

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	Toronto, Ontario	Pg. 1, S. 1	
Postal Code	M8W 1N1	Pg. 1, S. 1	
Property Owner (on request for comments memo)	Apria Inc.	Pg. 1, S. 1.1	
Proposed description of the project (if applicable) (point towers, number of podiums)	Multi-storey Mixed-Use Development	Pg. 1, S. 1	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	Mixed residential and commercial	Pg. 1, S. 1.2	
Number of below grade levels for the proposed structure	1	Pg. 1, S. 1.2	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	October 21, 2019	Title page	
Who Performed the Hydrological Review (Consulting Firm)	PRI Engineering Inc.	Title page	
Name of Author of Hydrological Review	Arash Yazdani, P.Eng Director of Engineering Services	Pg. 12, S. 5	

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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>	<p><a href="#">PEO Member # 100173202</a></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"> <li>• Ontario Water Resources Act</li> <li>• Ontario Regulation 387/04</li> <li>• Toronto Municipal Code Chapter 681- Sewers</li> </ul>	<p>Yes</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>	<p>Pg. 10, S. 4.1.1            Pg. 10, S. 4.1.1            Pg. 9, S. 3.5</p>	
		<p>Page # &amp; Section # of every occurrence in the Review</p>	<p>Review Includes this Information City Staff (Check)</p>

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<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) <b>with safety factor included</b></p>	<p style="color: blue;">118,800</p> <p>What safety factor was used?</p> <p style="color: blue;">1.5</p>	<p style="color: blue;">P.10, S. 4.1</p>	
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) <b>without safety factor included</b></p>	<p style="color: blue;">90,900</p>	<p style="color: blue;">P.10, S.4.1</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 style="color: blue;">102,800</p> <p>What safety factor was used?</p> <p style="color: blue;">1.5</p>	<p style="color: blue;">P.10, S.4.1</p>	
<p>List the nearest surface water (river, creek, lake)</p>	<p style="color: blue;">Lake Ontario ~700 m</p>		

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	83.7 mASL	P.1, S. 1.2 P.10, S.4.1	
Foundation elevation	83.5 mASL	P.10, S. 4.1.2	
Ground elevation	88.2 to 89.0 mASL	P.4, S. 2.1 (Table1)	
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	Figure 1 Figure 2 Figure 3	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> Yes	Figure 1 Figure 2 Figure 3	N/A
WATER LEVEL AND WELLS		Page # & Section # of every occurrence	Review Includes this Information (City Staff Initial)

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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	P. 4, S. 2.1	
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, measurements were taken at all monitoring wells every week for 3 months.	P.5, S. 2.3	
All water levels in the wells have been measured with respect to masl.	Yes	P.4-5, S. 2	
A table of geology/soil stratigraphy for the property has been included.	Yes	P. 4, S. 2.1 (Table 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	P. 3, S. 1.4	
Key aquifers and the site's proximity to nearby surface water has been identified.	⊗ Yes	P. 3, S. 1.4 P. 8, S. 3.3	N/A

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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.	Yes	P. 8, S. 3.2	
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 at 4 monitoring wells.	P. 8, S. 3.2	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	A datalogger was used for the entire duration of each test.	P. 5, S. 2.4.3	
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 checked="" type="checkbox"/> Yes	P.5, S.2.4.3	N/A
The above noted slug or pump tests have been included in the report.	<input checked="" type="checkbox"/> Yes	P.5. S.3.2	
WATER QUALITY		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

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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, the sample was unfiltered and collected on July 5, 2019. P.9, S. 3.5	
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 <b>If there are any sample parameter Exceedances the groundwater can't be discharged as is.</b>	Total Suspended Solids P.9, S.3.5 (Table 5)	
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>	Total Suspended Solids Total Manganese Total PAHs P.9, S.3.5 (Table 5)	
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 P.9, S.3.5. Appendix C	N/A

