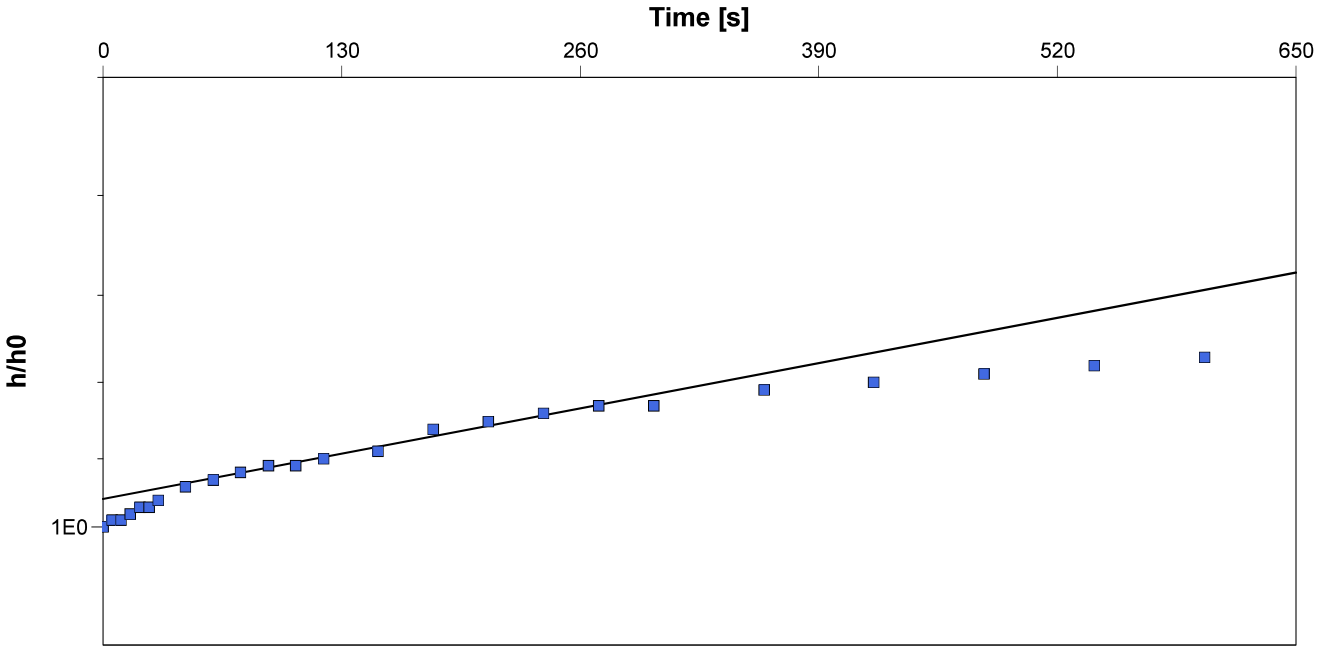
APPENDIX E

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 147 Spadina Ave
	Number: 21-019
	Client: HM RB (147 Spadina) LP

Location: 147 Spadina Ave, Toronto, ON	Slug Test: BH1	Test Well: BH1
Test Conducted by: DI		Test Date: 2021-04-27
Analysis Performed by: KM	BH1	Analysis Date: 2021-04-27
Aquifer Thickness: 12.60 m		

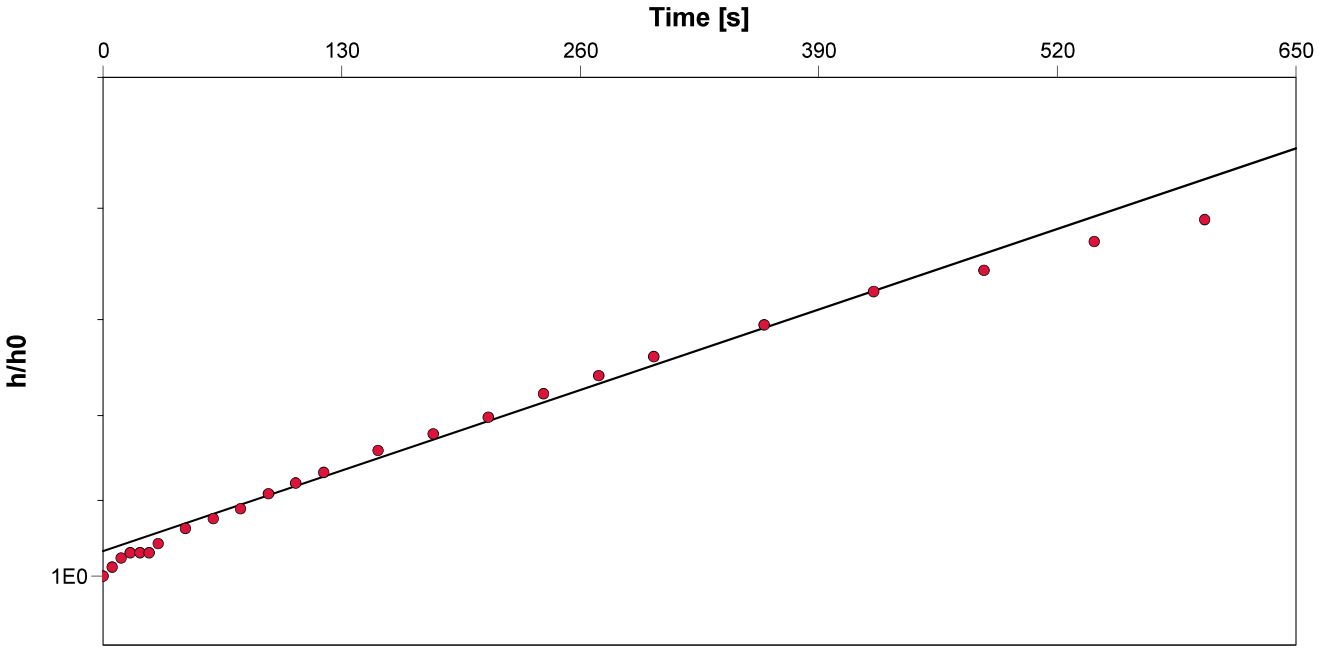


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH1	2.29×10^{-7}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 147 Spadina Ave
	Number: 21-019
	Client: HM RB (147 Spadina) LP

Location: 147 Spadina Ave, Toronto, ON	Slug Test: BH2	Test Well: BH2
Test Conducted by: NP		Test Date: 2021-04-27
Analysis Performed by: KM	BH2	Analysis Date: 2021-04-27
Aquifer Thickness: 12.20 m		

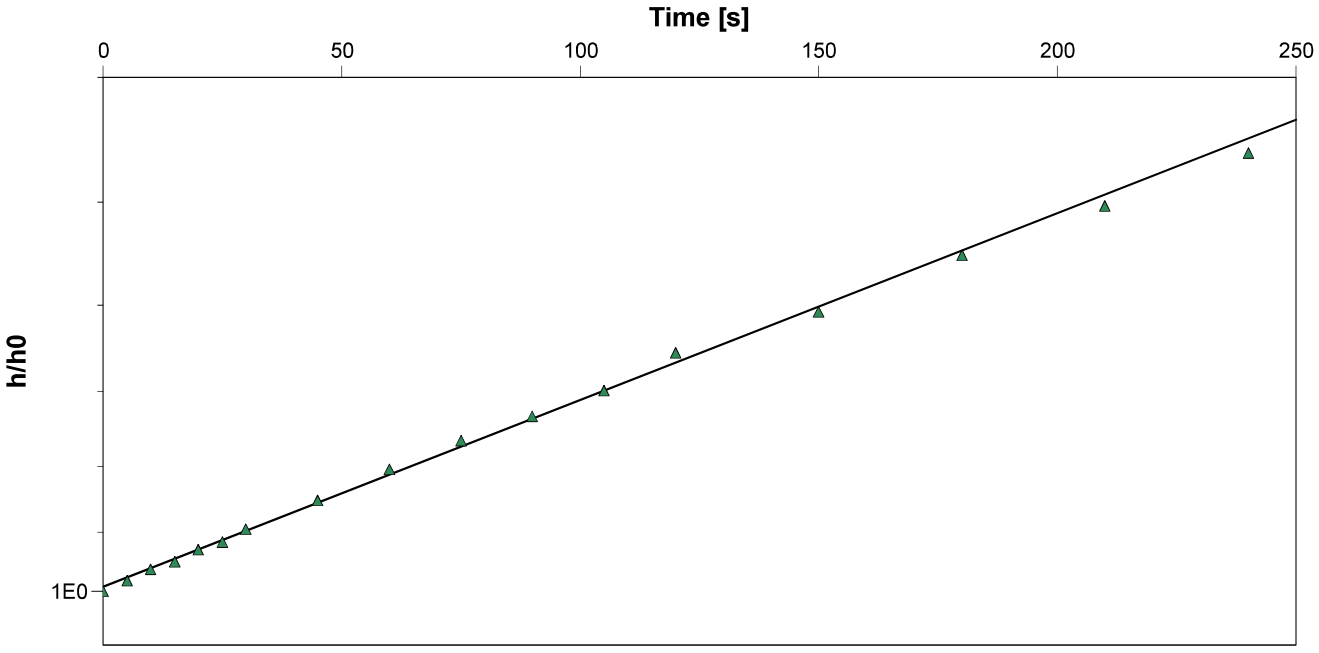


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH2	4.09×10^{-7}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 147 Spadina Ave
	Number: 21-019
	Client: HM RB (147 Spadina) LP

