was provided to all in attendance.

3.0 Questions

Once the presentation concluded, the following items were discussed:

- Metrolinx
  SF asked who the appropriate Metrolinx contact would be to discuss what distance north and south of the track the 7th Line design will need to consider and who should be contacted to obtain a Permit to Enter to access Metrolinx property. TG advised that Adam Snow would be the correct contact. TG also advised that they are currently undertaking an EA from Toronto to Barrie to add a second track. At the present time, it will be contained within the existing Metrolinx corridor and will be at the same elevation as existing. No grade separation is currently proposed at the 7th Line crossing. TG will provide a link to the Metrolinx EA website following receipt of an email from SF.

  ACTION BY: AINLEY GROUP

- Utilities
  In addition to the existing utility plant present within the limits of the project, SF questioned whether the various utility companies have long term plans that need to be considered in the design of the 7th Line. GM of Rogers advised that they do have long term plans for the area and they will share that information at the time the markup request is submitted. During the meeting GM provided a drawing that identifies the existing Roger plant present within the study limits.

- Lake Simcoe Region Conservation Authority (LSRCA)
  SF asked if the LSRCA currently has a drainage model for the existing watercourse on the north side of 7th Line. AB of the LSRCA advised that she will confirm if one exists. If so, they will make it available to Ainley Group. As noted during the power point presentation, the majority of 7th Line is within the LSRCA regulated area and coordination with the LSCRA will be a key factor for this project. It was also noted that maintaining the existing storage volume within the existing floodplain must be considered for this project, in addition to stormwater quality and quantity controls.

  ACTION BY: LSRCA

- Property Acquisition
  SF asked about the possibility of acquiring additional right-of-way through the land development process (i.e. Plan of Subdivision, Site Plan etc.) for lands located between the 20th Sideroad and the Metrolinx railway corridor. SM of the Town advised that the aforementioned section of the corridor is outside the limits of the Alcona Settlement Area and it is therefore unlikely that property can be acquired in that manner. SM identified future development proposed in the area of the 7th Line and Webster Boulevard intersection and also noted that the Town's Official Plan and Master Servicing Plan are currently in the process of being updated.

- Preliminary Project Schedule
  SF described a very tentative project schedule as follows:
  - EA complete 2018
  - Detailed Design complete 2018-2019
  - Property Acquisition 2020
  - Utility Relocation 2020-2021
  - Road Construction 2021-2022

4.0 Next TAC Meeting

- TAC Meeting No. 2 is tentatively scheduled for July 14, 2017.

Minutes prepared by:

Ainley & Associates Limited

Andrea Potter, B.E.S.
Environmental Planner

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CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
550 Welham Road, Barrie, ON L4N 8Z7
Tel: (705) 726-3371 • Fax: (705) 726-4391
Email: barrie@ainleygroup.com

TECHNICAL ADVISORY COMMITTEE
MEETING NO. 2

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: September 12, 2017

TIME: 1:00 p.m. – 3:00 p.m.

LOCATION: Town of Innisfil Administration Centre, 2101 Innisfil Beach Road

PRESENT:
Magdalena Koehler, Town of Innisfil, Capital Project Manager (MK)
Carolina Cautillo, Town of Innisfil, Project Manager (CC)
Meaghan Bowman, Town of Innisfil, Co-op Student (BM)
Paul Pentikainen, Town of Innisfil, Senior Policy Planner (PP)
Scott MacKenzie, Town of Innisfil, Development Engineer (SMK)
Derek Wantuch, Town of Innisfil, Dev. Engineering Peer Reviewer (DW)
Steven Montgomery, Town of Innisfil, Senior Planner (SM)
Brandon Gaffoor, Metrolinx, (BG)
Tom Hogenbirk, LSRCA, Manager of Engineering (TH)
Ashlea Brown, LSRCA, Senior Environmental Regulations Analysis (AB)
Graham McPherson, Roger, Planning (GM)
Meetpal Chhina, Enbridge, (MC)
Steve Fournier, Ainley Group, Project Manager (SF)
Andrea Potter, Ainley Group, Environmental Planner (AP)

