

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	River Street and Gerrard Street East, Toronto, Ontario Cover Page:	
Postal Code	M4W 2H2 Cover Page	
Property Owner (on request for comments memo)	Toronto Community Housing Corporation Section 1.0, Page 4	
Proposed description of the project (if applicable) (point towers, number of podiums)	re-developing the three (3) blocks of existing buildings into a variety of 6 to 38 storey buildings and townhouses Section 2.0, Page 5	
Land Use (ex. commercial, residential, mixed, institutional, industrial)		
Number of below grade levels for the proposed structure	Re-developed to include two (2) levels of underground parking. Section 6.1, Page 21	
HYDROLOGICAL REVIEW INFORMATION		
Date Hydrological Review was prepared:	July 19, 2022 Cover page & headers	
Who Performed the Hydrological Review (Consulting Firm)	Sirati & Partners Consultants Ltd. Cover page, Section 9.0, Page 32	
Name of Author of Hydrological Review	Kimberly Gilder, Reza Khabbaznia Section 9.0, Page 32	

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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>Reza Khabbazznia, P. Geo #:2472 Kimberly Gilder, P. Geo #:2417</p>	<p>Section 9.0, Page 32</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>Yes</p>	<p>Section 3.0 Page 6</p>	
		<p>Page # & Section # of every occurrence in the Review</p>	<p>Review Includes this Information City Staff (Check)</p>

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) with safety factor included</p>	<p>Block 1: 465,645 L/day with a safety factor of 3 and stormwater estimate. Block 2: 655,901 L/day with a safety factor of 3 and stormwater estimate. Block 3: 297,961 L/day with a safety factor of 3 and stormwater estimate.</p> <p>What safety factor was used? 3</p>	<p>Section 6.2, Page 22-24 Appendix G</p>	
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) without safety factor included</p>	<p>Block 1: 26,635 L/day without safety factor. Block 2: 31,514 L/day without safety factor. Block 3: 29,494 L/day without safety factor.</p>	<p>Section 6.2, Page 22-24 Appendix G</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>Block 1: 93,993 L/day with safety factor. Block 2: 110,164 L/day with safety factor. Block 3: 101,068 L/day with safety factor.</p> <p>What safety factor was used? 1.5</p>	<p>Section 6.3, Page 24-25 Appendix G</p>	
<p>List the nearest surface water (river, creek, lake)</p>	<p>No surface water features were observed adjacent to the site</p>	<p>Section 3.6, Page 10</p>	

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information
Lowest basement elevation	Lower parking P2 level will be at 82.91 mAMSL	Section 6.1, Page 21	
Foundation elevation	81.91 mAMSL. Footing elevation is about 1.0 m below P1 level 82.91mAMSL.	Section 6.1, Page 21	
Ground elevation	The average grade elevation will be 89.91 mAMSL	Section 6.1, Page 21	
STUDY AREA MAP		Page # & Section # of every occurrence in the Review	Review Includes this Information City
Study area map(s) have been included in the report.	<input checked="" type="checkbox"/> Yes	Figure attached to report.	
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> Yes	Figures attached to report.	
WATER LEVEL AND WELLS		Page # & Section # of every occurrence	Review Includes this Information

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	Yes, eighteen on-site monitoring wells were monitored for six times groundwater levels.	Section 5.2 and Table 5-1, 5-2, Page 14-18	
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	Section 5.2 and Table 5-1, 5-2, Page 14-18	
All water levels in the wells have been measured with respect to mASL.	Yes	Section 5.2 and Table 5-2, Page 14-18	
A table of geology/soil stratigraphy for the property has been included.	Geology/Soil stratigraphy of the property was summarized and presented in borehole logs, Soil Stratigraphy section and the Cross-Section.	Section 6.1, Page 9 Appendix B3 Figures 6-1, 6-2	
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.	Soil materials were reviewed and summarized and presented in borehole logs and discussed in the Soil Stratigraphy section.	Section 5.0, Page 12-15 Appendix C1, C2, Figure 5-1a o 5-1d	
Key aquifers and the site's proximity to nearby surface water has been identified.	<input type="radio"/> Yes. No surface water features were observed adjacent to the site	Section 3.6, Page-10	

