HADDAD GEOTECHNICAL INC.

Geotechnical & Environmental Engineers

Hydrogeological Assessment
Proposed Development
805 Dundas Street East
City of Mississauga, Ontario

Prepared for:

KJC Properties Inc.
1940 Ellesmere Road
Scarborough, Ontario
M1H 2V6

Project: 22-16145

June 12, 2023

151 Amber Street, Unit 17
Markham, Ontario, Canada L3R 3B3
(905) 475-0951
1-888-214-4285
Fax: (905) 475-8338
info@haddadgeo.com

HADDAD GEOTECHNICAL INC.
Geotechnical & Environmental Engineers

June 12, 2023

Project: 22-16145

KJC Properties Inc.
1940 Ellesmere Road
Scarborough, Ontario
M1H 2V6

Re: Hydrogeological Assessment
Proposed Redevelopment
805 Dundas Street East
Mississauga, Ontario

Dear Mr. Jabbaz:

Haddad Geotechnical Inc. was authorized by KJC Properties Inc., the owner of the subject property, to conduct a hydrogeological assessment for the proposed Redevelopment to be constructed on the subject property. Our findings and comments for the hydrogeological assessment are presented in the following report.

1. INTRODUCTION

1.1 Project

1. The site under consideration is located at 799, 801, 803 and 805 Dundas Street East (the Site), in the City of Mississauga, (see, Drawing Nos. 1 and 2). For the purpose of the present assessment, the Hydrogeological Assessment property is referenced as 805 Dundas Street East, Mississauga.

2. The proposed development concept plans for the project, prepared by Kirkor Architects and Planners, and presented in Appendix "A," indicate that the proposed redevelopment of the subject site consisting of:
   - the construction of a new, twelve (12) storey, multi-residential building (Building A), which will occupy the southern (nominal) portion of the site along Dundas Street.
   - the construction of three separate three-storey buildings (Building B, C and D) with a total of 20 conventional townhouses, which will occupy the northern (nominal) portion of the site.
   - the construction of hard and soft landscaping, a driveway, and access road network.

3. The proposed Building Section B presented in Appendix "A," also indicates that the Level 01-Upper and Level-01 Lower of the proposed building are to be set at Elevations 124.15±m and 123.45±m, respectively.

4. The proposed Building Section B, presented in Appendix "A," also indicate that all proposed buildings at the subject site, will be constructed over two (2) underground parking levels with the lowest level is to be set at 6.45±m below the proposed Level 01-Lower (i.e., elevation of the lowest basement: 117.0±m).

5. The existing buildings on the site are to be demolished.

1.2 Purpose

1. The objectives of the subsurface investigation were to:
   - provide subsurface information with regards to the types, thicknesses and variability of the subsoils underlying the area of the proposed building.
   - establish groundwater conditions
   - provide estimates of volumes of water to be encountered for construction and permanent dewatering operations.

2. The present hydrogeological assessment is conducted by Haddad Geotechnical Inc., under the supervision of D. Graham Fisher, M.E.Sc., P.Eng., QP_{ESA}. The present hydrogeological assessment of the subject site is conducted in general conformance with the following:
   - Ontario Water Resources Act
   - Ontario Regulation 387/04

1.3 Site Description – Present

1. The site under consideration is located on the northwest corner of Dundas Street East and Haines Road in the City of Mississauga.

2. The site has municipal address of 805 Dundas Street East, Mississauga, L4Y 2B7.

3. The subject property has an area of 12,707m^2.

4. At the time of our investigation, 799, 801, 803 and 805 Dundas Street East are occupied by a Tim Hortons, a one-story commercial strip mall, a ShishaLicious Café, and Ultra Lighting respectively. A large asphalt parking lot was observed occupying the space between the individual commercial buildings.

5. The topography of the subject site was observed to slope down towards Dundas Street East from the northerly (nominal) area of the site.

6. The closest body of surface water to the subject property is Etobicoke Creek, located 1.6km east of the east limit of the subject property.

2. FIELD AND LABORATORY WORK

2.1 Fieldwork

1. The fieldwork, carried out on July 11th to 15th, July 27th, and August 8th, 2022, consisted of the following:
   - drilling of six (6) sampled boreholes, Borehole (BH) Nos. 1 to 3, 5, 7 and 8 to depths ranging from 6.3±m to 16.8±m below grade.
   - drilling of two (2) unsampled boreholes, Borehole (BH) Nos. 4 and 6 to depth of 5.8±m below grade.
   - coring of bedrock at BH No. 1, from 7.3±m to 14±m depths below existing grade.
   - installation of eight (8) monitoring wells. Monitoring Wells (MW) Nos. 1 to 8.
   - measurements of water levels in the monitoring wells.

2. Drawing No. 1 presents a site plan showing the approximate locations of the boreholes and monitoring wells. Drawing No. 2 presents a proposed site plan showing the approximate locations of the boreholes and monitoring wells.

3. Borehole Nos. 1 to 8 were advanced to 16.8±m, 12.2±m, 12.2±m, 5.8±m, 12.2±m, 5.8±m, 12.2±m, 6.1±m, respectively, below the existing grades on site using track mounted power drilling equipment with 200mm diameter, hollow-stem, continuous flight augers. Samples were obtained with a split spoon sampler, driven by a 140-lb hammer, falling 30" (760mm). Detailed descriptions of the subsoils encountered in the sampled Boreholes are presented on the borehole logs, Drawing Nos. 4 to 12.

4. The surface elevations at the Borehole locations are referenced to the existing catch basin located east of 803 Dundas Street East, having an elevation of 125.45±m, as per the site survey plan provided by client.

2.2 Subsurface Conditions

2.2.1 Surficial Materials and Fill

1. The surficial materials at Borehole Nos. 1, 2, 3 and 7 were observed to consist of 100±mm of asphalt, underlain by 100±mm of granular materials. The surficial materials at Borehole No. 5 were observed to consist of 100±mm of grass and topsoil. The surficial materials at Borehole No. 8 were observed to consist of 100±mm of concrete slab.

2. Fill materials consisting of loose to compact sand and/or or sandy silt with trace gravels and trace silt and occasional crushed stone/rock, in moist condition and brown in colour, were observed below the surficial materials at borehole locations 1, 2, 3, 5, 7 and 8 and extended to depths of 2.3±m, 1.5±m, 1.5±m, 1.5±m, 1.5±m and 1.5±m below the existing grades, respectively.

2.2.2 Natural Subsoils

1. Natural, medium dense to very dense, sand subsoils with trace to some gravels and trace silt were observed to underlie the fill materials at borehole locations 2, 3, 5, 7 and 8 and extended to 7.3±m, 7.6±m, 6.1±m, 2.3±m, and 6.1±m below existing grades, respectively. The results of Standard Penetration Tests (SPT) in the sand subsoils indicated penetration resistance of 27 blows per 300mm to over 50 blows per 100mm.

2. Natural, medium dense to very dense, silty sand or silty sand till subsoils with trace gravels and trace clay were observed to underlie the fill materials at borehole location 1 and upper natural subsoils at borehole locations 3, 5 and 7 and extended to 7.3±m, 7.8±m, 6.3±m, and 5.2±m below existing grades, respectively. The results of Standard Penetration Tests (SPT) in the silty sand or silty sand till subsoils indicated penetration resistance of 18 blows per 300mm to over 50 blows per 50mm.

2.2.3 Bedrock

1. The surface of weathered bedrock was encountered at depths of 7.3±m, 7.3±m, 7.6±m, 6.3±m, 5.2±m and 6.1±m depths below existing grades at Borehole Nos. 1, 2, 3, 5, 7 and 8 respectively (elevations ranging from 117.3±m to 120.6±m).

2. Bedrock was observed to underly the upper natural subsoils at Borehole Nos. 1, 2, 3, 5 and 7 and extended to depths of 16.8±m, 12.2±m, 12.2±m, 12.2±m and 12.2±m below the grades. The drilling auger was refused to further penetration by the bedrocks at depth of 6.3±m within the explored depth at BH No. 8.

3. Coring of bedrock was conducted at BH No. 1, from a depth of 7.3±m to 14±m below existing grade. The coring was conducted in incremental runs of 1.5±m (5 ft). After each coring run the percent core recovery, and the Rock Quality Designation (R.Q.D.) were recorded.

4. The bedrock at each of the cored locations was observed to consist primarily of grey shale (Georgian Bay formation, Dundas unit), with occasional limestone bands up to 100mm thickness.

5. The upper 0.6±m to 1.8±m of the shale bedrock was easily penetrated by the augur equipment used, indicating very weathered to weathered condition. The upper portions of the bedrock indicated recoveries of R.Q.D. of less than 50%, indicating very poor to poor rock quality. Below a depth of 9.6±m, at Borehole No. 1 (elevations 115±m) recoveries of 95% to 100%, and R.Q.D. of greater than 50% were consistently encountered, indicating fair to good condition of the bedrock.

2.3 Groundwater

1. Monitoring Well Nos. 1 to 8, were installed in Borehole Nos. 1 to 8, as shown on the provided Site Plan, Drawing No. 1.

2. Monitoring Well Nos. MW1 to 8 were installed in Borehole Nos. 1 to 8, respectively. Table No. 1 below presents details of the monitoring well installations.

3. Measurements of water levels in the monitoring wells were conducted on a bi-weekly basis during periods July 19 to August 8, 2022. Table No. 2, below, presents a summary of measurements of the elevations of groundwater at each of the Monitoring Well locations.

4. The observed water levels vary from a low of 117.99 masl at MW5 on August 8, 2022, to a high level of 123.56 masl at MW8 on June 22, 2022. The maximum variance of high groundwater levels above average levels was measured at 1.12m at MW1.

5. The measured water levels indicate a groundwater flow direction from north to south and slightly east to west across the area of the site. The overall average of the average levels measured in the monitoring wells is at elevation 120.44 masl, and average of high-water levels is at elevation 120.75 masl, a variance of 0.31m from average to high water level.

6. The water level measurements indicate that the key aquifer consists of wet sand seams within the natural silty sand till soils below the property.

Table No. 1
Summary of Well Construction Details

Well No.	MW1	MW2	MW3	MW4	MW5
Installation Date	14-July-2022	13-July-2022	13-July-2022	12-July-2022	12-July-2022
Pipe diameter, mm	50	50	50	50	50
Grade Elevation (masl)	124.60	126.00	125.60	125.60	124.40
Screened Interval (m)	13.8 – 16.8	9.2 – 12.2	9.2 – 12.2	2.7 – 5.8	9.2 – 12.2
Screen Length (m)	3.0	3.0	3.0	3.0	3.0
Riser Length (m)	3.0	3.0	3.0	3.0	3.0
Sand Backfill (m)	13.5 – 16.8	8.9 – 12.2	8.9 – 12.2	2.4 – 5.8	8.9 – 12.2
Bentonite Backfill (m)	0.0 – 13.5	0.0 – 8.9	0.0 – 8.9	0.0 – 2.4	0.0 – 8.9

Well No.	MW6	MW7	MW8
Installation Date	11-July-2022	11-July-2022	15-July-2022
Pipe diameter, mm	50	50	50
Grade Elevation (masl)	124.40	125.80	126.40
Screened Interval (m)	2.7 – 5.8	9.2 – 12.2	3.0 – 6.1
Screen Length (m)	3.0	3.0	3.0
Riser Length (m)	3.0	3.0	3.0
Sand Backfill (m)	2.4 – 5.8	8.9 – 12.2	2.7 – 6.0
Bentonite Backfill (m)	0.0 – 2.4	0.0 – 8.9	0.0 – 2.7

Table No. 2
Groundwater Level Measurements at Monitoring Wells

Monitoring Well (MW) – Borehole (BH) No.	MW1	MW2	MW3	MW4	MW5
Existing Grade Elevation at Borehole/Well Locations (masl)	124.60	126.00	125.60	125.60	124.40
Date of Installation	30-May-2022	30-May-2022	30-May-2022	30-May-2022	30-May-2022
July 19, 2022 Depth (m) Elevation (masl)	 3.83 120.77	 5.20 120.80	 5.80 119.80	 4.80 120.80	 5.79 118.61
July 27, 2022 Depth (m) Elevation (masl)	 4.91 119.69	 5.18 120.84	 5.84 119.76	 5.79 119.81	 6.36 118.04
August 8, 2022 Depth (m) Elevation (masl)	 4.95 119.65	 5.22 120.78	 5.86 119.74	 5.75 119.85	 6.41 117.99
Highest Water Elevation (masl)	120.77	120.84	119.80	120.80	118.61
Lowest Water Elevation (masl)	119.65	120.78	119.74	119.81	117.99
Variance High to Average (m)	1.12	0.06	0.06	0.99	0.62

Monitoring Well (MW) – Borehole (BH) No.	MW6	MW7	MW8
Existing Grade Elevation at Borehole/Well Locations (masl)	124.40	125.80	126.40
Date of Installation	11-July-2022	11-July-2022	15-July-2022
July 19, 2022 Depth (m) Elevation (masl)	 Dry <118.60	 4.92 120.88	 2.84 123.56
July 27, 2022 Depth (m) Elevation (masl)	 Dry <118.60	 5.33 120.47	 2.84 123.56
August 8, 2022 Depth (m) Elevation (masl)	 Dry <118.60	 5.42 120.38	 2.89 123.51
Highest Water Elevation (masl)	<118.60	120.88	123.56
Lowest Water Elevation (masl)	<118.60	120.38	123.51
Variance High to Average (m)	<118.60	0.50	0.05

2.4 Slug Test

1. The hydraulic conductivity was also determined based on a single well response test (slug test) conducted at MW3. This test involved the rapid removal of water from a single well and monitoring well recovery. The result of the falling head test was analyzed using the Bouwer and Rice (1976) method.

2. The results of the slug tests, which are presented on Appendix "B", indicated a hydraulic conductivity of the silt and sand till stratum of 2.81 x 10^{-6} m/s in MW3. According to Freeze and Cherry (1979), the typical hydraulic conductivity of the strata investigated at the site are sand till with a range of 10^{-6} m/s to 10^{-4} m/s. Based on the analysis, the hydraulic conductivity field results are relative consistent with the published values of associated with geological materials which were tested.

3. The water levels in well MW3 were measured at 5.86m depth (elevation 119.74 masl) before and after the slug test.

4. Measurement of conductivity of soils on the site by means of pump test or measurement of groundwater levels using digital equipment were not conducted.

2.5 Laboratory Work

1. The laboratory analysis of borehole samples carried out included the determination of moisture contents, with results as presented on the Borehole Logs.

2. The results of moisture content are presented on the Borehole Logs and the results of gradation analyses carried out on five (5) representative samples of the native subsoils encountered in Borehole Nos.1, 2, 3, 5, and 7, are presented on Drawing No. 13.

3. The results of the gradation analyses carried out on the upper natural subsoils sample obtained from Borehole No. 1 indicated 4% gravels, 69% sand, 24% silt, and 3% clay.

4. The results of the gradation analyses carried out on the upper natural subsoils sample obtained from Borehole No. 2 indicated 2% gravels, 93% sand, and 5% silt.

5. The results of the gradation analyses carried out on the upper natural subsoils sample obtained from Borehole No. 3 indicated 13% gravel, 84% sand, and 3% silt.

6. The results of the gradation analyses carried out on the upper natural subsoils sample obtained from Borehole No. 5 indicated 12% gravel, 82% sand, and 6% silt.

7. The results of the gradation analyses carried out on the lower natural subsoils sample obtained from Borehole No. 7 indicated 14% gravel, 49% sand, 29% silt, and 8% clay.

2.6 Sampling and Analysis of Groundwater

1. Monitoring Well MW8 was selected for sampling in conformance with City of Toronto Sewer Use Bylaw. MW8, represents water from the upper groundwater regime in the natural silt & sand till soils and is deemed to be representative of groundwater entering the site from upstream in terms of direction of groundwater flow, and of water that would be directed from the perimeter drainage system to the sumps for discharge to the municipal sewers for the development with two underground levels.

2. The monitoring well was developed by purging using a Waterra® inertial pump (5/8" Wattera® High Density (HDPE) tubing, connected to a foot pump). The inertial pump was used to remove approximately three times the volume of water from the well, during a site visit on July 19, 2022.

3. The well was sampled on May 18, 2023, using a low-flow sampling method, which consisted of a Horiba U22 multi-probe connected to a Geotech geopump peristaltic-pump.

4. Water was pumped from the well using the peristaltic pump at a rate ranging between 0.1 to 0.5L/min through the multi-probe and measurements were taken recorded at 10 to 15-minute intervals until stable readings were achieved. Measurements for Temperature, pH, Conductivity, Turbidity, Dissolved Oxygen and Oxygen Reducing Potential (ORP) were recorded until ±0.2 pH, ±3% Conductivity, ±20mV ORP and ±0.2mg/L Dissolved Oxygen was achieved between consecutive readings. The sample was not field filtered.

5. The groundwater sample was delivered following sampling to ALS Environmental, where measurement of temperature was conducted upon receipt of the samples, as indicated on the certificates of analysis, Appendix "C".

6. The samples of the groundwater in wells MW8 obtained on May 18, 2023, were analyzed by parameters for the parameters listed in the City of Mississauga Storm Sewer Use Bylaw (0046-2022) and Regional Municipality of Peel Sanitary Sewer Bylaw #53-2010. The results of the analysis are presented in the Certificate of Analysis in Appendix "C" and are summarized on Table No. 3 for discharge to storm sewer and on Table NO. 4 for discharge to sanitary sewer.