DISTRIBUTION: All Present + Tammy Kalimootoo (Ainley Group) + TAC Contact List

1.0 Presentation

- Following the introduction of TAC members, AP (Ainley Group) initiated the presentation providing a recap of the previous TAC meeting. She defined the limits of the study area, the existing conditions, scope of work, and discussed the Municipal Class EA process and its application to the current project. AP (Ainley Group) also identified the environmental sub-studies completed to date and summarized the results of the Stage 1 archaeological assessment, the cultural heritage review and the natural heritage assessment. AP's portion of the presentation addressed Slides 1 through 10.
- SF (Ainley Group) was responsible for the second half of the meeting which discussed Slides 11-29. He provided a brief summary of the findings of the geotechnical and hydrogeological investigations as well as a summary of traffic projections for the area. He identified the alternatives under consideration and

discussed intersection and servicing improvements and stormwater management requirements for the project.
- A hard copy of the presentation was provided to all in attendance.
- AP (Ainley Group) advised that draft copies of the environmental sub-studies will be made available to TAC members once the Town has completed their review.

2.0 Questions Following Slide Presentation

- Lake Simcoe Region Conservation Authority (LSRCA)
  - Following the discussion pertaining to stormwater management (Slide 26) SF (Ainley Group) asked LSRCA if they had a preference for addressing impacts to Bank's Creek. As the existing watercourse abuts the corridor, TH (LSRCA) suggested that rather than trying to avoid the channel, there may be some benefit to simply moving the channel further north with consideration for channel naturalization and increasing the buffer between the channel and the road.
  - SF (Ainley Group) noted that he had not considered significant relocation of Bank's Creek, but based on today's discussion would attempt to identify the width of disturbance along the north side of the road between Quarry Road and St. John's Road that would allow for naturalization of the channel, but also accommodate existing property constraints on the south side of the road between Webster Boulevard and St. John's Road.
  - LSRCA also indicated that it is their expectation that Low Impact Development (LID) measures be implemented throughout the project length. SF (Ainley Group) said he would try to incorporate LID features between the back of curb and the multi-use trail. TH (LSRCA) cautioned that infiltration features in this area may be affected by road salt which could impact area wells and would also influence boulevard tree selection (i.e. require more salt tolerant species).
  - TH (LSRCA) also pointed out that dewatering during construction has the potential to impact both the creek and area wells noting that it could flood the creek or dry it out. TH (LSRCA) cautioned that proper mitigation will need to be implemented during construction. AP (Ainley Group) noted that mitigation to address this aspect will be included in the Environmental Study Report to be prepared for this project. The mitigation measures and recommendations as outlined in the ESR will be given consideration and finalized during the detailed design phase for implementation during construction.
  - During the presentation SF (Ainley Group) identified possible locations for stormwater management ponds to address quantity control. The LSRCA pointed out that there are benefits to having a pond with a width to length ration of 5:1 and that perhaps this would allow the western pond shown on Slide 26 to be moved to the north side of the 7th Line and its impact on the crossing protection features. TH (LSRCA) suggested that It is better to make the pond long and narrow so that it can be properly shaded which reduces thermal impacts and algae growth.
  - AB (LSRCA) noted that the pedestrian connectivity preference would be the trail on the south side of the road to avoid natural features (watercourse, woodlands).

- Enbridge Gas
  - MC (Enbridge) noted that Enbridge has no plans to increase the diameter of the gas main along 7th Line as they consider their main line to be along Lockhart Road. Enbridge would like to continue to be informed regarding the alternatives under consideration and any anticipated impacts to the existing gas main and / or the identification of any segments that need to be re-positioned.

- Metrolinx
  - BG (Metrolinx) questioned when the 7th Line reconstruction would take place. The Town indicated that construction was anticipated for 2019. BG (Metrolinx) indicated that by 2025 Metrolinx may plan to twin the line and convert to electrification however, this requires approval from internal

Metrolinx stakeholders. He will review their right-of-way requirements to address these features and provide input to Ainley Group.

- SF (Ainley Group) asked BG (Metrolinx) about obtaining approvals for the proposed improvements to the 7th Line. BG (Metrolinx) indicated that it would go through him and their third party project office.