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
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.	No pumping test was conducted. Instead, slug tests were completed.	Section 5.4, Page 19 Appendix E	
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	Slug tests were completed in five monitoring wells.	Section 5.4, Page 19 Appendix E	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Water levels were measured both manually and using a datalogger. The intervals varied from 5 seconds to 5 minutes throughout the test. The frequency information is included in the analysis included in Appendix F.	Section 5.4, Page 19 Appendix E	
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)?	<input type="radio"/> Yes Groundwater levels were measured prior to conducting any slug tests at the Site, as well as on several occasions following the tests. Manual levels were also collected during the tests to corroborate logger data.	Section 5.2, 5.4, Page 14-19	
The above noted slug or pump tests have been included in the report.	<input checked="" type="checkbox"/> Yes	Section 5.4, Page 19 Appendix E	
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
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, water samples (unfiltered) were collected and tested as per Chapter 681 Sewers of the Toronto Municipal Code. The samples were taken on March 4, 2022.	Section 5.5, Table 5-4, 5-5 Page 20 Appendix F
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	Yes, completed for BH/MW-05 and BH/Mw-42.	Appendix to this Form
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.	The water sample results were compared with the Table 1 Sanitary/Storm Sewer use Bylaw limits. Some Exceedance of Sanitary Sewer standard was found. Sanitary Sewer Exceedances: Nutrients (Total P)	Section 5.5, Table 5-4 Page 20 Appendix F
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.	The water sample results were compared with the Table 2 Storm Sewer use Bylaw limits. Some exceedances of Storm Sewer discharge limits were found. Storm Sewer Exceedances: Total Mn, Nutrients (Total P) , Total Cr, TSS	Section 5.5, Table 5-5 Page 20 Appendix F
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 The water samples were analyzed by Eurofins Environment Testing Inc. which is accredited by Canadian Association for Laboratory Accreditation.	Appendix F

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information
List of Canadian accredited laboratories: Standards Council of Canada			
A chain of custody record for the samples is included with the report.	Yes.	Appendix F	
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.	No.	Appendix F	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	<p>Sanitary Sewer Exceedances: Total P</p> <p>Storm Sewer Exceedances: Total Mn, Total P, Total Cr, TSS</p>	Section 5.5, Table 5-4, 5-5 Page 20 Appendix F	
A true copy of the Certificate of Analysis report, is included with the report.	Yes.	Appendix F	
EVALUATION OF IMPACT		Page # & Section # of every occurrence in the Review	Review Includes this Information City
Does the report recommend a back-up system or relief safety valve(s)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	NA	
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	Section 8.0, Page 31	

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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 No surface water features were noted adjacent to the site	Section 3.6, Page 10

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

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Appendix A:

Sanitary/Sewer Sample Location: MW5 (Sample ID: BH/MW-05)

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>ug/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>ug/L</u>
BOD	300	6	1	300,00
Fluoride	10	0.13	0.1	10,00
TKN	100	8.05	1.0	100,00
pH	6.0 -11.5	7.18	1.00	6.0 -11.5
Phenolics 4AAP	1	<0.001	0.001	1,000
TSS	350	10.0	0.01	350,000
Total Cyanide	2	<0.005	0.005	2,00
Metals				
Chromium Hexavalent	2	<0.01	0.01	2,000
Mercury	0.01	<0.0001	0.0001	10
Total Aluminum	50	<0.1	0.1	50,000
Total Antimony	5	<0.01	0.01	5,000
Total Arsenic	1	<0.02	0.02	1,000
Total Cadmium	0.07	<0.008	0.08	1,000
Total Chromium	4	<0.05	0.05	700
Total Cobalt	5	<0.01	0.01	4,000
Total Copper	2	<0.01	0.01	5,000
Total Lead	1	<0.01	0.01	2,000
Total Manganese	5	0.65	0.01	1,000
Total Molybdenum	5	<0.01	0.01	5,000
Total Nickel	2	<0.01	0.01	2,000
Total Phosphorus	10	2.97	0.02	10,000
Total Selenium	1	<0.02	0.02	1,000
Total Silver	5	<0.01	0.01	5,000
Total Tin	5	<0.1	0.1	5,000
Total Titanium	5	<0.1	0.1	5,000
Total Zinc	2	<0.04	0.04	2,000
Animal/Vegetable Oil & Grease	150	1	1	150,000
Mineral/Synthetic Oil & Grease	15	<1	1	15,000