7. The results of analysis of the sample from well MW8 indicate that the measured concentrations of the following parameters exceed the criteria of City of Mississauga Storm Sewer Use Bylaw (0046-2022) for discharge into the into storm sewer: Kjeldahl Nitrogen (TKN): (measured 4.56mg/L, criteria 1mg/L); Phosphorus: measured 6.10mg/L, criteria 0.4mg/L); Total Suspended Solids (measured 14200mg/L, criteria 15mg/L); Aluminum (measured 191 mg/L, criteria 1 mg/L); Arsenic: (measured 0.0788mg/L, criteria 0.02 mg/L); Chromium (measured 0.333 mg/L, criteria 0.08mg/L); Copper: (measured 0.411 mg/L, criteria 0.04mg/L); Manganese: (measured 12.6 mg/L, criteria 2mg/L); Nickel: (measured 0.406 mg/L, criteria 0.08mg/L); Zinc: (measured 0.883 mg/L, criteria 0.04mg/L).

8. The results of analysis of the sample from well MW8 indicate that the measured concentrations of the following parameters exceed the criteria for discharge into the sanitary sewer of Regional Municipality of Peel Sanitary Sewer Bylaw #53-2010: Total Suspended Solids (measured 14200mg/L, criteria 350mg/L); Aluminum (measured 191 mg/L, criteria 50 mg/L); Manganese: (measured 12.6 mg/L, criteria 5mg/L).

Table No. 3
Monitoring Well MW8, Sampled May 18, 2023
Comparison to City of Mississauga Storm Sewer Use Bylaw Criteria

			Guidelines		
			Ontario Mississauga Storm Sewer Use By-Law (0046-2022) (March 2022)		
			Mississauga Storm Sewer (0046-2022)		
			MISSUB		
			Pass Limits		
			Lower	Upper	WT2313579-001 (1)
Sample					
Name					MW8
Sampling Date					18-05-2023 14:00
ALS ID					WT2313579-001
Test	**Unit**	**LOR**			
Aggregate Organics					
Biochemical oxygen demand [BOD]	mg/L			<=15	4.2
Carbonaceous biochemical oxygen demand [CBOD]	mg/L	5			<3.0
Oil & grease (gravimetric)	mg/L	5			<5.0
Oil & grease, animal/vegetable (gravimetric)	mg/L	5			<5.0
Oil & grease, mineral (gravimetric)	mg/L	5			<5.0
Phenols, total (4AAP)	mg/L	0.001		<=0.008	<0.0010
Anions and Nutrients					
Fluoride	mg/L	0.1			<0.100
Kjeldahl nitrogen, total [TKN]	mg/L			<=1	4.56
Phosphorus, total	mg/L			<=0.4	0.10
Sulfate (as SO4)	mg/L				225
Cyanides					
Cyanide, strong acid dissociable (Total)	mg/L	0.002		<=0.02	<0.0020
Inorganics					
Chlorine, total	mg/L	0.05		<=1	<0.050
Microbiological Tests					
Coliforms, Escherichia coli [E. coli]	CFU/100mL	100		<=200	<100
Nonylphenols					
Nonylphenol diethoxylates [NP2EO]	µg/L	0.1			<0.10
Nonylphenol ethoxylates, total	µg/L	2			<2.0
Nonylphenol monoethoxylates [NP1EO]	µg/L	2			<2.0
Nonylphenols [NP]	µg/L	1			<1.0
Phenolics Surrogates					
Tribromophenol, 2,4,6-	µg/L				0.90
Phthalate Esters					
bis(2-Ethylhexyl) phthalate [DEHP]	µg/L	2			<2.0
Di-n-butyl phthalate	µg/L	1			<1.0
Physical Tests					
pH	pH units		>=6	<=9	7.67
Solids, total suspended [TSS]	mg/L			<=15	14200
Polychlorinated Biphenyls					
Aroclor 1016	µg/L	0.02			<0.020
Aroclor 1221	µg/L	0.02			<0.020
Aroclor 1232	µg/L	0.02			<0.020
Aroclor 1242	µg/L	0.02			<0.020
Aroclor 1248	µg/L	0.02			<0.020
Aroclor 1254	µg/L	0.02			<0.020
Aroclor 1260	µg/L	0.02			<0.020
Aroclor 1262	µg/L	0.02			<0.020
Aroclor 1268	µg/L	0.02			<0.020
Polychlorinated biphenyls [PCBs], total	µg/L	0.06			<0.060
Polychlorinated Biphenyls Surrogates					
Decachlorobiphenyl	µg/L				0.2
Tetrachloro-m-xylene	µg/L				0.2
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	µg/L	0.01			<0.010
Acenaphthylene	µg/L	0.01			<0.010
Anthracene	µg/L	0.01			<0.010
Benz(a)anthracene	µg/L	0.01			<0.010
Benzo(a)pyrene	µg/L	0.005			<0.0050
Benzo(b+j)fluoranthene	µg/L	0.01			<0.010
Benzo(g,h,i)perylene	µg/L	0.01			<0.010
Benzo(k)fluoranthene	µg/L	0.01			<0.010
Chrysene	µg/L	0.01			<0.010
Dibenz(a,h)anthracene	µg/L	0.005			<0.0050
Fluoranthene	µg/L	0.01			<0.010
Fluorene	µg/L	0.01			<0.010
Indeno(1,2,3-c,d)pyrene	µg/L	0.01			<0.010
Methylnaphthalene, 1-	µg/L				0.023
Methylnaphthalene, 2-	µg/L				0.033
Naphthalene	µg/L				0.096
PAHs, total (CCME sewer 18)	µg/L			<=2	0.224
Phenanthrene	µg/L				0.072
Pyrene	µg/L	0.01			<0.010
Polycyclic Aromatic Hydrocarbons Surrogates					
Chrysene-d12	µg/L				1.0
Naphthalene-d8	µg/L				1.0
Phenanthrene-d10	µg/L				1.0
Semi-Volatile Organics Surrogates					
Fluorobiphenyl, 2-	µg/L	1			<1.0
Terphenyl-d14, p-	µg/L	1			<1.0
Speciated Metals					
Chromium, hexavalent [Cr VI], total	mg/L	0.0005			<0.00050
Total Metals					
Aluminum, total	mg/L			<=1	191
Antimony, total	mg/L	0.001			<0.00100
Arsenic, total	mg/L			<=0.02	0.0788
Cadmium, total	mg/L			<=0.008	0.000634
Chromium, total	mg/L			<=0.08	0.333
Cobalt, total	mg/L				0.226
Copper, total	mg/L			<=0.04	0.411
Lead, total	mg/L			<=0.12	0.0838
Manganese, total	mg/L			<=2	12.6
Mercury, total	mg/L			<=0.0004	0.0000291
Molybdenum, total	mg/L				0.00171
Nickel, total	mg/L			<=0.08	0.406
Selenium, total	mg/L			<=0.02	0.000761
Silver, total	mg/L			<=0.12	0.00181
Tin, total	mg/L				0.00416
Titanium, total	mg/L				0.322
Zinc, total	mg/L			<=0.04	0.883
Volatile Organic Compounds					
Benzene	µg/L	0.5		<=2	<0.50
Chloroform	µg/L				0.73
Dichlorobenzene, 1,2-	µg/L	0.5			<0.50
Dichlorobenzene, 1,4-	µg/L	0.5			<0.50
Dichloroethylene, cis-1,2-	µg/L	0.5			<0.50
Dichloromethane	µg/L	1			<1.0
Dichloropropylene, trans-1,3-	µg/L	0.3			<0.30
Ethylbenzene	µg/L	0.5		<=2	<0.50
Methyl ethyl ketone [MEK]	µg/L	20			<20
Styrene	µg/L	0.5			<0.50
Tetrachloroethane, 1,1,2,2-	µg/L	0.5			<0.50
Tetrachloroethylene	µg/L	0.5			<0.50
Toluene	µg/L	0.5		<=2	<0.50
Trichloroethylene	µg/L	0.5			<0.50
Xylene, m+p-	µg/L	0.4			<0.40
Xylene, o-	µg/L	0.3			<0.30
Xylenes, total	µg/L	0.5		<=4.4	<0.50
Volatile Organic Compounds Surrogates					
Bromofluorobenzene, 4-	µg/L				9.6
Difluorobenzene, 1,4-	µg/L				10.1

Evaluations	
Pending	Pending
No Spec	No Spec
Within Limit	Within Limit
Within Warning Limit	Within Warning Limit
Exceeds Limit	Exceeds Limit
Result LOR > Limit	Result LOR > Limit
Result LOR < Limit	Result LOR < Limit

Table No. 4
Monitoring Well MW8, Sampled May 18, 2023
Comparison to Regional Municipality of Peel Sanitary Sewer Use Bylaw Criteria

			Guidelines		
			Ontario Reg.Mun. of Peel Sewer Bylaw #53-2010 (APR, 2019)		
			Peel Sanitary Sewer (53-2010)		
			RMPSUB		
			Pass Limits		
			Lower	Upper	WT2313579-001 (1)
Sample					
Name					MW8
Sampling Date					18-05-2023 14:00
ALS ID					WT2313579-001
Test	**Unit**	**LOR**			
Aggregate Organics					
Biochemical oxygen demand [BOD]	mg/L			<=300	4.2
Carbonaceous biochemical oxygen demand [CBOD]	mg/L	3		<=300	<3.0
Oil & grease (gravimetric)	mg/L	5			<5.0
Oil & grease, animal/vegetable (gravimetric)	mg/L	5		<=150	<5.0
Oil & grease, mineral (gravimetric)	mg/L	5		<=15	<5.0
Phenols, total (4AAP)	mg/L	0.001		<=1	<0.0010
Anions and Nutrients					
Fluoride	mg/L	0.1		<=10	<0.100
Kjeldahl nitrogen, total [TKN]	mg/L			<=100	6.56
Phosphorus, total	mg/L			<=10	0.10
Sulfate (as SO4)	mg/L			<=1500	225
Cyanides					
Cyanide, strong acid dissociable (Total)	mg/L	0.002		<=2	<0.0020
Inorganics					
Chlorine, total	mg/L	0.05			<0.050
Microbiological Tests					
Coliforms, Escherichia coli [E. coli]	CFU/100mL	100			<100
Nonylphenols					
Nonylphenol diethoxylates [NP2EO]	µg/L	0.1			<0.10
Nonylphenol ethoxylates, total	µg/L	2		<=200	<2.0
Nonylphenol monoethoxylates [NP1EO]	µg/L	2			<2.0
Nonylphenols [NP]	µg/L	1		<=20	<1.0
Phenolics Surrogates					
Tribromophenol, 2,4,6-	µg/L				0.90
Phthalate Esters					
bis(2-Ethylhexyl) phthalate [DEHP]	µg/L	2		<=12	<2.0
Di-n-butyl phthalate	µg/L	1		<=80	<1.0
Physical Tests					
pH	pH units		>=5.5	<=10	7.67
Solids, total suspended [TSS]	mg/L			<=350	54200
Polychlorinated Biphenyls					
Aroclor 1016	µg/L	0.02			<0.020
Aroclor 1221	µg/L	0.02			<0.020
Aroclor 1232	µg/L	0.02			<0.020
Aroclor 1242	µg/L	0.02			<0.020
Aroclor 1248	µg/L	0.02			<0.020
Aroclor 1254	µg/L	0.02			<0.020
Aroclor 1260	µg/L	0.02			<0.020
Aroclor 1262	µg/L	0.02			<0.020
Aroclor 1268	µg/L	0.02			<0.020
Polychlorinated biphenyls [PCBs], total	µg/L	0.06		<=1	<0.060
Polychlorinated Biphenyls Surrogates					
Decachlorobiphenyl	µg/L				0.2
Tetrachloro-m-xylene	µg/L				0.2
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	µg/L	0.01			<0.010
Acenaphthylene	µg/L	0.01			<0.010
Anthracene	µg/L	0.01			<0.010
Benz(a)anthracene	µg/L	0.01			<0.010
Benzo(a)pyrene	µg/L	0.005			<0.0050
Benzo(b+j)fluoranthene	µg/L	0.01			<0.010
Benzo[g,h,i]perylene	µg/L	0.01			<0.010
Benzo(k)fluoranthene	µg/L	0.01			<0.010
Chrysene	µg/L	0.01			<0.010
Dibenz(a,h)anthracene	µg/L	0.005			<0.0050
Fluoranthene	µg/L	0.01			<0.010
Fluorene	µg/L	0.01			<0.010
Indeno(1,2,3-c,d)pyrene	µg/L	0.01			<0.010
Methylnaphthalene, 1-	µg/L				0.023
Methylnaphthalene, 2-	µg/L				0.033
Naphthalene	µg/L				0.096
PAHs, total (CCME sewer 18)	µg/L				0.224
Phenanthrene	µg/L				0.072
Pyrene	µg/L	0.01			<0.010
Polycyclic Aromatic Hydrocarbons Surrogates					
Chrysene-d12	µg/L				1.0
Naphthalene-d8	µg/L				1.0
Phenanthrene-d10	µg/L				1.0
Semi-Volatile Organics Surrogates					
Fluorobiphenyl, 2-	µg/L	1			<1.0
Terphenyl-d14, p-	µg/L	1			<1.0
Speciated Metals					
Chromium, hexavalent [Cr VI], total	mg/L	0.0005			<0.00050
Total Metals					
Aluminum, total	mg/L			<=50	191
Antimony, total	mg/L	0.001		<=5	<0.00100
Arsenic, total	mg/L			<=1	0.0788
Cadmium, total	mg/L			<=0.7	0.000634
Chromium, total	mg/L			<=5	0.333
Cobalt, total	mg/L			<=5	0.226
Copper, total	mg/L			<=3	0.411
Lead, total	mg/L			<=3	0.0838
Manganese, total	mg/L			<=5	12.6
Mercury, total	mg/L			<=0.01	0.0000291
Molybdenum, total	mg/L			<=5	0.00171
Nickel, total	mg/L			<=3	0.406
Selenium, total	mg/L			<=1	0.000761
Silver, total	mg/L			<=5	0.00181
Tin, total	mg/L			<=5	0.00416
Titanium, total	mg/L			<=5	0.322
Zinc, total	mg/L			<=3	0.883
Volatile Organic Compounds					
Benzene	µg/L	0.5		<=10	<0.50
Chloroform	µg/L			<=40	0.73
Dichlorobenzene, 1,2-	µg/L	0.5		<=50	<0.50
Dichlorobenzene, 1,4-	µg/L	0.5		<=80	<0.50
Dichloroethylene, cis-1,2-	µg/L	0.5		<=4000	<0.50
Dichloromethane	µg/L	5		<=2000	<5.0
Dichloropropylene, trans-1,3-	µg/L	0.3		<=140	<0.30
Ethylbenzene	µg/L	0.5		<=160	<0.50
Methyl ethyl ketone [MEK]	µg/L	20		<=8000	<20
Styrene	µg/L	0.5		<=200	<0.50
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		<=1400	<0.50
Tetrachloroethylene	µg/L	0.5		<=1000	<0.50
Toluene	µg/L	0.5		<=270	<0.50
Trichloroethylene	µg/L	0.5		<=400	<0.50
Xylene, m+p-	µg/L	0.4			<0.40
Xylene, o-	µg/L	0.3			<0.30
Xylenes, total	µg/L	0.5		<=1400	<0.50
Volatile Organic Compounds Surrogates					
Bromofluorobenzene, 4-	µg/L				9.6
Difluorobenzene, 1,4-	µg/L				10.1

Evaluations	
Pending	Pending
No Spec	No Spec
Within Limit	Within Limit
Within Warning Limit	Within Warning Limit
Exceeds Limit	Exceeds Limit
Result LOR > Limit	Result LOR > Limit
Result LOR < Limit	Result LOR < Limit

3. DISCUSSION & RECOMMENDATIONS

3.1 Design Parameters

1. The proposed development concept plans for the project, prepared by Kirkor Architects and Planners, and presented in Appendix "A," indicate that the proposed redevelopment of the subject site will consist of:
   - the construction of a new, twelve (12) storey, multi-residential building (Building A), which will occupy the southern (nominal) portion of the site along Dundas Street.
   - the construction of three separate three-storey buildings (Building B, C and D) with a total of 20 conventional townhouses, which will occupy the northern (nominal) portion of the site.
   - the construction of hard and soft landscaping, a driveway, and access road network.

2. The proposed Building Section B presented in Appendix "A," also indicates that the Level 01-Upper and Level-01 Lower of the proposed building are to be set at Elevations 124.15±m and 123.45±m, respectively.

3. The proposed Building Section B, presented in Appendix "A," also indicate that all proposed buildings at the subject site, will be constructed over two (2) underground parking levels with the lowest level is to be set at 6.45±m below the proposed Level 01-Lower (i.e., elevation of the lowest basement: 117.0±m)

3.2 Estimation of Groundwater Pumping Flow Rates

1. The boreholes conducted in our subsurface investigation on the site, as described above, indicated the presence of upper fill materials, underlain below elevation 124.9 masl to 122.1 masl by natural, sand soils.

2. The observed water levels vary from a low of 117.99 masl at MW5 on August 8, 2022, to a high level of 123.56 masl at MW8 on June 22, 2022. The measured water levels indicate a groundwater flow direction from north to south and slightly east to west across the area of the site. The overall average of the average levels measured in the monitoring wells is at elevation 120.44 masl, and average of high-water levels is at elevation 120.75 masl, a variance of 0.31m from average to high water level. For the purpose of this report, the average of highest water levels measured at each monitoring well location to date was used for the calculations.

3. The hydraulic conductivity of the sand stratum is hydraulic conductivity of the silt and sand till stratum of 2.81×10^{-6} m/s in MW3 based on the slug test in section 2.4.

4. For the purpose of this report, it is assumed that the groundwater is to be drawn down to 0.3m below the underside of base of footing (elevation 116.4 masl) during the construction phase, and to 0.3m below the underground floor slab (elevation 116.7 masl) in the post-construction period.

5. The potential dewatering needs for the required excavation are estimated using methodology outlined in *Construction Dewatering and Groundwater Control, New Methods and Applications, Third Edition*; J. Patrick Powers et al, 2007. Dewatering needs are estimated for three scenarios as follows: average conditions as measured (average construction flow), potential short-term high-water table conditions (peak construction flow) and long-term maintenance flows.