ACTION BY: METROLINX

- Pedestrian Connectivity
  - A general discussion with Town personnel ensued regarding the merits of placing the multi-use trail on the north or side of the road and if a sidewalk on the opposite side of the road would be required in some areas. SF (Ainley Group) noted that between St. John's Road and Webster Boulevard there are no existing homes on the north side and in his opinion the south side would be the preferred location. West of Webster Boulevard there is some flexibility on selecting which side to place the multi-use trail.
  - The current proposal is to provide a 4.0 m wide paved multi-use trail with an offset from back of curb of 2.0 m. SF (Ainley Group) noted that his preference would be that the 4.0 m width would be sufficient so that a separate sidewalk on the opposite side of the road is not necessary. The Town noted that their preference may be to have a 3.0 m multi-use trail with a 1.5 m sidewalk. This is the strategy currently being applied to the 6th Line.
  - It was suggested that another meeting with Town staff prior to the Public Open House (POH) be held to review the Town's preference regarding the width and position of the multi-use trail. SMK (Town Engineer) suggested that Public Works also be present at that meeting. The Town will schedule this meeting once they meet internally.

ACTION BY: TOWN

- Traffic Projections
  - During the presentation, SF (Ainley Group) provided a summary of traffic projections and the methodology used to arrive at those numbers. He presented schematics showing a significant increase in traffic between Webster Boulevard and the 20th Sideroad. He noted that the impact of future development on the portion of 7th Line east of Webster Boulevard will be minor, but to the west of Webster Boulevard he anticipates almost a doubling of the traffic volumes. He noted several key turning movements will be heavily impacted by proposed development and need to be accommodated in the road improvements. These are southbound on Webster Boulevard to proceed westbound on 7th Line. The left turn for westbound traffic on 7th Line to turn south onto 20th Sideroad and the northbound right turn from 20th Sideroad to eastbound on 7th Line. These turning movements are already high and will be more than doubled with the proposed area development.
  - SF (Ainley Group) noted that recent information provided by the Town shows an internal link between 7th Line and 6th Line for the future development between 20th Sideroad and the railway lands which may reduce the identified traffic growth. Further analysis is required prior to the Public Open House Scheduled for October 11, 2017.
  - SM (Town Planner), pointed out that the 359 units as illustrated on Slide 14, identified as Grand Sierra development is actually approximately 404 units and should be shown spanning Jans Boulevard. The 40 units as shown west of Fox Hill Road should be revised to show 22 units adjacent to the railway corridor and then 40 units between this location and Fox Hill Drive. Within the northwest quadrant of the intersection of Fox Hill Road and Webster Boulevard the diagram should show an additional 78 units. DW (Town Dev. Review) questioned whether the entrance to the property in the southeast quadrant of the intersection of Webster Boulevard and 7th Line would remain on 7th Line or be transferred to Webster Boulevard. SF (Ainley Group) replied that it might

not be ideal in its current location but expects that it will not be within the queue length of the left turn movement on 7th Line.

- Road Cross-section
  - DW (Town Dev. Review) noted that the Town preference was not to have medians as part of the roadway improvements. He asked if street lighting would be included. SF (Ainley Group) confirmed that it would be included but will require coordination with potential utility pole relocations.
  - DW (Town Dev. Review) asked that Ainley Group review the Town's standard cross-section for positioning of the storm and sanitary sewer.
  - Slide 17 - it was noted that there was an error in the lane width and that it is to be 4.25 m wide as opposed to 3.75 m as currently shown on the slide.

- Alternative Solutions to be Presented at POH 1
  - Slides 16 to 19 illustrate the alternative solutions under consideration. SF (Ainley Group) noted that based on the discussion today it would be helpful to add a fifth alternative identified as a combination with a four lane segment from 20th Sideroad to Webster Boulevard, a three lane segment from Webster Boulevard to Quarry Road, and a two lane section from Quarry Road to St. John's Road. The need for this variation in number of lanes would be based on traffic capacity requirements.

3.0 Other

- SF (Ainley Group) noted that this the last TAC meeting in advance of the POH scheduled for October 11, 2017.
- If any TAC members have any questions on the material presented today or the soon to be released sub-consultant studies, please feel free to contact the Ainley Group.

4.0 Next TAC Meeting

- TAC Meeting No. 3 is tentatively scheduled for mid-November 2017.

