

Hydrogeological Data Report

Highway 400 - Highway 404 Link (Bradford Bypass)

Ontario Ministry of Transportation

60636190

June 19, 2023

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1. Overview of Undertaking

1.1 **Project Overview**

The Ontario Ministry of Transportation (the Ministry) has retained AECOM Canada Ltd. (AECOM) to undertake a Preliminary Design and project-specific assessment of environmental impacts for the proposed Highway 400 to Highway 404 Link (Bradford Bypass). The Bradford Bypass (the project) is being assessed in accordance with Ontario Regulation 697/21 (the Regulation).

The Bradford Bypass is part of Ontario's plan to expand highways and public transit across the Greater Golden Horseshoe to fight congestion, create jobs and prepare for the massive population growth expected in the next 30 years. Simcoe County's population is expected to increase to 416,000 by 2031, with the Regional Municipality of York growing to 1.79 million by 2041. The Bradford Bypass has been proposed as a response to this dramatic growth in population and travel demand in the area and the forecasted increase in congestion on key roadways linking Highway 400 to Highway 404.

The Bradford Bypass is a proposed 16.3 kilometre controlled access freeway that will extend from Highway 400 between 8th Line and 9th Line in Bradford West Gwillimbury, will cross a small portion of King Township, and will connect to Highway 404 between Queensville Sideroad and Holborn Road in East Gwillimbury. There are proposed full and partial interchanges, as well as grade separated crossings at intersecting municipal roads and watercourses, including the Holland River and Holland River East Branch. This project also includes the design integration for the replacement of the 9th Line structure on Highway 400, which will accommodate the proposed future ramps north of the Bradford Bypass corridor. The Ministry is considering an interim four-lane configuration and an ultimate eight-lane design for the Bradford Bypass. The interim condition will include two general purpose lanes in each direction and the ultimate condition will include four lanes in each direction (one high-occupancy vehicle lane and three general purpose travel lanes in each direction). This Report and its findings are based on the project footprint identified within this Report. Should the footprint change or be modified in any way, a review of the changes shall be undertaken, and the report will be updated to reflect the changes, impacts, mitigation measures, and any commitments to future work.

This *Hydrogeological Data Report* (this Report) was prepared for the Ministry in support of the Highway 400 – Highway 404 Link (Bradford Bypass) Project (the project) for the intent of characterizing the local physical and hydrogeological setting, quantifying potential source water protection areas of concern, and determining preliminary groundwater hydraulic conductivity and groundwater quality with the Study Area. This Report was prepared in accordance with the requirements of O. Reg. 697/21, Section 23, in order to support the Groundwater Protection and Well Monitoring Plan. It is recommended that this Report be updated based on the data gaps identified during the subsequent Detail Design of the project.

1.2 Study Area

As illustrated in **Figure 1**, the proposed highway will extend from Highway 400 between 8th Line and 9th Line in Bradford West Gwillimbury, will cross a small portion of King Township, and will connect to Highway 404 between Queensville Sideroad and Holborn Road in East Gwillimbury.

1.3 Objectives

The objective of this hydrogeological investigation is to provide a technical assessment and characterization

of local geological and hydrogeological conditions based on a review of available background information, along with the results of a hydrogeological field investigation program comprised of groundwater level monitoring, single well response testing, and groundwater quality sampling.

1.4 Scope of Work

The scope of the assignment commenced with a review of available reports, mapping, and other published documentation pertaining to the Study Area. Examples of information reviewed included, but was not limited to: physiography, surficial geology, quaternary geology, and bedrock geology mapping available from Ontario Geological Survey (OGS), and the results *Geotechnical Investigation* completed by Golder/WSP in 2022 as part of the project.

Stemming from the results of the preliminary background information review, a hydrogeological field investigation program was developed and implemented for the project with this report presenting data collected between February and August 2022. The field program is still ongoing. Tasks relating to hydrogeological aspects of the investigation program included:

- Development of 13 groundwater monitoring wells installed by Golder/WSP in 2022 as part of a project related geotechnical engineering investigation
- Measurement of groundwater levels within each of the 13 monitoring wells
- Single well response in each of the 13 monitoring wells
- Collection of groundwater samples for laboratory geochemical analysis from all 13 monitoring wells, and
- Evaluation of potential impacts associated with project related dewatering activities related to source water protection areas.

Some of the installed monitoring wells could not be accessed during our hydrogeological investigation due to access issues related to safety concerns due to proximity to major highways, damaged wells after construction or encampments, as shown in **Table 1**.

Additionally, approximately 7 monitoring wells were installed after August 2022 by Golder/WSP which are to be assessed during Detail Design. It is expected that each unassessed monitoring wells will continue to be monitored and assessed during the subsequent Detail Design phase of the project, as shown in **Figure 1**.

1.5 Background Information

The following background data and reports were reviewed and considered in the preparation of this Report:

- Door To Door Water Well Report Highway 400 to Highway 404 Link (Bradford Bypass) (GWP 2008-21-00) by AECOM Canada Ltd, 2023
- Groundwater Protection and Well Monitoring Program Highway 400 to Highway 404 Link (Bradford Bypass) (GWP 2008-21-00) by AECOM Canada Ltd, 2023
- Golder Associates Ltd., A Member of WSP (Golder/WSP). September 2022. Preliminary Foundation Investigation and Design Report – Bradford Bypass and Highway 404 Interchange Ramp Structures. Highway 400 to Highway 404 Link (Bradford Bypass). Simcoe County and York Region. Assignment No. 2019-E-0048. Golder/WSP Golder/WSP Project No. 19136074

- Golder Associates Ltd., A Member of WSP (Golder/WSP). October 2022. Preliminary Foundation Investigation and Design Report – Holland River (West Branch) Structure. Highway 400 to Highway 404 Link (Bradford Bypass). Simcoe County and York Region. Assignment No. 2019-E-0048. Golder/WSP Project No. 19136074
- Golder Associates Ltd., A Member of WSP (Golder/WSP). October 2022. Preliminary Foundation Investigation and Design Report – Holland River (East Branch) Structure. Highway 400 to Highway 404 Link (Bradford Bypass). Simcoe County and York Region. Assignment No. 2019-E-0048. Golder/WSP Project No. 19136074
- Golder Associates Ltd., A Member of WSP (Golder/WSP). January 2023. Preliminary Foundation Investigation and Design Report – 10th Sideroad Underpass Structure. Highway 400 to Highway 404 Link (Bradford Bypass). Simcoe County and York Region. Assignment No. 2019-E-0048. Golder/WSP Project No. 19136074
- MECP Water Well Information System (WWIS), Permit To Take Water (PTTW), and Environmental Activity and Sector Registry (EASR) Databases within the PSA, and
- Ontario Geological Survey (OGS) and Geological Survey of Canada (GSC) Physiography, Surficial Geology, Quaternary Overburden Geology, and Bedrock Geology Mapping.

2. Methodology

This section describes the methods and specific procedures that were followed during completion of the hydrogeological field investigation program.

2.1 Borehole Drilling and Monitoring Well Installation

AECOM followed behind a project-related geotechnical (subsurface) field investigation completed by Golder/WSP within the Study Area in 2022. As part of the works, boreholes were advanced using a track or truck-mounted drilling rig depending on the drilling location using 210 mmØ hollow-stem augers and mud rotary. Soil samples retrieved during drilling were logged and visually classified in the field by a member of Golder/WSP's geotechnical engineering team. In-situ tests completed during the advancement of each borehole included Standard Penetration Testing (SPT) at a regular interval and field shear vane testing within cohesive soils.

A monitoring well subsequently was installed by Golder/WSP within selected boreholes to allow for the measurement of stabilized groundwater levels, and to facilitate related hydrogeological testing / sampling. **Table 1** provides details for the 13 monitoring wells installed within the Study Area, including their depths, and screened intervals in both metres Below Ground Surface (mBGS) and metres Above Sea Level (mASL). Groundwater level monitoring data for each well is provided in **Section 4.1**.

Borehole records received by the writing of this report from Golder/WSP describing the encountered soils and monitoring well/piezometer construction details for each of the borehole locations discussed herein are contained in **Appendix A**.

				•					
MW ID	Ground Elevation	Well Depth ¹	Well Bottom	Screened Interval (mBGS)		Screen Interval Elevation (mASL)		Screened Geologic	
	(mASL)	(mBGS)	Elevation (mASL)	Тор	Bottom Top		Bottom	Materials	
BH 9-1	275.6	9.37	266.23	6.1	9.1	269.5	266.5	Silty Sand (SM), trace clay, trace gravel to gravelly	
BH 10-1	283.0	9.18	273.82	6.1	9.1	276.9	273.9	Clayey Silt (CL), some sand to sandy, trace to some gravel / Silty Sand (SM), trace grave, some clay, contains clayey silt layers	
BH 10-4	282.3	6.36	275.94	3.1	6.1	279.2	276.2	Sandy Clayey Silt (CL), some gravel / Silty Sand (SM), some clay, trace gravel	
BH PDD-1 ²	-	-	-	-	-	-	-	-	
BH PDC-6	-	-	-	-	-	-	-	-	
BH PDC-7	-	-	-	-	-	-	-	-	
BH AIP-3	224.8	3.07	221.73	1.5	3.0	223.3	221.8	Sandy Clayey Silt (CL) to Clayey Silt-Silt (CL- ML), trace sand, trace gravel	

Table 1: Monitoring Well Construction Details

Ontario Ministry of Transportation

Hydrogeological Data Report

Highway 400 – Highway 404 Link (Bradford Bypass)

MW ID	Ground Elevation	Well Depth ¹	Well Bottom	Screened Interval (mBGS)		Screen Interval Elevation (mASL)		Screened Geologic	
	(mASL)	(mBGS)	Elevation (mASL)	Тор	Bottom	Тор	Bottom	Materials	
BH CN-1	222.4	4.64	217.76	3.1	4.6	219.3	217.8	Sandy Silt (ML) to Silty Sand (SM, some clay, trace gravel	
BH CN-3	219.8	4.75	215.05	1.5	4.5	218.3	215.3	Sandy Silt (ML) to Silty Sand (SM), trace to some clay, trace gravel	
BH HRW-1	219.0	4.54	214.46	3.1	4.6	215.9	214.4	Silty Sand (SM), trace clay, trace gravel	
BH HRW-4	217.4	2.80	214.60	1.5	3.0	215.9	214.4	Sandy Peat / Silty Sand (SM) to Sandy Silt (ML) / Clayey Silt (CL) to Clayey Silt-Silt (CL-ML), trace sand	
BH HRE-3	220.0	3.94	218.06	2.5	5.5	217.5	214.5	Silty Sand (SM)	
BH 2-1	220.4	9.10	211.30	6.2	9.2	214.2	211.2	Clayey Silt (CL), trace sand, trace gravel	

NOTE: 1 As measured by AECOM Hydrogeological personnel. Cells that include NA indicates that the monitoring well was not visited by AECOM.
 2 Monitoring well not assessed as part of the program due to access issues, safety concerns due to proximity to major highways, damaged wells after construction or encampments.

"-" Borehole Log has not yet been provided.

Monitoring wells were each constructed using either a 1.50 or 3.05 m length of 50 mmØ PVC Schedule 40 (10-slot) commercially manufactured well screen with solid riser pipe to ground surface. The sand pack at each monitoring well extends from a short distance below the base of the screen to a minimum height of 0.5 m above the top of the screened interval and is topped with a dry bentonite plug (Holeplug). Cement-bentonite grout was utilized to seal the wellbore annulus above the bentonite plug continuously to a depth of approximately 1.5 mBGS. A 1.2 m thick bentonite seal (Holeplug) was placed atop the grout and each monitoring well was finished at surface using up to 0.3 m of concrete. Holeplug was used to seal the remaining borehole annulus below the sand pack to the terminal depth of 15.80 mBGS at each location. Monitoring wells are completed in a monument or flush-mount configuration depending on the Study Area location with commercially manufactured protective covers.

Further details regarding the investigation methodologies employed by Golder/WSP for borehole drilling, geotechnical field testing, soil sampling, and logging, as well as associated physical laboratory testing of collected soil samples, are provided in Golder/WSPs *Preliminary Foundation Investigation and Design Reports (FIDR)* (2022 -2023) under 14 separate covers, 4 of which were provided prior to writing this report. The reader is referred to these reports for further information and details.

2.2 Monitoring Well Development

All the monitoring wells installed, development of the 13 monitoring wells was completed by AECOM between February 4, 2022, and May 25, 2023, for the purposes of removing sediment, rectifying possible damage caused to the target formation during the drilling process, and to improve hydraulic properties of the filter pack installed around the well screen at each location. The well development process also entails that collected groundwater samples are representative of in situ conditions for the screened geologic formation(s).

Appropriate well development methods were employed by AECOM on a location-by-location basis, based on the total well depth, local groundwater conditions / water column height, and sediment content of the pumped water.

Specifically, the well development process implemented for this project included:

- Pumping of a minimum three wellbore volumes of water from each monitoring well using dedicated equipment (e.g., fitted Waterra foot valves and tubing)
- During the development process, repetitive measurements of field parameters within the discharged water were obtained; including: pH, temperature, conductivity, and visual appearance, and
- Each monitoring well was developed until a visual improvement was observed in the turbidity level of the purged water, or until field parameters stabilized.

2.3 Groundwater Level Monitoring

Following the completion of well development and recovery, stabilized groundwater level measurements were obtained manually by AECOM at all monitoring well locations between February 4, 2022, and May 31, 2023.

The groundwater level measurement process employed for this project was as follows:

- Measurements were obtained using an electronic water level indicator
- The electronic water level indicator was lowered into the riser pipe of each monitoring well until the water was encountered, as indicated by the instrument signal. The water level was then measured with respect to a fixed "top-of-casing" reference point and entered on the field log
- Two additional water level measurements were obtained immediately thereafter to verify the initial reading, and
- Following the completion of groundwater level measurement at each monitoring well, the electronic water level tape was cleaned and decontaminated to eliminate the possibility of cross-contamination between monitoring well locations.

2.4 Single Well Response Testing

Single Well Response Testing (SWRT) was completed by AECOM at 11 monitoring wells between February 16, 2022, and May 25, 2023, to provide an estimate of the hydraulic conductivity (K) of the screened geologic material(s) at each monitoring well location. The SWRT methodology involved invoking a rapid change in the hydraulic head and measuring the groundwater level (recovery) response within each monitoring well. SWRT methods included one or a combination of rising head or falling head tests, depending on the position of the static groundwater level within the monitoring well being tested. Monitoring wells BH PDD-1 and BH HRW-4 were damaged after well development and hydraulic conductivity testing could not be completed.

Specifically, the SWRT process employed for this project was as follows:

- Immediately prior to each SWRT, the static groundwater level was measured within the target monitoring well
- An electronic pressure transducer (datalogger) was installed in the monitoring well below the groundwater level and configured to measure absolute pressure (water pressure + atmospheric pressure) at a regular interval (i.e., 0.5 seconds)

- Falling head tests were carried out using a solid slug of known volume introduced into the monitoring well, and the reverse technique was also carried out (i.e., slug removal) for a corresponding rising head test
- Immediately following introduction of the solid slug into the monitoring well, manual groundwater level measurements were collected to supplement the datalogger readings, and recovery of the groundwater level was timed
- As the static groundwater level was positioned within the riser pipe above the top of the screen and sand pack interval within each monitoring well, both falling head and rising head test methods were conducted. For rising head tests, care was taken as to not lower the groundwater level to within the screen interval to avoid complexities associated with partially submerged conditions, and
- Testing was concluded when a minimum of 85% recovery of the static water level was achieved in each well (>90% preferred).

2.5 Groundwater Quality Sampling

During project construction, groundwater pumped to dewater excavations is planned to be discharged directly to the natural environment or to the nearest sanitary and storm sewer. As such, the chemical quality of the pumped water will need to conform with the requirements of the Provincial Water Quality Objectives (PWQO), Town of Bradford West Gwilliumbury's Sewer Use By-Law (#2013-68), the York Region Sewer Use By-Law (2021-102) as required in the Town of East Gwillimbury's Sewer Use By-Law 2008-54 and King Township's Sewer Use By-Law 2014-072.

Groundwater quality data are required to assess possible treatment needs for dewatering effluent generated during construction. To this end, groundwater samples were collected by AECOM at 12 monitoring well locations in accordance with the following methodology:

- Industry-standard QA/QC protocols were followed for bottle preparation, sample collection, and transportation, as outlined within MECP guidance documents (MOE, 1999)
- The initial groundwater sample was collected manually using dedicated equipment (i.e., fitted Waterra foot valves and tubing) following the completion of well development to confirm that the groundwater samples were representative of the source within the screened well interval at the monitoring well location. The groundwater sample was collected as soon as practically possible following the completion of well development
- Clean nitrile gloves were worn by AECOM staff during sample collection
- Samples were collected unfiltered (as per requirements for comparison against municipal sewer by-law discharge standards)
- A small aliquot of the sampled water was placed into a clean container to facilitate field measurement of pH, temperature, and specific conductance, and
- Each groundwater sample was examined in the field for visual and olfactory evidence of impact then immediately placed in laboratory-supplied sample bottles prepared in advance with the appropriate preservatives, sealed, labelled, and stored on ice to maintain a sample temperature of 10°C or lower during transportation under a chain of custody documentation to a CALA-accredited environmental analytical laboratory within the specified sample analyte holding times.

BH PDD-1 was not sampled as it was inaccessible after well development and was damaged upon return to the location. A summary of the groundwater sampling program is presented in **Table 2**.

		-				
Monitoring Well	Sampling Date	Date Samples Received by Laboratory	Date Analysis Reported by Laboratory	Town of Bradford West Gwillimbury Limits for Sanitary (Table 1) and Storm (Table 2) Sewers	PWQO	Laboratory Certificate of Analysis Number(s)
BH 9-1	February 8 th , 2022	February 8 th , 2022	February 25 th / 16 th , 2022	\checkmark	\checkmark	22T861751 / 22T861744
BH 10-1	February 8 th , 2022	February 8 th , 2022	February 16 th , 2022		\checkmark	22T861744
BH 10-4	February 8 th , 2022	February 8 th , 2022	February 25 th / 16 th , 2022	\checkmark		22T861752
BH PDC-6	May 31 st , 2023	June 1 st , 2023	June 8 th , 2023		\checkmark	23T030999
BH PDC-7	May 31 st , 2023	June 1 st , 2023	June 12 th , 2023	\checkmark		23T030993
BH AIP-3	February 8 th , 2022	February 8 th , 2022	February 25 th , 2022	\checkmark		22T861747
BH CN-1	February 8 th , 2022	February 8 th , 2022	February 16 th , 2022		\checkmark	22T861744
BH CN-3	May 13 th , 2022	May 13 th , 2022	May 25 th , 2022	\checkmark		22T895412
BH HRW-1	May 12 th , 2022	May 12 th , 2022	May 25 th , 2022		\checkmark	22T894872
BH HRW-4	May 13 th , 2022	May 13 th , 2022	May 25 th , 2022	\checkmark		22T895413
BH HRE-3	May 13 th , 2022	May 13 th , 2022	May 25 th , 2022	\checkmark		22T895413
BH 2-1	May 12 th , 2022	May 12 th , 2022	May 25 th , 2022		\checkmark	22T894872

Table 2: Groundwater Sampling Program Summary

3. Site Physiographical, Geological, and Hydrogeological Setting

Existing local and regional-scale geological and hydrogeological conditions were established based on a review of available physiography, surficial geology, Quaternary geology, and Paleozoic bedrock geology mapping published by OGS, in addition to a search of MECP's WWIS database. Borehole logs prepared in relation to Golder's (WSP), geotechnical (subsurface) investigations also were reviewed and considered herein.

3.1 Physiography, Topography, and Drainage

The Study Area crosses in an approximate northeast to southwest direction by a fluvial terrace that serves as a divide between the Schomberg Clay Plains (west) and the Simcoe Lowlands (east) physiographic regions, as described by Chapman and Putnam (1984). A brief discussion of each region is provided below.

The Schomberg Clay Plains encompass three distinct areas near Schomberg, Newmarket, and to the north of Lake Scugog, covering a total area of approximately 1,230 km². Within the Schomberg and Newmarket areas, the region is characterized generally by a muted drumlinized till plain that is overlain predominantly by a varying thickness of surficial clay (glaciolacustrine) soils. Some of the larger drumlins have escaped complete burial; however, where present, the clay may extend well up their side slopes.

The Simcoe Lowlands border on the shorelines of Lake Simcoe and Georgian Bay and encompass a combined area of approximately 2,850 km². The component of this region that borders on Lake Simcoe is aptly termed the Lake Simcoe Basin given that approximately half of its area is occupied by the lake's waters. Within the vicinity of the Site, the Simcoe Lowlands present as a broad valley between high morainic hills that extends generally southwestward over a distance of about 24 km from the present-day limits of Cook's Bay (Lake Simcoe). Historically, this low-lying area represented a shallow southward extension of Lake Simcoe, that is now occupied predominantly by marshland and the meandering channel of the Holland River. Occurrences of peat within the marshland area is common.

Ground surface topography within the Study Area ranges significantly with 283 mASL on the western side (Highway 400), down to 217 mASL within the Holland River Lands and back up to 250 mASL near eastern side (Highway 404), with a total relief of up to about 67 m, based on a review of ground surface elevations reported upon the various borehole logs contained in **Appendix A**. Drainage is primarily towards the Holland River Lands towards the West and East Holland Rivers.

3.2 Geological Conditions

3.2.1 Overburden Geology

Four Quaternary overburden geology units being reported to occur within the Study Area, as shown in **Figures 2a** to **2e**. These deposits include (chronologically from oldest to youngest):

- Unit 13: Newmarket Till (sandy silt to silt matrix, moderate to high matrix carbonate content, clast content moderate to high)
- Unit 24: Glaciolacustrine Deposits (silt and clay, minor sand, derived from basin and quiet water deposits)
- Unit 25: Glaciolacustrine Deposits (sand, gravelly sand and gravel, derived from nearshore and beach deposits), and
- Unit 32: Organic Deposits (peat, muck and marl).

Glaciofluvial outwash deposits, comprising gravel and sand (proglacial river and deltaic deposits) are reported to occur north of the site.

Soil stratigraphy within the Study Area has not been interpreted based on the results of Golder/WSPs recent geotechnical (subsurface) investigation (**Appendix A**). It is recommended that the reader refer to the FIDRs generated by Golder/WSP. A detailed breakdown will be provided once all borehole logs have been received during subsequent Detail Design phases.

3.2.2 Bedrock Geology

OGS mapping (2010) indicates that bedrock within the Study Area is composed of limestone, dolostone, shale, arkose sandstone of the Bass Island Formation and shale, limestone and dolostone of the Stooping River Formation, as shown in **Figure 3**.

4. Field Investigation Results

4.1 Groundwater Level Monitoring

Groundwater level monitoring was undertaken for eleven monitoring well locations between February 4 and August 23, 2022, by AECOM. The remaining wells were not accessible or available for development during AECOM's assessment Collected (manual) groundwater level depth and elevation data for each monitoring well are summarized in **Table 3**.

Table 3: Summary of Groundwater Level Measurements										
MW ID	Ground Elevation (mASL)	Well Depth (mBGS)	Well Bottom Elevation (mASL)	Monitoring Date	Depth to Groundwater (mBGS)	Groundwater Elevation (mASL)				
		9.10		8-Feb-2022	2.53	273.97				
BH 9-1	276.50	(BH Log) 9.37	267.1	16-Feb-2022	2.57	273.93				
		(AECOM Measured)		12-May-2022	1.93	274.57				
		9.10		8-Feb-2022	0.61	282.39				
BH 10-1	283.00	<i>(BH Log)</i> 9.18	273.8	16-Feb-2022	0.56	282.44				
		(AECOM Measured)		12-May-2022	0.51	282.49				
		6.00		8-Feb-2022	0.91	281.39				
BH 10-4	282.30	(BH Log) 6.36	275.9	16-Feb-2022	0.88	281.42				
		(AECOM Measured)		12-May-2022	0.89	281.41				
BH PDD-1 ¹	-	7.84 (AECOM Measured)	-	7-Feb-2022	0.42	-				
BH PDC-6	-	13.61 (AECOM Measured)	-	31-May-2023	5.63	-				
BH PDC-7	-	10.80 (AECOM Measured)	-	31-May-2023	1.83	-				
		3.00	221.7	8-Feb-2022	1.36	223.44				
BH AIP-3	224.80	(BH Log) 3.07		16-Feb-2022	1.29	223.51				
		(AECOM Measured)		12-May-2022	1.43	223.37				
		4.50		8-Feb-2022	1.56	220.84				
BH CN-1	222.40	(BH Log) 4.64	217.8	16-Feb-2022	1.58	220.82				
		(AECOM Measured)		12-May-2022	1.27	221.13				
		4.50		13-May-2022	0.78	219.02				
BH CN-3	219.80	(BH Log) 4.75 (AECOM Measured)	215.1	23-Aug-2022	0.83	218.97				
		4.50		12-May-2022	0.69	218.31				
BH HRW-1	219.00	(BH Log) 4.54 (AECOM Measured)	214.5	13-May-2022	0.67	218.33				

Table 3: Summary of Groundwater Level Measurements

Ontario Ministry of Transportation

Hydrogeological Data Report

Highway 400 – Highway 404 Link (Bradford Bypass)

MW ID	Ground Elevation (mASL)	Well Depth (mBGS)	Well Bottom Elevation (mASL)	Monitoring Date	Depth to Groundwater (mBGS)	Groundwater Elevation (mASL)
BH HRW-4 ²	217.40	3.00 (BH Log) 2.80 (AECOM Measured)	214.6	13-May-2022	0.55	216.85
BH HRE-3	220.00	5.40 (BH Log) 3.94 (AECOM Measured)	216.1	13-May-2022	0.97	219.03
				23-Aug-2022	1.79	218.21
		9.10		12-May-2022	0.77	219.63
BH 2-1	220.4	(BH Log) 9.24 (AECOM Measured)	211.2	13-May-2022	0.81	219.59

Note: 1-BH PDD-1 was inaccessible due to encampment in the area after initial visit.

² – BH HRW-4 was damaged and redrilled in April 2022, could not be located in August due to agricultural operations.

Based on the monitoring that has been completed to-date, from the western edge near Highway 400 the groundwater elevations within the Study Area have been found to range from 274.57 mASL (1.93 mBGS) at BH 9-1 to 282.49 mASL (0.51 mBGS) at BH 10-1 near County Road 10. Within the Holland River lands, the groundwater elevations range from 223.51 mASL (1.29 mBGS) at BH AIP-3 to 216.8 mASL (0.55 mBGS) at BH HRW-4. Significant data gaps currently exist with the monitoring wells installed after AECOM's assessment and access issues previously discussed. It is recommended that the additional groundwater level measurements at the above and missing groundwater assessments from the monitoring wells listed in **Table 1** and in **Section 1.4** be obtained during subsequent Detail Design.

It is anticipated that seasonal fluctuations in groundwater levels will occur that have not been fully captured given the snapshot readings of the monitoring wells completed as part of the current hydrogeological investigation. It is recommended that additional groundwater level measurements be obtained during subsequent Detail Design phases and that dataloggers be installed within all monitoring wells to obtain the seasonal fluctuations within the groundwater table.

4.2 Single Well Response Testing

Single Well Response Testing (SWRT) was conducted by AECOM at eleven monitoring wells between February 16, 2022, and May 25, 2023, as mentioned in Section 2.4. The collected data was analyzed using the AQTESOLV Professional[®] (Version 4.5) software package to provide an estimate of the hydraulic conductivity (K) of the geologic formation(s) surrounding each respective monitoring well screen. The analysis model selected for each data set was dependent on the observed heterogeneity within the screened geologic materials, the position of the groundwater table with respect to the screened interval, and nature of the groundwater level response to slug insertion and/or removal.

Data collected from BH CN-3 were analyzed using the Hvorslev (1951) solution that is applicable to unconfined or confined aquifer systems and monitoring wells with fully or partially submerged screens.

Data collected from BH 9-1, BH 10-1, BH 10-4, BH AIP-3, BH CN-1, BH HRW-1, and BH 2-1were analyzed using the Kansas Geological Survey (KGS) model (Hyder *et al.*, 1994) to provide an estimate of K for the geologic

materials within the well screen interval. The KGS model is highly recommended by professionals working in the field of aquifer testing and data interpretation methods (Butler *et al.*, 2000).

Data collected from BH HRE-3, BH PDC-6, and BH PDC-7 were analyzed using the Bouwer and Rice (1976) solution that is appliable to aquifer systems and monitoring wells with fully or partially submerged screens.

SWRT results are presented in **Table 4**, with the individual analysis reports contained in **Appendix B**.

Table 4: Summary of Single Well Response Testing Results

MW ID	Test Date	Analytical Method	Top of Test Interval (mBGS)	Bottom of Test Interval (mBGS)	Test Type	Hydraulic Conductivity (m/sec)	Geological Material	
					Falling Head	5.61x10 ⁻⁷	Silty Sand (SM), trace	
BH 9-1	16-Feb-2022	KGS Model	6.32	9.37	Rising Head	5.23x10 ⁻⁷	clay, trace gravel to gravelly	
					Falling Head	1.23x10 ⁻⁷	Clayey Silt (CL),	
BH 10-1	16-Feb-2022	KGS Model	6.13	9.18	Rising Head	2.03x10 ⁻⁷	some sand to sandy, trace to some gravel / Silty Sand (SM), trace grave, some clay, contains clayey silt layers	
					Falling Head	1.12x10 ⁻⁶	Sandy Clayey Silt	
BH 10-4	16-Feb-2022	KGS Model	3.31	6.36	Rising Head	2.04x10 ⁻⁶	(CL), some gravel / Silty Sand (SM), some clay, trace gravel	
BH PDC-6	25-May-2023	Bouwer and Rice	10.56	13.61	Rising Head	9.95x10 ⁻⁸	-	
	25 May 2022	Bouwer and	7.76	10.90	Falling Head	2.89x10 ⁻⁶	-	
BH PDC-7	25-May-2023	Rice	7.76	10.80	Rising Head	8.56x10⁻ ⁶		
					Falling Head	1.59x10⁻⁵	Sandy Clayey Silt	
BH AIP-3	16-Feb-2022	KGS Model	1.55	3.07	Rising Head	3.07x10⁻⁵	(CL) to Clayey Silt-Silt (CL-ML), trace sand, trace gravel	
		KOOM	0.40	4.04	Falling Head	5.34x10 ⁻⁷	Sandy Silt (ML) to	
BH CN-1	16-Feb-2022	KGS Model	3.12	4.64	Rising Head	8.65x10 ⁻⁷	Silty Sand (SM, some clay, trace gravel	
					Falling Head	5.25x10 ⁻⁸	Sandy Silt (ML) to	
BH CN-3	23-Aug-2022	Hvorslev	1.70	4.75	Rising Head	8.63x10 ⁻⁸	Silty Sand (SM), trace to some clay, trace gravel	
	12 May 2022		2.02	4 5 4	Falling Head	5.46x10 ⁻⁶	Silty Sand (SM), trace clay, trace gravel	
BH HRW-1	12-May-2022	KGS Model	3.02	4.54	Rising Head	4.69x10⁻ ⁶		
BH HRE-3	12-Aug-2022	Bouwer and Rice	1.79	3.94	Rising Head	2.75x10 ⁻⁷	Silty Sand (SM)	
BH 2-1	13-May-2022	KGS Model	6.19	9.24	Falling Head 1.94x10 ⁻⁶		Not Available	
D1 2-1	10-1viay=2022	NGO WIUUEI	0.19	3.24	Rising Head	2.74x10 ⁻⁶		

4.3 Groundwater Quality

During construction of the project, groundwater pumped to dewater excavations is planned to be discharged directly to the natural environment, or to the nearest sanitary and storm sewer, or it may need to be treated off site. As such, the chemical quality of the pumped water will need to conform with the requirements of the Provincial Water Quality Objectives (PWQO), Town of Bradford West Gwilliumbury's Sewer Use By-Law (#2013-68), the York Region Sewer Use By-Law (2021-102) as required in the Town of East Gwillimbury's Sewer Use By-Law 2008-54 and King Township's Sewer Use By-Law 2014-072.

Raw (unfiltered) groundwater samples were obtained by AECOM at 12 monitoring well locations as described in **Section 2.5** and submitted to AGAT (Mississauga, ON) for geochemical analysis. Results of the analyses were compared against the following standards:

- Town of Bradford West Gwillimbury Sewer Use By-Law (#2013-68): Sanitary Sewer (Table 1) and Storm Sewer (Table 2) discharge
- York Region Sewer Use By-Law (2021-102): Sanitary Sewer (Schedule A) and Storm Sewer (Schedule B) discharge, and
- Provincial Water Quality Objectives (PWQO).

As required under the Municipal Sewer Use By-Law's and PWQO criteria, the samples were not filtered and are therefore representative of raw groundwater quality prior to any treatment processes.

The analytical results received from AGAT Laboratories indicate that the tested groundwater samples were generally below most of the criteria limits for the applicable standards, with the exception of those parameters summarized in **Table 5**, **Table 6** and **Table 7**. Certificates of Analysis provided by AGAT Laboratories are included in **Appendix C**. It is recommended that additional sampling be completed during Detail Design at all unassessed groundwater monitors listed listed in **Section 1.4**

The concentration of Un-ionized Ammonia provided in the certificates of analysis was calculated by the laboratory for each groundwater sample based on measured pH and temperature when the samples were received, rather than the field-measured parameters of pH and temperature at the time of sample collection. As a result, the laboratory calculated and reported Un-ionized Ammonia values do not accurately reflect the actual concentration within each sampled well.

Ammonia is highly soluble in water and its speciation is affected by a wide variety of environmental parameters including pH, temperature, and ionic strength. In aqueous solutions, an equilibrium exists between Un-ionized (NH3) and Ionized (NH4+) Ammonia species (Canadian Council of Ministers of the Environment, 2010). The equilibrium constant for this reaction is a function of temperature and solution pH (Florida Department of Environmental Protection, 2001). Thus, if the equilibrium constant is known for a particular temperature and the pH of the solution is also known, the fraction of Un-ionized Ammonia can be calculated. The Un-ionized Ammonia concentration can be calculated if the Total Ammonia concentration is also known from laboratory analysis (Florida Department of Environmental Protection, 2001).

Field measurements of pH and temperature together with the laboratory-derived concentration of Total Ammonia (mg/L) were utilized to calculate the Un-ionized Ammonia concentration for selected sampled monitoring wells. The calculation process followed the procedure and equations provided in Emerson et.al.,1975, and the calculation parameters are presented in **Appendix C**. The calculated concentration of Un-ionized Ammonia for selected sampled well was compared to the PWQO criteria of 0.02 mg/L. Results indicate that none of the 7 monitoring wells sampled for PWQO were found to contain a concentration of Un-ionized Ammonia in excess of the PWQO criteria.

Table 5: Summary of Parameters Exceeding the Town of Bradford West Gwillimbury Storm and Sanitary Sewer By-Law

Paran	neter →	Phenol s	Total Copper	Total Kjeldahl Nitrogen	Total Mangane se	Total Phosphor us	Total Zinc	Total Suspend -ed Solids
	Unit \rightarrow	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Deteo	Reported ction Limit (RDL) \rightarrow	0.001	0.002	0.10	0.0001	0.002	0.020	10
Sto	Storm Sewer Limits →		0.05	1	0.15	0.40	0.04	15
Sanit	ary Sewer Limits \rightarrow	1	3	100	5	10	2	350
	BH 9-1	0.014	<0.002	0.2	0.042	<0.02	<0.020	15
	BH 10-4	0.041	<0.002	1.28	0.716	0.03	<0.020	10
	BH AIP-3	0.036	0.003	0.16	0.125	0.06	<0.020	308
Sample	BH CN-3	0.021	0.011	1.86	0.282	0.14	0.022	544
d Wells	BH HRW- 3	0.064	0.065	2.27	1.86	1.29	0.104	2600
	BH PDC- 7	0.006	<0.002	0.11	0.033	0.03	<0.020	26

Notes: mg/L = milligrams per Litre

Bolded/Shaded = indicates parameter does not meet the Town of Bradford West Gwillimbury Sanitary Sewer Discharge (Bylaw 2013-68) Bolded = indicates parameter does not meet the Town of Bradford West Gwillimbury Storm Sewer Discharge (Bylaw 2013-68)

Table 6: Summary of Parameters Exceeding the York Region Storm and Sanitary Sewer By-Law

Paran	neter →	Phenols	Total Copper	Total Kjeldahl Nitrogen	Total Manganese	Total Phosphorus	Total Zinc	Total Suspended Solids
	Unit \rightarrow	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	ed Detection mit (RDL) \rightarrow	0 001	0.002	0.10	0.0001	0.002	0.020	10
Storm S	Storm Sewer Limits \rightarrow		0.05	1	0.15	0.40	0.04	15
Sanitary S	Sewer Limits \rightarrow	1	3	100	5	10	2	350
	BH 9-1	0.014	<0.002	0.2	0.042	<0.02	<0.020	15
	BH 10-4	0.041	<0.002	1.28	0.716	0.03	<0.020	10
Sampled Wells	BH AIP-3	0.036	0.003	0.16	0.125	0.06	<0.020	308
	BH CN-3	0.021	0.011	1.86	0.282	0.14	0.022	544
	BH HRW-3	0.064	0.065	2.27	1.86	1.29	0.104	2600

Notes: mg/L = milligrams per Litre

Bolded/Shaded = indicates parameter does not meet the York Region Sanitary Sewer Discharge (Bylaw 2021-102) **Bolded** = indicates parameter does not meet the York Region Storm Sewer Discharge (Bylaw 2021-102)

Parameter \rightarrow		Total Iron	Total Cobalt	Total Copper	Total Nickel	Total Thallium	Total Uranium	Total Vanadium	Total Zinc	Total Zirconium
Unit →		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Reported Detection Limit (RDL) \rightarrow		~ ~ 4	0.0005	0.0001	0.0001	0.0003	0.002	0.0001	0.01	0.004
PWQO Guideline \rightarrow		0.3	0.0009	0.005	0.025	0.0003	0.005	0.006	0.3	0.004
	BH 10-1	0.398	< 0.0005	0.001	<0.003	<0.0003	0.012	0.002	<0.020	<0.004
	BH HRW-1	43.5	0.0178	0.05	0.04	0.0005	0.003	0.07	0.1	0.01
Sampled Wells	BH HRE-3	1.2	0.0013	0.003	<0.003	<0.0003	0.003	<0.002	<0.020	<0.004
110112	BH 201	55.3	0.0186	0.034	0.031	<0.0003	<0.002	0.044	0.068	0.009
	BH PDC-6	3.07	0.0012	0.004	0.004	<0.0003	<0.002	0.006	0.023	<0.004

Table 7: Summary of Parameters Exceeding PWQO Guidelines

Notes: mg/L = milligrams per Litre

Bolded = indicates parameter does not meet the PWQO Guidelines

As shown in **Table 5** and **Table 6**, phenols, total copper, total Kjeldahl nitrogen, total manganese, total phosphorus, total titanium and zinc suspended solids exceed the York Region and Town of Bradford West Gwilliumbury's Storm Sewer By-Law limits.

As shown in **Table 7**, total iron, total cobalt, total copper, total nickel, total thallium, total uranium, total vanadium, total zinc and total zirconium exceeded the PWQO guidelines limits.

Given these exceedances, the use of water treatment prior to the discharge to the respective municipal storm sewer system or the natural environment should be included as part of the dewatering plan. Additionally, it is the responsibility of the Detail Design and Construction team to identify alternate plans to treat and/or manage water if it exceeds guidelines and by-law limits should there not be a nearby municipal storm sewer system to discharge to after treatment etc.

5. Permitting Requirements

Where construction dewatering volumes between 50,000 and 400,000 L/day are expected, filing of the project on MECP's Environmental Activity and Sector Registry (EASR) system is required in accordance with Ontario Regulation 63/16 (as amended). Where expected construction dewatering volumes that exceed 400,000 L/day, a PTTW (Category 3) will be required from MECP in accordance with Section 34 of the *Ontario Water Resources Act* (RSO, 1990). Permitting requirements will be determined during the subsequent Detail Design phase once the overall design is advanced to a level of detail that makes it appropriate to complete dewatering calculations for excavated areas.

6. Environmental Considerations

6.1 Groundwater Resources

A search of the MECP WWIS database was conducted for the Study Area, which identified a total of 413 well records, as shown in **Figures 4a to 4e**. The search identified records for 230 domestic wells, four municipal wells, four industrial wells, one public well, eight commercial wells, 19 livestock wells, and 33 monitoring/observation/test wells. In addition, 42 well records are listed with other and/or not used status and 72 records with unknown status or use. A summary table of the search results, including the above-mentioned categories, is provided in **Appendix D1**.

The Study Area includes a variety of agricultural, industrial, commercial, residential and institutional properties within a municipally serviced area.

With the records of supply wells within or near to the Study Area. A water well survey was completed and is summarized in the *Door To Door Water Well Survey Report* (AECOM Canada Ltd. 2022B) under a separate cover.

6.2 PTTW/EASR Database Review

A query of MECP's PTTW and EASR databases was conducted for the Study Area. The search results identified nine PTTWs and five EASRs records, as indicated in **Figures 4a to 4e**. A summary table of the search results, including the issue and expiry dates for each PTTW and EASR, is provided in **Appendix D2 & D3**.

Three of the identified PTTW's are registered to the Town of Bradford West Gwillimbury and one is registered to the Regional Municipality of York for water supply purposes. One PTTW is registered to the Silver Lake Golf and Country Club for commercial purposes. Four PTTWs are registered for agriculture purposes (from surface water) with unknown permit owners.

It is noted that all three PTTW's registered to the Town of Bradford West Gwillimbury have expired and other PTTW's are identified as active.

Five EASRs were identified within the Study Area as related to air emissions, heating system, and automotive refinishing facility, and thus are not relevant to the current hydrogeological assessment.

6.3 Source Protection Information

As noted above in this Report, the Study Area is located within the South Georgian Bay Lake Simcoe Source Protection Region and Nottawasaga Valley Source Protection Area (Lake Simcoe Region Conservation Authority, 2021).

A review of MECP's *Source Protection Information Atlas* indicates that the Study Area is not situated within an identified Wellhead Protection Area-E - Groundwater Under Direct Influence, Q₁ or Q₂), Issue Contributing Area (ICA), or an Event Based Area (EBA).

The Study Area includes lands that have been delineated as a Highly Vulnerable Aquifer (HVA) and Significant Groundwater Recharge Areas (SGRAs), as is shown in **Figure 5**. A HVA is an aquifer that can be easily changed or affected by contamination from both human activities and natural processes. SGRAs are surfaces on the landscape that allow a high volume of water to penetrate the surface – higher than the average for the entire

watershed, with levels of low, medium and high found throughout the Study Area, especially the Holland River Lands.