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List of Canadian accredited laboratories: <a href="#">Standards Council of Canada</a>	ALS Environmental (Waterloo) ALS Canada Ltd. Accreditation No. A3149 (CALA)	Appendix C	
A chain of custody record for the samples is included with the report.	Yes	Appendix C	
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.	unfiltered sample only	Appendix C	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	Total Suspended Solids	Appendix C	
A true copy of the Certificate of Analysis report, is included with the report.	Yes	Appendix C	
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	P.10-11, S. 4	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 <b>If yes, identify impact:</b>  <input checked="" type="radio"/> No	P11, S. 4.2-4.3  N/A

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

## HYDROLOGICAL REVIEW SUMMARY

### Appendix A:

**SANITARY/COMBINED**

**Sample Location:** MW19-11 (4828048.015 N, 618989.928 E)

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	< 3	3.0	300,000
Fluoride	10	< 0.4	0.40	10,000
TKN	100	12.1	1.5	100,000
pH	6.0 - 11.5	7.49	0.1	6.0 - 11.5
Phenolics 4AAP	1	< 0.0010	0.0010	1,000
TSS	350	1540	20	350,000
Total Cyanide	2	< 0.0020	0.0020	2,000
<b>Metals</b>				
Chromium Hexavalent	2	< 0.00050	0.00050	2,000
Mercury	0.01	< 0.000010	0.000010	10
Total Aluminum	50	< 0.050	0.050	50,000
Total Antimony	5	< 0.0010	0.0010	5,000
Total Arsenic	1	0.0021	0.0010	1,000
Total Cadmium	0.7	< 0.000050	0.000050	700
Total Chromium	4	< 0.0050	0.0050	4,000
Total Cobalt	5	0.0029	0.0010	5,000
Total Copper	2	< 0.010	0.010	2,000
Total Lead	1	< 0.00050	0.00050	1,000
Total Manganese	5	0.676	0.0050	5,000
Total Molybdenum	5	0.0040	0.00050	5,000
Total Nickel	2	<0.0050	0.0050	2,000
Total Phosphorus	10	1.15	0.030	10,000
Total Selenium	1	< 0.00050	0.00050	1,000
Total Silver	5	<0.00050	0.00050	5,000
Total Tin	5	< 0.0010	0.0010	5,000
Total Titanium	5	< 0.0030	0.0030	5,000
Total Zinc	2	< 0.03	0.03	2,000
<b>Petroleum Hydrocarbons</b>				
Animal/Vegetable Oil & Grease	150	< 2.0	2.0	150,000
Mineral/Synthetic Oil & Grease	15	< 1.0	1.0	15,000

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Volatile Organics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	mg/L	mg/L	<u>ug/L</u>
Benzene	0.01	< 0.00050	0.00050	10
Chloroform	0.04	< 0.0010	0.0010	40
1,2-Dichlorobenzene	0.05	< 0.00050	0.00050	50
1,4-Dichlorobenzene	0.08	< 0.00050	0.00050	80
Cis-1,2-Dichloroethylene	4	< 0.00050	0.00050	4,000
Trans-1,3-Dichloropropylene	0.14	< 0.00050	0.00050	140
Ethyl Benzene	0.16	< 0.00050	0.00050	160
Methylene Chloride	2	< 0.0020	0.0020	2,000
1,1,2,2-Tetrachloroethane	1.4	< 0.00050	0.00050	1,400
Tetrachloroethylene	1	< 0.00050	0.00050	1,000
Toluene	0.016	< 0.00050	0.00050	16
Trichloroethylene	0.4	< 0.00050	0.00050	400
Total Xylenes	1.4	< 0.0011	0.0011	1,400
<b>Semi-Volatile Organics</b>				
Di-n-butyl Phthalate	0.08	< 0.0010	0.0010	80
Bis (2-ethylhexyl) Phthalate	0.012	< 0.0020	0.0020	12
3,3'-Dichlorobenzidine	0.002	< 0.00040	0.00040	2
Pentachlorophenol	0.005	< 0.00050	0.00050	5
Total PAHs	0.005	0.0048	0.0017	5
<b>Misc Parameters</b>				
Nonylphenols	0.02	< 0.0010	0.0010	20
Nonylphenol Ethoxylates	0.2	< 0.010	0.010	200