5.0 TAC Meeting Slide Presentation

These Meeting Minutes should be read in conjunction with the TAC Meeting No. 2 Slide Presentation; however, please note that the following updates have been made to the presentation material at the Town's request after the Sept. 12, 2017 meeting:

- Slide 9 BHR2 added
- Slide 14 No. of units updated to reflect Planning Department input during meeting
- Slide 17 Lane width corrected to 4.25 m as opposed to 3.75 m
- Slides 22-25 Title added for cross-section reference

Minutes prepared by:
Ainley & Associates Limited

Andrea Potter, B.E.S.
Environmental Planner
S:\217024\Class EA\OUTGOING\06-TAC #2 Meeting Minutes Issued Sept-19-2017\217024 7th Line TAC Meeting No. 2 Sept-12-2017 Final.docx

Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
550 Welham Road, Barrie, ON L4N 8Z7
Tel: (705) 726-3371 • Fax: (705) 726-4391
Email: barrie@ainleygroup.com

TECHNICAL ADVISORY COMMITTEE
MEETING NO. 3

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: January 29, 2018

TIME: 10:00 a.m. – 12:00 p.m.

LOCATION: Town of Innisfil Administration Centre, 2101 Innisfil Beach Road

PRESENT:
Magdalena Koehler, Town of Innisfil, Capital Project Manager (MK)
Carolina Cautillo, Town of Innisfil, Project Manager (CC)
Ivan Chtcherbakun, Town of Innisfil, Co-op Student (IC)
Scott MacKenzie, Town of Innisfil, Development Engineer (SMK)
Derek Wantuch, Town of Innisfil, Dev. Engineering Peer Reviewer (DW)
Steven Montgomery, Town of Innisfil, Senior Planner (SM)
Dan Cole, Town of Innisfil, Operations Supervisor (DC)
Tom Panak, InnServices Utilities Inc., Capital Engineer (TP)
Tony Mendocino, InnPower, Engineering Technologist (TM)
Meetpal Chhina, Enbridge, Supervisor (MC)
Angela Taylor, Bell, Implementation Manager (AT)
Deanna Roy, Bell, Coordinator (DR)
Steve Fournier, Ainley Group, Project Manager (SF)
Andrea Potter, Ainley Group, Environmental Planner (AP)
Jodi Moore, Ainley Group, Environmental Planning Assistant (JM)

DISTRIBUTION: All Present + Tammy Kalimootoo (Ainley Group) + TAC Contact List

Note: These Meeting Minutes should be read in conjunction with the following:
- *TAC Meeting No. 3 Powerpoint Presentation Slides 1-14*
- *Preferred Solution OPLAN drawing*
- *Utility Impacts OPLAN drawing.*

1.0 Presentation

- Following the introduction of TAC members, AP (Ainley Group) initiated the meeting by presenting Slides 1 through 4. SF (Ainley Group) provided an update regarding Public Open House No. 1 held previously on October 11, 2017 and noted that the meeting was well attended.

- AP (Ainley Group) noted that at that meeting five alternatives were presented that included 'Do Nothing', a two lane option for the full extent, three lanes and four lanes. The fifth alternative was a combination of these alternatives. As illustrated on Slide 2, AP (Ainley Group) noted that Alternative 5 was identified at the POH as the preliminary Preferred Solution and consisted of four lanes at the west end of the study area reducing to three lanes east of Webster Boulevard and to two lanes for the remainder of the project limits.
- AP (Ainley Group) noted that the above options also proposed a 4.0 m multi-use trail (MUT) on the north side from the 20th Sideroad to St. John's Road, a 1.5 m sidewalk from just east of the 20th Sideroad to approximately 150 m east of Webster Boulevard as well as servicing and intersection improvements.
- SF (Ainley Group) noted later in the presentation that, since completion of the POH and the receipt of additional subdivision layout information from area developers, he was able to reduce the lane requirements at the west end from four to three lanes. To reduce the overall construction footprint the width of the MUT was reduced from 4.0 m (as presented at the POH) to 3.0 m.
- AP (Ainley Group) noted that the public was generally supportive of the Preliminary Preferred Solution (Alternative 5) and provided a summary of key public concerns as identified on Slide 3. AP utilized Slide 4 to highlight some of the key constraints affecting the project.
- SF (Ainley Group) discussed Slides 5 to 14 providing additional technical and engineering details associated with the Preliminary Preferred Solution. SF (Ainley Group) presented the overall plan view drawing and identified the limits of disturbance. Cross-sections at key locations were also presented on Slides 6-8. SF (Ainley Group) discussed utility impacts based on Alternative 5. On Slide 11 he touched on preliminary aspects for stormwater management noting that the key items that need to be addressed in relation to this are cut/fill balance, first 25mm flush from new impervious area infiltration, post to pre-construction run-off and quality control. It was noted that the LSRCA, while not in attendance at today's meeting, has been providing direction in this regard.
- Utilizing Slide 12 SF (Ainley Group) identified a potential Low Impact Development (LID) measure that the Town is considering implementing to assist in quality/quantity control. On Slide 13 SF (AINLEY GROUP) discussed infrastructure improvements.
- Following the presentation Ainley Group advised that the following material will be circulated to TAC members:
    - TAC Meeting No. 3 Powerpoint Presentation Slides 1-14 and associated overall drawings (i.e. Preferred Solution OPLAN drawing and Utility Impacts OPLAN drawing).
    - POH No. 1 Presentation Material.