6. The dewatering requirements are estimated using the formula for radial flow into a well (Powers, equation 6.3) of equivalent radius of a circular system with the same perimeter. The formula requires estimates for the following:

   a = excavation length, m
   b = excavation width, m
   K = hydraulic conductivity, m/min
   H = initial saturated aquifer thickness, m
   h = saturated aquifer thickness after desired drawdown is achieved, m
   R = radius of influence
   r = well radius

7. For the purposes of the construction dewatering assessment the excavation is assumed to extend to the interior face of temporary shoring along the perimeter of the site. For the long-term dewatering needs, the footprint area of the underground levels is used. The average lengths, a = 110.0m, and average width, b = 90.0m, of the proposed excavation were determined above.

8. An average lowest floor elevation of 117.00 masl and average elevation for underside of footing of 115.5 masl are assumed, as per recommendations of the geotechnical investigation report for the project.

9. It is assumed that the excavation will occur within an unconfined aquifer, assumed to be homogeneous and extend in all directions. The hydraulic conductivity of the aquifer is estimated to be 2.81×10^{-4} cm/s = 2.81×10^{-6} m/s.

10. The presence of wet seams within the sand soils presented an aquifer. For the purpose of our calculations, the base of aquifer is assumed to be at 0.5m below the assumed footing level, elevation 115.00 masl, during construction and 0.5m below the lower floor level, elevation 116.50masl, in the post-construction period.

11. In the absence of a full year of groundwater level measurements, and limits of water levels measurements to typically drier summer months, it is assumed for the purpose of this report, that a seasonally high groundwater level would be at 1.0m above observed levels.

12. The formula to calculate inflow is as follows (Powers, Table 6.1 – Metric Units):

$$Q = \frac{K (H^2 - h^2)}{5.31 \times 10^{-6} \ln(R/r)}$$

where:
   H = aquifer saturated thickness, m
   h = saturated thickness at excavation after dewatering, m
   R = effective radius of influence, m, = $R_0 + r$
   r = equivalent well radius, m, = $(a + b) / \Pi$
   R_0 = radius of influence of the excavation
   $R_0 = 3000 (H - h) \sqrt{K}$ where R_0, H, h in ft, K in m/s

13. On the above basis, the estimated flows of water during construction period and in the long term are presented in Table No. 5, below.

Table No. 5
Estimated Flows During Construction and Long-Term Periods

Factors/Result	Average Construction Drawdown	Peak Construction Drawdown	Average Long term Drawdown	Peak Long term Drawdown
K (m/sec)	2.81E-06	2.81E-06	2.81E-06	2.81E-06
a Ex. Length (m)	111.2	111.2	110	110
b Ex. Width (m)	91.2	91.2	90	90
Floor Elevation masl	117	117	117	117
Underside of Footing Elevation, masl	115.5	115.5	115.5	115.5
Water Table El. (m)	120.75	121.75	120.75	121.75
Base of Aquifer El. (m)	115	115	116.5	116.5
H Init Aq. Thickness (m)	5.75	6.75	4.25	5.25
Drawdown El (masl)	115.2	115.2	116.7	116.7
h Drawdown Aq. Thickness (m)	0.2	0.2	0.2	0.2
R_0 Radius of Influence (m)	27.9	32.9	20.4	25.4
r Equivalent Well Radius (m)	64.4	64.4	63.7	63.7
R effective radius of influence (m)	92.3	97.4	84.0	89.1
Q (m^3/sec)	8.10E-04	9.73E-04	5.73E-04	7.24E-04
Q (L/min)	48.60	58.39	34.39	43.43
Q (L/day)	69,980	84,080	49,523	62,533
Factor of Safety	1.5	1.5	1.5	1.5
Q - Conservative (L/min)	72.90	87.58	51.59	65.14
Q - Conservative (L/day)	104,969	126,120	74,284	93,799

14. A discharge flow rate for groundwater of 48.60 L/min (69,980 L/day) is estimated during the construction period. A discharge flow rate of 34.39 L/min (49,523 L/day) is estimated during the long-term (post-construction) period.

15. With assumption of peak water levels at 1.0m higher than observed highest water levels, peak flow rates of groundwater of 58.39 L/min (84,080 L/day) and 43.43 L/min (62,533 L/day) are estimated for the during-construction and post–construction periods, respectively.

16. For design purposes, it is recommended that a factor of safety of 1.5 be applied to the above noted discharge flow rates. This results in a total design discharge flow rates of groundwater of 72.90 L/min (104,969 L/day) during the construction period, and 51.59 L/min (74,284 L/day) during the long-term (post-construction) period.

17. For design purposes, it is recommended that a factor of safety of 1.5 be applied to the above noted peak discharge flow rates, which were determined with assumption of peak water levels at 0.5m higher than observed highest water levels. This results in total design discharge flow rates of groundwater of 87.58 L/min (126,120 L/day) and 65.12 L/min (93,799 L/day) during construction period, and during the long-term (post construction) period, in peak conditions, respectively.

18. The above-noted flow rates during the construction periods have not included an allowance for discharge of surface water which may accumulate in the excavations during the construction period. For purpose of estimating surface water discharge, it is assumed that a 2-year design storm (rainfall of 52.1mm over 2 hours) on the excavation area of 10,141m^2, would result in an accumulation of 528.0m^3 (528000 litres) of water in the excavation. It is also assumed that this accumulated surface water will be pumped out over a period of 2 days, resulting in an average discharge rate of surface water of 264000 L/day (11000L/hour, 183L/min).

19. The calculations of flow rates of discharge of groundwater from the site, during construction and post-construction conditions, indicate flow rates of more than 50000 litres per day. On this basis a permit to take water (PTTW) from the Ministry of the Environment, Conservation and Parks (MECP) will be required during the construction period, unless measures are conducted to minimize the flow volumes.

20. In light of the high groundwater levels, and anticipated flow volumes for dewatering, the construction of a perimeter continuous caisson wall, socketed into the bedrock below the site is recommended to minimize flow of groundwater from upper soils beyond the perimeter of the excavation during construction. The construction of a structural mat foundation with waterproofing of underground perimeter walls has been recommended in the geotechnical investigation report for the project, in order to resist hydrostatic uplift pressures and to eliminate the need for groundwater discharge to sewers in the post-period.

3.3 Groundwater Quality for Disposal into Municipal Sewers

1. The results of analysis of the sample from well MW8 indicate that the measured concentrations of the following parameters exceed the City of Mississauga Sewer Use Bylaw criteria for discharge into the storm sewer: Total Suspended Solids (measured 1040mg/L, criteria 15mg/L), Manganese (measured 0.658mg/L, criteria 0.05mg/L), Phosphorus (measured 0.988mg/L, criteria 0.4mg/L), Trichloroethylene (measured 237ug/L, criteria 4.4ug/L).

2. The results of analysis of the sample from well MW3 indicate that the measured concentrations of the following parameters exceed the regional Municipality f Peel Sewer Use Bylaw criteria for discharge into the into sanitary sewer: Total Suspended Solids (measured 1040mg/L, criteria 150mg/L).

3. On the basis of this test alone, groundwater cannot be discharged into the municipal sanitary and storm sewers as per the City of Toronto Sewer Use Bylaw.

4. Alternatively, the owner has the option to remove water from site by truck haulage during construction period.

4. REPORT LIMITATIONS

1. The information provided and recommendations made in this report, in terms of the thicknesses, depth and type of subsoil encountered, groundwater levels, etc., are only applicable to the actual locations explored. Subsurface and groundwater conditions between and beyond the borehole locations may differ from those encountered at the borehole locations, and such conditions may become apparent during construction, which could not be detected or anticipated at the time of writing of this report. Should additional information become apparent upon excavation or construction, or further investigation, our office should be contacted so that the situation may be reassessed, and alternative recommendations made, if deemed necessary. It is recommended practice that the Geotechnical Engineer be retained during the construction to confirm that the subsurface conditions across the site do not deviate materially from those encountered in the boreholes.

2. The design recommendations given in this report are applicable only to the project described in the text, and then only if constructed substantially in accordance with the details stated in this report. Should plans for the project change, most notably if much lower underground levels approaching the observed groundwater levels are anticipated, it will be necessary for Haddad Geotechnical Inc. to re-evaluate the findings of this investigation in light of the revised plans.

3. The comments made in this report relating to potential construction problems and possible methods of construction are intended only for the guidance of the designer. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. The report has been prepared in accordance with normally accepted geotechnical engineering practices. No other warranty is expressed or implied.

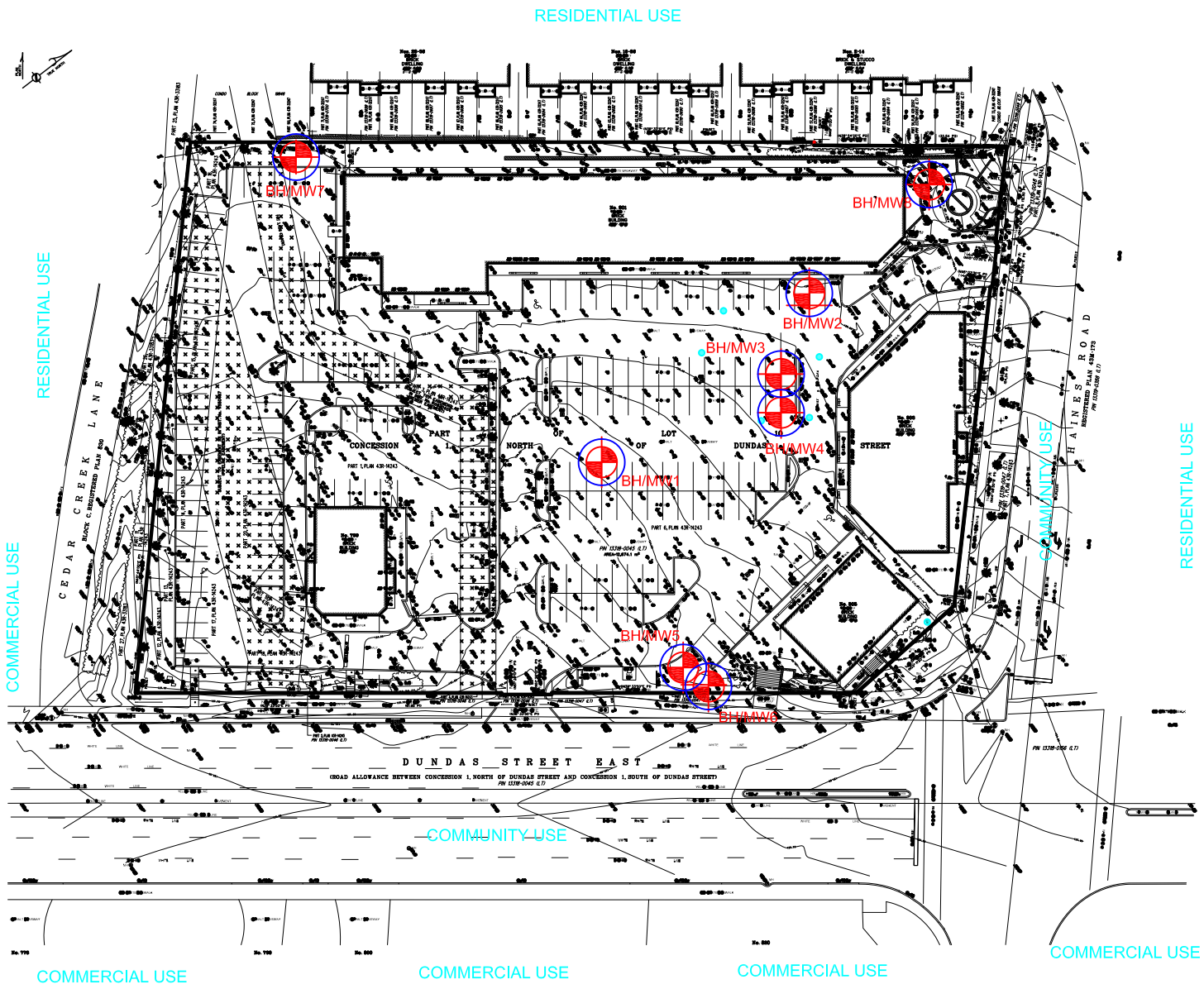
4. The information provided and recommendations presented in this report reflect the best judgment of Haddad Geotechnical Inc. in light of the information available to it at the time of preparation. Any use which a third party makes of this report or any reliance on or decisions to be based on it are the responsibility of that third party. Haddad Geotechnical Inc. 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 trust that the information presented in this report satisfies your present requirements. Should you require further information, please contact our office.

Yours very truly,
HADDAD GEOTECHNICAL INC.

D. Graham Fisher, M.E.Sc., P. Eng.

Encs.
Dist:
KJC Properties Inc - 1 pdf
File:2216145.805 Dundas Street East.hydrog.June 2023



APPROXIMATE LOCATION OF BOREHOLES

APPROXIMATE LOCATION OF MONITORING WELLS

SCALE
0 10 20 30 40m

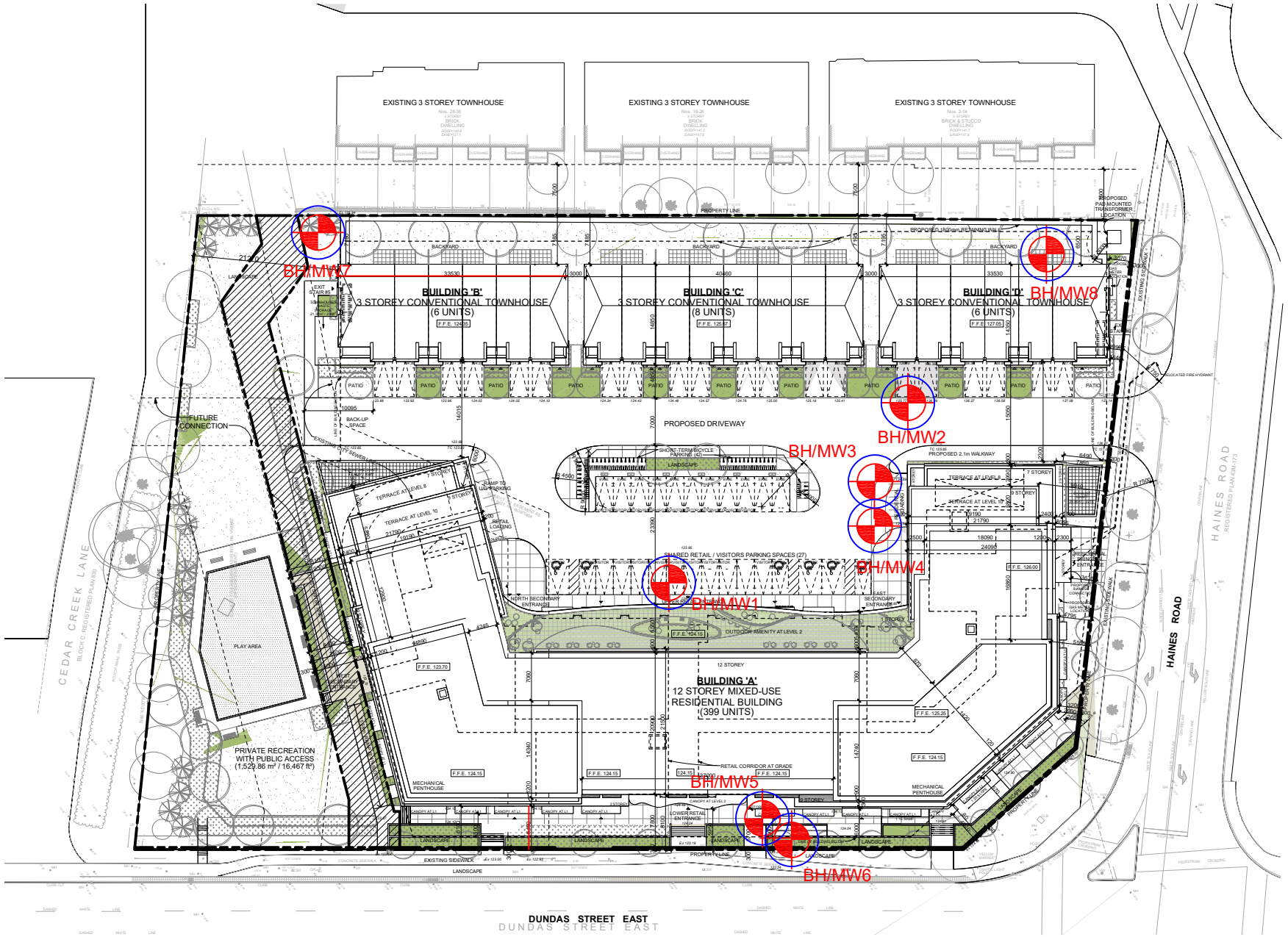
HADDAD GEOTECHNICAL INC.
151 Amber Street, Unit 17
Markham, Ontario, Canada, L3R 3B3
905-475-0951, fax: 905-475-8338
info@haddadgeo.com

799,801,803 & 805 DUNDAS STREET EAST, MISSISSAUGA

SITE PLAN SHOWING APPROXIMATE LOCATIONS OF BOREHOLES & MONITORING WELLS

SCALE AS NOTED
DRAWN BY: GF

PROJECT:22-16145
DRAWING No. 1
DATE: JULY 25, 2022



APPROXIMATE LOCATION OF BOREHOLES

APPROXIMATE LOCATION OF MONITORING WELLS

SCALE
0 10 20 30 40m

HADDAD GEOTECHNICAL INC.
151 Amber Street, Unit 17
Markham, Ontario, Canada, L3R 3B3
905-475-0951, fax: 905-475-8338
info@haddadgeo.com

