

Door to Door Water Well Survey Report

(Highway 400 – Highway 404 Link (Bradford Bypass) County Road 4 Early Works
(GWP 2008-21-00))

Ministry of Transportation Ontario

60636190

December 2021

Statement of Qualifications and Limitations

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- may be based on information provided to AECOM which has not been independently verified;
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AECOM: 2015-04-13

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Quality Information

Prepared by



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DRAFT

Ministry of Transportation Ontario

Door to Door Water Well Survey Report

(Highway 400 – Highway 404 Link (Bradford Bypass) County Road 4 Early Works (GWP 2008-21-00))

Prepared for:

Ministry of Transportation Ontario

Prepared by:

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DRAFT

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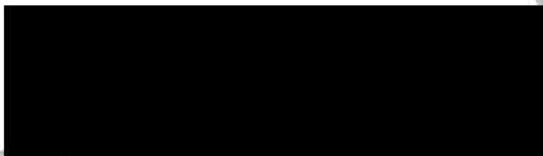
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1. Introduction

The Ontario Ministry of Transportation (MTO) has retained AECOM Canada Ltd. (AECOM) to undertake the Early Works study for the grade separated bridge crossing at County Road 4 for the future Bradford Bypass (Highway 400 – Highway 404 Link) Project, in accordance with the provisions of the Ontario Regulation (O. Reg.) 697/21. The Project limits of construction work is located along County Road 4 from north of 8th Line to 9th Line within in the Town of Bradford West Gwillimbury and Simcoe County. The Study Area map is presented in **Figure 1**. This study will advance as an early works project for the Bradford Bypass Project. The new bridge will be designed to include the widening of County Road 4 approved by Simcoe County.

This report provides a summary of the work undertaken and factual data obtained by AECOM to fulfil obligations for the pre-construction assessment of private well supplies in the vicinity of the above-noted MTO.

2. Work Program Description

The initial step in the Door To Door Water Well Survey (DDWWS) involved a review of available project documentation and design information relating to the proposed construction activities and methods, as well as a desktop review of existing published information within a radial distance of approximately 500 m of the project limits (the 'Study Limits') (see **Figure 1**) as a precursor to field assessment activities, including:

- Aerial photographs;
- Available Ontario Ministry of Environment, Conservation, and Parks (MECP) Water Well Record and Permit To Take Water (PTTW) databases (incl. Environmental Bill of Rights registry);
- Available mapping (e.g., topographic, base mapping, geological) and reports (e.g., watershed plans, aquifer vulnerability mapping, site-specific investigations);
- Subsurface or other hydrogeological information that AECOM and/or the MTO may have on file which pertains to the Study Limits; and
- Geotechnical data / reports carried out as part of the current project, if available.

Upon completion of the preliminary desktop review, AECOM staff mailed to all known and listed properties in the MECP database a letter explaining the water well survey from that was attached to the letter. The homeowners were given one month upon receipt of the letter and form to complete and send back. The water well survey form allowed the homeowners to confirm groundwater use and to provide basic well information, including the location, type, depth, condition, use, yield and water quality of any identified wells. A stamped envelope was left at each residence in a conspicuous location (i.e., in mailbox or front door) for completion by the property owner and return mailing to AECOM.

The purpose of the initial desktop review and field reconnaissance was to identify, on a preliminary basis to the extent possible, the following:

- General groundwater usage including aquifers, well types and locations;
- Location and use of large volume wells, if present; and
- Wells with known quality and/or quantity problems.

For each identified well source where access permission was obtained from the Property Owner, a baseline well survey / assessment was carried out to document pre-construction conditions (quality and quantity). The scope of each baseline (pre-construction) well survey was developed based on requirements outlined in the following reference documents:

- a) MTO, April 2004. Guidelines for Drinking Water Sampling and Testing in Ministry of Transportation Activities.
- b) MECP, December 2009. Water Supply Wells – Requirements & Best Management Practices. Chapter 10 – Yield Test.

The baseline survey for each identified well (where accessible) included the following elements, at a minimum. Variations to the generalized methodology below were made in the field, as required, based on site-specific conditions encountered at each property and/or requests made by individual property owners:

1. Interview with the current property owner and/or tenant.
2. Documentation of well construction details (including well type, diameter, casing material, total depth, stick-up, general condition, co-ordinate location, etc.) in written form and through the collection of digital photographs.
3. Measurement of the static groundwater level within the well.
4. Collection of a representative raw (untreated) water sample for analysis of general water quality (pH; total hardness; total alkalinity; calcium, magnesium, sodium; potassium; iron, manganese; chloride; sulphate; nitrate [NO₃-N]; nitrite [NO₂-N], ammonia / ammonium [NH₃-N]; electrical conductivity; total dissolved solids [TDS]; total suspended solids [TSS]; tannin and lignins) and microbiological (*E. coli*, faecal coliforms, total coliforms) parameters.

Private wells were not opened, and measurement of groundwater levels and completion of well yield tests were not completed as part of this program. Groundwater samples were obtained from untreated taps to obtain a representative sample. Groundwater quality samples were submitted under chain of custody documentation to a CALA-accredited environmental analytical laboratory for general inorganic and microbiological testing. Any exceedances of the applicable drinking water standards were reported to the well owner, MTO, and to the local public health unit, where appropriate.

As detailed in the MTO Guidance Document (April 2004), the following standard forms were referenced by AECOM in the completion of this assignment:

- Form 1: Field Survey Documentation Form
- Form 2: Standard Checklist for Collection and Handling of Drinking Water Samples
- Form 3: Letter to Licensed Laboratory
- Form 4: Analytical Results Comparison Table
- Form 5: Notification Letter – No exceedance of Regulated Parameters
- Form 6: Notification Letter – Exceedance of MTO Mandatory Parameters
- Form 7: Notification Letter – Exceedance of Other Regulated Parameters
- Form 8: Communication Record
- Form 9: Checklist for Well Water Quantity Testing

Results of the DDWWS are summarized in this stand-alone report. The documentation provided includes well owner notification in accordance with the procedures outlined within the MTO Guideline Document (April 2004). All reporting completed for this assignment has been completed by an experienced hydrogeologist licenced by the Professional Geoscientist of Ontario (PGO).

2.1 Identification of Licenced Laboratory

AECOM retained AGAT Laboratories (Mississauga, ON) to provide analytical testing services for this assignment. AGAT is a CAEAL, SCC and MECP-accredited environmental analytical laboratory, and are well qualified to provide the services required.

2.2 Project Staff / Licencing

AECOM is a *Licensed Water Well Contractor* (#7503) with MECP. Licences presently held by AECOM include Class #4 (Pump Installation) and Class #5 (Monitoring, Sampling, Testing, and Non-Powered Construction).

Mr. Brian Holden (P. Geo.) was designated by AECOM as the Well Technician for this assignment. Brian led the water well survey program, completed all phone and in-person interviews and wrote the exceedance letters as necessary. Brian possesses more than 13 years professional consulting experience in the development and implementation of hydrogeologic / environmental investigations. Brian possesses knowledge of the relevant guidelines, acts and legislation as they apply to water resource development, construction dewatering, aggregate resources, environmental site assessment / investigation, waste management, and remediation. Brian's consulting experience has included a broad range of projects, such as: preliminary and detailed hydrogeological investigations, water budget / balance assessments, groundwater and surface water resource development, aggregate resources (development and operational monitoring), environmental impact and site assessment, environmental permitting (PTTW / ECA), and contaminated site remediation / monitoring.

3. Results and Discussion

Upon completion of the initial background information review a total of forty-four (44) properties that were identified within a radial distance of approximately 500 m of the County Road 4 early works Study Area. A summary of the results of the private well survey requests that were mailed to residences is provided in **Table 1**.

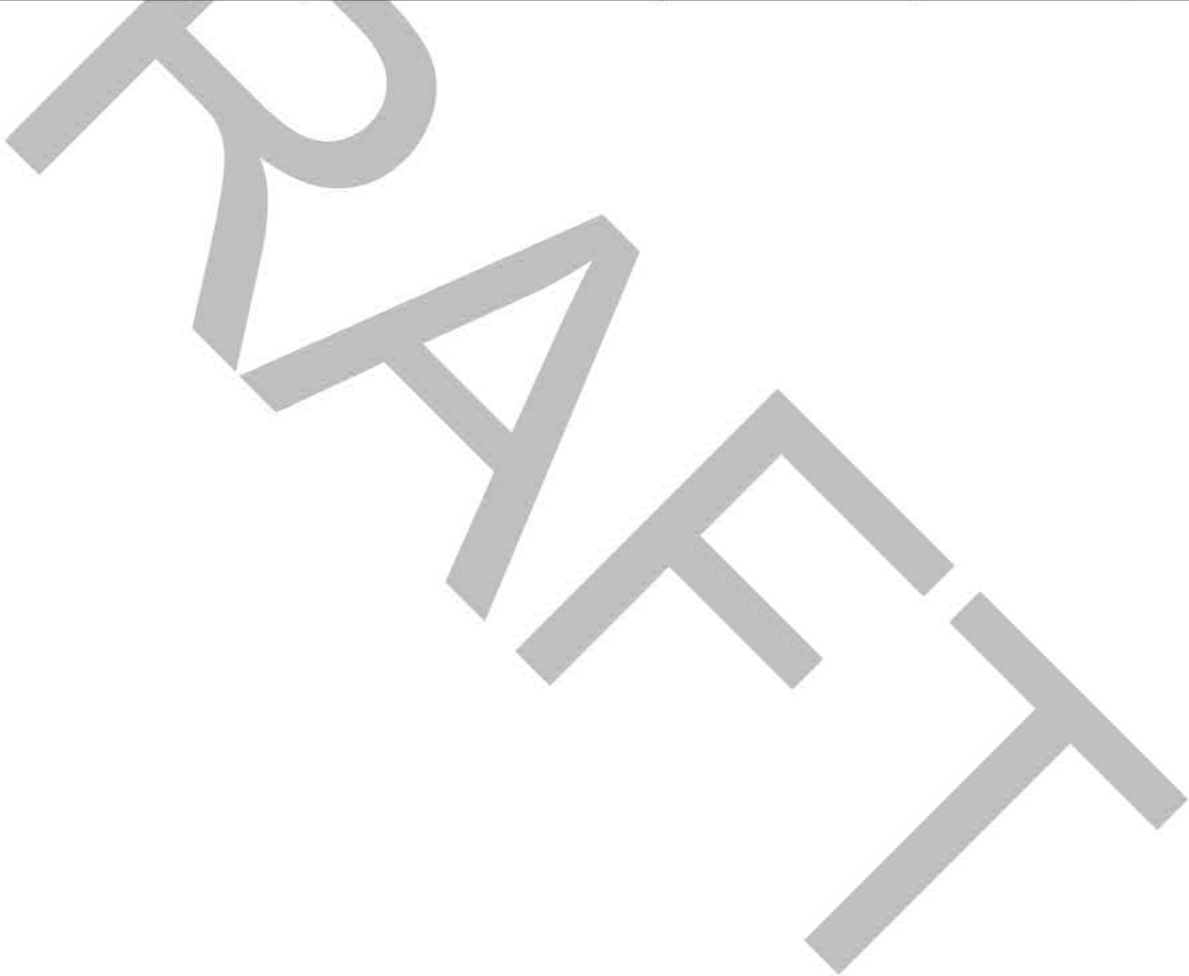
Table 1: Summary of Results of Private Well Survey Requests Mailed to Residences

Property ID	Property Description / Address	UTM Co-Ordinate Location	Contact With Owner / Resident (Y/N)	Complete Survey Received	Permission To Complete Testing?
1			N	N	--
2			N	N	--
3			N	N	--
4			N	N	--
5			N	N	--
6			N	N	--
7			N	N	--
8			N	N	--
9			N	N	--
10			Y	Y	Y
11			N	N	--
12			N	N	--
13			N	N	--
14			N	N	--
15			Y	Y	Y
16			N	N	--
17			N	N	--
18			N	N	--
19			N	N	--
20			N	N	--
21			N	N	--
22			N	N	--
23			N	N	--
24			N	N	--
25			N	N	--
26			N	N	--
27			N	N	--
28			N	N	--
29			N	N	--
30			N	N	--
31			N	N	--
32			N	N	--
33			Y	Y	Y
34			N	N	--
35			N	N	--
36			N	N	--
37			N	N	--

Door to Door Water Well Survey Report

(Highway 400 – Highway 404 Link (Bradford Bypass) County Road 4 Early Works (GWP 2008-21-00))

Property ID	Property Description / Address	UTM Co-Ordinate Location	Contact With Owner / Resident (Y/N)	Complete Survey Received	Permission To Complete Testing?
38			N	N	--
39			N	N	--
40			Y	Y	Y
41			N	N	--
42			N	N	--
43			N	N	--
44			N	N	--



Following mailing of the survey letter, a response was received from a total of four (4) property owners, or 9% of the identified properties. The properties were scheduled for participation within the pre-construction PWMP between October 6th and October 14th, 2021, as summarized in **Table 2**.

Table 2: Private Well Monitoring Program Testing Summary

Property ID	Property Description / Address	Date of Site Visit	Well Accessible for Monitoring?	Raw (Untreated) Water Sample Obtained?
10		6-Oct-21	Y	Y
15		14-Oct-21	Y	Y
33		13-Oct-21	Y	Y
40		14-Oct-21	Y	Y

Further property specific detail regarding the testing work that was completed at each property is provided in the appendices attached to this report. A general summary of the results of the DDWWS is summarized below:

- Water quality sampling results from two (2) of the properties determined that the drinking water sample obtained had exceedances above the Ontario Drinking Water Standards (ODWS) for health-related parameters. Owners were contacted by phone to resample the well water and informed to contact the Local Public Health Units to discuss the results further.
- Other parameters that were exceeded for the ODWS fell into the aesthetic objectives which may impair the taste, odour, and colour of water which may interfere with good water quality or are operational guidelines that must be controlled to make water treatment systems effective.
- Drilled wells were in excellent condition; however, dug wells had historical lid issues or debris/objects blocking assessment of the well lid.
- All properties except for one have water softeners and/or some form of water treatment (chlorination, reverse osmosis or ultraviolet lights).

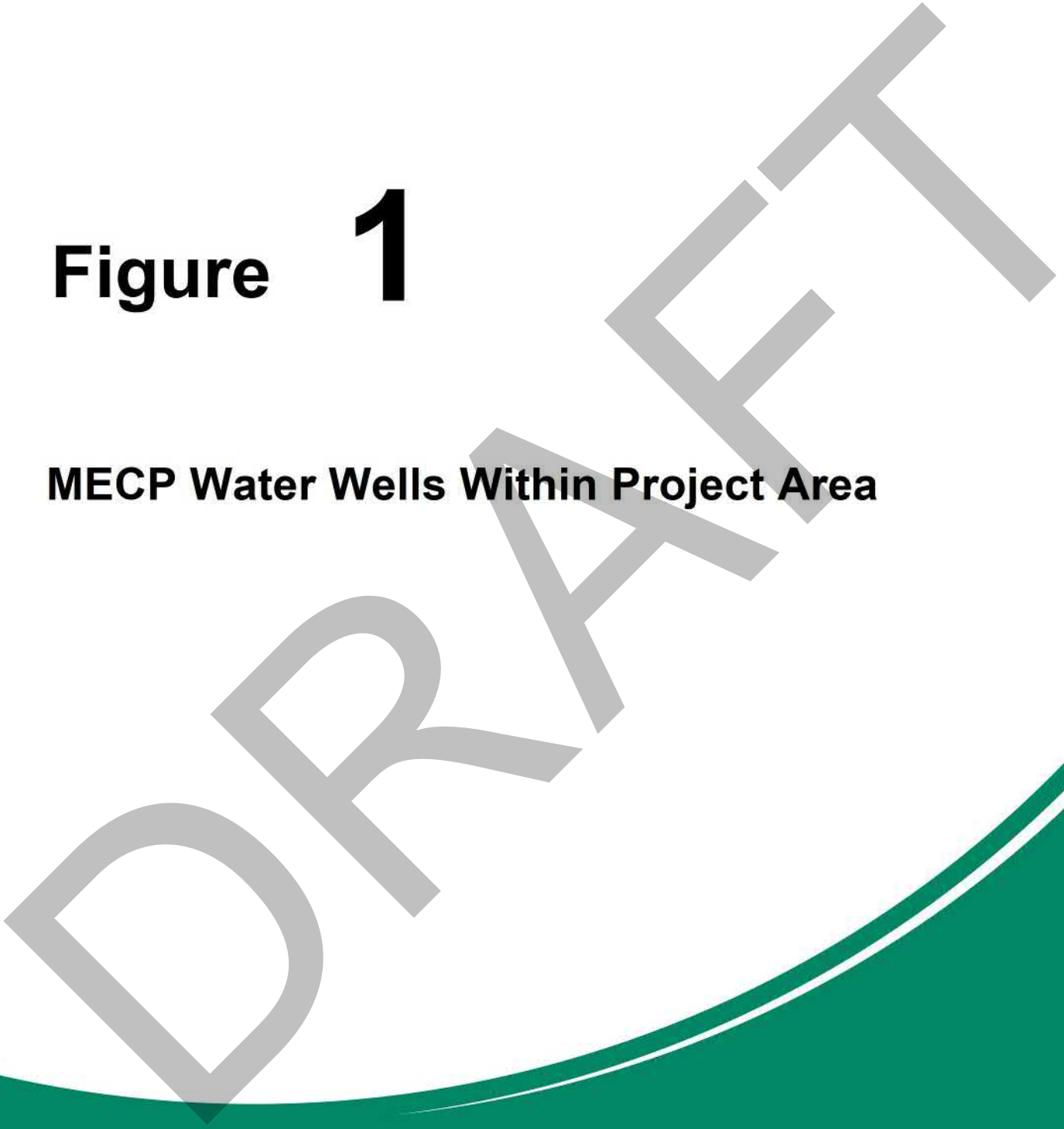
A copy of the lab results, including the completed AECOM field investigation and any exceedances were hand delivered to all respective properties in an envelope.

