

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](#)

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

**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	15-17 Elm Street, Toronto, Ontario		
Postal Code	M5G 1H1		
Property Owner (on request for comments memo)	TRUSTEES OF MAPLE LEAF AERIE NO. 2311, FRATERNAL ORDER OF EAGLES; and COOPER, ANNETTE; COOPER, DAVID		
Proposed description of the project (if applicable) (point towers, number of podiums)	Thirty-two (32) storey building, single tower	Page 4 Section 2.2	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	Commercial Residential	Page 3 Section 2.1	
Number of below grade levels for the proposed structure	Two levels of underground parking	Page 4 Section 2.2	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	August 3rd, 2022		
Who Performed the Hydrological Review (Consulting Firm)	GEMS		
Name of Author of Hydrological Review	Kenley Bairos / Mike Frances		

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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: <a href="#">Professional Engineers of Ontario</a>            APGO: <a href="#">Association of Professional Geoscientists of Ontario</a></p>	N/A	
<p>Has the Hydrological Review been prepared in accordance with all the following:</p> <ul style="list-style-type: none"> <li>• Ontario Water Resources Act</li> <li>• Ontario Regulation 387/04</li> <li>• Toronto Municipal Code Chapter 681-Sewers</li> </ul>	Yes	
	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)
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) <b>with safety factor included</b></p>	<p>What safety factor was used?    1.5</p>	<p>Page 14 Section 5.3</p>	
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) <b>without safety factor included</b></p>	<p>5,164 L/day</p>	<p>Page 14 Section 5.3</p>	
<p>Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) <b>with safety factor included</b></p> <p>If the development is part of a multiple tower complex, include total volume for each separate tower</p>	<p>What safety factor was used?    1.5</p> <p>Long term drainage of groundwater is not anticipated.</p> <p>2,850 L/day is estimated following a 25mm rainfall event</p>	<p>Page 15 Section 5.5</p>	
<p>List the nearest surface water (river, creek, lake)</p>	<p>Don River (2km East)</p>	<p>Page 7 Section 4.2</p>	

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<b>SITE INFORMATION</b>		<b>Page # &amp; Section # of Review</b>	<b>Review Includes this Information City Staff (Check)</b>
Lowest basement elevation	88.5 masl	Page 11 Section 5.1	
Foundation elevation	88.5 masl	Page 11 Section 5.1	
Ground elevation	95.5 masl	Page 11 Section 5.1	
<b>STUDY AREA MAP</b>		<b>Page # &amp; Section # of every occurrence in the Review</b>	<b>Review Includes this Information City Staff (Check)</b>
Study area map(s) have been included in the report.	<input checked="" type="checkbox"/> <b>Yes</b>	Page 25 Figure 2	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> <b>Yes</b>		N/A
<b>WATER LEVEL AND WELLS</b>		<b>Page # &amp; Section # of every occurrence</b>	<b>Review Includes this Information (City Staff Initial)</b>

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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	Page 8 Section 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	Page 8 Section 4.3	
All water levels in the wells have been measured with respect to masl.	Yes	Page 8 Section 4.3	
A table of geology/soil stratigraphy for the property has been included.	Yes	Page 6 Section 4.1	
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	Page 6 Section 4.2	
Key aquifers and the site's proximity to nearby surface water has been identified.	⊗ Yes	Page 7 Section 4.2	N/A

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
<b>PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS</b>		<b>Page # &amp; Section # of every occurrence in the Review</b>	<b>Review Includes this Information City Staff (Check)</b>
A summary of the pumping test data and analysis is included in the review.	Pumping test not completed - see next sections	Page 9 Section 4.4 & Appendix C	
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	Pumping test not completed. Rising head tests were completed in 3 monitoring wells	Page 9 Section 4.4 & Appendix C	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Yes - Three wells, 9 tests, 15 second intervals	Page 9 Section 4.4 & Appendix C	
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  Recovery was monitored following the removal of slug from test well.	Page 9 Section 4.4 & Appendix C	N/A
The above noted slug or pump tests have been included in the report.	⊗ Yes	Page 9 Section 4.4 & Appendix C	
<b>WATER QUALITY</b>		<b>Page # &amp; Section # of every occurrence in the Review</b>	<b>Review Includes this Information City Staff (Check)</b>

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<p>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.</p>	<p>Baseline water quality data provided in Tables provided by Toronto Water</p>	<p>Page 10 Section 4.5 &amp; Appendix D</p>	
<p>The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.</p>	<p>For sanitary discharge- See the sanitary/combined sewer parameter limit template <b>Yes</b></p> <p>For storm discharge- See the storm sewer parameter limit template <b>Yes</b></p>		
<p>Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits <b>If there are any sample parameter Exceedances the groundwater can't be discharged as is.</b></p>	<p>Exceedances listed in report</p>	<p>Page 10 Section 4.5</p>	
<p>Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. <b>If there are any sample parameter exceedances the groundwater can't be discharged as is.</b></p>	<p>Exceedances listed in report</p>	<p>Page 10 Section 4.5</p>	
<p>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.</p>	<p>⊗ <b>Yes</b></p> <p>Samples analyzed by Bureau Veritas</p>	<p>Appendix D</p>	<p>N/A</p>

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
List of Canadian accredited laboratories: <a href="#">Standards Council of Canada</a>			
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.	No filtered samples		
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	TSS (RDL 10) Total Manganese (RDL 2.0) Total Phosphorus (RDL 100)	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)?  Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	<input type="radio"/> Yes <input checked="" type="radio"/> No These are engineering design related components and not a component of a hydrogeology report <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		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.	The hydrogeology report has provided information on the anticipated quantities and quality of groundwater. Short term dewatering of groundwater for excavation is not anticipated	Page 11 Section 5.0	
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 <b>If yes, identify impact:</b>  <input checked="" type="radio"/> No	Page 16 Section 6.0	N/A