Location: 147 Spadina Ave, Toronto, ON	Slug Test: BH3	Test Well: BH3
Test Conducted by: NP		Test Date: 2021-04-27
Analysis Performed by: KM	BH3	Analysis Date: 2021-04-27
Aquifer Thickness: 13.70 m		

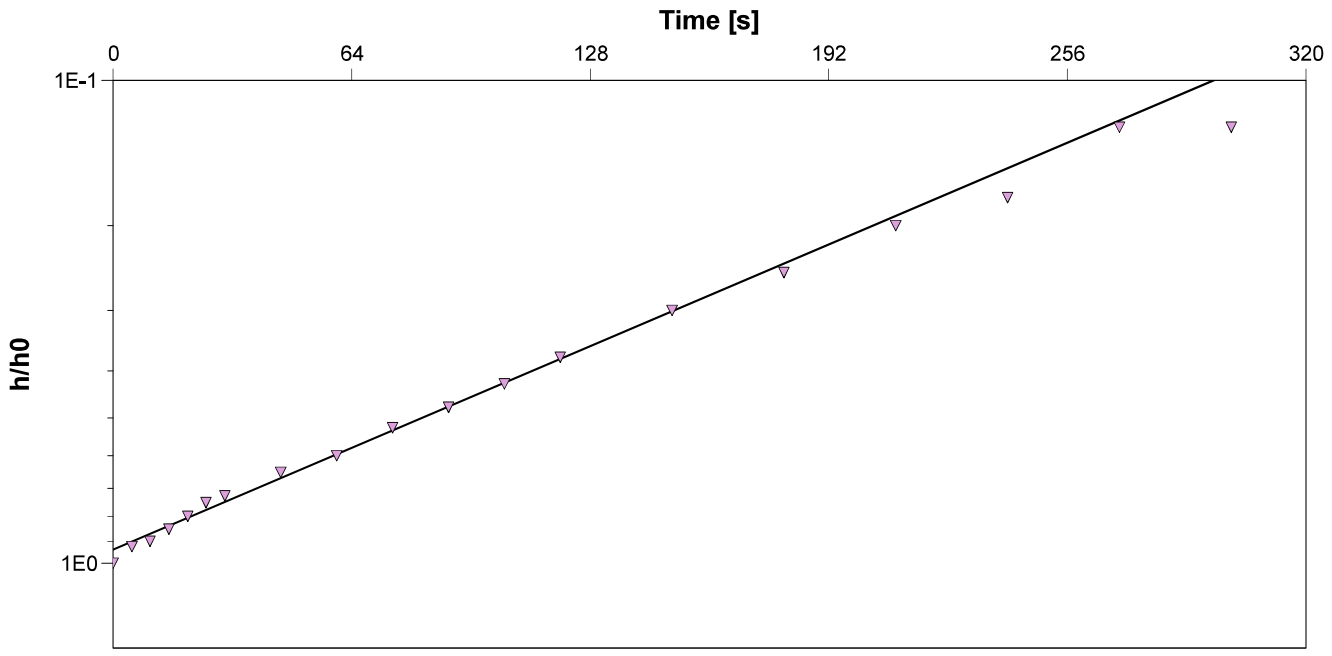


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH3	1.61×10^{-6}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 147 Spadina Ave
	Number: 21-019
	Client: HM RB (147 Spadina) LP

Location: 147 Spadina Ave, Toronto, ON	Slug Test: BH4	Test Well: BH4
Test Conducted by: NP		Test Date: 2021-04-27
Analysis Performed by: KM	BH4	Analysis Date: 2021-04-27
Aquifer Thickness: 15.93 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH4	3.73×10^{-6}	

APPENDIX F

K from Grain Size Analysis Report

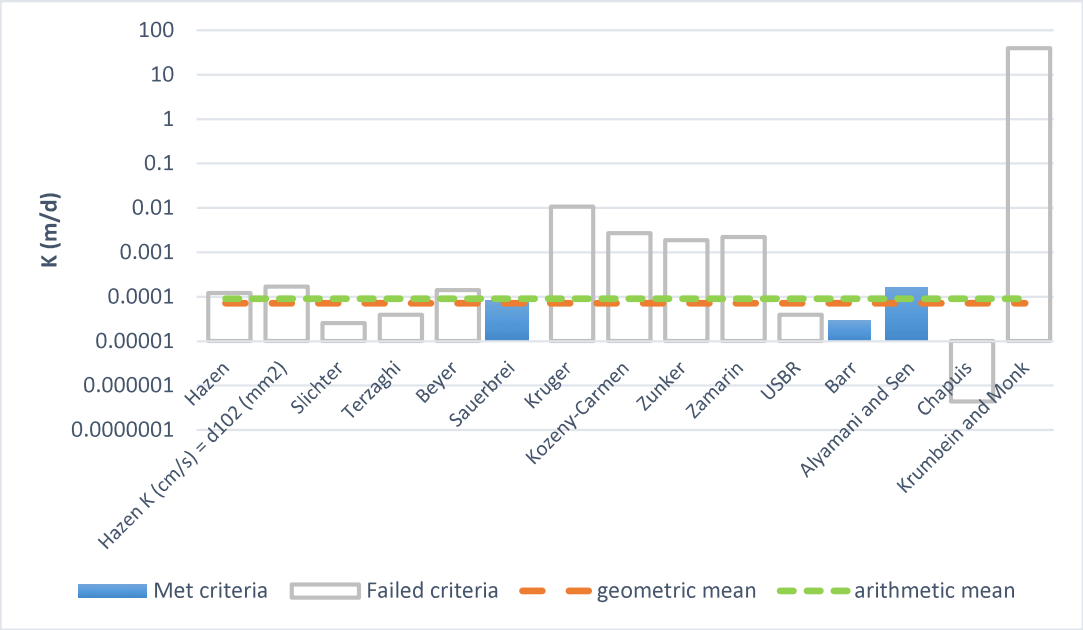
Date: 27-Apr-21

Sample Name: BH2 SS9

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	1.4E-07	1.4E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	2.0E-07	2.0E-09	0.00	
Slichter	3.0E-08	3.0E-10	0.00	
Terzaghi	4.6E-08	4.6E-10	0.00	
Beyer	1.6E-07	1.6E-09	0.00	
Sauerbrei	9.4E-08	9.4E-10	0.00	
Kruger	1.2E-05	1.2E-07	0.01	
Kozeny-Carmen	3.1E-06	3.1E-08	0.00	
Zunker	2.2E-06	2.2E-08	0.00	
Zamarin	2.5E-06	2.5E-08	0.00	
USBR	4.5E-08	4.5E-10	0.00	
Barr	3.3E-08	3.3E-10	0.00	
Alyamani and Sen	1.9E-07	1.9E-09	0.00	
Chapuis	5.1E-10	5.1E-12	0.00	
Krumbein and Monk	4.6E-02	4.6E-04	39.64	
geometric mean	8.4E-08	8.4E-10	0.00	
arithmetic mean	1.1E-07	1.1E-09	0.00	

K from Grain Size Analysis Report

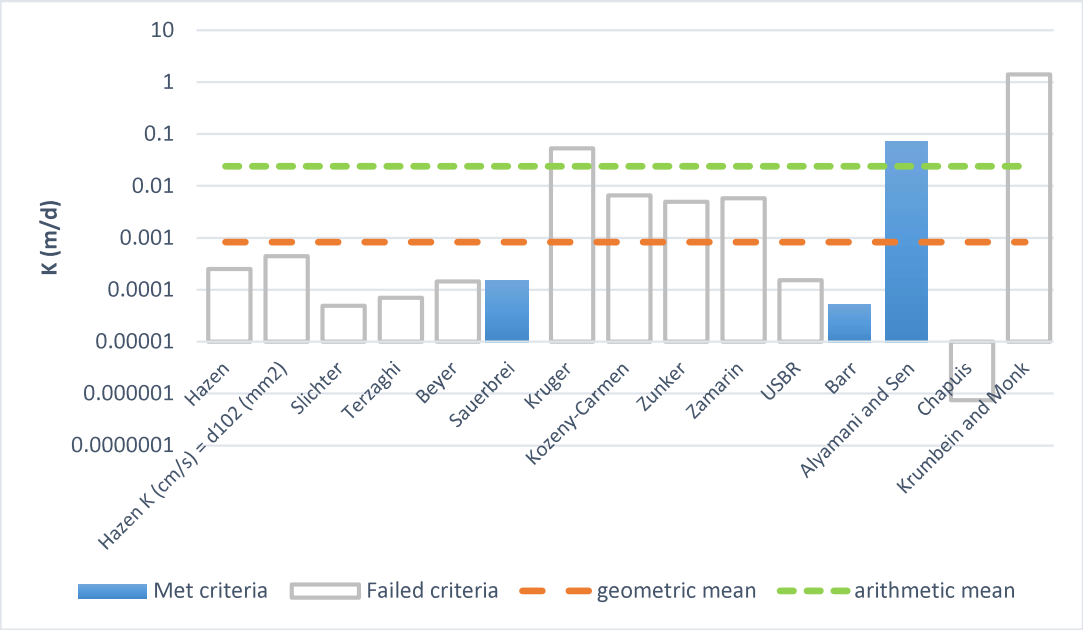
Date: 27-Apr-21

Sample Name: BH3 SS11

Mass Sample (g): 100

T (oC) 20

Poorly sorted silt low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.9E-07	2.9E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	5.1E-07	5.1E-09	0.00	
Slichter	5.7E-08	5.7E-10	0.00	
Terzaghi	8.1E-08	8.1E-10	0.00	
Beyer	1.7E-07	1.7E-09	0.00	
Sauerbrei	1.7E-07	1.7E-09	0.00	
Kruger	6.1E-05	6.1E-07	0.05	
Kozeny-Carmen	7.6E-06	7.6E-08	0.01	
Zunker	5.7E-06	5.7E-08	0.00	
Zamarin	6.7E-06	6.7E-08	0.01	
USBR	1.8E-07	1.8E-09	0.00	
Barr	6.1E-08	6.1E-10	0.00	
Alyamani and Sen	8.4E-05	8.4E-07	0.07	
Chapuis	8.6E-10	8.6E-12	0.00	
Krumbein and Monk	1.6E-03	1.6E-05	1.40	
geometric mean	9.6E-07	9.6E-09	0.00	
arithmetic mean	2.8E-05	2.8E-07	0.02	