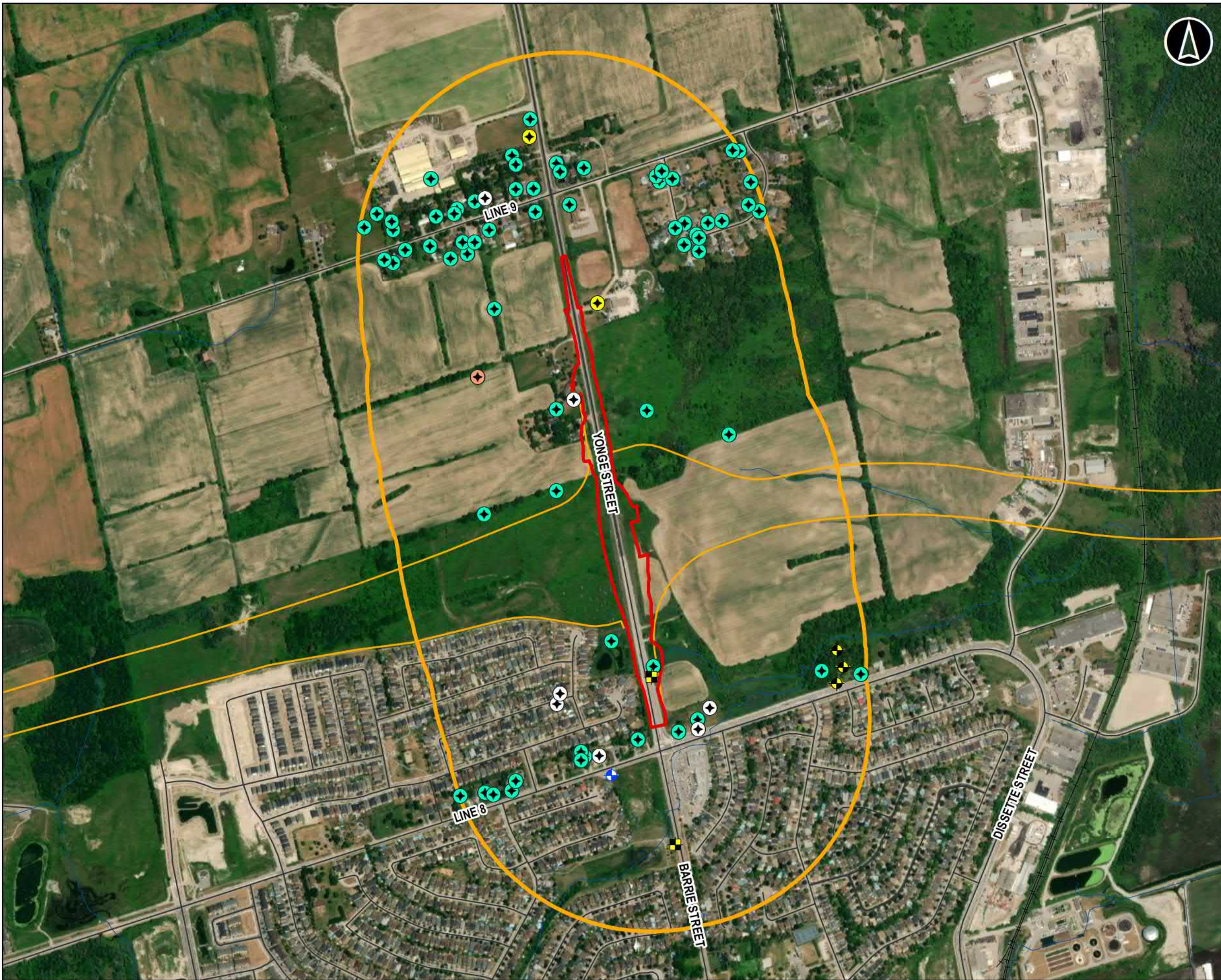
4. Conclusion

It is recommended that prior to any construction dewatering occurring that the four (4) properties listed in **Table 2** be contacted for monitoring and sampling of the residential well during and after construction to ensure that there is no effect on the water quality from the baseline assessed. The DDWWS provides a baseline for the water wells prior to the proposed construction to determine existing water quality and quantity of each property. Additional mailing of letters to all properties within 500 m of the study limits is recommended to ensure all concerned homeowners are monitored during and after construction to capture and ensure potential well issues are addressed and monitored.

Figure 1

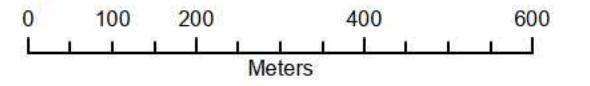
MECP Water Wells Within Project Area





Legend

- Study Area Boundary
- County Road 4 Limits of Work
- Highway 400 - Highway 404 Link (Bradford Bypass) Right of Way
- Rail
- Watercourses
- Waterbody
- Municipality Boundary
- Roads**
- Provincial Highway
- Other
- MECP Water Wells**
- + Domestic
- + Industrial
- + Livestock
- + Not Used
- + Monitoring
- + Monitoring and Test Hole
- + Test Hole



Highway 400 - Highway 404 Link (Bradford Bypass)

County Road 4 Door To Door Well Survey

December 2021	1:9,000 <small>* when printed 11"x17"</small>	Datum: NAD 1983 UTM Zone 17N Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS
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AECOM	Figure 1
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Date Saved: 2021-12-10 10:33:20 AM User: Naren_Ashwin_Vijayar

Appendix **A**



November 22th, 2021

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Project No: 60636190
Regarding: Pre-Construction Water Quality Testing Results
MTO Bradford Bypass Project

Dear [REDACTED]

AECOM Canada Ltd. (AECOM) would like to thank you for your participation in the Pre-Construction Well Assessment Program offered to local residents as part of the Bradford Bypass Project. Based on receipt of written permission from yourself, a sample of raw (untreated) groundwater from your private well was collected for laboratory analysis by AECOM staff on October 6th, 2021. Please find attached a copy of the water quality testing results for your review and record.

Laboratory testing results for the sample obtained indicate that concentrations of certain parameters, as shown in the table below, are in excess of the *Ontario Drinking Water Standards, Objectives and Guidelines* (Ontario Ministry of the Environment, 2006). It should be noted, however, that these results are based on a single sample analysis and that additional testing is recommended.

PARAMETER	CONCENTRATION IN YOUR WATER	STANDARD VALUE / RANGE	STANDARD TYPE	HEALTH RELATED (Y / N)
Colour	26 TCU	5 TCU	AO	N
Iron	1.06 mg/L	0.3 mg/L	AO	N

NOTE: MAC – Maximum Acceptable Concentration; AO – Aesthetic Objective; OG – Operational Guideline.

For your information, the *Well Aware Booklet – A Guide To Caring For Your Well* created by Green Communities Canada is available on the Walkerton Clean Water Centre (WCWC) website at:

<https://wccw.ca/well-aware-and-well-wise-program-resources-for-homeowners/>

Should you have any questions or concerns regarding the quality of your well water, it is recommended that you contact your local Public Health Unit for further information and advice. Contact information for your Local Public Health Unit is provided, as follows:

Simcoe Muskoka District Health Unit
80 Bradford St. #403
Barrie, ON L4N 6S7
Website: <https://www.simcoemuskokahealth.org/>
Telephone: 705.721.7520

If you have any further questions, please contact:

AECOM Canada Ltd. C/O Brian Holden, P.Geo.
Hydrogeology, Environment
Telephone: 226-821-2486

Email: brian.holden@aecom.com

Sincerely,
AECOM Canada Ltd.



Brian Holden, P.Geo.
Hydrogeologist
DCS Americas, Canada East (Greater Ontario / Metro Toronto)
Environment
Brian.holden@aecom.com

Encl.

cc: R. Sheikh, N. Valenton, S. Rankin, S.Schmied – AECOM;
H. Singh, L. Sarris, J. MacKinnon, R. Gribbon – MTO

CLIENT NAME: AECOM CANADA LTD
50 SPORTSWORLD CROSSING RD UNIT 290
KITCHENER, ON N2P0A4
(519) 650-5313

ATTENTION TO: Brian Holden

PROJECT: 60636190

AGAT WORK ORDER: 21T812334

MICROBIOLOGY ANALYSIS REVIEWED BY: [REDACTED]

WATER ANALYSIS REVIEWED BY: [REDACTED]

DATE REPORTED: Oct 13, 2021

PAGES (INCLUDING COVER): 13

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***Notes**

[Empty box for notes]

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



Certificate of Analysis

AGAT WORK ORDER: 21T812334

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE: Bradford

ATTENTION TO: Brian Holden

SAMPLED BY: Justin Borrmann

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2021-10-06

DATE REPORTED: 2021-10-13

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water

DATE SAMPLED: 2021-10-06
10:35

3061845

Parameter	Unit	G / S	RDL	3061845
Escherichia coli	CFU/100mL	100	1	ND
Total Coliforms	CFU/100mL		1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3061845 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Nivine Dasly



Certificate of Analysis

AGAT WORK ORDER: 21T812334

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE: Bradford

ATTENTION TO: Brian Holden

SAMPLED BY: Justin Bormann

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2021-10-06

DATE REPORTED: 2021-10-13

SAMPLE DESCRIPTION: ██████████

SAMPLE TYPE: Water

DATE SAMPLED: 2021-10-06
10:35

3061845

Parameter	Unit	G / S	RDL	3061845
Electrical Conductivity	µS/cm		2	457
pH	pH Units	6.5-8.5	NA	8.17
Saturation pH (Calculated)				7.53
Langelier Index (Calculated)				0.644
Hardness (as CaCO3) (Calculated)	mg/L		0.5	86.3
Total Dissolved Solids	mg/L		10	258
Alkalinity (as CaCO3)	mg/L		5	233
Bicarbonate (as CaCO3)	mg/L		5	233
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	0.26
Chloride	mg/L		0.10	9.00
Nitrate as N	mg/L		0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	<0.10
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L		0.02	0.93
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	0.0795
Total Phosphorus	mg/L	*	0.02	0.12
Total Organic Carbon	mg/L		0.5	8.9
True Colour	TCU		5	26
Turbidity	NTU		0.5	5.0
Total Calcium	mg/L		0.10	17.1
Total Magnesium	mg/L		0.10	10.6
Total Potassium	mg/L		0.50	1.04
Total Sodium	mg/L		0.10	63.9
Aluminum-dissolved	mg/L	*	0.004	<0.004
Total Antimony	mg/L	0.020	0.001	<0.001

Certified By:

Jris Vera'stegui



Certificate of Analysis

AGAT WORK ORDER: 21T812334

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE: Bradford

ATTENTION TO: Brian Holden

SAMPLED BY: Justin Bormann

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2021-10-06

DATE REPORTED: 2021-10-13

SAMPLE DESCRIPTION: ██████████

SAMPLE TYPE: Water
DATE SAMPLED: 2021-10-06
10:35
3061845

Parameter	Unit	G / S	RDL	3061845
Total Arsenic	mg/L	0.1	0.003	<0.003
Total Barium	mg/L		0.002	0.089
Total Beryllium	mg/L	*	0.001	<0.001
Total Boron	mg/L	0.2	0.010	0.137
Total Cadmium	mg/L	0.0002	0.0001	<0.0001
Total Chromium	mg/L		0.003	<0.003
Total Cobalt	mg/L	0.0009	0.0005	<0.0005
Total Copper	mg/L	0.005	0.001	0.002
Total Iron	mg/L	0.3	0.010	1.06
Total Lead	mg/L	*	0.001	<0.001
Total Manganese	mg/L		0.002	0.022
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Total Molybdenum	mg/L	0.040	0.002	0.010
Total Nickel	mg/L	0.025	0.003	<0.003
Total Selenium	mg/L	0.1	0.002	<0.002
Total Silver	mg/L	0.0001	0.0001	<0.0001
Total Strontium	mg/L		0.005	0.293
Total Thallium	mg/L	0.0003	0.0003	<0.0003
Total Tin	mg/L		0.002	<0.002
Total Titanium	mg/L		0.010	<0.010
Total Tungsten	mg/L	0.030	0.010	<0.010
Total Uranium	mg/L	0.005	0.002	<0.002
Total Vanadium	mg/L	0.006	0.002	<0.002
Total Zinc	mg/L	0.030	0.020	0.076
Total Zirconium	mg/L	0.004	0.004	<0.004
Lab Filtration Aluminum Dissolved				2021/10/7
Lab Filtration mercury				2021/10/7

Certified By:

Jris Vera'stegui



Certificate of Analysis

AGAT WORK ORDER: 21T812334

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford

ATTENTION TO: Brian Holden

SAMPLED BY:Justin Borrmann

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2021-10-06

DATE REPORTED: 2021-10-13

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
3061845 Dilution required, RDL has been increased accordingly.
Un-ionized Ammonia detection limit is a calculated RDL. The calculation of Un-ionized Ammonia is based on lab measured parameters (ammonia as N, pH and temperature). Values are reported as calculated.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Exceedance Summary

AGAT WORK ORDER: 21T812334

PROJECT: 60636190

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3061845	██████████	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.0795
3061845	██████████	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	1.06
3061845	██████████	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zinc	mg/L	0.030	0.076

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE: Bradford

AGAT WORK ORDER: 21T812334
 ATTENTION TO: Brian Holden
 SAMPLED BY: Justin Borrmann

Microbiology Analysis

RPT Date: Oct 13, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli	3061729	ND	ND	NA	< 1
Total Coliforms	3061729	50	40	22.2%	< 1

Comments: ND - Not Detected, NA - % RPD Not Applicable.

Certified By:



Nivine Basly

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
PROJECT: 60636190
SAMPLING SITE:Bradford

AGAT WORK ORDER: 21T812334
ATTENTION TO: Brian Holden
SAMPLED BY:Justin Borrmann

Water Analysis																
RPT Date: Oct 13, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Water Quality Assessment - PWQO (mg/L)															
Electrical Conductivity	3062184		40	40	0.0%	< 2	100%	90%	110%						
pH	3062184		6.69	6.73	0.6%	NA	102%	90%	110%						
Total Dissolved Solids	3060808		172	186	7.8%	< 10	98%	80%	120%						
Alkalinity (as CaCO3)	3062184		17	16	NA	< 5	87%	80%	120%						
Bicarbonate (as CaCO3)	3062184		17	16	NA	< 5	NA								
Carbonate (as CaCO3)	3062184		<5	<5	NA	< 5	NA								
Hydroxide (as CaCO3)	3062184		<5	<5	NA	< 5	NA								
Fluoride	3068146		<0.05	<0.05	NA	< 0.05	94%	70%	130%	107%	80%	120%	103%	70%	130%
Chloride	3068146		64.1	64.1	0.0%	< 0.10	93%	70%	130%	110%	80%	120%	109%	70%	130%
Nitrate as N	3068146		<0.05	<0.05	NA	< 0.05	100%	70%	130%	108%	80%	120%	108%	70%	130%
Nitrite as N	3068146		<0.05	<0.05	NA	< 0.05	102%	70%	130%	99%	80%	120%	112%	70%	130%
Bromide	3068146		<0.05	<0.05	NA	< 0.05	107%	70%	130%	106%	80%	120%	107%	70%	130%
Sulphate	3068146		123	123	0.0%	< 0.10	97%	70%	130%	109%	80%	120%	106%	70%	130%
Ortho Phosphate as P	3068146		<0.10	<0.10	NA	< 0.10	100%	70%	130%	100%	80%	120%	100%	70%	130%
Ammonia as N	3062181		<0.02	<0.02	NA	< 0.02	105%	70%	130%	99%	80%	120%	90%	70%	130%
Total Phosphorus	3061760		0.87	0.89	2.3%	< 0.02	98%	70%	130%	97%	80%	120%	NA	70%	130%
Total Organic Carbon	3062196		1.3	1.3	NA	< 0.5	103%	90%	110%	103%	90%	110%	95%	80%	120%
True Colour	3051121		232	237	2.1%	< 5	105%	90%	110%						
Turbidity	3061372		42.1	44.5	5.5%	< 0.5	98%	80%	120%						
Total Calcium	3059717		40.8	40.3	1.2%	< 0.10	93%	70%	130%	94%	80%	120%	100%	70%	130%
Total Magnesium	3059717		14.1	13.8	2.2%	< 0.10	97%	70%	130%	97%	80%	120%	103%	70%	130%
Total Potassium	3059717		1.29	1.24	NA	< 0.50	94%	70%	130%	95%	80%	120%	101%	70%	130%
Total Sodium	3059717		8.59	8.44	1.8%	< 0.10	92%	70%	130%	92%	80%	120%	101%	70%	130%
Aluminum-dissolved	3057466		<0.004	<0.004	NA	< 0.004	110%	70%	130%	107%	80%	120%	85%	70%	130%
Total Antimony	3059717		<0.001	<0.001	NA	< 0.001	99%	70%	130%	104%	80%	120%	105%	70%	130%
Total Arsenic	3059717		<0.003	<0.003	NA	< 0.003	93%	70%	130%	116%	80%	120%	112%	70%	130%
Total Barium	3059717		0.062	0.062	0.0%	< 0.002	101%	70%	130%	103%	80%	120%	109%	70%	130%
Total Beryllium	3059717		<0.001	<0.001	NA	< 0.001	96%	70%	130%	112%	80%	120%	112%	70%	130%
Total Boron	3059717		0.023	0.026	NA	< 0.010	99%	70%	130%	103%	80%	120%	111%	70%	130%
Total Cadmium	3059717		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	105%	80%	120%	107%	70%	130%
Total Chromium	3059717		<0.003	<0.003	NA	< 0.003	107%	70%	130%	102%	80%	120%	107%	70%	130%
Total Cobalt	3059717		<0.0005	<0.0005	NA	< 0.0005	107%	70%	130%	109%	80%	120%	111%	70%	130%
Total Copper	3059717		0.002	0.002	NA	< 0.001	105%	70%	130%	104%	80%	120%	110%	70%	130%
Total Iron	3059717		0.162	0.181	11.1%	< 0.010	102%	70%	130%	105%	80%	120%	101%	70%	130%
Total Lead	3059717		<0.001	<0.001	NA	< 0.001	96%	70%	130%	109%	80%	120%	109%	70%	130%
Total Manganese	3059717		0.100	0.112	11.3%	< 0.002	103%	70%	130%	109%	80%	120%	107%	70%	130%
Dissolved Mercury	3065987		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	99%	80%	120%	99%	70%	130%
Total Molybdenum	3059717		<0.002	<0.002	NA	< 0.002	106%	70%	130%	107%	80%	120%	110%	70%	130%
Total Nickel	3059717		<0.003	<0.003	NA	< 0.003	104%	70%	130%	105%	80%	120%	106%	70%	130%

Quality Assurance

 CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE: Bradford

 AGAT WORK ORDER: 21T812334
 ATTENTION TO: Brian Holden
 SAMPLED BY: Justin Borrmann

Water Analysis (Continued)

RPT Date: Oct 13, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Total Selenium	3059717		<0.002	<0.002	NA	< 0.002	96%	70%	130%	113%	80%	120%	105%	70%	130%	
Total Silver	3059717		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	109%	80%	120%	106%	70%	130%	
Total Strontium	3059717		0.261	0.287	9.5%	< 0.005	100%	70%	130%	107%	80%	120%	100%	70%	130%	
Total Thallium	3059717		<0.0003	<0.0003	NA	< 0.0003	96%	70%	130%	111%	80%	120%	110%	70%	130%	
Total Tin	3059717		<0.002	<0.002	NA	< 0.002	105%	70%	130%	110%	80%	120%	106%	70%	130%	
Total Titanium	3059717		<0.010	<0.010	NA	< 0.010	95%	70%	130%	107%	80%	120%	110%	70%	130%	
Total Tungsten	3059717		<0.010	<0.010	NA	< 0.010	97%	70%	130%	103%	80%	120%	104%	70%	130%	
Total Uranium	3059717		<0.002	<0.002	NA	< 0.002	93%	70%	130%	110%	80%	120%	111%	70%	130%	
Total Vanadium	3059717		<0.002	<0.002	NA	< 0.002	107%	70%	130%	106%	80%	120%	107%	70%	130%	
Total Zinc	3059717		0.029	<0.020	NA	< 0.020	107%	70%	130%	103%	80%	120%	110%	70%	130%	
Total Zirconium	3059717		<0.004	<0.004	NA	< 0.004	110%	70%	130%	106%	80%	120%	107%	70%	130%	

Comments: NA signifies Not Applicable.
 If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.
 Matrix spike: Spike level < native concentration. Matrix spike acceptance limits do not apply.

