

August 2018

HYDROLOGICAL REVIEW SUMMARY

The form is to be completed by the Professional that prepared the Hydrological Review.
 Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

Refer to the Terms of Reference, Hydrological Review:

[Link to Terms of Reference Hydrological Review](#)

For City Staff Use Only:	
Name of ECS Case Manager (Please print)	
Date Review Summary provided to to TW, EM&P	

**IF ANY OF THE REQUIREMENTS LISTED BELOW HAVE NOT BEEN INCLUDED IN THE HYDROLOGICAL REVIEW, THE REVIEW WILL BE CONSIDERED INCOMPLETE.
 THE GREY SHADED BOXES WILL REQUIRE A CONSISTANCY CHECK BY THE ECS CASE MANAGER.**

Summary of Key Information:

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Site Address	21 Broadview Avenue, Toronto, ON	pg. 4, sec. 1.1	
Postal Code	M4M 2E4	pg. 4, sec. 1.1	
Property Owner (on request for comments memo)	Broadview Avenue Inc.	pg. 4, sec. 1.1	
Proposed description of the project (if applicable) (point towers, number of podiums)	The development will consist of a 12 storey building with 1 level of underground parking.	pg. 4, sec. 1.1	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	mixed use - residential, commercial/industrial	pg. 4, sec. 1.1	
Number of below grade levels for the proposed structure	one (1) below grade level	pg. 4, sec. 1.1	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	June 27, 2022	pg. i and ii	
Who Performed the Hydrological Review (Consulting Firm)	WSP Canada Inc.	pg. i and ii	
Name of Author of Hydrological Review	Peter Hayes	pg. i and ii	

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<p>Check the directories on the website for Professional Geoscientists and/or Professional Engineers of Ontario been checked to ensure that the Hydrological Report has been prepared by a qualified person who is a licensed Professional Geoscientist as set out in the Professional Geoscientist Act of Ontario or a Professional Engineer?</p> <p>PEO: Professional Engineers of Ontario APGO: Association of Professional Geoscientists of Ontario</p>	<p>Peter Hayes, P. Geo.</p>	<p>N/A</p>	
<p>Has the Hydrological Review been prepared in accordance with all the following:</p> <ul style="list-style-type: none"> • Ontario Water Resources Act • Ontario Regulation 387/04 • Toronto Municipal Code Chapter 681-Sewers 	<p>A Hydrogeological Report and a City of Toronto Hydrological Review Summary Form were prepared in accordance with the Ontario Water Resources Act, Ontario Regulation 387/04, and Toronto Municipal Code Chapter 681.</p>	<p>pg. 5, sec. 1.3</p>	
		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

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<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) with safety factor included</p>	<p>95,800 L/day</p> <p>What safety factor was used? safety factor of 2</p>	<p>pg. 25, sec. 6.4 pg. 33, sec. 10 Appendix E</p>	
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) without safety factor included</p>	<p>47,900 L/day</p>	<p>pg. 25, sec. 6.4 Appendix E</p>	
<p>Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) with safety factor included</p> <p>If the development is part of a multiple tower complex, include total volume for each separate tower</p>	<p>30,200 L/day</p> <p>What safety factor was used? safety factor of 2</p>	<p>pg. 27, sec. 6.6 pg. 34, sec. 10 Appendix E</p>	
<p>List the nearest surface water (river, creek, lake)</p>	<p>Lower Don River and Lake Ontario</p>	<p>pg. 8, sec. 3.1 pg. 16, sec. 4.3</p>	

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	75.88 m ASL	pg. 23, sec. 6.1 pg. 27, sec. 6.6 Appendix E	
Foundation elevation	74.4 m ASL	pg. 24, sec. 6.1 Appendix E	
Ground elevation	79.5 m ASL	pg. 23, sec. 6.1 Appendix E	
STUDY AREA MAP		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
Study area map(s) have been included in the report.	<input checked="" type="checkbox"/> Yes	pg. 3 Figures	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> Yes	pg. 3 Figures	N/A
WATER LEVEL AND WELLS		Page # & Section # of every occurrence	Review Includes this Information (City Staff Initial)