K from Grain Size Analysis Report

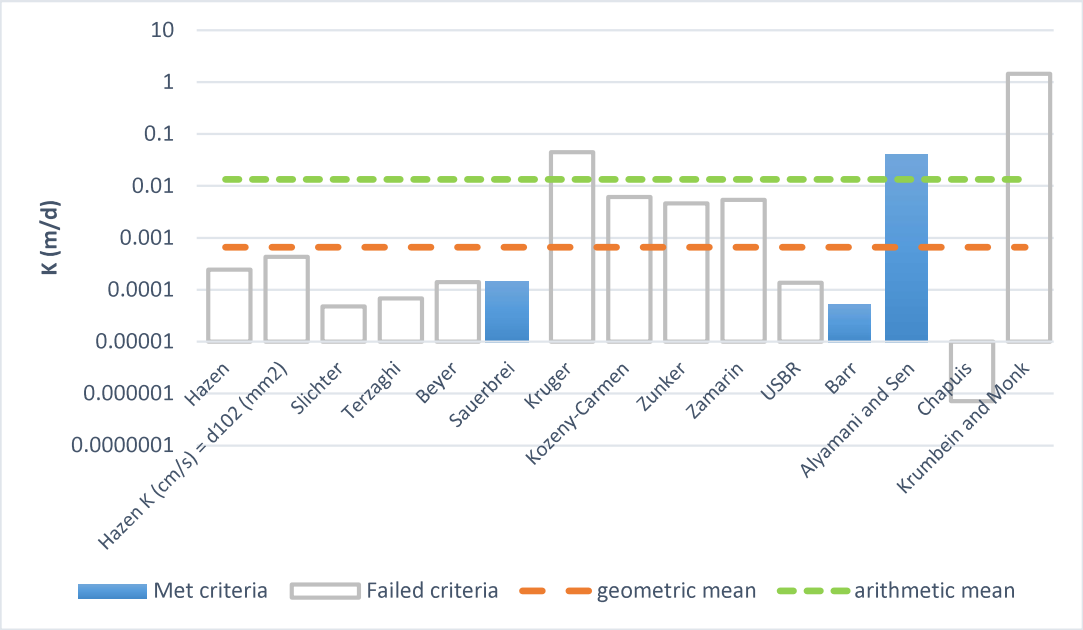
Date: 27-Apr-21

Sample Name: BH4 SS12

Mass Sample (g): 100

T (oC) 20

Poorly sorted silt low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.8E-07	2.8E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	5.0E-07	5.0E-09	0.00	
Slichter	5.5E-08	5.5E-10	0.00	
Terzaghi	7.9E-08	7.9E-10	0.00	
Beyer	1.6E-07	1.6E-09	0.00	
Sauerbrei	1.7E-07	1.7E-09	0.00	
Kruger	5.2E-05	5.2E-07	0.04	
Kozeny-Carmen	7.0E-06	7.0E-08	0.01	
Zunker	5.3E-06	5.3E-08	0.00	
Zamarin	6.2E-06	6.2E-08	0.01	
USBR	1.6E-07	1.6E-09	0.00	
Barr	5.9E-08	5.9E-10	0.00	
Alyamani and Sen	4.6E-05	4.6E-07	0.04	
Chapuis	8.2E-10	8.2E-12	0.00	
Krumbein and Monk	1.7E-03	1.7E-05	1.45	
geometric mean	7.7E-07	7.7E-09	0.00	
arithmetic mean	1.6E-05	1.6E-07	0.01	

Adopting the equation form presented in Vukovic and Soro (1992),

$$K = \frac{\rho g}{\mu} N \varphi(n) d_e^2$$

the following values and equations aresubstituted into the appropriate terms to evalute the models listed in the table below. The values of d_e to be entered should be in cm units. The values of *K* calculated have the units cm/s, except for the Alyamani and Sen model (see footnote).

Source	*N*	*φ(n)*	d_e	Applicable Conditions
Hazen simplified (Freeze and Cherry, 1979)	$10\frac{\mu}{\rho g}$	1	d_{10}	uniformly graded sand, n = 0.375 T = 10 °C
Hazen (1892)[a]	6×10^{-4}	$[1 + 10(n - 0.26)]$	d_{10}	0.01 cm < d_{10} < 0.3 cm U < 5
Slichter (1898)[a]	1×10^{-2}	$n^{3.287}$	d_{10}	0.01 cm < d_{10} < 0.5 cm
Terzaghi (1925)[a]	10.7×10^{-3} smooth grains 6.1×10^{-3} coarse grains	$\left(\frac{n - 0.13}{\sqrt[3]{1-n}}\right)^2$	d_{10}	sandy soil, coarse sand
Beyer (1964)[a]	$5.2 \times 10^{-4} \log\frac{500}{U}$	1	d_{10}	0.006 cm < d_{10} <0.06 cm $1 < U < 20$
Sauerbrei (1932)[a] (Vuković and Soro, 1992)	$(3.75 \times 10^{-5}) \times \tau$ $\tau \cong 1.093 \times 10^{-4} T^2 + 2.102 \times 10^{-2} T + 0.5889$	$\frac{n^3}{(1-n)^2}$	d_{17}	sand and sandy clay d_{17} < 0.05 cm
Krüger (1919)[a]	4.35×10^{-4}	$\frac{n}{(1-n)^2}$	$\frac{1}{\sum_{i=1}^{n} \frac{\Delta w_i}{d_i}}$	medium sand U > 5 T = 0 °C
Kozeny-Carmen (1953)[a]	8.3×10^{-3}	$\frac{n^3}{(1-n)^2}$	d_{10} or $\frac{1}{\frac{3}{2}\frac{\Delta w_1}{d_1} + \sum_{i=2}^{n} \Delta g_i \frac{d_i^g + d_i^d}{2 d_i^g d_i^d}}$ $d_1 = \frac{1}{\frac{1}{2}\left(\frac{1}{d_i^g} + \frac{1}{d_i^d}\right)}$	Coarse sand
Zunker (1930)[a]	0.7×10^{-3} for nonuniform, clayey, angular grains 1.2×10^{-3} for nonuniform 1.4×10^{-3} for uniform, coarse grains 2.4×10^{-3} for uniform sand, well rounded grains	$\frac{n}{(1-n)}$	$\frac{1}{\sum_{i=1}^{n} \Delta g_i \frac{d_i^g - d_i^d}{d_i^g d_i^d ln\left(\frac{d_i^g}{d_i^d}\right)}}$	no fractions finer than d = 0.0025 mm
Zamarin (1928)[a]	8.65×10^{-3}	$\frac{n^3}{(1-n)^2} C_n$ $C_n = (1.275 - 1.5n)^2$	$\frac{1}{\sum_{i=1}^{n} \Delta g_i \frac{\ln\left(\frac{d_i^g}{d_i^d}\right)}{d_i^g - d_i^d}}$	Large grained sands with no fractions having d < 0.00025 mm
USBR (United States Bureau of Reclamation) (Bialas, 1966)[a]	$(4.8 \times 10^{-4})(10^{0.3})$	1.0	$d_{20}^{1.15}$	Medium grained sands with U < 5; derived for T = 15 °C
Barr (2001)	$\frac{1}{(36)5C_s^2}$ C_s^2 = 1 for spherical grains C_s^2 = 1.35 for angular grains	$\frac{n^3}{(1-n)^2}$	d_{10}	unspecified
Alyamani and Sen (1993)	1300	1.0	$[I_o + 0.025(d_{50} - d_{10})]$	unspecified
Chapuis (2004)	$\frac{\mu}{\rho g}$	$10^{1.291\xi - 0.6435}$ $\xi = \frac{n}{1-n}$	$d_{10}^{\left(\frac{10^{(0.5504 - 0.3937\xi)}}{2}\right)}$	$0.3 < n < 0.7$ $0.10 < d_{10} < 2.0$ mm $2 < U < 12$ $d_{10}/d_5 < 1.4$
Krumbein and Monk (1942)	7.501×10^{-6}	$e^{(-1.31 \times \sigma_\phi)}$ $\sigma_\phi = \frac{\frac{d_{84\%} - d_{16\%}}{4}}{\frac{d_{95\%} - d_{5\%}}{6.6}}$	$2^{\left(\frac{d_{16\%} + d_{50\%} + d_{84\%}}{3}\right)}$	natural sands with lognormal grain size distribution