Certified By: _____

Jris Verastegui

Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford

AGAT WORK ORDER: 21T812334

ATTENTION TO: Brian Holden

SAMPLED BY:Justin Borrmann

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T812334
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:Bradford
SAMPLED BY:Justin Borrmann

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Aluminum-dissolved	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T812334
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE: Bradford
SAMPLED BY: Justin Borrmann

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION
Lab Filtration mercury	SR-78-9001		FILTRATION

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK CORRECT BOX WHERE APPLICABLE

11

COUNTY OR DISTRICT: **SIMCOE** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **WEST GWILLIMBURY**

DATE COMPLETED: DAY **13** MO **8** YR **90**

21

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	CLAY	STONES		0	24
BROWN	SAND			24	46
BLUE	CLAY			46	240
BLUE	SAND			240	260

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER					
10-13	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> SALTY	6 <input type="checkbox"/> GAS	14
15-18	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> SALTY	6 <input type="checkbox"/> GAS	19
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> SALTY	6 <input type="checkbox"/> GAS	24
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> SALTY	6 <input type="checkbox"/> GAS	29
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> SALTY	6 <input type="checkbox"/> GAS	34

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.188	0	243
5	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.188	233	253
	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			

SCREEN

SIZE OF OPENING (SLOT NO.): **6**

DIAMETER: **6** INCHES

LENGTH: **6** FEET

MATERIAL AND TYPE: **STAINLESS STEEL**

DEPTH TO TOP OF SCREEN: **253** FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET		MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
FROM	TO	
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD: **AIR**

1 PUMP BAILER

PUMPING RATE: **12** GPM

DURATION OF PUMPING: **6** HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING					
183 FEET	259 FEET	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES		
		26-26	29-31	32-34	35-37		

IF FLOWING, GIVE RATE: _____ GPM

PUMP INTAKE SET AT: _____ FEET

WATER AT END OF TEST: **1** CLEAR **2** CLOUDY

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: **250** FEET

RECOMMENDED PUMPING RATE: **8** GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND

DRILLERS REMARKS

FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY

2 OBSERVATION WELL 6 ABANDONED POOR QUALITY

3 TEST HOLE 7 UNFINISHED

4 RECHARGE WELL 8 DEWATERING

WATER USE

1 DOMESTIC 5 COMMERCIAL

2 STOCK 6 MUNICIPAL

3 IRRIGATION 7 PUBLIC SUPPLY

4 INDUSTRIAL 8 COOLING OR AIR CONDITIONING

9 OTHER 9 NOT USED

METHOD OF CONSTRUCTION

1 CABLE TOOL 6 BORING

2 ROTARY (CONVENTIONAL) 7 DIAMOND

3 ROTARY (REVERSE) 8 JETTING

4 ROTARY (AIR) 9 DRIVING

5 AIR PERCUSSION DIGGING OTHER

OFFICE USE ONLY

REMARKS

CR4

Water Well Survey

AECOM

Well I.D. #: [Redacted]
MECP WWR #: [Redacted]

AECOM Project No.: 60236190
Client Project No.: _____

Well Owner Information:

Property Owner Name:	[Redacted]
Property Address:	[Redacted]
Telephone:	[Redacted]
Name of Person Completing Survey:	[Redacted]
Telephone:	[Redacted]
Relationship to Property Owner:	[Redacted]
Email:	[Redacted]
Date of Survey Completion:	Sep 6/21
Name of Original Well Owner: (if known/different from above)	[Redacted]

Occupant of Property Served by Well: (if other than Owner)

Name:	[Redacted]	
Telephone:	[Redacted]	Email: [Redacted]
Address:	[Redacted]	

Well Location:

Lot:	[Redacted]	Concession:	[Redacted]	Township:	Bradford West Swillimbury
------	------------	-------------	------------	-----------	------------------------------

Well Construction Details:

Well Record Available?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date Well Constructed:	[Redacted]	Well Contractor Name:	?
Well Type: (Drilled / Bored / Dug)	Drilled	Casing Material: (Steel, Concrete, etc.)	steel	Well Casing Diameter:	10"
Well Stick Up: (Above Ground)	12"	Well Depth: (Below Ground)	180'	Water Level: (Below Ground)	140'
Is Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: (Below Ground)		Well Stick Up: (Above Pit Bottom)	
Is Well Flowing?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Flow Rate:		Contractor:	
Well Cap Type:	Sealed	Does Cap Create a Good Seal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is Wire Conduit Tight to Well Cap?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is the Well:	Accessible for Direct Sampling?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	OR	Buried, in a Well Pit, or Other Confined Space?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Well Screen Installed?	? <input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Length & Slot Size:		Depth of Top of Screen: (Below Ground)	

Water Well Survey

AECOM

Well I.D. #: [REDACTED] AECOM Project No.: 60636190
 MECP WWR #: [REDACTED] Client Project No.: _____

Pumping Equipment:

Pump Type:	<input checked="" type="checkbox"/> Jet Pump <input type="checkbox"/> Submersible <input type="checkbox"/> Piston Pump <input type="checkbox"/> Other (please describe):				
Pump Horsepower:	1.5 hp.	Pump Age:	21+ ?	Pumping Capacity:	> 5 gal/min
Pump Intake Depth: (Below Ground)	180'	Pump Location: (If Not in Well)	At the bottom of well	Pumping Rate: (If Known)	?
Pressure Tank:	Type:	Flexcon Industries.		Capacity:	32 gal.
Water Treatment: (if present)	<input type="checkbox"/> Chlorinator <input checked="" type="checkbox"/> Water Softener <input checked="" type="checkbox"/> Water Filter (indicate type) <u>Reverse Osmosis</u> <input checked="" type="checkbox"/> U.V. <input checked="" type="checkbox"/> R.O. <input type="checkbox"/> Other (please describe): _____				

Well Usage:

Primary Use(s):	Domestic:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Livestock:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lawn Watering:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
# of Persons Using Well:	[REDACTED]	# of Livestock Watered:	[REDACTED]	Other Uses:		Daily Amount: (if known)
Indoor Plumbing Fixtures: (Washroom(s), Shower(s), Dishwasher, Laundry, Pool, Spa, etc.)			[REDACTED]			

Sewage Servicing:

Private Sewage System or Municipal:	Private	System Type: (septic tank, etc.)	Septic tank	Distance from Well:	[REDACTED]
Well Location:	<input checked="" type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input type="checkbox"/> Same Grade				
Presence of Any Above Ground Storage Tank or Other Potential Source(s) of Contamination: (including distance on / off property)			NO		

Previous Concerns:

How Long Have You Owned, Resided, or Operated a Business on this Property?	[REDACTED]		
Have You Experienced Any Previous Concerns with Your Well Supply? (Quantity or Quality)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, When?	
Cause(s) of the Previous Concern?	<input type="checkbox"/> Drought <input type="checkbox"/> Pump Failure <input type="checkbox"/> Plugging <input type="checkbox"/> Increased Usage <input type="checkbox"/> Interference <input type="checkbox"/> Contamination <input type="checkbox"/> Other (Please describe): _____		

natural iron is high

Water Well Survey

AECOM

2021-08-30

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 60036190
 Client Project No.: _____

Well Modification / Maintenance:

Has Your Well Ever Been...	Deepened?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cleaned?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Reconstructed or Replaced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If Yes to Any of the Above, Please Provide Details:						

Other Details:

Other Details that May be Relevant to Assessing the Current Condition of Your Well Supply:

Property Owner Participation in Monitoring Program:

Does the Property Owner and/or Occupant Grant Permission for MTO/AECOM to Monitor and/or Sample Your Well?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	---

[REDACTED]

Sep 6/21
Date

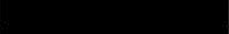
(Please Print in BLOCK letters)

Water Well Survey

AECOM

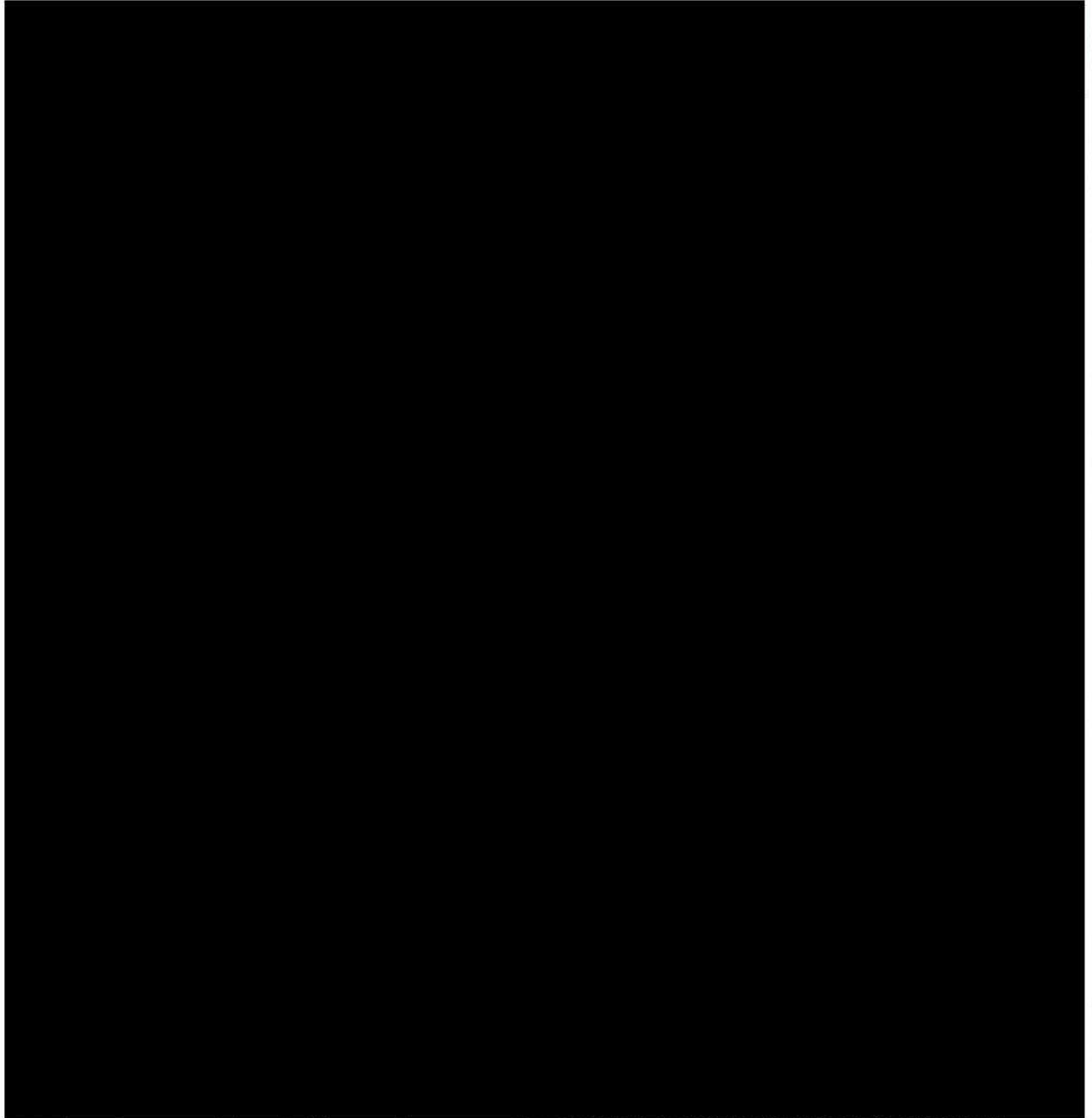
Well I.D. #: 

AECOM Project No.: 60636190

MECP WWR #: 

Client Project No.: _____

Location Sketch *(To be Completed by Property Owner / Occupant)*



Include details such as property lines, buildings, well, sewage system (if present), as well as any other potential sources of contamination (e.g., tanks, banyards, chemical/manure storage, etc.).

Water Well Survey

AECOM

Well I.D. #: [REDACTED] AECOM Project No.: 60636190
 MECP WWR #: [REDACTED] Client Project No.: _____

Field Visit Log (To Be Completed by AECOM Staff)

General Details:

Project Name:	[REDACTED]	Project No.:	60636190
Address:	[REDACTED]	Inspected By:	Holden / Bormann
Date:	Oct. 6/21	Time:	10:20 - 10:40
Weather:	Sunny		
Easting:	[REDACTED]	Northing:	[REDACTED]
Datum:	[REDACTED]		

Well Details:

Is Well Accessible for Inspection?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason:	[REDACTED]
MECP Water Well Record No.:	[REDACTED]	Date Well Constructed:	[REDACTED]
Contractor Name:	[REDACTED]		
Well Type: <small>(Drilled / Bored / Dug)</small>	Drilled	Well Stick Up: <small>(Above Ground)</small>	0.26m
Casing Material: <small>(Steel, Concrete, etc.)</small>	Steel		
Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: <small>(Below Ground)</small>	—
Well Stick Up: <small>(Above Pit Bottom)</small>	0.26m		
Well Casing Diameter:	10"	Well Depth: <small>(Below Ground)</small>	253 ft
Groundwater Level: <small>(Below Ground)</small>	240 ft		
Pump On / Off?	<input checked="" type="checkbox"/> On <input type="checkbox"/> Off	Water Level Condition:	<input checked="" type="checkbox"/> Stable (Static) <input type="checkbox"/> Declining (Drawdown) <input type="checkbox"/> Rising (Recovery)
Flowing Well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Flow Rate: <small>(Estimated)</small>	8 GPM
Well Cap Type:	Non-Locking Cap.		
Well Screen Installed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Length & Slot Size:	6 slot
Top of Screen: <small>(Below Ground)</small>	253 ft		
Is There a Depression Around the Well Casing Exterior?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Photo(s) of Well Obtained?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Observation(s) Summary:

- Well in great condition
- No issues w/ grabbing sample.
- Homeowner tests regularly, historical iron issues
- Not concerned about BPP construction

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 60030190
 Client Project No.: _____

Water Quality Sampling:

Water Quality Sample Obtained?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason:	
Sampling Location:	<u>Outside Tap</u>	Raw or Treated Sample?	<u>Raw</u>
Disinfected Sample Port?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Disinfection Method:	<u>Alconex</u>
Photo of Sample Obtained? (against white background)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason:	

Analyte Suite:	<u>93179 + E. coli + Total Coliforms</u>		
Sample I.D.:	[REDACTED]	Date / Time of Sampling:	<u>Oct. 6 - 10:35</u>
		Number of Sample Bottles:	<u>9</u>

Field Water Quality Parameters: (record units)			
Temperature:	<u>15.0°C</u>	pH:	<u>8.05</u>
Turbidity:	<u>—</u>	D.O.:	<u>—</u>
Odours?	<u>no</u>	Appearance/Odour:	<u>Clear</u>
		Conductivity:	<u>0.56 mS</u>
		Colour:	<u>slightly cloudy, colourless</u>

Type of Concern: (if applicable)	<input type="checkbox"/> Water Quantity <input type="checkbox"/> Water Quality (Note any differences in taste, odour, colour or clarity)
If the concern was contamination what changes were apparent to water quality?	<u>None</u>
Were there any effects of this concern?	<u>None</u>
What action was taken to overcome this concern?	<u>None.</u>

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 www.aecom.com

Appendix **B**



November 22nd, 2021



Project No: 60636190
Regarding: Pre-Construction Water Quality Testing Results
MTO Bradford Bypass Project

Dear

AECOM Canada Ltd. (AECOM) would like to thank you for your participation in the Pre-Construction Well Assessment Program offered to local residents as part of the Bradford Bypass Project. Based on receipt of written permission from yourself, a sample of raw (untreated) groundwater from your private well was collected for laboratory analysis by AECOM staff on October 14th, 2021. Please find attached a copy of the water quality testing results for your review and record.

Laboratory testing results for the sample obtained indicate that concentrations of certain parameters, as shown in the table below, are in excess of the *Ontario Drinking Water Standards, Objectives and Guidelines* (Ontario Ministry of the Environment, 2006). It should be noted, however, that these results are based on a single sample analysis and that additional testing is recommended.