Sample Collected:  
Temperature:

## HYDROLOGICAL REVIEW SUMMARY

**STORM**

**Sample Location:** MW19-11 (4828048.015 N, 618989.928 E)

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>
pH	6.0 - 9.5	7.49	0.1	
BOD	15	< 3	3.0	15,000
Phenolics 4AAP	0.008	< 0.0010	0.0010	8
TSS	15	1540	20	15,000
Total Cyanide	0.02	< 0.0020	0.0020	20
<b>Metals</b>				
Total Arsenic	0.02	0.0021	0.0010	20
Total Cadmium	0.008	< 0.000050	0.000050	8
Total Chromium	0.08	< 0.0050	0.0050	80
Chromium Hexavalent	0.04	< 0.00050	0.00050	40
Total Copper	0.04	< 0.010	0.010	40
Total Lead	0.12	< 0.00050	0.00050	120
Total Manganese	0.05	0.676	0.0050	50
Total Mercury	0.0004	< 0.000010	0.000010	0.4
Total Nickel	0.08	< 0.0050	0.0050	80
Total Phosphorus	0.4	1.15	0.030	400
Total Selenium	0.02	< 0.00050	0.00050	20
Total Silver	0.12	< 0.00050	0.00050	120
Total Zinc	0.04	< 0.03	0.03	40
<b>Microbiology</b>				
E.coli	200	< 2 CFU/100mL	2	200,000
<b>Volatile Organics</b>				
<u>Parameter</u>	<u>mg/L</u>			<u>ug/L</u>
Benzene	0.002	< 0.00050	0.00050	2
Chloroform	0.002	< 0.0010	0.0010	2
1,2-Dichlorobenzene	0.0056	< 0.00050	0.00050	6
1,4-Dichlorobenzene	0.0068	< 0.00050	0.00050	7
Cis-1,2-Dichloroethylene	0.0056	< 0.00050	0.00050	6
Trans-1,3-Dichloropropylene	0.0056	< 0.00050	0.00050	6
Ethyl Benzene	0.002	< 0.00050	0.00050	2
Methylene Chloride	0.0052	< 0.0020	0.0020	5
1,1,2,2-Tetrachloroethane	0.017	< 0.00050	0.00050	17
Tetrachloroethylene	0.0044	< 0.00050	0.00050	4
Toluene	0.002	< 0.00050	0.00050	2
Trichloroethylene	0.0076	< 0.00050	0.00050	8
Total Xylenes	0.0044	< 0.0011	0.0011	4

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Semi-Volatile Organics		Sample Result mg/L	Sample Result with upper RDL included mg/L	
Di-n-butyl Phthalate	0.015	< 0.0010	0.0010	5
Bis (2-ethylhexyl) Phthalate	0.0088	< 0.0020	0.0020	8.8
3,3'-Dichlorobenzidine	0.0008	< 0.00040	0.00040	0.8
Pentachlorophenol	0.002	< 0.00050	0.00050	2
Total PAHs	0.002	0.0048	0.0017	2
PCBs	0.0004	< 0.00040	0.00040	0.4
Misc Parameters				
Nonylphenols	0.001	< 0.0010	0.001	1
Nonylphenol Ethoxylates	0.01	< 0.010	0.01	10

Sample Collected: 05-JUL-19 , 9:00AM  
 Temperature: 15.0 deg C

Consulting Firm that prepared Hydrological Report: PRI Engineering Inc.

Qualified Professional who completed the report summary: Arash Yazdani, P.Eng  
 Print Name

Qualified Professional who completed the report summary: *Arash Yazdani*  
 Signature