* indicates formulas were taken from Vuković and Soro, (1992)
N = constant dependent on characteristics of the porous medium
φ(n) = function of porosity
T = water temp. (°C)
g = 980 cm s^{-2}
$\rho = 3.1 \times 10^{-6} T^3 - 7.0 \times 10^{-6} T^2 + 4.19 \times 10^{-5} T + 0.99985$
$\mu = -7.0 \times 10^{-8} T^3 + 1.002 \times 10^{-5} T^2 - 5.7 \times 10^{-4} T + 0.0178$
$\tau = 1.093 \times 10^{-4} T^2 + 2.102 \times 10^{-2} T + 0.5889$
n = porosity as fraction of aquifer volume
d_i^g = the maximum grain diameter in fraction *i*
d_i^d = the minimum grain diameter in fraction *i*
d_{10} = grain size (cm) corresponding to 10% by weight passing through the sieves
d_{20} = grain size (cm) corresponding to 20% by weight passing through the sieves
d_{50} = grain size (cm) corresponding to 50% by weight passing through the sieves
d_{60} = grain size (cm) corresponding to 60% by weight passing through the sieves
$U = d_{60}/d_{10}$
Δg_i = the fraction of mass that passes between sieves *i* and *i+1* where *i* is the smaller sieve
Δw_i = fraction of total weight of sample with fraction identifier '*i*'
d_i = mean grain diameter of the fraction *i*
d_ϕ = mean grain diameter of the fraction *i* in phi units ($\phi = \log_2 (d_e/d_o)$, d_e in mm, d_o = 1 mm)
I_o = x-intercept (grain size) of a percent grain retention curve plotted on arithmetic axes and focussing on data below 50% retained

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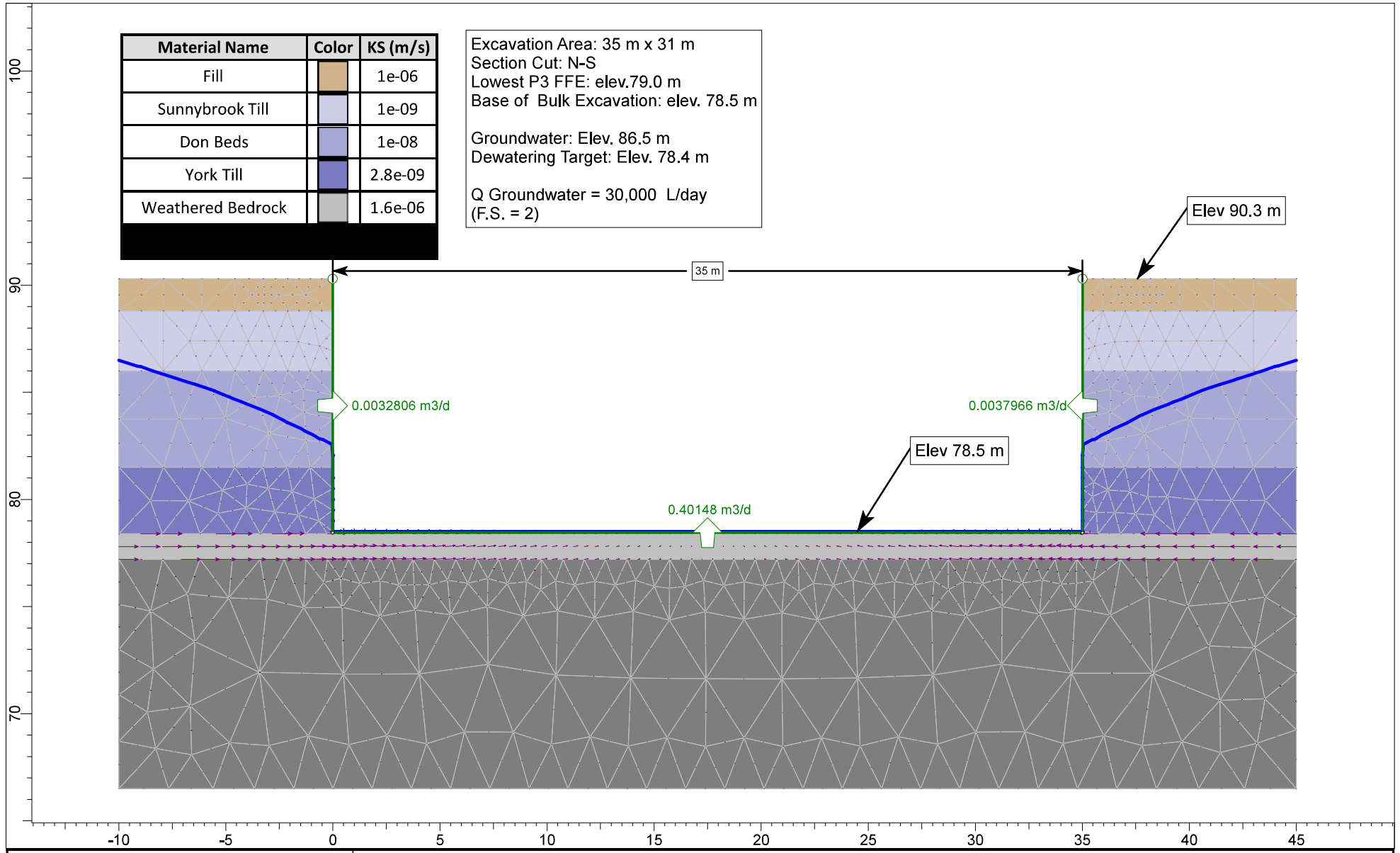
APPENDIX G

Material Name	Color	KS (m/s)
Fill		1e-06
Sunnybrook Till		1e-09
Don Beds		1e-08
York Till		2.8e-09
Weathered Bedrock		1.6e-06

Excavation Area: 35 m x 31 m
Section Cut: N-S
Lowest P3 FFE: elev.79.0 m
Base of Bulk Excavation: elev. 78.5 m

Groundwater: Elev. 86.5 m
Dewatering Target: Elev. 78.4 m

Q Groundwater = 30,000 L/day
(F.S. = 2)



GROUNDED ENGINEERING

Project	21-019 | 147 Spadina Ave, Toronto		
Analysis Description	Steady State Groundwater FEM	Model	P3 - Short Term Dewatering | Master Scenario
Drawn By	KM	Scale 1:250	Date 2021-08-16
Source	Hydrogeological Report		File Name 21-019 Slide V2 2021-08-13.slmd

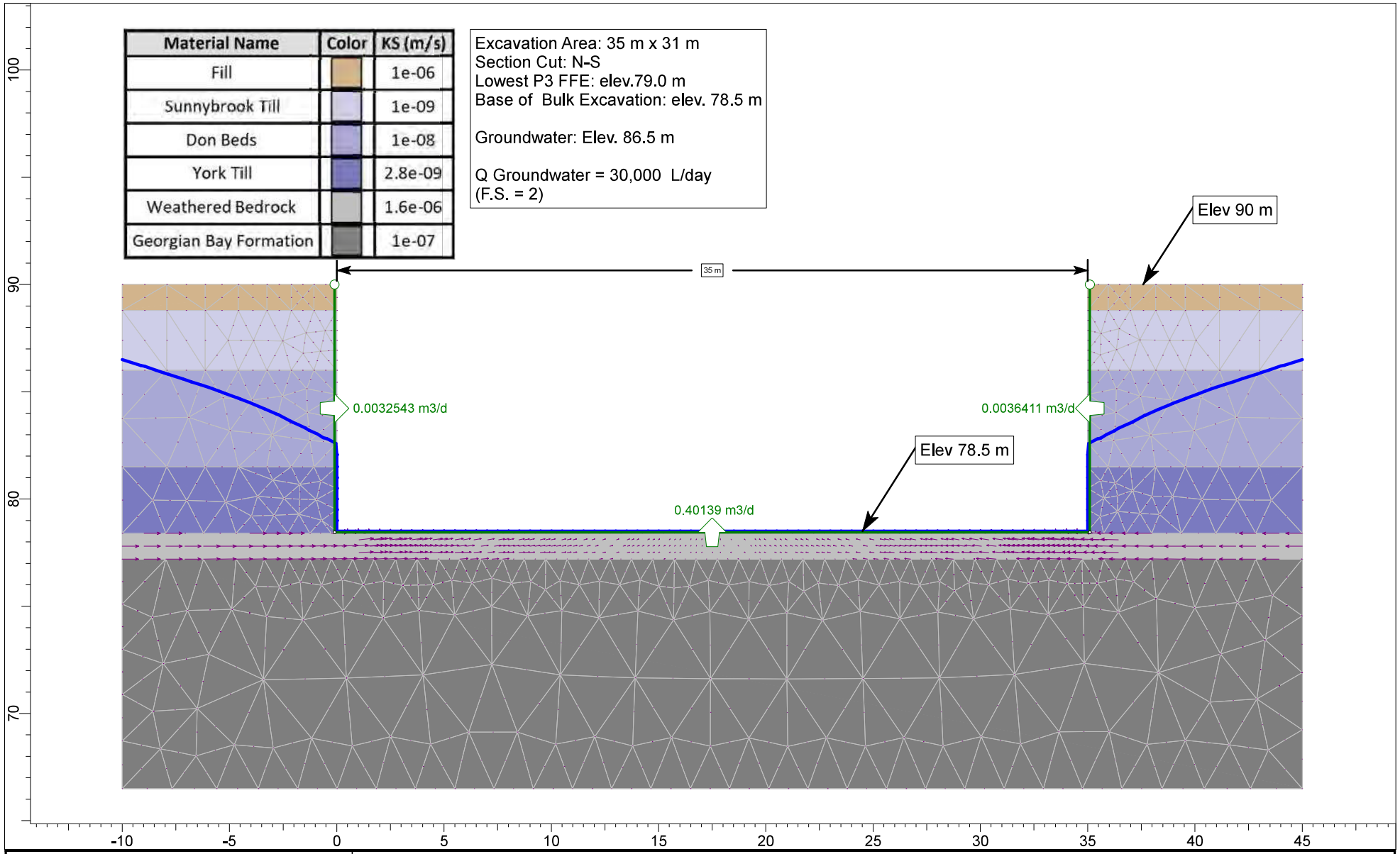
SLIDEINTERPRET 9.018

Material Name	Color	KS (m/s)
Fill		1e-06
Sunnybrook Till		1e-09
Don Beds		1e-08
York Till		2.8e-09
Weathered Bedrock		1.6e-06
Georgian Bay Formation		1e-07