PARAMETER	CONCENTRATION IN YOUR WATER	STANDARD VALUE / RANGE	STANDARD TYPE	HEALTH RELATED (Y / N)
Total Coliforms	346 CFU/ 100mL	0 CFU/100mL	MAC	Y
Escherichia coli (E. coli)	1 CFU/ 100 ml	0 CFU/100mL	MAC	Y
Hardness (as CaCO ₃)	1 mg/L	80 - 100 mg/L	OG	N

NOTE: MAC – Maximum Acceptable Concentration; AO – Aesthetic Objective; OG – Operational Guideline.

As discussed via telephone with Mr. Vujcic on November 19th, 2021, following receipt of the water quality testing results, the presence of bacteriological parameters (Total Coliforms and E.Coli) in your drinking water may represent an immediate health concern. It is recommended that you discuss this exceedance with your Local Public Health Unit.

For your information, the *Well Aware Booklet – A Guide To Caring For Your Well* created by Green Communities Canada is available on the Walkerton Clean Water Centre (WCWC) website at:

<https://wcwc.ca/well-aware-and-well-wise-program-resources-for-homeowners/>

Should you have any questions or concerns regarding the quality of your well water, it is recommended that you contact your local Public Health Unit for further information and advice. Contact information for your Local Public Health Unit is provided, as follows:

Simcoe Muskoka District Health Unit
80 Bradford St. #403
Barrie, ON L4N 6S7
Website: <https://www.simcoemuskokahealth.org/>
Telephone: 705.721.7520

If you have any further questions, please contact:

AECOM Canada Ltd. C/O Brian Holden, P.Geo.
Hydrogeology, Environment
Telephone: 226-821-2486
Email: brian.holden@aecom.com

Sincerely,
AECOM Canada Ltd.



Brian Holden, P.Geo.
Hydrogeologist
DCS Americas, Canada East (Greater Ontario / Metro Toronto)
Environment
Brian.holden@aecom.com

Encl.

cc: R. Sheikh, N. Valenton, S. Rankin, S.Schmied – AECOM;
H. Singh, L. Sarris, J. MacKinnon, R. Gribbon – MTO



Water Well Survey

Groundwater Supply Well Location [REDACTED]

Project Name: Bradford Bypass – CR4 Expansion

Project#: 60636190

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



Well Record

Coordinates (UTM)..... [REDACTED]
[REDACTED]

Type of Well..... Bored

Constructed (year)..... [REDACTED]

Well Location..... [REDACTED]

Well Diameter.....0.914 m

Well Depth.....15.54 m

Casing Position.....0.30 m above ground;

Casing Condition.....Fair

Water Usage.....Residential

Water Source.....Overburden

Static Water Level.....12.19 m



Water Quality & Well Testing

Past Water Quality Problems..... None

Potential Contamination Sources... Well is covered by vegetation and debris

Location of Septic Tank..... [REDACTED]

Treatment System.....Water Softener

Recent Test Results.....None

Water Sampled..... Yes (October 14, 2021)

Sample Source..... [REDACTED]

Appearance.....Clear, no odour

Comments:

- The well sampled is the residential well and has been used for [REDACTED] No history of well issues.
- Sample has been softened.

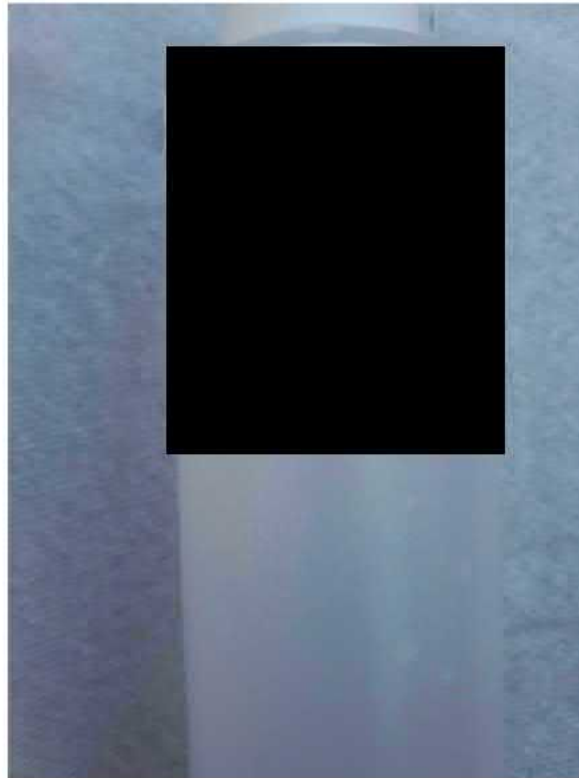
Quality Testing

Groundwater quality met the applicable standards for bacteriological, selected inorganic and metal parameters analyzed except for the following:

<i>Parameters</i>	<i>Test Results</i>	<i>Guideline/Standard</i>	<i>Criteria Type</i>
Total Coliforms	346 CFU / 100 ml	0 CFU / 100 ml	MAC
Escherichia coli (E. coli)	1 CFU / 100 ml	0 CFU / 100 ml	MAC
Hardness (as CaCO ₃)	1 mg/L	80 – 100 mg/L	OG

Notes:

1. Criteria are from "Ontario Drinking Water Standards" (Ontario Regulation 169/03) and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" (MOE, June 2003, revised June 2006)
2. AO - Aesthetic Objectives (parameters that may impair the taste, odour or colour of water or which may interfere with good water quality)
3. MAC- Maximum Acceptable Concentration (health related)
4. OG - Operational Guideline (parameters which must be controlled for effective treatment)
5. NDOGT – No data; sample overgrown with target bacteria; over-crowding microbial growth
6. CFU – Colony forming units
7. **Bold** - test result exceeding guideline/standard.



CLIENT NAME: AECOM CANADA LTD
50 SPORTSWORLD CROSSING RD UNIT 290
KITCHENER, ON N2P0A4
(519) 650-5313

ATTENTION TO: Brian Holden

PROJECT: 60636190

AGAT WORK ORDER: 21T815956

MICROBIOLOGY ANALYSIS REVIEWED BY: [REDACTED]

WATER ANALYSIS REVIEWED BY: [REDACTED]

DATE REPORTED: Oct 23, 2021

PAGES (INCLUDING COVER): 13

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***Notes**

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water

DATE SAMPLED: 2021-10-14
12:05

Parameter	Unit	G / S	RDL	3091521
Escherichia coli	CFU/100mL	100	1	1
Total Coliforms	CFU/100mL		1	346

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
3091521 If RDL >1 indicates dilutions of the sample.
ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Anayot Bhele




Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water
DATE SAMPLED: 2021-10-14
12:05
3091521

Parameter	Unit	G / S	RDL	3091521
Electrical Conductivity	µS/cm		2	824
pH	pH Units	6.5-8.5	NA	8.21
Saturation pH (Calculated)				9.37
Langelier Index (Calculated)				-1.16
Hardness (as CaCO3) (Calculated)	mg/L		0.5	1.0
Total Dissolved Solids	mg/L		10	478
Alkalinity (as CaCO3)	mg/L		5	299
Bicarbonate (as CaCO3)	mg/L		5	299
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.12	54.3
Nitrate as N	mg/L		0.05	4.07
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	25.8
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L		0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	<0.000002
Total Phosphorus	mg/L	*	0.02	<0.02
Total Organic Carbon	mg/L		0.5	77.2
True Colour	TCU		5	<5
Turbidity	NTU		0.5	0.6
Dissolved Calcium	mg/L		0.25	0.41
Dissolved Magnesium	mg/L		0.25	<0.25
Dissolved Potassium	mg/L		2.50	<2.50
Dissolved Sodium	mg/L		0.25	187
Aluminum-dissolved	mg/L	*	0.004	<0.004
Dissolved Antimony	mg/L	0.020	0.001	<0.001

Certified By:

Iris Veraestegui



Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: XXXXXXXXXX
 SAMPLE TYPE: Water
 DATE SAMPLED: 2021-10-14
 12:05
 3091521

Parameter	Unit	G / S	RDL	3091521
Dissolved Arsenic	mg/L	0.1	0.003	<0.003
Dissolved Barium	mg/L		0.002	<0.002
Dissolved Beryllium	mg/L	*	0.0005	<0.0005
Dissolved Boron	mg/L	0.2	0.010	0.022
Dissolved Cadmium	mg/L	0.0002	0.0001	<0.0001
Dissolved Chromium	mg/L		0.003	<0.003
Dissolved Cobalt	mg/L	0.0009	0.0005	<0.0005
Dissolved Copper	mg/L	0.005	0.001	0.031
Dissolved Iron	mg/L	0.3	0.010	<0.010
Dissolved Lead	mg/L	*	0.001	<0.001
Dissolved Manganese	mg/L		0.002	<0.002
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Dissolved Molybdenum	mg/L	0.040	0.002	<0.002
Dissolved Nickel	mg/L	0.025	0.003	<0.003
Dissolved Selenium	mg/L	0.1	0.004	<0.004
Dissolved Silver	mg/L	0.0001	0.0001	<0.0001
Dissolved Strontium	mg/L		0.005	<0.005
Dissolved Thallium	mg/L	0.0003	0.0003	<0.0003
Dissolved Tin	mg/L		0.002	<0.002
Dissolved Titanium	mg/L		0.002	<0.002
Dissolved Tungsten	mg/L	0.030	0.010	<0.010
Dissolved Uranium	mg/L	0.005	0.002	<0.002
Dissolved Vanadium	mg/L	0.006	0.002	<0.002
Dissolved Zinc	mg/L	0.030	0.005	0.008
Dissolved Zirconium	mg/L	0.004	0.004	<0.004
Lab Filtration Aluminum Dissolved				2021/10/18
Lab Filtration mercury				2021/10/18
Lab Filtration Metals				2021/10/18

Certified By:

Iris Vera'stegui



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3091521 Metals analysis completed on a lab filtered sample.
Dilution required, RDL has been increased accordingly.
Un-ionized Ammonia detection limit is a calculated RDL. The calculation of Un-ionized Ammonia is based on lab measured parameters (ammonia as N, pH and temperature). Values are reported as calculated.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Iris Vera'stegui



Exceedance Summary

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3091521		ON PWQO	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Dissolved Copper	mg/L	0.005	0.031

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE:

AGAT WORK ORDER: 21T815956
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Microbiology Analysis

RPT Date: Oct 23, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli	3091472	3091472	ND	ND	NA	< 1
Total Coliforms	3091472	3091472	116	114	1.7%	< 1

Comments: ND - Not Detected, NA - % RPD Not Applicable.

Certified By:

Amanjot Bhele


Quality Assurance

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T815956
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:
SAMPLED BY:

Water Analysis																
RPT Date: Oct 23, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

Electrical Conductivity	3090117		138	138	0.0%	< 2	97%	90%	110%						
pH	3090117		7.17	7.13	0.6%	NA	102%	90%	110%						
Total Dissolved Solids	3091472	3091472	520	524	0.8%	< 10	102%	80%	120%						
Alkalinity (as CaCO3)	3090117		64	62	3.2%	< 5	84%	80%	120%						
Bicarbonate (as CaCO3)	3090117		64	62	3.2%	< 5	NA								
Carbonate (as CaCO3)	3090117		<5	<5	NA	< 5	NA								
Hydroxide (as CaCO3)	3090117		<5	<5	NA	< 5	NA								
Fluoride	3091521	3091521	<0.05	<0.05	NA	< 0.05	94%	70%	130%	95%	80%	120%	112%	70%	130%
Chloride	3091521	3091521	54.3	54.3	0.0%	< 0.10	96%	70%	130%	104%	80%	120%	110%	70%	130%
Nitrate as N	3091521	3091521	4.07	4.16	2.2%	< 0.05	106%	70%	130%	106%	80%	120%	109%	70%	130%
Nitrite as N	3091521	3091521	<0.05	<0.05	NA	< 0.05	95%	70%	130%	101%	80%	120%	110%	70%	130%
Bromide	3091521	3091521	<0.05	<0.05	NA	< 0.05	107%	70%	130%	104%	80%	120%	102%	70%	130%
Sulphate	3091521	3091521	25.8	25.7	0.4%	< 0.10	99%	70%	130%	105%	80%	120%	108%	70%	130%
Ortho Phosphate as P	3091521	3091521	<0.10	<0.10	NA	< 0.10	105%	70%	130%	100%	80%	120%	94%	70%	130%
Ammonia as N	3087154		<0.02	<0.02	NA	< 0.02	115%	70%	130%	99%	80%	120%	96%	70%	130%
Total Phosphorus	3090116		0.02	0.03	NA	< 0.02	97%	70%	130%	97%	80%	120%	105%	70%	130%
Total Organic Carbon	3094303		47.1	47.2	0.2%	< 0.5	99%	90%	110%	98%	90%	110%	NA	80%	120%
True Colour	3090232		31	31	0.0%	< 5	106%	90%	110%						
Turbidity	3091472	3091472	<0.5	<0.5	NA	< 0.5	101%	80%	120%						
Dissolved Calcium	3095356		101	101	0.0%	< 0.05	95%	70%	130%	97%	80%	120%	98%	70%	130%
Dissolved Magnesium	3095356		12.2	12.2	0.0%	< 0.05	99%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Potassium	3095356		0.83	0.89	NA	< 0.50	99%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Sodium	3095356		2.75	2.72	1.1%	< 0.05	97%	70%	130%	96%	80%	120%	101%	70%	130%
Aluminum-dissolved	3091472	3091472	<0.004	<0.004	NA	< 0.004	104%	70%	130%	116%	80%	120%	119%	70%	130%
Dissolved Antimony	3091472	3091472	<0.001	<0.001	NA	< 0.001	102%	70%	130%	103%	80%	120%	107%	70%	130%
Dissolved Arsenic	3091472	3091472	<0.003	<0.003	NA	< 0.003	92%	70%	130%	103%	80%	120%	112%	70%	130%
Dissolved Barium	3091472	3091472	0.073	0.079	7.9%	< 0.002	100%	70%	130%	103%	80%	120%	104%	70%	130%
Dissolved Beryllium	3091472	3091472	<0.0005	<0.0005	NA	< 0.0005	97%	70%	130%	109%	80%	120%	115%	70%	130%
Dissolved Boron	3091472	3091472	0.036	0.038	NA	< 0.010	98%	70%	130%	106%	80%	120%	108%	70%	130%
Dissolved Cadmium	3091472	3091472	<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	106%	80%	120%	108%	70%	130%
Dissolved Chromium	3091472	3091472	<0.003	<0.003	NA	< 0.003	102%	70%	130%	105%	80%	120%	104%	70%	130%
Dissolved Cobalt	3091472	3091472	<0.0005	<0.0005	NA	< 0.0005	100%	70%	130%	107%	80%	120%	104%	70%	130%
Dissolved Copper	3091472	3091472	0.021	0.025	17.4%	< 0.001	99%	70%	130%	105%	80%	120%	104%	70%	130%
Dissolved Iron	3091472	3091472	0.012	<0.010	NA	< 0.010	101%	70%	130%	106%	80%	120%	101%	70%	130%
Dissolved Lead	3091472	3091472	<0.001	<0.001	NA	< 0.001	98%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Manganese	3091472	3091472	<0.002	0.003	NA	< 0.002	96%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Mercury	3095856		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	98%	70%	130%
Dissolved Molybdenum	3091472	3091472	<0.002	<0.002	NA	< 0.002	104%	70%	130%	105%	80%	120%	108%	70%	130%
Dissolved Nickel	3091472	3091472	<0.003	<0.003	NA	< 0.003	100%	70%	130%	106%	80%	120%	103%	70%	130%

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE:

AGAT WORK ORDER: 21T815956
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Oct 23, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Dissolved Selenium	3091472	3091472	<0.004	<0.004	NA	< 0.004	101%	70%	130%	108%	80%	120%	113%	70%	130%	
Dissolved Silver	3091472	3091472	<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	106%	80%	120%	104%	70%	130%	
Dissolved Strontium	3091472	3091472	0.249	0.253	1.6%	< 0.005	95%	70%	130%	101%	80%	120%	99%	70%	130%	
Dissolved Thallium	3091472	3091472	<0.0003	<0.0003	NA	< 0.0003	97%	70%	130%	103%	80%	120%	104%	70%	130%	
Dissolved Tin	3091472	3091472	<0.002	<0.002	NA	< 0.002	101%	70%	130%	103%	80%	120%	107%	70%	130%	
Dissolved Titanium	3091472	3091472	<0.002	<0.002	NA	< 0.002	100%	70%	130%	106%	80%	120%	105%	70%	130%	
Dissolved Tungsten	3091472	3091472	<0.010	<0.010	NA	< 0.010	96%	70%	130%	99%	80%	120%	101%	70%	130%	
Dissolved Uranium	3091472	3091472	<0.002	<0.002	NA	< 0.002	97%	70%	130%	106%	80%	120%	108%	70%	130%	
Dissolved Vanadium	3091472	3091472	<0.002	<0.002	NA	< 0.002	100%	70%	130%	104%	80%	120%	108%	70%	130%	
Dissolved Zinc	3091472	3091472	0.044	0.053	18.6%	< 0.005	100%	70%	130%	109%	80%	120%	107%	70%	130%	
Dissolved Zirconium	3091472	3091472	<0.004	<0.004	NA	< 0.004	100%	70%	130%	106%	80%	120%	108%	70%	130%	

Comments: NA signifies Not Applicable.
 If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.
 Matrix spike: Spike level < native concentration. Matrix spike acceptance limits do not apply.