Wellhead Protection Areas (WHPAs) are shown near the Holland River Lands and near Highway 404 in **Figure 5**, these are areas of groundwater flow with zones of travel times of potential contamination in relation to proximity to Municipal water supply wells. The categories are:

- WHPA-A is a 100-metre circle around the well
- WHPA-B is the 2-year time-of-travel zone
- WHPA-C is the 5-year time-of-travel zone, and
- WHPA-D is the 25-year time-of-travel zone.

From a surface water perspective, the Study Area is located within an Intake Protection Zone 3 (IPZ-3) within the Holland River Lands where a spill of a chemical or pathogen contaminant could reach a surface water intake.

Implementation of best management practices is required during Detail Design and Construction to alleviate the potential for spills and/or other potentially deleterious effects during construction of the project.

7. Dewatering Discharge

7.1 General Information – Return of Dewatering Water to the Natural Environment

Per initial data gathered during this Preliminary Design assignment, several inorganic/metal parameters exceeded the Provincial Water Quality Objectives (PWQO) in the groundwater samples collected from groundwater monitoring wells in the vicinity of the proposed groundwater taking locations.

During Detail Design, a pre-construction groundwater sampling program should be conducted for the groundwater monitoring wells located in the vicinity of the proposed dewatering locations (at least one well at one dewatering location) to confirm the groundwater quality in the areas. The collected groundwater samples have to be analyzed for general inorganic parameters (including total suspended solids (TSS) and turbidity), metals, and volatile organic compounds (VOCs). Based on the pre-construction groundwater analytical results, there will be two anticipated options:

Option 1:

If the concentrations of the analyzed parameters in dewatering groundwater have been confirmed to be above the applicable standards (i.e., sewer by-law or PWQO), the groundwater needs to be pre-treated prior to being re-used or discharged to the municipal sewer system (if one exists) or nearby drainage ditch. Onsite groundwater treatment may require operating a mobile groundwater treatment unit. The mobile groundwater treatment unit usually consists of a series of containers/tanks containing different types of treatment media, which are customized to remove specific contaminants identified in the groundwater.

If the desired groundwater quality could not be met through the treatment processes, the collected water must be disposed properly off-site at an MECP approved facility by the Contractor.

Option 2:

If the treated groundwater meets the PWQO, the groundwater is recommended to be re-used on site for construction purposes (i.e., dust control etc.) as a water conservation measure. The excess groundwater may be discharged to the municipal sewer system (if one exists) or nearby drainage ditch. During Detail Design and Construction, erosion and sediment control measures and a groundwater monitoring program will be developed and implemented to maintain the environmental quality of the water discharged, both chemical parameters and physical parameters, meet the municipal sewer by-law (if discharged to the sewer), or the PWQO (if discharged to the natural environment), and the requirements provided in Ontario Regulation 387/04 and Ontario Regulation 63/16.

Deliverables:

A Construction Dewatering Plan (Water Discharge/Management) shall be prepared during Detail Design and Construction, as well as an Erosion and Sediment Control Plan and a Groundwater Quality Monitoring Program. The Construction Dewatering Plan, which shall include details on where and when all groundwater is obtained, stored, transferred, used and returned to the environment (if applicable) and the proper decommissioning of the dewatering wells upon the completion of the construction, must be implemented prior to the discharge to the natural environment. These three reports should be prepared during the subsequent Detail Design prior to the commencement of the dewatering activities and submitted to MECP when finalizing the draft permit to take water (if one is determined to be required during subsequent Detail Design and Construction phases).

The preferable discharging method for the dewatering groundwater is to the municipal sewer system in the vicinity of the study area if one exists. However, given the nature of the study area opportunities to connect to municipal sewer systems may be limited and challenging.

7.2 Dewatering Discharge in the Town of Bradford West Gwillimbury

Dewatering effluent shall be directed to the Town of Bradford West Gwillimbury's sanitary or storm sewer system for dewatering near existing roadways. Any discharge of water would be subject to the terms and conditions of all required permits obtained during the subsequent Detail Design based on the actual conditions encountered during construction. Sewer discharge requires by-law authorization from the Town.

The results of the baseline water quality sampling completed within the Study Area indicates that dewatering effluent may not fulfill the water quality requirements under the Town of Bradford West Gwillimbury's Sewer Use Bylaw 2013-68 for Storm Sewer Discharge without pre-treatment for the exceeded parameters identified by AECOM sampling in 2021 and 2022 (AECOM, 2022A). As a result, it will be the responsibility of the dewatering contractor to maintain that any discharge to the local sewer system occurs in full compliance with the Town's Sewer Use By-Law (By-Law 2013-68). The Contractor shall make sure that all control measures implemented, and all materials collected or trapped by those measures are recovered and properly disposed of when they are no longer engaging in the activity or discharge to the sanitary sewer. Expected treatment options for the dewatering discharge potentially include sedimentation tanks and filtration.

7.3 Dewatering Discharge in the Town of East Gwillimbury

Dewatering effluent shall be directed to the Town of East Gwillimbury's sanitary sewer system for dewatering near existing roadways. Any discharge of water shall be subject to the terms and conditions of all required permits obtained during Detail Design based on the actual conditions encountered during construction. Sewer discharge requires by-law authorization from the Town.

The results of the baseline water quality sampling completed within the Study Area indicates that dewatering effluent may not fulfill the water quality requirements under the York Region Sewer Use By-Law (2021-102) as required in the Town of East Gwillimbury's Sewer Use By-Law 2008-54 for Storm Sewer Discharge without pre-treatment for the exceeded parameters identified by AECOM sampling in 2021 and 2022 (AECOM, 2022A). As a result, it will be the responsibility of the dewatering contractor to maintain that any discharge to the local sewer system occurs in full compliance with York Region Sewer Use By-Law (By-Law 2021-102). The Contractor shall make sure that all control measures implemented, and all materials collected or trapped by those measures are recovered and properly disposed of when they are no longer engaging in the activity or discharge to the sanitary sewer. Expected treatment options for the dewatering discharge potentially include sedimentation tanks and filtration.

7.4 Dewatering Discharge in King Township

Dewatering effluent shall be directed to the King Township's sanitary sewer system for dewatering near existing roadways. Any discharge of water shall be subject to the terms and conditions of all required permits obtained by the Detail Design designer based on the actual conditions encountered during construction. Sewer discharge requires by-law authorization from the Township.

The results of the baseline water quality sampling completed within the Study Area indicates that dewatering effluent may not fulfill the water quality requirements under the York Region Sewer Use By-Law (2021-102) as required in the King Township's Sewer Use By-Law 2014-072 for Storm Sewer Discharge without pre-treatment for the exceeded parameters identified by AECOM sampling in 2021 and 2022 (AECOM, 2022A). As a result, it will be the responsibility of the dewatering Contractor to comply that any discharge to the local sewer system occurs in full compliance with York Region Sewer Use By-Law (By-Law 2021-102). The Contractor shall make sure that all control measures implemented, and all materials collected or trapped by those measures are recovered and properly disposed of when they are no longer engaging in the activity or discharge to the sanitary sewer. Expected treatment options for the dewatering discharge potentially include sedimentation tanks and filtration.

If the collected groundwater from dewatering activities is expecting to be discharged to the natural environment (only in areas of no previous development) this water must be tested for Provincial Water Quality Objectives (PWQO) and be in compliance with these objectives. Given the variability in geological material encountered throughout the proposed ROW, it is suggested that the dewatering Contractor be prepared to potentially deal with treatment for suspended solids prior to discharge to the sanitary sewer. Given the Highly Vulnerable Aquifer (HVA), Significant Groundwater Recharge Areas (SGRA), and Wellhead Protection Areas (WHPA) present within the Study Area, discharge to the natural environment is unlikely to be an option.

The results described above are representative of the condition at the sampled monitoring well at the time of sampling and do not necessarily reflect conditions that will be present at the time of construction. Confirmation of local groundwater levels and groundwater quality shall be completed during Detail Design prior to construction activities.

Prior to discharging any dewatering effluent, the Contractor will be required to check that all necessary discharge permits have been secured and that the Water Taking Plan, Discharge Plan, a Water Treatment Process and Sampling Plan has been designed and implemented in accordance with the terms and conditions of any such permits and the contract documents. Further information can be found in the Groundwater Protection and Well Monitoring Plan (AECOM, 2023A)

8. Summary of Environmental Commitments

8.1 2002 Approved Environmental Assessment Commitments

The 2002 Approved Environmental Assessment identified a number of proposed mitigation and commitments to future work for the project. **Table 8-1** below identifies the groundwater commitments carried forward through to Preliminary Design and describes any applicable changes to the 2002 Approved Environmental Assessment commitment. Commitments identified in the 2002 Approved Environmental Assessment are to be carried forward to the subsequent Detail Design phase unless otherwise stated in **Table 8-1** below.

Factor / Criterion	Issue	Concerned Group / Agency	Potential Net Environmental Effect (as taken from 2002 Approved Environmental Report)	Proposed Mitigation / Commitments to Future Work (as taken from 2002 Approved Environmental Report)	Changes to Mitigation/ Protection/ Monitoring (Yes/No/NA)	Description of Commitment Carried Forward through Preliminary Design for Mitigation, Protection and Monitoring
Groundwater	Potential well impacts and contamination of/interference with groundwater resources	Ministry of Transportation, local municipalities, property owners	directly (i.e., removal) or indirectly (i.e., potential interference) by the proposed Link. In the area of sandy soils associated with the Holland River, shallow perched groundwater system is susceptible to contamination and/or interference. The Bradford municipal well west of the Holland River will be avoided and otherwise unaffected by the proposed roadway.	 Tilling of soil in non-vegetated areas prior to restoration to re- establish infiltration along access roads, storage areas, or other well travelled areas where soil compaction has occurred in areas that previously permitted infiltrating Backfilling of excavations that intercept existing groundwater flow with porous granular material to maintain existing groundwater linkage particularly at river crossings Detailed stormwater management plans which address both quantity and quality A well monitoring program which will involve pre-construction testing, investigation of complaints during construction, and provision of an alternate water supply, and Use of appropriate dewatering and spills avoidance management techniques. 		 Proposed mitigation measure outlined in 2002 shall be complied with such as: Tilling of soil in non-vegetated areas prior to restoration to re-establish infiltration along access roads, storage areas, or other well travelled areas where soil compaction has occurred in areas that previously permitted infiltrating Backfilling of excavations that intercept existing groundwater flow with porous granular material to maintain existing groundwater linkage particularly at river crossings Detailed stormwater management plans which address both quantity and quality A well monitoring program which will involve preconstruction testing, investigation of complaints during construction, and provision of an alternate water supply, and Use of appropriate dewatering and spills avoidance management techniques. The Ministry shall complete and prepare a Stormwater Management Plan and a Groundwater Protection and Well Monitoring Plan per the Regulation, and As a result of the project-specific assessment of environmental impacts, during subsequent Detail Design and Construction phases, design and construction plans will consider erosion and sediment control requirements, access management, clearing and grubbing, earth management and landscape and ecological restoration.

Table 8-1: 2002 Approved Environmental Assessment Commitments and Description of Changes Carried Forward Through Preliminary Design

8.2 **Preliminary Design Commitments**

Impacts to groundwater and the hydrogeological system and proposed mitigation measures, monitoring activities and commitments identified in this Report are summarized in **Table 8-2** below.

Table 8-2: Summary of Environmental Concerns and Commitments

ID	Issues / Concerns / Potential Effects	Concerned Agencies	ID	Mitigation, Protection, Monitoring, and Commitments
Groundwa	ter and Hydrogeology			
	Dewatering Effluent Discharge	 Ministry of Environment Conservation and Parks, and Lake Simcoe Conservation Authority. 	GW-1.01 GW-1.02	 It is recommended that dewatering effluent be directed to the local Town sanitary or storm sewer, if applicable. conditions of all required permits obtained by the Contractor based on the actual conditions encountered during authorization from the Town. Due to the close proximity of the construction to agricultural drains, it is suggested reduce overland flow and promote infiltration, and Discharge the natural environment will be allowed with previously undeveloped areas assuming that the discha based on proximity within or nearby SGRA and WHPAs. Supplemental sampling during dewatering will be required to check that all necessary discharge Plan, Discharge Plan, a Water Treatment Process and Sampling Plan has been designed and implemented in a permits and the contract documents developed during Detail Design, and
				Regular sampling and testing of the discharge and residential wells by the Contractor will be required during co comply.
			GW-1.03	 A visual inspection must be completed by the Contractor along with the collection of in-field turbidity and temper discharge streams) on a daily basis during periods of active discharge for the duration of the dewatering system sedimentation within the HVA area and surface water features within the proposed construction area are also resident as a sample is determined to be 'unacceptable' based on the applicable water quality standards, additional effluent samples must be obtained by the Contractor immediately upon receipt of the initial laboratory "unacceptable" results, the local Public Health agencies (Simcoe Muskoka Public Health, York Region Public H Where the verification sampling is confirmed, immediate action should be taken by the Contractor to assess an methodology, rate / duration of pumping, and/or provide additional / alternative pre-treatment prior to resuming discharge, a confirmatory sample should be obtained by the Contractor confirming adherence with the applicable
GW-2.00	Potential conflicts with monitoring wells	 Ministry of Environment Conservation and Parks Ministry of Transportation Lake Simcoe Conservation Authority, and Nottawasaga Valley Conservation Authority 	GW-2.01	Should the location of any existing monitoring wells be in conflict with the location(s) of project construction or d recommended that a Ministry of the Environment, Conservation and Parks licenced water well contractor be ret accordance with Ontario Regulation 903 (Wells), as amended. It is further recommended that replacement well contractor to replace any decommissioned monitoring wells and/or piezometers.
			GW-2.02	A pre-construction groundwater sampling program should be conducted for the groundwater monitoring wells lo (at least one well at one dewatering location) to confirm the groundwater quality in the areas. The collected groundwater inorganic parameters (including total suspended solids (TSS) and turbidity), metals, hydrocarbons, and VOCs.
			GW-2.03	The monitoring wells listed in Table 1 were completed during the Preliminary Design program, are considered a potential dewatering ROI and is to be monitored during Detail Design, for each excavation and proposed structure monitoring wells may need to be installed that reflect the revised proposed excavation areas.
GW-3.00	Potential impacts to private wells	 Ministry of Environment Conservation and Parks Lake Simcoe and Muskoka Public Health, and York Region Public Health 	GW-3.01	Prior to any construction dewatering occurring the properties listed Door to Door Water Well Survey Report shares residential well during and after construction to confirm that there is no effect on the water quality from the base provides a baseline for the water wells prior to the proposed construction to determine existing water quality an all properties within 500 m of the study limits is recommended to maintain all concerned homeowners are monipotential well issues are addressed and monitored.
			GW-3.02	Prior to the initiation of the monitoring and sampling of the residential properties listed above, the Contractor wil Health, York Region Public Health) to allow for involvement as requested/required.
			GW-3.03	 Where the monitoring completed above identifies a significant amount of water level drawdown (i.e., in excess of the dewatering area), immediate action should be taken by the Contractor to assess and potentially modify their of pumping, so as to limit the dewatering radius of impact (R) and alleviate the observed groundwater level imp Detail Design in each identified residential water well and monitoring well and left for the duration of the dewate Monthly hydrographs will be provided to the MTO, MECP, Simcoe Muskoka Public Health, and York Region Pulevels as a result of the proposed construction by the Contractor.
			GW-3.04	 Residential wells should be sampled for a representative raw (untreated) water sample for analysis of general water magnesium, sodium; potassium; iron, manganese; chloride; sulphate; nitrate [NO3-N]; nitrite [NO2-N], ammonia dissolved solids [TDS]; total suspended solids [TSS]; tannins and lignins); hydrocarbons and microbiological (E Sodium sampling results will be provided to local Public Health Agencies (Simcoe Muskoka Public Health, York Designer. Adequate pre-treatment shall be provided by the Contractor at each dewatering location to achieve c Establishing treatment methodology (settling tank) is the responsibility of the Contractor and may be further information sampling results obtained by the Contractor during construction.

e. Any discharge of water would be subject to the terms and ing construction. Sewer discharge requires by-law red that the discharge be directed away from the drains to

narge meets PWQO. Further discharge restrictions may occur quired to maintain discharge compliance.

arge permits have been secured and that the Water Taking n accordance with the terms and conditions of any such

construction to verify that the effluent quality continues to

perature measurements (both untreated and treated effluent em(s) operation. A visual inspection of terrestrial changes or required

s, field turbidity and/or temperature monitoring activities, ory results for verification purposes. In the event of Health) will be notified immediately, and

and potentially modify their dewatering approach / ng any further discharge. Prior to resuming any effluent able water quality standards.

damaged as a result of project construction activities, it is etained by the Contractor to decommission those locations in ell(s) be installed by a licenced environmental drilling

located in the vicinity of the proposed dewatering locations roundwater samples have to be analyzed for general S.

d as part of the proposed monitoring program within the cture. If the design changes during Detail Design, additional

hall be contacted for monitoring and sampling of the iseline assessed. The Door-to-Door Water Well Survey and quantity of each property. Additional mailing of letters to initored during and after construction to capture and confirm

will contact local public health (Simcoe Muskoka Public

s of 0.3 m at a monitored location more than 40 m ROI from neir dewatering approach / methodology, and/or rate / duration npact. It is recommended that dataloggers be installed during atering period, and

Public Health showing the changes to the local groundwater

al water quality (pH; total hardness; total alkalinity; calcium, onia / ammonium [NH3-N]; electrical conductivity; total (E. coli, faecal coliforms, total coliforms) parameters, and ork Region Public Health) as received by the Detail Design a compliance prior to any off-site discharge occurring. Informed by the raw (pumped) water quality and confirmatory

ID	Issues / Concerns / Potential Effects	Concerned Agencies	ID	Mitigation, Protection, Monitoring, and Commitments
GW-4.00	Assumed Excavation Parameters and Radius of Influence	 Ministry of Environment Conservation and Parks, and Ministry of Transportation 	GW-4.01	All groundwater plans should assume the potential for groundwater interference to be limited to those areas where bridge support structures) will cut 1 m to 15 m into the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface locally and will extend below the existing groundwater interference is a structure of the subsurface local structure of the subsurface local str
			GW-4.02	The calculated radius of influence at each dewatering locations shall be summarized and reported on by the sum) are at risk of being affected during Detail Design reporting, additional mitigation measures may need to be on the summarized and reported during Detail Design reporting.
			GW-4.03	Mitigation plans should be generated for any excavation and structure construction with areas of medium to hig shown near the Holland River and Holland River East Branch as shown in Figure 5. Dewatering discharge sho areas if excavation and dewatering activities are occurring within them, as shown in Figure 5.
			GW-4.04	Based on AECOM's understanding of the regional hydrogeology, the potential effect of road salt runoff from the surficial materials is considered high. These areas of high aquifer vulnerability could potentially be impacted by are required during dewatering to limit runoff.
GW-5.00	Contamination	 Ministry of Environment Conservation and Parks Ministry of Transportation Lake Simcoe Conservation Authority Nottawasaga Valley Conservation Authority 	GW-5.01	The use of best management practices for handling of hydrocarbons according to the Ministry of Environment, Standards and Safety Authority (TSSA) of the Ministry of Government Services will reduce the potential of envir product handling and uses. Spillage of petroleum products must be immediately remediated according to these
			GW-5.02	The effect of road salt can result in the direct increase of shallow groundwater salinity, or in the case of deeper susceptibility of the soils to infiltration is reflected by the Highly Vulnerable Aquifers (HVA) designation areas al dewatering discharge should be directed away from these areas unless they meet the Provincial Water Quality
GW-6.00	Ongoing Monitoring	 Ministry of Environment Conservation and Parks, and Ministry of Transportation 	GW-6.01	 All monitoring wells listed in Table 1 should continue be assessed again during Detail Design under the followi Additional groundwater monitors installed by Golder/WSP during Detail Design will be developed, tested, monitors installed, and Well abandonment will be carried out in compliance with O. Reg. 903 Wells (as amended) for any damaged

where the deeper road alignment (trenches, ditches, and proundwater table.

subsequent Contractor. If the deep monitoring wells (over 15 e considered (domestic well monitoring, caissons, etc.). high significant groundwater recharge areas (SGRA) as

hould be directed away from Well Head Protection (WHPA)

the highway on the shallow groundwater system and shallow by saline runoff. As such, berms around the excavated areas

nt, Conservation and Parks (MECP) and the Technical invironmental adverse effects associated with petroleum se standards such that groundwater quality is not impacted.

er wells, an increase in water hardness over time. The along the entire project construction area. Any runoff and ity Objectives (PWQO).

wing gaps or design changes: nonitored and sampled for the required discharge option vill be assessed. Additional groundwater monitors may need to

ed or deemed unnecessary.

9. Recommendations and Conclusions

This Report was completed for the intended purpose of characterizing the local physical and groundwater setting, assessing possible impacts to local water wells and groundwater dependent environmental features. This Report was prepared in accordance with the requirements of O. Reg. 697/21, Section 23. It is recommended that this Report be updated based on the additional field investigation that will be completed during subsequent Detail Design of the project.

As part of the Report, AECOM reviewed the MECP Water Well Database that identifies water wells within the Bradford Bypass corridor that may be impacted by the project. Approximately 260 domestic, livestock, commercial, industrial, or public water supply wells within the Study Area were identified.

A series of groundwater monitoring wells have been installed along the highway corridor within the Study Area to track groundwater quality and quantity before and after construction. A pre-construction groundwater sampling program will be conducted to establish baseline data which will enable effective monitoring of changes within groundwater levels and quality related to construction activities. Assessment of some of the groundwater monitoring wells installed by Golder/WSP were not completed due to accessibility and installation after AECOM's assessment had been completed as listed in **Table 1**. It is expected that additional well development, hydraulic conductivity testing, water quality testing and continued groundwater elevation monitoring, be completed during subsequent Detail Design of the project once the design is finalized. Additional groundwater monitors may need to be installed if the currently installed groundwater monitors no longer reflect the current excavated areas. It is recommended that dataloggers be installed in all groundwater monitoring wells to capture seasonal variations in the groundwater elevations during subsequent Detail Design of the project.

Dewatering discharge will be managed consistent with best management practices employed by the Ministry and applied to all highway construction projects. Any runoff or dewatering discharge from construction will be directed away from any environmentally sensitive areas identified along the entire length of the highway unless on-site testing indicates that satisfactory provincial water quality standards are met. Any uncontrolled release of dewatering effluent during construction will be treated with the same urgency as a chemical spill and managed using best practices, as well as protocols in the contractor's Spill Prevention and Response Plan. If the spill impacts the natural environment, it will also be reported to the MECP Spills Action Centre.

The results of WSP/Golder's Geological Investigation were relied upon by AECOM in the completion of this Preliminary Design Plan. AECOM has assumed that all information provided was factual and accurate. Judgement has been used by AECOM in the interpretation of the field information collected. However, it is recognized that subsurface physical and chemical characteristics may vary between or beyond borehole locations given the variability observed in local geological and hydrogeological conditions. If variability in geologic and/or hydrogeologic conditions is observed at the time of construction, in comparison to the information presented in this Report, AECOM should be contacted to review the conditions present and assess the potential implications. Additionally, should further works be completed by Golder for the project, or other project components be added which were not factored into this Report, they shall be considered beyond the scope of this Report and be assessed and documented in the subsequent Detail Design phase.

Hydrogeological Data Report

Highway 400 – Highway 404 Link (Bradford Bypass)

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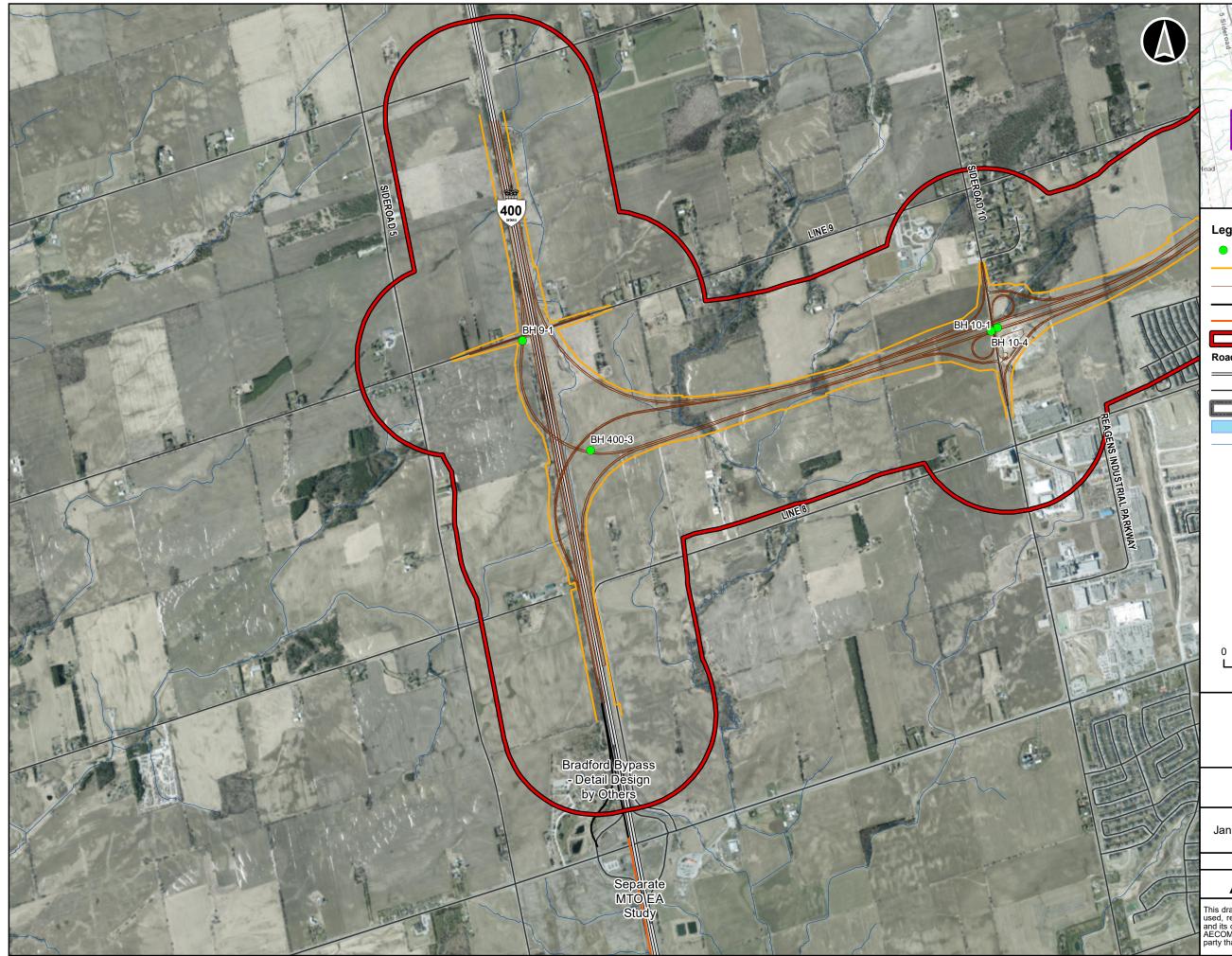
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Figures

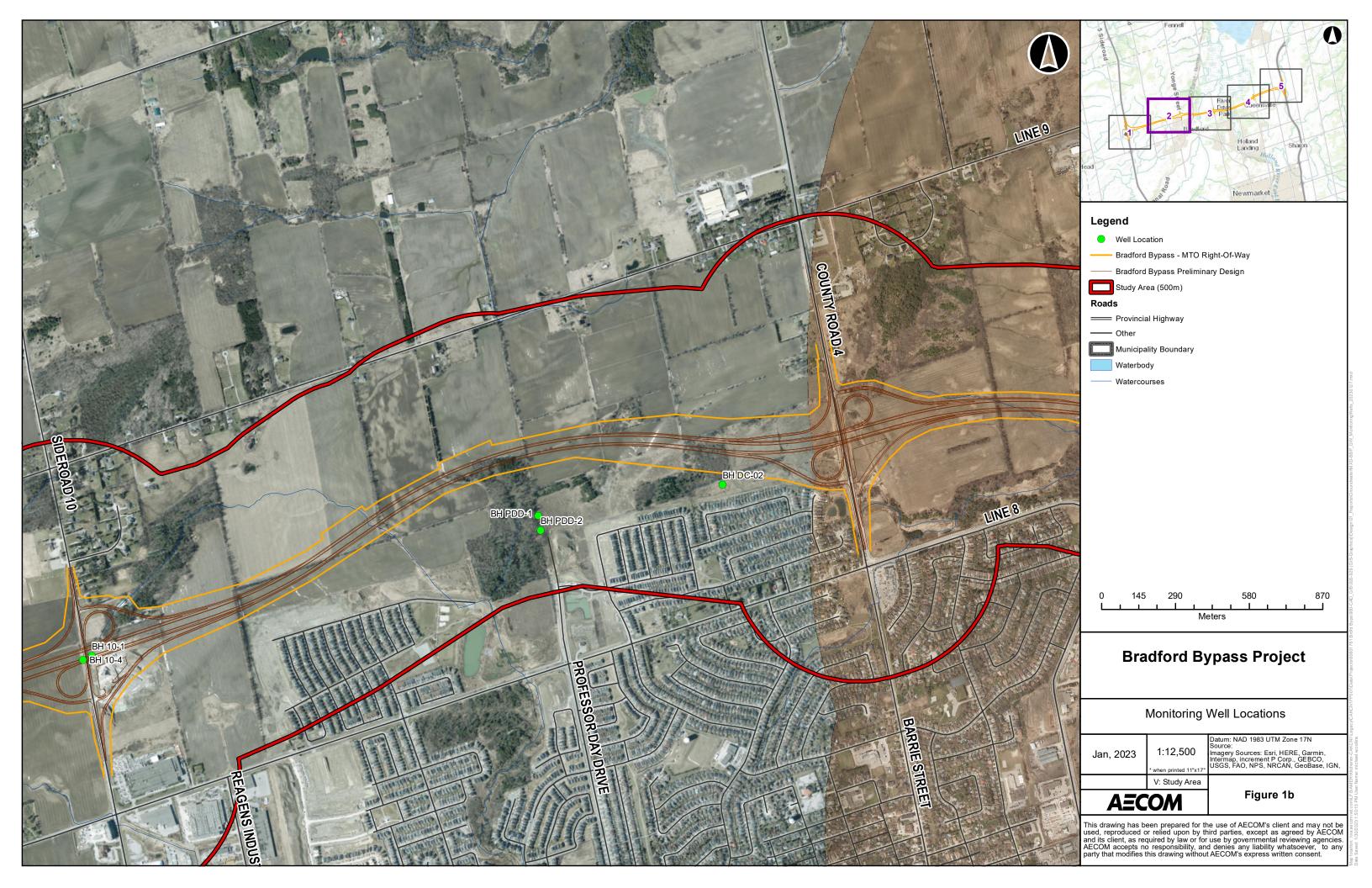


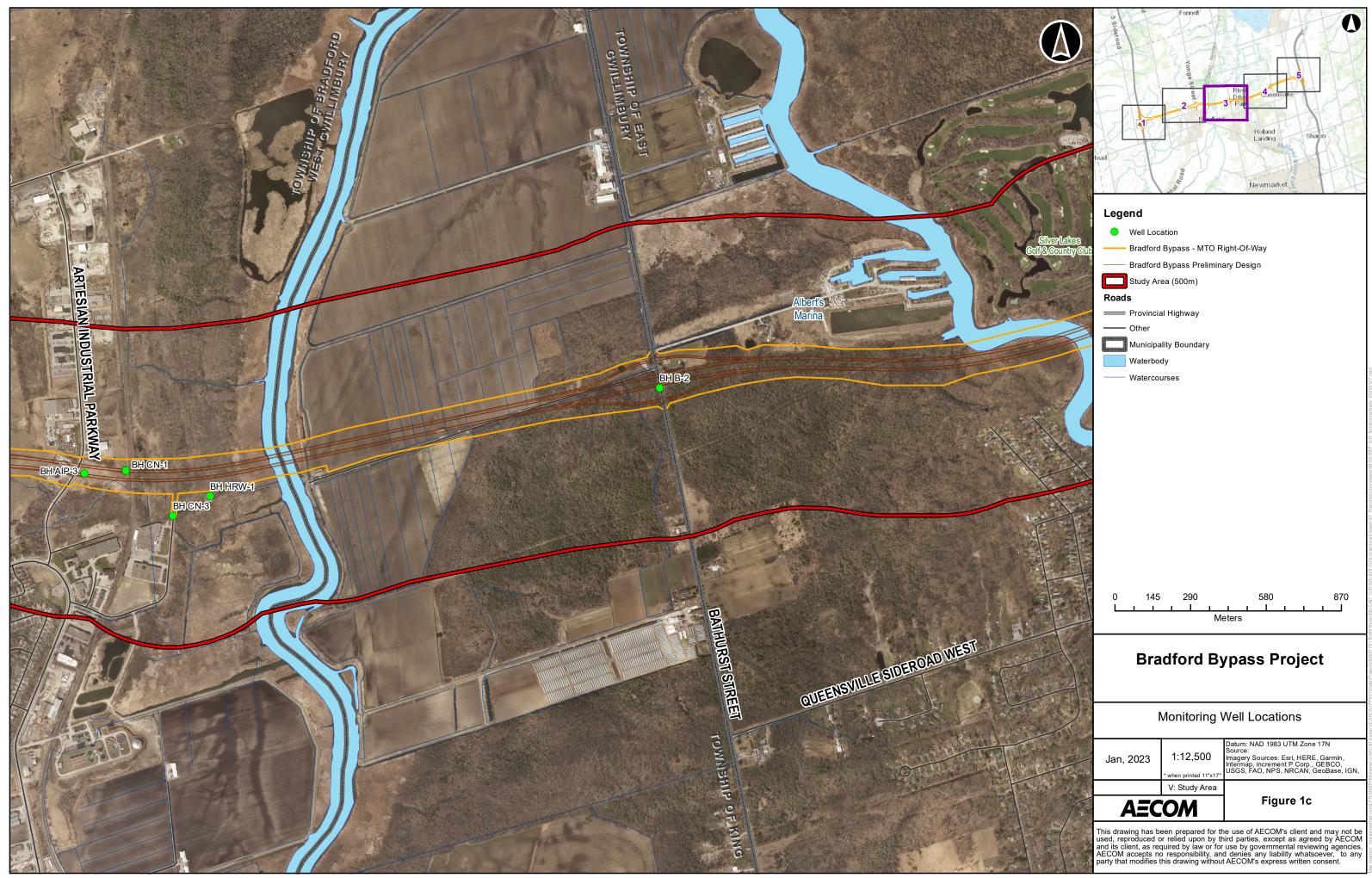
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Legend
Well Location
Bradford Bypass - MTO Right-Of-Way
Bradford Bypass Preliminary Design
Bradford Bypass/Detail Design (by Others)
Separate MTO EA Study
Study Area (500m)
Roads
Provincial Highway
Other
Municipality Boundary
Waterbody
Watercourses

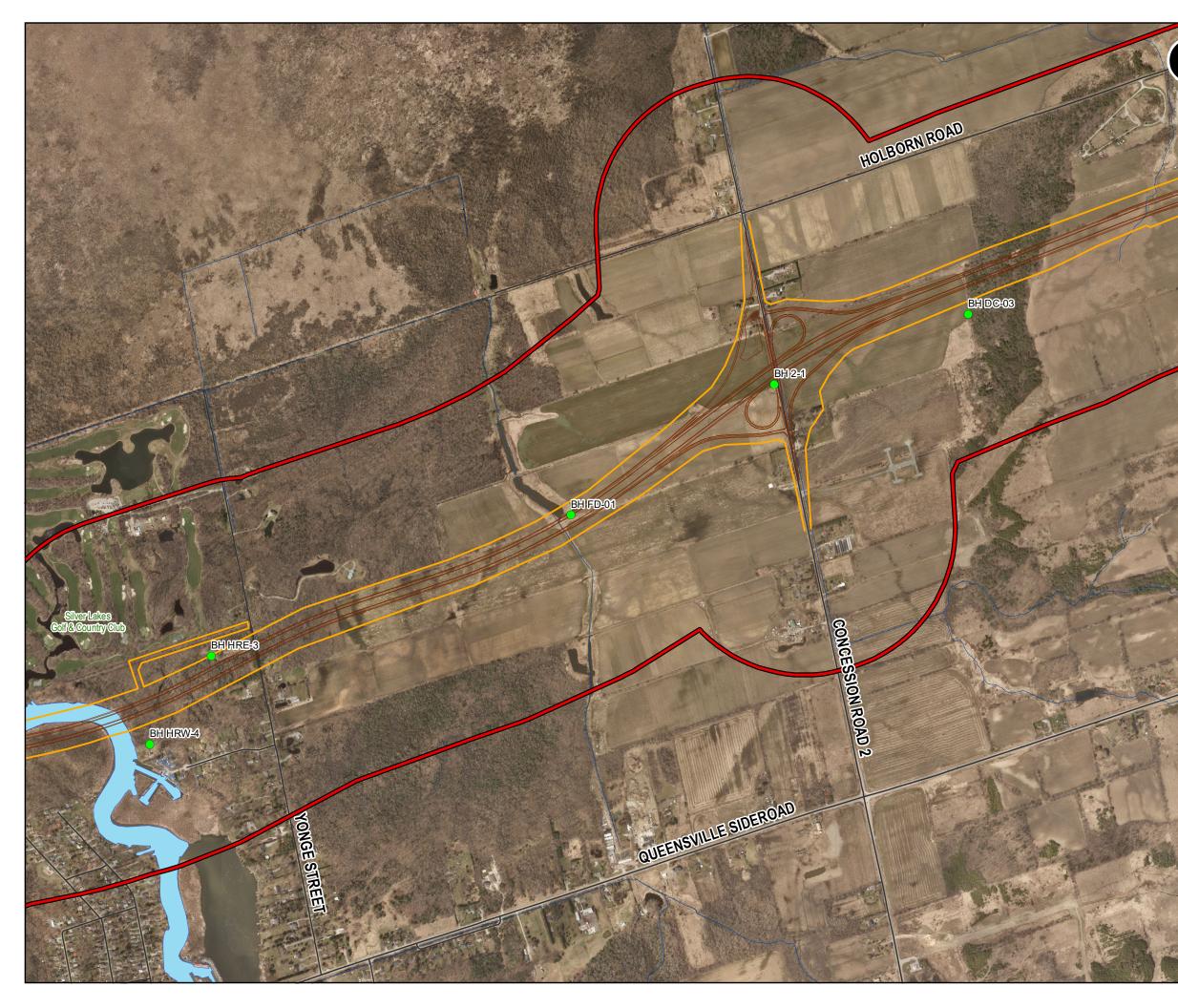
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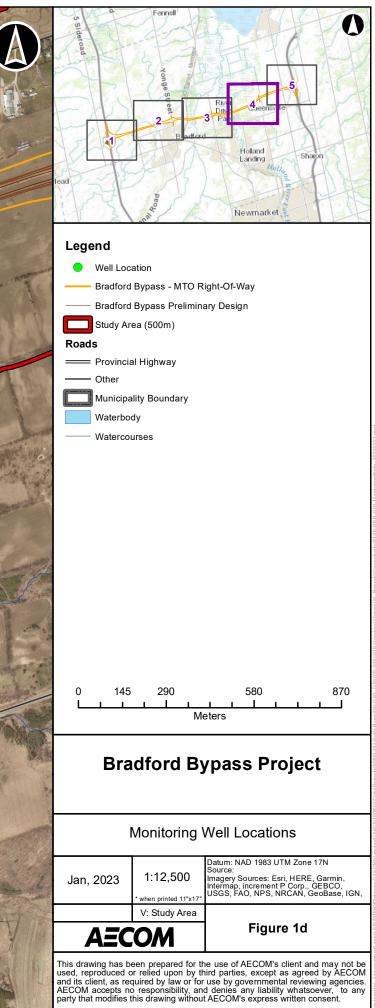
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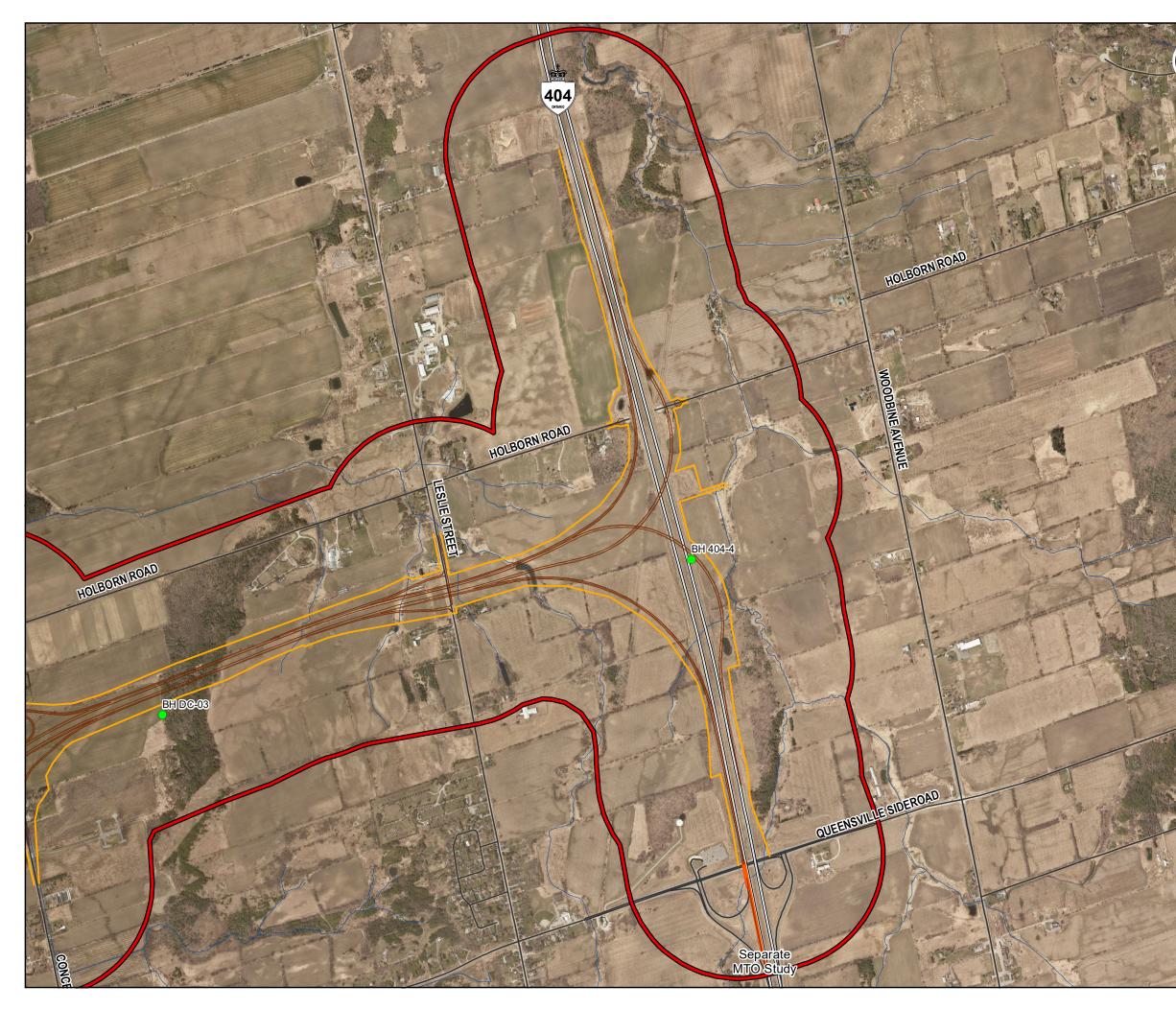
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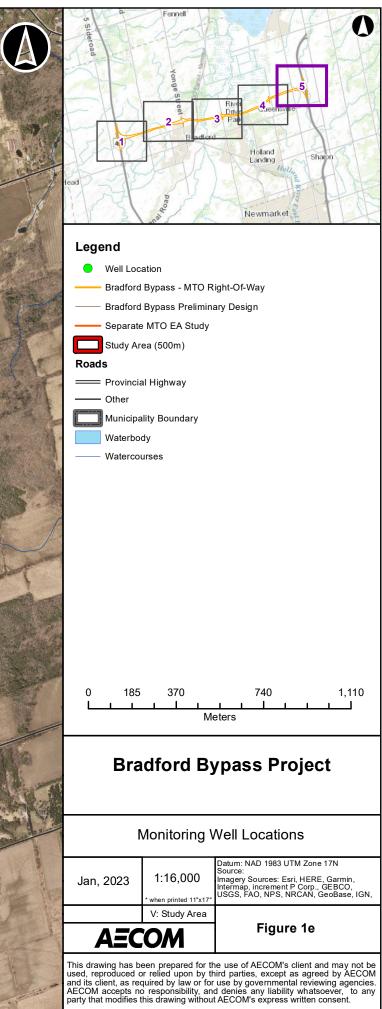