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

## HYDROLOGICAL REVIEW SUMMARY

### Appendix A:

**SANITARY/COMBINED**

**Sample Location:**

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	<u>mg/l</u>	<u>mg/l</u>	<u>ug/L</u>
BOD	300	ND	2	300,000
Fluoride	10	0.30	0.10	10,000
TKN	100	7.2	0.20	100,000
pH	6.0 - 11.5	7.90		6.0 - 11.5
Phenolics 4AAP	1	ND	0.0010	1,000
TSS	350	<b>17</b>	10	350,000
Total Cyanide	2	ND	0.0050	2,000
<b>Metals</b>				
Chromium Hexavalent	2	ND	0.50	2,000
Mercury	0.01	ND	0.00010	10
Total Aluminum	50	220	4.9	50,000
Total Antimony	5	ND	0.50	5,000
Total Arsenic	1	7.0	1.0	1,000
Total Cadmium	0.7	ND	0.090	700
Total Chromium	4	ND	5.0	4,000
Total Cobalt	5	ND	0.50	5,000
Total Copper	2	1.0	0.90	2,000
Total Lead	1	ND	0.50	1,000
Total Manganese	5	<b>290</b>	2.0	5,000
Total Molybdenum	5	3.1	0.50	5,000
Total Nickel	2	1.6	1.0	2,000
Total Phosphorus	10	<b>820</b>	100	10,000
Total Selenium	1	ND	2.0	1,000
Total Silver	5	ND	0.090	5,000
Total Tin	5	1.8	1.0	5,000
Total Titanium	5	14	5.0	5,000
Total Zinc	2	ND	5.0	2,000
<b>Petroleum Hydrocarbons</b>				
Animal/Vegetable Oil & Grease	150	ND	0.50	150,000
Mineral/Synthetic Oil & Grease	15	ND	0.50	15,000

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Volatile Organics		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	ND	0.40	10
Chloroform	0.04	ND	0.40	40
1,2-Dichlorobenzene	0.05	ND	0.80	50
1,4-Dichlorobenzene	0.08	ND	0.80	80
Cis-1,2-Dichloroethylene	4	ND	1.0	4,000
Trans-1,3-Dichloropropylene	0.14	ND	0.80	140
Ethyl Benzene	0.16	ND	0.40	160
Methylene Chloride	2	ND	4.0	2,000
1,1,2,2-Tetrachloroethane	1.4	ND	0.80	1,400
Tetrachloroethylene	1	ND	0.40	1,000
Toluene	0.016	ND	0.40	16
Trichloroethylene	0.4	ND	0.40	400
Total Xylenes	1.4	ND	0.40	1,400
<b>Semi-Volatile Organics</b>				
Di-n-butyl Phthalate	0.08	ND	2	80
Bis (2-ethylhexyl) Phthalate	0.012	ND	2	12
3,3'-Dichlorobenzidine	0.002	ND	0.8	2
Pentachlorophenol	0.005	ND	1	5
Total PAHs	0.005	ND	1	5
<b>Misc Parameters</b>				
Nonylphenols	0.02	ND	0.005	20
Nonylphenol Ethoxylates	0.2	ND	0.001	200

Sample Collected:  
Temperature:

## HYDROLOGICAL REVIEW SUMMARY

**STORM**

**Sample Location:**

Inorganics		Sample Result	Sample Result with upper RDL included	
<b>Parameter</b>	<b>mg/L</b>	mg/L	mg/L	<b>ug/L</b>
pH	6.0 - 9.5	7.90		
BOD	15	ND	2	15,000
Phenolics 4AAP	0.008	ND	0.0010	8
TSS	15	<b>17</b>	10	15,000
Total Cyanide	0.02	ND	0.0050	20
<b>Metals</b>		<b>ug/L</b>	<b>ug/L</b>	
Total Arsenic	0.02	7.0	1.0	20
Total Cadmium	0.008	ND	0.090	8
Total Chromium	0.08	ND	5.0	80
Chromium Hexavalent	0.04	ND	0.50	40
Total Copper	0.04	1.0	0.90	40
Total Lead	0.12	ND	0.50	120
Total Manganese	0.05	<b>290</b>	2.0	50
Total Mercury	0.0004	ND	0.00010	0.4
Total Nickel	0.08	1.6	1.0	80
Total Phosphorus	0.4	<b>820</b>	100	400
Total Selenium	0.02	ND	2.0	20
Total Silver	0.12	ND	0.090	120
Total Zinc	0.04	ND	5.0	40
<b>Microbiology</b>		<b>CFU/100mL</b>	<b>CFU/100mL</b>	
E.coli	200	<10	10	200,000
<b>Volatile Organics</b>				
<b>Parameter</b>	<b>mg/L</b>	ug/L	ug/L	<b>ug/L</b>
Benzene	0.002	ND	0.40	2
Chloroform	0.002	ND	0.40	2
1,2-Dichlorobenzene	0.0056	ND	0.80	6
1,4-Dichlorobenzene	0.0068	ND	0.80	7
Cis-1,2-Dichloroethylene	0.0056	ND	1.0	6
Trans-1,3-Dichloropropylene	0.0056	ND	0.80	6
Ethyl Benzene	0.002	ND	0.40	2
Methylene Chloride	0.0052	ND	4.0	5
1,1,2,2-Tetrachloroethane	0.017	ND	0.80	17
Tetrachloroethylene	0.0044	ND	0.40	4
Toluene	0.002	ND	0.40	2
Trichloroethylene	0.0076	ND	0.40	8
Total Xylenes	0.0044	ND	0.40	4