Certified By:

Iris Verastegui

Method Summary

CLIENT NAME: AECOM CANADA LTD

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T815956
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Dissolved Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Aluminum-dissolved	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T815956
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:
SAMPLED BY:

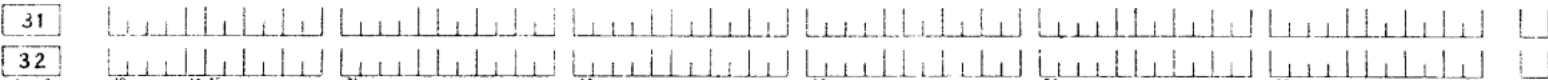
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Manganese	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Strontium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tin	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Titanium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tungsten	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zirconium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION
Lab Filtration mercury	SR-78-9001		FILTRATION
Lab Filtration Metals	SR-78-9001		FILTRATION

1 PRINT ONLY IN SPACES PROVIDED

2 CHECK CORRECT BOX WHERE APPLICABLE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	TOP SOIL		HARD	0	1'
Brown	CLAY			1	20'
GREY	CLAY			20	40'
GREY	SAND LAYERS		SOFT	40	51'



41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
40	2 <input checked="" type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	2 1/2	0	27
17-18	1 <input type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		27	51'
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
✓	INCHES	FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN
		41-44 10 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT	MATERIAL AND TYPE
FROM TO	(CEMENT GROUT LEAD PACKER, ETC.)
10-13 14-17	
18-21 22-25	
26-29 30-33 80	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	GPM	15-16 HOURS 17-18 MINS
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
19-21	22-24	15 MINUTES 25-28 30 MINUTES 29-31 45 MINUTES 32-34 60 MINUTES 35-37
20	50	49 48 45 46
FEET	FEET	FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	43-45 48 FEET	46-49 2 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY
 2 OBSERVATION WELL 6 ABANDONED POOR QUALITY
 3 TEST HOLE 7 UNFINISHED
 4 RECHARGE WELL

WATER USE

1 DOMESTIC 5 COMMERCIAL
 2 STOCK 6 MUNICIPAL
 3 IRRIGATION 7 PUBLIC SUPPLY
 4 INDUSTRIAL 8 COOLING OR AIR CONDITIONING
 OTHER 9 NOT USED

METHOD OF DRILLING

1 CABLE TOOL 6 BORING
 2 ROTARY (CONVENTIONAL) 7 DIAMOND
 3 ROTARY (REVERSE) 8 JETTING
 4 ROTARY (AIR) 9 DRIVING
 5 AIR PERCUSSION

DRILLER'S REMARKS

CONTRACTOR

OFFICE USE ONLY

DATA SOURCE	58 CONTRACTOR	59
DATE OF INSPECTION	INSPECTOR	
REMARKS		

CSS.ES

Water Well Survey

CR4

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 606 36190
 Client Project No.: _____

Well Owner Information:

Property Owner Name:			
Property Address:			
Telephone:			
Name of Person Completing Survey:			
Telephone:		Email:	
Relationship to Property Owner:		Date of Survey Completion:	
Name of Original Well Owner: <i>(if known/different from above)</i>			

Occupant of Property Served by Well: *(if other than Owner)*

Name:			
Telephone:		Email:	
Address:			

Well Location:

Lot:		Concession:		Township:	<u>Bradford</u>
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Well Construction Details:

Well Record Available?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date Well Constructed:		Well Contractor Name:	<u>E</u>
Well Type: <i>(Drilled / Bored / Dug)</i>	<u>Bored</u>	Casing Material: <i>(Steel, Concrete, etc.)</i>	<u>Concrete</u>	Well Casing Diameter:	<u>3ft</u>
Well Stick Up: <i>(Above Ground)</i>	<u>11" Above ground</u>	Well Depth: <i>(Below Ground)</i>	<u>Below Ground</u>	Water Level: <i>(Below Ground)</i>	<u>Below Ground</u>
Is Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: <i>(Below Ground)</i>	<u>—</u>	Well Stick Up: <i>(Above Pit Bottom)</i>	<u>—</u>
Is Well Flowing?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Flow Rate:		Contractor:	
Well Cap Type:	<u>Concrete</u>	Does Cap Create a Good Seal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is Wire Conduit Tight to Well Cap?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the Well:	Accessible for Direct Sampling?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	OR	Buried, in a Well Pit, or Other Confined Space?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Well Screen Installed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, Length & Slot Size:		Depth of Top of Screen: <i>(Below Ground)</i>	

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 60636190
 Client Project No.: _____

Pumping Equipment:

Pump Type:	<input checked="" type="checkbox"/> Jet Pump <input type="checkbox"/> Submersible <input type="checkbox"/> Piston Pump <input type="checkbox"/> Other (please describe): _____			
Pump Horsepower:	<u>1/2</u>	Pump Age:	[REDACTED]	Pumping Capacity:
Pump Intake Depth: (Below Ground)	<u>Below ground</u>	Pump Location: (If Not in Well)	<u>In House</u>	Pumping Rate: (If Known)
Pressure Tank:	Type:			Capacity:
Water Treatment: (if present)	<input type="checkbox"/> Chlorinator <input checked="" type="checkbox"/> Water Softener <input type="checkbox"/> Water Filter (indicate type) _____ <input type="checkbox"/> U.V. <input type="checkbox"/> R.O. <input type="checkbox"/> Other (please describe): _____			

Well Usage:

Primary Use(s):	Domestic:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Livestock:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Lawn Watering:	<input type="checkbox"/> Yes <input type="checkbox"/> No
# of Persons Using Well:	[REDACTED]	# of Livestock Watered:		Other Uses:		Daily Amount: (if known)
Indoor Plumbing Fixtures:			[REDACTED]			

Sewage Servicing:

Private Sewage System or Municipal:	<u>Private</u>	System Type: (septic tank, etc.)	<u>septic tank.</u>	Distance from Well:	[REDACTED]
Well Location:	<input checked="" type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input type="checkbox"/> Same Grade				
Presence of Any Above Ground Storage Tank or Other Potential Source(s) of Contamination: (including distance on / off property)					

Previous Concerns:

How Long Have You Owned, Resided, or Operated a Business on this Property?	[REDACTED]				
Have You Experienced Any Previous Concerns with Your Well Supply? (Quantity or Quality)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If Yes, When?		
Cause(s) of the Previous Concern?	<input type="checkbox"/> Drought <input type="checkbox"/> Pump Failure <input type="checkbox"/> Plugging <input type="checkbox"/> Increased Usage <input type="checkbox"/> Interference <input type="checkbox"/> Contamination <input type="checkbox"/> Other (Please describe): _____				

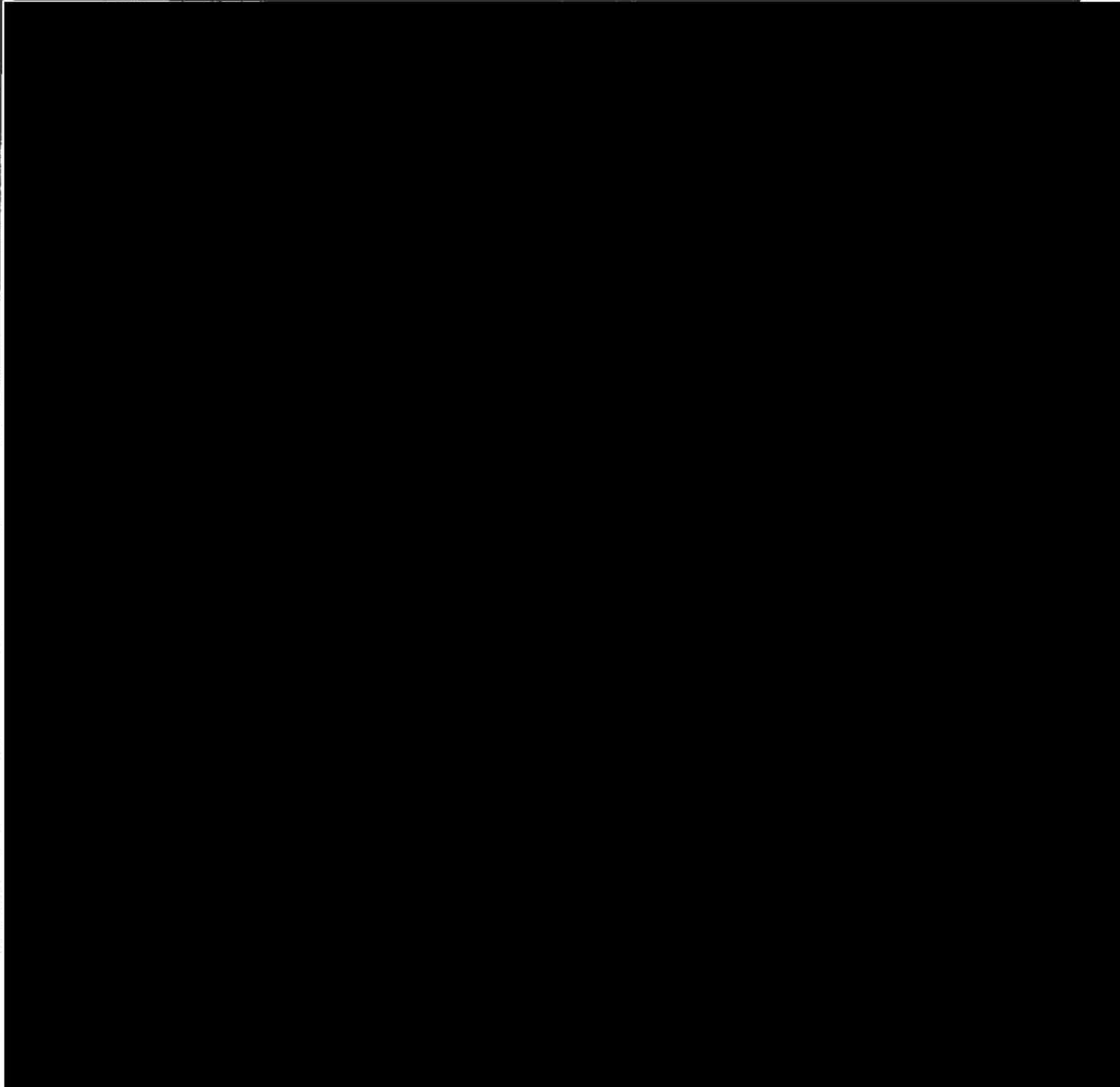
Water Well Survey

AECOM

Well I.D. #: _____
MECP WWR #: _____

AECOM Project No.: 60636190
Client Project No.: _____

Location Sketch *(To be Completed by Property Owner / Occupant)*



Include details such as property lines, buildings, well, sewage system (if present), as well as any other potential sources of contamination (e.g., tanks, bamyards, chemical/manure storage, etc.).

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
MECP WWR #: [REDACTED]

AECOM Project No.: 60638190
Client Project No.: _____

Well Modification / Maintenance:

Has Your Well Ever Been...	Deepened?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cleaned?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Reconstructed or Replaced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If Yes to Any of the Above, Please Provide Details:						

Other Details:

Other Details that May be Relevant to Assessing the Current Condition of Your Well Supply:

Property Owner Participation in Monitoring Program:

*via phone
Oct. 12/21*

Yes No

Does the Property Owner and/or Occupant Grant Permission for MTO/AECOM to Monitor and/or Sample Your Well?

[REDACTED]

Property Owner / Occupant Name
(Please Print in BLOCK letters)

[REDACTED]

[REDACTED]

Date

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 60636190
 Client Project No.: _____

Field Visit Log (To Be Completed by AECOM Staff)

General Details:

Project Name: <u>BBP - Water Well Survey</u>		Project No.: <u>60636190</u>	
Address: [REDACTED]		Inspected By: <u>Holden / Madick</u>	
Date: <u>Oct. 14 / 21</u>	Time: <u>12:00 - 12:15</u>	Weather: <u>Sunny</u>	
Easting: [REDACTED]	Northing: [REDACTED]	Datum: [REDACTED]	

Well Details:

Is Well Accessible for Inspection?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason: <u>Vegetation</u>		
MECP Water Well Record No.:	[REDACTED]	Date Well Constructed:	[REDACTED]	Contractor Name:	[REDACTED]
Well Type: (Drilled / Bored / Dug)	<u>Dug</u>	Well Stick Up: (Above Ground)	<u>1 ft.</u>	Casing Material: (Steel, Concrete, etc.)	<u>Concrete</u>
Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: (Below Ground)	<u>—</u>	Well Stick Up: (Above Pit Bottom)	<u>—</u>
Well Casing Diameter:	<u>3 ft</u>	Well Depth: (Below Ground)	<u>51 ft</u>	Groundwater Level: (Below Ground)	<u>40 ft.</u>
Pump On / Off?	<input type="checkbox"/> On <input checked="" type="checkbox"/> Off	Water Level Condition:	<input type="checkbox"/> Stable (Static) <input checked="" type="checkbox"/> Declining (Drawdown) <input type="checkbox"/> Rising (Recovery)		
Flowing Well?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Flow Rate: (Estimated)	<u>2 GPM</u>	Well Cap Type:	<u>Concrete</u>
Well Screen Installed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, Length & Slot Size:	<u>—</u>	Top of Screen: (Below Ground)	<u>—</u>
Is There a Depression Around the Well Casing Exterior?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Photo(s) of Well Obtained?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Observation(s) Summary:

Well covered by vegetation, did not remove 1st sample is treaded (softened)

Water Well Survey

AECOM

Well I.D. #: [REDACTED] AECOM Project No.: 60636190
 MECP WWR #: [REDACTED] Client Project No.:

Water Quality Sampling:

Water Quality Sample Obtained?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason:	
Sampling Location:	[REDACTED]	Raw or Treated Sample?	Softened.
Disinfected Sample Port?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Disinfection Method:	
Photo of Sample Obtained? (against white background)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Provide Reason:	

Analyte Suite:	93179 + E. Coli / Total Coliform		
Sample I.D.:	[REDACTED]	Date / Time of Sampling:	October 14/21 12:05
		Number of Sample Bottles:	9

Field Water Quality Parameters: (record units)					
Temperature:	17.1	pH:	7.84	Conductivity:	794
Turbidity:	—	D.O.:	—	Colour:	Clear
Odours?	None	Appearance/Odour:	Clear / colorless.		

Type of Concern: (if applicable)	<input type="checkbox"/> Water Quantity <input checked="" type="checkbox"/> Water Quality (Note any differences in taste, odour, colour or clarity)
If the concern was contamination what changes were apparent to water quality?	Proximity to bypass
Were there any effects of this concern?	
What action was taken to overcome this concern?	

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 105 Commerce Valley Drive West, 7th Floor
 Markham, ON L3T 7W3
 Canada

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 F: 905.538.8076
 www.aecom.com

Appendix **C**



November 22nd, 2021



Project No: 60636190
Regarding: Pre-Construction Water Quality Testing Results
MTO Bradford Bypass Project

Dear

AECOM Canada Ltd. (AECOM) would like to thank you for your participation in the Pre-Construction Well Assessment Program offered to local residents as part of the Bradford Bypass Project. Based on receipt of written permission from yourself, a sample of raw (untreated) groundwater from your private well was collected for laboratory analysis by AECOM staff on October 13th, 2021. Please find attached a copy of the water quality testing results for your review and record.

Laboratory testing results for the sample obtained indicate that concentrations of certain parameters, as shown in the table below, are in excess of the *Ontario Drinking Water Standards, Objectives and Guidelines* (Ontario Ministry of the Environment, 2006). It should be noted, however, that these results are based on a single sample analysis and that additional testing is recommended.

PARAMETER	CONCENTRATION IN YOUR WATER	STANDARD VALUE / RANGE	STANDARD TYPE	HEALTH RELATED (Y / N)
Hardness	0.8 mg/L	80-100 mg/L	OG	N

NOTE: MAC – Maximum Acceptable Concentration; AO – Aesthetic Objective; OG – Operational Guideline.

For your information, the *Well Aware Booklet – A Guide To Caring For Your Well* created by Green Communities Canada is available on the Walkerton Clean Water Centre (WCWC) website at:

<https://wcwc.ca/well-aware-and-well-wise-program-resources-for-homeowners/>

Should you have any questions or concerns regarding the quality of your well water, it is recommended that you contact your local Public Health Unit for further information and advice. Contact information for your Local Public Health Unit is provided, as follows:

Simcoe Muskoka District Health Unit
80 Bradford St. #403
Barrie, ON L4N 6S7
Website: <https://www.simcoemuskokahealth.org/>
Telephone: 705.721.7520

If you have any further questions, please contact:

AECOM Canada Ltd. C/O Brian Holden, P.Geo.
Hydrogeology, Environment
Telephone: 226-821-2486
Email: brian.holden@aecom.com

Sincerely,
AECOM Canada Ltd.



Brian Holden, P. Geo.
Hydrogeologist
DCS Americas, Canada East (Greater Ontario / Metro Toronto)
Environment
Brian.holden@aecom.com

Encl.

cc: R. Sheikh, N. Valenton, S. Rankin, S. Schmied – AECOM;
H. Singh, L. Sarris, J. MacKinnon, R. Gribbon – MTO



Water Well Survey

Groundwater Supply Well Location [REDACTED]

Project Name: Bradford Bypass – CR4 Expansion

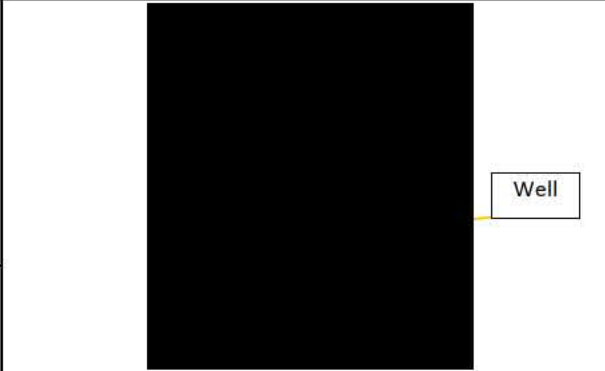
Project#: 60636190

Residence Address:

[REDACTED]

Owner Information:

[REDACTED]



Well Record

Coordinates (UTM)..... [REDACTED]

[REDACTED]

Type of Well..... Drilled

Constructed (year)..... [REDACTED]

Well Location..... [REDACTED]

[REDACTED]

Well Diameter.....0.178 m

Well Depth.....89.61 m

Casing Position.....0.90 m above ground;

Casing Condition.....Good

Water Usage.....Residential

Water Source.....Overburden

Static Water Level.....76.81 m



Water Quality & Well Testing

Past Water Quality Problems..... Homeowner has noted a green tinge at time with the water

Potential Contamination Sources...None

Location of Septic Tank..... [REDACTED]

Treatment System.....Water Softener, U.V. Filter

Recent Test Results.....None

Water Sampled..... Yes (October 13, 2021)

Sample Source..... Garage Tap, untreated

Appearance.....Clear, slightly cloudy initially, no odour

Comments:

- [REDACTED]
- Curious about when the BBP construction will occur.