799,801,803 & 805 DUNDAS STREET EAST, MISSISSAUGA

PROPOSED SITE PLAN SHOWING APPROXIMATE LOCATION OF BOREHOLES AND SLOPE SECTIONS

SCALE: AS INDICATED
PREPARED BY: DK

PROJECT: 22-16145
DRAWING No. 2
DATE: NOVEMBER 2, 2022

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 1 and Monitoring Well No. 1

Project No. 22-16145
Drawing No. 3

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 124.6±m, see Note 1

Start Date: July 14, 2022 | End Date: July 14, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m
GROUND SURFACE OF BOREHOLE NO. 1	124.6	0.0
ASPHALT - 100±mm GRANULAR MATERIALS - 100±mm FILL MATERIALS - loose to compact sand, trace gravels, trace silt, brown, moist		1.0
	122.3	2.0
SILTY SAND - trace gravels, trace clay, medium dense, layering, brown, moist bentonite backfill: 0.0m - 13.5m		3.0
	120.8 (July 19, 2022)	4.0
	120.1	
SILTY SAND TILL - trace gravels, trace clay, very dense, occ. crushed rock at tip of spilt spoon, brown, moist	119.7 (July 27, 2022) (Aug 08, 2022)	5.0
		6.0
		7.0
	117.3	
WEATHERED SHALE - very dense, grey, moist		8.0
		9.0
		10.0
		11.0
		12.0
		13.0
CONTINUED ON DRAWING NO. 4	110.9	13.7

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

N Blows/300mm: 0, 20, 40, 60, 80, 100

Sample No.	N	Moisture Content %
SS0	31	6.0
SS1	8	13.7
SS2	14	9.7
SS3	18	8.2
SS4	23	12.6
SS5	50/3"	7.9
SS6	50/2"	2.0

RUN NUMBER	RUN LENGTH, m	RECOVERY, %	R.Q.D., %	CORE SIZE / CASING	JOINT SYSTEM	COMMENTS - ROCK QUALITY
1	0.76	93	14	NX		Very Poor
2	1.52	98	49	NX	some vertical near top	Poor
3	1.52	95	63	NX	vertical for bottom 45cm	Fair
4	1.52	100	89	NX		Good
5	1.52	100	88	NX		Good

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 1 and Monitoring Well No. 1

Project No. 22-16145
Drawing No. 4

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: XXX.XX±m, see Note 1

Start Date: July 14, 2022 | End Date: July 14, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Strength and Penetration Resistance (KPa) 0 50 100 150 200 250 / N Blows/300mm 0 20 40 60 80 100	Sample No.	N	Moisture Content %
CONTINUED FROM DRAWING NO. 3						
WEATHERED SHALE - very dense, grey, moist	110.9	13.7				
sand backfill: 13.5m - 16.8m		14.0				
screening interval: 13.8m - 16.8m		15.0				
		16.0				
END OF BOREHOLE	107.8	17.0				
		18.0				
		19.0				
		20.0				
		21.0				
		22.0				
		23.0				
		24.0				
		25.0				
		26.0				
		27.0				

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW1 installed on July 14, 2022 with flush mount covering.
   - 0 - 13.8m riser
   - 13.8 - 16.8m screen
   - 0.0 - 13.5m bentonite backfill
   - 13.5 - 16.8m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	3.83	(120.8)
July 27, 2022	4.91	(119.7)
August 08, 2022	4.95	(119.7)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 2 and Monitoring Well No. 2

Project No. 22-16145
Drawing No. 5

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 126.0±m, see Note 1

Start Date: July 13, 2022 | End Date: July 13, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 2	126.0	0.0			
ASPHALT - 100±mm GRANULAR MATERIALS - 100±mm FILL MATERIALS - compact sand, trace gravels, trace silt, brown, moist			SS0	26	6.7
		1.0	SS1	35	4.6
SAND - trace to some gravels, trace silt, dense to very dense, layering, brown, moist	124.5	2.0	SS2	43	3.5
			SS3	50	4.2
		3.0	SS4	48	4.3
		4.0			
	120.8 (July 19, 2022) (July 27, 2022) (Aug 08, 2022)	5.0	SS5	50/5"	5.9
		6.0	SS6	50/5"	7.0
		7.0			
WEATHERED SHALE - very dense, grey, moist	118.7	8.0			
		9.0			
		10.0			
		11.0			
		12.0			
END OF BOREHOLE	113.8	13.0			
		13.7			

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

N Blows/300mm: 0, 20, 40, 60, 80, 100

bentonite backfill: 0.0m - 8.9m

sand backfill: 8.9m - 12.2m

screening interval: 9.2m - 12.2m

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW2 installed on July 13, 2022 with flush mount covering.
   - 0 - 9.2m riser
   - 9.2 - 12.2m screen
   - 0.0 - 8.9m bentonite backfill
   - 8.9 - 12.2m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	5.20	(120.8)
July 27, 2022	5.16	(120.8)
August 08, 2022	5.22	(120.8)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 3 and Monitoring Well No. 3

Project No. 22-16145
Drawing No. 6

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 125.6±m, see Note 1

Start Date: July 13, 2022 | End Date: July 13, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 3	125.6	0.0			
ASPHALT - 100±mm GRANULAR MATERIALS - 100±mm FILL MATERIALS - compact sand, trace gravels, trace silt, brown, moist			SS0	26	5.7
		1.0	SS1	42	5.9
SAND - trace to some gravels, trace silt, dense to very dense, layering, brown, moist	124.1	2.0	SS2	44	5.5
			SS3	52	6.4
		3.0	SS4	44	5.5
		4.0			
		5.0	SS5	44	6.0
	119.8 (July 19, 2022) (July 27, 2022) 119.7 (Aug 08, 2022)	6.0	SS6	75	15.9
		7.0			
SILTY SAND TILL - trace gravels, trace clay, very dense, grey, moist	118.0		SS7	50/3"	9.6
WEATHERED SHALE - very dense, grey, moist	117.8	8.0			
bentonite backfill: 0.0m - 8.9m sand backfill: 8.9m - 12.2m screening interval: 9.2m - 12.2m		9.0			
		10.0			
		11.0			
		12.0			
END OF BOREHOLE	113.4	13.0			
		13.7			

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

N Blows/300mm: 0, 20, 40, 60, 80, 100

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW3 installed on July 13, 2022 with flush mount covering.
   - 0 - 9.2m riser
   - 9.2 - 12.2m screen
   - 0.0 - 8.9m bentonite backfill
   - 8.9 - 12.2m sand backfill
3. Water levels (depth (elevation), m)
   - July 19, 2022 — 5.80 (119.8)
   - July 27, 2022 — 5.84 (119.8)
   - August 08, 2022 — 5.86 (119.7)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 4 and Monitoring Well No. 4

Project No. 22-16145
Drawing No. 7

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 125.6±m, see Note 1

Start Date: July 12, 2022 | End Date: July 12, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Strength and Penetration Resistance (KPa) 0 50 100 150 200 250 / N Blows/300mm 0 20 40 60 80 100	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 4	125.6	0.0				
UNSAMPLED BOREHOLE						
bentonite backfill: 0.0m - 2.4m sand backfill: 2.4m - 5.8m screening interval: 2.7m - 5.8m						
(July 19, 2022) 120.8 (Aug 08, 2022) 119.9 (July 27, 2022) 119.8						
END OF BOREHOLE AUGER REFUSAL	119.8	5.8				
		13.7				

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW4 installed on July 12, 2022 with flush mount covering.
   - 0 - 2.7m riser
   - 2.7 - 5.8m screen
   - 0.0 - 2.4m bentonite backfill
   - 2.4 - 5.8m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	4.80	(120.8)
July 27, 2022	5.79	(119.8)
August 08, 2022	5.75	(119.9)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 5 and Monitoring Well No. 5

Project No. 22-16145
Drawing No. 8

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 129.6±m, see Note 1

Start Date: July 12, 2022 | End Date: July 12, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 5	124.4	0.0			
TOPSOIL - 100±mm FILL MATERIALS - compact silt and sand, trace gravels, crushed rock at tip of spoon, brown, moist			SS0	50/4"	3.4
		1.0	SS1	38	5.8
SAND - some gravels, trace silt, dense, layering, brown, moist	122.9	2.0	SS2	30	4.8
			SS3	36	4.7
		3.0	SS4	45	5.0
becomes very dense at and below 4.5±m depth below grade		4.0			
		5.0	SS5	55	24.3
	118.6 (July 19, 2022)				
SILTY SAND TILL - trace gravels, trace clay, very dense, grey, moist	118.3	6.0	SS6	50/3"	6.1
WEATHERED SHALE - very dense, grey, moist	118.1				
	118.0 (July 27, 2022) (Aug 08, 2022)	7.0			
		8.0			
bentonite backfill: 0.0m - 8.9m sand backfill: 8.9m - 12.2m screening interval: 9.2m - 12.2m		9.0			
		10.0			
		11.0			
		12.0			
END OF BOREHOLE	112.2	13.0			
		13.7			

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

N Blows/300mm: 0, 20, 40, 60, 80, 100

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW5 installed on July 12, 2022 with flush mount covering.
   - 0 - 9.2m riser
   - 9.2 - 12.2m screen
   - 0.0 - 8.9m bentonite backfill
   - 8.9 - 12.2m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	5.79	(118.6)
July 27, 2022	6.36	(118.0)
August 08, 2022	6.41	(118.0)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 6 and Monitoring Well No. 6

Project No. 22-16145
Drawing No. 9

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 124.4±m, see Note 1

Start Date: July 11, 2022 | End Date: July 11, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Strength and Penetration Resistance (KPa) 0 50 100 150 200 250 / N Blows/300mm 0 20 40 60 80 100	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 6	124.4	0.0				
UNSAMPLED BOREHOLE		1.0				
bentonite backfill: 0.0m - 2.4m		2.0				
sand backfill: 2.4m - 5.8m		3.0				
screening interval: 2.7m - 5.8m		4.0				
		5.0				
END OF BOREHOLE AUGER REFUSAL	118.6	6.0				
		7.0				
		8.0				
		9.0				
		10.0				
		11.0				
		12.0				
		13.0				
		13.7				

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.45±m, located east of 803 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW6 installed on July 12, 2022 with flush mount covering.
   - 0 - 2.7m riser
   - 2.7 - 5.8m screen
   - 0.0 - 2.4m bentonite backfill
   - 2.4 - 5.8m sand backfill
3. Water levels (depth (elevation), m)
   - July 19, 2022 - (dry)
   - July 27, 2022 - (dry)
   - August 08, 2022 - (dry)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 7 and Monitoring Well No. 7

Project No. 22-16145
Drawing No. 10

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

Hole Elevation & Datum: 125.8±m, see Note 1

Start Date: July 11, 2022 | End Date: July 11, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer

Description	Elev. ±m	Depth ±m	Sample No.	N	Moisture Content %
GROUND SURFACE OF BOREHOLE NO. 7	125.8	0.0			
ASPHALT - 100±mm GRANULAR MATERIALS - 250±mm FILL MATERIALS - compact sandy silt, trace gravels, brown, slight green colouring, moist			SS0	18	9.7
		1.0	SS1	15	10.6
SAND - some gravels, trace silt, dense, layering, brown, slight green colouring, moist	124.3	2.0	SS2	34	7.7
SILTY SAND TILL - some gravels, trace clay, medium dense to dense, slight green colouring, moist	123.5		SS3	33	12.2
		3.0	SS4	21	15.3
		4.0			
	120.9 (July 19, 2022)	5.0	SS5	44	8.8
WEATHERED SHALE - very dense, grey, moist	120.6 120.5 (July 27, 2022) 120.4 (Aug 08, 2022)				
		6.0	SS6	65	8.6
		7.0			
		8.0			
		9.0			
		10.0			
		11.0			
		12.0			
END OF BOREHOLE	113.6	13.0			
		13.7			

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

N Blows/300mm: 0, 20, 40, 60, 80, 100

bentonite backfill: 0.0m - 8.9m

sand backfill: 8.9m - 12.2m

screening interval: 9.2m - 12.2m

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 125.21±m, located southeast of 801 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW7 installed on July 11, 2022 with flush mount covering.
   - 0 - 9.2m riser
   - 9.2 - 12.2m screen
   - 0.0 - 8.9m bentonite backfill
   - 8.9 - 12.2m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	4.92	(120.9)
July 27, 2022	5.33	(120.5)
August 08, 2022	5.42	(120.4)

HADDAD GEOTECHNICAL INC.

Engineering Data Sheet For Borehole No. 8 and Monitoring Well No. 8

Project No. 22-16145
Drawing No. 11

Project: Proposed Residential Development

Location: 799-805 Dundas Street East, Mississauga

Hole Location: see Drawing No. 1

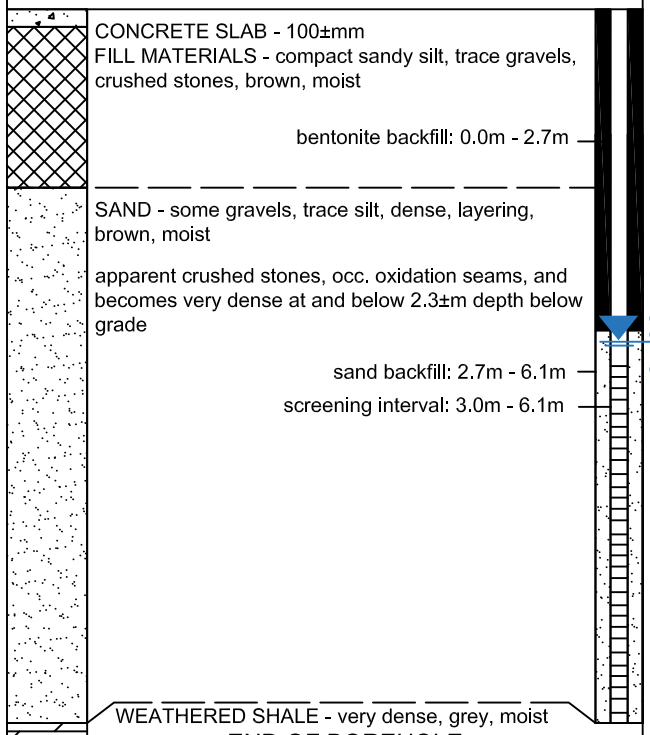
Hole Elevation & Datum: 126.4±m, see Note 1

Start Date: July 15, 2022 | End Date: July 15, 2022

Field Supervision: HR

LEGEND

- 51 mm dia Split Spoon Sample
- Auger Sample
- N - Standard Penetration Value
- Gradation Analysis Completed — M
- No Split Spoon Recovery — NR
- Water Level
- Pocket Penetrometer



Description	Elev. ±m	Depth ±m
GROUND SURFACE OF BOREHOLE NO. 8	126.4	0.0
CONCRETE SLAB - 100±mm		
FILL MATERIALS - compact sandy silt, trace gravels, crushed stones, brown, moist		
bentonite backfill: 0.0m - 2.7m		
	124.9	2.0
SAND - some gravels, trace silt, dense, layering, brown, moist		
apparent crushed stones, occ. oxidation seams, and becomes very dense at and below 2.3±m depth below grade		
	123.6 (July 19, 2022) (July 27, 2022) 123.5 (Aug 08, 2022)	3.0
sand backfill: 2.7m - 6.1m		
screening interval: 3.0m - 6.1m		
WEATHERED SHALE - very dense, grey, moist	120.3	6.0
END OF BOREHOLE	120.1	

Strength and Penetration Resistance (KPa): 0, 50, 100, 150, 200, 250

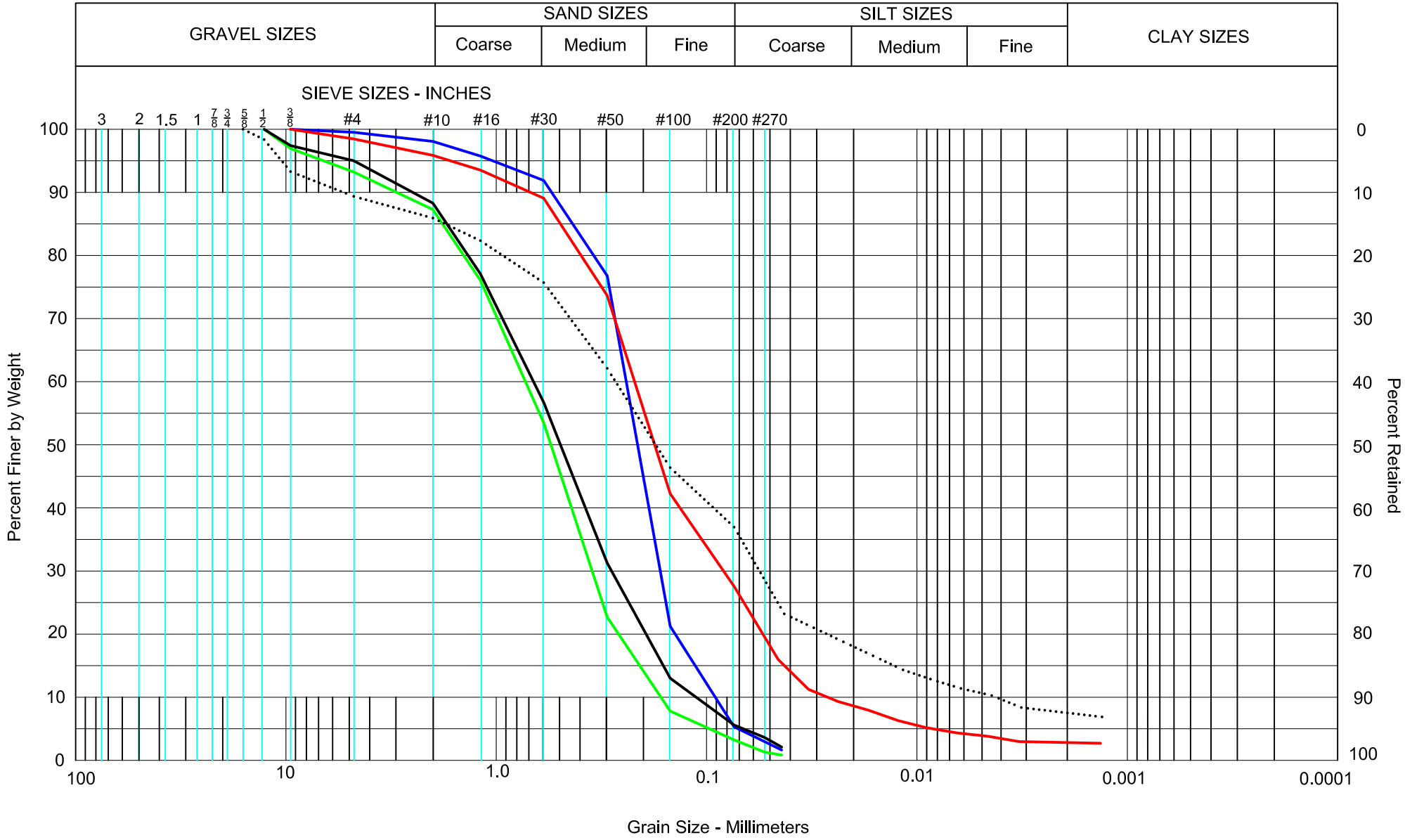
N Blows/300mm: 0, 20, 40, 60, 80, 100

Sample No.	N	Moisture Content %
SS0	14	9.0
SS1	67	4.9
SS2	27	6.0
SS3	50/4"	5.5
SS4	50/4"	3.6
SS5	50/4"	6.6
SS6	50/2"	6.6