2.0 Questions Following Slide Presentation

InnPower

- TM (InnPower) questioned whether Metrolinx has been consulted regarding their planned electrification of the tracks. SF (Ainley Group) noted that Metrolinx has advised that they will be twinning the line and electrifying it in the future. They have directed us to their Class EA material, available online, for additional information. Since we are maintaining the existing grade we will be required to provide the necessary crossing width and signage. AP noted that while Metrolinx was not in attendance at today's meeting they have been at previous TAC meetings and will continue to be circulated on all material.
- TM (InnPower) questioned the anticipated timing of utility relocation. SF noted that construction is anticipated by 2021-2022. SF stated that this Class EA should be completed by 2018 with detailed design finalized in 2019 so utility relocation would need to be completed by 2020-2021.
- SMK (Town of Innisfil) noted that they will be meeting with Metrolinx January 30, 2018 to discuss the planned electrification of the tracks within the municipality. He noted that he will discuss their requirements for the 7th Line crossing at that meeting.

- TM (InnPower) pointed out that the hydro poles at the corner of 7th Line and 20th Sideroad are at their current location because the Town was unable to secure the property required in the southeast quadrant at the time the intersection was signalized. SF (Ainley Group) said that he would review the intersection and check for conflicts between proposed relocation of traffic signal poles versus existing hydro poles and overhead wires.

ACTION BY: AINLEY GROUP

Bell

- SF (Ainley Group) indicated that there were some discrepancies between what was surveyed in the field versus what the Bell markups have indicated. SF pointed out that there are several places on the north side of the road where Bell pedestals have been picked up in the survey, but there are no Bell lines noted on the markups. Additionally, the survey identified Bell markers and warning signs in the area of the Metrolinx crossing; however, there is nothing showing on the mark-ups provided by Bell.
- SF (Ainley Group) noted that the required repositioning of Bell utilities is extensive and that test pits will be undertaken during detailed design. The Bell representative advised that they could do a pre-engineering locate to address the discrepancy. SF agreed that would be helpful.

ACTION BY: BELL

Gas

- SF (Ainley Group) pointed out that some repositioning of the gas line is necessary; however, it is minor and limited in extent. There was no Enbridge representative at the meeting.

Transportation Requirements

- The Town questioned whether the profile could be lowered to improve the cut/fill balance. SF noted that he did not want to lower the centreline any further and be too far below the floodline.
- The proposed sidewalk was discussed. SF (Ainley Group) pointed out that the sidewalk would extend from the existing pedestrian entrance into Previn Court, approximately 150 m east of Webster Boulevard to west of Metrolinx, but not all the way to the 20th Sideroad. It has been assumed that the sidewalk would turn southwards into any development on the south side of 7th Line possibly just east of where Bank's Creek crosses 7th Line.
- DW (Town of Innisfil) asked how many entrances the current traffic analysis includes. SF (Ainley Group) pointed out that the analysis shows the amount of direct access to the 7th Line needs to be limited. At the present time entrances include a one-cross intersection between Metrolinx and the 20th Sideroad, an entrance for the DIAM Developments located east of the tracks, the existing Fox Hill Street intersection and one right-in / right-out access to highway commercial areas on the south side of 7th Line west of Webster Boulevard. Generally, the level of service provided for the roadway would then be governed by the signalized intersections. DW (Town of Innisfil) asked that Ainley Group provide a summary where additional entrances would be restrained due to separation requirements and overlap of turn lanes or separation from rail crossings. SF (Ainley Group) will provide.