Quality Testing

Groundwater quality met the applicable standards for bacteriological, selected inorganic and metal parameters analyzed except for the following:

<i>Parameters</i>	<i>Test Results</i>	<i>Guideline/Standard</i>	<i>Criteria Type</i>
Hardness	0.8 mg/L	80 – 100 mg/L	AO

Notes:

1. Criteria are from “Ontario Drinking Water Standards” (Ontario Regulation 169/03) and “Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines” (MOE, June 2003, revised June 2006)
2. AO - Aesthetic Objectives (parameters that may impair the taste, odour or colour of water or which may interfere with good water quality)
3. MAC- Maximum Acceptable Concentration (health related)
4. OG - Operational Guideline (parameters which must be controlled for effective treatment)
5. NDOGT – No data; sample overgrown with target bacteria; over-crowding microbial growth
6. CFU – Colony forming units
7. **Bold** - test result exceeding guideline/standard.

The water quality results indicate that water sample obtained from the garage tap was likely softened.



CLIENT NAME: AECOM CANADA LTD
50 SPORTSWORLD CROSSING RD UNIT 290
KITCHENER, ON N2P0A4
(519) 650-5313

ATTENTION TO: Brian Holden
PROJECT: 60636190 - BBP - Well Survey

AGAT WORK ORDER: 21T815177

MICROBIOLOGY ANALYSIS REVIEWED BY: [REDACTED]

WATER ANALYSIS REVIEWED BY: [REDACTED]

DATE REPORTED: Oct 20, 2021

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***Notes**

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



Certificate of Analysis

AGAT WORK ORDER: 21T815177

PROJECT: 60636190 - BBP - Well Survey

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2021-10-13

DATE REPORTED: 2021-10-20

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water

DATE SAMPLED: 2021-10-13

11:41

3086556

Parameter	Unit	G / S	RDL	3086556
Escherichia coli	CFU/100mL	0	1	ND
Total Coliforms	CFU/100mL	0	1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3086556 If RDL >1 indicates dilutions of the sample.
ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Anayot Bhele




Certificate of Analysis

AGAT WORK ORDER: 21T815177

PROJECT: 60636190 - BBP - Well Survey

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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment (mg/L) Groundwater

DATE RECEIVED: 2021-10-13

DATE REPORTED: 2021-10-20

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water
DATE SAMPLED: 2021-10-13
11:41
3086556

Parameter	Unit	G / S: A	G / S: B	RDL	3086556
Electrical Conductivity	µS/cm			2	488
pH	pH Units		6.5-8.5	NA	8.43
Saturation pH (Calculated)					9.55
Langelier Index (Calculated)					-1.12
Hardness (as CaCO3) (Calculated)	mg/L		80-100	0.5	0.8
Total Dissolved Solids	mg/L		500	10	288[<B]
Alkalinity (as CaCO3)	mg/L		30-500	5	237
Bicarbonate (as CaCO3)	mg/L			5	227
Carbonate (as CaCO3)	mg/L			5	10
Hydroxide (as CaCO3)	mg/L			5	<5
Fluoride	mg/L	1.5		0.05	0.35[<A]
Chloride	mg/L		250	0.10	10.3[<B]
Nitrate as N	mg/L	10.0		0.05	<0.05[<A]
Nitrite as N	mg/L	1.0		0.05	<0.05[<A]
Bromide	mg/L			0.05	<0.05
Sulphate	mg/L		500	0.10	<0.10[<B]
Ortho Phosphate as P	mg/L			0.10	0.33
Ammonia as N	mg/L			0.02	<0.02
Total Phosphorus	mg/L			0.02	0.19
Total Organic Carbon	mg/L			0.5	35.9
True Colour	TCU		5	5	<5[<B]
Turbidity	NTU		5	0.5	0.6[<B]
Dissolved Calcium	mg/L			0.05	0.22
Dissolved Magnesium	mg/L			0.05	0.06
Dissolved Potassium	mg/L			0.50	<0.50
Dissolved Sodium	mg/L	20		0.05	109[>A]
Dissolved Aluminum	mg/L			0.004	0.011
Dissolved Antimony	mg/L	0.006		0.001	<0.001[<A]
Dissolved Arsenic	mg/L	0.01		0.001	0.003[<A]

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 21T815177

PROJECT: 60636190 - BBP - Well Survey

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CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment (mg/L) Groundwater

DATE RECEIVED: 2021-10-13

DATE REPORTED: 2021-10-20

SAMPLE DESCRIPTION:

SAMPLE TYPE:

Water

DATE SAMPLED:

2021-10-13
11:41

Parameter	Unit	G / S: A	G / S: B	RDL	3086556
Dissolved Barium	mg/L	1.0		0.002	<0.002[<A]
Dissolved Beryllium	mg/L			0.0005	<0.0005
Dissolved Boron	mg/L	5.0		0.010	0.128[<A]
Dissolved Cadmium	mg/L	0.005		0.0001	<0.0001[<A]
Dissolved Chromium	mg/L	0.05		0.002	<0.002[<A]
Dissolved Cobalt	mg/L			0.0005	<0.0005
Dissolved Copper	mg/L			0.001	0.005
Dissolved Iron	mg/L			0.010	<0.010
Dissolved Lead	mg/L	0.010		0.0005	<0.0005[<A]
Dissolved Manganese	mg/L			0.002	<0.002
Dissolved Mercury	mg/L	0.001		0.0001	<0.0001[<A]
Dissolved Molybdenum	mg/L			0.002	0.008
Dissolved Nickel	mg/L			0.003	<0.003
Dissolved Selenium	mg/L	0.05		0.001	0.001[<A]
Dissolved Silver	mg/L			0.0001	<0.0001
Dissolved Strontium	mg/L			0.005	<0.005
Dissolved Thallium	mg/L			0.0003	<0.0003
Dissolved Tin	mg/L			0.002	<0.002
Dissolved Titanium	mg/L			0.002	<0.002
Dissolved Tungsten	mg/L			0.010	<0.010
Dissolved Uranium	mg/L	0.02		0.0005	<0.0005[<A]
Dissolved Vanadium	mg/L			0.002	<0.002
Dissolved Zinc	mg/L			0.005	0.013
Dissolved Zirconium	mg/L			0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards - Aesthetic Objectives and Operational Guidelines
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Exceedance Summary

AGAT WORK ORDER: 21T815177

PROJECT: 60636190 - BBP - Well Survey

5835 COOPERS AVENUE
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<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3086556	██████████	ON 169/03 AO&OG	Water Quality Assessment (mg/L) Groundwater	Hardness (as CaCO3) (Calculated)	mg/L	80-100	0.8
3086556	██████████	ON 169/03 MAC/IMAC	Water Quality Assessment (mg/L) Groundwater	Dissolved Sodium	mg/L	20	109

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190 - BBP - Well Survey
 SAMPLING SITE:

AGAT WORK ORDER: 21T815177
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Microbiology Analysis

RPT Date: Oct 20, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli	3085462	ND	ND	NA	< 1
Total Coliforms	3085462	ND	ND	NA	< 1

Comments: ND - Not Detected, NA - % RPD Not Applicable.

Certified By:

Amanjot Bhele


Quality Assurance

CLIENT NAME: AECOM CANADA LTD
PROJECT: 60636190 - BBP - Well Survey
SAMPLING SITE:

AGAT WORK ORDER: 21T815177
ATTENTION TO: Brian Holden
SAMPLED BY:

Water Analysis															
RPT Date: Oct 20, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Water Quality Assessment (mg/L) Groundwater															
Electrical Conductivity	3086235		6120	6130	0.2%	< 2	104%	90%	110%						
pH	3086235		7.42	7.44	0.3%	NA	103%	90%	110%						
Total Dissolved Solids	3086147		540	558	3.3%	< 10	102%	80%	120%						
Alkalinity (as CaCO3)	3086235		689	702	1.9%	< 5	85%	80%	120%						
Bicarbonate (as CaCO3)	3086235		689	702	1.9%	< 5									
Carbonate (as CaCO3)	3086235		<5	<5	NA	< 5									
Hydroxide (as CaCO3)	3086235		<5	<5	NA	< 5									
Fluoride	3080984		<0.05	<0.05	NA	< 0.05	107%	70%	130%	93%	80%	120%	112%	70%	130%
Chloride	3080984		59.6	58.8	1.4%	< 0.10	94%	70%	130%	101%	80%	120%	103%	70%	130%
Nitrate as N	3080984		7.76	7.58	2.3%	< 0.05	94%	70%	130%	102%	80%	120%	101%	70%	130%
Nitrite as N	3080984		<0.05	<0.05	NA	< 0.05	106%	70%	130%	103%	80%	120%	112%	70%	130%
Bromide	3080984		<0.05	<0.05	NA	< 0.05	98%	70%	130%	92%	80%	120%	88%	70%	130%
Sulphate	3080984		27.6	27.5	0.4%	< 0.10	95%	70%	130%	99%	80%	120%	98%	70%	130%
Ortho Phosphate as P	3080984		<0.10	<0.10	NA	< 0.10	105%	70%	130%	100%	80%	120%	100%	70%	130%
Ammonia as N	3084096		0.03	0.03	NA	< 0.02	103%	70%	130%	106%	80%	120%	89%	70%	130%
Total Phosphorus	3070594		0.03	0.03	NA	< 0.02	99%	70%	130%	96%	80%	120%	97%	70%	130%
Total Organic Carbon	3080535		11.2	11.2	0.0%	< 0.5	95%	90%	110%	100%	90%	110%	NA	80%	120%
True Colour	3095546		46	46	0.0%	< 5	100%	90%	110%						
Turbidity	3089426		14.4	15.2	5.4%	< 0.5	99%	80%	120%						
Dissolved Calcium	3086543		75.0	75.2	0.3%	< 0.05	96%	70%	130%	98%	80%	120%	97%	70%	130%
Dissolved Magnesium	3086543		24.7	24.7	0.0%	< 0.05	98%	70%	130%	100%	80%	120%	100%	70%	130%
Dissolved Potassium	3086543		2.72	2.68	1.5%	< 0.50	100%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Sodium	3086543		8.64	8.57	0.8%	< 0.05	96%	70%	130%	96%	80%	120%	102%	70%	130%
Dissolved Aluminum	3086788		0.028	0.026	7.4%	< 0.004	104%	70%	130%	110%	80%	120%	105%	70%	130%
Dissolved Antimony	3086788		< 0.001	< 0.001	NA	< 0.001	94%	70%	130%	99%	80%	120%	95%	70%	130%
Dissolved Arsenic	3086788		0.001	0.001	NA	< 0.001	96%	70%	130%	98%	80%	120%	104%	70%	130%
Dissolved Barium	3086788		0.050	0.047	6.2%	< 0.002	98%	70%	130%	100%	80%	120%	100%	70%	130%
Dissolved Beryllium	3086788		< 0.0005	< 0.0005	NA	< 0.0005	107%	70%	130%	105%	80%	120%	103%	70%	130%
Dissolved Boron	3086788		0.031	0.030	NA	< 0.010	103%	70%	130%	106%	80%	120%	101%	70%	130%
Dissolved Cadmium	3086788		< 0.0001	< 0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	100%	70%	130%
Dissolved Chromium	3086788		0.003	0.003	NA	< 0.002	99%	70%	130%	104%	80%	120%	101%	70%	130%
Dissolved Cobalt	3086788		0.0008	0.0007	NA	< 0.0005	94%	70%	130%	102%	80%	120%	104%	70%	130%
Dissolved Copper	3086788		< 0.001	< 0.001	NA	< 0.001	95%	70%	130%	102%	80%	120%	104%	70%	130%
Dissolved Iron	3086788		5970	5440	9.3%	< 0.010	87%	70%	130%	112%	80%	120%	101%	70%	130%
Dissolved Lead	3086788		< 0.0005	< 0.0005	NA	< 0.0005	97%	70%	130%	108%	80%	120%	103%	70%	130%
Dissolved Manganese	3086788		0.949	0.875	8.1%	< 0.002	95%	70%	130%	100%	80%	120%	96%	70%	130%
Dissolved Mercury	3073029		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	97%	80%	120%	97%	70%	130%
Dissolved Molybdenum	3086788		0.008	0.007	NA	< 0.002	95%	70%	130%	102%	80%	120%	104%	70%	130%
Dissolved Nickel	3086788		< 0.003	< 0.003	NA	< 0.003	99%	70%	130%	104%	80%	120%	106%	70%	130%

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190 - BBP - Well Survey
 SAMPLING SITE:

AGAT WORK ORDER: 21T815177
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Oct 20, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Dissolved Selenium	3086788		<0.001	0.001	NA	< 0.001	97%	70%	130%	93%	80%	120%	98%	70%	130%	
Dissolved Silver	3086788		< 0.0001	< 0.0001	NA	< 0.0001	99%	70%	130%	104%	80%	120%	102%	70%	130%	
Dissolved Strontium	3086788		0.271	0.249	8.5%	< 0.005	94%	70%	130%	102%	80%	120%	103%	70%	130%	
Dissolved Thallium	3086788		< 0.0003	< 0.0003	NA	< 0.0003	99%	70%	130%	108%	80%	120%	103%	70%	130%	
Dissolved Tin	3086788		< 0.002	< 0.002	NA	< 0.002	98%	70%	130%	102%	80%	120%	101%	70%	130%	
Dissolved Titanium	3086788		< 0.002	< 0.002	NA	< 0.002	96%	70%	130%	101%	80%	120%	99%	70%	130%	
Dissolved Tungsten	3086788		< 0.010	< 0.010	NA	< 0.010	98%	70%	130%	100%	80%	120%	101%	70%	130%	
Dissolved Uranium	3086788		0.0013	0.0012	NA	< 0.0005	96%	70%	130%	104%	80%	120%	100%	70%	130%	
Dissolved Vanadium	3086788		< 0.002	< 0.002	NA	< 0.002	94%	70%	130%	100%	80%	120%	97%	70%	130%	
Dissolved Zinc	3086788		< 0.005	< 0.005	NA	< 0.005	100%	70%	130%	99%	80%	120%	96%	70%	130%	
Dissolved Zirconium	3086788		< 0.004	< 0.004	NA	< 0.004	94%	70%	130%	99%	80%	120%	100%	70%	130%	

Comments: NA Signifies Not Applicable.
 Duplicate NA: results are less than 5X the RDL and RPD will not be calculated.
 Matrix spike: Spike level < native concentration. Matrix spike acceptance limits do not apply.

Certified By: _____



Method Summary

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190 - BBP - Well Survey
 SAMPLING SITE:

AGAT WORK ORDER: 21T815177
 ATTENTION TO: Brian Holden
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190 - BBP - Well Survey
 SAMPLING SITE:

AGAT WORK ORDER: 21T815177
 ATTENTION TO: Brian Holden
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Total Phosphorus	INOR-93-6057	modified from LACHAT 10-115-01-3A	LACHAT FIA
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Dissolved Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Aluminum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

Method Summary

CLIENT NAME: AECOM CANADA LTD
PROJECT: 60636190 - BBP - Well Survey
SAMPLING SITE:

AGAT WORK ORDER: 21T815177
ATTENTION TO: Brian Holden
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dissolved Manganese	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Strontium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tin	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Titanium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tungsten	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zirconium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

1. PRINT ONLY IN SPACES PROVIDED
11

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	DEPTH - FEET	
			FROM	TO
BROWN	CLAY	STONES	0	26
	SAND		26	51
BLUE	CLAY		51	220
BLUE	CLAY	GRAVEL	220	252
BLUE	SAND		252	260

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER					
10-13 252	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> GAS	6 <input type="checkbox"/>	7 <input type="checkbox"/>
15-18	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> GAS	6 <input type="checkbox"/>	7 <input type="checkbox"/>
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> GAS	6 <input type="checkbox"/>	7 <input type="checkbox"/>
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> GAS	6 <input type="checkbox"/>	7 <input type="checkbox"/>
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	5 <input type="checkbox"/> GAS	6 <input type="checkbox"/>	7 <input type="checkbox"/>

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11 6	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.188	0	249
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 6	DIAMETER 6 INCHES	LENGTH 6 FEET
MATERIAL AND TYPE STAINLESS STEEL		DEPTH TO TOP OF SCREEN 253 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET		MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
FROM	TO	
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	PUMPING RATE 25 GPM	DURATION OF PUMPING 4 HOURS
STATIC LEVEL 160 FEET	WATER LEVELS DURING	
	15 MINUTES 26-28 FEET	30 MINUTES 29-31 FEET
	45 MINUTES 32-34 FEET	60 MINUTES 35-37 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
		1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 225 FEET	RECOMMENDED PUMPING RATE 8 GPM

LOCATION OF WELL

[REDACTED]

FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input type="checkbox"/> OBSERVATION WELL	6 <input type="checkbox"/> ABANDONED POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	8 <input type="checkbox"/> DEWATERING

WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
9 <input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

METHOD OF CONSTRUCTION

1 <input type="checkbox"/> TABLE TOOL	6 <input type="checkbox"/> BORING
2 <input checked="" type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input type="checkbox"/> AIR PERCUSSION	10 <input type="checkbox"/> DIGGING <input type="checkbox"/> OTHER

WELL CONTRACTOR'S [REDACTED]

OFFICE USE ONLY

DATA SOURCE	DATE RECEIVED SEP 06 1990
DATE OF INSPECTION	INSPECTOR
REMARKS	

CSS.ES

Water Well Survey

CR4
AECOM

Well I.D. #: [REDACTED] AECOM Project No.: 60636190
MECP WWR #: [REDACTED] Client Project No.: _____

Well Owner Information:

Property Owner Name:
Property Address:
Telephone:
Name of Person Completing Survey:
Telephone:
Relationship to Property Owner:
Name of Original Well Owner (if known/different from above):



Occupant of Property Served by Well: (if other than Owner)

Name:			
Telephone:		Email:	
Address:			

Well Location:



Lot:		Concession:		Township:	
------	--	-------------	--	-----------	--

Well Construction Details:

Well Record Available?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date Well Constructed:	[REDACTED]	Well Contractor Name:	[REDACTED]
Well Type: (Drilled/Bored/Dug)	Drilled	Casing Material: (Steel, Concrete, etc.)	Steel	Well Casing Diameter:	7"
Well Stick Up: (Above Ground)	0.90	Well Depth: (Below Ground)	294?	Water Level: (Below Ground)	252 ft
Is Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: (Below Ground)	—	Well Stick Up: (Above Pit Bottom)	—
Is Well Flowing?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Flow Rate:	8 GPM	Contractor:	
Well Cap Type:	Steel	Does Cap Create a Good Seal?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Is Wire Conduit Tight to Well Cap?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is the Well:	Accessible for Direct Sampling?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	OR	Buried, in a Well Pit, or Other Confined Space?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Well Screen Installed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Length & Slot Size:	6	Depth of Top of Screen: (Below Ground)	253

Water Well Survey

AECOM

Well I.D. #: [REDACTED] AECOM Project No.: 60636190
 MECP WWR #: [REDACTED] Client Project No.: _____

Pumping Equipment:

Pump Type:	<input type="checkbox"/> Jet Pump <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Piston Pump <input type="checkbox"/> Other (please describe): _____
[REDACTED]	

Primary Use(s):	Domestic: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Livestock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lawn Watering: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
# of Persons Using Well:	[REDACTED]	# of Livestock Watered:	Other Uses: _____
Indoor Plumbing Fixtures: (Washroom(s), Shower(s), Dishwasher, Laundry, Pool, Spa, etc.)		[REDACTED]	
Daily Amount: (if known)		_____	

Sewage Servicing:

Private Sewage System or Municipal:	Private	System Type: (septic tank, etc.)	Septic tank	Distance from Well:	65 ft
Well Location:	<input type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input type="checkbox"/> Same Grade				
Presence of Any Above Ground Storage Tank or Other Potential Source(s) of Contamination: (including distance on / off property)					
[REDACTED]					

Previous Concerns:

How Long Have You Owned, Resided, or Operated a Business on this Property?	[REDACTED]		x
Have You Experienced Any Previous Concerns with Your Well Supply? (Quantity or Quality)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, When?	x 1001-2
Cause(s) of the Previous Concern?	<input type="checkbox"/> Drought <input type="checkbox"/> Pump Failure <input type="checkbox"/> Plugging <input type="checkbox"/> Increased Usage <input type="checkbox"/> Interference <input type="checkbox"/> Contamination <input type="checkbox"/> Other (Please describe): _____		

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: 60036190
 Client Project No.: _____

Well Modification / Maintenance:

Has Your Well Ever Been...	Deepened?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cleaned?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Reconstructed or Replaced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If Yes to Any of the Above, Please Provide Details:						

Other Details:

Other Details that May be Relevant to Assessing the Current Condition of Your Well Supply:	
pump replaced	
homeowner has noted a green tinge	
pH 8.63	cloudy initially
temp 15.4	then clear
cond. 467	
11:41 - sample	
curious about when it will be completed.	