NOTES:

1. Elevation datum, referenced to the existing catch basin, El. 126.36±m, located west of 801 Dundas Street East, as per the site survey plan provided by client.
2. Monitoring well MW8 installed on July 15, 2022 with flush mount covering.
   - 0 - 3.0m riser
   - 3.0 - 6.1m screen
   - 0.0 - 2.7m bentonite backfill
   - 2.7 - 6.1m sand backfill
3. Water levels (depth (elevation), m)

July 19, 2022	2.84	(123.6)
July 27, 2022	2.84	(123.6)
August 08, 2022	2.89	(123.5)



BH1 SS3 - (2.3±m to 2.8±m) (4% Gravels, 69% Sand, 24% Silt, 3% Clay)

BH2 SS3 - (2.3±m to 2.8±m) (2% Gravels, 93% Sand, 5% Silt)

BH3 SS5 - (4.5±m to 5.0±m) (13% Gravels, 84% Sand, 3% Silt)

BH5 SS3 - (2.3±m to 2.8±m) (12% Gravels, 82% Sand, 6% Silt)

BH7 SS4 - (3.0±m to 3.5±m) (14% Gravels, 49% Sand, 29% Silt, 8% Clay)

HADDAD GEOTECHNICAL INC.
151 Amber Street, Unit 17, 18
Markham, Ontario L3R 3B3
phone: 905-475-0951, fax: 905-475-8338
info@haddadgeo.com

799 - 805 DUNDAS STREET EAST, MISSISSAUGA

GRADATION ANALYSES A.S.T.M. D422
NATIVE SUBSOILS

SCALE: AS INDICATED
DRAWN BY: AT

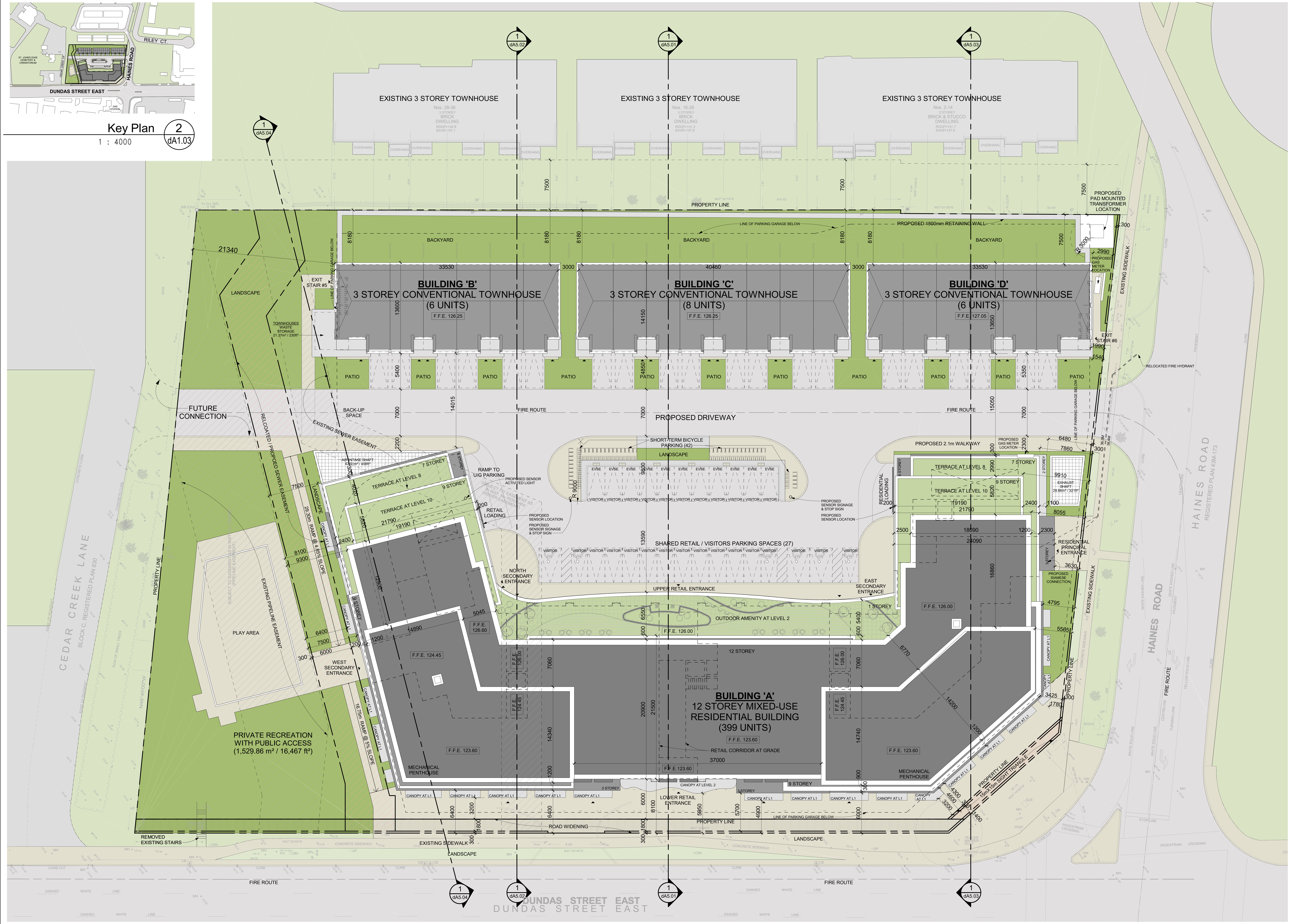
PROJECT: 22-16145
DRAWING No. 12
DATE: JULY 20, 2022

APPENDIX A

Architectural Plans Provided by Client

Kirkor Architects and Planners, Project: 21-115, June 2, 2023.

1. Drawing dA1.03. Site Plan
2. Drawing dA2.01. Parking Floor Plan – Level P2
3. Drawing dA2.02. Parking Level Plan – Level P1
4. Drawing A5.01 – Building Section A
5. Drawing A5.02 – Building Section B
6. Drawing A5.03 – Building Section C
7. Drawing A5.04 – Building Section D



Key Plan 2 dA1.03
1 : 4000

Site Plan 1 dA1.03
1 : 250

Authorities Having Jurisdiction

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS

20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:

No.:	Issued For:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022

Client:
KJC PROPERTIES INC.

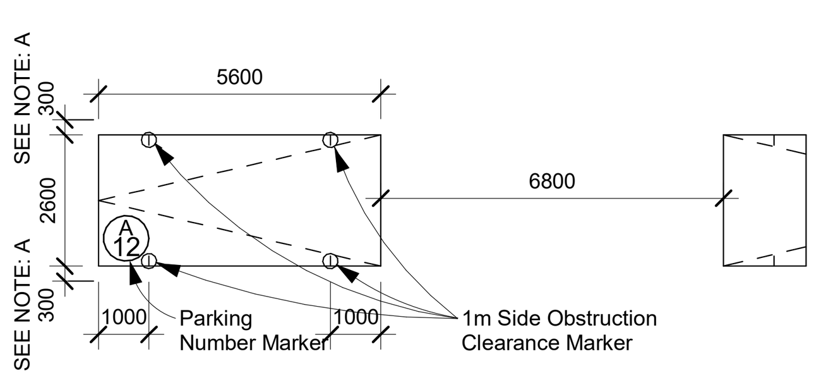
805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Site Plan

Scale: As indicated
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: JUNE 2, 2023
Drawing No.:

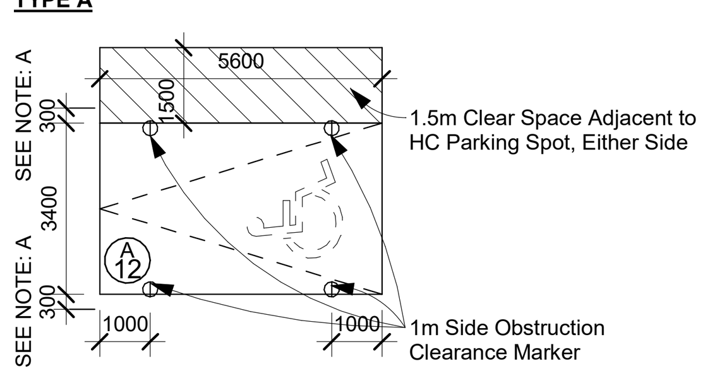
dA1.03

TYPICAL PARKING SPACE:
Drive Aisle @ 6.8m min.

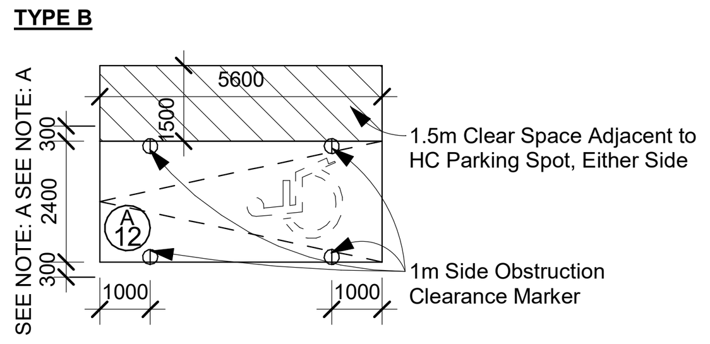


ACCESSIBLE PARKING SPACE:

TYPE A

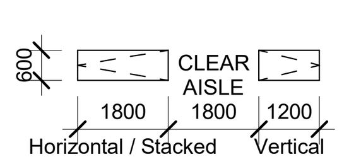


TYPE B

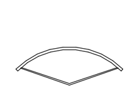


NOTE: A- PROVIDE AN ADDITIONAL 300mm FOR PARKING SPACE WIDTH WHEN OBSTRUCTIONS OCCUR BETWEEN THE FRONT AND REAR 1000mm

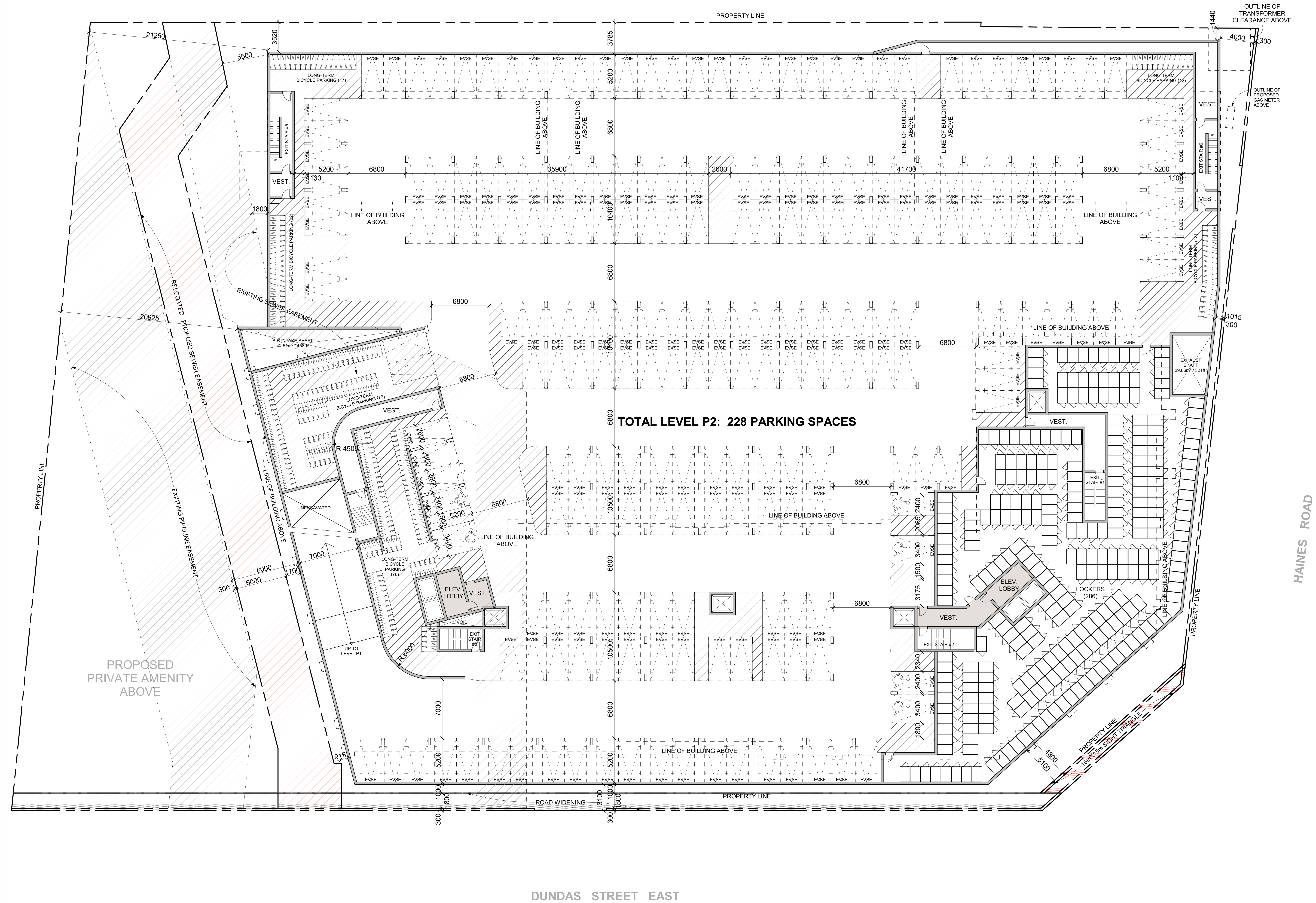
BICYCLE PARKING SPACE LEGEND



CONVEX MIRROR



Parking Space Legend 2 dA2.01
NTS



Floor Plan - Level P2 1 dA2.01
1 : 250

Authorities Having Jurisdiction

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS

20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:

No.:	Issued For:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022

Client:
KJC PROPERTIES INC.

805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Parking Floor Plan - Level P2

Scale: As indicated
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: MAY 31, 2023
Drawing No.:

dA2.01

Authorities Having Jurisdiction

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS
20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:

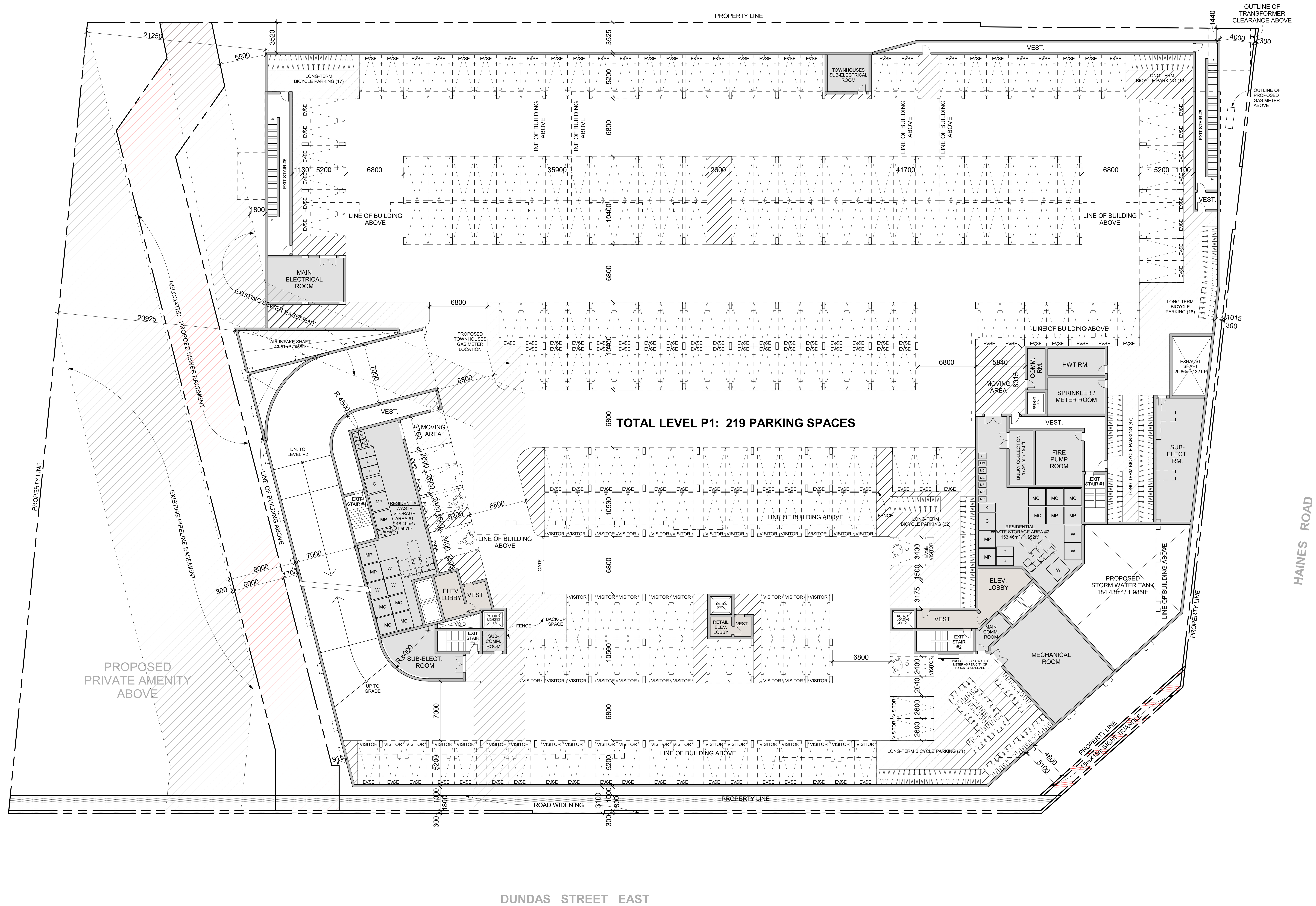
No.:	Issued For:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022

Client:
KJC PROPERTIES INC.