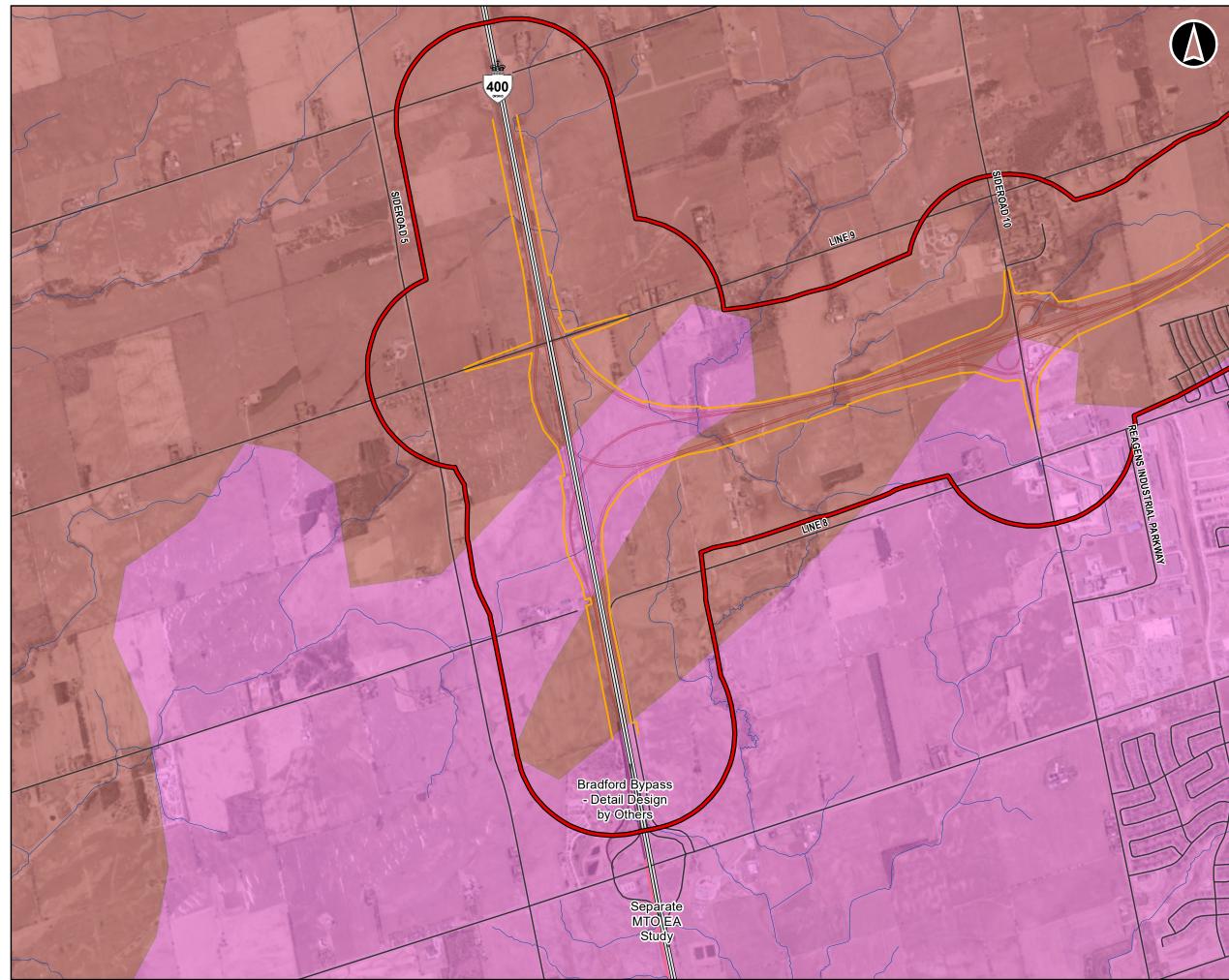




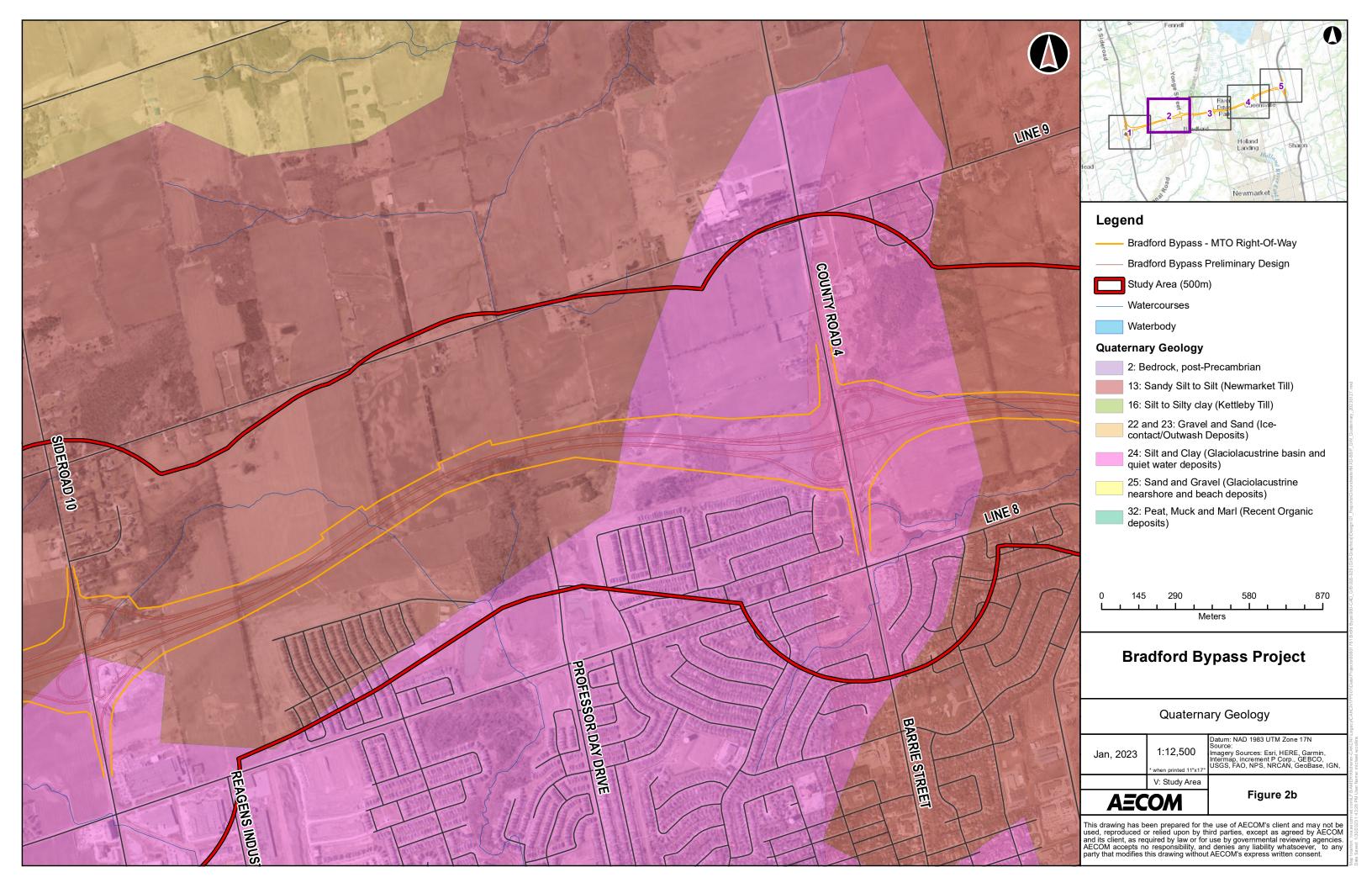


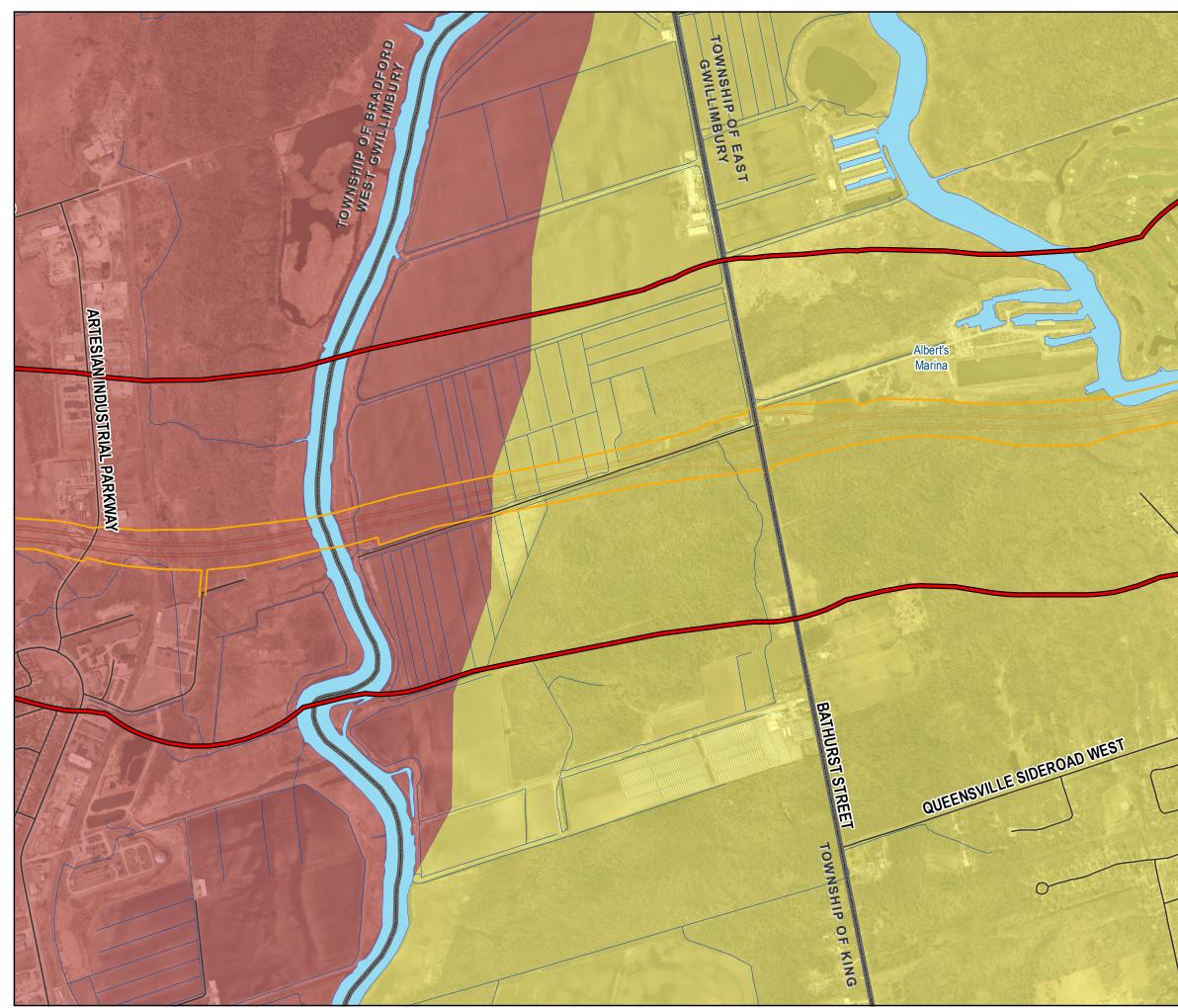




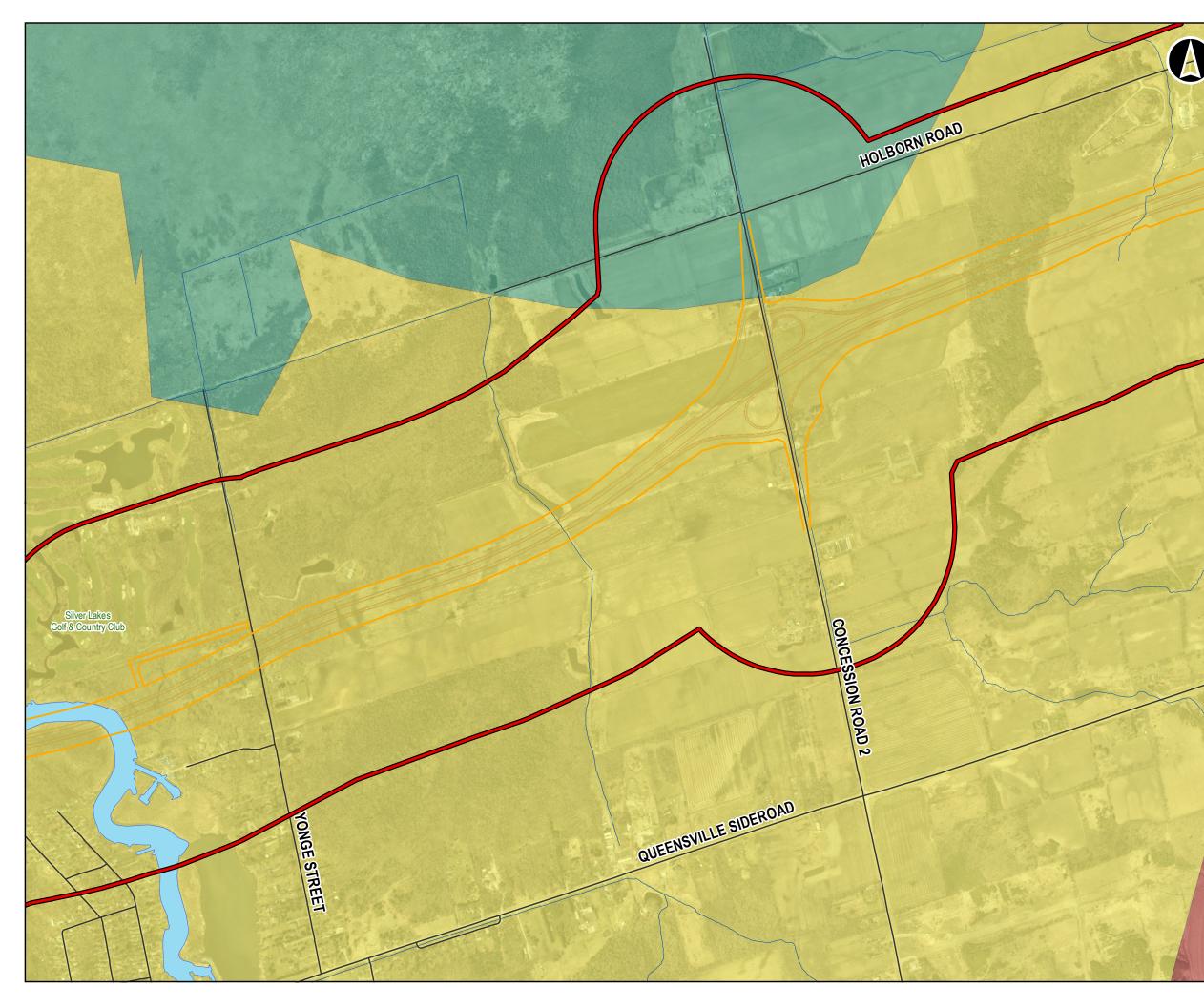


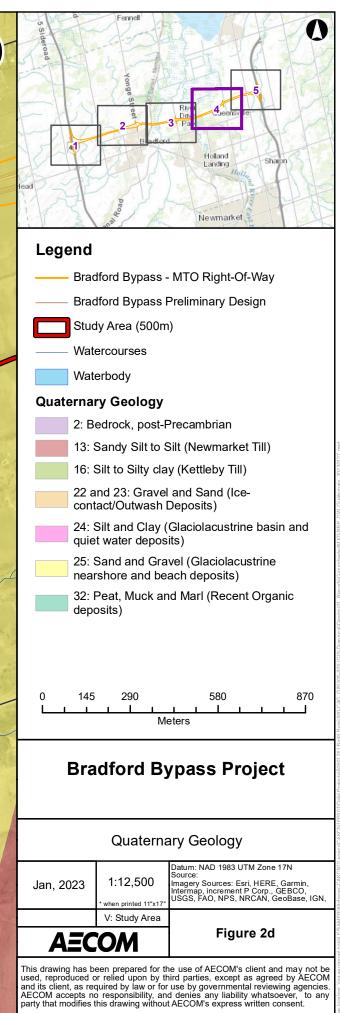
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——— Bradford Bypass Preliminary Design
——— Bradford Bypass/Detail Design (by Others)
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Study Area (500m)
——— Watercourses
Waterbody
Quaternary Geology
2: Bedrock, post-Precambrian
13: Sandy Silt to Silt (Newmarket Till)
16: Silt to Silty clay (Kettleby Till)
22 and 23: Gravel and Sand (Ice- contact/Outwash Deposits)
24: Silt and Clay (Glaciolacustrine basin and quiet water deposits)
25: Sand and Gravel (Glaciolacustrine nearshore and beach deposits)
32: Peat, Muck and Marl (Recent Organic deposits)
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V: Study Area Figure 2a
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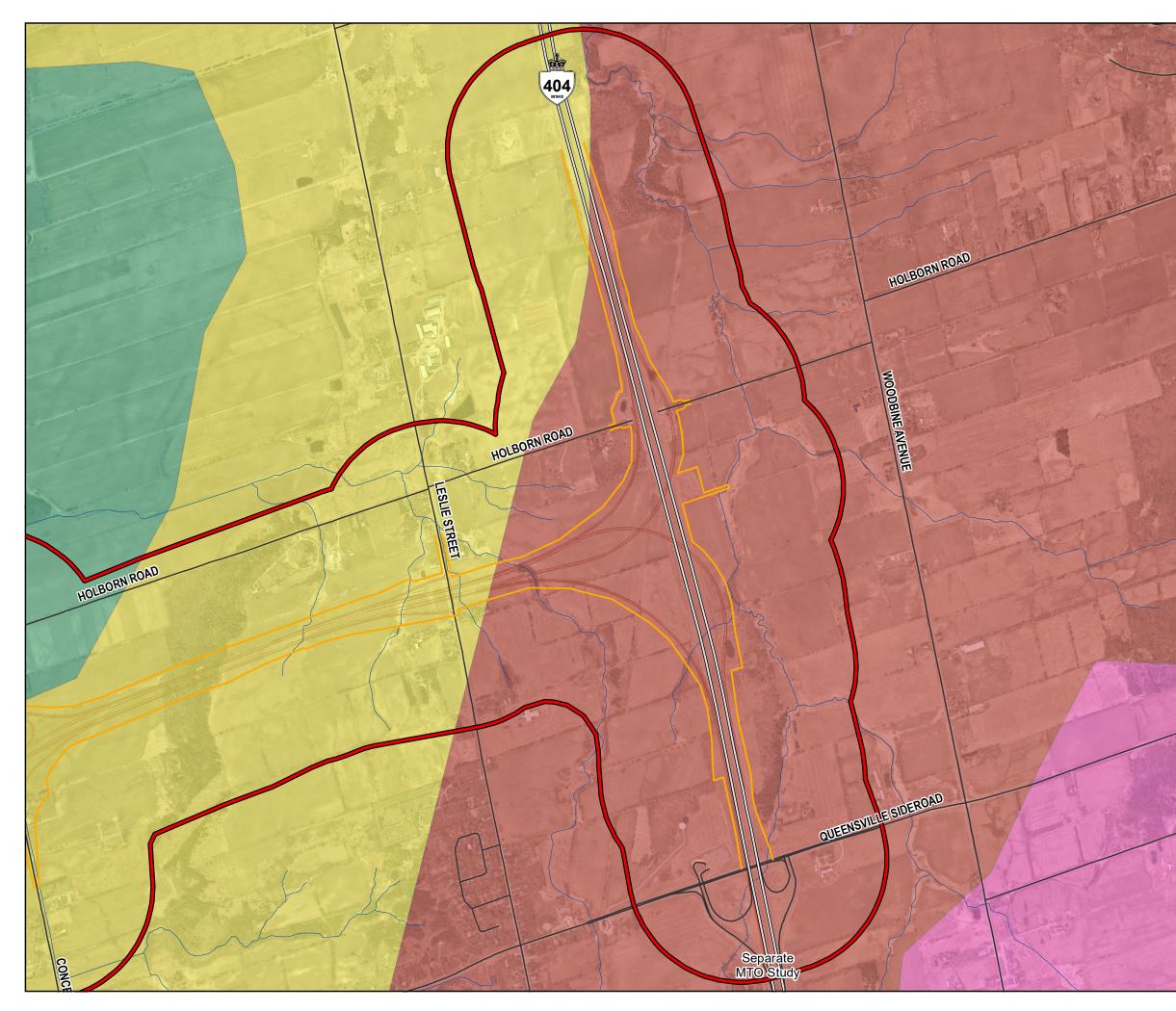




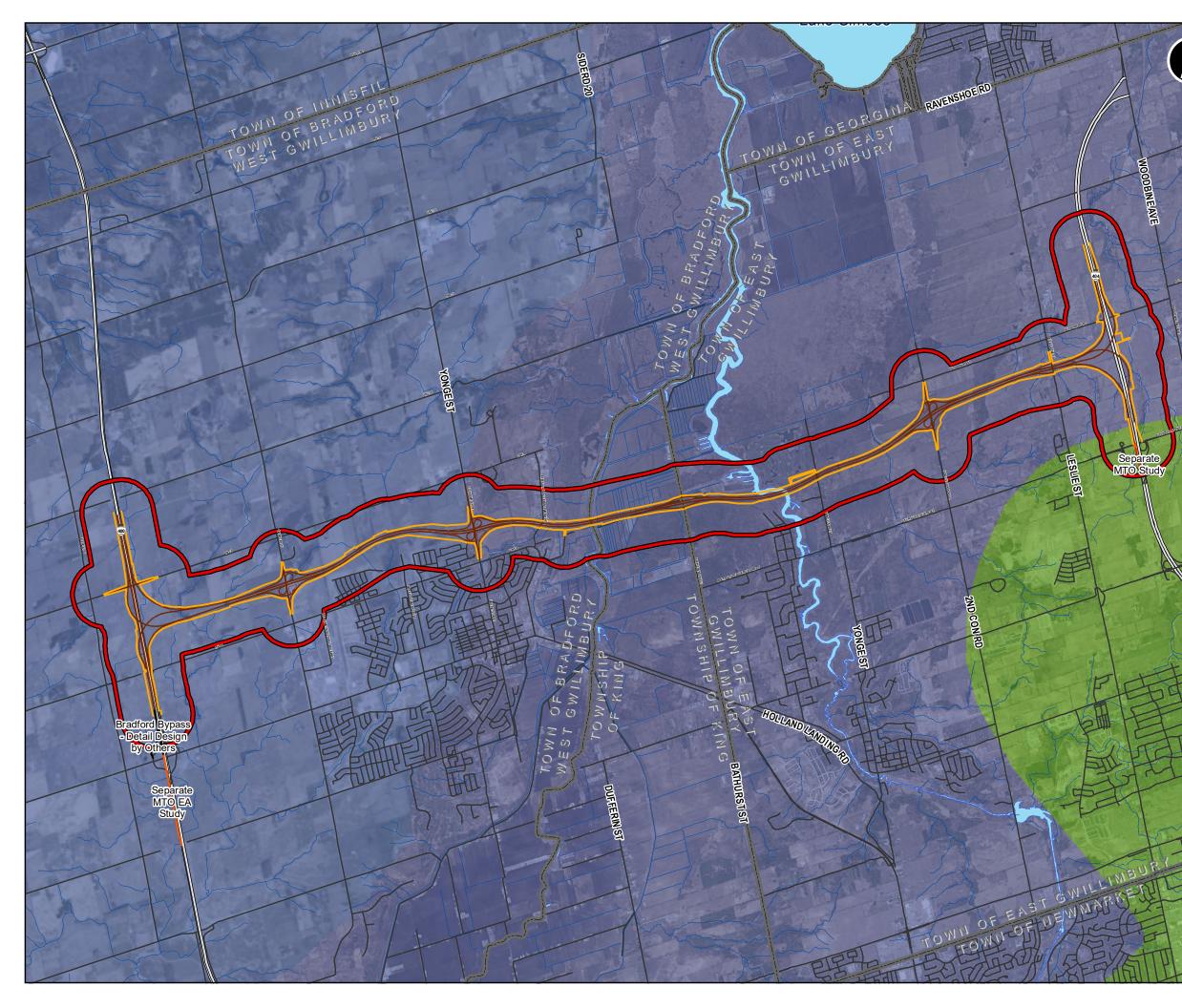
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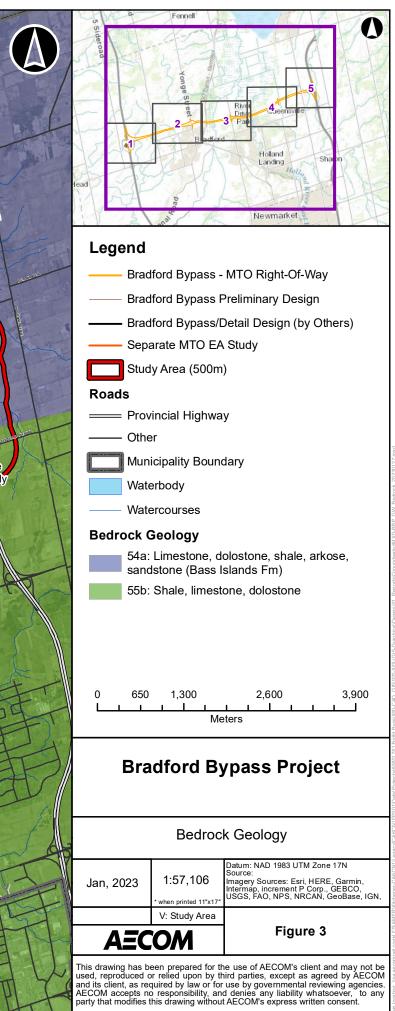


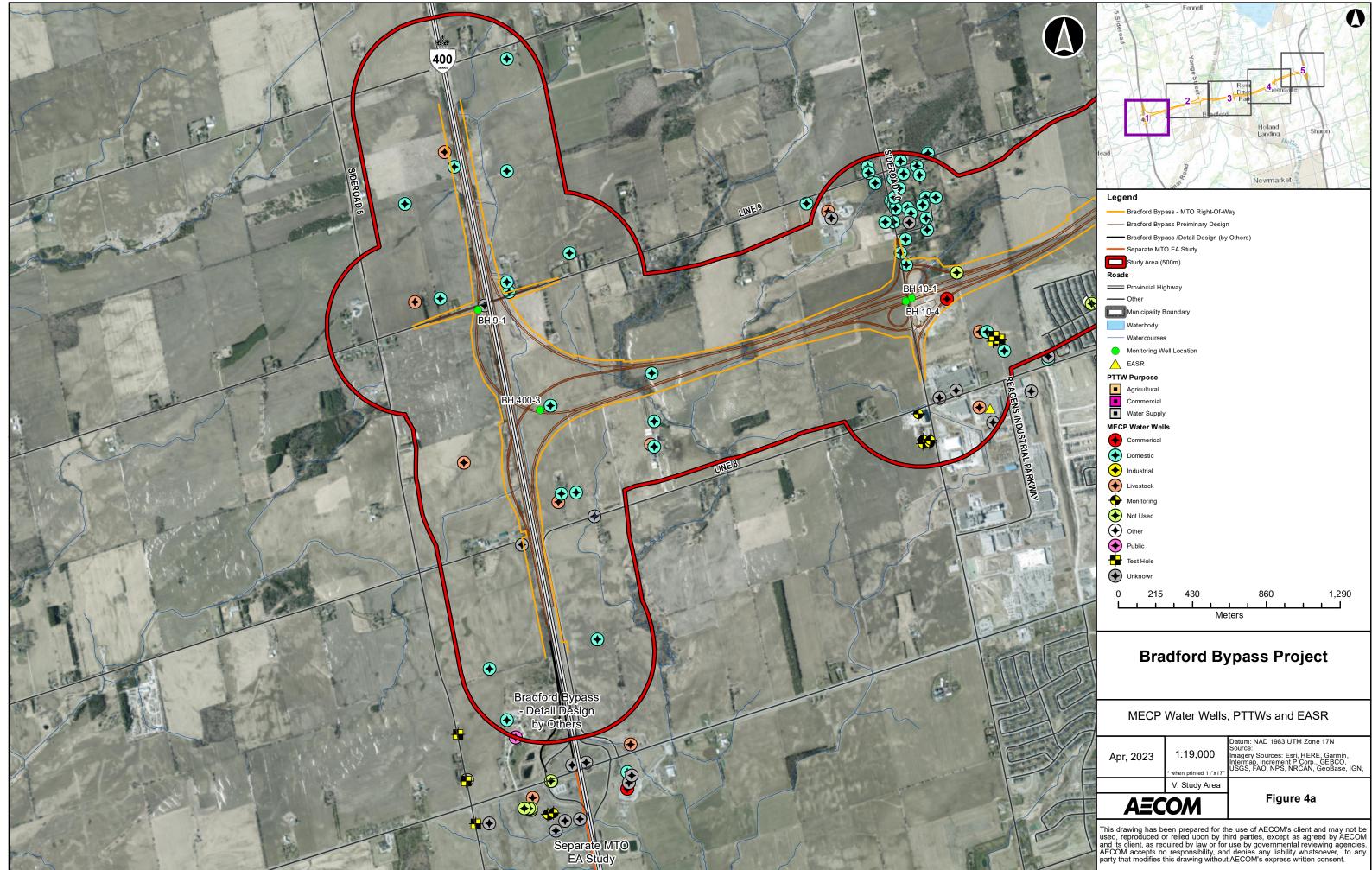


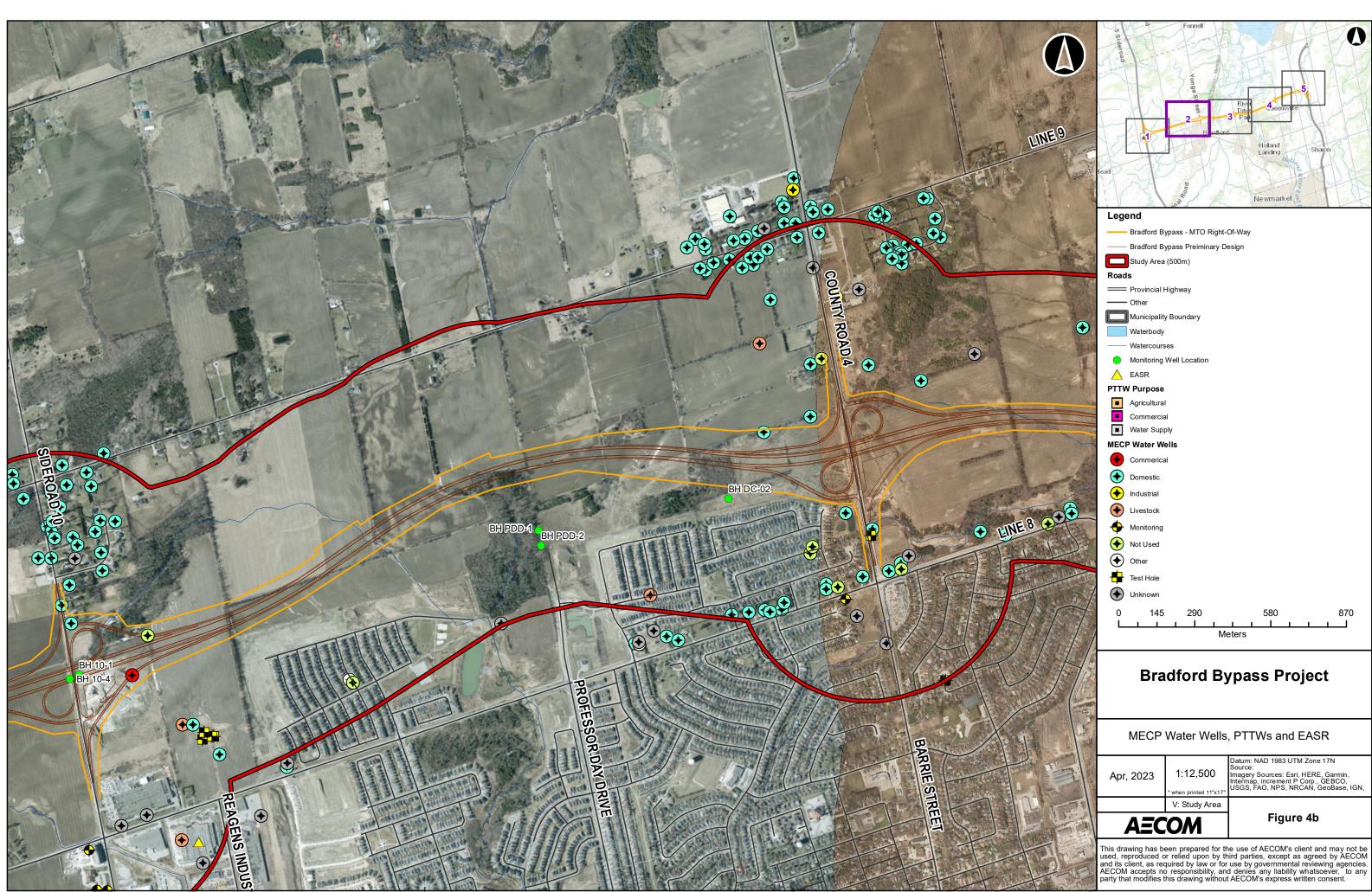


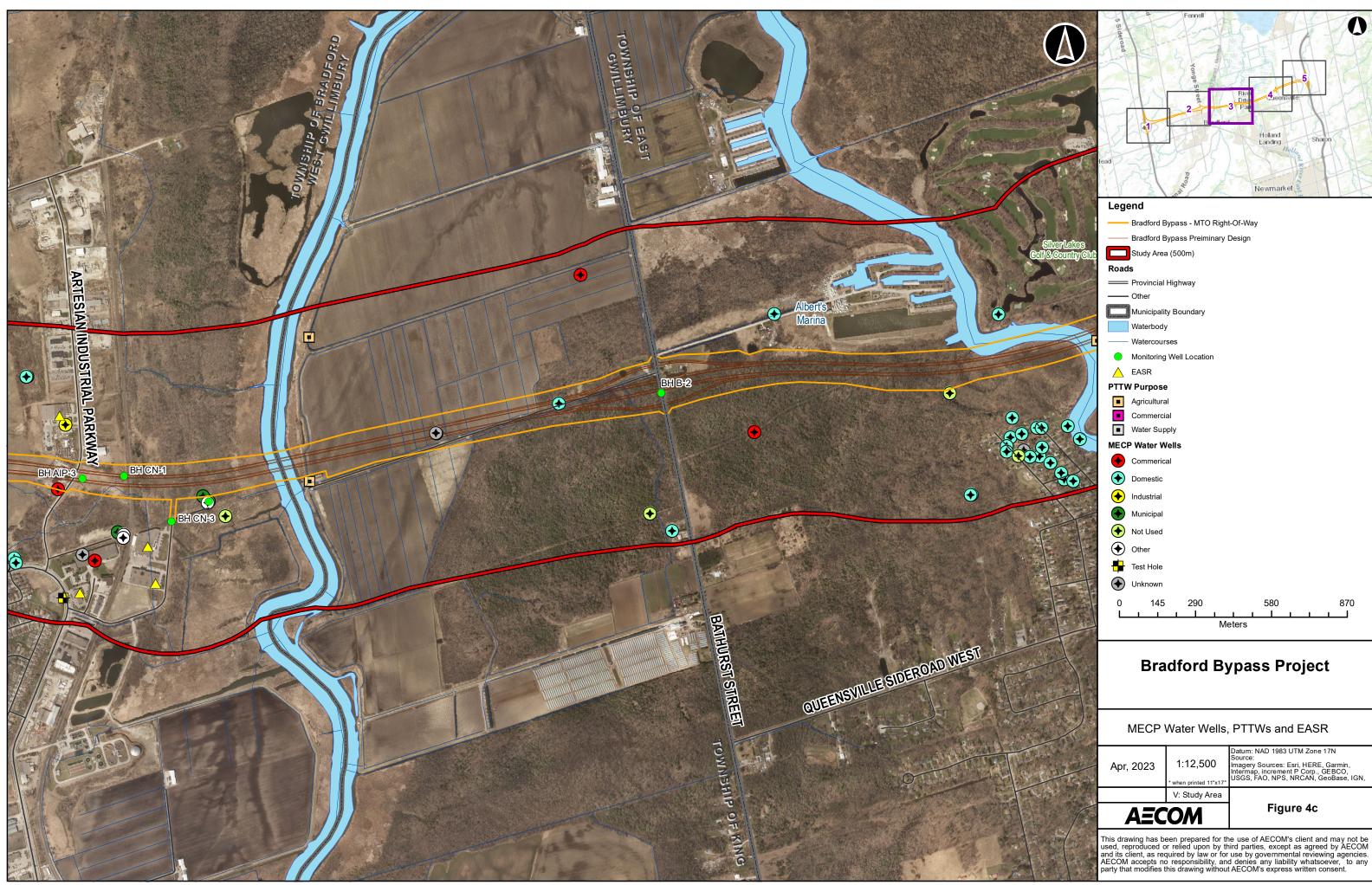
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En a	—— Bradi	ford Bypass F	Preliminary Design										
	—— Sepa	rate MTO EA	Study										
	Study	y Area (500m)										
	—— Wate	rcourses											
杨梅瓜	Wate	rbody											
and the second	Quaternar	y Geology											
All and a second second	2: Be	drock, post-F	Precambrian										
the state	13: S	andy Silt to S	Silt (Newmarket Till)										
122	16: Silt to Silty clay (Kettleby Till)												
		nd 23: Gravel act/Outwash [Precambrian Silt (Newmarket Till) y (Kettleby Till) and Sand (Ice- Deposits) Glaciolacustrine basin and its) vel (Glaciolacustrine pack deposits)										
			Glaciolacustrine basin and										
Derfering	quiet	water depos	its)										
			vel (Glaciolacustrine										
	32: P depo		d Marl (Recent Organic										
	0 185 L I I	370 	Ad Marl (Recent Organic T40 1,110 740 1,110 eters Image: Sources: Esri, HERE, Garmin, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Figure 2e ter use of AECOM's client and may not be ind parties, except as agreed by AECOM										
The state	Brad	dford By	/pass Project										
		Quaterna	ry Geology										
2	Jan, 2023	1:16,000 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Imagery Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,										
1 14		V: Study Area	Eiguro 20										
and the	AEC	OM	Figure 2e										
10-	used, reproduced or and its client, as requ AECOM accepts no	relied upon by th uired by law or for responsibility, and	Datum: NAD 1983 UTM Zone 17N Source: Imagery Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Figure 2e The use of AECOM's client and may not be irid parties, except as agreed by AECOM use by governmental reviewing agencies. d denies any liability whatsoever, to any AECOM's express written consent.										