ACTION BY: AINLEY GROUP

Servicing Improvements

- There was a discussion pertaining to servicing as shown on Slide 13 between 20th Sideroad and Webster Boulevard. The Town noted that the segment west of the Metrolinx railway crossing is outside the servicing area and that the proposed segment of sanitary servicing at this location should be removed and that a short link extending from Webster Boulevard mid-way to Fox Hill Road be added. Ainley Group will update this for the next public open house.

ACTION BY: AINLEY GROUP

3.0 Next TAC Meeting

- TAC Meeting No. 4 to be scheduled at a later date after POH No. 2.

4.0 Action Items

1) AINLEY GROUP: Circulate TAC Meeting No. 3 presentation material and POH No. 1 material to all TAC members.
2) AINLEY GROUP: Review the intersection of 20th Sideroad and 7th Line to check for conflicts between proposed relocation of traffic signal poles versus existing hydro poles and overhead wires.
3) AINLEY GROUP: Provide a summary where additional entrances would be restrained due to separation requirements and overlap of turn lanes or separation from rail crossing.
4) AINLEY GROUP: Revise Slide 13 to remove proposed sanitary servicing segment west of Webster Boulevard and add a short segment extending from Webster Boulevard mid-way to Fox Hill Road.
5) BELL: Complete a pre-engineering locate to address discrepancies between Ainley Group topographical survey and Bell mark-ups.

Minutes prepared by:
Ainley & Associates Limited

Andrea Potter, B.E.S.
Environmental Planner

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Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEETING SUMMARY

Ainley & Associates Limited
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TECHNICAL ADVISORY COMMITTEE
MEETING NO. 4

PROJECT: Town of Innisfil 7th Line Improvements (20th SR to Lake Simcoe) Class EA

FILE: 217024

DATE: October 3, 2018

TIME: 1:30p.m. – 2:45p.m.

LOCATION: Town of Innisfil Operations Office, 7253 Yonge Street
Meeting Room 2

PRESENT:
Magdalena Koehler, Town of Innisfil, Capital Project Manager (MK)
Carolina Cautillo, Town of Innisfil, Project Manager (CC)
Grayden Armstrong, Town of Innisfil, Co-op Student (GA)
Derek Wantuch, Town of Innisfil, Dev. Engineering Peer Reviewer (DW)
Steven Montgomery, Town of Innisfil, Senior Planner (SM)
Tom Hogenbirk, Lake Simcoe Region Conservation Authority (TH)
Meetpal Chhina, Enbridge, Supervisor (MC)
Anthony Zita, Enbridge (AZ)
Deanna Roy, Bell, Coordinator (DR)
Brandan Gaffoor, Metrolinx (BG)
Trevor Recalla, InnPower (TR)
Sheldon Lamoureux, InnPower (SL)
Steve Fournier, Ainley Group, Project Manager (SF)
Jody Marks, Ainley Group, Environmental Planning Assistant (JM)

DISTRIBUTION: All Present + Tammy Kalimootoo (Ainley Group) + TAC Contact List

Note: These Meeting Minutes should be read in conjunction with the following:
- *TAC Meeting No. 4 PowerPoint Presentation Slides 1-15*

1.0 Presentation

- Following the introduction of TAC members, Ainley Group initiated the meeting by presenting Slides 1 through 4. SF (Ainley Group) provided an update regarding the selection of the preferred design to be a fully urbanized cross section with multi use trail and naturalization of 900m of Bank's Creek. With this, the status of the project is now entering into phase 4 of the Environmental Assessment process.
- SF (Ainley Group) discussed Slides 5 to 11 that updated Lake Simcoe Region Conservation Authority (LSRCA) on the latest design for stormwater management.
- Slides 12 – 15 were organized to allow for discussions with each agency directly as the project relates to infrastructure impacts.