805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

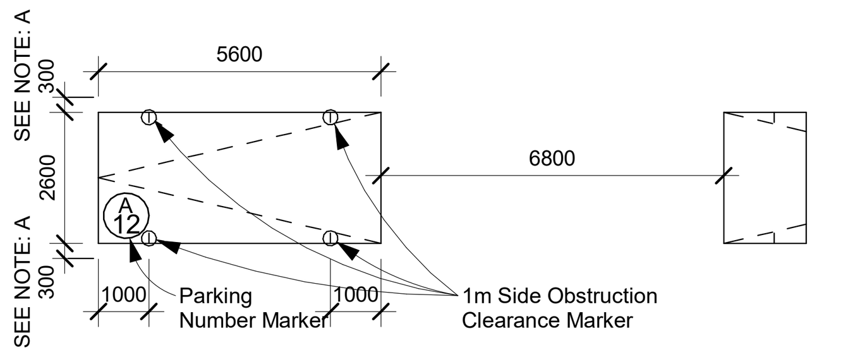
Drawing Title:
Parking Floor Plan - Level P1

Scale: As indicated
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: MAY 31, 2023
Drawing No.: **dA2.02**



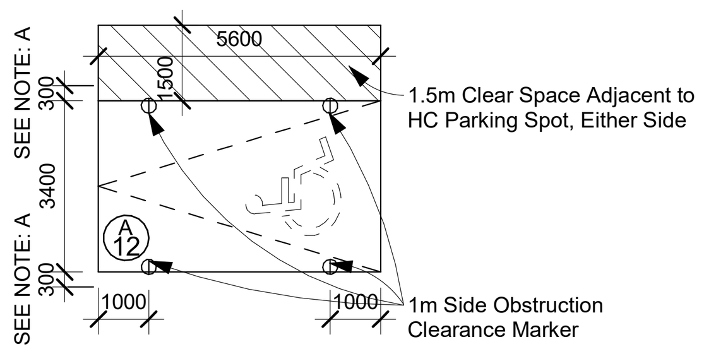
Floor Plan - Level P1 (1 / dA2.02)
1 : 250

TYPICAL PARKING SPACE:
Drive Aisle @ 6.8m min.

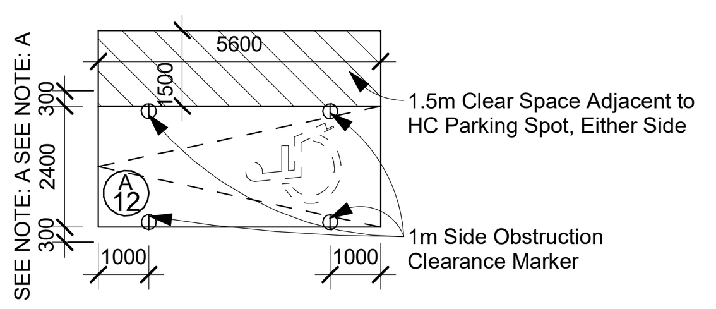


ACCESSIBLE PARKING SPACE:

TYPE A

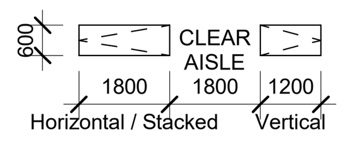


TYPE B

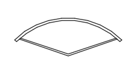


NOTE: A- PROVIDE AN ADDITIONAL 300mm FOR PARKING SPACE WIDTH WHEN OBSTRUCTIONS OCCUR BETWEEN THE FRONT AND REAR 1000mm

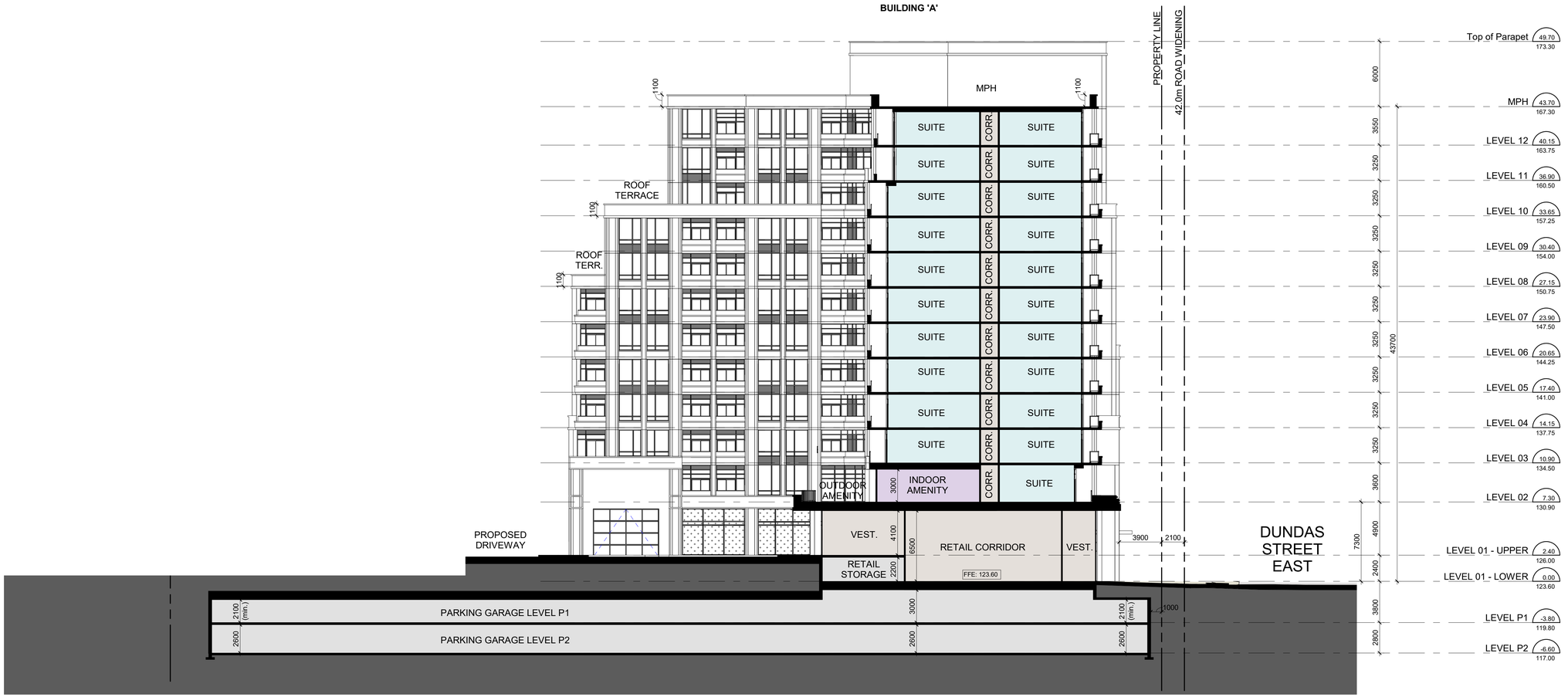
BICYCLE PARKING SPACE LEGEND



CONVEX MIRROR



Parking Space Legend (2 / dA2.02)
NTS



Building Section 'A'

1 : 200

1
dA5.01

Authorities Having Jurisdiction

JUNE 2, 2023

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS
20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022
No.:	Issued For:	Date:

Client:
KJC PROPERTIES INC.

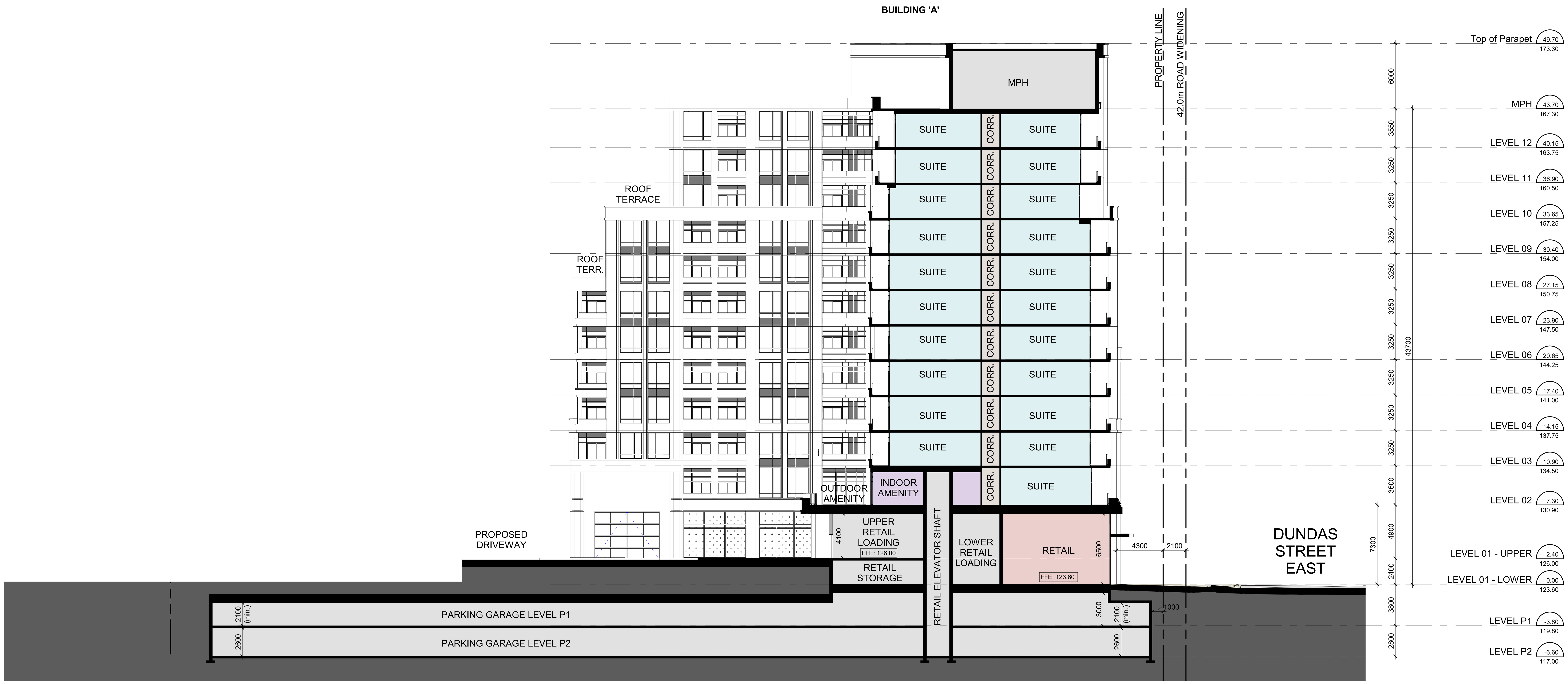
805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Building Section 'A'

Scale: 1 : 200
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: JUNE 2, 2023
Drawing No.:

dA5.01

Plot Date: 6/2/2023 9:30:34 AM File Path: C:\Revit\2021\21115\P1_805 Dundas Street East_R21_gh@kirkorarchitects.com.rvt



Building Section 'B'
1 : 200
1
dA5.02

Authorities Having Jurisdiction

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and detailed below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS
20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:

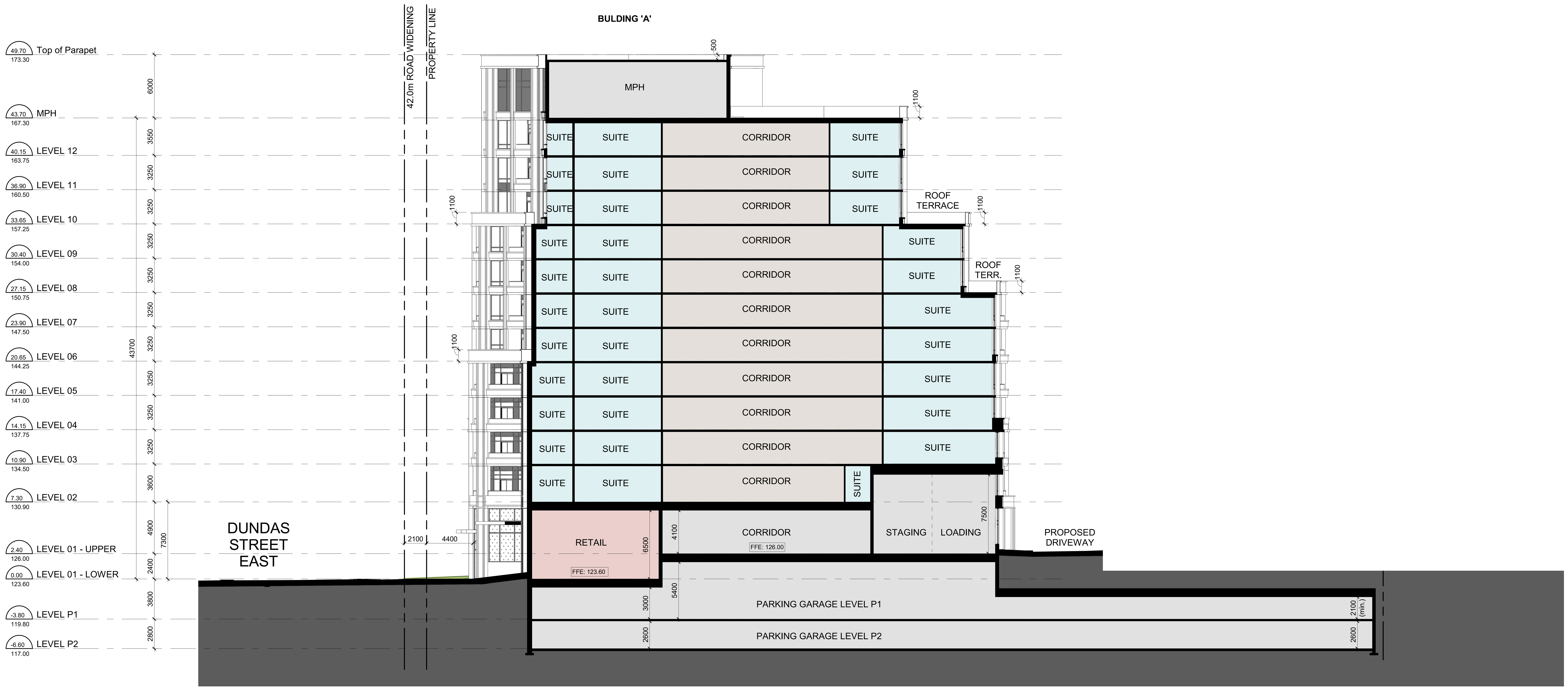
No.:	Issued For:	Date:

Client:
KJC PROPERTIES INC.