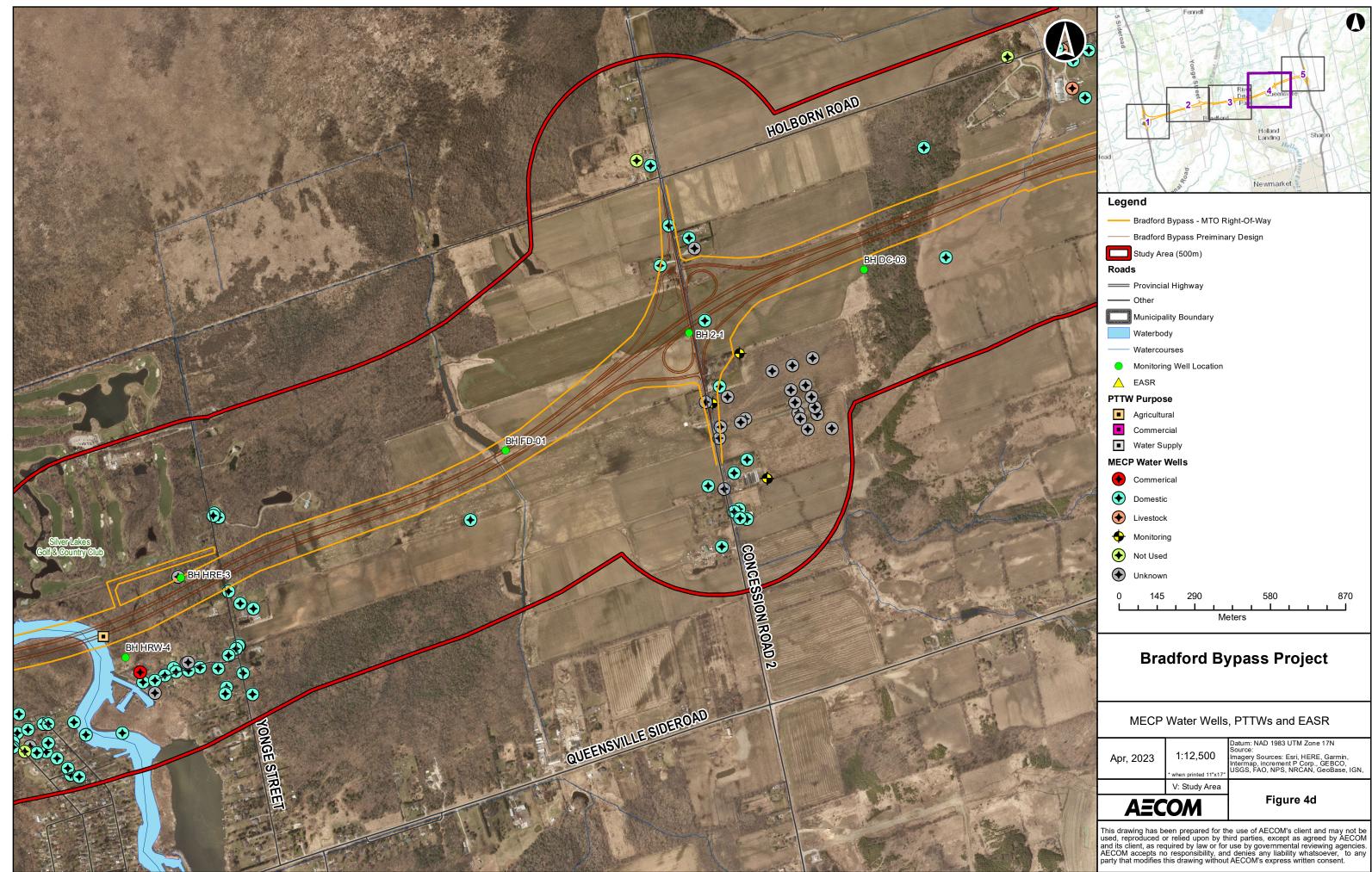






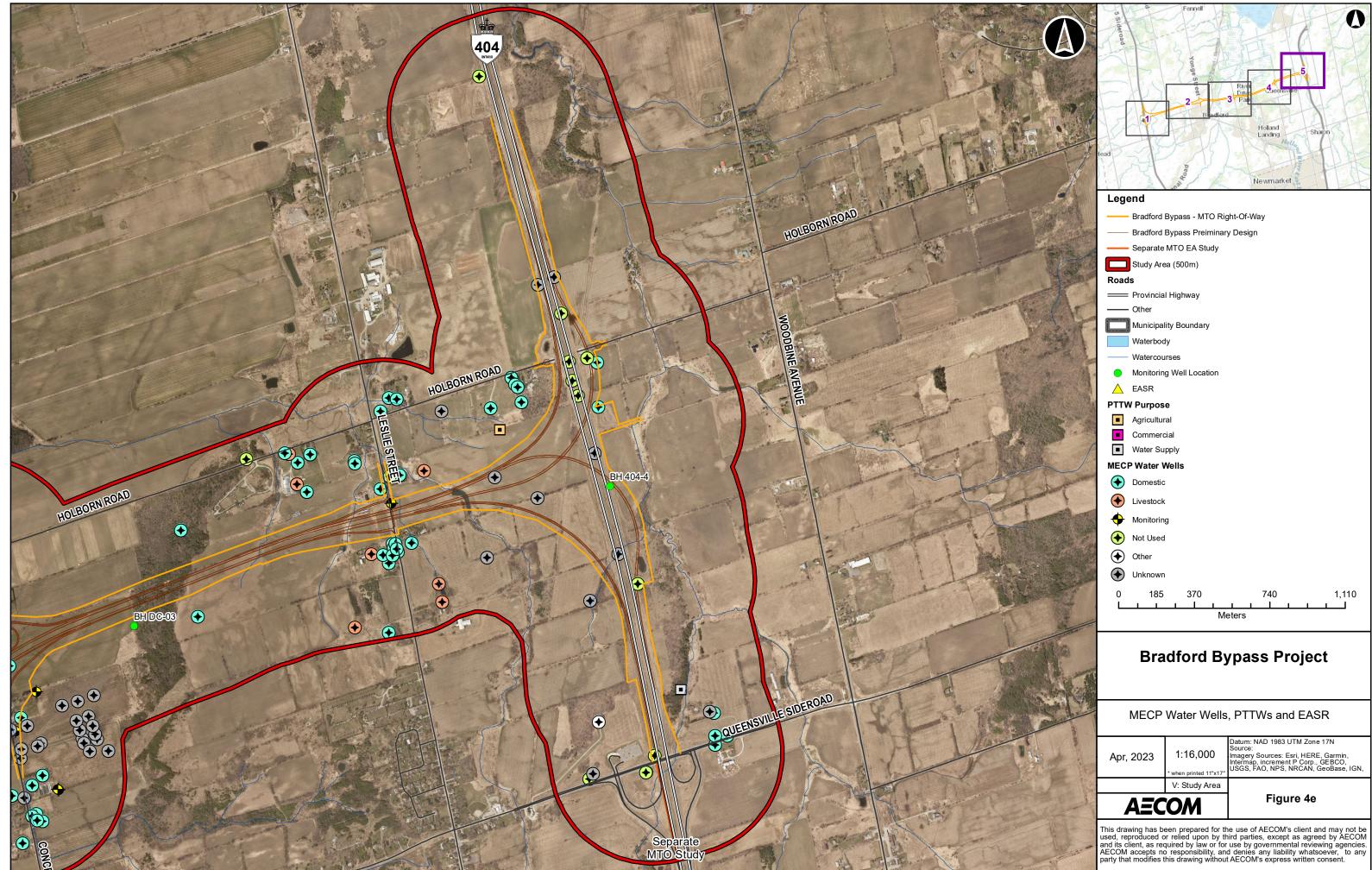


MECP	Water Wells,	PTTWs and EASR
Apr, 2023	1:12,500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Imagery Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,
	V: Study Area	
AEC	MO	Figure 4c
ised, reproduced c and its client, as rec	or relied upon by th quired by law or for	e use of AECOM's client and may not be ird parties, except as agreed by AECOM use by governmental reviewing agencies

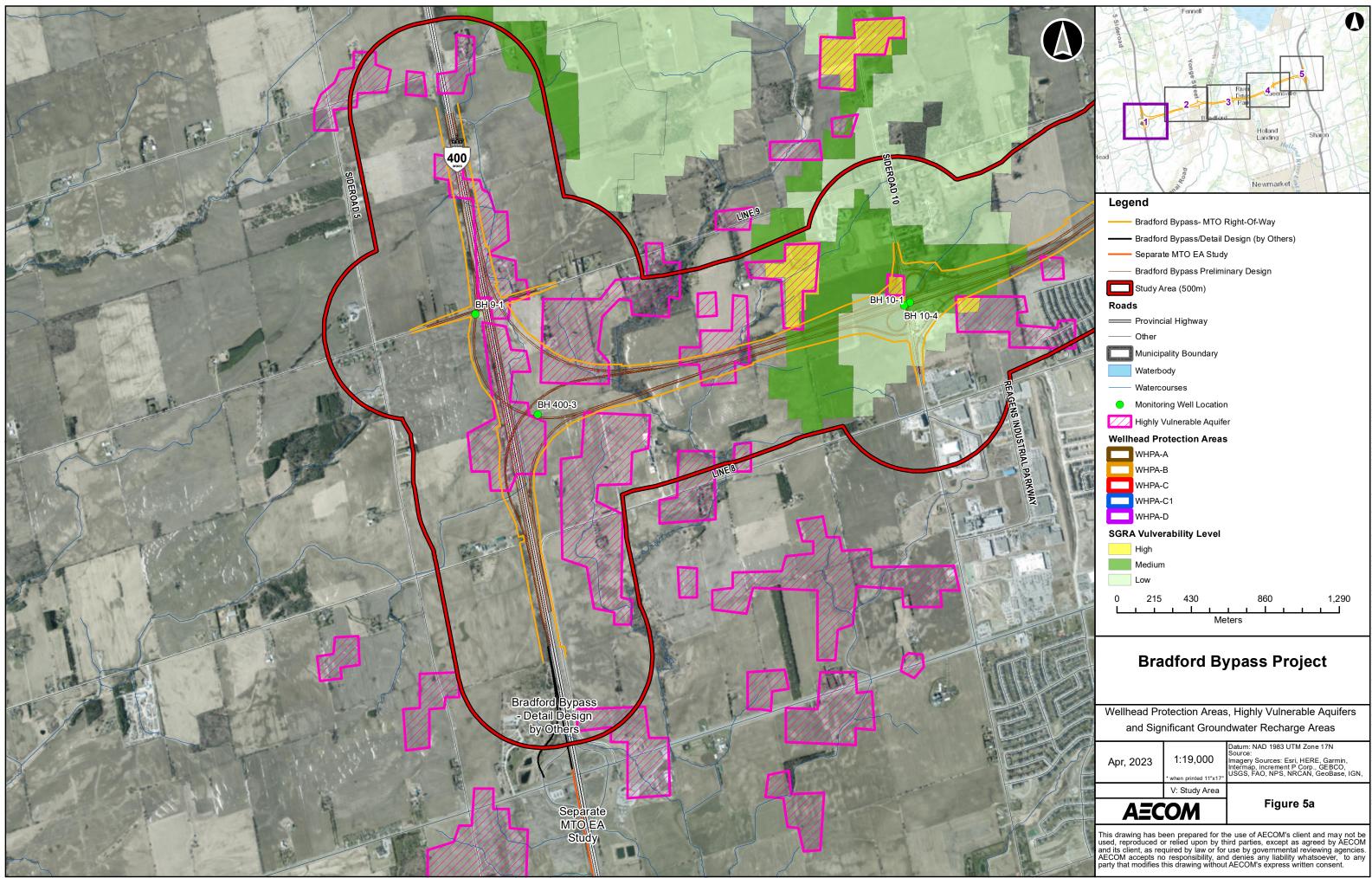


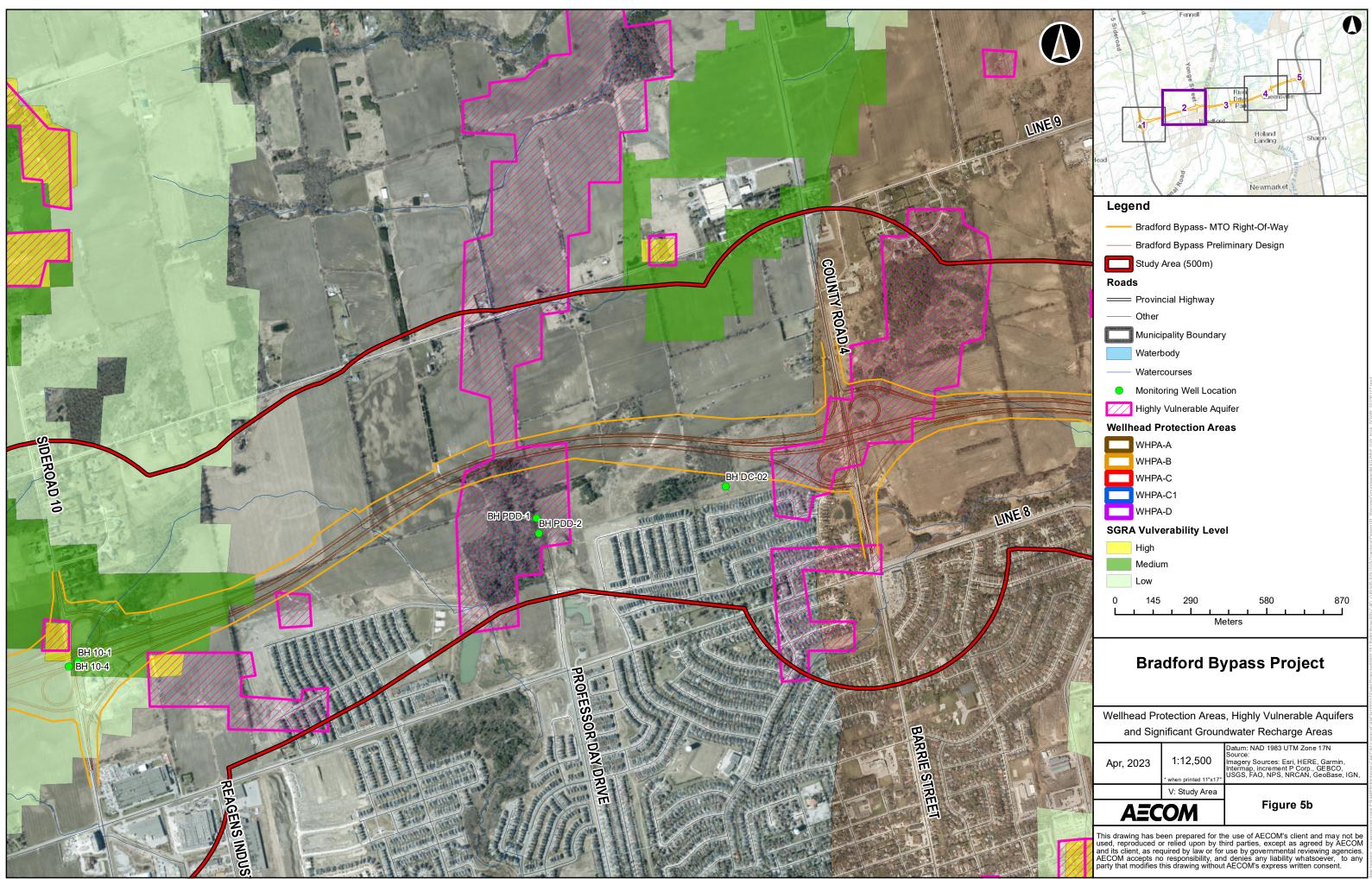
-0g.	
	Bradford Bypass - MTO Right-Of-Way
	Bradford Bypass Preiminary Design
	Study Area (500m)
Road	s
	Provincial Highway
	Other
	Municipality Boundary
	Waterbody
	Watercourses
	Monitoring Well Location
\land	EASR
PTTV	V Purpose
	Agricultural
	Commercial
	Water Supply
MEC	P Water Wells
+	Commerical
\bigcirc	Domestic
\bigcirc	Livestock
÷	Monitoring
\bigcirc	Not Used
\bigcirc	Unknown
0	145 290 580 870
L	<u> </u>
	Meters

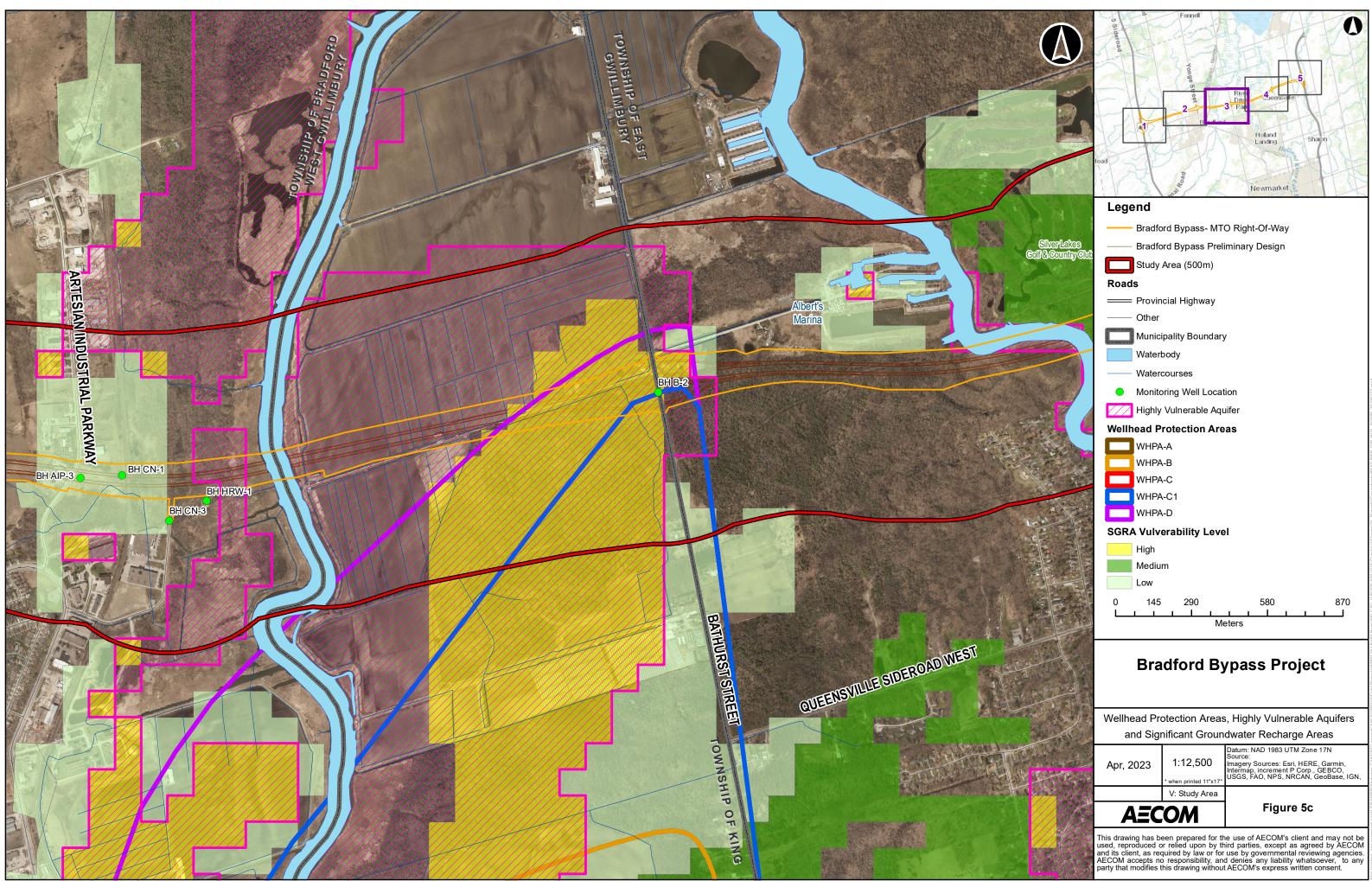
MECP	Water Wells	, PTTWs and EASR
Apr, 2023	1:12,500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Imagery Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,
	V: Study Area	
AEC	MO	Figure 4d

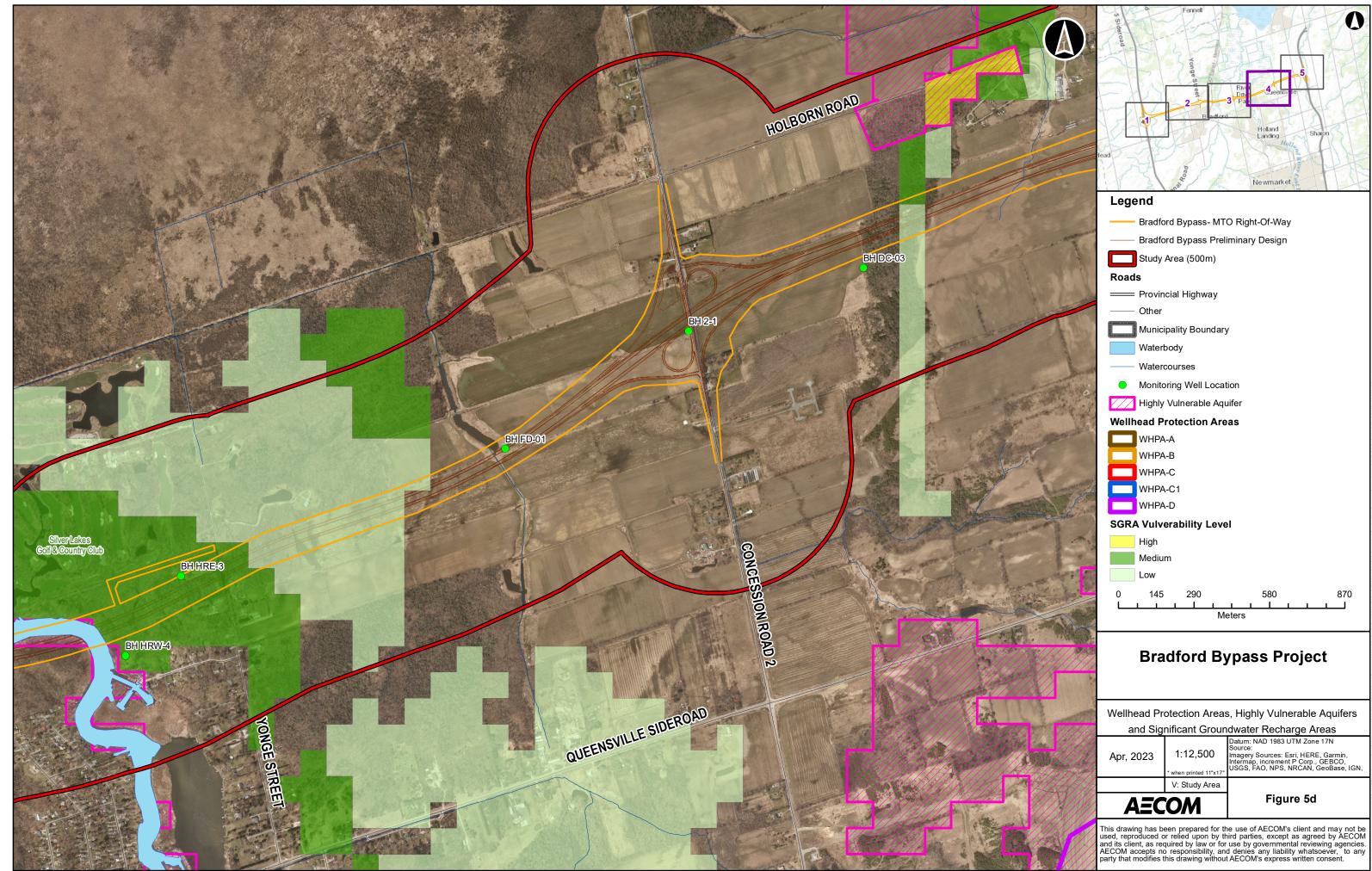


	Bradford Bypass - MTO Right-Of-Way
	Bradford Bypass Preiminary Design
	Separate MTO EA Study
	Study Area (500m)
Road	
	Provincial Highway
(Other
	Municipality Boundary
	Waterbody
	Watercourses
0	Monitoring Well Location
\land	EASR
PTTV	V Purpose
	Agricultural
	Commercial
	Water Supply
MEC	P Water Wells
\bigcirc	Domestic
\bigcirc	Livestock
÷	Monitoring
\bigcirc	Not Used
	Other
\bigcirc	Unknown
0	185 370 740 1,110
	<u> </u>
	Meters

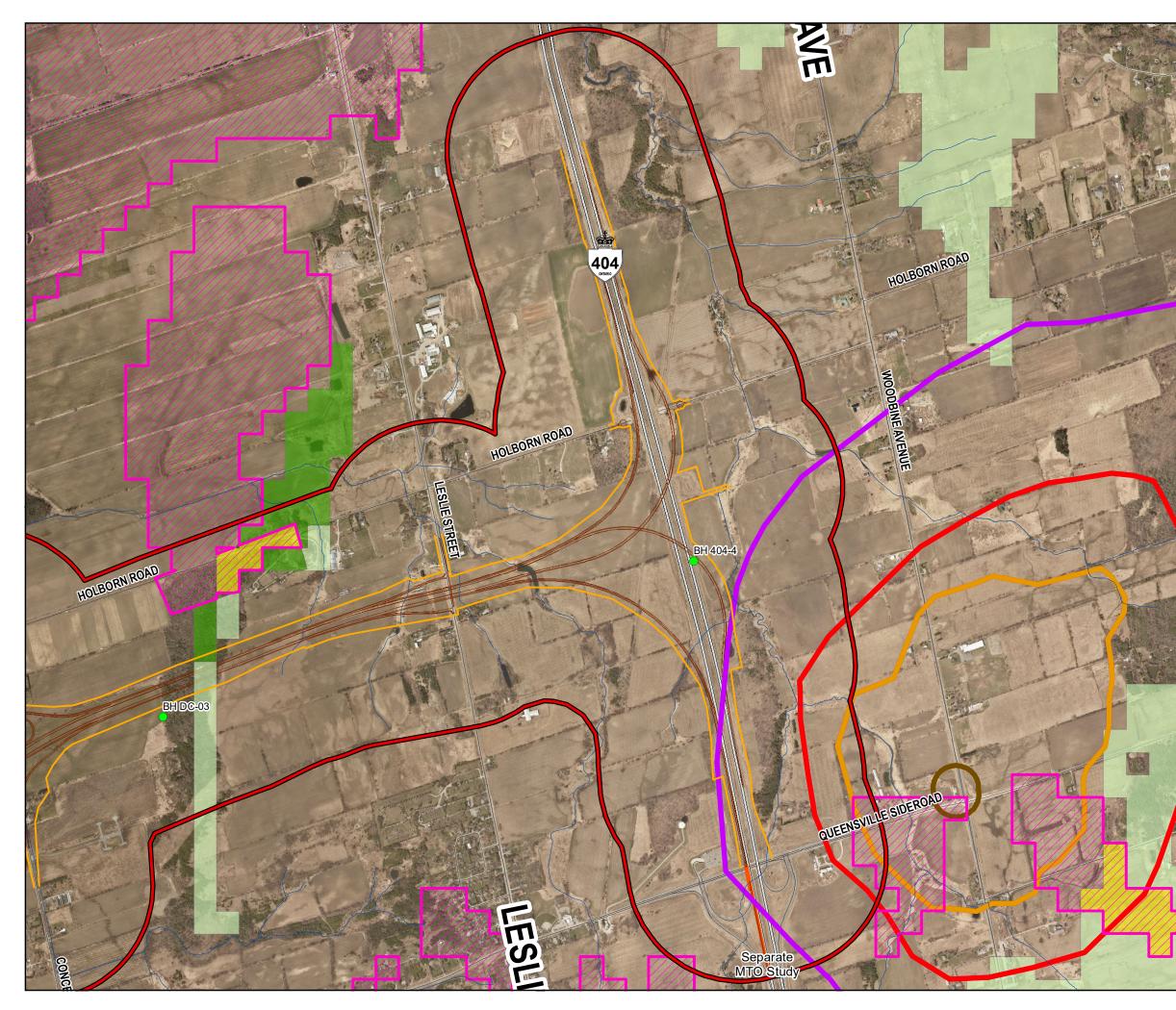


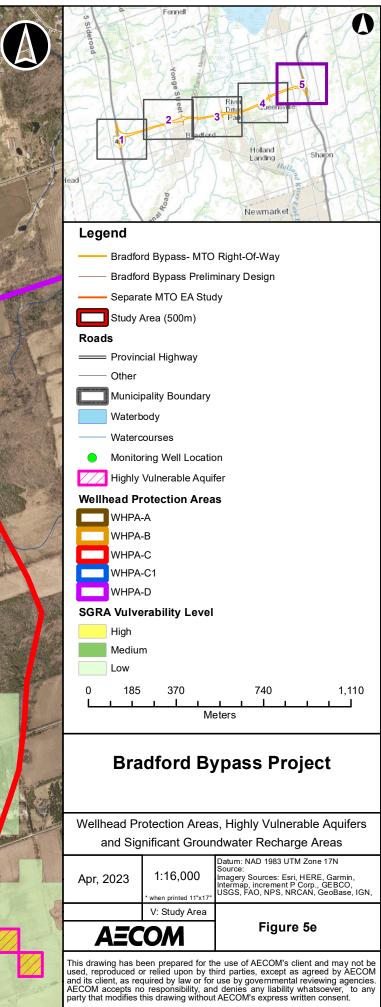






and Sig	nificant Groun	dwater Recharge Areas
Apr, 2023	1:12,500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Imagery Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,
	V: Study Area	
AEC	MO	Figure 5d
		e use of AECOM's client and may not be ird parties, except as agreed by AECOM









Borehole Logs

ROJEC	T 19136074	DRAI],	FCC	ם מו		יסר	HOLE	No. 9	_1	Shoo	t 1 of 4		MET	
W.P.	Assignment No 201	9-E-0048	LOCATION						M Zone 10 (LAT. 4					GINATED E		SS
	Central	HWY BBP - 9th Line	BOREHOLE	_					d Rotary with Ca					MPILED BY	-	СК
TUM		Elevation:275.6 m	_			Apr 13, 20		-	·					ECKED BY		/KJB
	S	OIL PROFILE			SAMPL	ES	ъ	ЦΠ	DYNAMIC CONE RESISTAN		WA	TER CONTENT (%)				
.ev. .pth		DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR STRE × Field Vane Remoulded Pocket Pen Quick Triaxial Unconfined	NGTH (kPa)	- PL W _p 	NMC LL W W 0 NP Nonplastic		GR SA	SI CL	REMARKS
.0	Sandy CLAYEY SIL organics, (FILL) Stiff Brown Moist	Γ (CL), trace gravel, trace		1	SS	8		교 275	20 40 60	0 80 100	2		kN/m ³			
4.9 7		race clay, trace gravel to gra	velly, 44	2	SS	7		210								
			199 (99 4 199 (99 4 19) (99 (99 (99 (99 (99 (99 (99 (99 (99 (3	SS	14		274								
	- 2.3 m: Slow augeri	ing and grinding.		4	SS	17		273			Œ			4 50	37 9	
				5	SS	13		272								
			200 400 400 400 400 400 400 400 400 400	6	SS	20					0					
			100 100 100 100 100 100 100 100 100 100	7	SS	36		271								
								270								
				8	SS	72		269			ОН			26 43	26 5	
	- 7.6 m: Slow augeri	ing and grinding		9	SS	15		268								
								267								
			100 100 100 100 100 100 100 100 100 100	10	SS	12		266								
	Contin	nued on Next Page														L
	Contai	aca on Next aye					+ ³ , X ³	: Num	bers refer to Se	nsitivity o ³ %	6 STR/	AIN AT FAILURE				

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PROJEC	T <u>19136074</u>		F	RECO	ORD (OF BO	ORI	EHO	LE		Ν	1o. 9)-1			Sheet	t 2 of	4			ME	TR	IC	
G.W.P.	Assignment No 2019-E-0048 LC	CATION		N 48870	82.5; E 293	780.6 NAD	083 / M	TM Zone	e 10 (LAT	T. 44.	.1236	55; LON	IG79	.63768	89)		OF	RIG	INAT	ED B	Y	SS		
DIST		REHOL				Stem Aug	er, M	ıd Rota	ry with	Cas	sing								PILED			MCK		
DATUM	CGVD28 Surface Elevation:275.6 m DA	ATE A	pr 12,	2021 -	Apr 13, 2	021	1										_		CKED	BY	-	MTI/K	JB	_
	SOIL PROFILE			SAMP	LES	ЩS	ELEVATION SCALE		MIC COI RESIST				N W	ATER	CON	TENT (%) C LL	UNIT WEIGHT							
		1	~		S	GROUNDWATER CONDITIONS	N SC	× SH	EAR ST Field Vane	REN	IGTH	(kPa)	W,	,	W	W ₁	LINI						REMARKS	
ELEV.	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	NNO	OL	Ð	Remoulde Pocket Pe Quick Tria	ed en			-		0				GR	SA	SI C	L	EMA	
DEPTH		STI	NU	F -	> "N	80	E ≪		Unconfine	d						lastic	Ŷ						R	
	SILTY SAND (SM), trace clay, trace gravel to gravelly,	19214	at				Ξ	20) 40	60	80	100	-	20	40	60	kN/m	n³				_		
265.4 10.2	(TILL) Loose to very dense																							
	Brown to Grey, iron oxide staining																							
	Moist to wet CLAYEY SILT (CL), some sand, trace gravel, (TILL)					_	26	ز ا																
	Stiff Grey		11	SS	11									H H					0	15	46 3	0		
	Moist - 11.0 m: Sand seam encountered within sample			33															0	15	40 3	5		
							26	1																
263.8 11.7	SAND (SP), trace gravel	_ FIELE	1																					
	Compact Grey																							
	Moist		-			_																		
			12	SS	25																			
							26	3																
262.2																								
13.4	SILTY SAND (SM), trace clay, some gravel (TILL) Compact		1				26	,																
	Grey	1	-			_																		
	Moist		13	SS	20								a a						12	11	37	,		
				00	20														12		57			
				_		-																		
							26	1																
260.8 14.8	SAND (SP), trace gravel	1.11.12	! !																					
	Compact Grey																							
	Wet		-			_																		
			14	SS	20		26						0											
259.9 15.7	Sandy CLAYEY SILT (CL), trace gravel	-	A	_			20	1																
	Very Stiff Grey		В																					
	Wet																							
							25)																
	- 16.8 to 18.3 m: Slow drilling.																							
258.5																								
17.1	CLAYEY SILT (CL), trace sand, trace gravel; Hard																							
	Grey Wet																							
							25	3																
			1			-																		
			15	SS	53		25	7						6										
														ľ										
						1																		
							25	j																
	Continued on Next Page	1/1////	44	1	1	1	I							1										
						+³, X³	: Nur	bers re	efer to	Sens	sitivi	ty o ^{se}	% ST	RAIN	AT F	AILURE								

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PROJEC		_			ORD C							lo. 9				neet	3 of 4			MET	
G.W.P.	Assignment No 2019-E-0048	_ LOCATION			2.5; E 2937							55; LONG	679.6	37689)					ED B		SS
	Central HWY BBP - 9th Line	BOREHOLE			Hollow St		er, Mu	d Rota	ary wit	h Ca	sing							NPILE			
DATUM	CGVD28 Surface Elevation:275.6 m	DATEAp					Щ	DYNA	MIC CO	ONE P	PENET	RATION				T (0()	_	CKEI	JBA	MI	I/KJB
	SOIL PROFILE			SAMPL	ES	ATER	SCAL		RESIS	TANC	E PLC	т	PL	N	DNTENT MC	LL	UNIT WEIGHT				S
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	0	IEAR S Field Var Remould Pocket F Quick Tr Unconfin 0 40	ied ² en iaxial ied				NP No	V o onplastic IO 6	W, c 50	ν γ kN/m ³	GR	SA	SI CL	REMARKS
254.9 20.7	CLAYEY SILT (CL), trace sand, trace gravel; Hard Grey Wet SILTY CLAY (CI) Very stiff to hard Grey Moist to wet						255														
			16	SS	25		254						ŀ	-0-1				0	0	44 56	
							253														
							252														
			17	SS	42		251														
							250														
249.4 26.2	CLAYEY SILT (CL) containing laminations Hard Moist Grey						249														
	- 28.0 m: contains silt seams/layers		18	SS	40		248							0							
							247														
245.7 29.9	Sandy SILT (ML), trace clay Very Dense Grey Wet						246														
	Continued on Next Page					+ ³ x ³	: Num	bers r	efer to	Sen	sitivit	y 0 ³ %	STR		FAILI						
						, , ,				2.011		, 57									

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PROJEC	CT 19136074		R	ECO	ORD C	F BC	ORE	но	LE		N	o. 9	-1		Sh	eet	4 of 4			MET	RIC
G.W.P.	Assignment No 2019-E-0048	LOCATION	_		32.5; E 2937							5; LONG	679.6	37689)				GINATI		_	S
DIST	Central HWY BBP - 9th Line	BOREHOLE			Hollow St		er, Mu	l Rota	ry with	Cas	ing							IPILED		MC	
DATUM	CGVD28 Surface Elevation:275.6 m	DATE Ap	r				ш		AIC CO		ENETE	RATION						CKED	BY	MTL	/KJB
	SOIL PROFILE			SAMP	LES	ATER	SCALE		RESIST	ANCE	E PLOT	Г	PL	N	DNTENT MC	LL	UNIT WEIGHT				S
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION S		EAR ST Field Vane Remoulde Pocket Pe Quick Tria Jnconfine 40	e ed en axial ed				NP No	V o onplastic IO 6		γ kN/m ³	GR	SA	SI CL	REMARKS
	Sandy SILT (ML), trace clay Very Dense																				
	Grey Wet		19	SS	100/0.15		245							D				0	32	64 4	
							244														
							243														
							242														
241.7			20	SS	102/0.22																
33.9	End of Borehole Note: 1. Water level not recorded upon completion of dri due to introduction of drilling mud. 2. A monitoring well was installed approximately (north of Borehole 9-1. 3. Water level in standpipe piezometer measured depth of 1.5 m on December 10, 2021.	3 m					241														
							240														
							239														
							238														
							237														
							236														
						3 3 ر	· NI		forte	Sor	, .itiit	o ^{30/}	CTD /								
						+³, Χ³	. num	, ci S 16	лет LU	Jens	muvily	0-%	UTR/	AIN AI		JINE					
·																					

ROJEC					ORD (lo. 1			Sheet	t 1 of 3				TRIC
W.P.		LOCATION	-		5.4; E 2963						394; LON	G79.	606104)				TED B		SS
ST ATUM	Central HWY BBP- 10th SR Line CGVD28 Surface Elevation:283.0 m	DATE Ap			Hollow S		er, Mu	d Rota	ary and	Casing						MPILE ECKEI			AY <jb< th=""></jb<>
	SOIL PROFILE			SAMPI			Щ	DYNA	MIC CON	IE PENE	TRATIO	N							(30
	SOIL PROFILE			SAIVIFI		ATEF ONS	SCALE		RESISTA	NCE PL	.OT	- PL	N	MC LL					ų
LEV. EPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION (X⊕∎●O	Field Vane Remoulded Pocket Per Quick Triax Unconfined	ial		W _p	NP No	V W _I o onplastic 0 60	Υ KN/m ³		SA	SI C	
0.0	TOPSOIL (200mm)	ماند <u>ماند</u>									1.00		1		NN/III				
2.8 .2	SILTY SAND (SM), trace organics Loose to compact Brown Moist to wet		1	SS	7		-												
			2	SS	14	™	282					(S						
1.5 .4	CLAYEY SILT (CL), trace sand, trace gravel																		
	Very stiff Brown to grey, iron oxide staining Moist		3	SS	17		281						њч			0	3	48 4	9
			4	SS	16							c							
0.0 .0	CLAYEY SILT (CL), some sand to sandy, trace to s	ome					280												
	gravel (TILL) Stiff to very stiff Grey Moist		5	SS	14							0							
			6	SS	15		279												
			7	SS	17	N	278					E	H			2	19	54 2	5
							277												
			8	SS	17														
5.8 .2	SILTY SAND (SM), trace gravel, some clay, contair clayey silt layers, (TILL)	15					276												
	Dense to very dense Grey Moist		9	SS	57		275												
		1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1																	
		1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4					274												
		100 100 100	10	SS	100							ан				9	50	28 1	3
	Continued on Next Page	n ach 1 A					·	. I	ofor t- C	orati	ity - 21			FAILURE					

T. Central HWY BBP- 10th SR Line BOREHOLE TYPE Hollow Stem Auger, Mud Rotary and Casing COMPILED BY AY CGVD28 Surface Elevation:283.0 m DATE Apr 29, 2021 - Apr 30, 2021 CHECKED BY KJB SOIL PROFILE SOIL PROFILE SAMPLES UM CONE PENETRATION RESISTANCE PLOT PAREMULTION WATER CONTENT (%) PL NMC LL WP Soil PROFILE SAMPLES UM CONE PENETRATION RESISTANCE PLOT SHEAR STRENGTH (kPa) Protoch Panital VATER CONTENT (%) PL NMC LL WP WATER CONTENT (%) PL NMC LL WP VALUE ON WATER CONTENT (%) PL NMC LL WP Y PROV PAREMULATION RESISTANCE PLOT WATER CONTENT (%) PL MUK LL WP WATER CONTENT (%) PL MUK LL WP PAREMULATION RESISTANCE PLOT PAREMULATION RESISTANCE PLOT MUK LL WP PAREMULATION RESISTANCE PLOT PAREMULATI	OJEC	T <u>19136074</u>		R	ECC	ORD C	F BC	ORE	HOLE		No.	10	-1		Sheet	2 of 3		MET	RIC
Image: 100 Output Section Sectin Sectin Section Section Sectin Section Section Section Section S	V.P.			-)5.4; E 2963	08.4 NAD	83 / MT	M Zone 10 (L	AT. 44.1	123894;	LONG	-79.60	6104)		ORI	GINATED	BY .	SS
Solt, PROFILE SAMPLES Bigged								er, Mu	d Rotary ar	d Cas	ing								
March DESCRIPTION Start Shot (SM) (SAC) space to modely, contains days of lines angenting and gineting March Start Shot (SM) (SAC) space to modely, contains days of lines angenting and gineting March Start Shot (SM) (SAC) space to modely, contains days of lines angenting and gineting March March <td>ТИМ</td> <td>CGVD28 Surface Elevation:283.0 m</td> <td>DATE Ap</td> <td></td> <td></td> <td></td> <td>21</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ECKED BY</td> <td>KJE</td> <td>3</td>	ТИМ	CGVD28 Surface Elevation:283.0 m	DATE Ap				21										ECKED BY	KJE	3
SUTY SNU((SM), Issue gravel, full.) Grave all periods (TLL) Grave (TLL) Grave all periods (TLL) Model 7 50 7 273 273 01 6 51 30 13 - 10.7 m: Slow algoring and grinding 7 8 11 35 94.004 272 271 01 6 51 30 13 - 10.7 m: Slow algoring and grinding 7 8 11 35 94.004 272 271 01 6 51 30 13 - 13.7 m: Slow algoring to 15.24 m 13 35 47 286 286 04 7 50 30 13 - 15.2 m: Slow algoring to 15.24 m 15		SOIL PROFILE			SAMP	LES	NS	CALE					WATE PL	ER CON NM	TENT (%) C LL	GHT			
SUTY SNUE (SM), Eace to some gravel (TIL) mode - 18.3 m. Store sugering to 15.24 m - 18.3 m. Store sugering to 15.2	EV. PTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDW ^A CONDITIO	ELEVATION S	Field Va Remou Pocket Quick 1 Unconf	ane Ided Pen Triaxial ined			 N	o- IP Nonj	olastic	Ŷ	GR SA	SI CL	
- 10.7 m: Slow augering and grinding - 10.7 m: Slow augering and grinding - 13.7 m: Slow augering to 15.24 m - 15.2 m: Slow augering to 15.24 m - 15.3 m: Contains daysy slit layers - 15.3 m: Contains daysy slit layers - 18.3 m: Slow augering to 15.24 m - 18.3 m		clayey silt layers, (TILL) Dense to very dense Grey	S																
- 13.7 m. Stow augering to 15.2 m - 15.2 m. Stow augering to 15.2 m - 18.3 m. Stow augering to 18.2 m - 19.4 m 10.4				11	SS	54/0.09		070											
- 13.7 m: Slow augering - 13.7 m: Slow augering to 15.24 m - 15.2 m: Contains cityey all layers - 15.3 m: Contains cityey all layers - 18.3 m: Slow augering to 18.29 m -								272											
- 13.7 m: Slow augering - 13.7 m: Slow augering to 15.24 m - 15.2 m: Slow augering to 15.24 m - 15.3 m: Contains clayey silt layers - 15.3 m: Contains clayey silt layers - 15.3 m: Contains clayey silt layers - 15.3 m: Slow augering to 15.24 m - 15.3 m: Contains clayey silt layers - 15.3 m: Slow augering to 15.24 m - 15.3 m: Slow augering to 15.29 m - 18.3 m: Slow augering to 18.29 m - 18.3 m: Slow augering to 18								271											
- 13.7 m: Slow augering - 13.7 m: Slow augering to 15.24 m - 15.2 m: Slow augering to 15.24 m - 15.3 m: Contains clayey salt layers - 15.3 m: Contains clayey salt layers - 15.3 m: Slow augering to 18.29 m - 18.3 m: Slow augering to 18.29 m - 19.4				12	SS	82							он				6 51	30 13	
- 15.2 m: Slow augering to 15.24 m - 15.2 m: Contains clayey sill layers - 15.3 m: Slow augering to 18.29 m - 18.3 m: Slow aug								270											
- 15.2 m: Slow augering to 15.24 m - 15.3 m: Contains clayey silt layers - 15.3 m: Slow augering to 18.29 m - 18.3 m: Slow augering to 18.29 m		- 13.7 m: Slow augering		13	SS	47		269											
- 15.2 m: Slow augering to 15.24 m - 15.3 m: Contains clayey silt layers - 15.3 m: Slow augering to 18.29 m - 18.3 m: Slow augering to 18.29 m								268											
3 15 SS 1000.28 266 0H 7 50 30 13 7 SILTY SAND (SM), trace to some gravel (TILL) Very dense Grey Moist 16 SS 79 266 0H 0H 7 50 30 13		 15.2 m: Slow augering to 15.24 m 15.3 m: Contains clayey silt layers 		14	SS	93													
3 3 3 3 3 3 3 3 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5			100 100 100 100 100 100 100 100 100 100					267											
7 SILTY SAND (SM), trace to some gravel (TILL) 7 8 265 Very dense Grey Moist - 18.3 m: Slow augering to 18.29 m 265				15	SS	100/0.28		266					ан				7 50	30 13	
- 18.3 m: Slow augering to 18.29 m		Very dense Grey						265											
			100 100 100 100 100 100 100 100 100 100	16	SS	79							0						
			1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4					264											
Continued on Next Page																			