Excavation Area: 35 m x 31 m
Section Cut: N-S
Lowest P3 FFE: elev.79.0 m
Base of Bulk Excavation: elev. 78.5 m

Groundwater: Elev. 86.5 m

Q Groundwater = 30,000 L/day
(F.S. = 2)



GROUNDED ENGINEERING

Project	21-019 | 147 Spadina Ave, Toronto		
Analysis Description	Steady State Groundwater FEM	Model	P3 - Long Term Dewatering | Master Scenario
Drawn By	KM	Scale 1:250	Date 2021-08-16
Source	Hydrogeological Report		File Name 21-019 Slide V2 2021-08-13.slmd

SLIDEINTERPRET 9.018

SHORT TERM

Excavation Dimensions [m]	
N-S	35
E-W	31
Area (m2)	1085
Perimeter (m)	132

Rainfall Data		
Year	2	100
Hour	3	12
Depth (mm)	25	94
Depth (m)	0.025	0.094

Section		Flow [m3/day]	Length [m]	Volume [L/day]
Base		0.40148	31	12,446
Sides		0.0037966	132	501
Total				12,947
Factor of Safety	2.0			25,894

Storm Events	
2 Year [L/day]	100 Year [L/day]
27,125	102,000

Summary	L/day	L/min
Groundwater	30,000	20.8
Rainfall	28,000	19.4
Total	58,000	40.3

LONG TERM

Excavation Dimensions [m]	
N-S	35
E-W	31
Area (m2)	1085
Perimeter (m)	132

Rainfall Data		
Year	2	100
Hour	3	12
Depth (mm)	25	94
Depth (m)	0.025	0.094

Section		Flow [m3/day]	Length [m]	Volume [L/day]
Base		0.40139	31	12,443
Sides		0.0036411	132	481
Total				12,924
Factor of Safety	2.0			25,847

Infiltration [L/day]
990

Summary	L/day	L/min
Groundwater	30,000	20.8
Infiltration	1,000	0.7
Total	31,000	21.5

APPENDIX H

FINAL REPORT

CA15968-FEB21 R1

21-019, 147 Spadina Ave, Toronto

Prepared for

Grounded Engineering Inc.

FINAL REPORT

CA15968-FEB21 R1

First Page

CLIENT DETAILS

Client	Grounded Engineering Inc.
Address	12 Banigan Drive Toronto, Ontario M4H1E9. Canada
Contact	Katrina Morgenroth
Telephone	
Facsimile	
Email	kmorgenroth@groundedeng.ca
Project	21-019, 147 Spadina Ave, Toronto
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA15968-FEB21
Received	02/25/2021
Approved	03/04/2021
Report Number	CA15968-FEB21 R1
Date Reported	03/04/2021

COMMENTS

RL - SGS Reporting Limit

Nonylphenol Ethoxylates is the sum of nonylphenol monoethoxylate and nonylphenol diethoxylate.

Temperature of Sample upon Receipt: 7 degrees C
Cooling Agent Present:Yes
Custody Seal Present:Yes

Chain of Custody Number:018900

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - General Chemistry**
(WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	8
Total Kjeldahl Nitrogen	as N mg/L	0.5	100		12.6
Total Suspended Solids	mg/L	2	350	15	15

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics					
Fluoride	mg/L	0.06	10		0.11
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Aluminum (total)	mg/L	0.001	50		0.367
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0033
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000005
Chromium (total)	mg/L	0.00008	4	0.08	0.0043

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Cobalt (total)	mg/L	0.000004	5		0.00057
Copper (total)	mg/L	0.0002	2	0.04	0.0005
Lead (total)	mg/L	0.00001	1	0.12	0.00021
Manganese (total)	mg/L	0.00001	5	0.05	0.426
Molybdenum (total)	mg/L	0.00004	5		0.0017
Nickel (total)	mg/L	0.0001	2	0.08	0.0019
Phosphorus (total)	mg/L	0.003	10	0.4	0.371
Selenium (total)	mg/L	0.00004	1	0.02	0.00017
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.0028
Titanium (total)	mg/L	0.00005	5		0.0119
Zinc (total)	mg/L	0.002	2	0.04	0.003

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - Microbiology** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Microbiology					
E. Coli	cfu/100mL	-		200	< 2↑

PACKAGE: **SANSEW - Nonylphenol and Ethoxylates** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02	0.001	< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2	0.01	< 0.01
Nonylphenol diethoxylate	mg/L	0.01			< 0.01
Nonylphenol monoethoxylate	mg/L	0.01			< 0.01

PACKAGE: **SANSEW - Oil and Grease** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Oil and Grease					

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - Oil and Grease** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Oil and Grease (continued)					
Oil & Grease (total)	mg/L	2			< 2
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

PACKAGE: **SANSEW - Other (ORP)** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	11.5	9.5	7.40
Chromium VI	mg/L	0.0002	2	0.04	< 0.0002
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001

PACKAGE: **SANSEW - PAHs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
PAHs					

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - PAHs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
PAHs (continued)					
Benzo(b+j)fluoranthene	mg/L	0.0001			< 0.0001

PACKAGE: **SANSEW - PCBs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.001	0.0004	< 0.0001

PACKAGE: **SANSEW - Phenols** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	< 0.002

PACKAGE: **SANSEW - SVOCs** (WATER)

Sample Number	8
Sample Name	UF-SW-BH3

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - SVOCs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
SVOCs					
di-n-Butyl Phthalate	mg/L	0.002	0.08	0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002	0.012	0.0088	< 0.002
3,3-Dichlorobenzidine	mg/L	0.0005	0.002	0.0008	< 0.0005
Pentachlorophenol	mg/L	0.0005	0.005	0.002	< 0.0005
PAHs (Total)	mg/L	-	0.005	0.002	< 0.001
Perylene	mg/L	0.0005			< 0.0005

PACKAGE: **SANSEW - SVOCs - PAHs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
SVOCs - PAHs					
7Hdibenzo(c,g)carbazole	mg/L	0.0001			< 0.0001
Anthracene	mg/L	0.0001			< 0.0001
Benzo(a)anthracene	mg/L	0.0001			< 0.0001
Benzo(a)pyrene	mg/L	0.0001			< 0.0001
Benzo[e]pyrene	mg/L	0.0001			< 0.0001
Benzo(ghi)perylene	mg/L	0.0002			< 0.0002
Benzo(k)fluoranthene	mg/L	0.0001			< 0.0001
Chrysene	mg/L	0.0001			< 0.0001

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - SVOCs - PAHs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
SVOCs - PAHs (continued)					
Dibenzo(a,h)anthracene	mg/L	0.0001			< 0.0001
Dibenzo(a,i)pyrene	mg/L	0.0001			< 0.0001
Dibenzo(a,j)acridine	mg/L	0.0001			< 0.0001
Fluoranthene	mg/L	0.0001			< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002			< 0.0002
Phenanthrene	mg/L	0.0001			< 0.0001
Pyrene	mg/L	0.0001			< 0.0001

PACKAGE: **SANSEW - VOCs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.05	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethene	mg/L	0.0005	4	0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005	0.14	0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	1.4	0.017	< 0.0005

Client: Grounded Engineering Inc.
Project: 21-019, 147 Spadina Ave, Toronto
Project Manager: Katrina Morgenroth
Samplers: Deepak Kanraj

PACKAGE: **SANSEW - VOCs** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
VOCs (continued)					
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.0076	< 0.0005

PACKAGE: **SANSEW - VOCs - BTEX** (WATER)

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	UF-SW-BH3
Sample Matrix	Ground Water
Sample Date	24/02/2021

Parameter	Units	RL	L1	L2	Result
VOCs - BTEX					
Benzene	mg/L	0.0005	0.01	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.16	0.002	< 0.0005
Toluene	mg/L	0.0005	0.016	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	1.4	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Toronto Sewer Use By Law Table 1 - Sanitary and Combined Sewer Discharge - BL_100_2016 L1	SANSEW / WATER / - - Toronto Sewer Use By Law Table 2 - Storm Sewer Discharge - BL_100_2016 L2
UF-SW-BH3					
Manganese	SM 3030/EPA 200.8	mg/L	0.426		0.05

QC SUMMARY

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0056-FEB21	mg/L	2	< 2	7	30	110	70	130	NV	70	130

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0214-FEB21	mg/L	0.01	<0.01	ND	10	93	90	110	99	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0371-FEB21	mg/L	0.06	<0.06	ND	10	97	90	110	103	75	125