Property Owner Participation in Monitoring Program:

Does the Property Owner and/or Occupant Grant Permission for MTO/AECOM to Monitor and/or Sample Your Well?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	---

Water Well Survey

AECOM

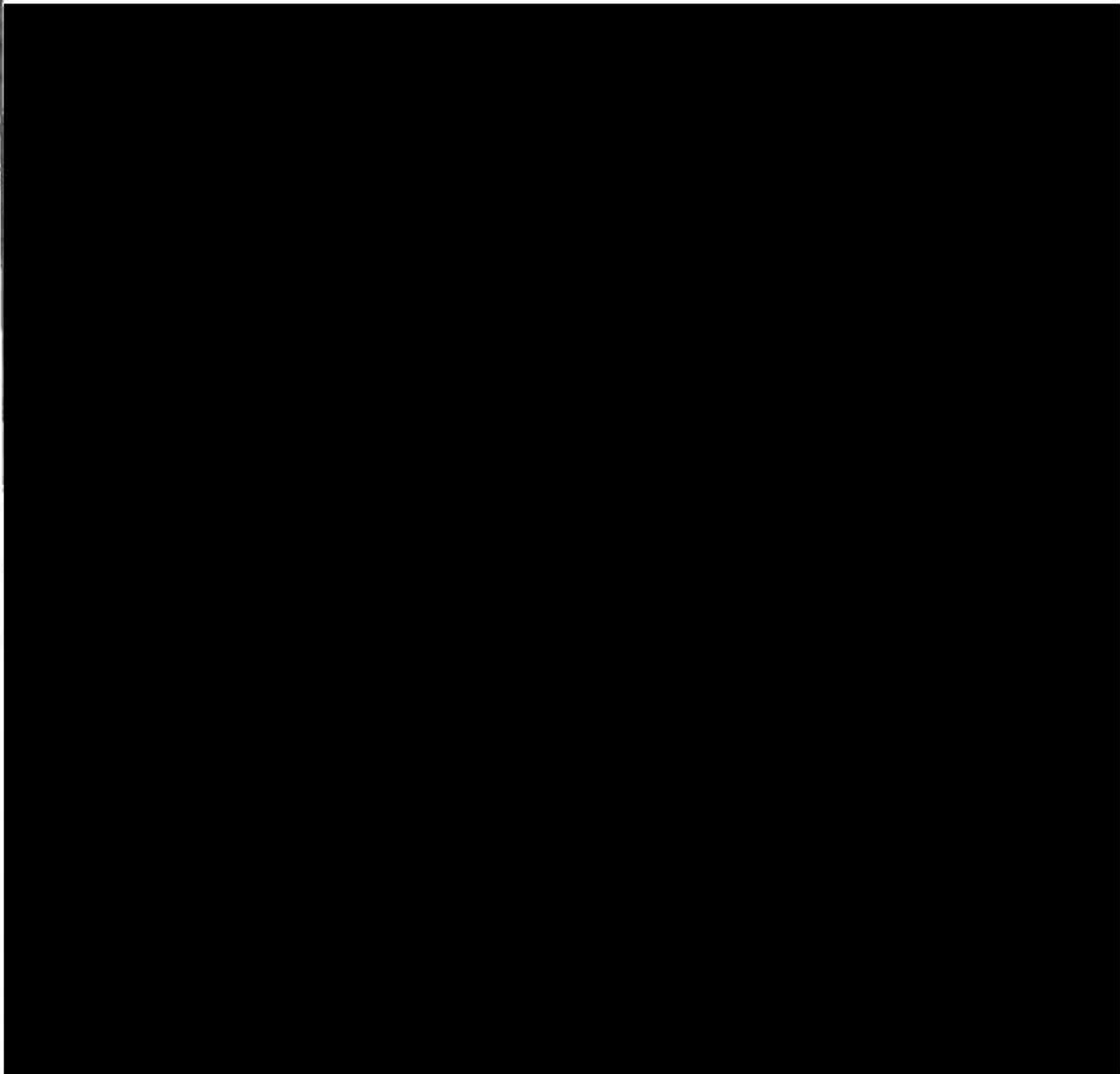
Well I.D. #: [REDACTED]

AECOM Project No.: 60636190

MECP WWR #: [REDACTED]

Client Project No.: _____

Location Sketch *(To be Completed by Property Owner / Occupant)*



Include details such as property lines, buildings, well, sewage system (if present), as well as any other potential sources of contamination (e.g., tanks, bamyards, chemical/manure storage, etc.).

Appendix **D**



November 22nd, 2021

[REDACTED]

Project No: 60636190
Regarding: Pre-Construction Water Quality Testing Results
MTO Bradford Bypass Project

Dear [REDACTED]

AECOM Canada Ltd. (AECOM) would like to thank you for your participation in the Pre-Construction Well Assessment Program offered to local residents as part of the Bradford Bypass Project. Based on receipt of written permission from yourself, a sample of raw (untreated) groundwater from your private well was collected for laboratory analysis by AECOM staff on October 14th, 2021. Please find attached a copy of the water quality testing results for your review and record.

Laboratory testing results for the sample obtained indicate that concentrations of certain parameters, as shown in the table below, are in excess of the *Ontario Drinking Water Standards, Objectives and Guidelines* (Ontario Ministry of the Environment, 2006). It should be noted, however, that these results are based on a single sample analysis and that additional testing is recommended.

PARAMETER	CONCENTRATION IN YOUR WATER	STANDARD VALUE / RANGE	STANDARD TYPE	HEALTH RELATED (Y / N)
Total Coliforms	116 CFU/ 100mL	0 CFU/100mL	MAC	Y
Hardness (as CaCO ₃)	355 mg/L	80 - 100 mg/L	OG	N

NOTE: MAC – Maximum Acceptable Concentration; AO – Aesthetic Objective; OG – Operational Guideline.

As discussed via telephone with Ms. Clubine-Lisk on November 19th, 2021, following receipt of the water quality testing results, the presence of bacteriological parameters (Total Coliforms) in your drinking water may represent an immediate health concern. It is recommended that you discuss this exceedance with your Local Public Health Unit.

For your information, the *Well Aware Booklet – A Guide To Caring For Your Well* created by Green Communities Canada is available on the Walkerton Clean Water Centre (WCWC) website at:

<https://wcwc.ca/well-aware-and-well-wise-program-resources-for-homeowners/>

Should you have any questions or concerns regarding the quality of your well water, it is recommended that you contact your local Public Health Unit for further information and advice. Contact information for your Local Public Health Unit is provided, as follows:

Simcoe Muskoka District Health Unit
80 Bradford St. #403
Barrie, ON L4N 6S7
Website: <https://www.simcoemuskokahealth.org/>
Telephone: 705.721.7520

If you have any further questions, please contact:

AECOM Canada Ltd. C/O Brian Holden, P.Geo.
Hydrogeology, Environment
Telephone: 226-821-2486
Email: brian.holden@aecom.com

Sincerely,
AECOM Canada Ltd.



Brian Holden, P.Geo.
Hydrogeologist
DCS Americas, Canada East (Greater Ontario / Metro Toronto)
Environment
Brian.holden@aecom.com

Encl.

cc: R. Sheikh, N. Valenton, S. Rankin, S.Schmied – AECOM;
H. Singh, L. Sarris, J. MacKinnon, R. Gribbon – MTO



Water Well Survey

Groundwater Supply Well Location [REDACTED]

Project Name: Bradford Bypass – CR4 Expansion

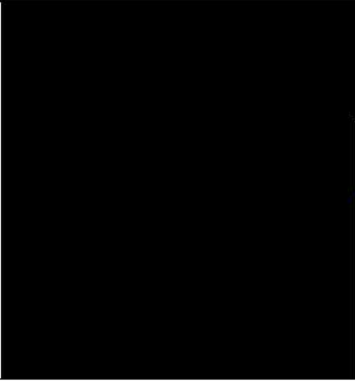
Project#: 60636190

Residence Address:

[REDACTED]

Owner Information:

[REDACTED]



Well

Well Record

Coordinates (UTM)..... [REDACTED]

[REDACTED]

Type of Well..... Dug

Constructed (year)..... [REDACTED]

Well Location..... [REDACTED]

Well Diameter.....0.914 m

Well Depth.....21.03 m

Casing Position.....0.25 m above ground;

Casing Condition.....Fair

Water Usage.....Residential

Water Source.....Overburden

Static Water Level.....NA



Water Quality & Well Testing

Past Water Quality Problems..... None

Potential Contamination Sources... None

Location of Septic Tank..... [REDACTED]

Treatment System.....None

Recent Test Results.....None

Water Sampled..... Yes (October 14, 2021)

Sample Source..... Side house tap.

Appearance.....Clear, no odour

Comments:

- [REDACTED]
- Lid has been replaced.
- Concern about bypass construction influences
- [REDACTED] New well had to be installed.

Quality Testing

Groundwater quality met the applicable standards for bacteriological, selected inorganic and metal parameters analyzed except for the following:

<i>Parameters</i>	<i>Test Results</i>	<i>Guideline/Standard</i>	<i>Criteria Type</i>
Total Coliforms	116 CFU / 100 ml	0 CFU / 100 ml	MAC
Hardness (as CaCO ₃)	355 mg/L	80 – 100 mg/L	OG

Notes:

1. Criteria are from "Ontario Drinking Water Standards" (Ontario Regulation 169/03) and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" (MOE, June 2003, revised June 2006)
2. AO - Aesthetic Objectives (parameters that may impair the taste, odour or colour of water or which may interfere with good water quality)
3. MAC- Maximum Acceptable Concentration (health related)
4. OG - Operational Guideline (parameters which must be controlled for effective treatment)
5. NDOGT – No data; sample overgrown with target bacteria; over-crowding microbial growth
6. CFU – Colony forming units
7. **Bold** - test result exceeding guideline/standard.



CLIENT NAME: AECOM CANADA LTD
50 SPORTSWORLD CROSSING RD UNIT 290
KITCHENER, ON N2P0A4
(519) 650-5313

ATTENTION TO: Brian Holden

PROJECT: 60636190

AGAT WORK ORDER: 21T815956

MICROBIOLOGY ANALYSIS REVIEWED BY: [REDACTED]

WATER ANALYSIS REVIEWED BY: [REDACTED]

DATE REPORTED: Oct 23, 2021

PAGES (INCLUDING COVER): 13

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***Notes**

[REDACTED]

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water

DATE SAMPLED: 2021-10-14
10:13

3091472

Parameter	Unit	G / S	RDL	3091472
Escherichia coli	CFU/100mL	100	1	ND
Total Coliforms	CFU/100mL		1	116

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
3091472 If RDL >1 indicates dilutions of the sample.
ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Amayot Bhele




Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: [REDACTED]

SAMPLE TYPE: Water
DATE SAMPLED: 2021-10-14
10:13
3091472

Parameter	Unit	G / S	RDL	3091472
Electrical Conductivity	µS/cm		2	847
pH	pH Units	6.5-8.5	NA	7.99
Saturation pH (Calculated)				6.89
Langelier Index (Calculated)				1.10
Hardness (as CaCO3) (Calculated)	mg/L		0.5	355
Total Dissolved Solids	mg/L		10	520
Alkalinity (as CaCO3)	mg/L		5	282
Bicarbonate (as CaCO3)	mg/L		5	282
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.12	60.4
Nitrate as N	mg/L		0.05	6.91
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	40.5
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L		0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	<0.000002
Total Phosphorus	mg/L	*	0.02	<0.02
Total Organic Carbon	mg/L		0.5	68.0
True Colour	TCU		5	<5
Turbidity	NTU		0.5	<0.5
Dissolved Calcium	mg/L		0.25	111
Dissolved Magnesium	mg/L		0.25	18.8
Dissolved Potassium	mg/L		2.50	4.91
Dissolved Sodium	mg/L		0.25	28.5
Aluminum-dissolved	mg/L	*	0.004	<0.004
Dissolved Antimony	mg/L	0.020	0.001	<0.001

Certified By:

Iris Veraestegui



Certificate of Analysis

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PROJECT: 60636190

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CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

SAMPLE DESCRIPTION: XXXXXXXXXX
 SAMPLE TYPE: Water
 DATE SAMPLED: 2021-10-14
 10:13
 3091472

Parameter	Unit	G / S	RDL	3091472
Dissolved Arsenic	mg/L	0.1	0.003	<0.003
Dissolved Barium	mg/L		0.002	0.073
Dissolved Beryllium	mg/L	*	0.0005	<0.0005
Dissolved Boron	mg/L	0.2	0.010	0.036
Dissolved Cadmium	mg/L	0.0002	0.0001	<0.0001
Dissolved Chromium	mg/L		0.003	<0.003
Dissolved Cobalt	mg/L	0.0009	0.0005	<0.0005
Dissolved Copper	mg/L	0.005	0.001	0.021
Dissolved Iron	mg/L	0.3	0.010	0.012
Dissolved Lead	mg/L	*	0.001	<0.001
Dissolved Manganese	mg/L		0.002	<0.002
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Dissolved Molybdenum	mg/L	0.040	0.002	<0.002
Dissolved Nickel	mg/L	0.025	0.003	<0.003
Dissolved Selenium	mg/L	0.1	0.004	0.009
Dissolved Silver	mg/L	0.0001	0.0001	<0.0001
Dissolved Strontium	mg/L		0.005	0.249
Dissolved Thallium	mg/L	0.0003	0.0003	<0.0003
Dissolved Tin	mg/L		0.002	<0.002
Dissolved Titanium	mg/L		0.002	<0.002
Dissolved Tungsten	mg/L	0.030	0.010	<0.010
Dissolved Uranium	mg/L	0.005	0.002	<0.002
Dissolved Vanadium	mg/L	0.006	0.002	<0.002
Dissolved Zinc	mg/L	0.030	0.005	0.044
Dissolved Zirconium	mg/L	0.004	0.004	<0.004
Lab Filtration Aluminum Dissolved				2021/10/18
Lab Filtration mercury				2021/10/18
Lab Filtration Metals				2021/10/18

Certified By:

Iris Vera'stegui



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

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CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2021-10-14

DATE REPORTED: 2021-10-23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3091472 Metals analysis completed on a lab filtered sample.
Dilution required, RDL has been increased accordingly.
Un-ionized Ammonia detection limit is a calculated RDL. The calculation of Un-ionized Ammonia is based on lab measured parameters (ammonia as N, pH and temperature). Values are reported as calculated.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Exceedance Summary

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

5835 COOPERS AVENUE
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CLIENT NAME: AECOM CANADA LTD

ATTENTION TO: Brian Holden

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3091472	██████████	ON PWQO	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Dissolved Copper	mg/L	0.005	0.021
3091472	██████████	ON PWQO	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Dissolved Zinc	mg/L	0.030	0.044

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE:

AGAT WORK ORDER: 21T815956
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Microbiology Analysis

RPT Date: Oct 23, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli	3091472	3091472	ND	ND	NA	< 1
Total Coliforms	3091472	3091472	116	114	1.7%	< 1

Comments: ND - Not Detected, NA - % RPD Not Applicable.