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PROJEC					ORD (. 10				heet	3 of 3			MET		
G.W.P. DIST	Assignment No 2019-E-0048 L Central HWY BBP- 10th SR Line E		-		5.4; E 296 Hollow S								LONG	i79.6	06104	l)				ted b Ed by	Y <u></u>	SS ,	
DATUM					Apr 30, 20				tary		2311	9							ECKE		KJE		
	SOIL PROFILE			SAMP	LES	щ.	SCALE	DYN	AMIC RE	CONI	E PEN	IETRA PLOT	ATION	WA	TER (ONTE	NT (%)	 					
		۷.	æ		ES	GROUNDWATER CONDITIONS	N SC		Field	R STR d Vane	ENGT	ſH (kP	Pa)	PL Wp		NMC W	LL Wi	UNIT WEIGHT		64			REMARKS
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	ROUN	ELEVATION	X⊕∎●O	Qui	houlded ket Pen ck Triaxia	al					Vonpla		Y	GR	SA	SI CL		REMA
DEFIN		·0 –	z		"	0	ELEV			onfined 40 6	60 8	30 10	00	2		40	60	kN/m³					_
	SILTY SAND (SM), trace to some gravel (TILL) Very dense																						
	Grey Moist						263																
			i E																				
							262																
						_																	
			17	SS	74																		
							261																
								K															
259.8 23.2	Gravelly SAND (SP), some silt						260																
23.2	Very Dense Grey																						
	Wet - 23.2 to 24.4 m: Slow augering and grinding																						
							259				ŀ												
							200																
						-																	
			18	SS	100/0.25																		
							258																
257.0 26.0	• 26.0 to 27.4 m: Slow augering and grinding		c.				257																
20.0	CLAYEY SILT-SILT (CL-ML) trace sand, trace gravel (TILL)																						
	Hard Grey																						
	Moist																						
							256																
			19	SS	100/0.25									0									
255.2 27.8	End of Borehole	LIN L	k				0.75									-	+						
	Notes: 1. Water level measured at a depth of 0.6 m (Elev. 28	2.4					255																
	 m) prior to introducing water for mud rotary . Water Level measured at a depth of 0.9 m (El. 28) m) after the installation of monitoring well. 	2.1																					
	m and the instantion of monitoring well.																						
							254																
							L				I				I								
						+3, X3	: Num	bers	refe	r to S	ensiti	ivity	0 ³ %	STR	AIN A	T FAI	LURE						
L																							

.W.P. IST <u>(</u> ATUM	Assignment No 2019-E-0048 LOC	ATION				OF BC					No. 1			eet 1				1ETF	
-	Central HWY BBP- 10th SR Line BOR	ATION	_			tem Auge						IG79	9.606558)		_	GINATED		<u>S</u> AY	S
					May 04,		er, iviu		y anu v	Jasing	1				_	CKED B		KJB	
	SOIL PROFILE		1	SAMPL			ш	DYNAN	IIC CON	E PEN	ETRATIO	NW	ATER CONTENT	(%)	_				
ELEV. EPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	EVATION SCALE		RESISTA EAR STF ield Vane temoulded ocket Pen Quick Triax Inconfined	RENGT	H (kPa)	- Pl W -	NMC W NP Nonplastic	UL W, 	< UNIT WEIGHT	GR SA	si	CL	REMARKS
	Topsoil-ORGANIC SILT (OL) Soft Black Moist	<u></u>	1	SS	3		립 282		40	60 8	0 100		20 40 60)	<u>kN/m³</u>				
81.6		<u></u>				V													
	CLAYEY SILT (CL), some organic silt pockets in the upper zone Firm to stiff Brown, iron oxide staining Moist		2	SS	4		281												
			3	SS	7								F⊕⊣						
279.3			4	SS	13		280												
3.0	Sandy CLAYEY SILT (CL), some gravel (TILL) Stiff to hard Brown to grey, iron oxide staining Moist		5	SS	19		279												
	 - 3.8 to 4.4 m: Silty sand seams encountered within sample. 		6	SS	33		278					Ф				16 49	2	78	
	- 4.6 to 5.2 m: Slow augering and grinding.		7	SS	14														
	5.6 to 7.6 m: Slow Augering SILTY SAND (SM), some clay, trace gravel (TILL) Dense to very dense Grey						277												
	Moist - 6.2 to 9.1 m: Slow Augering	1	8	SS	48		276												
		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4					275												
		20 4 20 4 20 4 20 4	9	SS	72		274												
		2 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4	10	SS	63		273					0				3 51	32	2 14	
	Continued on Next Page																		

ROJEC	T 19136074		R	ECC	ORD C)F BC	ORE	HO	LE		No. 1	0-4		S	heet	2 of 4		MET	RIC
i.W.P.	Assignment No 2019-E-0048	LOCATION	١	N 488708	7.9; E 2962	72.1 NAD	83 / MT	M Zone	10 (LAT	. 44.12	3737; LON	IG79	.60655	58)		ORI	GINATED E		SS
IST	Central HWY BBP- 10th SR Line				Hollow S		er, Mu	d Rota	ry and	Casing	9						/PILED BY		
DATUM	CGVD28 Surface Elevation:282.3 m	DATE M	ay 03,	2021 -	May 04, 2	2021											CKED BY	KJE	3
	SOIL PROFILE			SAMP	LES	AS AS	CALE				ETRATIO PLOT	N W	ATER	CONTEN NMC	NT (%) LL	. THS			
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	түре	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE		Remoulder Pocket Per Quick Tria: Inconfiner	d n kial d	H (kPa)	W,	NP	W 0 Nonplas	W, 	 UNIT WEIGHT 	GR SA	SI CL	
	SILTY SAND (SM), some clay, trace gravel (TILL) Dense to very dense						ш	20					1	1		kN/m ³			
	Grey Moist	7 4																	
							272												
					00/0.45														
			11	SS	62/0.15														
							271												
			12	SS	58/0.15		270												
							269												
			13	SS	98														
				00	50														
		40					268												
		4																	
		4 4 4					267												
			14	SS	73							а					4 50	34 12	
		1 2 2																	
		1 2 2					266												
		1 2 4																	
			15	SS	87														
							265												
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1	264												
			16	SS	76														
							263												
							203												
	Continued on Next Page	A				+3 √3	· Num	oers re	fer to 9	Senciti	vity o ³	% ९ ७		AT FAII	LIRE				

ROJEC	T 19136074		R	ECC	RD C)F BC	DRE	HOL	E	Ν	lo. 10)-4		She	et 3	3 of 4		ME	TRIC
i.W.P.	Assignment No 2019-E-0048	LOCATION	<u>_</u>	488708	7.9; E 2962	72.1 NAD	83 / MTN	I Zone 1) (LAT. 4	4.1237	37; LON	G79.6	06558)				GINATED	BY	SS
IST	Central HWY BBP- 10th SR Line				Hollow S		er, Mud	Rotary	and C	asing							IPILED B		AY
ATUM	CGVD28 Surface Elevation:282.3 m	DATE Ma			May 04, 2						TRATION					_	CKED BY	′	JB
	SOIL PROFILE			SAMPL	ES	ATER	CALI				TRATION OT	- PL	N	NTENT (MC	LĹ	UNIT WEIGHT			
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	Re Po Qu O Un	R STRI Id Vane moulded ket Pen ick Triaxia confined 40 6	I		W _p		/ o nplastic 0 60	W, 	Y kN/m ³	GR SA	SI CI	-
	SILTY SAND (SM), some clay, trace gravel (TILL) Dense to very dense	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																	
	Grey Moist																		
							262												
							202												
	- 20.7 to 21.3 m: Grinding of casing and slow																		
	advancement	4																	
							261												
		4	17	SS	80														
	- 22.0 to 24.4 m: Grinding of casing and slow advancement																		
							260												
							259												
							258												
		A D										_							
			18	SS	91							ан					6 56	26 12	2
		4 A A																	
							257												
		1																	
		1																	
256.1 26.2	- 26.2 to 27.4 m: Grinding of casing and slow						050												
-0.2	advancement SILTY SAND (SM), some gravel, (TILL)						256												
	Very dense Grey																		
	Moist, slow augering																		
							255												
			19	SS	100														
							254												
							253												
	Continued on Next Page					+3 v3	· Numb	ers refe	r to Se	noitivi	tu 0 ³⁰	OTD		FAILUF	2E				

C	Ontario 🕅																		V	sp g	OLDER
PROJEC	CT <u>19136074</u>		R	ECO	ORD C	OF BO	ORE	HC	٦L	E	Ν	lo. ′	10-	4		Sh	eet	4 of 4		ME	FRIC
G.W.P.		CATION	_		37.9; E 2962								NG	-79.60	6558)						SS
DIST DATUM	Central HWY BBP- 10th SR Line BOF CGVD28 Surface Elevation:282.3 m DA				Hollow S May 04, 2		er, Mu	d Ro	tary	and C	asing								IPILED E	-	IY IB
DATOM	SOIL PROFILE		1	SAMP			щ	DYN	AMIC	CONE	PENE	TRATI	ON	WAT		ONTEN ⁻	F (%)				
					1	GROUNDWATER CONDITIONS	SCALE	s		SISTAN R STRE		LOT H (kPa)	_	PL Wp	N	MC V	LL Wi	UNIT WEIGHT			Š
ELEV.	DECODIDION	ATA	BER	ТҮРЕ	LUES	VDNU	NOL	X⊕∎●O	Fiel Rer	d Vane houlded ket Pen		()				0		53	GR S	A SI CL	REMARKS
DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	Σ	"N" VALUES	GRO	ELEVATION		Qui Unc	ck Triaxia onfined						onplasti		Ŷ			RE
	SILTY SAND (SM), some gravel, (TILL)	19514			-		Ш	2	20	40 6	0 80	0 100	_	20) 4	10 E	0	kN/m ³			
	Very dense Grey																				
	Moist, slow augering																				
							252														
251.6			20	SS	100/0.17																
30.7	End of Borehole Notes:					-															
	1. Water level measured at a depth of 2.24 m (Elev. 280.1 m) prior to introducing water for mud rotary .												X								
	 Water Level measured at a depth of 0.61 m (El. 281.7 m) after the installation of monitoring well. 	7					251						4								
							250														
							249														
							248														
							047														
							247														
							246														
							245														
							244														
	1	1	1	1	1	.3 ^	. N ¹ :	l.	-			dita :	30/ 0		IN/ 4=			1	J		1
						+³, χ³	: Num	pers	refe	r to Se	ensitiv	nty o	~% S	IRA	in At	FAIL	JKĘ				
L																					

PROJEC	ntario 😵 🛛 🗍 🤁 🕅 🛛 🕅 🕹		R	ECC	RD C)F BC	ORE	HOLE	No	. AI	P-3 S	heet	1 of 3		MET	RIC
W.P.	Assignment No 2019-E-0048 LOC	ATION									G79.555347)			GINATED E		/TI
IST		EHOLE					item A	iger, Mud R	otary and c	asing				IPILED BY	PT	
ATUM	CGVD28 Surface Elevation:224.8 m DAT	E <u>No</u>	ov 19,	2021 -	Nov 21, 2	021					1		_	CKED BY		
	SOIL PROFILE			SAMPI	ES	NS TER	SCALE	DYNAMIC CC RESIS	NE PENETR	TION	WATER CONTE PL NMC	NT (%) LL	THE			
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	EVATION	 Field Van Remould Pocket P Quick Tri Unconfin 	ed en axial ed		W _p W o NP Nonpla	W, stic	< UNIT ~ WEIGHT	GR SA	SI CL	REMARKS
0.0	CLAYEY SILT (CL), trace sand, trace gravel, some rootlets (FILL) Stiff Brown Moist		1	SS	11		EL	20 40	60 80	100	20 40 0	60	kN/m ³			
0.7	SILT (ML) and sand, trace gravel, trace rootlets (FILL) Compact Brown to blackish brown Moist		2	SS	13		224				0			2 42	49 7	
23.4 1.4	Sandy CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL- ML), trace sand, trace gravel, Stiff to hard Brown to mottled grey / brown		3	SS	10		223									
	Moist - 2.1 m: -trace organics above 2.1 m bgs -resembles glacial till below a depth of 2.29 m		4	SS	11						0-1			4 26	52 18	
			5	SS	21		222				0 -1					
			6	SS	100/0.15		221									
			7	SS	100/0.13		220									
219.2 5.6	CLAYEY SILT (CL), trace gravel, trace sand Very stiff to Hard Grey Moist						219									
			8	SS	52		218									
							210									
	- 8.1 m: -silt seam (25 mm thick)		9	SS	45		217				0			0 0	57 43	
							216									
			10	SS	22						0					
			<u> </u>				215									
	Continued on Next Page		1													

ROJEC						OF BC				No. A			et 2 of 3		MET	
i.W.P.			-						e 10 (LAT. 44			-79.555347)			-	MTI -
DIST DATUM		OREHOLI DATE N			Nov 21, 2		stem Au	iger,	Mud Rotar	and casi	ing			MPILED BY ECKED BY	<u>P</u> T	
-	SOIL PROFILE			SAMPI			Ш	DYN/	AMIC CONE I	PENETRAT	ION	WATER CONTENT (%				
						MATE	SCA		RESISTANC			PL NMC L				KS X
ELEV. DEPTH	DESCRIPTION	STRATA	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	0	Field Vane Remoulded Pocket Pen Quick Triaxial Unconfined 0 40 60	80 100		NP Nonplastic 20 40 60	- ∃≥ γ γ	GR SA	SI CL	RFMARKS
214.6	CLAYEY SILT (CL), trace gravel, trace sand Very stiff to Hard										-		KIN/III			
10.2	\Grey Moist															
	SILTY CLAY (CI), trace sand Firm to very stiff	- 88														
	Grey Moist						214									
	WOISt		11	SS	6							0				
			-			-										
			12	TO			213					0				с
			-													
			13a			1						lo l		0 1	31 68	
212.3 12.5	Sandy SILT (ML), trace gravel		1	SS	29										50	
	Compact to Dense Grey		13b			-	212									
	Moist															
						-	211									
			14	SS	33		211									
			'		55											
						1										
210.0																
14.8	CLAYEY SILT (CL), trace to some sand, trace gravel (TILL)	(AL					210									
	Grey															
	Moist															
			15	SS	71									09	53 38	
						-	209									
						-	208									
			16	SS	40											
]										
							207									
			17	SS	39							0				
			-	$\left - \right $		-	206									
							205									
	Continued on Next Page	1401/1	ari				·		· · · ·			STRAIN AT FAILUR	_			

0	ntario 🕅																					V	15		
PROJEC					ORD C								. Al				Shee	et 3	3 of 3				ETF		
G.W.P.			-		67.2; E 3003										55534	7)						βY	M	TI	
DIST DATUM		OREHOLE			210 mm Nov 21, 2		lem A	uger	, iviu	u Ro	lary a	and	casing						_				PT		
	SOIL PROFILE			SAMP			ALE	DYN	IAMIO	C CON		NET	RATIOI T	VV/	ATER	CONTE	ENT (%		_						
		_	~		ŝ	DWATE	N SC/	×	SHEA	R STI d Vane	RENG			PL Wp		NMC W	L	L Vi	UNIT WEIGHT					RKS	2
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X @IO	Rer Poo Qui Uno	noulded ket Per ck Triax confined 40	i n dal I	80	100		NP 20	0 Nonpla 40	stic 60	1	Y	GR	SA	SI (CL	REMARKS	
201.8 23.0	CLAYEY SILT (CL), trace to some sand, trace gravel (TILL) Hard Grey Moist SILT (ML), some clay, trace sand Very Dense Grey Moist - 23.0 to 24.7 m: -contains sand seams			SS	107/0.10		 204 203 202 202				60					40	60		<u>kN/m³</u>						
			19	SS	100/0.13	-												NP		0	3	86	11		
200.1 24.7	End of Borehole Notes: 1. Hollow stem augers to 2.3 m depth and then switch to mud rotary. 2. Groundwater first encountered at 1.7 m (Elev. 222.2 below ground surface before introducing water for murotary. 3. Standpipe piezometer (50 mm pipe) installed1.5 r north of borehole location. Groundwater level measurement(s) in piezometer: Date Depth (m) Elev. (m) Dec 23, 2021 1.52 222.4	m) Id					200														-				
							198																		
							197																		
							196																		
							195																		
				•	•	+ ³ , X ³	: Num	bers	refe	r to s	Sensi	itivitv	/ 0 ³⁰	6 STF	RAIN	AT FA	ILURF								
						, ^						,													

ROJEC	T <u>19136074</u>		-		RECO	ORD)F B	ORE	HOLE	No. Cl	N-1	Sh	eet	1 of 2		М	ETRIC
.W.P.	Assignment No 2019-	E-0048	LOCATIO							44.131768; LONO					GINATEI		MTI
DIST		HWY BBP - CN Rail	BOREHO			210 mm	Hollow	Stem A	uger; Mud Rot	ary					IPILED I	BY	MA/MTI
DATUM	CGVD28 Surface E	levation:222.4 m	DATE	Nov 17	, 2021			1	1					_	CKED E	SY	МН
	SO	IL PROFILE			SAMP	LES	NS NS	CALE		E PENETRATION NCE PLOT	WATI PL	ER CONTENT NMC	(%) LL	- THE			
ELEV. DEPTH	DE	ESCRIPTION	STRATA	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	 X Field Vane ⊕ Remoulded Pocket Pen Quick Triaxis O Unconfined 	al	W _p 	W o IP Nonplastic	W, 	KN/m ³ k	GR S	A SI	CL
0.0	CLAYEY SILT (CL), tra gravel, Soft Dark Brown Moist	ace sand, trace organics, trac	ce	1	SS	4		222					*				
0.7	SILTY SAND (SM) to S trace gravel Loose to compact Brown, contains oxida Moist	Sandy SILT (ML), trace orgar tion staining	nics,	2	SS	4		221									
				3	SS	10		z			0		NP				
220.2 2.2	CLAYEY SILT (CL), so gravel Very stiff Brown, contains oxidat Moist	me sand, trace organics, tra tion staining		4	SS	16		220			ю	ı			7 1	8 46	29
219.4 3.0	Sandy SILT (ML) to SI trace gravel Compact to very dense			5	SS	11		219									
	Moist to wet	ntains oxidation staining						213									
				6	SS	41		218			0				1 2	9 58	12
				7	SS	52					0		NP		11 5	4 29	6
								217									
				8	SS	104		216			0				03	2 62	6
215.2 7.2	trace gravel, (TILL)	SILT-SILT (CL-ML), some sa	and,					215									
	Very Dense Grey Moist			9	SS	102/0.05											
				The search of the second se				214									
	- 9.1 to 9.4 m: gravel f	ragments encountered in sa	mple	10	SS	101/0.13		213			0		NP				
	Continu	ed on Next Page															
	Conullu	eu un next raye					+3, X3	: Num	bers refer to S	ensitivity o3%	STRA	N AT FAILU	IRE				

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PROJEC	T <u>19136074</u>		R	ECO	ORD C)F B(ORE	НО	LE		No). CN	1-1		Sh	neet	2 of 2			MET	RIC
G.W.P.		CATION	-		76.1; E 3005							B; LONG	679.5	53359)				ED B		MTI
		REHOLE			210 mm	Hollow S	item A	uger; I	/lud Ro	otary								NPILE			4/MTI
DATUM		TE No	1		. 50		щ	DYNA			NETE	RATION			0.UTEN	- (0/)	-	CKED) BY	MH	1
	SOIL PROFILE	-		SAMP	LES	GROUNDWATER CONDITIONS	ELEVATION SCALE		RESIST	ANCE	PLO	Т	PL	N	ONTEN IMC	LL	UNIT WEIGHT				S
ELEV.		₹⊢	ER	ш	UES	MDNL	NO	× ⊕	EAR ST Field Vane Remoulde	d	3111 (6	(ra)	W _p 		W -0	W,	NN	GR	SA	SI CL	REMARKS
DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROL	EVATI		Pocket Pe Quick Tria Unconfine	xial				NP N	onplasti	с	γ				REN
					f		ELE	20	40	60	80	100	2	0	40 6	60 I	kN/m³				
	SILT (ML) to CLAYEY SILT-SILT (CL-ML), some sand, trace gravel, (TILL)																				
	Very Dense Grey						212														
	Moist					-															
			11	SS	100/0.15																
							211														
			12	SS	101/0.11	-	210						0								
						-	210														
							209														
						-															
208.4	End of Danabala		13	SS	100/0.15								0					0	16	73 11	
14.0	End of Borehole Note: 1. Hollow stem augers to 3.0 m (Elev. 219.4 m) and the																				
	switched to mud rotary.	;11					208														
	2. Water level measured at a depth of 2.07 m during drilling and prior to mud rotary.																				
	3. Water level in piezometer measured as follows: Depth(m) EI. (m) Date																				
	1.23221.212/23/211.55220.902/04/22																				
	1.56220.802/08/221.58220.802/16/22						207														
	1.27 221.1 05/12/22																				
							206														
							205														
							204														
							204														
							000														
							203														
			<u> </u>		<u> </u>	L	L										L				l
						+3, X3	: Num	bers re	efer to	Sens	itivity	/ 0 ³ %	STR/	AIN A	T FAIL	URE					

PROJEC	Dintario 😵 DRA			H	FCC				HOLE	No. C	N-3	Sh	eet	1 of 2		MET	
G.W.P.	Assignment No 2019-E-0048		TION						M Zone 10 (LAT. 44						GINATEI		мті
DIST	Central HWY BBP - CN Rail	BORE						tem A	ıger; Mud Rotar	У					IPILED I		A/MTI
DATUM	CGVD28 Surface Elevation:219.8 m	DATE	M	ar 08,	2022 -	Mar 09, 2	2022							_	CKED E	Y MH	I T
	SOIL PROFILE				SAMPI	ES	ATER	CALE	DYNAMIC CONE RESISTAN	CE PLOT	PL	R CONTENT NMC	LL	UNIT WEIGHT			U.
ELEV. DEPTH	DESCRIPTION		STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR STRE Field Vane Remoulded Pocket Pen Quick Triaxial Unconfined		W _p N 20	W 0 P Nonplastic 40 6		IND γ kN/m ³	GR S	A SICL	RFMARKS
0.0	Gravelly SILTY SAND (SM), trace rootlets, (FILL) Very Dense Brown Moist		\bigotimes	1	SS	109		ш					<u> </u>	KIN/III*			
219.2 0.6	CLAYEY SILT-SILT (CL-ML), trace sand, trace gr Stiff Grey Moist	ravel	XX	2	SS	10		219			ФН						
218.4 1.4	Sandy SILT (ML) to SILTY SAND (SM), trace to s clay, trace gravel, trace to some rootlets/organics						-										
	Very loose to dense Dark brown to grey Moist			3	SS	5		218									
								217									
	- 3.5 to 3.8 m: Organic layer encountered			4A 4B	SS	2						м	C= 92		4 3 2 3		
				5	SS	5		216			но						
	 4.6 to 5.2 m: Less than 25 mm of sample recov within split spoon. 	vered		6	SS	13		215									
								214									
				7	SS	25					0						
								213									
				8	SS	30		212			0				19 3	9 35 7	
211.1 8.7	SILT (ML) to CLAYEY SILT-SILT (CL-ML, some s trace gravel, (TILL) Very Dense	sand,		5				211									
	Grey Moist to wet			9	SS	100/0.24	-										
		6 - 72 - X	A A A A A				-	210									
	Continued on Next Page	k	G113	H					pers refer to Ser								

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PROJEC					ORD C									1-3			neet	2 of 2		MET		
G.W.P.	¥	LOCATION	_		98.4; E 3007							0169;	LONG	i79.5	51132)				-		
DIST DATUM	Central HWY BBP - CN Rail CGVD28 Surface Elevation:219.8 m	BOREHOLE DATE M			210 mm Mar 09, 2		lem A	uger;	Muc	Rola	iry								IPILED B		/MTI	—
	SOIL PROFILE			SAMP	LES	Ĥ. a	ALE	DYN.	AMIC	CONE		ETRA	TION	WA	TER C	ONTEN						_
					ŝ	GROUNDWATER CONDITIONS	N SC/		HEAF	R STRE Vane			a)	PL Wp		NMC W	LL Wi	UNIT WEIGHT			RKS	
ELEV.	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	SOUNE	10ITA	X⊕∎●O	Rem Pock	oulded et Pen k Triaxia						-0			GR SA	SI CL	REMARKS	
DEPTH		ST	R		, N	5	ELEVATION SCALE		Unco	nfined 106		0 10	00			lonplasti 40 €	c 60	Y kN/m³			Ľ	
	SILT (ML) to CLAYEY SILT-SILT (CL-ML, some san trace gravel, (TILL)	d,																				
	Very Dense Grey																					
	Moist to wet - 10.1 m: Auger grinding					-																
			10	SS	100/0.25		209															
							208															
			-			-																
207.2			11	SS	100/0.26									0								
12.6	End of Borehole Note:	F. 1.14:64					207															
	1. Hollow stem augers to 3.0 m (Elev. 216.8 m) and switched to mud rotary.																					
	2. Water level measured at a depth of 2.44 m prior mud rotary.																					
	3. Water level in piezometer measured as follows Depth(m) El. (m) Date	s:																				
	0.80 219.0 05/12/22 0.78 219.0 05/13/22						206															
							205															
							204															
							203															
							202															
							201															
							200															
							200															
						+ ³ , X ³	: Num	bers	refer	to Se	ensiti	vity	0 ³ %	STR	AIN A	T FAIL	URE					

PROJEC							OF B					o. H				heet	1 of {				TRIC
6.W.P.		OCATI		_			852.7 NAD					082; LON	IG79	.549328	3)			IGINA			AM
DIST DATUM						210 mm Nov 15,	Hollow S	stem A	uger; N	iud Ro	otary							MPILE ECKEI			MA/MTI KJB
								ш	DYNAM			ETRATIO	ON ,		00.UT			_	וסכ		<u></u>
	SOIL PROFILE				SAMP	LES	ATER	SCALE	F	RESIST	ANCE F	PLOT	F	L	CONTE NMC	LL	UNIT WEIGHT				
ELEV. DEPTH	DESCRIPTION	STRATA	PLOT	NUMBER	түре	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION S		Field Vane Remoulde Pocket Pe Quick Tria Jnconfine	d n xial d	H (kPa)	V		W 0 Nonpla 40	W, stic 60	ν KN/m ³		SA	SI CI	L
0.0 218.8 0.2	SANDY SILT (ML), trace clay, trace organic includes roots, (TOPSOIL) Loose Brown	she		1A 1B	SS	11							(0		N					
218.2 0.8	Moist SILTY SAND (SM) to SAND (SP), trace gravel (FILL) Compact to loose Brown			2A 2B												0 NI	5				
218.1 0.9	Moist to wet PEAT (PT), sandy Very loose Blackish brown Wet			2C	SS	4		218						ο							
	SILTY SAND to SANDY SILT (SM-ML), contains clay seams Very loose to loose Brown			3	SS	1		2 217						0		N	þ				
216.8 2.2	Wet CLAYEY SILT-SILT (CL-ML), some sand Stiff to Very Stiff Brown Moist			4	SS	15								ю				0	14	66 20	0
216.0								216													
3.0	SILTY SAND (SM), trace clay, trace gravel Loose to dense Brown to grey Wet			5	SS	8															
	- 3.9 m: 75mm clay layer (Elev. 215.1 m)			6	SS	17		215													
				7	SS	23		214													
				8	SS	23		213						0				1	82	15 2	:
								212													
	- 7.9 m: silt seams encountered (Elev. 211.1 m).			9	SS	27	_	211													
	- 9.1 m: tricone grinding noted			10	SS	43	_	210					,	c							
	- 9.8 m: gravel seam / layer at tip of spoon Continued on Next Page																				

ROJEC	T 19136074		R	ECC	RD C	OF BC	DRE	HO	LE		No.	HR	W-1		Sh	eet :	2 of 5			ME	TRIC
W.P.	Assignment No 2019-E-0048	LOCATION	1	488787	0.6; E 3008	352.7 NAD	83 / MTI	V Zon	e 10 (L/	AT. 44.	13082;	LONG.	-79.54	9328)				GINAT	ED B		AM
ST	Central HWY BBP	BOREHOL			210 mm		tem Au	iger;	Mud F	Rotary	/							IPILE		_	IA/MTI
ATUM	CGVD28 Surface Elevation:219.0 m	DATE N	lov 11,		Nov 15, 2	1	ш		MIC CO		ENET	RATION						CKE	JBY	<u>_K</u>	IR
	SOIL PROFILE	-		SAMPL	ES	ATER	SCAL		RESIS	TANC	E PLO	Г	PL	N	DNTENT MC	LL	UNIT WEIGHT				ų
LEV. EPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X⊕∎●O	Field Va Remould Pocket F Quick Tr Unconfir 0 40	ne ded Pen riaxial ned				NP No	V ·o onplastic 40 6		γ kN/m ³	GR	SA	SI CL	A A A K S
	SILTY SAND (SM), trace clay, trace gravel Loose to dense Brown to grey Wet - 10.0 to 12.0 m: gravelly silty sand encountered. Difficulties advancing tricone.						209														
			11	SS	31	-	208						0					32	56	11 1	
						-	207														
			12	SS	24	-							0								
							206														
	- 13.7 to 14.3 m: no sample recovered		13	SS	19		205							0							
03.8 5.2	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML),						204														
5.2	Soft to stiff Moist Grey		14	SS	3	-	203	ÐX													
	 16.8 to 17.4 m: no sample recovered in shelby tu Obtained disturbed sample with split spoon. Contai sand seams/ layers 	be. ns	15	то			202						F	a							
							201														
	- 18.3 m: contains sand layers/seams		16	SS	9		200						ан					12	20	54 14	
							200														
	Continued on Next Page					+ ³ , X ³	: Numt	oers r	efer to	Sen	sitivitv	0 ³ %	STR	ΑΙΝ ΑΤ	FAIL	JRE					

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PROJEC		_			RD O							. HR				heet	3 of 5			MET	
G.W.P.	Assignment No 2019-E-0048				6; E 30085							82; LONG	i79.5	549328	5)				TED B		AM
DIST DATUM	Central HWY BBP CGVD28 Surface Elevation:219.0 m	BOREHOLE			10 mm H ov 15, 20		stem A	uger;	IVIUG	Rota	y								D BY	KJ	A/MTI B
	SOIL PROFILE			SAMPLE			Ш	DYNA		CONE		TRATION	N W	ATER	CONTEI	NT (%)					
						MATE	I SCA	Sł	HEAR	STRE	NGTH	l (kPa)	PL W _P		NMC W	ÈLĹ Wi	UNIT WEIGHT				SKS
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	10	UNCO) 100		NP 20	Nonplas	 tic 60	⊃ ≤ γ kN/m³	GR	SA	SI CL	REMARKS
	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML trace to some sand, trace to some gravel Soft to stiff Moist Grey).					ш 199		0 4					20			KN/M°				
21.3 197.7	SILTY SAND (SM), trace clay, trace gravel						198	;													
	Very dense Grey Wet		17	SS	106		10-							c				0	76	21 3	
							197														
							196														
							195														
			18	SS 1	121/0.26																
							194														
					,		193														
							192	2													
			19	SS 1	101/0.23		191														
							190														
	Continued on Next Page	1:1:1:1 1				13 - 2	I			ta 0		ita - 20	/ OT		AT		1	1			1
						+°, X3	: NUM	ipers r	eter	io Sel	ISITIV	ity o³%	∞ SIÌ	KAIN.	AI FAI	LUKE					

PROJEC	T <u>19136074</u>	-	R	ECC	ORD C	OF BC	DRE	HOLE	No.	HR	W-1	S	heet	4 of 5		MET	RIC
G.W.P.	Assignment No 2019-E-0048	LOCATION	-					Zone 10 (LAT		; LONG.	-79.549	328)			GINATED E	-	AM
DIST DATUM	Central HWY BBP CGVD28 Surface Elevation:219.0 m	DATE No			210 mm Nov 15, 2		tem Au	ger; Mud Ro	tary						IPILED BY	<u>M</u> / KJE	A/MTI
	SOIL PROFILE			SAMPL			щ	YNAMIC CON RESISTA	NE PENET	RATION	W/AT	ER CONTE	NT (%)	-			,
	SOLEFICITE					VATEF	scal	RESISTA SHEAR STI			PL W _p	NMC W	LL Wi	UNIT WEIGHT			0
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	түре	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	Field Vane Field Vane Remoulded Pocket Per Quick Trias Unconfined 20 40	i n kial I			NP Nonpla	 stic	γ	GR SA	SI CL	
	SILTY SAND (SM), trace clay, trace gravel						ш	20 40		100		, 40		kN/m ³			
	Very dense Grey Wet																
	wet						189										
			20	SS	100						9				0 60	36 4	
							188										
										K							
							187										
							186										
185.4																	
33.6	- 33.5 m: gravelly silty sand layer encountered (Ele 185.5 m).	/148888	21	SS	100/0.26						он				1 16	73 10	
	CLAYEY SILT-SILT (CL-ML), trace sand, trace gra Hard	vel				-	185									-	
	Grey Moist																
							184										
							183										
							103										
			22	SS	100/0.05						0						
						1	100										
							182										
							104										
							181										
							180										
	Continued on Next Page					+ ³ ¥ ³	: Numh	ers refer to S	Sensitivity	V 0 ^{30//}	STRA	ΙΝ ΑΤ ΕΔΙ					

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PROJEC	T <u>19136074</u>		RE	ECORD	OF B	OREHO	LE	No. HR	W-1	Sheet	5 of 5		METR	RIC
G.W.P.	Assignment No 2019-E-0048	LOCATION						44.13082; LONG.	-79.549328)			GINATED B		
DIST DATUM	Central HWY BBP CGVD28 Surface Elevation:219.0 m	BOREHOLE		<u>210 mm</u> 021 - Nov 15,		Stem Auger; I	Mud Rota	ary				APILED BY	MA/ KJB	MTI
DATON	SOIL PROFILE			AMPLES	1	Щ DYNA		PENETRATION	WATER C	ONTENT (%)				
					NATEF	R SCAI	HEAR STR	NCE PLOT ENGTH (kPa)	PL N	MC LL V W	UNIT WEIGHT			KS.
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE "N" VALUES	GROUNDWATER CONDITIONS	8 0	Field Vane Remoulded Pocket Pen Quick Triaxia Unconfined	u 0 80 100	 NP N	o onplastic 40 60	Y	GR SA	SI CL	REMARKS
	CLAYEY SILT-SILT (CL-ML), trace sand, trace grave Hard	vel									kN/m ³			
	Grey Moist				_									
39.9	Find of Darachala		23	SS 100/0.13										
179.1	End of Borehole Notes: 1. Hollow stem augers to 2.4 m (Elev. 216.6) then switched to mud rotary. 2. Water level measured at a depth of 1.98 m after completion of drilling. 3. Water level in piezometer measured as follo Depth(m) El. (m) Date 0.44 218.6 02/07/22 0.67 218.3 05/013/22 0.67 218.3 05/013/22					179 178 177 176 175 174 173 172								
				I					L L		1	I	1	
					+ ³ , X ³	: Numbers r	efer to Se	ensitivity o ³ %	STRAIN A	FAILURE				
L														

ROJEC	T <u>19136074</u>					ORD (t 1 of 5	5		MET	RIC
W.P.		LOCATI		_								32381	; LONG	679.544608)			TED B	-	M
ST ATUM	Central HWY BBP	BOREH				210 mm		Stem A	luger	; Mud Ro	otary						ED BY		/MTI
UM	CGVD28 Surface Elevation:217.4 m	DATE	00			Oct 08, 20		ш	DYN	IAMIC CO		NETR	ATION			T	DBY	<u>KJB</u>	
	SOIL PROFILE				SAMPL	ES	ATER	CAL		RESIST	ANCE	PLOT		PL NMC LI	しこう				ų
LEV. EPTH	DESCRIPTION	STRATA	PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X⊕∎€O	SHEAR ST Field Vane Remoulde Pocket Pe Quick Tria Unconfine 20 40	d n xial d			W _p W W 00 NP Nonplastic 20 40 60	' ΝΜ Υ kN/m ³	GR	SA	SI CL	
0.0 17.2 0.2	TOPSOIL SILTY SAND (SM), trace clay (FILL) Compact Brown			1	SS	12		21			Ť								
	Dry ORGANIC SILT (OL)		(<u>36</u> 56	2A															
1 6.4).9	Loose Brown Woist SANDY SILT (ML), trace clay	_/[2B	SS	10		210						Φ		0	44	48 8	
.5.9 4 .5.7	Compact Brown	/		3A															
.7 5.5 .8	Wet Sandy PEAT (PT) SILTY SAND (SM) to SANDY SILT (ML) Very loose			3B 3C	SS	2		_						но		0	2	74 24	
	Brown Wet CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML), trace sand			4	то			21	5										
	Stiff to very stiff Brown Moist to wet												>95.8 <						
	- 3.3 m: 75 mm thick sandy layer encountered (Ele 214.1 m).	v.		5	SS	11		214	1										
				6	SS	7		21:	3			×		нə		0	3	64 33	
				7	SS	12													
				8	то			21:	2						19.8				
													>95.8						
				9	SS	18		21	1			>	×						
				\square															
								210	D										
				10	SS	10								но		0	2	77 21	
								209	Э										
				11	SS	11		208	3										
								207	7										
I	Continued on Next Page	1/1/2	vrAA				1	1	-1				1		_1				

.W.P.								HOLE	No. HR			et 2 of 5		MET	
			-						44.132381; LON	G79.54	4608)			-	
IST ATUM		BOREHOL DATE					item Al	ger; Mud Rot	ary				MPILED BY		A/MTI B
	SOIL PROFILE			SAMPL			Ш	OYNAMIC CON	E PENETRATION	WAT	ER CONTENT (%				
ELEV.		Z -	- #			GROUNDWATER CONDITIONS	ON SCAI	SHEAR STR	NCE PLOT RENGTH (kPa)	- PL W _p	NMC L	UNIT WEIGHT	GR SA	SI CL	REMARKS
DEPTH	DESCRIPTION	STRATA	NUMBER	TYPE	"N" VALUES	GROU CON	ELEVATION SCALE	 Field Vane Remoulded Pocket Pen Quick Triax Unconfined 20 40 	^{ial} 60 80 100	20	IP Nonplastic 40 60	Y kN/m³			A FN
	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML), trace sand Firm to stiff Brown Moist to wet		12	SS	14					0					
205.6							206								
11.7	SANDY SILT (ML), trace clay Dense to very dense Brown														
	Moist to wet		13	SS	34	_	205			0			0 21	70 9	
						_	204								
			14	SS	35					0					
							203								
			15	SS	74		202						0 23	69 8	
201.0 16.3	Sandy CLAYEY SILT (CL) to CLAYEY SILT (CL) Very stiff					-	201								
	Grey Moist to wet														
			16	SS	17	_	200			o					
199.5 17.8	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML), trace to some sand Stiff														
	Grey Wet		17	SS	12		199			ы			0 1	71 28	
							198		>95.8 ×	3					
							197								
	Continued on Next Page														