QC SUMMARY

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A | Internal ref.: ME-CA-[ENV]SKA-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA0216-FEB21	mg/L	0.0002	<0.0002	ND	20	106	80	120	79	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0030-FEB21	mg/L	0.00001	< 0.00001	ND	20	107	80	120	98	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0146-FEB21	mg/L	0.00005	<0.00005	ND	20	101	90	110	98	70	130
Aluminum (total)	EMS0146-FEB21	mg/L	0.001	<0.001	18	20	108	90	110	126	70	130
Arsenic (total)	EMS0146-FEB21	mg/L	0.0002	<0.0002	16	20	102	90	110	100	70	130
Cadmium (total)	EMS0146-FEB21	mg/L	0.000003	3e-006	12	20	101	90	110	110	70	130
Cobalt (total)	EMS0146-FEB21	mg/L	0.000004	<0.000004	6	20	101	90	110	105	70	130
Chromium (total)	EMS0146-FEB21	mg/L	0.00008	<0.00008	11	20	99	90	110	111	70	130
Copper (total)	EMS0146-FEB21	mg/L	0.0002	<0.0002	5	20	103	90	110	104	70	130
Manganese (total)	EMS0146-FEB21	mg/L	0.00001	<0.00001	5	20	102	90	110	104	70	130
Molybdenum (total)	EMS0146-FEB21	mg/L	0.00004	<0.00004	1	20	102	90	110	106	70	130
Nickel (total)	EMS0146-FEB21	mg/L	0.0001	<0.0001	4	20	100	90	110	104	70	130
Lead (total)	EMS0146-FEB21	mg/L	0.00001	<0.00001	16	20	100	90	110	102	70	130
Phosphorus (total)	EMS0146-FEB21	mg/L	0.003	<0.003	20	20	105	90	110	NV	70	130
Antimony (total)	EMS0146-FEB21	mg/L	0.0009	<0.0009	ND	20	104	90	110	122	70	130
Selenium (total)	EMS0146-FEB21	mg/L	0.00004	<0.00004	13	20	103	90	110	89	70	130
Tin (total)	EMS0146-FEB21	mg/L	0.00006	<0.00006	1	20	97	90	110	NV	70	130
Titanium (total)	EMS0146-FEB21	mg/L	0.00005	<0.00005	1	20	104	90	110	NV	70	130
Zinc (total)	EMS0146-FEB21	mg/L	0.002	<0.002	9	20	100	90	110	117	70	130

QC SUMMARY

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9392-FEB21	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

Method: ASTM D7065-06 | Internal ref.: ME-CA-[ENV]GC-LAK-AN-015

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0035-MAR21	mg/L	0.01	< 0.01			85	55	120			
Nonylphenol Ethoxylates	GCM0035-MAR21	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0035-MAR21	mg/L	0.01	< 0.01			85	55	120			
Nonylphenol	GCM0035-MAR21	mg/L	0.001	< 0.001			86	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0100-MAR21	mg/L	2	<2	NSS	20	92	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0100-MAR21	mg/L	4	<2	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0100-MAR21	mg/L	4	<2	NSS	20	NA	70	130			

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0381-FEB21	No unit	0.05	NA	1		101			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0008-MAR21	mg/L	0.002	<0.002	10	10	106	80	120	107	75	125
4AAP-Phenolics	SKA0213-FEB21	mg/L	0.002	<0.002	ND	10	98	80	120	87	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-[ENV]GC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0009-MAR21	mg/L	0.0001	<0.0001	NSS	30	91	60	140	NSS	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
7Hdibenzo(c,g)carbazole	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	110	50	140	NSS	50	140
Anthracene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Benzo(a)anthracene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140
Benzo(a)pyrene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	91	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	107	50	140	NSS	50	140
Benzo[e]pyrene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	92	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0026-MAR21	mg/L	0.0002	< 0.0002	NSS	30	103	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	104	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0026-MAR21	mg/L	0.002	< 0.002	NSS	30	113	50	140	NSS	50	140
Chrysene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	104	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0026-MAR21	mg/L	0.002	< 0.002	NSS	30	106	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140
Dibenzo(a,i)pyrene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	96	50	140	NSS	50	140
Dibenzo(a,j)acridine	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	106	50	140	NSS	50	140
Fluoranthene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	105	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0026-MAR21	mg/L	0.0002	< 0.0002	NSS	30	103	50	140	NSS	50	140
Pentachlorophenol	GCM0026-MAR21	mg/L	0.0005	< 0.0005	NSS	30	110	50	140	NSS	50	140
Perylene	GCM0026-MAR21	mg/L	0.0005	< 0.0005	NSS	30	106	50	140	NSS	50	140
Phenanthrene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	100	50	140	NSS	50	140
Pyrene	GCM0026-MAR21	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140

QC SUMMARY

Semi-Volatile Organics (continued)

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
3,3-Dichlorobenzidine	GCM0044-MAR21	mg/L	0.0005	< 0.0005	NSS	30	85	30	130	NSS	30	130

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0369-FEB21	mg/L	2	< 2	0	10	103	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0010-MAR21	as N mg/L	0.5	<0.5	ND	10	101	90	110	97	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENV]GC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	95	60	130	99	50	140
1,2-Dichlorobenzene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	97	60	130	99	50	140
1,4-Dichlorobenzene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	96	60	130	99	50	140
Benzene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	98	60	130	100	50	140
Chloroform	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	97	60	130	99	50	140
cis-1,2-Dichloroethene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	98	60	130	100	50	140
Ethylbenzene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	104	50	140
m-p-xylene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	103	50	140
Methylene Chloride	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	98	60	130	98	50	140
o-xylene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	103	50	140
Tetrachloroethylene (perchloroethylene)	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	100	60	130	104	50	140
Toluene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	102	50	140
trans-1,3-Dichloropropene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	103	50	140
Trichloroethylene	GCM0378-FEB21	mg/L	0.0005	<0.0005	ND	30	99	60	130	103	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates 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.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. “Temperature Upon Receipt” is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” published by the Ministry and dated March 9, 2004 as amended.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 018900

Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Oleg Mozhlix
Received Date: 02/25/21 (mm/dd/yy)
Received Time: 11:00 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ice pack
Temperature Upon Receipt (°C) 7.7
LAB LIMS #: CA-15968-Feb21

REPORT INFORMATION	INVOICE INFORMATION
Company: GROUNDED ENGINEERING	☒ (same as Report Information)
Contact: KATRINA MORGENROTH	Company:
Address: 12 BANIGAN DRIVE TORONTO, ONTARIO, M4H 1E9	Contact:
Phone: 647 264 - 7953	Address:
Fax:	Phone:
Email: KMORGENROTH@GROUNDEDENG	Email:

Quotation #: P.O. #:
Project #: 21-019 Site Location/ID: 147 SPADINA AVE, TORONTO

TURNAROUND TIME (TAT) REQUIRED

☐ Regular TAT (5-7days)

TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐1 Day ☐2 Days ☐3 Days ☐4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

☑ O.Reg 153/04 ☐ O.Reg 406/19

☐ Table 1 ☒ Res/Park Soil Texture:
☐ Table 2 ☐ Ind/Com ☒ Coarse
☒ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____
Soil Volume ☒ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☐ ODWS Not Reportable *See note

Sewer By-Law:
☒ Sanitary
☒ Storm
Municipality: TORONTO

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	M&I: Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN, Hg, pH, (B(HWS), EC, SAR-soil) (Cl, Na-water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni,	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs	PCB: PCBs ☐ Total ☐ Aroclor	PHC: F1-F4 + BTEX	PHC: F1-F4 only (no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides (Organochlorine or specify other	Other: Appendix 2: 406/19 Leachate Screening Levels Table :	Other: Sewer Use: Specify pkg: STORM + SANITARY	Other: Water Characterization Pkg General ☐ Extended ☐	TCLP: Specify TCLP tests ☐M&I ☐VOC ☐FCB ☐E(a)P ☐ABN ☐Ignit.	COMMENTS:
1	UF-SW-BH3	24FEB2021	1:45PM	18	GW	N													X			
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Observations/Comments/Special Instructions

Sampled By (NAME): DEEPAK KANRAJ Signature: Date: 02/24/2021 (mm/dd/yy)
Relinquished by (NAME): DEEPAK KANRAJ Signature: Date: 02/24/2021 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.4
Date of Issue: 27 May 2020

Smith + Andersen

4211 Yonge Street Suite 500 Toronto Ontario M2P 2A9
416 487 8151 f 416 487 9104 smithandandersen.com

2021-08-20

Attention: Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering
Metro Hall
55 John Street
16th Floor
Toronto, Ontario M5V 3C6

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring and Protection
Unit 30 Dee Ave, Toronto ON M9N 1S9

RE: 147 Spadina Ave
TORONTO, ONTARIO
S+A PROJECT # 21225.000.M001
GROUND WATER DISCHARGE STRATEGY

To whom it may concern:

This letter is to confirm that groundwater from the Private Water Drainage System for the above mentioned project will be collected and discharged into the sanitary control manhole of the site located at 147 Spadina Avenue.

The groundwater sump pumps will be sized at 1.0 L/sec (groundwater peak flow rate) and are expected to run approximately 8.6 hours per day.

This peak flow rate will be used for assessing capacity for the peak discharge flow into the City's sanitary sewer system.

Once the proposed groundwater peak flow rate of 1.0 L/sec is approved by Engineering Construction Services (ECS), City of Toronto, the property owner will not be allowed to amend this flow rate in the future. Should there be any amendment to the peak flow rate of 1.0 L/sec in future, the property owner shall re-submit either the updated pump schedule or a revised letter to ECS. In addition, the sewer capacity will need to be re-assessed.