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		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	yes	pg. 15-17, sec. 4.3	
The static water level measurements have been monitored at all monitoring wells for a minimum of 3 months with samples taken every 2 weeks for a minimum of 6 samples. The intent is for the qualified professional to use professional judgement to estimate the seasonally high groundwater level.	yes	pg. 15-17, sec. 4.3	
All water levels in the wells have been measured with respect to masl.	yes	pg. 15-17, sec. 4.3	
A table of geology/soil stratigraphy for the property has been included.	yes	pg. 13-15, sec. 4.2	
GEOLOGY AND PHYSICAL HYDROLOGY		Page # & Section # of every occurrence in the Review	Review Includes this Information (City Staff Initial)
The review has made reference to the soil materials including thickness, composition and texture, and bedrock environments.	yes	pg. 13-15, sec. 4.2	
Key aquifers and the site's proximity to nearby surface water has been identified.	⊗ Yes	pg. 6-7, sec. 2.3	N/A

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PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
A summary of the pumping test data and analysis is included in the review.	Not applicable since no pumping test was done		
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	No pumping test was done.		
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	a datalogger was installed at the site, set to record at 1 hour intervals	pg. 15-17, sec.4.3 Hydrograph	
If a slug or pump test has been conducted has the static groundwater level been monitored at all monitoring well(s) multiple times to measure recovery? -prior to the slug or pumping test(s)? -post slug or pumping test(s)?	⊗ Yes	pg. 17-18, sec.4.4 pg. 33, sec. 10 Appendix C	N/A
The above noted slug or pump tests have been included in the report.	⊗ Yes	pg. 17-18, sec.4.4 pg. 33, sec. 10 Appendix C	
WATER QUALITY		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
The report includes baseline water quality samples from a laboratory. The water quality must be analyzed for all parameters listed in Tables 1 and 2 of Chapter 681 Sewers of the Toronto Municipal Code (found in Appendix A) and the samples must have to be taken unfiltered within 9 months of the date of submission.	yes	pg. 19-22, sec. 5 Appendix D	
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	For sanitary discharge- See the sanitary/combined sewer parameter limit template For storm discharge- See the storm sewer parameter limit template		
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits If there are any sample parameter Exceedances the groundwater can't be discharged as is.	No sanitary/combined sewer exceedances. Table 8 of the Hydrogeological Report shows concentrations of TSS and total Manganese, both not exceeding sanitary/combined bylaw limits. Please also refer to laboratory analytical results on Appendix D.	pg. 19-22, sec. 5 Appendix D	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. If there are any sample parameter exceedances the groundwater can't be discharged as is.	No storm sewer exceedances - sample MW21-5 (April 1, 2021) Table 8 of the Hydrogeological Report shows concentrations of TSS and total Manganese, both not exceeding storm bylaw limits. Please also refer to laboratory analytical results on Appendix D. Storm sewer exceedances - sample BH22-1 (June 3, 2022) TSS: 28 mg/L Total Mn: 1600 ug/L	pg. 19-22, sec. 5 Appendix D	
The water quality samples have been analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and/or Canadian Association for Laboratory Accreditation.	⊗ Yes	pg. 19-22, sec. 5 Appendix D	N/A

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List of Canadian accredited laboratories: Standards Council of Canada	Bureau Veritas Laboratories	pg. 19-22, sec. 5 Appendix D	
A chain of custody record for the samples is included with the report.	yes	Appendix D	
Has the chain of custody reference any filtered sample? If yes, the report has to be amended and re-submitted to include only non-filtered samples.	samples were not filtered	Appendix D	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	No exceedances Table 8 of the Hydrogeological Report shows concentrations of TSS and total Manganese, both not exceeding storm and sanitary/combined bylaw limits. Please also refer to laboratory analytical results on Appendix D.	Appendix D	
A true copy of the Certificate of Analysis report, is included with the report.	yes	Appendix D	
EVALUATION OF IMPACT		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
Does the report recommend a back-up system or relief safety valve(s)?	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	<input type="radio"/> Yes <input checked="" type="radio"/> No		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	<input checked="" type="radio"/> Yes	pg. 28, sec. 7	N/A

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SITE INFORMATION	Page # & Section # of Review	Review Includes this Information City Staff (Check)
impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.		
Has it been determined that there will be a negative impact to the natural environment, City sewage works, or surrounding properties has the study identified the following: the extent of the negative impact, the detail of the precondition state of all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	<input type="radio"/> Yes If yes, identify impact: <input checked="" type="radio"/> No	N/A pg. 28, sec. 7

Summary of Additional Information and Key Items (if applicable):

It should be noted that the hydrogeological investigation is ongoing, and this interim report presents the results and evaluation of the currently available data. The continuous water level monitoring currently being carried out at the Site will provide more information about the static groundwater levels and any seasonal fluctuations that might occur.