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PROJEC	T 19136074	_		R	ECC	ORD (OF BO	ORE	EHO	OL	E	Ν	o. H	RW	-4		She	et 3	3 of 5			MET	RIC
G.W.P.	Assignment No 2019-E-0048	LOCAT		_		3.9; E 301							2381; LC	DNG	79.544	1608)			_	GINAT			AM
DIST DATUM	Central HWY BBP CGVD28 Surface Elevation:217.4 m	BORE				210 mm		Stem A	uger	; Mu	d Rot	ary							_			M. KJI	A/MTI
DATON	SOIL PROFILE	DATE			SAMPI	Dct 08, 20		щ	DYN	IAMIC	CON	E PEN	IETRATI	ON	\//\TE		ITENT (9	()	_	CKED	DI		<u> </u>
					SAIVIFI		GROUNDWATER CONDITIONS	SCALE		RE	SISTA	NCE F	PLOT TH (kPa)	_ 1	PL Np	NM W	C	UL Wi	UNIT WEIGHT				Ş
ELEV.		į	ATA T I O	BER	щ	LUES	NDND	NOI	X⊕∎●O	Field Rem	I Vane Ioulded ket Pen	2.101	(••• ••••••••••••••••••••••••••••••••••			NB	GR	SA	SI CL	REMARKS
DEPTH	DESCRIPTION		STRATA PLOT	NUMBER	TYPE	"N" VALUES	GRO	EVATION	0	Quid	k Triaxi	al				IP Non			Y				RE
	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML)		8999			-		Ш	1	20	40 6	50 8	80 100	_	20	40	60		kN/m³				
	trace to some sand Stiff			18	SS	13																	
	Grey Wet			<u> </u>			_																
	- 21.5 m: 75 mm thick wet silt layer encountered																						
								195															
								194															
				_			-	193															
				19	SS	8									н					0	14	60 26	
									Κ														
				200	то																		
				20	то			192															
										Ð		\setminus											
								191				2											
	- 27.4 to 28.0 m: contains silty sand seams/ layers	s (up						190															
	to 25 mm thick)	· ·		21	SS	13																	
								189															
								188															
				_			-	187															
				22	SS	11																	
								186															
										e		×											
				1																L			
	Continued on Next Page						+ ³ , X ³	: Num	bers	refe	r to S	ensiti	ivity c	³ % S	TRAI	N AT F	AILUR	E					

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PROJEC	CT <u>19136074</u>		R	ECC	RD C	F BC	ORE	EHO	ЭL	E	Ν	lo. H	HR\	N-4	ŀ	Sł	neet	4 of 5			ME	TRIC)
G.W.P.		LOCATION	N	488804	3.9; E 3012;	30.5 NAD	083 / MT	ΓM Zo	ne 1	0 (LAT.	44.13	32381; L	LONG	79.5	44608)			GINA	TED E	ΒY	AM	
DIST		BOREHOLE			210 mm H		Stem A	uger	; Mu	id Rot	ary									DBY	-	A/MT	l
DATUM	CGVD28 Surface Elevation:217.4 m	DATE O	ct 04, 2	2021 - 0	Oct 08, 20	21												CHE	CKE	D BY	K	JB	
	SOIL PROFILE			SAMPL	.ES	щw	ELEVATION SCALE	DYN	IAMI RE	C CON ESISTA	E PEI	NETRA PLOT	TION	WA	TER C	ONTEN	T (%)	보					
					S	GROUNDWATER CONDITIONS	I SC	5	SHEA	AR STF		TH (kPa	a)	PL Wp		NMC W	LL Wi	UNIT WEIGHT					REMARKS
ELEV.	DESCRIPTION	OT	NUMBER	ТҮРЕ	ILUE		10N	X⊕∎●O	Re	ld Vane moulded cket Pen						-0		⊃≤	GR	SA	SI CL		MAF
DEPTH		STRATA PLOT	NUN	È	"N" VALUES	92 O 02 O	EVA	8	Qu Un	ick Triaxi confined	ial					onplast	ic	Y					RE
	CLAYEY SILT (CL) to CLAYEY SILT-SILT (CL-ML),				•		Ц	1	20	40 (60	80 10	0	2	20 4	40 (60	kN/m³				_	
	trace to some sand						185	5															
	Stiff Grey																						
	Wet																						
							184																
	- 33.5 m: contains silt seams/ pockets		23	SS	13										0								
															-								
							183	3															
182.3											Ľ.												
35.0	CLAYEY SILT-SILT (CL-ML), some sand to sandy,	113	\$																				
	trace to some gravel, (TILL) Very stiff to hard						182	2															
	Grey Moist to wet							К															
							181																
			24	SS	31							1											
								1			1												
							180	,															
			5																				
							170																
							1/9	'															
			-																				
							178	8															
			25	SS	17									Ø					2	25	53 20		
	- 40.0 to 42.0 m: tricone grinding noted																						
			8				177	'															
							176	6															
							175	5															
		1.73	1				1		_						I				1				
	Continued on Next Page					+ ³ , X ³	: Num	bers	refe	er to S	ensi	tivity	0 ³ %	STR/	AIN A	T FAIL	URE						

PROJEC	T <u>19136074</u>		R	ECC	ORD C)F B(DRE	HOLE	1 3	No. H	RW	4	Sh	neet	5 of 5		MET	RIC
6.W.P.	Assignment No 2019-E-0048	LOCATION	1	488804	3.9; E 3012	230.5 NAD	83 / MT	I Zone 10	LAT. 44.1	132381; LO	NG79	.544608)			GINATED B	Y <u>/</u>	٩M
DIST	Central HWY BBP	BOREHOLE			210 mm		tem A	ger; Mud	Rotary							IPILED BY		VMTI
ATUM	CGVD28 Surface Elevation:217.4 m	DATE O	1			1					21					CKED BY	KJB	r
	SOIL PROFILE			SAMPI	ES	NS	CALE			ENETRATIO	JN W PL	ATER C	ONTEN	T (%) LL	UNIT WEIGHT			0
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	Field Remo Pocke Quick Uncor	Vane ulded t Pen Triaxial nfined	GTH (kPa) 80 100	W, -	NP N	W 0 lonplasti 40 €	W, c	Y	GR SA	SI CL	REMARKS
	CLAYEY SILT-SILT (CL-ML), some sand to sandy, trace to some gravel, (TILL) Very stiff to hard Grey Moist to wet		26	SS	100		ш 174 173 172								<u>kN/m³</u>			
			27	SS	15	-												
<u>170.1</u> 47.2	Sandy SILT (ML), some gravel to gravelly, trace to some clay Very dense Grey Wet						171											
	- 48.0 to 48.8 m: tricone grinding noted		28	SS	103		169				0			NP		20 20	50 10	
168.1 49.2	End of Borehole Notes: 1. Water level measured at a depth of 1.67 m (B	Elev.					168											
	215.7) prior to introducing water for mud rota 2. Water level measured at a depth of 0.55 m (E 216.9) on May 13, 2022.	ry. :lev.					167											
							166											
							165											
							164											
						+ ³ , X ³	: Num	ers refer	to Sens	itivity o	3% ST	RAIN A	T FAIL	URE				

ROJEC	T <u>19136074</u>		R	ECC	ORD ()F B(ORE	HOLE	No	. HR	E-3	Sheet	1 of 6			MET	RIC
.W.P.		LOCATION	1	488865	7.1; E 3045	31.7 NAD	83 / MT	VI Zone 10 (LA	AT. 44.1379	91; LONG.	-79.503353	3)		GINATE		<u> </u>	OP
		BOREHOLE					item A	iger; Mud R	lotary					MPILED			V MTI
ATUM		DATE Ja	1			1	ш	DYNAMIC CO			1			ECKED I	3Y	KJB	
	SOIL PROFILE			SAMPI	LES	ATER	CAL	RESIS	TANCE PL	.OT	PL	CONTENT (%) NMC LL	UNIT WEIGHT				s
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR S Field Var Remould Pocket F Quick Tr Unconfin 20 40	ne led Pen iaxial			W W, 0 Nonplastic 40 60	Y kN/m ³	GR S	SA S	SI CL	REMARKS
0.0 19.8 0.2	SILTY SAND (SM), trace organics including rootlets (TOPSOIL) Dark Brown Dry to moist SILTY SAND (SM), trace clay, trace gravel, trace		1	SS	6	4							, KN/III				
	organics (FILL) Loose Brown Dry to moist		2	SS	6	Ţ	219				0			0 8	30	16 4	
1.8 18.2	CLAYEY SILT-SILT (CL-ML), trace sand		3	SS	5												
17.7 2.3	Firm Brown Moist SILTY SAND (SM)				5		218										
	Compact to loose Brown to grey Moist to wet		4	SS	26		217				0			0 6	65	29 6	
			5	SS	7						HO						
			6	SS	8		216				0			0 4	17	50 3	
	- 4.8 m: sample contains silt seams		7	SS	22		215				Φ			0 8	32	16 2	
213.5 6.5	SANDY SILT (ML), trace clay		8A 8B	SS	14		214										
	Compact to very dense Grey Moist						213										
			9	SS	21		212				НŌ						
							211										
	Configuration N. 10		10	SS	38						D						
	Continued on Next Page					+ ³ , X ³	: Num	oers refer to	Sensitiv	ity o ³ %	STRAIN	AT FAILURE					

ROJEC							OF BO). HR			Shee	et 2 of (MET	
.W.P.	Assignment No 2019-E-0048	_ LOCA		_			531.7 NAD					1; LONG	-79.503	353)				TED B	-	DP
	Central HWY BBP CGVD28 Surface Elevation:220.0 m	_		E TYPE			Hollow S	Stem Au	iger;	Mud Rot	ary									V MTI
ATUM			<u></u>			Jan 25, 2	1	ш		MIC CON		TRATION					IECKE	DBY	KJE	
	SOIL PROFILE				SAMPL	LES	ATER	SCAL		RESISTA	NCE PL	.OT	PL	ER COI	NTENT (% //C L					ζ.
ELEV. DEPTH	DESCRIPTION		STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X⊕∎●O	Field Vane Remoulded Pocket Pen Quick Triaxi Unconfined	al				nplastic	Y		SA	SI CL	RFMARKS
	SANDY SILT (ML), trace clay			-					2	0 40 6	50 80	100	2) 40	0 60	kN/m	3			
	Compact to very dense Grey							210												
	Moist																			
				11	SS	61		209												
							_													
								208												
							-													
				12	SS	33							IC				0	21	71 8	
								207												
						_														
						20		206												
				13	SS	39							10							
				1				205												
								200												
				14	SS	64							0				0	19	76 5	
							_													
								204												
				\vdash			-													
				15	SS	33		203					c							
02.1			ЩЦ	T.																
	CLAYEY SILT-SILT (CL-ML), some sand Hard							202												
	Grey Wet			 			_													
	- 18.3 to 18.9 m: lenses of clayey silt-silt			10		20														
01.4				16	SS	32														
201.1 18.9	SILTY SAND (SM), trace clay			8			-	201												
	Dense to compact Grey																			
	Wet																			
	Continued on Next Page	:	: :1 d	1											FAILURE					

ROJEC		_				OF BO					HR			Sheet	3 of 6		MET	
N.P.	Assignment No 2019-E-0048		-			531.7 NAD					LONG.	-79.503	353)				-	
ST ATUM	Central HWY BBP CGVD28 Surface Elevation:220.0 m	_ BOREHOLE DATE Ja				Hollow S	tem AL	ger; Muo	Rota	ry						IPILED BY	KJE	V MTI
	SOIL PROFILE		-	SAMPL			ΓE		CONE	PENET	RATION	WAT	ER CONTI	ENT (%)	-			
.ev. PTH	DESCRIPTION	STRATA	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEA	R STRE Vane oulded et Pen k Triaxial nfined	NGTH (kPa)	PL W _p 	NMC W o NP Nonpla 0 40		 UNIT WEIGHT 	GR SA	SI CL	SNAAMAA
	SILTY SAND (SM), trace clay Dense to compact Grey Wet						ш 200	20		0 80					<u>kN/m³</u>			
			17	SS	32	-	199					0				0 75	24 1	
							197											
i.4	CLAYEY SILT (CL), trace to some sand		18 A				196											
	Stiff to very stiff Grey Moist to wet		18 B	SS	21		195											
							194											
						_	193											
			19	SS	17	-	192											
							191											
	Continued on Next Page	12844684		. 1		+3 v3	· Numł	ers refe	to So	nsitivity	/ 030/	STPA	IN AT FA		•			·

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PROJEC		_			RD OF							. HI				Sh	eet	4 of 6			MET	
G.W.P.	Assignment No 2019-E-0048		-		.1; E 304531.7							91; LON	G7	9.503	353)						-	
DIST DATUM	Central HWY BBP CGVD28 Surface Elevation:220.0 m	BOREHOLE		-	210 mm Holl an 25. 2022		em Al	iger;	IVIUG	Rota	y										KJE	√ MTI 3
	SOIL PROFILE		T	SAMPLI		1	Щ	DYNA	MIC	CONE		TRATIC	DN	WATE	R CO	ITENT	· (%)					
						LIONS	I SCALE		HEAR	STRE	NGTH	l (kPa)	_	PL Wp	NM W	IC	ÈLĹ Wi	UNIT WEIGHT				SXS
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	CONDITIONS	ELEVATION	9	Uncor			100			o IP Nor 40			Ŷ	GR	SA	SI CL	REMARKS
	CLAYEY SILT (CL), trace to some sand Stiff to very stiff Grey Moist to wet		20 21 21 22 23	SS SS SS SS TO	26 10 11		190 189 188 187 186 185 184 183 183	9	Uncor	llinea) 100			0			kN/m ³	0	0	67 33	
							181															
	Continued on Next Page					+ ³ , X ³ :	Num	oers i	efer	to Se	nsitiv	ity o ³	³% S	TRA	N AT	FAILU	JRE					

ROJEC	T <u>19136074</u>	_	l	RECO	ORD (F BC	ORE	HOLE No. HF	RE-3	Sheet	5 of 6		MET	RIC
W.P.	Assignment No 2019-E-0048		N	N 48886	57.1; E 3045	531.7 NAD	83 / MTN	I Zone 10 (LAT. 44.13791; LONG	79.503353)			GINATED BY		P
ST	Central HWY BBP	BOREHO					tem Au	ger; Mud Rotary				IPILED BY		/ MTI
ATUM	CGVD28 Surface Elevation:220.0 m	DATE	Jan 13	8, 2022 -	Jan 25, 20	022						CKED BY	KJB	
	SOIL PROFILE			SAMP	LES	NS R	CALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT	WATER CON PL NW	ITENT (%) C LL	. He			
LEV. EPTH	DESCRIPTION	STRATA	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR STRENGTH (kPa) × Field Vane Remoulded Pocket Pen Quick Triaxial Unconfined 20 40 60 80 100	W _p W 0 NP Nor 20 40	W _I plastic	THDIAM V WEIGHT	GR SA	SI CL	DEMADKS
	CLAYEY SILT (CL), trace to some sand Stiff to very stiff								t Ť Ť		NN/III			
	Grey Moist to wet													
	Moist to wet													
			24	SS	3		180							
						-								
								$\oplus \times$						
							179							
							178							
							1/0							
						-								
			25	SS	14		177							
				_										
							176							
						-								
							175							
					1									
				+		-								
			26	SS	14		174							
						1								
							173							
							470							
							172							
			1			-								
	Continued on Next Page													
	Continued on Next Page					+ ³ , X ³	: Numb	ers refer to Sensitivity o ³⁰	6 STRAIN AT	AILURE				

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PROJEC	CT <u>19136074</u>		R	ECC	ORD C	F BC	DRE	НС	DL	Е	Ν	lo. I	HR	E-3		Sh	neet	6 of 6			МЕТ	RIC
G.W.P.	Assignment No 2019-E-0048	LOCATION	<u> </u>	488865	7.1; E 3045	31.7 NAD	83 / MT	M Zor	ne 10) (LAT.	44.13	791; LO	ONG.	-79.50	3353)				GINATE		<u> </u>	OP
DIST	Central HWY BBP	BOREHOLE			210 mm I		tem A	uger;	; Mu	d Rot	ary								APILED			V MTI
DATUM	CGVD28 Surface Elevation:220.0 m	DATE Ja	n 13,: I		Jan 25, 20		ш		ΔΜΙΟ	CON		NETRA							CKED	BY	KJE	<u> </u>
	SOIL PROFILE			SAMP	LES	ATER	SCAL		RE	SISTA	NCE F	PLOT		PL	N	DNTEN MC	LL	UNIT WEIGHT				S
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X⊕∎•O	Field Rem Pocl Quid Unc	d Vane noulded ket Pen ck Triaxi onfined	al				NP N	V -o onplasti		γ	GR	SA	SI CL	REMARKS
	CLAYEY SILT (CL), trace to some sand Stiff to very stiff Grey Moist to wet		27	SS	18		<u> </u>	2	20			30 10	00		0 ₄ ∂i	10 6	50	<u>kN/m³</u>				
<u>169.7</u> 50.3	CLAYEY SILT (CL), some sand to sandy, trace to some gravel Hard Grey Wet						169															
52.2			28	SS	166/0.28		168															
167.7	End of Borehole Notes:																					
	 Groundwater level was measured at 1.5 m (EL 2 m) inside hollow stem auger during drilling. Groundwater level was measured at 1.0 m (EL 2 m) inside the monitoring well on May 13, 2022 	19.0					167															
							166															
							165															
							164															
							163															
							162															
						+³, X³	: Num	bers	refe	r to S	ensit	ivity	0 ³ %	STR/	AIN AT	FAIL	URE					

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PROJEC			R	ECC	ORD (F BOF	RE	HOLE No.	. 2-	1	Sheet	1 of 4		MET	RIC
G.W.P.		ATION						M Zone 10 (LAT. 44.145964; L					GINATED B		ИТІ
		REHOLE				em Auger,	Mud	d Rotary					IPILED BY	DF	
DATUM		E De	1		Dec 22, 2				TION				CKED BY	KJE	3
	SOIL PROFILE	1		SAMPI	LES	NS	CALE	DYNAMIC CONE PENETRAT RESISTANCE PLOT		PL N	ONTENT (%) IMC LL	GHT			S
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	түре	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR STRENGTH (kPa × Field Vane Remoulded Pocket Pen Quick Triaxial O Unconfined		W _p V NP No	W Wı -o onplastic	 UNIT WEIGHT 	GR SA	SI CL	REMARKS
0.0	CLAYEY SILT (CL), trace sand, trace rootlets						ш	20 40 60 80 10	0	20 4	40 60	kN/m ³			
	Soft to firm Brown and Grey Moist Oxidation staining		1	SS	5	• ²	220								
			2	SS	6		219			0					
			3	SS	4					ю			02	86 12	
218.2 2.2	SILTY SAND to SAND (SM-SP), trace clay, trace gravel Compact to Dense Grey Moist		4	то		2	218								See Note 4.
			5	SS	42	2	217			0			0 89	10 1	
			6	SS	18										
			7	SS	18		216				NF				
214.8							215								
5.6	CLAYEY SILT (CL), trace sand, trace gravel Stiff to very stiff Grey Moist														
			8	SS	17		214			0					
							213								
	- 8.0 m: Silty Sand layer (100 mm thick)		9	SS	16		212			0					
	- 9.6 m: Silty Sand layer (100 mm thick)		10	SS	12	:	211			Φ			0 0	69 31	
	Continued on Next Page	144444	4	·											1
						+", X" : N	umb	pers refer to Sensitivity	03% \$	5 I KAIN AT	FAILURE				
L															

	T 10100071							<u> </u>								~		0 -1 1			
ROJEC	T <u>19136074</u> Assignment No 2019-E-0048	LOC					DF BC 525.9 NAD				T 44 1). 2 .		784271	Sh	eet :	2 of 4	GINATED B		
	Central HWY BBP - 2nd Concession			N. .E TYF			Stem Aug				44.	. +0004;	20140	1 3.4	. 0721)				IPILED BY	r <u>Iv</u> DP	
ATUM	CGVD28 Surface Elevation:220.4 m					Dec 22, 2													CKED BY	KJB	
	SOIL PROFILE		_		SAMP	ES	с.	ΓE	DYN/	MIC CO RESIST			ATION	WA	TER CC	NTENT	Г (%)	_ 			
ELEV. EPTH	DESCRIPTION		STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	S X⊕∎●O	HEAR ST Field Van Remoulde Pocket Po Quick Tria Unconfine	FRENC e ed en axial		°a)	PL W _p 	V	MC V o	LL W, 	< UNIT WEIGHT	GR SA	SI CL	REMARKS
210.3	CLAYEY SILT (CL), trace sand, trace gravel			-		-		ELE	2	0 40	60	80 1	00	2	0 4	0 6	0	kN/m³			
10.1	Stiff to very stiff Grey Moist SILTY SAND (SM), Compact			11				210													
209.5 10.9	Grey <u>Moist</u> CLAYEY SILT (CL), contains sand seams/layers Stiff to very stiff to hard Grey			11 A 11 B	SS	26		209													
	Moist							209													
				12	SS	11		208						(þ						
								207													
	- 13.8 m: Silty Sand layer (25 mm thick)			13	SS	16															
								206													
204.9 15.5	SILT (ML), trace sand Compact to Dense Grey			14 A 14 B	SS	36		205													
	Moist							204													
				15	SS	12								H	þ						
	CLAYEY SILT (CL), trace sand, trace gravel Firm to stiff							203													
	Grey Moist			16	SS	10		202													
								201													
	Continued on Neut Deve																				
	Continued on Next Page						+ ³ , X ³	: Num	oers	efer to	Sens	itivity	0 ³ %	STRA	AIN AT	FAILU	JRE				

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PROJEC	CT <u>19136074</u>	_		R	ECC	ORD (OF BO	ORE	EH	OL	E		No.	2-′	1		Sł	neet	3 of 4			N	/IET	RIC	
G.W.P.	Assignment No 2019-E-0048	LOCAT				2.2; E 306					(LAT. 4	4.145	5964; LO	NG. •	-79.47	8427)					TED		-	MTI	
DIST DATUM	Central HWY BBP - 2nd Concession CGVD28 Surface Elevation:220.4 m	BOREH				Hollow S Dec 22, 2		er, Mu	d Ro	otary											ED BN D BY		<u>D</u> F KJE		
DATON	SOIL PROFILE							щ	DYM	AMIC	CONE	PEN	ETRATIO	NC	\A/A T			T (0/)			υы			, 	
					SAMPI		GROUNDWATER CONDITIONS	ELEVATION SCALE		RE	SISTAN	ICE P	LOT H (kPa)		PL Wp	N N	ONTEN MC	LL Wi	UNIT WEIGHT						s
ELEV.		< H	T T	BER	щ	"N" VALUES	NDN	NOL		Field	Vane oulded at Pen				۷۷ _P 	·	v 0	·····	NB	GR	SA	SI	CL		REMARKS
DEPTH	DESCRIPTION		PLOT	NUMBER	түре	N" VA	GRO CC	EVAT	X⊕∎●O	Quie	k Triaxia	I			1	NP No	onplasti	с	Ŷ						RE
	CLAYEY SILT (CL), trace sand, trace gravel	28				=		E	-	20	40 6	08	0 100	_	20) 4	10 6	50	kN/m³						
	Firm to stiff Grey																								
	Moist							200																	
							-	199																	
				17	SS	8									9					0	1	80) 19		
	- 22.1 m: Attempted Shelby Tube sample but no recovery.																								
				18	TO			198																	
								197																	
								196																	
				19	SS	4									- H	0									
				20	то			195																с	
								194																	
							_	193																	
				21	SS	5																			
						v																			
							1																		
								192																	
									1																
								191																	
									1																
								L																	
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PROJEC	T 19136074		R	ECC	ORD C	OF BC	ORE	HC)LE			No.	2-	1		Sh	eet	4 of 4			MET	RIC	
G.W.P.		CATION	-		2.2; E 3065					LAT. 4	4.145	5964; L	ONG.	-79.47	8427)				GINATE		-	ЛТI	
DIST DATUM	Central Concession BO				Hollow S		ər, Mu	d Rot	ary										IPILED		DF KJE		
DATON	SOIL PROFILE			SAMP	Dec 22, 2	1	щ	DYNA	AMIC	CONE	PEN	ETRAT	ION	W/AT		NTENT	(%)	_					
		T		SAIVIE		VATER	SCALE	Sł		ISTAN STRE		LOT H (kPa)	PL Wp	NI NI V	MC	LL Wi	UNIT WEIGHT				S X	2
ELEV.	DESCRIPTION	STRATA PLOT	NUMBER	ТҮРЕ	"N" VALUES	GROUNDWATER CONDITIONS	NOIL	X⊕∎●O	Field \ Remo Pocke	/ane ulded t Pen			,			, D		53	GR 🕄	SA	SI CL	SHAAMAA	
DEPTH		STF	NUN	F	N" \	80 9	ELEVATION		Uncon			0 100		20		nplastic 0 6		Y Ich I/ma3				ä	2
	CLAYEY SILT (CL), trace sand, trace gravel Firm to stiff						ш		- 1		0 0		,		-	0 0		kN/m ³					
	Grey Moist						190																
						-																	
			22	SS	4																		
						-						×	96	(Pa									
							189																
							188																
							100																
							187																
105.2			23	SS	6										0				0	2	31 67		
186.3 34.1	End of Borehole Note:																						
	 Hollow stem augers to 2.3 m (Elev. 218.1 m) and the switched to mud rotary. 						186																
	 Water level measured at a depth of 0.1 m (Elev. 220. m) prior to mud rotary. 	3																					
	3. Water level in standpipe piezometer measured as follows:																						
	Depth(m) El. (m) Date 0.77 219.6 May 12. 22 0.81 219.6 May 13, 22						185																
	0.47 219.9 Feb 01, 23																						
	4. Attempted shelby tube sample but limited recovery of silty sand.	f																					
							184																
							183																
							100																
							182																
							181																
			1	1		.3 ^			unf-	ta C			e 30 /		IN: 47	EAU:		l	I				
						+³, χ³	. Num	uers I	efer	ιο Se	ensiti	vity	U~% -	SIRA	an Af	FAILU	JKE						

PROJEC	T <u>19136074</u>			R	ECC	RD C)F B(OR	EHOLE	No. 2-	-2 Sheet	1 of 6		MET	RIC
.W.P.	Assignment No 2019-E-0048	LOC	ATION	<u> </u>	488963	6.3; E 3065	41.2 NAD	083 / N	TM Zone 10 (LAT. 44	.146721; LONG	79.478236)		GINATED B	Y <u>P</u>	т
	Central HWY BBP - 2nd Concession		EHOLE					er, M	ud Rotary				IPILED BY	MC	К
DATUM	CGVD28 Surface Elevation:221.3 m	DAT	E <u>0</u>	ct 27, 2	2022 - 1	lov 02, 2)22	I	1				CKED BY	KJB	
	SOIL PROFILE				SAMPL	ES	IS IE	SCALE	DYNAMIC CONE F RESISTANC	PENETRATION DE PLOT	WATER CONTENT (%) PL NMC LL	HT			
ELEV.			۲.	щ		ES	-DWA	ON SC		NGTH (kPa)	W _p W W ₁	UNIT WEIGHT	GR SA	SI (1	REMARKS
DEPTH	DESCRIPTION		STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION	 Field Vane Remoulded Pocket Pen Quick Triaxial Unconfined 20 40 60 	80 100	NP Nonplastic 20 40 60	γ		OF OL	RFM
0.0	SILT (ML), some sand, trace rootlets, (FILL)		$\times\!\!\times$					ш	20 40 00			kN/m ³			
	Firm Brown to grey		\otimes	1	SS	7		22	1						
	Moist		\bigotimes	8											
220.6 0.7	CLAYEY SILT (CL)		ŤĤ	i I											
-	Firm Mottled grey and brown, oxidation staining														
	Moist			2	SS	8					0				
219.9								22							
1.4	SILT (ML), trace sand			Ľ											
	Loose Brown to grey, oxidation staining														
	Wet			3	SS	4					0				
219.1				_											
2.2	CLAYEY SILT (CL), contains silty sand layers Stiff							21	9						
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215.7				F											
5.6	CLAYEY SILT-SILT (CL-ML), trace sand, trace g contains silt and sand seams/layers	gravel,		Į											
	Stiff to very stiff Grey														
	Moist														
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G.W.P.		ATION	1	N 488963	6.3; E 306	541.2 NAD	083 / M	FM Zone	e 10 (L	AT. 44	.1467	'21; LO	DNG.	-79.47	78236)			GIN	ATE	DΒ		PT	
DIST		REHOLE			Hollow S	-	er, Mu	id Rota	ary										ИРIL	.ED	ΒY	<u> </u>	MCK	
DATUM	CGVD28 Surface Elevation:221.3 m DAT	<u>e</u> 0	ct 27, 3	2022 - 1	Nov 02, 2	022	-	_										CHE	CKI	ED E	BY	K	JB	
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203.5																								
17.8	CLAYEY SILT (CL) to SILTY CLAY (CI), trace sand Firm to stiff																							
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G.W.P.	Assignment No 2019-E-0048	LOCATIO					541.2 NAD				(LAT. 4	4.146	6721; L	LONG	79.4	78236)				GINATED		PT	
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DATUM	CGVD28 Surface Elevation:221.3 m	DATE	Oc			lov 02, 2		111	DVAU		CONE			TION						CKED B	Y <u>k</u>	JB	
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G.W.P.	Assignment No 2019-E-0048							M Zone 10	(LAT. 44.	146721;	LONG.	-79.478	3236)			GINATED		РТ
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ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION	X Field ⊕ Remo Pock ● Quicl O Unco	Vane oulded et Pen c Triaxial nfined			 N	IP Nonpla	 stic	Y	GR SA	SI CL	REMARKS
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Child Contraction Description Contraction Contraction <th< td=""><td>G.W.P.</td><td></td><td>-</td><td></td><td>_</td><td></td><td>6.3; E 3065</td><td>541.2 NAD</td><td>83 / M1</td><td>M Zone</td><td>10 (LAT. 4</td><td>44.146</td><td>721; LONG</td><td>679.4</td><td>78236)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	G.W.P.		-		_		6.3; E 3065	541.2 NAD	83 / M1	M Zone	10 (LAT. 4	44.146	721; LONG	679.4	78236)								
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PROJEC	CT <u>19136074</u>		R	ECO	ORD	OF BO	ORE	нс	DLE		I	No. 2	2-2		Sh	eet	6 of 6		ME	TRI	С
G.W.P.	PPD_2nd	ATION	-			541.2 NAD				LAT. 4	4.1467	721; LON	G79.4	78236)				GINATED		PT	
DIST DATUM	Concession BOP				Hollow S Nov 02, 2	Stem Aug	er, Mu	d Rot	ary											MCK KJB	
DATUM		E <u>0</u>	1			1	щ	DYN	AMIC (CONE	PENE	TRATIO	N 14/4-			- (0/)		CKED B	r _	NJD	
	SOIL PROFILE	1		SAMP	1	GROUNDWATER CONDITIONS	SCALE		RESI	STAN	CE PL	LOT H (kPa)	PL W _P	N	DNTENT MC V	(%) LL Wi	UNIT WEIGHT				S
ELEV.	DECODIDITION	ATA	BER	щ	"N" VALUES	NDN	NOL	X	Field V Remou Pocket	/ane ulded		. ()			v 0		NB	GR S	A SIC	L	REMARKS
DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	N" VA	0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ELEVATION		Quick Uncon	Triaxial fined					onplastic		Y				RE
	CLAYEY SILT-SILT (CL-ML)	2000			-	्मा	Ш	2	0 40	0 60) 80	0 100	2	20 4	0 6	0	kN/m³				
	Hard Grey					目	173														
	Moist																				
						_															
					70																
171.0			26	SS	72		170						E C								
171.9 49.4	End of Borehole		1				172														
	Note: 1. Hollow stem augers to 3.0 m (Elev. 218.3 m) and ther august the data much retar.																				
	switched to mud rotary. 2. Water level measured at a depth of 3.2 m (Elev. 218.1 m) prior to mud rotary.																				
	 Water level in standpipe piezometer measured as follows: 																				
	Depth(m) El. (m) Date 0.73 220.6 Nov 03, 22						171														
	2.63 218.7 Nov 04 22 1.98 219.3 Feb 01, 23																				
	2.77 218.5 Feb 28, 23																				
							170														
							169														
							168														
							167														
							166														
							165														
							.03														
							10.														
							164														
	1		1		I			L										I			
						+³, Χ³	: Num	oers	refer t	to Sei	nsitiv	rity o ^{so}	% STR/	AIN AT	FAILU	JRE					
L																					

ROJEC								HOLE No. 40			METRIC
.W.P. DIST		ATION	-					^{zone} 10 (LAT. 44.157182; LONG ger; Mud Rotary	79.441689)	ORIGINATED E COMPILED BY	
ATUM					Jun 16, 2			gol, maa riotaly		CHECKED BY	KJB
	SOIL PROFILE			SAMPI	ES	Ĥ	ΓE	DYNAMIC CONE PENETRATIO RESISTANCE PLOT	WATER CONTENT (70)	 _	
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	SHEAR STRENGTH (kPa) X Field Vane ⊕ Remoulded Pocket Pen Quick Triaxial O Unconfined	W _P W W _I 0 NP Nonplastic	HSIBN GR SA	SI CL
0.0	Sandy Gravelly SILT (ML), some clay (FILL) Compact Brownish grey; Moist		1	SS	12			20 40 60 80 100	0 40 60	kN/m ³ 24 25	37 14
251.8			}				252				
0.7	Sandy Gravelly CLAYEY SILT (CL) (FILL) Hard Brownish grey Moist		2	SS	31				01		
51.1 1.4	CLAYEY SILT (CL), trace sand, trace gravel						251				
	Hard Brownish grey to grey Moist		3	SS	52		231				
			4	SS	40		250				
			5	SS	60		249		0	04	56 40
			6	SS	42						
			7	SS	46		248				
							247				
			8	SS	54		246		i o i		
245.4 7.2	CLAYEY SILT (CL) to CLAYEY SILT -SILT (CL-ML), trace sand Very stiff to hard	-					245				
	Grey Wet		9	SS	44				ющ		
							244				
			10	SS	36		243				
	Continued on Next Page		[

ROJEC			-			ORD O					No.				Sheet	2 of 4		MET	
.W.P.	2008-21-00			-		0; E 309464						ONG.	-79.4416	89)			GINATED	-	MM
DIST DATUM	Central H CGVD28 Surface Ele	WY BBP - Hwy 404	BOREHO			210 mm H Jun 16, 202		tem Au	ger; M	ud Rota	ry						IPILED B		
		PROFILE			SAMPL			щ	DYNAM	IC CONE	PENETRA CE PLOT	ATION	\A/A TI	R CONTI	ENIT (0/)				,
1	3012	FROMEL		_		.L.3	GROUNDWATER CONDITIONS	ELEVATION SCALE			CE PLOT		PL Wp	NMC	LL Wi	UNIT WEIGHT			s
ELEV.	DEC		ATA	BER	щ	"N" VALUES	UNDV	NOL	X Fi ⊕ Ri	eld Vane emoulded ocket Pen		-,	۷۷ _p 	••• 0		NB	GR SA	SI CL	REMARKS
DEPTH	DES	SCRIPTION	STRATA	PLOT NUMBER	TYPE	N" VA	GRO CO	EVAT		uick Triaxial				IP Nonpla		γ			RE
	CLAYEY SILT (CL) to CL	LAYEY SILT -SILT (CL-ML				-		Ē	20	40 60	0 80 10	00	20	40	60	kN/m³			
	trace sand Very stiff to hard		,																
	Grey Wet																		
								242											
				11	SS	23													
								241											
				12	SS	39		240					C	>			0 0	62 38	
								239											
				13	SS	67													
								238											
						10		237											
				14	SS	19		231											
								236											
				15	SS	26													
								235											
				16	SS	43		234					H						
	Continue	d on Next Page						233											
	Conunde	a on ment raye					+3, X3	: Numb	ers ref	er to Se	nsitivity	0 ³ %	STRA	N AT FA	ILURE				

C	Ontario 🕅																		\\ \$) G (DLDER
PROJEC	CT 19136074		R	ECC	RD OF	BC	ORE	EHC	DLE	Ξ	Ν	o. 4	04-2	2	5	Sheet	t 3 of	4		MET	
G.W.P.	2008-21-00	LOCATION	_		0; E 309464.1	NAD83	/ MTN	1 Zone	10 (L	AT. 44.	.15718	32; LON	G79.4	441689	9)			IGINATE			/M
DIST	Central HWY BBP - Hwy 404	BOREHOLE			210 mm Hol		tem A	uger;	Mud	Rota	iry							MPILED		MA	
DATUM	CGVD28 Surface Elevation:252.5 m	DATE Ju	un 15,∶	2021 - 、	Jun 16, 2021													ECKED	BY	KJB	
	SOIL PROFILE			SAMPL	ES	H S	SCALE	DYN/	AMIC RES	CONE	ICE PL	ETRATIC LOT	οΝ V 		CONT NMC	ENT (%) LL	UNIT WEIGHT				(0
		∢	~		S	CONDITIONS	N SC		Field	Vane	ENGTH	H (kPa)	W	р	W	W,	NIT		~ ~		REMARKS
ELEV.	DESCRIPTION	STRATA	NUMBER	TYPE	"N" VALUES		DIT	X	Remo Pocke	oulded et Pen < Triaxial			''		0			GR	SA :	SICL	EMA
DEPTH		ST	N	н		50	ELEVATION		Unco	nfined		0 100		NP 20	Nonpl 40		Y				Ŕ
	CLAYEY SILT (CL) to CLAYEY SILT -SILT (CL-ML) trace sand Very stiff to hard Grey Wet),															kN/m				
							232	2													
			17	SS	42		231														
							230														
							229														
			18	SS	59		228														
							227														
							226														
							225	;													
224.6			19 A	SS	46																
27.9	CLAYEY SILT -SILT (CL-ML) to SILT (ML) with slig plasticity, trace to some sand Hard	ht	19 B																		
	Grey Moist						224														
	Continued on Next Page																				
	Continued on MEAL Fage					+ ³ , X ³ :	Num	bers	refer	to Se	ensitiv	/ity o ^s	% ST	RAIN	AT FA	ILURE					

c	ontario 😵																	V	sp co	DLDER
PROJEC			R	ECO	ORD C	F BC	ORE	HO	LE		N	o. 40	4-2		Sh	eet	4 of 4		MET	RIC
G.W.P.		OCATION	-		00; E 309464							2; LONG.	-79.441	689)				GINATED	-	MM
DIST DATUM		OREHOLE ATE Ju			210 mm H Jun 16, 20		item A	uger; I	Mud I	Rota	ry							IPILED E		
DATOM	SOIL PROFILE		11 15,	SAMP			щ	DYNA	MIC C	ONE	PENE	TRATION	W/A-		ONTEN	(%)				3
	301L PROFILE			SAIVIE		VATER	SCAL		RESI	STAN	CE PL	OT (kPa)	PL Wp	N	MC V	LL W	UNIT WEIGHT			ş
ELEV.	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	NOL	Ψ	Field Va Remou Pocket	'ane Jlded		()	۷۷ _p 		• 0		38	GR S/	A SI CL	REMARKS
DEPTH	DESCRIPTION	STR	NUN	≿	۸۳ V/	0R0 0R0	ELEVATION SCALE		Quick T Unconf	Triaxial fined					onplasti		Ŷ			RE
	CLAYEY SILT -SILT (CL-ML) to SILT (ML) with slight	-	-				교 223	20) 40	0 60	0 80	100	2	0 4	10 E	0	kN/m ³			
	plasticity, trace to some sand Hard						225													
	Grey Moist																			
							000													
			20	SS	81/0.28		222						H	}						
221.6 30.9	End of Borehole								_											
	Note: 1. Water level not measured due to introduction water during drilling operations.	of																		
							221													
							220													
							219													
							218													
							217													
			1																	
							216													
							215													
							214													
							I						I		<u> </u>					I
						+ ³ , X ³	: Num	bers re	efer t	o Se	nsitivi	ity o³%	STR/	AIN A	FAIL	JRE				
L																				

ROJEC		_			ORD C				No. 40			et 1 of 4		MET	
.W.P.	Assignment No.: 2019-E-0048		_						44.153824; LON	G79.4	40624)		GINATED E	-	MM
IST ATUM	Central HWY BBP - Hwy 404 CGVD28 Surface Elevation:252.1 m	_ BOREHOL DATE J					em Aug	er; Mud Rot	ary				MPILED BY ECKED BY	M. K.	
	SOIL PROFILE			SAMPI			щ р	NAMIC CON	E PENETRATIO	N 14/4-	TER CONTENT (%				
				SAME		GROUNDWATER CONDITIONS	ELEVATION SCALE			- PL W _p	NMC L W V	L L こう			S,
ELEV.		TATA	Ë	щ	LUES	NDND	NOI	Field Vane Remoulded	ENGTH (kPa)		0		GR SA	SI CL	REMARKS
DEPTH	DESCRIPTION	STRATA	NUMBER	ТҮРЕ	'N" VALUES	0 C C C C		Pocket Pen Quick Triaxi Unconfined	al		NP Nonplastic	Y			L L L
					F	1 M		20 40 6	<u>50 80 100</u>	2	0 40 60	kN/m ³			
0.0	Sandy SILTY GRAVEL (GM), some fines (FILL) Compact		3				252								
	Moist to dry			SS	14										
251.4	Sandy SILT (ML), trace gravel (FILL)	-	X-												
0.7	Compact		\mathbf{X}												
	Moist to dry		2	SS	12		251			G			1 27	59 13	
250.6			3												
1.4	CLAYEY SILT (CL), trace sand Stiff to hard														
	Brown to grey, iron oxide staining Moist.		3	SS	14										
	Wold.						250								
			4	SS	20										
			4	55	20										
			-												
						\sim	249				Ť				
			5	SS	22										
								NК							
			_												
			6	SS	33		248								
						NИ									
			7		20					Ι.				EA 4E	
			1	SS	32		247			'			0 1	54 45	
			-				241								
246.5						- 4									
5.6	CLAYEY SILT-SILT (CL-ML), trace sand (TILL) Hard		A												
	Grey Moist to wet														
	Wolst to wet					НI	246								
			8	SS	31	日日									
			A A			目上									
			N.A.												
							245								
			2												
						目上									
						目上									
			9	SS	36	目上	244								
						目上									
						目上									
						目上									
						티니	243								
			10	SS	40										
	Continued on Next Page		3	<u> </u>									I		I
						+ ³ , X ³ :	Numbe	s refer to S	ensitivity o ³⁰	% STR/	AIN AT FAILURE				