Certified By:

Amanjot Bhele


Quality Assurance

CLIENT NAME: AECOM CANADA LTD

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

Water Analysis																
RPT Date: Oct 23, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

Electrical Conductivity	3090117		138	138	0.0%	< 2	97%	90%	110%						
pH	3090117		7.17	7.13	0.6%	NA	102%	90%	110%						
Total Dissolved Solids	3091472	3091472	520	524	0.8%	< 10	102%	80%	120%						
Alkalinity (as CaCO3)	3090117		64	62	3.2%	< 5	84%	80%	120%						
Bicarbonate (as CaCO3)	3090117		64	62	3.2%	< 5	NA								
Carbonate (as CaCO3)	3090117		<5	<5	NA	< 5	NA								
Hydroxide (as CaCO3)	3090117		<5	<5	NA	< 5	NA								
Fluoride	3091521	3091521	<0.05	<0.05	NA	< 0.05	94%	70%	130%	95%	80%	120%	112%	70%	130%
Chloride	3091521	3091521	54.3	54.3	0.0%	< 0.10	96%	70%	130%	104%	80%	120%	110%	70%	130%
Nitrate as N	3091521	3091521	4.07	4.16	2.2%	< 0.05	106%	70%	130%	106%	80%	120%	109%	70%	130%
Nitrite as N	3091521	3091521	<0.05	<0.05	NA	< 0.05	95%	70%	130%	101%	80%	120%	110%	70%	130%
Bromide	3091521	3091521	<0.05	<0.05	NA	< 0.05	107%	70%	130%	104%	80%	120%	102%	70%	130%
Sulphate	3091521	3091521	25.8	25.7	0.4%	< 0.10	99%	70%	130%	105%	80%	120%	108%	70%	130%
Ortho Phosphate as P	3091521	3091521	<0.10	<0.10	NA	< 0.10	105%	70%	130%	100%	80%	120%	94%	70%	130%
Ammonia as N	3087154		<0.02	<0.02	NA	< 0.02	115%	70%	130%	99%	80%	120%	96%	70%	130%
Total Phosphorus	3090116		0.02	0.03	NA	< 0.02	97%	70%	130%	97%	80%	120%	105%	70%	130%
Total Organic Carbon	3094303		47.1	47.2	0.2%	< 0.5	99%	90%	110%	98%	90%	110%	NA	80%	120%
True Colour	3090232		31	31	0.0%	< 5	106%	90%	110%						
Turbidity	3091472	3091472	<0.5	<0.5	NA	< 0.5	101%	80%	120%						
Dissolved Calcium	3095356		101	101	0.0%	< 0.05	95%	70%	130%	97%	80%	120%	98%	70%	130%
Dissolved Magnesium	3095356		12.2	12.2	0.0%	< 0.05	99%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Potassium	3095356		0.83	0.89	NA	< 0.50	99%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Sodium	3095356		2.75	2.72	1.1%	< 0.05	97%	70%	130%	96%	80%	120%	101%	70%	130%
Aluminum-dissolved	3091472	3091472	<0.004	<0.004	NA	< 0.004	104%	70%	130%	116%	80%	120%	119%	70%	130%
Dissolved Antimony	3091472	3091472	<0.001	<0.001	NA	< 0.001	102%	70%	130%	103%	80%	120%	107%	70%	130%
Dissolved Arsenic	3091472	3091472	<0.003	<0.003	NA	< 0.003	92%	70%	130%	103%	80%	120%	112%	70%	130%
Dissolved Barium	3091472	3091472	0.073	0.079	7.9%	< 0.002	100%	70%	130%	103%	80%	120%	104%	70%	130%
Dissolved Beryllium	3091472	3091472	<0.0005	<0.0005	NA	< 0.0005	97%	70%	130%	109%	80%	120%	115%	70%	130%
Dissolved Boron	3091472	3091472	0.036	0.038	NA	< 0.010	98%	70%	130%	106%	80%	120%	108%	70%	130%
Dissolved Cadmium	3091472	3091472	<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	106%	80%	120%	108%	70%	130%
Dissolved Chromium	3091472	3091472	<0.003	<0.003	NA	< 0.003	102%	70%	130%	105%	80%	120%	104%	70%	130%
Dissolved Cobalt	3091472	3091472	<0.0005	<0.0005	NA	< 0.0005	100%	70%	130%	107%	80%	120%	104%	70%	130%
Dissolved Copper	3091472	3091472	0.021	0.025	17.4%	< 0.001	99%	70%	130%	105%	80%	120%	104%	70%	130%
Dissolved Iron	3091472	3091472	0.012	<0.010	NA	< 0.010	101%	70%	130%	106%	80%	120%	101%	70%	130%
Dissolved Lead	3091472	3091472	<0.001	<0.001	NA	< 0.001	98%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Manganese	3091472	3091472	<0.002	0.003	NA	< 0.002	96%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Mercury	3095856		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	98%	70%	130%
Dissolved Molybdenum	3091472	3091472	<0.002	<0.002	NA	< 0.002	104%	70%	130%	105%	80%	120%	108%	70%	130%
Dissolved Nickel	3091472	3091472	<0.003	<0.003	NA	< 0.003	100%	70%	130%	106%	80%	120%	103%	70%	130%

Quality Assurance

CLIENT NAME: AECOM CANADA LTD
 PROJECT: 60636190
 SAMPLING SITE:

AGAT WORK ORDER: 21T815956
 ATTENTION TO: Brian Holden
 SAMPLED BY:

Water Analysis (Continued)

RPT Date: Oct 23, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Dissolved Selenium	3091472	3091472	<0.004	<0.004	NA	< 0.004	101%	70%	130%	108%	80%	120%	113%	70%	130%	
Dissolved Silver	3091472	3091472	<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	106%	80%	120%	104%	70%	130%	
Dissolved Strontium	3091472	3091472	0.249	0.253	1.6%	< 0.005	95%	70%	130%	101%	80%	120%	99%	70%	130%	
Dissolved Thallium	3091472	3091472	<0.0003	<0.0003	NA	< 0.0003	97%	70%	130%	103%	80%	120%	104%	70%	130%	
Dissolved Tin	3091472	3091472	<0.002	<0.002	NA	< 0.002	101%	70%	130%	103%	80%	120%	107%	70%	130%	
Dissolved Titanium	3091472	3091472	<0.002	<0.002	NA	< 0.002	100%	70%	130%	106%	80%	120%	105%	70%	130%	
Dissolved Tungsten	3091472	3091472	<0.010	<0.010	NA	< 0.010	96%	70%	130%	99%	80%	120%	101%	70%	130%	
Dissolved Uranium	3091472	3091472	<0.002	<0.002	NA	< 0.002	97%	70%	130%	106%	80%	120%	108%	70%	130%	
Dissolved Vanadium	3091472	3091472	<0.002	<0.002	NA	< 0.002	100%	70%	130%	104%	80%	120%	108%	70%	130%	
Dissolved Zinc	3091472	3091472	0.044	0.053	18.6%	< 0.005	100%	70%	130%	109%	80%	120%	107%	70%	130%	
Dissolved Zirconium	3091472	3091472	<0.004	<0.004	NA	< 0.004	100%	70%	130%	106%	80%	120%	108%	70%	130%	

Comments: NA signifies Not Applicable.
 If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.
 Matrix spike: Spike level < native concentration. Matrix spike acceptance limits do not apply.

Certified By:



Method Summary

CLIENT NAME: AECOM CANADA LTD

AGAT WORK ORDER: 21T815956

PROJECT: 60636190

ATTENTION TO: Brian Holden

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T815956
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Dissolved Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Aluminum-dissolved	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

Method Summary

CLIENT NAME: AECOM CANADA LTD
AGAT WORK ORDER: 21T815956
PROJECT: 60636190
ATTENTION TO: Brian Holden
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Manganese	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Strontium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tin	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Titanium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tungsten	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zirconium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION
Lab Filtration mercury	SR-78-9001		FILTRATION
Lab Filtration Metals	SR-78-9001		FILTRATION



WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED

2. CHECK CORRECT BOX WHERE APPLICABLE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
		top soil		0	2
		brown stony clay		2	42
		gravel		42	47
		blue clay		47	55
		fine sand		55	57

31 [redacted] 32 [redacted]

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0047	<input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
30	<input checked="" type="checkbox"/> CONCRETE	3	0	0027
30	<input checked="" type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE	.064	27	0047
24	<input checked="" type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE	.064	47	0057

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
		41-44
		80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17
18-21	22-25
26-29	30-33

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	GPM	15-16 HOURS 17-18 MINS
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
039 FEET	FEET	15 MINUTES 26-28 FEET 30 MINUTES 29-31 FEET 45 MINUTES 32-34 FEET 60 MINUTES 35-37 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 <input type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	055 FEET	0004 GPM

LOCATION OF WELL

PROGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND

FINAL STATUS OF WELL

54

1 <input checked="" type="checkbox"/> WATER SUPPLY	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input checked="" type="checkbox"/> OBSERVATION WELL	6 <input type="checkbox"/> ABANDONED, POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	

WATER USE

55-56

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
<input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

METHOD OF DRILLING

57

1 <input type="checkbox"/> CABLE TOOL	6 <input checked="" type="checkbox"/> BORING
2 <input type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input type="checkbox"/> AIR PERCUSSION	

CONTRACTOR

[redacted]

OFFICE USE ONLY

[redacted]

CSS.S8

Water Well Survey

Well I.D. #: [Redacted] AECOM Project No.: [Redacted]
 MECP WWR #: [Redacted] Client Project No.: 60636190

Paper copy

Well Owner Information:

Property Owner Name:	[Redacted]
Property Address:	[Redacted]
Telephone:	[Redacted]
Name of Person Completing Survey:	[Redacted]
Telephone:	[Redacted]
Relationship to Property Owner:	[Redacted]
Name of Original Well Owner (if known/different from above):	[Redacted]

Occupant of Property Served by Well: (if other than Owner)

Name:	Same as above		
Telephone:		Email:	
Address:			

Well Location:

Lot:	[Redacted]	Concession:	[Redacted]	Township:	Bradford West Gwilym
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Well Construction Details

Well Record Available?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Well Constructed:	[Redacted]	Well Contractor Name:	[Redacted]
Well Type: (Drilled/Bored/Dug)	Dug	Casing Material: (Steel, Concrete, etc.)	Concrete	Well Casing Diameter:	3 ft
Well Stick Up: (Above Ground)	-	Well Depth: (Below Ground)	69'	Water Level: (Below Ground)	-
Is Well Located in a Well Pit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Well Pit Depth: (Below Ground)	-	Well Stick Up: (Above Pit Bottom)	10"
Is Well Flowing?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Flow Rate:		Contractor:	
Well Cap Type:	Concrete	Does Cap Create a Good Seal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is Wire Conduit Tight to Well Cap?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is the Well:	Accessible for Direct Sampling?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	OR	Buried, in a Well Pit, or Other Confined Space?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Well Screen Installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Length & Slot Size:		Depth of Top of Screen: (Below Ground)	

Water Well Survey

AECOM

Well I.D. #: [REDACTED]
 MECP WWR #: [REDACTED]

AECOM Project No.: _____
 Client Project No.: 60636196

Pumping Equipment:

Pump Type:	<input type="checkbox"/> Jet Pump <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Piston Pump <input type="checkbox"/> Other (please describe): _____			
Pump Horsepower:		Pump Age:	[REDACTED]	Pumping Capacity:
Pump Intake Depth: (Below Ground)		Pump Location: (If Not in Well)		Pumping Rate: (If Known)
Pressure Tank:	Type:			Capacity:
Water Treatment: (if present)	<input type="checkbox"/> Chlorinator <input type="checkbox"/> Water Softener <input type="checkbox"/> Water Filter (indicate type) _____ <input type="checkbox"/> U.V. <input type="checkbox"/> R.O. <input type="checkbox"/> Other (please describe): NO water treatment			

Well Usage:

Primary Use(s):	Domestic:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Livestock:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lawn Watering:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
# of Persons Using Well:	[REDACTED]	# of Livestock Watered:		Other Uses:		Daily Amount: (if known)
Indoor Plumbing Fixtures: (Washroom(s), Shower(s), Dishwasher, Laundry, Pool, Spa, etc.)			[REDACTED]			

Sewage Servicing:

Private Sewage System or Municipal:	Private Sewage	System Type: (septic tank, etc.)	Septic tank	Distance from Well:	150 ft
Well Location:	<input type="checkbox"/> Uphill <input type="checkbox"/> Downhill <input checked="" type="checkbox"/> Same Grade				
Presence of Any Above Ground Storage Tank or Other Potential Source(s) of Contamination: (including distance on / off property)			No		

Previous Concerns:

How Long Have You Owned, Resided, or Operated a Business on this Property?	[REDACTED]		
Have You Experienced Any Previous Concerns with Your Well Supply? (Quantity or Quality)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, When?	[REDACTED]
Cause(s) of the Previous Concern?	<input type="checkbox"/> Drought <input type="checkbox"/> Pump Failure <input type="checkbox"/> Plugging <input type="checkbox"/> Increased Usage <input type="checkbox"/> Interference <input type="checkbox"/> Contamination <input checked="" type="checkbox"/> Other (Please describe): [REDACTED]		

Water Well Survey

AECOM

Well I.D. #: [Redacted] AECOM Project No.: [Redacted]
MECP WWR #: [Redacted] Client Project No.: 60636190

Well Modification / Maintenance:

Has Your Well Ever Been...	Deepened?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cleaned?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Reconstructed or Replaced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If Yes to Any of the Above, Please Provide Details:		Concrete Top replaced				

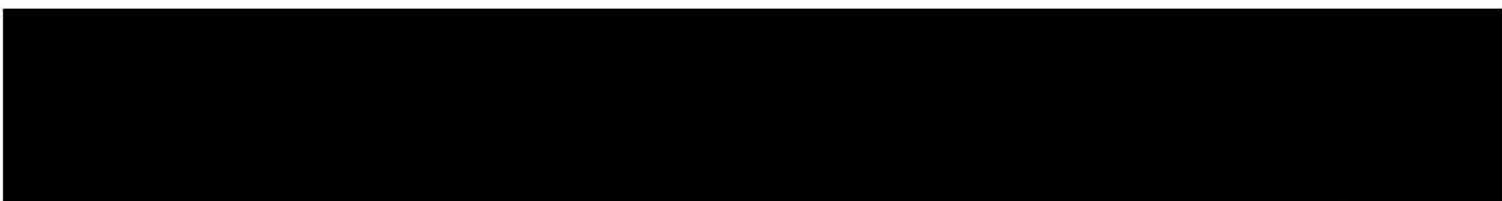
Other Details:

Other Details that May be Relevant to Assessing the Current Condition of Your Well Supply:

pH - 8.29	[Redacted]
Temp - 13.9	[Redacted]
Cond - 416	[Redacted]
	- Lid issues
Sample taken at 10:13	- concerned about water quality/quantity related to construction
	- Talked with neighbor.

Property Owner Participation in Monitoring Program:

Does the Property Owner and/or Occupant Grant Permission for MTO/AECOM to Monitor and/or Sample Your Well?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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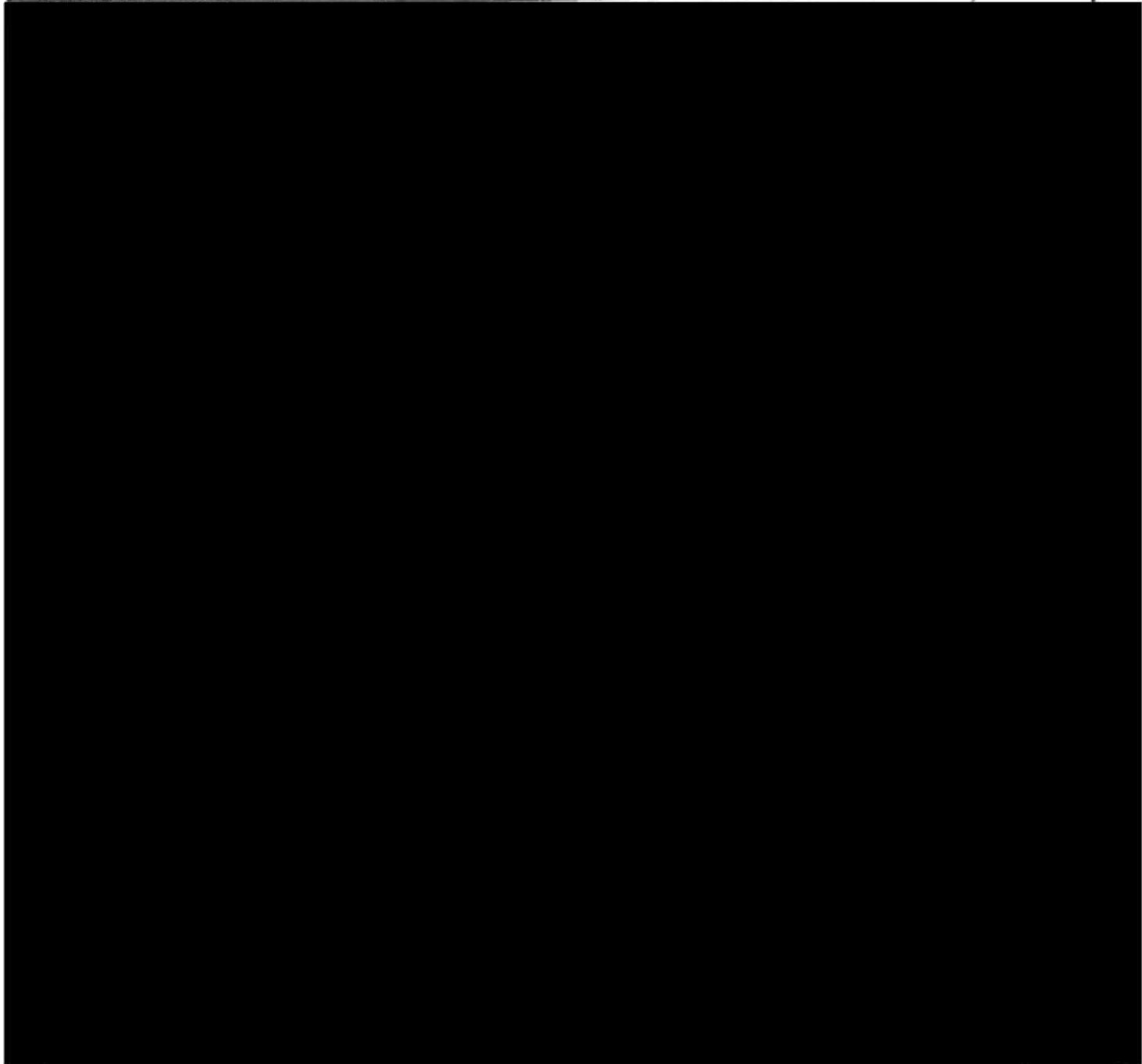


Water Well Survey

AECOM

Well I.D. #: [REDACTED] AECOM Project No.: _____
MECP WWR #: [REDACTED] Client Project No.: 606 36190

Location Sketch *(To be Completed by Property Owner / Occupant)*



Include details such as property lines, buildings, well, sewage system (if present), as well as any other potential sources of contamination (e.g., tanks, bamyards, chemical/manure storage, etc.).

[REDACTED]

[REDACTED]

[REDACTED]

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