Three (3) months of continuous water level monitoring should be conducted at the Site (initiated in June 2022), and at least three (3) additional manual groundwater level measurements will be taken at the available monitoring wells until September 2022. The continuous groundwater level monitoring currently being carried out at the Site will provide more information about the static groundwater levels and seasonal fluctuations that might occur. In order to assess detailed long-term groundwater fluctuations at the Site, a datalogger was installed in the monitoring well BH22-2 on June 3rd, 2022, and groundwater levels will continue to be monitored at least until September 3rd, 2022. A hydrograph showing the long-term groundwater variations will be included in the final version of this report, which will be updated once the ninety (90) day period of water level monitoring is completed.

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Appendix A:

SANITARY/COMBINED

Sample Location: BH21-5 and BH22-1

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	mg/L	mg/L	<u>ug/L</u>
BOD	300	3 <2	2 2	300,000
Fluoride	10	1.3 0.13	0.1 0.1	10,000
TKN	100	3.9 0.97	0.1 0.1	100,000
pH	6.0 - 11.5	8.2 7.46	-	6.0 - 11.5
Phenolics 4AAP	1	<0.0010 <0.0010	0.001 0.001	1,000
TSS	350	<10 29	10 10	350,000
Total Cyanide	2	<0.0050 <0.0050	0.005 0.005	2,000
Metals		ug/L	ug/L	
Chromium Hexavalent	2	<0.50 <0.50	0.5 0.5	2,000
Mercury	0.01	<0.10 <0.10	0.1 0.1	10
Total Aluminum	50	450 580	4.9 4.9	50,000
Total Antimony	5	<0.50 <0.50	0.50	5,000
Total Arsenic	1	<1.0 <1.0	1.0 1.0	1,000
Total Cadmium	0.7	<0.090 0.094	0.09 0.09	700
Total Chromium	4	<5.0 <5.0	5.0 5.0	4,000
Total Cobalt	5	<0.50 2.1	0.5 0.5	5,000
Total Copper	2	<0.90 2.5	0.9 0.9	2,000
Total Lead	1	<0.50 1.1	0.5 0.5	1,000
Total Manganese	5	31 1600	2.0 2.0	5,000
Total Molybdenum	5	<0.50 2.1	0.5 0.5	5,000
Total Nickel	2	2.6 6.6	1.0 1.0	2,000
Total Phosphorus	10	<100 <100	100 100	10,000
Total Selenium	1	<2.0 <2.0	2.0 2.0	1,000
Total Silver	5	<0.090 <0.090	0.09 0.09	5,000
Total Tin	5	1.4 1.6	1.0 1.0	5,000
Total Titanium	5	17 26	5.0 5.0	5,000
Total Zinc	2	<5.0 32	5.0 5.0	2,000
Petroleum Hydrocarbons		mg/L	mg/L	
Animal/Vegetable Oil & Grease	150	<0.50 <0.5	0.5 0.5	150,000
Mineral/Synthetic Oil & Grease	15	<0.50 <0.5	0.5 0.5	15,000

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Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	ug/L	ug/L	<u>ug/L</u>
Benzene	0.01	<1.0 <0.4	1.0 0.4	10
Chloroform	0.04	<1.0 <0.4	1.0 0.4	40
1,2-Dichlorobenzene	0.05	<2.0 <0.8	2.0 0.8	50
1,4-Dichlorobenzene	0.08	<2.0 <0.8	2.0 0.8	80
Cis-1,2-Dichloroethylene	4	<1.0 <1.0	1.0 1.0	4,000
Trans-1,3-Dichloropropylene	0.14	<2.0 <0.8	2.0 0.8	140
Ethyl Benzene	0.16	<1.0 <0.4	1.0 0.4	160
Methylene Chloride	2	<5.0 <4.0	5.0 4.0	2,000
1,1,1,2-Tetrachloroethane	1.4	<2.0 <0.8	2.0 0.8	1,400
Tetrachloroethylene	1	<1.0 <0.4	1.0 0.4	1,000
Toluene	0.016	<2.0 <0.4	2.0 0.4	16
Trichloroethylene	0.4	<1.0 <0.4	1.0 0.4	400
Total Xylenes	1.4	<1.0 <0.4	1.0 0.4	1,400
Semi-Volatile Organics		ug/L	ug/L	
Di-n-butyl Phthalate	0.08	<2 <2	2 2	80
Bis (2-ethylhexyl) Phthalate	0.012	<2 <2	2 2	12
3,3'-Dichlorobenzidine	0.002	<0.8 <0.8	0.8 0.8	2
Pentachlorophenol	0.005	<1 <1	1 1	5
Total PAHs	0.005	<1 <1	1 1	5
Misc Parameters		mg/L	mg/L	
Nonylphenols	0.02	<0.001 <0.001	0.001 0.001	20
Nonylphenol Ethoxylates	0.2	<0.005 <0.005	0.005 0.001	200