Smith + Andersen

2021-08-20

Bram Atlin P.Eng., LEED AP
Principal
d 416 218 7045 m 416 895 9825
bram.atlin@smithandandersen.com
21225.000.m.001.l001 (Ground Water Approach)

APPENDIX D

Storm Demand Analysis

City of Toronto Stormwater Manaegement Site Detention and Retention Requirements

Project: 450 Dufferin
Date: July 29, 2021

Site Area (ha) =	0.1081
Ex. Drainage Area to Richmond St. Comb. Sewer	0.0934
Pre Dev. Runoff Coeficeint =	0.90
Post Dev.Runoff Coefficient =	0.90
Max. Allowed Runoff Coefficeint =	0.5

City of Toronto IDF

$$i_{Year} = AT^{c}$$

Return Period (Year)	A	C	I (mm/hr)
2	21.8	-0.78	88.19
5	32.0	-0.79	131.79
10	38.7	-0.80	162.27
25	45.2	-0.80	189.52
50	53.5	-0.80	224.32
100	59.7	-0.80	250.32
T_c=	10	min (in hours)	

Allowed Peak Discharge Rate

$$Q = \frac{CIA}{360} * 1000$$

C = 0.5
I = 88.19 mm/hr
Q Allowed = 13.2 L/s
Q 100 = 67.6 L/s

Estimated On-Site Retention For Water Balance

Assume hard surface IA =	1	mm
Assume Soft Surface IA =	5	mm
Target Retention (mm) =	5	mm
Total Retention Volume Required =	5.4	cu.m
Estimated % Impervious =	100.0%	
Estmated Surface IA Provided =	1.00	mm
Estimated Deficit for Infiltration		
Or Rainwater Harvesting =	4.00	mm
or	4.3	cu.m

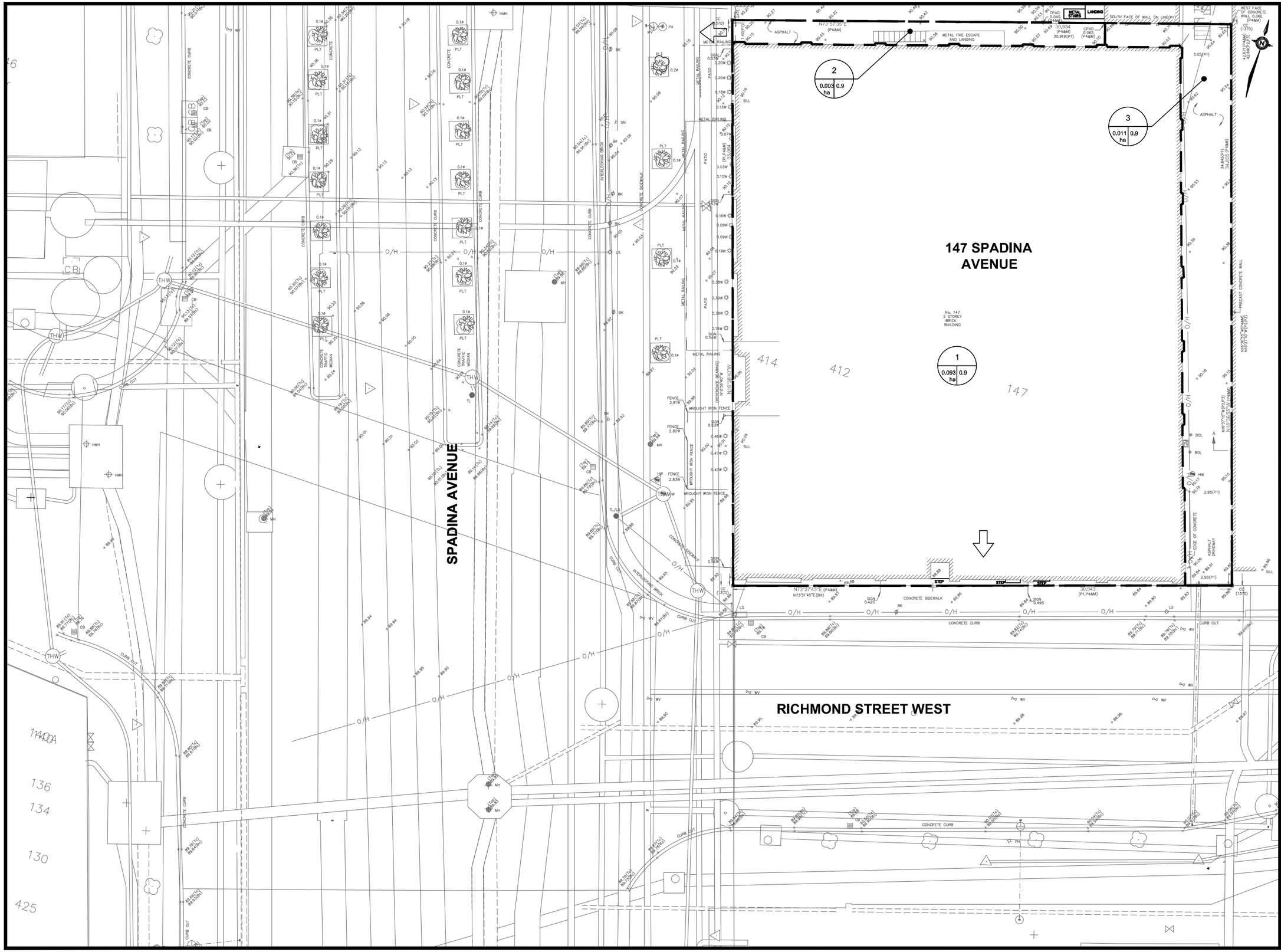
On Site Detention Storage
100 Yr Storm Event

Post Development Runoff Coefficeint =	0.90
Site Area (ha) =	0.1081
Allowed Realease Rate (cu.m/s) =	0.011
Peak Storage + 15% Allowance (m3) =	40.000

t_c (min)	i_{100} (mm/hr)	Q_{100} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	1579.412	0.427	0.416	24.980	
2	907.134	0.245	0.235	28.158	
3	655.841	0.177	0.167	30.013	
4	521.012	0.141	0.130	31.273	
5	435.832	0.118	0.107	32.185	
6	376.682	0.102	0.091	32.867	
7	332.979	0.090	0.079	33.385	
8	299.243	0.081	0.070	33.778	
9	272.334	0.074	0.063	34.073	
10	250.320	0.068	0.057	34.289	
11	231.943	0.063	0.052	34.441	
12	216.347	0.058	0.048	34.537	
13	202.927	0.055	0.044	34.586	
14	191.246	0.052	0.041	34.595	***max***
15	180.977	0.049	0.038	34.568	
16	171.870	0.046	0.036	34.510	
17	163.733	0.044	0.034	34.424	
18	156.415	0.042	0.032	34.313	
19	149.793	0.040	0.030	34.179	
20	143.771	0.039	0.028	34.025	
21	138.267	0.037	0.027	33.852	
22	133.216	0.036	0.026	33.662	
23	128.562	0.035	0.024	33.457	
24	124.259	0.034	0.023	33.236	
25	120.266	0.033	0.022	33.003	
26	116.551	0.031	0.021	32.757	
27	113.085	0.031	0.020	32.499	
28	109.842	0.030	0.019	32.231	
29	106.801	0.029	0.018	31.952	
30	103.944	0.028	0.018	31.663	
31	101.253	0.027	0.017	31.366	
32	98.713	0.027	0.016	31.060	
33	96.313	0.026	0.016	30.747	
34	94.040	0.025	0.015	30.425	
35	91.884	0.025	0.014	30.097	
36	89.837	0.024	0.014	29.761	
37	87.889	0.024	0.013	29.419	
38	86.034	0.023	0.013	29.071	
39	84.264	0.023	0.012	28.717	

APPENDIX E

Conceptual Civil Drawings



KEY PLAN
N.T.S.

No.	Revision	Comments
1.	2020/09/11	ISSUED FOR ZBA/OPA

NOTE:
THE INFORMATION DENOTED IN BOXES ☐ WITHIN THE DRAWING DETAILS ON THIS SHEET ARE CONSIDERED TO BE PROPOSED DESIGN/SPECIFICATIONS. ALL OTHER INFORMATION IS SHOWN FOR CONTEXT ONLY. REFER TO THE APPROPRIATE DRAWINGS BY THE ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER, AND MECHANICAL ENGINEER FOR DETAIL DESIGN AND SPECIFICATION OF OTHER DESIGN ELEMENTS.

Drawing Prepared By:

arva
R.V. Anderson Associates Limited
engineering • environment • infrastructure

Client:
HULLMARK DEVELOPMENTS

Project Name:
147 SPADINA AVE
REDEVELOPMENT

Drawing Title:
EXISTING STORM CATCHMENTS

Drawn: MS	Design: AW	Date: MAY 2021
Checked: ###	Approved: ###	Scale: 1:100
CADD File: 205518-S-CATCHMENTS.dwg		Dwg. No.: STM-1
Project No.: 205518		