2.0 Discussions with each Agency

Servicing Improvements (slide 12)

- Ongoing discussion with InnService is required to determine what plans they propose for watermain extensions in the area. There are challenges in this area due to pressure zone considerations.
- DW (Town) noted that the infiltration galleries illustrated on slide 11, may pose a problem with maintaining corridor space for watermain.
- DW (Town) asked Ainley Group if there had been any conversations initiated with the owner of the stormwater management (SWM) pond proposed to be increased. SF (Ainley Group) noted that eventually the maintenance period will end and the SWM pond will revert to the Town. DW (Town) asked if any preliminary checks have been run to see if the SWM pond can hold the additional capacity Ainley Group is proposing. SF (Ainley Group) informed that adjustments would be made to push the east berm of the SWM pond back in order to hold increased capacity, while maintaining levels and outflow rate.

Metrolinx (slide 13)

- SF (Ainley Group) asked Metrolinx what the process is when moving forward with detailed design, will the contact from Metrolinx continue to be Dean Bragg? BG (Metrolinx) responded that the main contact for Metrolinx will be Dean Bragg as the project goes through detailed design. In regards to detailed design process, it is unclear at the moment. The Town could retain a consultant to produce the detailed design and it would be reviewed by AECOM on behalf of Metrolinx. Or the Town could retain a designer and AECOM could again provide review on behalf of Metrolinx.
- BG (Metrolinx) informed that there is the future potential for the railway line that bisects this project area to become a twinned line. If the Town hired a consultant that wasn't Metrolinx – it would be important to keep this potential in mind as it would have implications to the design. Foresight for the repositioning of the drop down gates, plantings placement, maze gates at multi use trail crossing, etc. would be essential.
- SF (Ainley Group) asked Metrolinx if in the Environmental Study Report (ESR) for the Environmental Assessment (EA) process, this information was to be outlined would that be sufficient? BG (Metrolinx) responded that would be an acceptable strategy. The Town will need to apply to Transport Canada for the approval of the detailed design.
- As development in the vicinity of the Metrolinx crossing of 7th Line expands, whistle control may become an issue. The following link provides an overview of the procedure for eliminating whistling at public grade crossings https://www.tc.gc.ca/eng/railsafety/railsafety-976.html

InnPower (slides 14 -15)

- SF (Ainley Group) asked if InnPower coordinates with Metrolinx and if there was a typical method used for crossing railway lines. SL (InnPower) noted that the hydro lines would usually get buried across the tracks.
- BG (Metrolinx) informed that AECOM would need to review design if hydro poles were to be relocated around railway crossing.

Bell (slides 14 -15)

- SF (Ainley Group) asked who would continue to be the contact for Bell during the detailed design phase. DR (Bell) responded that she herself would continue to be the contact.
- With regards to permit and coordination with other agencies, DR (Bell) stated that Bell would apply to the LSRCA independently and that Bell would try to tie into existing InnPower poles but that would take substantial amount of time to coordinate.

- SF (Ainley Group) noted that the required repositioning of Bell utilities is extensive and that test pits and locates will be undertaken during detailed design.

Gas (slides 14 -15)

- TM (Enbridge) asked Ainley if the areas of potential gas relocation were based on horizontal conflicts or horizontal and vertical conflicts? SF (Ainley Group) responded that assumptions were made on the vertical as they aren't more than 1metre deep.
- MC (Enbridge) asked for a review of the project schedule, to ensure that there is adequate time for utility relocations for Enbridge. SF (Ainley Group) informed that the detailed design and property acquisition would be completed in 2019, 2020-2021 construction to begin.

Lake Simcoe Region Conservation Authority

- TH (LSRCA) noted that their Ecologist, who could not make it to this meeting, has requested to review the Environmental Impact Study report that outlines all impacts and mitigations. Any comments she has on the draft report should be addressed before the ESR is finalized.
- LSRCA would also like to see a reduction in the amount of retaining wall along the rehabilitated portion of Bank's Creek.
- LSRCA will not support delaying the provision of runoff storage to control runoff to pre road improvement conditions so that it can be accommodated in future adjacent residential development SWM ponds. The road improvement project must stand on its own for quality and quantity control.
- LSRCA asked that the proposed infiltration galleries be shown on the plan view. They suggested that the infiltration strategy could be expanded to reduce the amount of SWM pond storage required.

Minutes prepared by:
Ainley & Associates Limited

Jody Marks
Environmental Planning Assistant