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Sanitary/Sewer Sample Location: MW5 (Sample ID: BH/MW-05)

Volatile Organics	Sample Result		Sample Result with upper RDL included	
<u>Parameter</u>	<u>ug/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>ug/L</u>
Benzene	0.01	<0.5	0.5	10
Chloroform	0.04	<0.5	0.05	40
1,2-Dichlorobenzene	0.05		<0.2	50
1,4-Dichlorobenzene	0.08		<0.4	80
Cis-1,2-Dichloroethylene	4	<0.4	0.4	4,000
Trans-1,3-Dichloropropylene	0.14	<0.2	0.2	140
Ethyl Benzene	0.16	<0.5	0.5	160
Methylene Chloride	2	<4.0	4.0	2,000
1,1,2,2-Tetrachloroethane	1.4	<0.5	4.0	1,400
Tetrachloroethylene	1	<0.3	0.5	1,000
Toluene	0.016	0.5	0.3	16
Trichloroethylene	0.4	<0.3	0.4	400
Total Xylenes	1.4	<0.5	0.3	1,000
Semi-Volatile Organics			0.5	
Di-n-butyl Phthalate	0.08	<1.3	1.3	80
Bis (2-ethylhexyl) Phthalate	0.012	<0.4	1.3	12
3,3'-Dichlorobenzidine	0.002	<0.5	0.4	2
Pentachlorophenol	0.005	<1.0	0.5	5
Total PAHs	0.005	<2.0	1.0	5
Misc Parameters			2.0	
Nonylphenols	0.02	<1.0	1	20
Nonylphenol Ethoxylates	0.2	<2.0	1	200

Sample Collected: March 4, 2022
 Temperature: 10.1-degree C.

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Storm/Sewer Sample Location: MW5 (Sample ID: BH/MW-05)

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>ug/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>ug/L</u>
pH	6.0 – 9.5	7.18	1.0	
BOD	15	6	1	15,000
Phenolics 4AAP	0.008	<0.001	0.001	8
TSS	15	10.0	0.01	15,000
Total Cyanide	0.02	<0.005	0.005	20
Metals				
Total Arsenic	0.02	<0.02	0.02	20
Total Cadmium	0.008	<0.008	0.008	8
Total Chromium	0.08	<0.05	0.05	80
Chromium Hexavalent	0.04	<0.01	0.01	40
Total Copper	0.04	<0.01	0.01	40
Total Lead	0.12	<0.01	0.01	120
Total Manganese	0.05	0.65	0.01	50
Total Mercury	0.0004	<0.0001	0.0001	0.4
Total Nickel	0.08	<0.01	0.01	80
Total Phosphorus	0.4	2.97	0.02	400
Total Selenium	0.02	<0.02	0.02	20
Total Silver	0.12	<0.01	0.01	120
Total Zinc	0.04	<0.04	0.04	40
Microbiology				
E.coli	200			200,00
Volatile Organics				
<u>Parameter</u>	<u>ug/L</u>			<u>ug/L</u>
Benzene	0.002	<0.5	0.5	2
Chloroform	0.002	<0.5	0.5	2
1,2-Dichlorobenzene	0.0056	<0.2	0.22	6
1,4-Dichlorobenzene	0.0068	<0.4	0.4	7
Cis-1,2-Dichloroethylene	0.0056	<0.4	0.4	6
Trans-1,3-Dichloropropylene	0.0056	<0.2	0.2	6
Ethyl Benzene	0.002	<0.5	0.5	2
Methylene Chloride	0.0052	<4.0	4.0	5
1,1,2,2-Tetrachloroethane	0.017	<0.5	0.5	17
Tetrachloroethylene	0.0044	<0.3	0.3	4
Toluene	0.002	0.5	0.4	2
Trichloroethylene	0.0076	<0.3	0.3	8
Total Xylenes	0.0044	<0.5	0.5	4