805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Building Section 'B'

Scale: 1 : 200
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: JUNE 2, 2023
Drawing No.:
dA5.02



Building Section 'C' 1 dA5.03
1 : 200

Authorities Having Jurisdiction

JUNE 2, 2023

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS
20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:

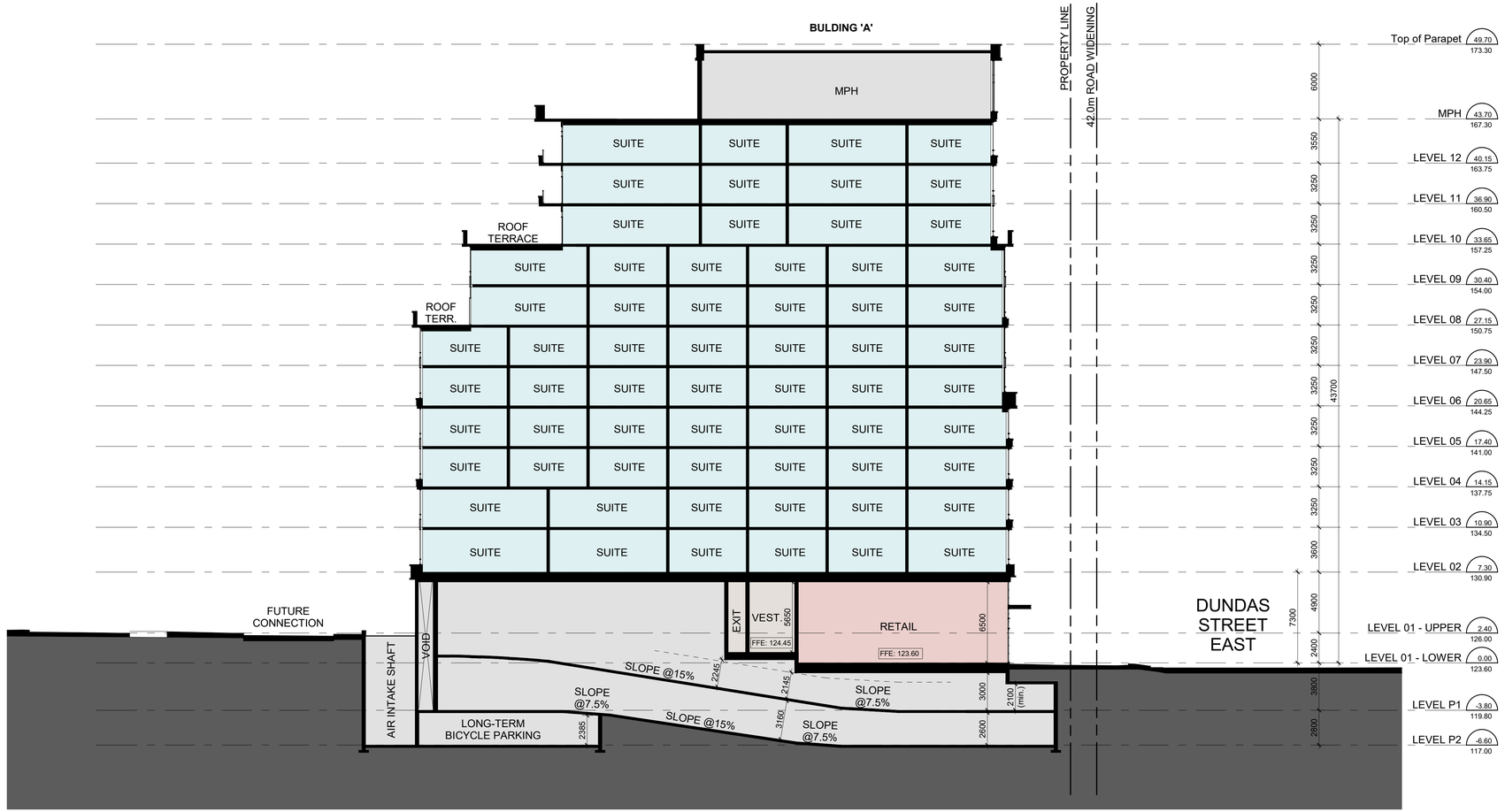
No.:	Issued For:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022

Client:
KJC PROPERTIES INC.

805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Building Section 'C'

Scale: 1 : 200
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: JUNE 2, 2023
Drawing No.:
dA5.03



Building Section 'D'
1 : 200

1
dA5.04

Authorities Having Jurisdiction

All Drawings, Specifications, and Related Documents are the Copyright of the Architect. The Architect retains all rights to control all uses of these documents for the intended issuance/use as identified below. Reproduction of these Documents, without permission from the Architect, is strictly prohibited. The Authorities Having Jurisdiction are permitted to use, distribute, and reproduce these drawings for the intended issuance as noted and dated below, however the extended permission to the Authorities Having Jurisdiction in no way debases or limits the Copyright of the Architect, or control of use of these documents by the Architect.

Do not scale the drawings.

This Drawing Is Not To Be Used For Construction Until Signed ByThe Architect.

Date:

KIRKOR
ARCHITECTS AND PLANNERS
20 De Boers Drive Suite 400
Toronto, ON M3J 0H1

Revisions:

No.:	Revision:	Date:
2	Rezoning Re-submission	xx, 2023
1	Rezoning Submission	Oct. 31, 2022

Issued For: Date:

Client:
KJC PROPERTIES INC.

805 Dundas Street East, Mississauga, ON.
Proposed Residential Development

Drawing Title:
Building Section 'D'

Scale: 1 : 200
Drawn by: G.H.
Checked by: D.S.
Project No.: 21-115
Date: JUNE 2, 2023
Drawing No.:
dA5.04

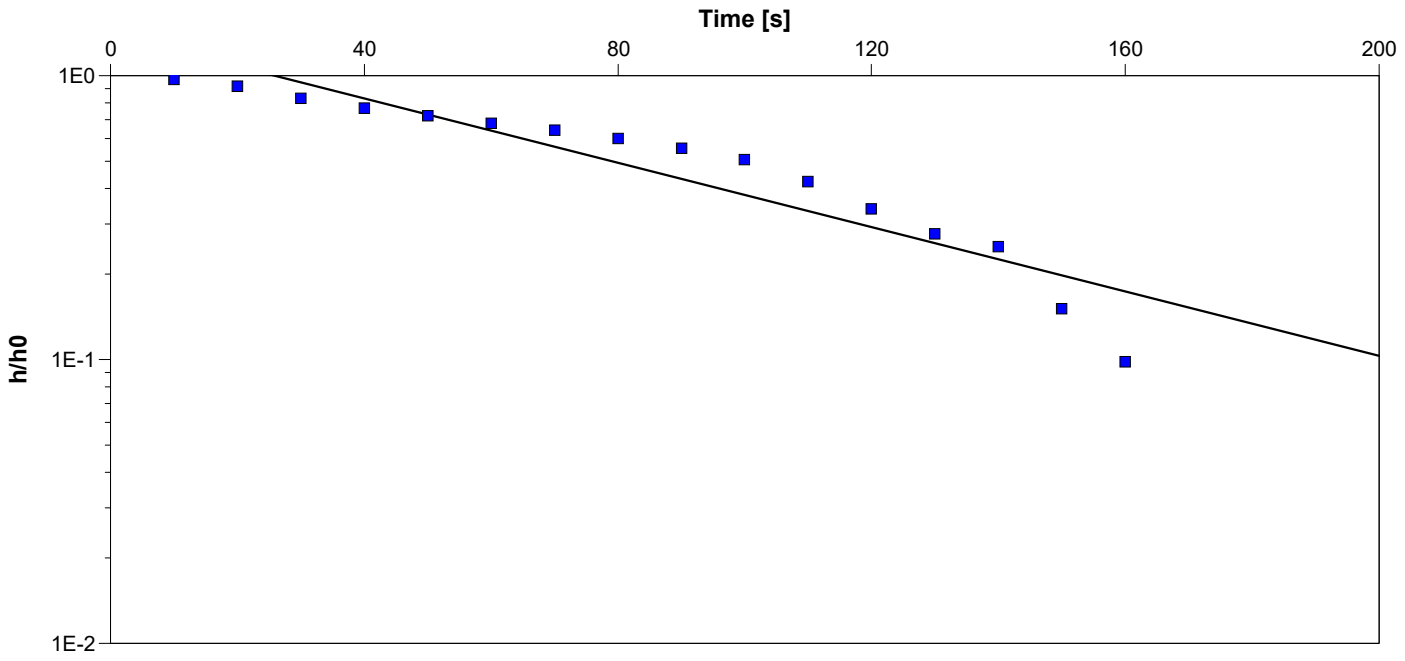
Plot Date: 6/2/2023 9:30:48 AM File Path: C:\Revit\2021\21115P1_805 Dundas Street East_R2021_gh@kirkorarchitects.com.rvt

APPENDIX B

Slug Test Results from MW3

HADDAD GEOTECHNICAL INC. Telephone: 905.475.0951 www.haddadgeo.com **Haddad Geotechnical Inc.** **151 Amber Street, Unit 17** **Markham, Ontario, L3R 3B3**	**Slug Test Analysis Report**	Appendix B
	Project: 805 Dundas St East	
	Number: 16145	
	Client:	

Location: Mississauga	Slug Test: Slug Test 1	Test Well: Well 1
Test Conducted by: RV		Test Date: 2022-10-13
Analysis Performed by: RV	MW3	Analysis Date: 2022-10-13
Aquifer Thickness: 6.34 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
Well 1	2.81×10^{-6}	

Appendix "C"
Certificates of Chemical Analysis

1. ALS Environmental, Workorder No. **WT2313579**, May 30, 2023, analysis of groundwater sampled from well MW8, May 18, 2023, for parameters in City of Mississauga and Regional Municipality of Peel Sewer Use Bylaws

CERTIFICATE OF ANALYSIS

Work Order	: **WT2313579**	Page	: 1 of 6
Client	: **Haddad Geotechnical Inc.**	Laboratory	: Waterloo - Environmental
Contact	: Rico Van	Account Manager	: Emily Hansen
Address	: 151 Amber Street Markham ON Canada L3R 3J7	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 905 475 0951 x 230	Telephone	: +1 519 886 6910
Project	: ----	Date Samples Received	: 18-May-2023 14:36
PO	: ----	Date Analysis Commenced	: 19-May-2023
C-O-C number	: 20-1046318	Issue Date	: 30-May-2023 20:11
Sampler	: Client		
Site	: ----		
Quote number	: Standing Offer 2022		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Kaitlyn Lammers	Lab Assistant	Microbiology, Waterloo, Ontario
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
BODL	*Limit of Reporting for BOD was increased to account for the largest volume of sample tested.*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLHC	*Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
OWP	*Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.*
PEHR	*Parameter exceeded recommended holding time on receipt: Proceeded with analysis as requested.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: MW8	----	----	----	----
					Client sampling date / time: 18-May-2023 14:00	----	----	----	----
					WT2313579-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
pH	----	E108/WT	0.10	pH units	7.67	----	----	----	----
Solids, total suspended [TSS]	----	E160/WT	3.0	mg/L	14200 DLHC	----	----	----	----
Anions and Nutrients									
Fluoride	16984-48-8	E235.F/WT	0.020	mg/L	<0.100 DLDS	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/WT	0.050	mg/L	4.56 DLM	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/WT	0.0020	mg/L	6.10 DLM	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/WT	0.30	mg/L	225 DLDS	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0020	mg/L	<0.0020	----	----	----	----
Inorganics									
Chlorine, total	7782-50-5	E326/WT	0.050	mg/L	<0.050 PEHR	----	----	----	----
Microbiological Tests									
Coliforms, Escherichia coli [E. coli]	----	E012A.EC/WT	1	CFU/100mL	Not Detected DLM	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/WT	0.0030	mg/L	191 DLHC	----	----	----	----
Antimony, total	7440-36-0	E420/WT	0.00010	mg/L	<0.00100 DLHC	----	----	----	----
Arsenic, total	7440-38-2	E420/WT	0.00010	mg/L	0.0788 DLHC	----	----	----	----
Cadmium, total	7440-43-9	E420/WT	0.0000050	mg/L	0.000634 DLHC	----	----	----	----
Chromium, total	7440-47-3	E420/WT	0.00050	mg/L	0.333 DLHC	----	----	----	----
Cobalt, total	7440-48-4	E420/WT	0.00010	mg/L	0.226 DLHC	----	----	----	----
Copper, total	7440-50-8	E420/WT	0.00050	mg/L	0.411 DLHC	----	----	----	----
Lead, total	7439-92-1	E420/WT	0.000050	mg/L	0.0838 DLHC	----	----	----	----
Manganese, total	7439-96-5	E420/WT	0.00010	mg/L	12.6 DLHC	----	----	----	----
Mercury, total	7439-97-6	E508/WT	0.0000050	mg/L	0.0000291	----	----	----	----
Molybdenum, total	7439-98-7	E420/WT	0.000050	mg/L	0.00171 DLHC	----	----	----	----
Nickel, total	7440-02-0	E420/WT	0.00050	mg/L	0.406 DLHC	----	----	----	----
Selenium, total	7782-49-2	E420/WT	0.000050	mg/L	0.000761 DLHC	----	----	----	----
Silver, total	7440-22-4	E420/WT	0.000010	mg/L	0.00181 DLHC	----	----	----	----
Tin, total	7440-31-5	E420/WT	0.00010	mg/L	0.00416 DLHC	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW8	----	----	----	----
					Client sampling date / time	18-May-2023 14:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		WT2313579-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
Titanium, total	7440-32-6	E420/WT	0.00030	mg/L		0.322 DLHC	----	----	----	----
Zinc, total	7440-66-6	E420/WT	0.0030	mg/L		0.883 DLHC	----	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	0.00050	mg/L		<0.00050	----	----	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/WT	2.0	mg/L		4.2	----	----	----	----
Carbonaceous biochemical oxygen demand [CBOD]	----	E555/WT	2.0	mg/L		<3.0 BODL	----	----	----	----
Oil & grease (gravimetric)	----	E567/WT	5.0	mg/L		<5.0	----	----	----	----
Oil & grease, animal/vegetable (gravimetric)	----	EC567A.SG/WT	5.0	mg/L		<5.0	----	----	----	----
Oil & grease, mineral (gravimetric)	----	E567SG/WT	5.0	mg/L		<5.0	----	----	----	----
Phenols, total (4AAP)	----	E562/WT	0.0010	mg/L		<0.0010	----	----	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Chloroform	67-66-3	E611D/WT	0.50	µg/L		0.73 OWP	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		<1.0 OWP	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	0.30	µg/L		<0.30 OWP	----	----	----	----
Ethylbenzene	100-41-4	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	20	µg/L		<20 OWP	----	----	----	----
Styrene	100-42-5	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT	0.50	µg/L		<0.50 OWP	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	0.40	µg/L		<0.40 OWP	----	----	----	----
Xylene, o-	95-47-6	E611D/WT	0.30	µg/L		<0.30 OWP	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW8	----	----	----	----
					Client sampling date / time	18-May-2023 14:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		WT2313579-001	--------	--------	--------	--------
						Result	----	----	----	----
Volatile Organic Compounds										
Xylenes, total	1330-20-7	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%		96.4	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%		101	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Acenaphthylene	208-96-8	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Anthracene	120-12-7	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	0.0050	µg/L		<0.0050	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Chrysene	218-01-9	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	0.0050	µg/L		<0.0050	----	----	----	----
Fluoranthene	206-44-0	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Fluorene	86-73-7	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	0.010	µg/L		0.023	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	0.010	µg/L		0.033	----	----	----	----
Naphthalene	91-20-3	E641A/WT	0.050	µg/L		0.096	----	----	----	----
Phenanthrene	85-01-8	E641A/WT	0.020	µg/L		0.072	----	----	----	----
Pyrene	129-00-0	E641A/WT	0.010	µg/L		<0.010	----	----	----	----
PAHs, total (CCME sewer 18)	n/a	E641A/WT	0.070	µg/L		0.224	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/WT	0.1	%		118	----	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	0.1	%		124	----	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT	0.1	%		116	----	----	----	----
Phthalate Esters										
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F/WT	2.0	µg/L		<2.0	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW8	----	----	----	----
					Client sampling date / time	18-May-2023 14:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		WT2313579-001	--------	--------	--------	--------
						Result	----	----	----	----
Phthalate Esters										
Di-n-butyl phthalate	84-74-2	E655F/WT	1.0	µg/L		<1.0	----	----	----	----
Semi-Volatile Organics Surrogates										
Fluorobiphenyl, 2-	321-60-8	E655F/WT	1.0	%		86.8	----	----	----	----
Terphenyl-d14, p-	1718-51-0	E655F/WT	1.0	%		55.0	----	----	----	----
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	E655F/WT	0.20	%		101	----	----	----	----
Nonylphenols										
Nonylphenol diethoxylates [NP2EO]	n/a	E749B/WT	0.10	µg/L		<0.10	----	----	----	----
Nonylphenol ethoxylates, total	n/a	E749B/WT	2.0	µg/L		<2.0	----	----	----	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B/WT	2.0	µg/L		<2.0	----	----	----	----
Nonylphenols [NP]	84852-15-3	E749A/WT	1.0	µg/L		<1.0	----	----	----	----
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L		<0.060	----	----	----	----
Polychlorinated Biphenyls Surrogates										
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%		83.9	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%		120	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2313579**	Page	: 1 of 13
Client	: **Haddad Geotechnical Inc.**	Laboratory	: Waterloo - Environmental
Contact	: Rico Van	Account Manager	: Emily Hansen
Address	: 151 Amber Street Markham ON Canada L3R 3J7	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 905 475 0951 x 230	Telephone	: +1 519 886 6910
Project	: ----	Date Samples Received	: 18-May-2023 14:36
PO	: ----	Issue Date	: 30-May-2023 20:10
C-O-C number	: 20-1046318		
Sampler	: Client		
Site	: ----		
Quote number	: Standing Offer 2022		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Phthalate Esters	QC-MRG4-9558340 02	----	bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	144 % LCS-H	50.0-140%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	*Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Semi-Volatile Organics Surrogates	WT2313579-001	MW8	Terphenyl-d14, p-	1718-51-0	55.0 %	60.0-140 %	Recovery less than lower data quality objective