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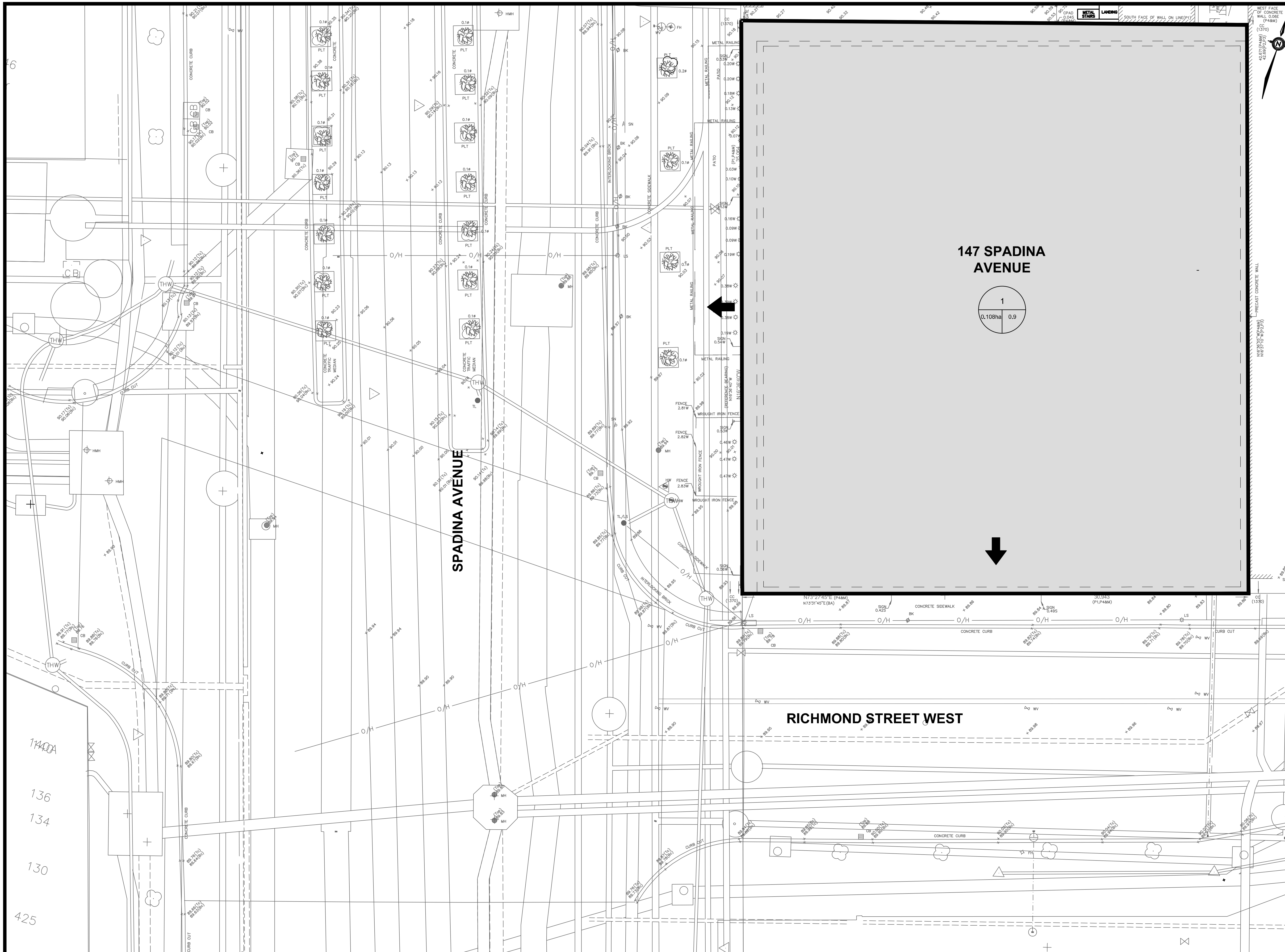

KEY PLAN
N.T.S.

No.	Revision	Comments
1.	2020/09/11	ISSUED FOR ZBA/OPA

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1:100

NOTE:
THE INFORMATION DENOTED IN BOXES ☐ WITHIN THE DRAWING DETAILS ON THIS SHEET ARE CONSIDERED TO BE PROPOSED DESIGN/SPECIFICATIONS. ALL OTHER INFORMATION IS SHOWN FOR CONTEXT ONLY. REFER TO THE APPROPRIATE DRAWINGS BY THE ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER, AND MECHANICAL ENGINEER FOR DETAIL DESIGN AND SPECIFICATION OF OTHER DESIGN ELEMENTS.

Drawing Prepared By:

R.V. Anderson Associates Limited
engineering • environment • infrastructure

Client:
HULLMARK DEVELOPMENTS

Project Name:
147 SPADINA AVE
REDEVELOPMENT

Drawing Title:
PROPOSED STORM CATCHMENTS

Drawn:	Design:	Date:
MS	AW	MAY 2021
Checked: ###	Approved: ###	Scale: 1:100

CADD File: 205518-S-CATCHMENTS.dwg
Project No.: 205518
Dwg. No.: STM-2

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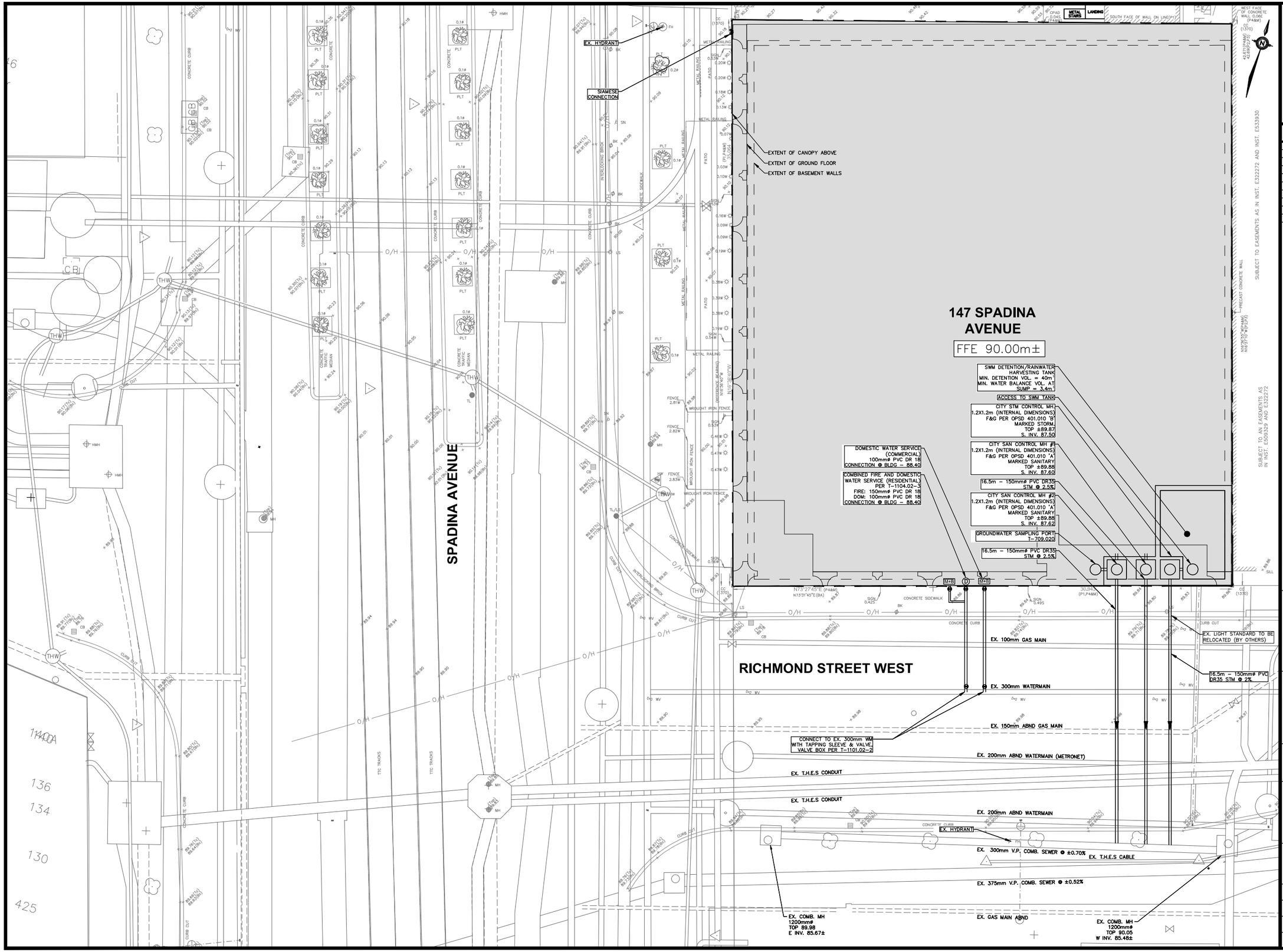

KEY PLAN
N.T.S.

No.	Revision	Comments
1.	2020/09/11	ISSUED FOR ZBA/OPA
1.	2021/07/30	RE-ISSUED FOR ZBA/OPA

LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED WATERMAIN
- PROPOSED SEWER AND FLOW DIRECTION
- M+B — PROPOSED WATER METER & DOUBLE CHECK VALVE ASSEMBLY AS PER T-1107.04-1 (SEE MECH DWGS FOR DETAILS)
- D — PROPOSED DETECTOR ASSEMBLY (SEE MECH DWGS FOR DETAILS)
- GM — PROPOSED GAS METER
- PROPOSED VALVE & BOX
- PROPOSED ACCESS OPENING FRAME & GRATE (ACCESSIBLE AT GRADE)
- UNDERGROUND BUILDING STRUCTURE
- PROPOSED BUILDING AT GRADE
- PROPOSED BUILDING ROOF OVERHANG

1m 0 2m 4m
1:100

NOTE:
THE INFORMATION DENOTED IN BOXES ☐ WITHIN THE DRAWING DETAILS ON THIS SHEET ARE CONSIDERED TO BE PROPOSED DESIGN/SPECIFICATIONS. ALL OTHER INFORMATION IS SHOWN FOR CONTEXT ONLY. REFER TO THE APPROPRIATE DRAWINGS BY THE ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER, AND MECHANICAL ENGINEER FOR DETAIL DESIGN AND SPECIFICATION OF OTHER DESIGN ELEMENTS.

Drawing Prepared By:

arva
R.V. Anderson Associates Limited
engineering • environment • infrastructure

Client:
HM RB (147 SPADINA) LP

Project Name:
147 SPADINA AVE
REDEVELOPMENT

Drawing Title:
CONCEPTUAL SERVICING PLAN

Drawn:	Design:	Date:
MS	AW	MAY 2021
Checked:	Approved:	Scale:
###	###	1:100
CADD File: 205518-S-SERVICING.dwg		Dwg. No.: C-1
Project No.: 205518		

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