Sample Collected: 01-Apr-21 03-Jun-22

Temperature:

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STORM **Sample Location:** **BH21-5** **BH22-1**

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	mg/L	mg/L	<u>ug/L</u>
pH	6.0 - 9.5	8.2 7.46	-	
BOD	15	3 <2	2 2	15,000
Phenolics 4AAP	0.008	<0.0010 <0.0010	0.001 0.001	8
TSS	15	<10 29	10 10	15,000
Total Cyanide	0.02	<0.0050 <0.0050	0.005 0.005	20
Metals		ug/L	ug/L	
Total Arsenic	0.02	<1.0 <1.0	1.0 1.0	20
Total Cadmium	0.008	<0.090 0.094	0.09 0.09	8
Total Chromium	0.08	<5.0 <5.0	5.0 5.0	80
Chromium Hexavalent	0.04	<0.50 <0.50	0.5 0.5	40
Total Copper	0.04	<0.90 2.5	0.9 0.9	40
Total Lead	0.12	<0.50 1.1	0.5 0.5	120
Total Manganese	0.05	31 1600	2.0 2.0	50
Total Mercury	0.0004	<0.10 <0.10	0.1 0.1	0.4
Total Nickel	0.08	2.6 6.6	1.0 1.0	80
Total Phosphorus	0.4	<100 <100	100 100	400
Total Selenium	0.02	<2.0 <2.0	2.0 2.0	20
Total Silver	0.12	<0.090 <0.090	0.09 0.09	120
Total Zinc	0.04	<5.0 32	5.0 5.0	40
Microbiology				
E.coli	200	<10 <10	10 10	200,000
Volatile Organics				
<u>Parameter</u>	<u>mg/L</u>	ug/L	ug/L	<u>ug/L</u>
Benzene	0.002	<1.0 <0.4	1.0 0.4	2
Chloroform	0.002	<1.0 <0.4	1.0 0.4	2
1,2-Dichlorobenzene	0.0056	<2.0 <0.8	2.0 0.8	6
1,4-Dichlorobenzene	0.0068	<2.0 <0.8	2.0 0.8	7
Cis-1,2-Dichloroethylene	0.0056	<1.0 <1.0	1.0 1.0	6
Trans-1,3-Dichloropropylene	0.0056	<2.0 <0.8	2.0 0.8	6
Ethyl Benzene	0.002	<1.0 <0.4	1.0 0.4	2
Methylene Chloride	0.0052	<5.0 <4.0	5.0 4.0	5
1,1,2,2-Tetrachloroethane	0.017	<2.0 <0.8	2.0 0.8	17
Tetrachloroethylene	0.0044	<1.0 <0.4	1.0 0.4	4
Toluene	0.002	<2.0 <0.4	2.0 0.4	2
Trichloroethylene	0.0076	<1.0 <0.4	1.0 0.4	8
Total Xylenes	0.0044	<1.0 <0.4	1.0 0.4	4

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Semi-Volatile Organics		Sample Result	Sample Result with upper RDL included	
Di-n-butyl Phthalate	0.015	<2 <2	2 2	5
Bis (2-ethylhexyl) Phthalate	0.0088	<2 <2	2 2	9
3,3'-Dichlorobenzidine	0.0008	<0.8 <0.8	0.8 0.8	1
Pentachlorophenol	0.002	<1 <1	1 1	2
Total PAHs	0.002	<1 <1	1 1	2
PCBs	0.0004	<0.05 <0.05	0.05 0.05	0
Misc Parameters		mg/L	mg/L	
Nonylphenols	0.001	<0.001 <0.001	0.001 0.001	1
Nonylphenol Ethoxylates	0.01	<0.005 <0.005	0.005 0.001	10

Sample Collected: 01-Apr-21 03-Jun-22
 Temperature:

Consulting Firm that prepared Hydrological Report

 Qualified Professional who completed the report summary:

 Qualified Professional who completed the report summary:

WSP Canada Inc.

Peter Hayes

Print Name



Signature



Date & Stamp