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] MW8	E550	18-May-2023	----	----	----		19-May-2023	4 days	0 days	✓
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-4d] MW8	E555	18-May-2023	----	----	----		19-May-2023	4 days	0 days	✓
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) MW8	E567SG	18-May-2023	25-May-2023	28 days	7 days	✓	26-May-2023	40 days	1 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) MW8	E567	18-May-2023	25-May-2023	28 days	7 days	✓	26-May-2023	40 days	1 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] MW8	E562	18-May-2023	23-May-2023	----	----		24-May-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] MW8	E235.F	18-May-2023	23-May-2023	----	----		24-May-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] MW8	E235.SO4	18-May-2023	23-May-2023	----	----		24-May-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] MW8	E318	18-May-2023	24-May-2023	----	----		24-May-2023	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] MW8	E372-U	18-May-2023	24-May-2023	----	----		24-May-2023	28 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) MW8	E333	18-May-2023	23-May-2023	----	----		23-May-2023	14 days	5 days	✓
Inorganics : Total Chlorine (Residual) by DPD Colourimetry										
HDPE [ON MECP] MW8	E326	18-May-2023	----	----	----		23-May-2023	0.25 hrs	118 hrs	× EHTR-FM
Microbiological Tests : E. coli (MF-mFC-BCIG)										
Sterile HDPE (Sodium thiosulphate) [ON MECP] MW8	E012A.EC	18-May-2023	----	----	----		19-May-2023	48 hrs	18 hrs	✓
Nonylphenols : Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode										
Amber glass/Teflon lined cap - LCMS MW8	E749B	18-May-2023	23-May-2023	7 days	5 days	✓	23-May-2023	7 days	0 days	✓
Nonylphenols : Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode										
Amber glass/Teflon lined cap - LCMS MW8	E749A	18-May-2023	23-May-2023	7 days	5 days	✓	23-May-2023	7 days	0 days	✓
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap [ON MECP] MW8	E655F	18-May-2023	26-May-2023	14 days	8 days	✓	30-May-2023	40 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] MW8	E108	18-May-2023	23-May-2023	----	----		24-May-2023	14 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP]										
MW8	E160	18-May-2023	----	----	----		24-May-2023	7 days	6 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
MW8	E687	18-May-2023	19-May-2023	14 days	1 days	✓	19-May-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
MW8	E641A	18-May-2023	25-May-2023	14 days	7 days	✓	26-May-2023	40 days	1 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (NaOH+Buf) [ON MECP]										
MW8	E532	18-May-2023	----	----	----		19-May-2023	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP]										
MW8	E508	18-May-2023	19-May-2023	----	----		19-May-2023	28 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
MW8	E420	18-May-2023	19-May-2023	----	----		19-May-2023	180 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW8	E611D	18-May-2023	24-May-2023	----	----		24-May-2023	14 days	6 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand - 5 day	E550	946389	1	10	10.0	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	946350	1	20	5.0	5.0	✓
E. coli (MF-mFC-BCIG)	E012A.EC	946179	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	950701	1	12	8.3	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	949585	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	949584	1	16	6.2	5.0	✓
pH by Meter	E108	950704	1	15	6.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	950257	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	950702	1	10	10.0	5.0	✓
Total Chlorine (Residual) by DPD Colourimetry	E326	949576	1	6	16.6	5.0	✓
Total Cyanide	E333	950536	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	946192	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	950254	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	945947	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	945972	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	950255	1	6	16.6	5.0	✓
TSS by Gravimetry	E160	951495	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	952443	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	946389	1	10	10.0	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	946350	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	955836	1	6	16.6	5.0	✓
Fluoride in Water by IC	E235.F	950701	1	12	8.3	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	954481	1	16	6.2	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	949585	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	949584	1	16	6.2	5.0	✓
Oil & Grease by Gravimetry	E567	954480	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	954841	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS	E687	945910	1	12	8.3	4.7	✓
pH by Meter	E108	950704	1	15	6.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	950257	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	950702	1	10	10.0	5.0	✓
Total Chlorine (Residual) by DPD Colourimetry	E326	949576	1	6	16.6	5.0	✓
Total Cyanide	E333	950536	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	946192	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	950254	1	7	14.2	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	945947	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	945972	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	950255	1	6	16.6	5.0	✓
TSS by Gravimetry	E160	951495	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	952443	1	20	5.0	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	946389	1	10	10.0	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	946350	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	955836	1	6	16.6	5.0	✓
E. coli (MF-mFC-BCIG)	E012A.EC	946179	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	950701	1	12	8.3	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	954481	1	16	6.2	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	949585	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	949584	1	16	6.2	5.0	✓
Oil & Grease by Gravimetry	E567	954480	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	954841	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS	E687	945910	1	12	8.3	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	950257	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	950702	1	10	10.0	5.0	✓
Total Chlorine (Residual) by DPD Colourimetry	E326	949576	1	6	16.6	5.0	✓
Total Cyanide	E333	950536	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	946192	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	950254	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	945947	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	945972	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	950255	1	6	16.6	5.0	✓
TSS by Gravimetry	E160	951495	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	952443	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Fluoride in Water by IC	E235.F	950701	1	12	8.3	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	949585	1	16	6.2	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	949584	1	16	6.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	950257	1	5	20.0	5.0	✓
Sulfate in Water by IC	E235.SO4	950702	1	10	10.0	5.0	✓
Total Chlorine (Residual) by DPD Colourimetry	E326	949576	1	6	16.6	5.0	✓
Total Cyanide	E333	950536	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	946192	1	6	16.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	950254	1	7	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	945947	1	18	5.5	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Total metals in Water by CRC ICPMS	E420	945972	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	950255	1	6	16.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	952443	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
E. coli (MF-mFC-BCIG)	E012A.EC Waterloo - Environmental	Water	ON E3433 (mod)	Following filtration (0.45 µm), and incubation at 44.5±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated.
pH by Meter	E108 Waterloo - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Waterloo - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Fluoride in Water by IC	E235.F Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Waterloo - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Chlorine (Residual) by DPD Colourimetry	E326 Waterloo - Environmental	Water	APHA 4500-Cl G (mod)	Chlorine (residual), as free or total, is analyzed using the DPD colourimetric method. The recommended hold time for this test is 15 minutes and field testing is recommended when determining Chlorine concentrations at the time of sampling. Chlorine if present in a sample container after sampling can be rapidly consumed by any inorganic or organic matter in the sample and dissipates rapidly into headspace. Laboratory results may be requested when chlorine concentrations that may be present at the time of laboratory analysis are required for the interpretation of other laboratory analysis where the presence of Chlorine may affect results. e.g. laboratory toxicity testing

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Waterloo - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Waterloo - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Waterloo - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Biochemical Oxygen Demand - 5 day	E550 Waterloo - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 Waterloo - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 Waterloo - Environmental	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 Waterloo - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mineral Oil & Grease by Gravimetry	E567SG Waterloo - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A Waterloo - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F Waterloo - Environmental	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.
PCB Aroclors by GC-MS	E687 Waterloo - Environmental	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A Waterloo - Environmental	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B Waterloo - Environmental	Water	J. Chrom A849 (1999) p.467-482	Water samples are filtered and analyzed on LCMS/MS by direct injection.
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG Waterloo - Environmental	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 Waterloo - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry	EP567 Waterloo - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Waterloo - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
BNA Extraction	EP655 Waterloo - Environmental	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 Waterloo - Environmental	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.
Preparation of Nonylphenol and Nonylphenol Ethoxylates	EP749 Waterloo - Environmental	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.

QUALITY CONTROL REPORT

Work Order	: **WT2313579**	Page	: 1 of 15
Client	: Haddad Geotechnical Inc.	Laboratory	: Waterloo - Environmental
Contact	: Rico Van	Account Manager	: Emily Hansen
Address	: 151 Amber Street Markham ON Canada L3R 3J7	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: ----	Date Samples Received	: 18-May-2023 14:36
PO	: ----	Date Analysis Commenced	: 19-May-2023
C-O-C number	: 20-1046318	Issue Date	: 30-May-2023 20:04
Sampler	: Client 905 475 0951 x 230		
Site	: ----		
Quote number	: Standing Offer 2022		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Kaitlyn Lammers	Lab Assistant	Waterloo Microbiology, Waterloo, Ontario
Sanja Risticevic	Department Manager - LCMS	Waterloo LCMS, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 950704)											
WT2313610-002	Anonymous	pH	----	E108	0.10	pH units	8.41	8.46	0.593%	4%	----
Physical Tests (QC Lot: 951495)											
WT2313518-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	96.4	97.6	1.24%	20%	----
Anions and Nutrients (QC Lot: 950254)											
WT2313553-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.413	0.411	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 950255)											
WT2313497-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	4.51	4.49	0.346%	20%	----
Anions and Nutrients (QC Lot: 950701)											
WT2313454-002	Anonymous	Fluoride	16984-48-8	E235.F	0.400	mg/L	0.439	0.426	0.013	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 950702)											
WT2313454-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	304	302	0.680%	20%	----
Cyanides (QC Lot: 950536)											
TY2304272-013	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Inorganics (QC Lot: 949576)											
WT2313790-001	Anonymous	Chlorine, total	7782-50-5	E326	0.050	mg/L	0.090	0.090	0	Diff <2x LOR	----
Microbiological Tests (QC Lot: 946179)											
WT2313518-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E012A.EC	1	CFU/100mL	2	1	1	Diff <2x LOR	----
Total Metals (QC Lot: 945947)											
WT2313362-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 945972)											
HA2300204-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0904	0.0881	2.61%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00016	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0522	0.0528	1.09%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000056	0.0000061	0.0000005	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00016	0.00017	0.000004	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000142	0.000140	0.000002	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0505	0.0508	0.571%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 945972) - continued											
HA2300204-001	Anonymous	Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00062	0.00062	0.000002	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000064	<0.000050	0.000014	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00145	0.00148	0.00003	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0033	0.0035	0.0002	Diff <2x LOR	----
Speciated Metals (QC Lot: 946192)											
WT2313362-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 946350)											
WT2313640-001	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	<2.0	2.2	10.4%	30%	----
Aggregate Organics (QC Lot: 946389)											
WT2313518-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----
Aggregate Organics (QC Lot: 950257)											
WT2313553-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 952443)											
WT2313565-003	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Nonylphenols (QC Lot: 949584)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Nonylphenols (QC Lot: 949584) - continued											
WT2313321-001	Anonymous	Nonylphenols [NP]	84852-15-3	E749A	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
Nonylphenols (QC Lot: 949585)											
WT2313321-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 951495)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 950254)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 950255)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 950701)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 950702)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Cyanides (QCLot: 950536)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Inorganics (QCLot: 949576)						
Chlorine, total	7782-50-5	E326	0.05	mg/L	<0.050	----
Microbiological Tests (QCLot: 946179)						
Coliforms, Escherichia coli [E. coli]	----	E012A.EC	1	CFU/100mL	<1	----
Total Metals (QCLot: 945947)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 945972)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 945972) - continued						
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Speciated Metals (QCLot: 946192)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Aggregate Organics (QCLot: 946350)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 946389)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 950257)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 954480)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 954481)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Volatile Organic Compounds (QCLot: 952443)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 954841)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 954841) - continued						
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Phthalate Esters (QCLot: 955836)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	----
Nonylphenols (QCLot: 949584)						
Nonylphenols [NP]	84852-15-3	E749A	1	µg/L	<1.0	----
Nonylphenols (QCLot: 949585)						
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	<0.10	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	<2.0	----
Polychlorinated Biphenyls (QCLot: 945910)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 950704)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 951495)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.3	85.0	115	----
Anions and Nutrients (QCLot: 950254)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 950255)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.845 mg/L	98.0	80.0	120	----
Anions and Nutrients (QCLot: 950701)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 950702)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.9	90.0	110	----
Cyanides (QCLot: 950536)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	92.4	80.0	120	----
Inorganics (QCLot: 949576)									
Chlorine, total	7782-50-5	E326	0.05	mg/L	0.28861 mg/L	107	75.0	125	----
Total Metals (QCLot: 945947)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	95.1	80.0	120	----
Total Metals (QCLot: 945972)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	114	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	116	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	107	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	108	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	106	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	104	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	105	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	107	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	97.5	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 945972) - continued									
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	105	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	91.4	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	107	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	110	80.0	120	----
Speciated Metals (QCLot: 946192)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	96.0	80.0	120	----
Aggregate Organics (QCLot: 946350)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	100	85.0	115	----
Aggregate Organics (QCLot: 946389)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	106	85.0	115	----
Aggregate Organics (QCLot: 950257)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	99.8	85.0	115	----
Aggregate Organics (QCLot: 954480)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	99.8	70.0	130	----
Aggregate Organics (QCLot: 954481)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	89.0	70.0	130	----
Volatile Organic Compounds (QCLot: 952443)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	107	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	97.4	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	97.8	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	96.5	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	102	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 952443) - continued									
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	105	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 954841)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5263 µg/L	109	50.0	140	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5263 µg/L	102	50.0	140	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5263 µg/L	90.4	50.0	140	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5263 µg/L	103	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5263 µg/L	99.2	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5263 µg/L	117	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5263 µg/L	103	50.0	140	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5263 µg/L	121	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5263 µg/L	95.8	50.0	140	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5263 µg/L	120	50.0	140	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5263 µg/L	114	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5263 µg/L	131	50.0	140	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5263 µg/L	111	50.0	140	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5263 µg/L	111	50.0	140	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5263 µg/L	113	50.0	140	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5263 µg/L	114	50.0	140	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5263 µg/L	117	50.0	140	----
Phthalate Esters (QCLot: 955836)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	# 144	50.0	140	LCS-H
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	118	50.0	140	----
Nonylphenols (QCLot: 949584)									
Nonylphenols [NP]	84852-15-3	E749A	1	µg/L	10 µg/L	95.3	75.0	125	----
Nonylphenols (QCLot: 949585)									
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	1 µg/L	100	75.0	125	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	20 µg/L	106	75.0	125	----
Polychlorinated Biphenyls (QCLot: 945910)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	99.5	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	99.5	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	99.5	60.0	140	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Polychlorinated Biphenyls (QCLot: 945910) - continued									
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	99.5	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	103	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	94.9	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 950254)										
WT2313553-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.99 mg/L	2.5 mg/L	120	70.0	130	----
Anions and Nutrients (QCLot: 950255)										
WT2313497-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 950701)										
WT2313454-002	Anonymous	Fluoride	16984-48-8	E235.F	19.8 mg/L	20 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 950702)										
WT2313454-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1890 mg/L	2000 mg/L	94.4	75.0	125	----
Cyanides (QCLot: 950536)										
TY2304272-013	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.228 mg/L	0.25 mg/L	91.1	75.0	125	----
Inorganics (QCLot: 949576)										
WT2313790-001	Anonymous	Chlorine, total	7782-50-5	E326	0.310 mg/L	0.28861 mg/L	107	70.0	130	----
Total Metals (QCLot: 945947)										
WT2313456-001	Anonymous	Mercury, total	7439-97-6	E508	0.000108 mg/L	0.0001 mg/L	108	70.0	130	----
Total Metals (QCLot: 945972)										
WT2313362-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0519 mg/L	0.05 mg/L	104	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0541 mg/L	0.05 mg/L	108	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00510 mg/L	0.005 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0122 mg/L	0.0125 mg/L	97.4	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0124 mg/L	0.0125 mg/L	99.0	70.0	130	----
		Copper, total	7440-50-8	E420	0.0116 mg/L	0.0125 mg/L	92.6	70.0	130	----
		Lead, total	7439-92-1	E420	0.0248 mg/L	0.025 mg/L	99.3	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0100 mg/L	0.0125 mg/L	80.3	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0243 mg/L	0.025 mg/L	97.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0490 mg/L	0.05 mg/L	97.9	70.0	130	----
		Silver, total	7440-22-4	E420	0.00452 mg/L	0.005 mg/L	90.5	70.0	130	----
		Tin, total	7440-31-5	E420	0.0248 mg/L	0.025 mg/L	99.1	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0121 mg/L	0.0125 mg/L	97.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 945972) - continued										
WT2313362-001	Anonymous	Zinc, total	7440-66-6	E420	ND mg/L	0.025 mg/L	ND	70.0	130	----
Speciated Metals (QCLot: 946192)										
WT2313362-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
Aggregate Organics (QCLot: 950257)										
WT2313553-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0202 mg/L	0.02 mg/L	101	75.0	125	----
Volatile Organic Compounds (QCLot: 952443)										
WT2313565-003	Anonymous	Benzene	71-43-2	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Chloroform	67-66-3	E611D	97.4 µg/L	100 µg/L	97.4	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	98.6 µg/L	100 µg/L	98.6	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloromethane	75-09-2	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	93.9 µg/L	100 µg/L	93.9	60.0	140	----
		Ethylbenzene	100-41-4	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	98 µg/L	100 µg/L	98.0	60.0	140	----
		Styrene	100-42-5	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	89.8 µg/L	100 µg/L	89.8	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Toluene	108-88-3	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Trichloroethylene	79-01-6	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	192 µg/L	200 µg/L	95.9	60.0	140	----
		Xylene, o-	95-47-6	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
Nonylphenols (QCLot: 949584)										
WT2313321-001	Anonymous	Nonylphenols [NP]	84852-15-3	E749A	12.4 µg/L	10 µg/L	124	60.0	140	----
Nonylphenols (QCLot: 949585)										
WT2313321-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	1.00 µg/L	1 µg/L	99.6	60.0	140	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	12.3 µg/L	20 µg/L	61.7	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1046318

Page 1 of 1

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2313579

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Reque
Company:	Haddad Geo	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharge
Contact:	Ricco Vun	Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush sur
Phone:	4054750951	☑ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush su
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush su
Street:	15 Ambor St	Email 1 or Fax rvun@haddadgeo.com	☐ 1 day [E] if received by 3pm M-F - 100% rush su
City/Province:	Markham ON	Email 2	☐ Same day [E2] if received by 10am M-S - 200% rus
Postal Code:	L3R 3B3	Email 3	may apply to rush requests on weekends, statutory h
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs
Company:		Email 1 or Fax accounts@haddadgeo.com	
Contact:		Email 2	

Project Information	Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	AFE/Cost Center:	PO#
Job #: 16145	Major/Minor Code:	Routing Code:
PO / AFE:	Requisitioner:	
LSD:	Location:	
ALS Lab Work Order # (ALS use only): WT2313579 Rp	ALS Contact:	Sampler: RV

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	MW8	18-MAY-23	14:00	GW	2	X Peel Sam X Mississauga Storm			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	Sample Not Field Filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	Peel San + Mississauga Storm Criteria

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☑ N/A Sample Custody Seals Intact: ☐ YES ☑ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
15.6			17.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by: Rp	Date: 18 May 23	Time: 2:36	Received by:	Date: May 18/23	Time: 5:50 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

CN-070 VW-103 OS-271
MM-956 SC-324 N-799
B-670 GC-875 L-324
OR-611