PROJEC	T <u>19136074</u>	-	R	ECC	ORD O	F BO	RE	HOL	E	N	lo. 4	04-4	ŀ	Sh	neet :	2 of 4			MET	RIC
G.W.P.	Assignment No.: 2019-E-0048		1	N 489042	6.9; E 309549	9.5 NAD83	3 / MTI	I Zone 1	0 (LAT.	44.153	3824; LOI	NG79.	440624)			GINAT	ED B	Y _!	MM
DIST	Central HWY BBP - Hwy 404	BOREHOL			210 mm H		em Au	ger; M	ud Rot	ary							IPILE		M/ KJI	
DATUM	CGVD28 Surface Elevation:252.1 m	DATE J	un 10,				111					NI					CKEE) BY		
	SOIL PROFILE		-	SAMPI	LES	ATER NS	CALI	R	ESISTA	NCE P		- PL		IMC	LL	UNIT WEIGHT				U
ELEV. DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES	GROUNDWATER CONDITIONS	ELEVATION SCALE	X Fie ⊕ Re Po Qu O Ur	eld Vane emoulded ocket Pen uick Triaxi nconfined	al	Ή (kPa) 0 100	W _P	NP N	W -o onplasti 40 6		Y kN/m ³	GR	SA	SI CL	DEM ADKS
	CLAYEY SILT-SILT (CL-ML), trace sand (TILL) Hard																			
241.9	Grey						242													
10.2	Moist to wet CLAYEY SILT (CL) Very stiff to hard																			
	Grey Moist																			
	WOISt																			
			11	SS	26		241						ю				0	0	55 45	
							240													
			12	SS	29				T											
							000							ľ						
							239													
									К											
			12		40															
			13	SS	40		238													
						MИ														
11.0																				
14.8 237.3	Sandy SILT (ML) to SILT (ML), some sand		¥2																	
	Very dense Grey						237													
	Wet.		14	SS	55/0.10															
							236													
							200													
			15	SS	100/0.28								0				0	15	74 11	
							235													
							234													
			16	SS	40/0.08															
							233													
	Continued on Next Page			· · · · ·				ers ref						•	•					•

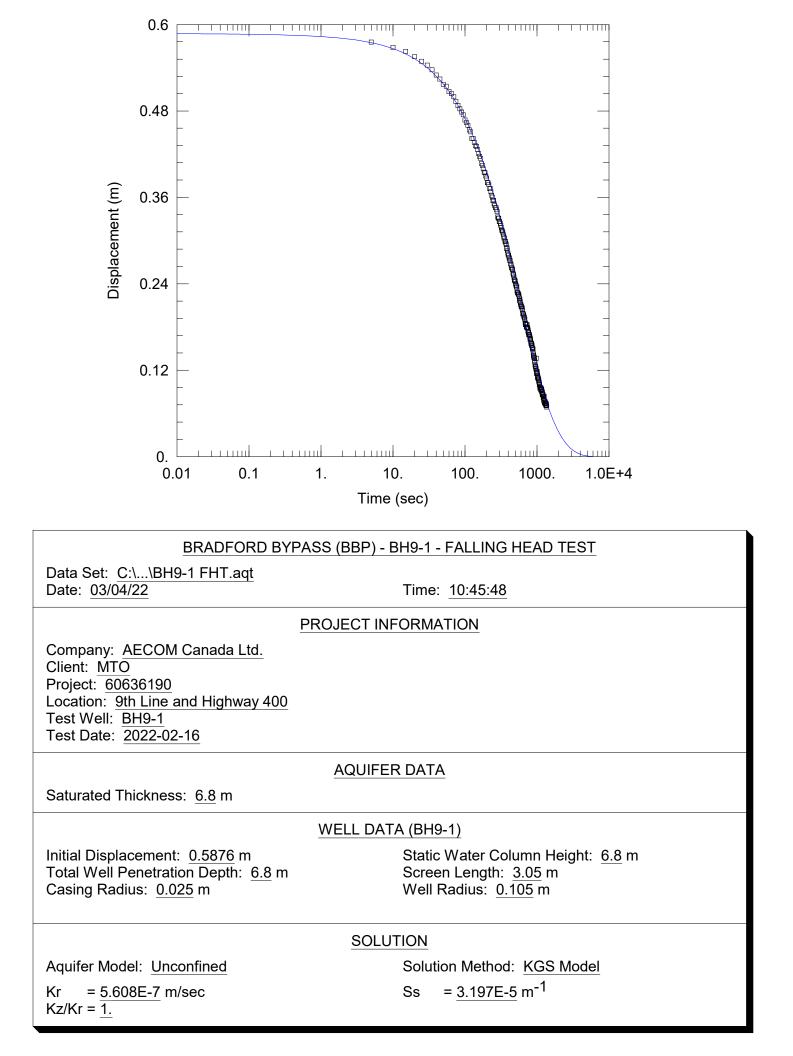
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PROJEC	T 19136074		R	ECC	ORD (OF BO	ORE	HO	LE		No. 4	404	-4		Sheet	3 of 4			MET	
G.W.P.		CATION			6.9; E 309						53824; L	ONG	-79.44(624)				ED BY	-	MM
DIST DATUM	Central HWY BBP - Hwy 404 BOI CGVD28 Surface Elevation:252.1 m DA	REHOLE			210 mm Jun 15, 2		Stem A	uger; I	Mud Ro	otary									M/ KJ	
DATOM	SOIL PROFILE	<u> </u>	1	SAMPL		1	ш	DYNA	MIC CO	NE PE	ENETRAT	ION	WATE		TENT (%)	<u> </u>				
				0/ 11/1 2		GROUNDWATER CONDITIONS	ELEVATION SCALE	SH	RESIST		EPLOT GTH (kPa)		PL W,	NMO	C LL W,	UNIT WEIGHT				Š
ELEV.	DESCRIPTION	ATA	BER	TYPE	TUES		NOL	X	Field Vane Remoulde Pocket Pe Quick Tria	e ed				0		53	GR	SA	SI CL	REMARKS
DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	≽	"N" VALUES	020	EVA-	10	Unconline	be				IP Nonp		Ŷ				RE
	Sandy SILT (ML) to SILT (ML), some sand						Ш	20	40	60	80 100	0	20	40	60	kN/m ³				
232.2	Very dense	ШШ																		
19.9	\Wet. CLAYEY SILT (CL), trace sand, trace gravel, silt layers						232													
	Hard Grey																			
	Moist to wet																			
							231													
						-														
			17	SS	69															
							230													
								K												
							229													
228.8 23.3	CLAYEY SILT-SILT (CL-ML), trace sand	-																		
	Hard Grey																			
	Moist to wet																			
							228													
			18	SS	53								н	,			0	0	85 15	
							227													
							226													
	*						225													
			19	SS	69								ю	a						
						-	224													
																	1			
																	1			
	CLAYEY SILT (CL), trace sand, trace gravel						223										1			
222.7	Hard Grey Moist to wet						223										1			
222.7	Continued on Next Page	14222	u				1	1		0	1	- 30/ 0				1	1			1
						+³, X³	: Num	pers r	eter to	Sensi	itivity (o*% S	5 I RAI	N Aſ F	AILURE					
L																				

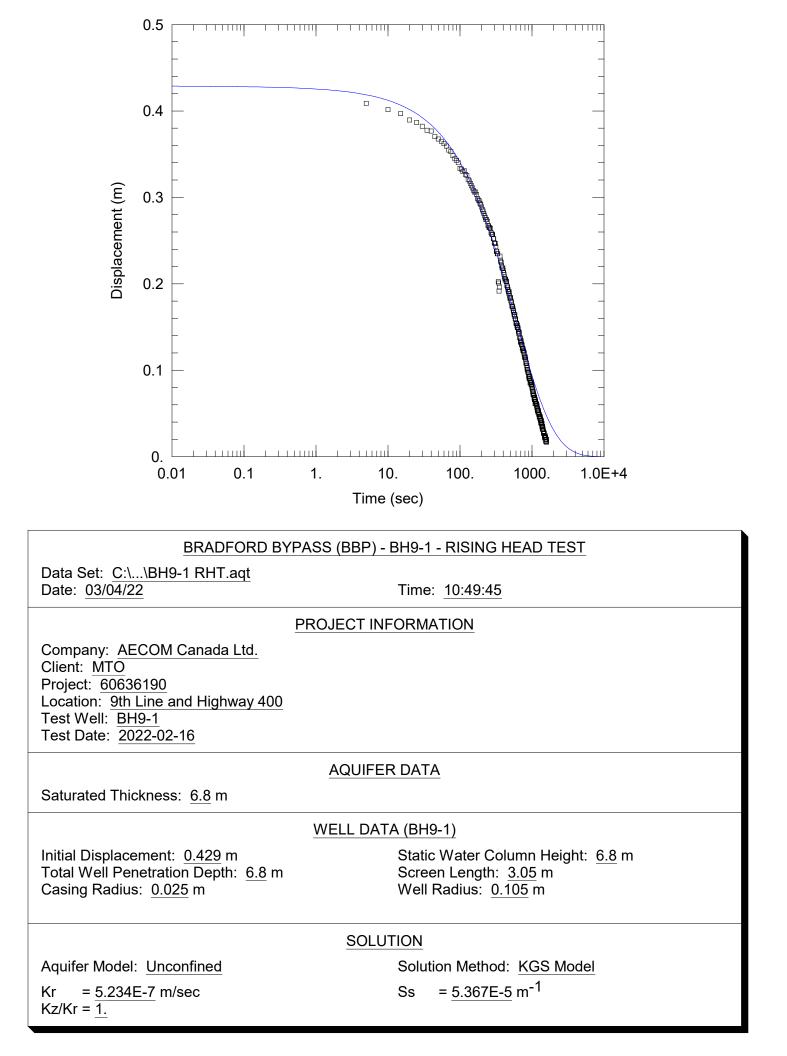
C	Ontario 🕅																	V	sp Go	DLDER
PROJEC	CT 19136074		R	ECO	RDC)F B(ORE	HC	DL	Ξ	Ν	o. 4	04-	4	5	Sheet	4 of 4	ļ	MET	RIC
G.W.P.	Assignment No 2019-E-0048	LOCATION	-		6.9; E 3095							824; LO	NG7	9.440	624)			GINATED	-	MM
DIST DATUM	Central HWY BBP - Hwy 404 CGVD28 Surface Elevation:252.1 m	DATE J		-	210 mm un 15, 20		item A	uger;	Muc	l Rota	ry							MPILED B		4
DATON	SOIL PROFILE	DAIL J		SAMPL			щ	DYN	AMIC	CONE	PEN	ETRATIC	DN 1			NT (%)			·	
						GROUNDWATER CONDITIONS	SCAI	s	HEAF	SISTAN		LOT H (kPa)	- P W	1/L /	R CONTE NMC W	LL Wi	UNIT WEIGHT			KS
ELEV.	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" VALUES		lion	X⊕∎●O	Field Rem	Vane oulded et Pen		. ,	li	р 	0		53	GR SA	A SI CL	REMARKS
DEPTH	DESCRIPTION	PL	NUN	Ł	// "N"	0 0 0 0 0 0 0	ELEVATION SCALE		Quic Unco	k Triaxial nfined					P Nonpla		Y			RE
	CLAYEY SILT (CL), trace sand, trace gravel		*				Ξ	2	20 4	10 60	0 80	0 100	+	20	40	60	kN/m ³			
	Hard Grey																			
	Moist to wet																			
							222													
			20	SS	38															
221.1	End of Porcholo			00	00									_		_				
31.0	End of Borehole Note: 1. Water level measured at a depth of 3.0 m (Elev. 2	249 m)				1	221													
	prior to introducing water for mud rotary . 2. Water level measured at a depth of 4.2 m (El. 24	1																		
	on March 22, 2022.																			
							220													
							220													
							219													
							218													
							217													
							216													
							215													
							214													
							213													
						+³, χ³	: Num	bers	refer	to Se	ensitiv	vity o ³	% ST	RAI	N AT FA	ILURE				

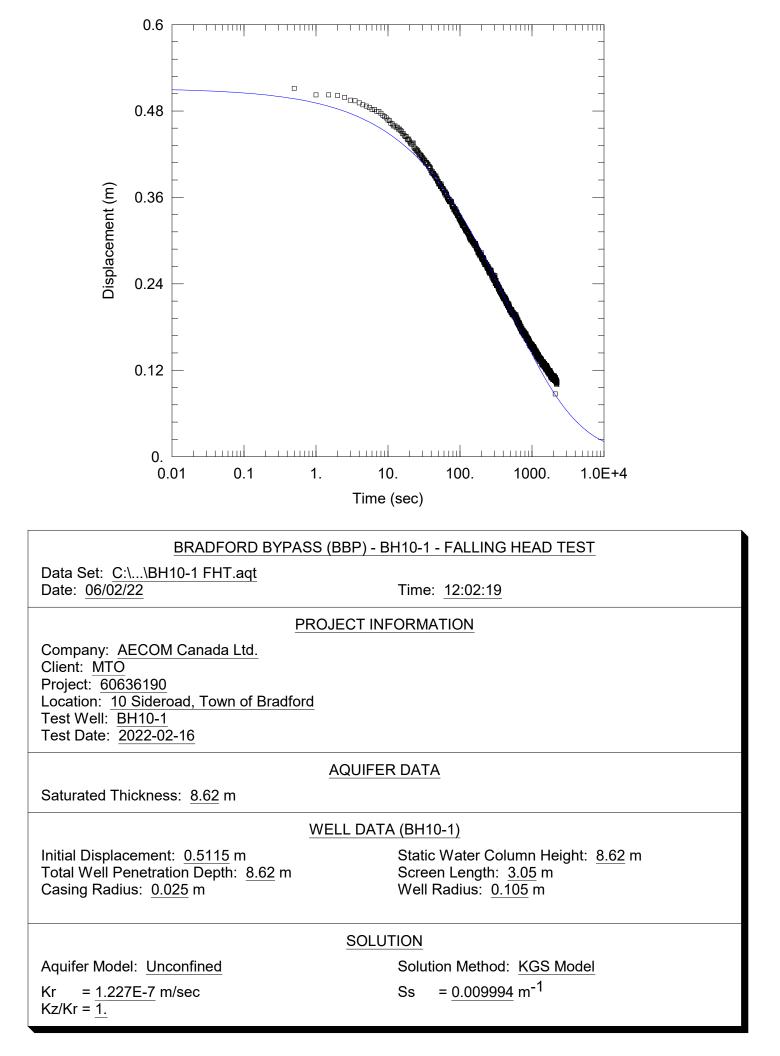


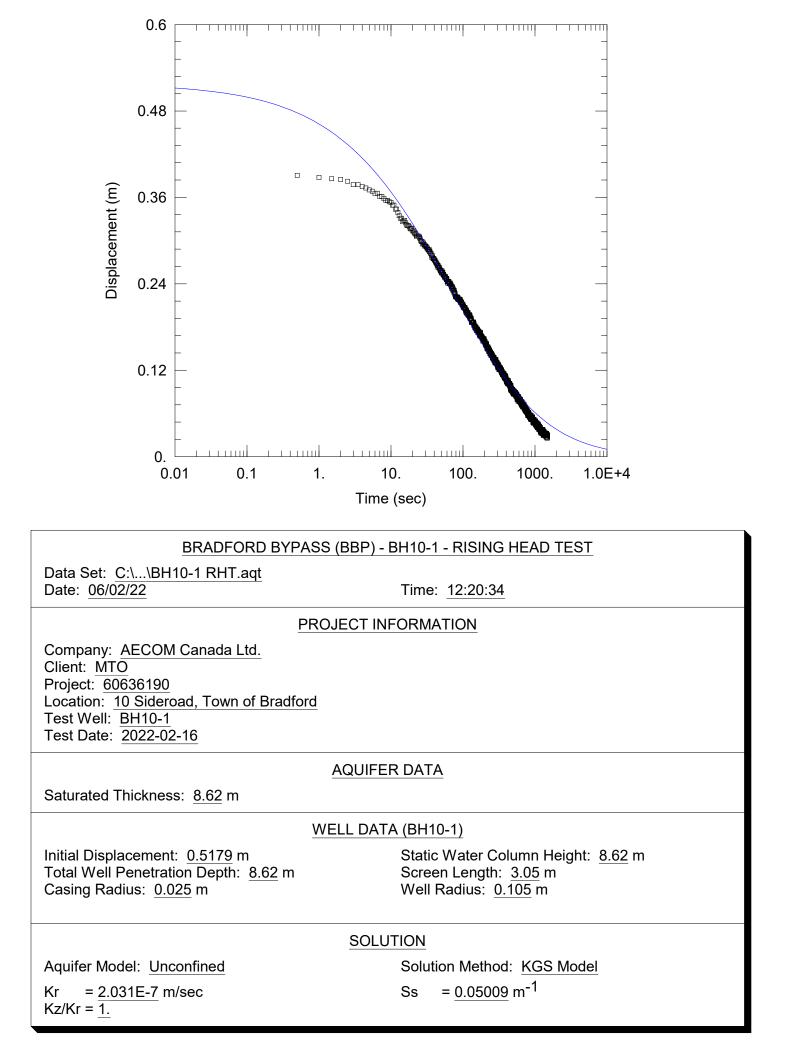
Appendix **B**

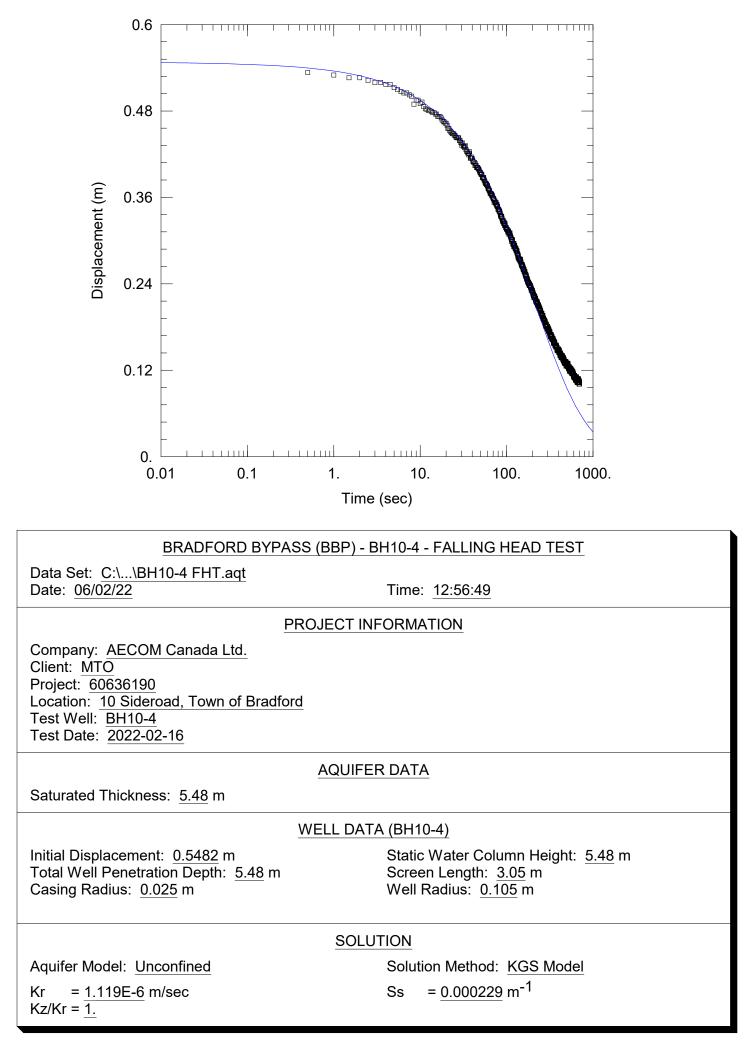
Hydraulic Conductivity Testing

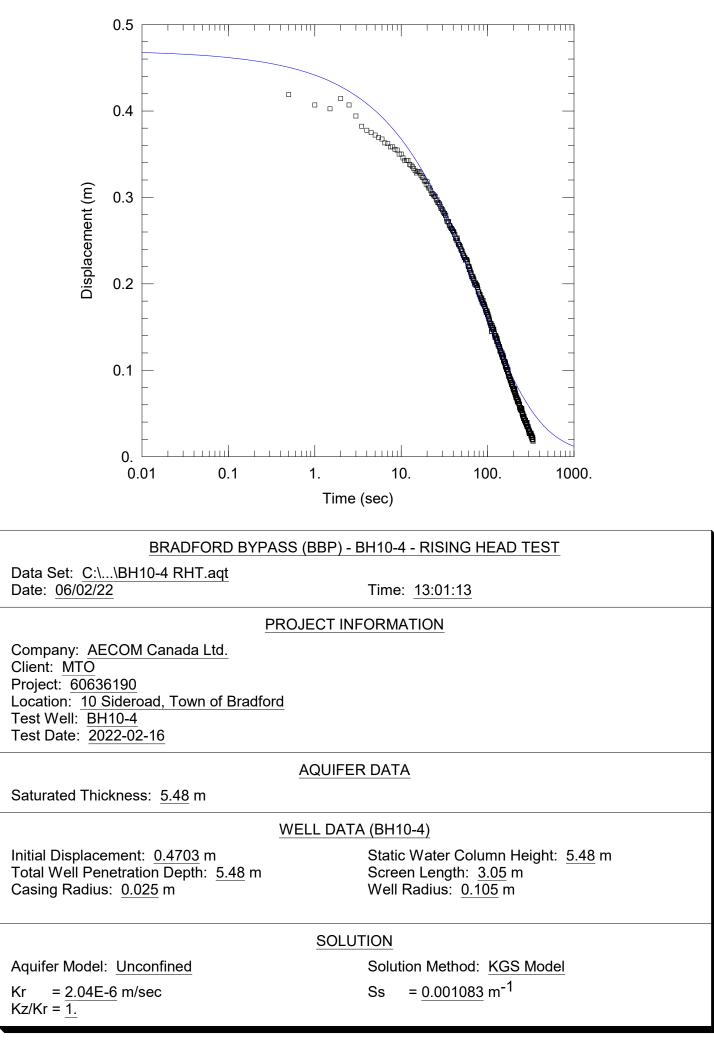


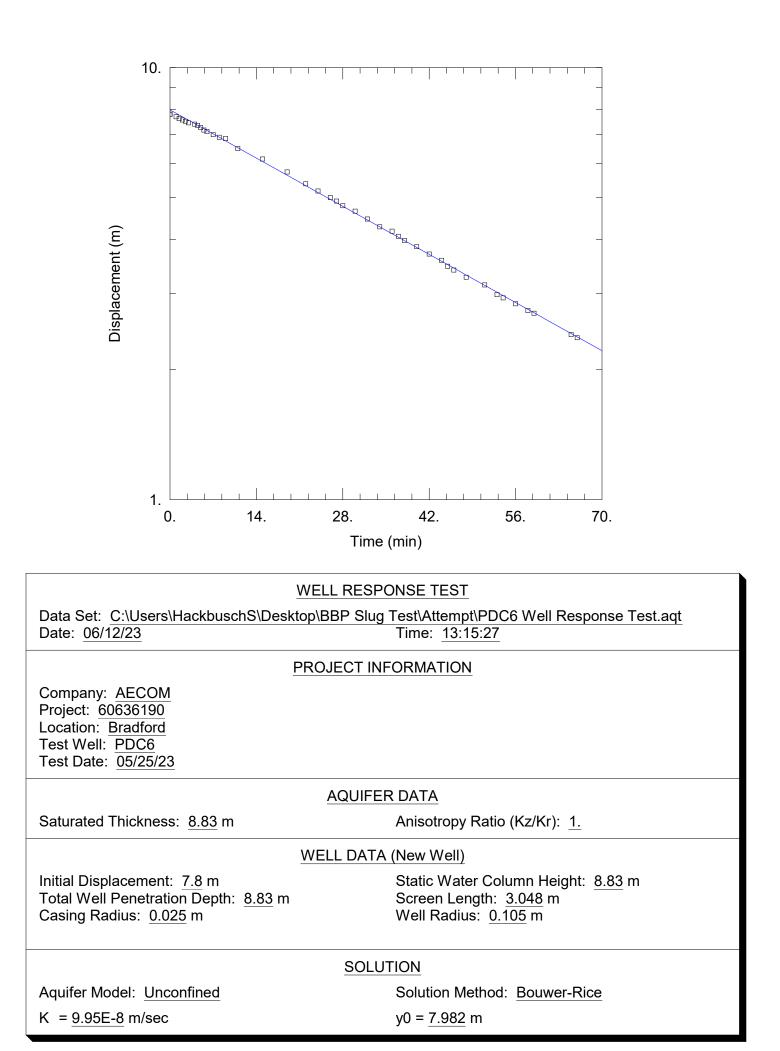


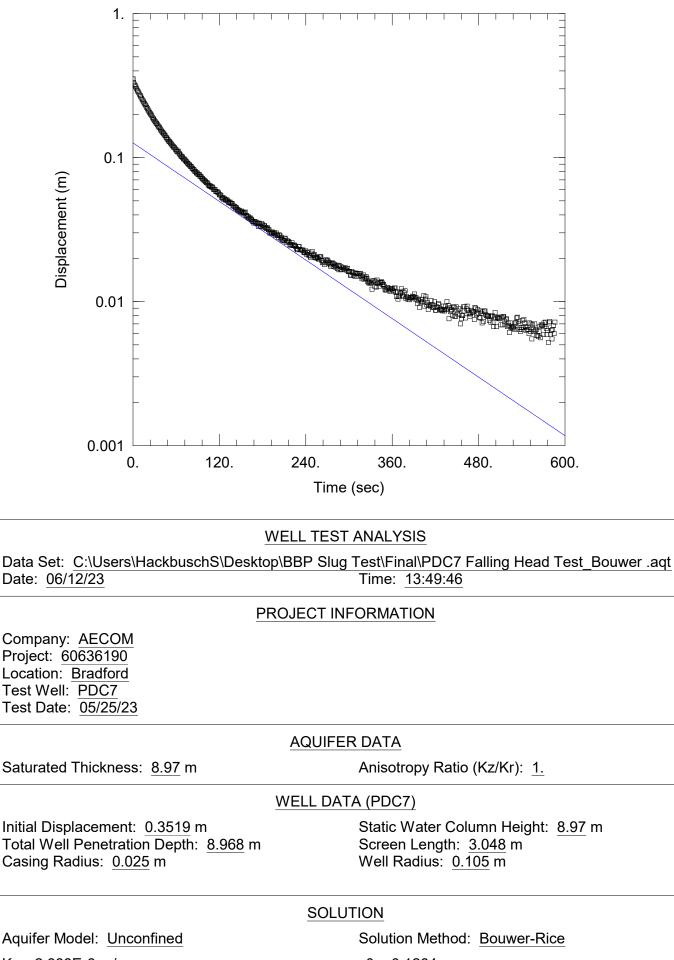






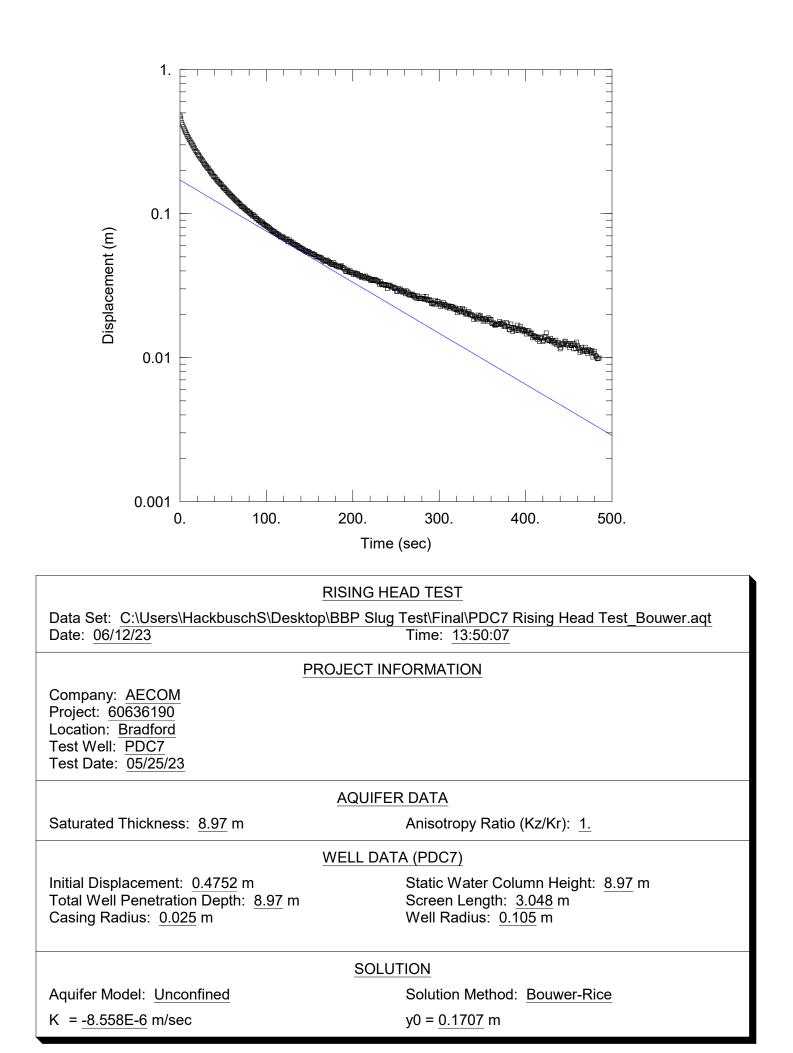


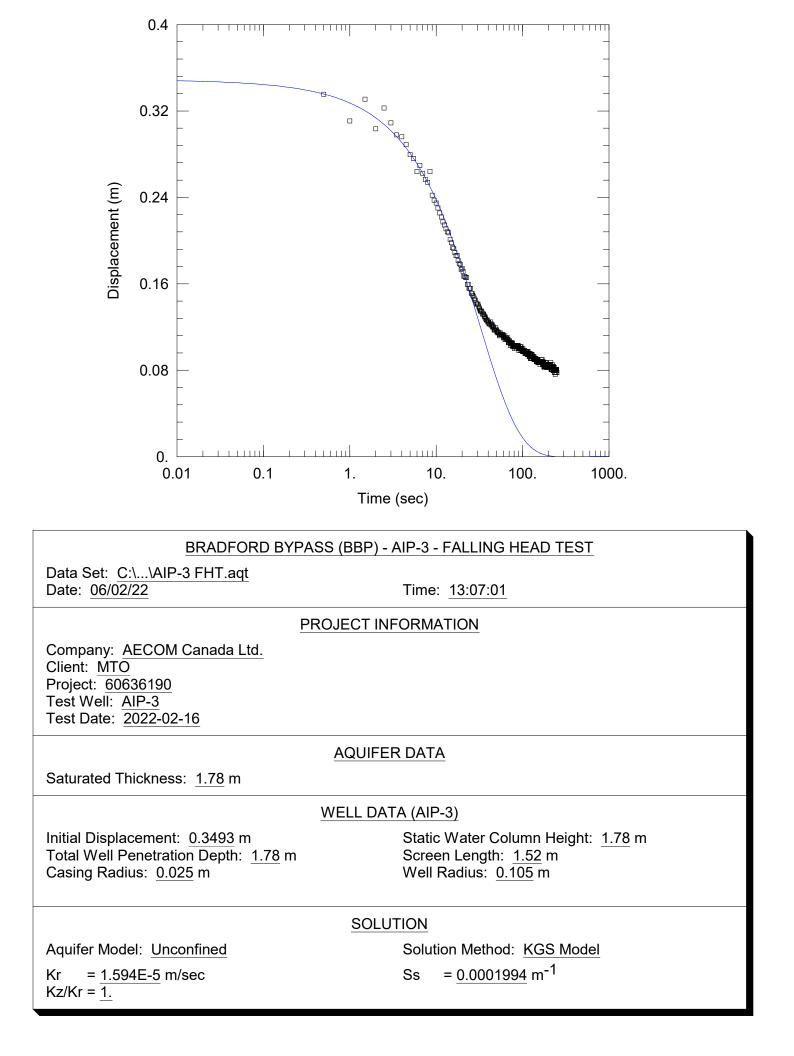


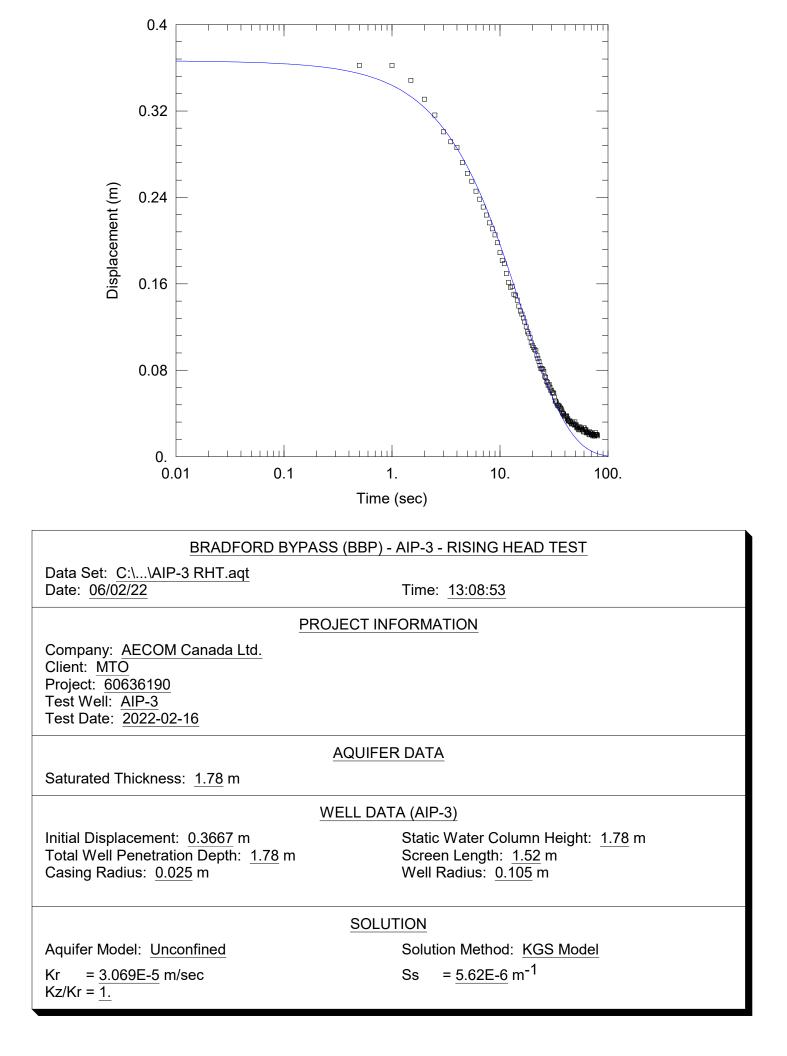


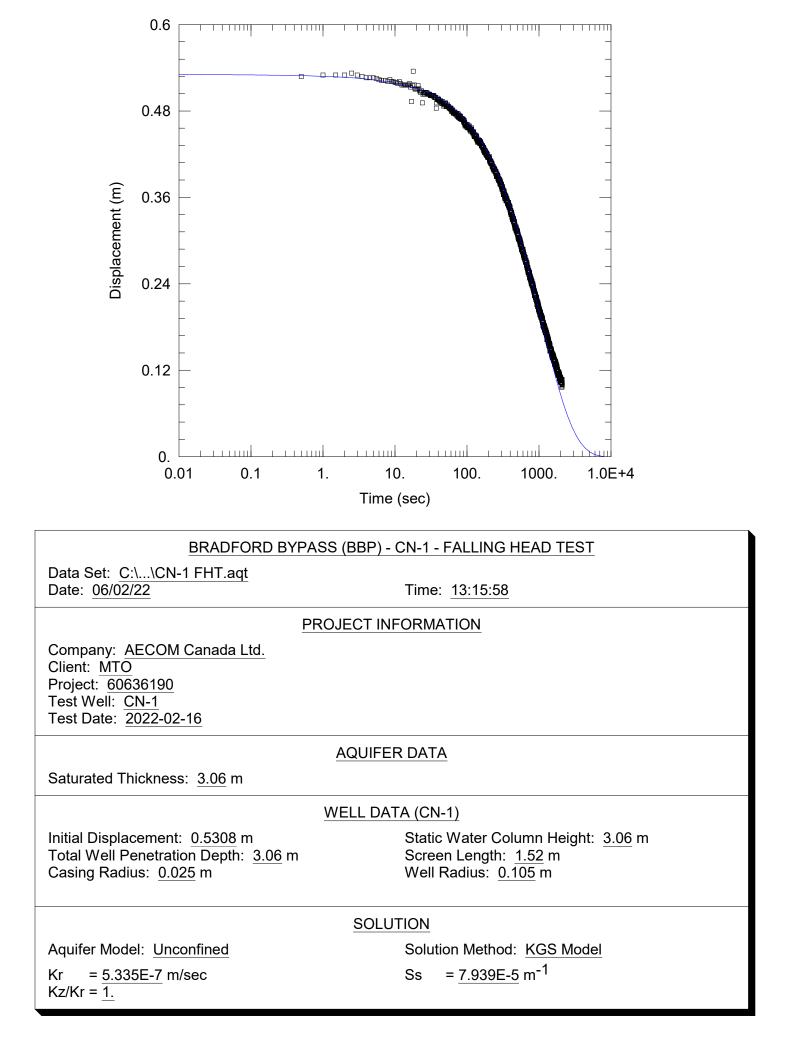
K = 2.888E-6 m/sec

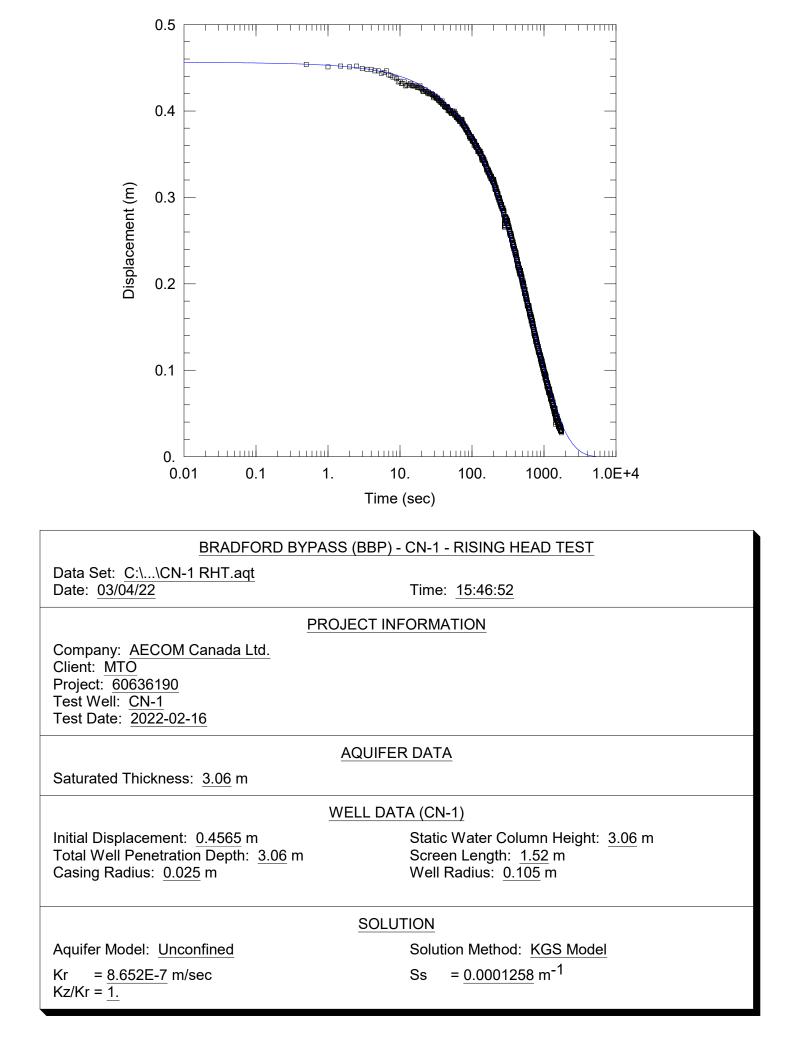
y0 = 0.1264 m

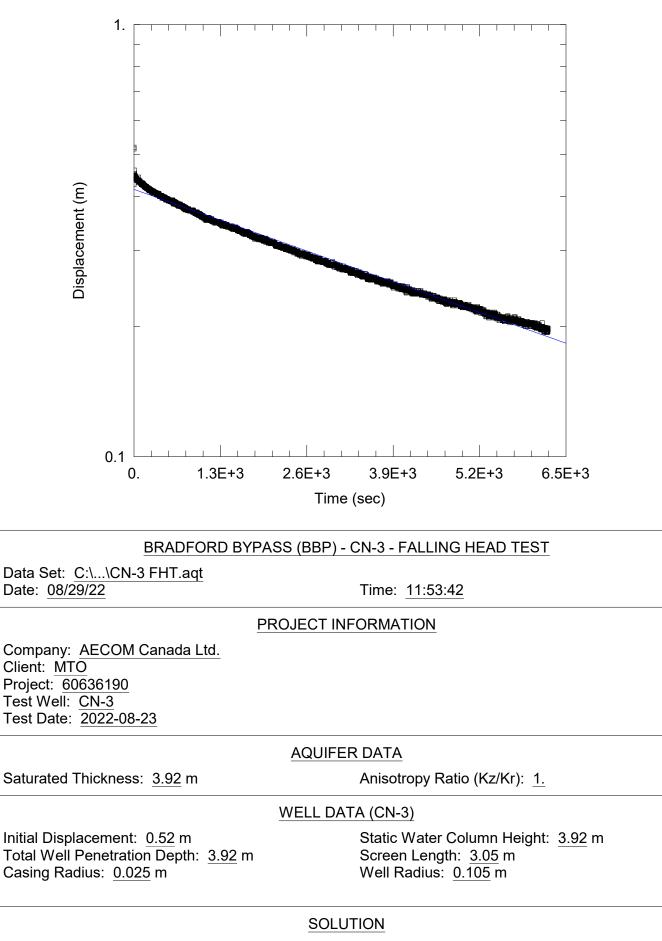










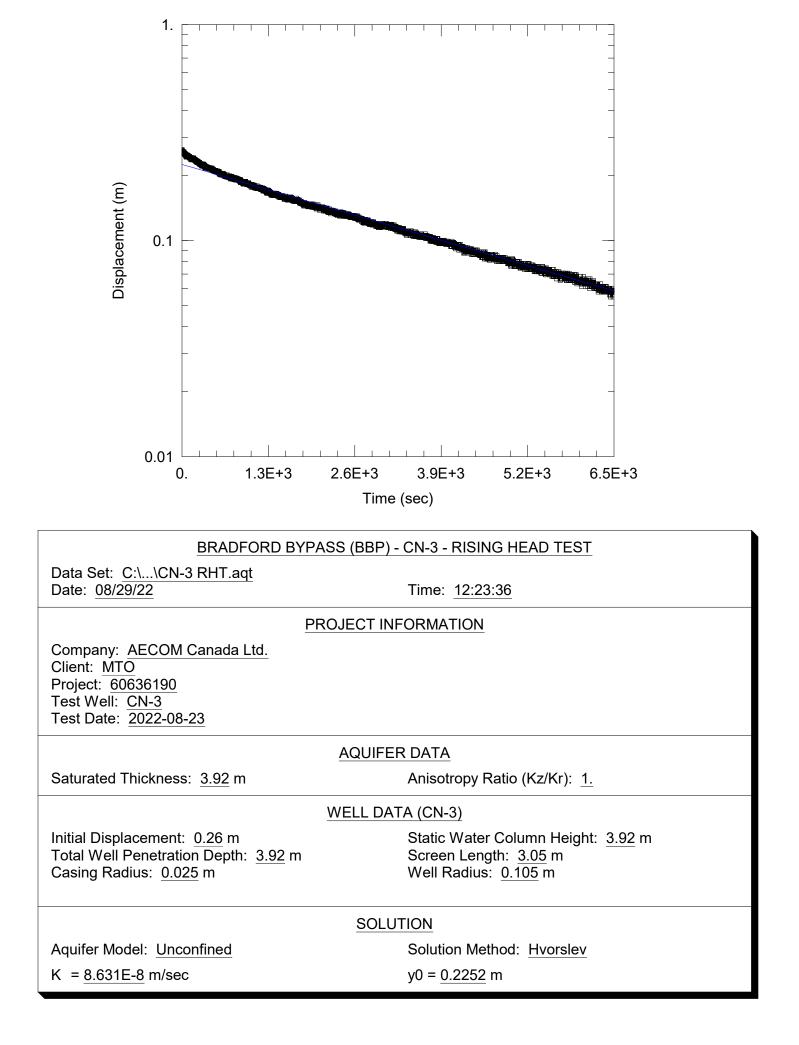


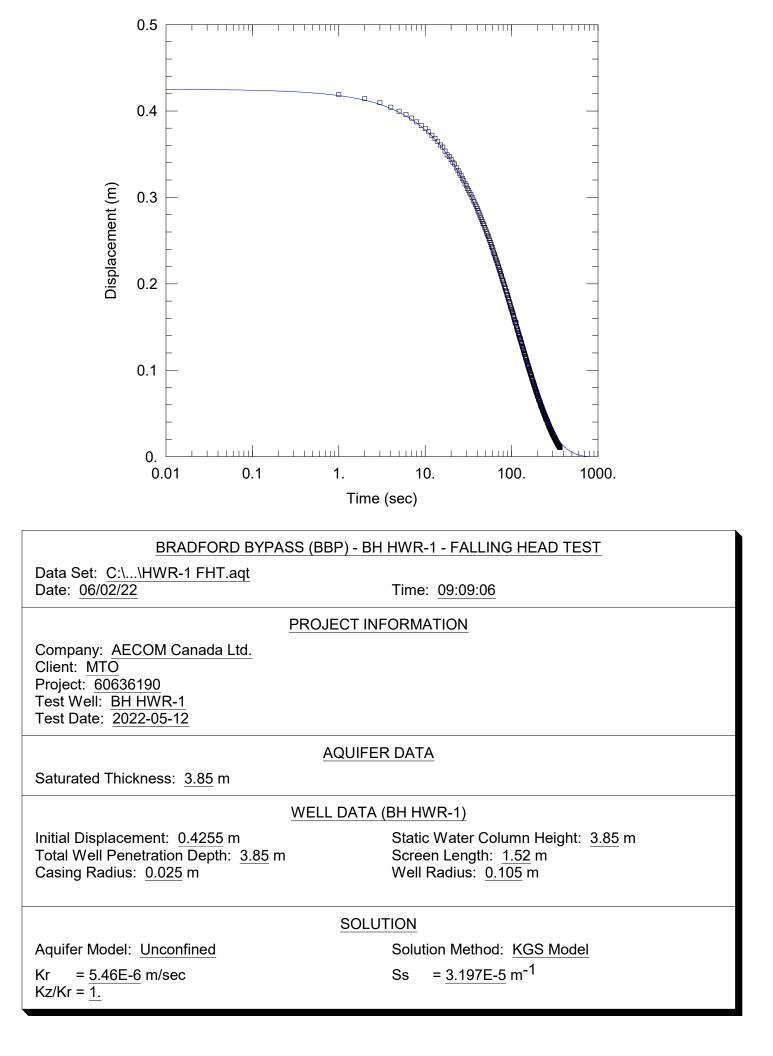
Aquifer Model: Unconfined

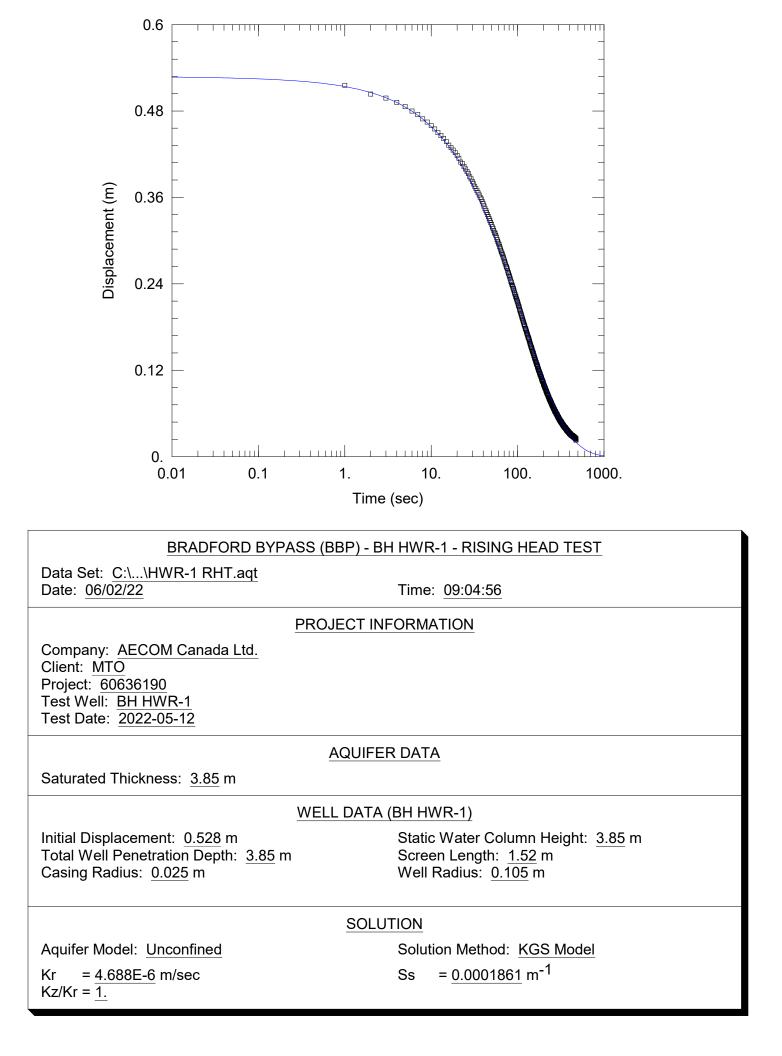
K = 5.252E-8 m/sec

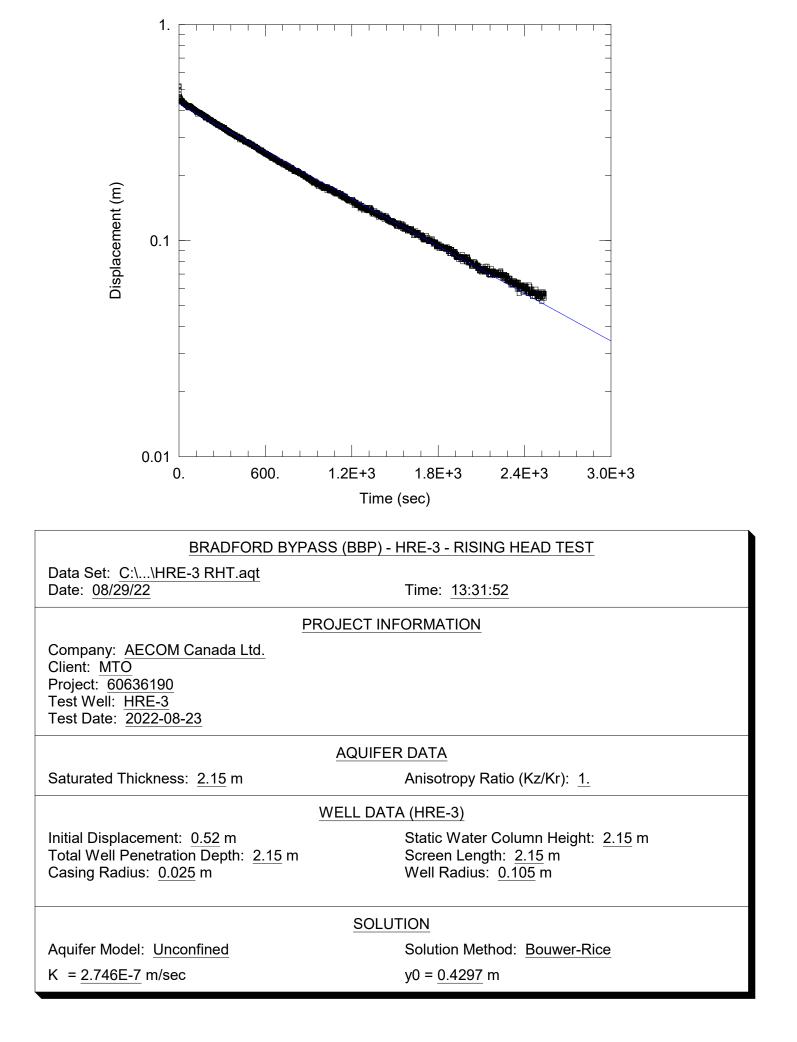
Solution Method: Hvorslev

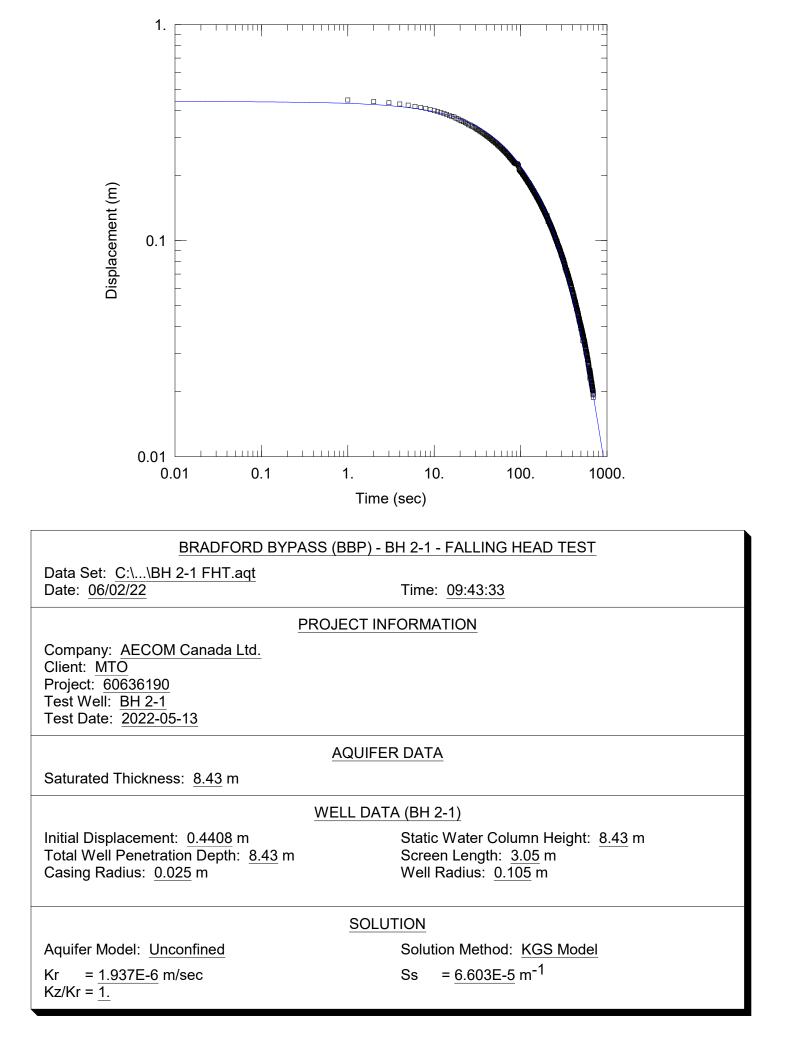
y0 = <u>0.4154</u> m

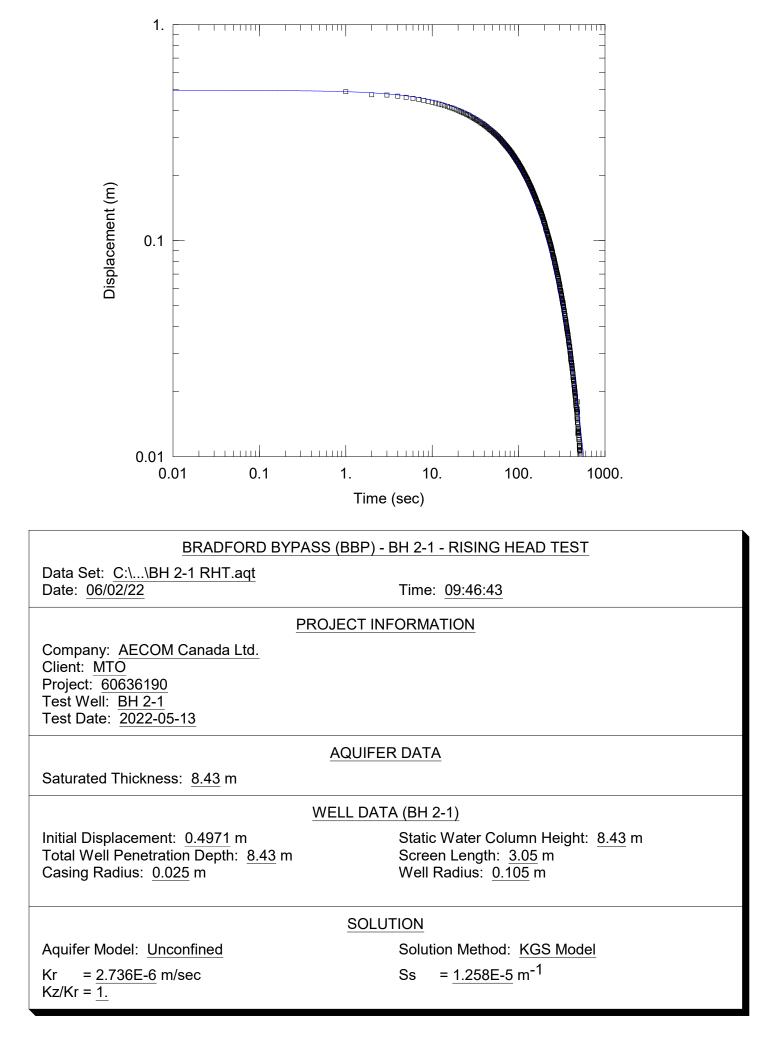














Appendix C

Water Quality Testing Results

	AGAT W	ork Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	S	Sampling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	We	Il Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Deremeters		s RDL												
Parameters Organics	Units													
Oil and Grease (animal/vegetable) in	wimg/I	0.5	<0.5	-	<0.5	-	<0.5	<0.5	-	1.12	_	2.33	-	-
Oil and Grease (mineral) in water	mg/L	0.5	<0.5	-	<0.5	-	<0.5	<0.5	_	<0.5	_	<0.5	_	_
Methylene Chloride	μg/L	0.3	< 0.3	-	<0.3	_	< 0.3	<0.3	_	<0.3	_	< 0.3	_	_
cis- 1,2-Dichloroethylene	μg/L	0.2	<0.2	-	<0.2	_	<0.2	<0.2	_	<0.2	_	<0.2	_	_
Chloroform	μg/L	0.2	<0.2	-	<0.2	_	<0.2	<0.2	-	<0.2	_	<0.2	_	_
Benzene	μg/L	0.2	<0.2	-	<0.2	-	< 0.2	<0.2	_	<0.2	_	<0.2	_	_
Trichloroethylene	μg/L	0.2	<0.2	_	<0.2	-	<0.2	<0.2	-	<0.2	_	<0.2	_	_
trans-1,3-Dichloropropene	μg/L	0.30	<0.30	_	< 0.30	-	< 0.30	<0.30	-	< 0.30	_	< 0.30	_	_
Toluene	μg/L	0.2	< 0.2	-	<0.2	-	< 0.2	<0.2	-	<0.2	_	<0.2	_	_
Tetrachloroethene	μg/L	0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	_	<0.1	_	_
Ethylbenzene	μg/L	0.1	<0.1	_	<0.1	_	<0.1	<0.1	-	<0.1	_	<0.1	_	_
1,1,2,2-Tetrachloroethane	μg/L	0.1	<0.1	_	<0.1	-	<0.1	<0.1	_	<0.1	_	<0.1	_	_
1,4-Dichlorobenzene	μg/L	0.1	<0.1	_	<0.1	_	<0.1	<0.1	_	<0.1	_	<0.1		_
1,2-Dichlorobenzene	μg/L	0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	_	<0.1	_	_
Xylenes (Total)	μg/L	0.2	<0.2	_	<0.2	-	<0.2	<0.2	-	<0.2	_	<0.2	_	_
Toluene-d8	% Recov		96	-	98	-	100	101	-	98	_	70	_	_
4-Bromofluorobenzene	% Recov		102	_	83	-	86	80	_	80	_	93	_	_
PCBs	μg/L	0.2	<0.2	_	<0.2	-	<0.2	<0.2	_	<0.2	_	<0.2	_	_
Decachlorobiphenyl	%	1	84	_	106	-	114	110	_	75	_	77	_	_
Di-n-butyl phthalate	ug/L	0.5	<0.5	-	<0.5	_	<0.5	<0.5	_	0.69	_	<0.5	_	_
Bis(2-éthylhexyl)phthalate	μg/L	0.5	< 0.5	_	<0.5	_	<0.5	<0.5	_	0.59	_	<0.5	_	_
2,4,6-Tribromophenol	%	1	89	_	89	_	79	89	_	83	_	78	_	_
Chrysene-d12	%	1	78	_	78	_	89	74	_	74	_	79	_	_
Inorganics	,,,		10		10			· ·				10		
Biochemical Oxygen Demand, Carbor	na mg/L	2.00	<2.00	-	<6.00	-	<2	<2.00	-	4	-	2	_	-
pH	pH Units		7.75	_	7.52	-	8.02	7.44	_	7.91	_	7.76	_	_
Total Suspended Solids	mg/L	10	15	_	10	_	26	308	_	544	_	2600	_	_
Fluoride	mg/L	0.05	<0.05	_	<0.05	_	< 0.05	<0.05	_	< 0.05	_	< 0.05	_	_
Sulphate	mg/L	0.10	37.6	-	10.6	_	86.5	14.8	_	2.79	_	2.03		_
Total Cyanide	mg/L	0.002	<0.002	_	< 0.002	_	< 0.002	<0.002	-	< 0.002	_	< 0.002	-	_
Phenols	mg/L	0.002	0.014	-	0.041	-	0.002	0.036	-	0.021	-	0.064	-	-
Total Kjeldahl Nitrogen	mg/L	0.10	0.014		1.28	-	0.000	0.030	_	1.86		2.27		<u> </u>
Total Aluminum	mg/L	0.010	0.167	-	0.124	-	0.488	1.63		3.88		32.5		
Total Antimony	mg/L	0.010	<0.020	-	< 0.020	-	<0.020	<0.020		<0.020		<0.040		
Total Arsenic	mg/L	0.020	<0.020		<0.020	_	<0.020	<0.020	-	<0.020		<0.040	-	-
Total Cadmium	mg/L	0.015	<0.010		<0.010	_	<0.010	<0.010	-	<0.010	-	<0.030		-
Total Chromium		0.000	<0.010	-	<0.010	-	<0.010	<0.010	-	<0.010	-	0.020	-	
	mg/L	0.020	NU.010	-	~0.015	-	NU.U13	NU.015	-	~0.015	-	0.044	-	-

	AGAT Wor	k Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sar	mpling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well	Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units	RDL												
Total Cobalt	mg/L	0.020	<0.010	-	<0.010	-	<0.010	<0.010	-	<0.010	-	0.022	-	-
Total Copper	mg/L	0.015	<0.002	-	<0.002	-	<0.002	0.003	-	0.011	-	0.065	-	-
Total Lead	mg/L	0.020	<0.020	-	<0.020	-	<0.020	<0.020	-	<0.020	-	<0.040	-	-
Total Manganese	mg/L	0.020	0.042	-	0.716	-	0.033	0.125	-	0.282	-	1.86	-	-
Total Mercury	mg/L	0.0002	<0.020	-	<0.020	-	<0.020	<0.0002	-	0.03	-	<0.040	-	-
Total Molybdenum	mg/L	0.020	<0.0002	-	<0.0002	-	<0.0002	<0.020	-	<0.0002	-	<0.0002	-	-
Total Nickel	mg/L	0.015	<0.015	-	<0.015	-	<0.015	<0.015	-	<0.015	-	0.044	-	-
Total Phosphorus	mg/L	0.02	<0.02	-	0.03	-	0.03	0.06	-	0.14	-	1.29	-	-
Total Selenium	mg/L	0.002	<0.002	-	<0.002	-	<0.002	<0.002	-	<0.002	-	<0.004	-	-
Total Silver	mg/L	0.020	<0.010	-	<0.010	-	<0.010	<0.010	-	<0.010	-	<0.020	-	-
Total Tin	mg/L	0.025	<0.020	-	<0.020	-	<0.020	<0.020	-	<0.020	-	<0.040	-	-
Total Titanium	mg/L	0.010	0.012	-	<0.010	-	0.014	0.046	-	0.193	-	1.14	-	-
Total Zinc	mg/L	0.020	<0.020	-	<0.020	-	<0.020	<0.020	-	0.022	-	0.104	-	-
Nonylphenol and Nonylphenol Ethoxyla	tes (Ontario	o, mg/L)												
Total Nonylphenol	mg/L	0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	0.029	-	<0.001	-	-
NP1EO	mg/L	0.001	<0.001	-	<0.001	-	-	<0.001	-	<0.001	-	<0.001	-	-
NP2EO	mg/L	0.0003	<0.0003	-	<0.0003	-	-	<0.0003	-	<0.0003	-	<0.0003	-	-
Total Nonylphenol Ethoxylates	mg/L	0.001	<0.001	-	<0.001	-	<0.01	<0.001	-	<0.001	-	<0.001	-	-

	AGAT Work Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sampling Date		8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units RDL												
		ceeds Storm Sew	l /er: Shaded - F	I Exceeds Sanitary	Sewer								
Standards	Table 1: Full Depth Bad			•		Property Uses							
Clandal de	The Regional Municipa	•											
	Metals analysis comple	•	-										
	DDT total is a calculate			e is the sum of o	p'DDT and pp'[DDT.							
	DDD total is a calculate	•											
	DDE total is a calculate	•											
	Endosulfan total is a ca	Ilculated parame	er. The calculate	ed value is the su	m of Endosulfa	an I and Endosi	ulfan II.						
	Chlordane total is a cal	culated paramete	er. The calculated	d value is the sur	n of Alpha-Chlo	ordane and Gai	mma-Chlordane.						
	PCB total is a calculate	d parameter. The	e calculated valu	e is the sum of A	roclor 1242, Ar	oclor 1248, Arc	oclor 1254 and A	roclor 1260.					
	The calculated parame	ters are non-acc	redited. The para	meters that are o	components of	the calculation	are accredited.						
	Note: The result for Be	nzo(b)Fluoranthe	ne is the total of	the Benzo(b)&(j)	Fluoranthene is	somers becaus	e the isomers co	-elute on the G	GC column.				
PAHs	2- and 1-Methyl Naphth that are components of			The calculated va	alue is the sum	of 2-Methyl Na	aphthalene and 1	-Methyl Napht	halene. The ca	lculated parame	eter is non-accr	edited. The para	ameters

	AGAT Wo	rk Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sa	mpling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
		Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Devenuedere														
Parameters Organics	Units	RDL												
Oil and Grease (animal/vegetable) in	wimg/L	0.5	<0.5	-	<0.5	-	-	<0.5	-	1.12	-	2.33	-	-
Oil and Grease (mineral) in water	mg/L	0.5	<0.5	_	<0.5	-	-	<0.5	_	<0.5	_	<0.5	-	-
Methylene Chloride	μg/L	0.3	<0.3	-	<0.3	-	-	<0.3	_	<0.3	_	< 0.3	_	-
cis- 1,2-Dichloroethylene	μg/L	0.2	<0.2	_	<0.2	-	-	<0.2	-	<0.2	_	<0.2	-	-
Chloroform	μg/L	0.2	<0.2	-	<0.2	-	-	<0.2	-	<0.2	_	<0.2	-	-
Benzene	μg/L	0.2	<0.2	-	<0.2	-	-	<0.2	_	<0.2	_	<0.2	_	-
Trichloroethylene	μg/L	0.2	<0.2	-	<0.2	_	-	<0.2	_	<0.2	_	<0.2	-	_
trans-1,3-Dichloropropene	μg/L	0.30	<0.30	-	< 0.30	_	_	<0.30	_	< 0.30	_	< 0.30	_	_
Toluene	μg/L	0.2	<0.2	-	<0.2	-	-	<0.2	-	<0.2	_	<0.2	-	-
Tetrachloroethene	μg/L	0.1	<0.1	-	<0.1	-	-	<0.1	_	<0.1	_	<0.1	-	-
Ethylbenzene	μg/L	0.1	<0.1	-	<0.1	-	-	<0.1	-	<0.1	_	<0.1	-	-
1,1,2,2-Tetrachloroethane	μg/L	0.1	<0.1	-	<0.1	-	-	<0.1	_	<0.1	-	<0.1	-	_
1,4-Dichlorobenzene	μg/L	0.1	<0.1	-	<0.1	-	-	<0.1	_	<0.1	-	<0.1	-	_
1,2-Dichlorobenzene	μg/L	0.1	<0.1	-	<0.1	-	-	<0.1	-	<0.1	_	<0.1		_
Xylenes (Total)	μg/L	0.2	<0.2	_	<0.2	-	_	<0.2		<0.2		<0.2		-
Toluene-d8	% Recove		96	-	98	-	-	101	_	98	-	70	-	_
4-Bromofluorobenzene	% Recove		102	-	83	-		80	-	80		93		
PCBs	μg/L	0.2	<0.2	-	<0.2	-		<0.2	-	<0.2		<0.2		-
Decachlorobiphenyl	με/ L %	1	84	-	106	-		110	-	< <u>0.2</u> 75		77		-
Di-n-butyl phthalate	ug/L	0.5	<0.5	-	<0.5	-		<0.5	-	0.69		<0.5		
Bis(2-éthylhexyl)phthalate	μg/L	0.5	<0.5	_	<0.5		-	<0.5	-	0.59	-	<0.5	-	-
2,4,6-Tribromophenol	με/ L %	1	89	-	89	-		89	-	83		78		-
Chrysene-d12	%	1	78	-	78	-	-	74	-	74	-	78	-	-
Inorganics	70		70	-	70	-	-	74	-	74	-	19	-	-
Biochemical Oxygen Demand, Carbo	nalmq/l	2.00	<2.00	-	<6.00	-	-	<2.00	-	4	_	2	_	-
pH	pH Units		7.75	-	7.52	-		7.44		7.91		7.76		
Total Suspended Solids	mg/L	10	15	-	10	-		308	-	544		2600		
Fluoride	mg/L	0.05	<0.05		<0.05	-		<0.05	-	<0.05		< 0.05		-
Sulphate	mg/L	0.00	37.6	-	10.6	-	-	14.8	-	2.79		2.03		
Total Cyanide	mg/L	0.002	<0.002		< 0.002			<0.002		<0.002	-	<0.002	-	
Phenols		0.002	<0.002 0.014	-	<0.002 0.041	-	-	0.002	-	<0.002 0.021	-	0.064	-	-
Total Kjeldahl Nitrogen	mg/L mg/L	0.001	0.014	-	1.28	-	-	0.036	-	1.86	-	2.27	-	-
Total Aluminum		0.10	0.2		0.124		-	1.63		3.88		32.5	-	
	mg/L		<0.020	-	<0.020	-	-	<0.020	-	<0.020	-	32.5 <0.040	-	-
Total Antimony Total Arsenic	mg/L	0.020	<0.020	-	<0.020	-	-	<0.020	-	<0.020	-	<0.040	-	-
Total Cadmium	mg/L	0.015		-		-	-		-		-		-	-
	mg/L	0.005	<0.010	-	<0.010	-	-	<0.010	-	<0.010	-	<0.020	-	-
Total Chromium	mg/L	0.020	<0.015	-	<0.015	-	-	<0.015	-	<0.015	-	0.044	-	-

	AGAT Wor	k Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	San	npling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well	Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units	RDL												
Total Cobalt	mg/L	0.020	<0.010	-	<0.010	-	-	<0.010	-	<0.010	-	0.022	-	-
Total Copper	mg/L	0.015	<0.002	-	<0.002	-	-	0.003	-	0.011	-	0.065	-	-
Total Lead	mg/L	0.020	<0.020	-	<0.020	-	-	<0.020	-	<0.020	-	<0.040	-	-
Total Manganese	mg/L	0.020	0.042	-	0.716	-	-	0.125	-	0.282	-	1.86	-	-
Total Mercury	mg/L	0.0002	<0.020	-	<0.020	-	-	<0.0002	-	0.03	-	<0.040	-	-
Total Molybdenum	mg/L	0.020	<0.0002	-	<0.0002	-	-	<0.020	-	<0.0002	-	<0.0002	-	-
Total Nickel	mg/L	0.015	<0.015	-	<0.015	-	-	<0.015	-	<0.015	-	0.044	-	-
Total Phosphorus	mg/L	0.02	<0.02	-	0.03	-	-	0.06	-	0.14	-	1.29	-	-
Total Selenium	mg/L	0.002	<0.002	-	<0.002	-	-	<0.002	-	<0.002	-	<0.004	-	-
Total Silver	mg/L	0.020	<0.010	-	<0.010	-	-	<0.010	-	<0.010	-	<0.020	-	-
Total Tin	mg/L	0.025	<0.020	-	<0.020	-	-	<0.020	-	<0.020	-	<0.040	-	-
Total Titanium	mg/L	0.010	0.012	-	<0.010	-	-	0.046	-	0.193	-	1.14	-	-
Total Zinc	mg/L	0.020	<0.020	-	<0.020	-	-	<0.020	-	0.022	-	0.104	-	-
Nonylphenol and Nonylphenol Ethoxyla	tes (Ontario	, mg/L)												
Total Nonylphenol	mg/L	0.001	<0.001	-	<0.001	-	-	<0.001	-	0.029	-	<0.001	-	-
NP1EO	mg/L	0.001	<0.001	-	<0.001	-	-	<0.001	-	<0.001	-	<0.001	-	-
NP2EO	mg/L	0.0003	<0.0003	-	<0.0003	-	-	<0.0003	-	<0.0003	-	<0.0003	-	-
Total Nonylphenol Ethoxylates	mg/L	0.001	<0.001	-	<0.001	-	-	<0.001	-	<0.001	-	<0.001	-	-

	AGAT Work Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sampling Date		8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units RDL												
		ceeds Storm Sew	l /er: Shaded - F	I Exceeds Sanitary	Sewer								
Standards	Table 1: Full Depth Bad			•		Property Uses							
Clandal de	The Regional Municipa	•											
	Metals analysis comple	•	-										
	DDT total is a calculate			e is the sum of o	p'DDT and pp'[DDT.							
	DDD total is a calculate	•											
	DDE total is a calculate	•											
	Endosulfan total is a ca	Ilculated parame	er. The calculate	ed value is the su	m of Endosulfa	an I and Endosi	ulfan II.						
	Chlordane total is a cal	culated paramete	er. The calculated	d value is the sur	n of Alpha-Chlo	ordane and Gai	mma-Chlordane.						
	PCB total is a calculate	d parameter. The	e calculated valu	e is the sum of A	roclor 1242, Ar	oclor 1248, Arc	oclor 1254 and A	roclor 1260.					
	The calculated parame	ters are non-acc	redited. The para	meters that are o	components of	the calculation	are accredited.						
	Note: The result for Be	nzo(b)Fluoranthe	ne is the total of	the Benzo(b)&(j)	Fluoranthene is	somers becaus	e the isomers co	-elute on the G	GC column.				
PAHs	2- and 1-Methyl Naphth that are components of			The calculated va	alue is the sum	of 2-Methyl Na	aphthalene and 1	-Methyl Napht	halene. The ca	lculated parame	eter is non-accr	edited. The para	ameters

	AGAT Wor	k Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	San	npling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well	Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Desemators	Unite	BDI												
Parameters Water Quality Assessment - PWQO (r	Units	RDL												
Electrical Conductivity	μS/cm	2	762	589	-	282	-	-	1050	-	1010	-	636	1350
pH	pH Units	NA	7.68	7.81	-	7.96	-	-	7.66	-	7.83	-	7.89	7.52
Saturation pH (Calculated)			6.75	7.5	_	7.39	_	-	6.59	_	6.13	_	6.79	6.13
Langelier Index (Calculated)			0.934	0.309	_	0.571	-	_	1.07	-	1.7	_	1.1	1.39
Hardness (as CaCO3) (Calculated)	mg/L	0.5	394	128	_	205	_	_	460	-	1840	_	337	1270
Total Dissolved Solids	mg/L	10	418	280	_	160	-	_	564	-	568	-	368	924
Alkalinity (as CaCO3)	mg/L	5	330	167	_	135	-	-	437	-	315	_	351	469
Bicarbonate (as CaCO3)	mg/L	5	330	167	_	135	_	_	437	-	315	_	351	469
Carbonate (as CaCO3)	mg/L	5	<5	<5	_	<5	_	-	<5	_	<5	-	<5	<5
Hydroxide (as CaCO3)	mg/L	5	<5	<5	_	<5	_	-	<5	_	<5	_	<5	<5
Fluoride	mg/L	0.05	<0.05	0.37	_	0.24	_	_	< 0.05	_	<0.05	_	<0.05	< 0.05
Chloride	mg/L	0.10	30.3	61.6	_	8.07	_	_	78.9	_	189	_	2.72	200
Nitrate as N	mg/L	0.05	3.9	1.66	_	< 0.05	_	_	<0.05	_	<0.05	_	< 0.05	<0.05
Nitrite as N	mg/L	0.05	<0.05	0.93	_	< 0.05	_	_	< 0.05	-	<0.05	_	< 0.05	< 0.05
Bromide	mg/L	0.05	< 0.05	<0.05	_	< 0.05	_	_	< 0.05	_	<0.05	_	< 0.05	< 0.05
Sulphate	mg/L	0.10	37.6	31.8	_	19	_	_	24	_	7.69	_	13.1	5.87
Ortho Phosphate as P	mg/L	0.10	<0.10	<0.10	_	<0.10	_	-	<0.10	-	<0.10	_	<0.10	<0.10
Ammonia as N	mg/L	0.02	0.06	0.08	_	<0.02	_	_	< 0.02	_	0.02	_	<0.02	0.64
Ammonia-Un-ionized (Calculated)	mg/L	0.000002	0.00157	0.0028	_	< 0.000002	_	_	< 0.000002	_	0.000829	_	<0.000002	0.0133
Total Phosphorus	mg/L	0.02	< 0.02	0.03	_	0.12	_	_	< 0.02	_	1.38	_	< 0.02	1.72
Total Organic Carbon	mg/L	0.5	1.3	1.2	_	7.1	_	-	2.7	_	5.5	_	4.6	13.1
True Colour	TCU	5	<5	<5	_	<2.50		-	<5	-	<5.00		<5.00	18.5
Turbidity	NTU	0.5	5.2	10	-	59.9		-	2	-	1430		45.1	645
Total Calcium	mg/L	0.32	107	23.4	-	61		-	145		626	-	128	455
Total Magnesium	mg/L	0.32	30.8	16.8		12.7		-	23.9		66.2		4.27	31.5
Total Potassium	mg/L	1.15	4.42	2.14	-	5.06		-	3.44		9.73		<1.15	6.39
Total Sodium	mg/L	0.45	22	82.9	-	44.9		-	58.4		102		20.9	92
Aluminum-dissolved	mg/L	0.004	< 0.004	0.007	-	0.025	_	-	<0.004		< 0.004		<0.004	<0.004
Total Antimony	mg/L	0.004	<0.001	0.002	-	< 0.020		-	<0.004		<0.004	-	<0.001	<0.004
Total Arsenic	mg/L	0.001	< 0.003	0.002	-	< 0.003		-	< 0.003	_	0.029		< 0.003	0.008
Total Barium	mg/L	0.003	0.000	0.051		0.079	-		0.078	-	0.023		0.024	0.196
Total Beryllium	mg/L	0.002	<0.001	< 0.001	-	<0.079	-	-	< 0.078	-	0.45	-	<0.024	<0.001
Total Boron	mg/L	0.001	0.018	0.001	-	0.103	-	-	0.028	-	0.001	-	0.065	0.053
Total Cadmium		0.010	<0.0001	<0.0001	-	0.0002	-	-	<0.028	-	0.092		<0.0001	0.0001
Total Chromium	mg/L	0.0001	<0.0001	<0.0001		0.0002		-	<0.0001		0.0002	-	<0.0001	0.0001
Total Cobalt	mg/L	0.003	<0.003	<0.003	-	0.005	-	-	0.0005	-		-		0.026
	mg/L				-		-	-		-	0.0178	-	0.0013	
Total Copper	mg/L	0.001	0.001	0.001	-	0.004	-	-	<0.001	-	0.05	-	0.003	0.034

	AGAT Wor	k Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sar	npling Date	8-Feb-22	8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well	Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units	RDL												
Total Iron	mg/L	0.010	0.163	0.398	-	3.07	-	-	0.143	-	43.5	-	1.2	55.3
Total Lead	mg/L	0.001	<0.001	<0.001	-	0.002	-	-	<0.001	-	0.022	-	<0.001	0.014
Total Manganese	mg/L	0.002	0.044	0.021	-	0.125	-	-	0.7	-	1.51	-	0.714	6.54
Dissolved Mercury	mg/L	0.0001	<0.0001	<0.0001	-	<0.0001	-	-	<0.0001	-	<0.0001	-	<0.0001	<0.0001
Total Molybdenum	mg/L	0.002	0.01	0.034	-	0.017	-	-	0.002	-	0.004	-	<0.002	0.003
Total Nickel	mg/L	0.003	<0.003	<0.003	-	0.004	-	-	0.004	-	0.04	-	<0.003	0.031
Total Selenium	mg/L	0.002	0.003	<0.002	-	< 0.002	-	-	<0.002	-	0.01	-	<0.002	0.009
Total Silver	mg/L	0.0001	<0.0001	<0.0001	-	<0.0001	-	-	<0.0001	-	<0.0001	-	<0.0001	<0.0001
Total Strontium	mg/L	0.005	0.297	0.426	-	0.314	-	-	0.449	-	1.42	-	0.32	1.04
Total Thallium	mg/L	0.0003	<0.0003	<0.0003	-	< 0.0003	-	-	<0.0003	-	0.0005	-	<0.0003	0.0003
Total Tin	mg/L	0.002	<0.002	0.005	-	0.014	-	-	0.002	-	<0.002	-	0.007	<0.002
Total Titanium	mg/L	0.010	<0.010	0.03	-	0.201	-	-	<0.010	-	1.39	-	0.042	0.957
Total Tungsten	mg/L	0.010	<0.010	<0.010	-	<0.010	-	-	<0.010	-	<0.010	-	<0.010	<0.010
Total Uranium	mg/L	0.002	<0.002	0.012	-	<0.002	-	-	<0.002	-	0.003	-	0.002	<0.002
Total Vanadium	mg/L	0.002	<0.002	0.002	-	0.006	-	-	<0.002	-	0.07	-	<0.002	0.044
Total Zinc	mg/L	0.020	<0.020	<0.020	-	0.023	-	-	<0.020	-	0.1	-	<0.020	0.068
Total Zirconium	mg/L	0.004	<0.004	<0.004	-	<0.004	-	-	<0.004	-	0.01	-	<0.004	0.009

	AGAT Work Order ID#	22T861744 / 22T861751	22T861744	22T861752	23T030999	23T030993	22T861747	22T861744	22T895412	22T894872	22T895413	22T895413	22T894872
	Sampling Date		8-Feb-22	8-Feb-22	31-May-23	31-May-23	8-Feb-22	8-Feb-22	13-May-22	12-May-22	13-May-22	13-May-22	12-May-22
	Well Location ID	BH 9-1	BH 10-1	BH 10-4	PDC-6	PDC-7	BH AIP-3	BH CN-1	BH CN-3	BH HRW-1	BH HRW-4	BH HRE-3	BH 2-1
Parameters	Units RDL												
		ceeds Storm Sew	l /er: Shaded - F	I Exceeds Sanitary	Sewer								
Standards	Table 1: Full Depth Bad			•		Property Uses							
Clandal de	The Regional Municipa	•											
	Metals analysis comple	•	-										
	DDT total is a calculate			e is the sum of o	p'DDT and pp'[DDT.							
	DDD total is a calculate	•											
	DDE total is a calculate	•											
	Endosulfan total is a ca	Ilculated parame	er. The calculate	ed value is the su	m of Endosulfa	an I and Endosi	ulfan II.						
	Chlordane total is a cal	culated paramete	er. The calculated	d value is the sur	n of Alpha-Chlo	ordane and Gai	mma-Chlordane.						
	PCB total is a calculate	d parameter. The	e calculated valu	e is the sum of A	roclor 1242, Ar	oclor 1248, Arc	oclor 1254 and A	roclor 1260.					
	The calculated parame	ters are non-acc	redited. The para	meters that are o	components of	the calculation	are accredited.						
	Note: The result for Be	nzo(b)Fluoranthe	ne is the total of	the Benzo(b)&(j)	Fluoranthene is	somers becaus	e the isomers co	-elute on the G	GC column.				
PAHs	2- and 1-Methyl Naphth that are components of			The calculated va	alue is the sum	of 2-Methyl Na	aphthalene and 1	-Methyl Napht	halene. The ca	lculated parame	eter is non-accr	edited. The para	ameters

BH ID	Sampling Date	Water Temperature ^o C (Field)* ¹	pH (Field) ^{*5}	Total Ammonia From Laboratory Certificate of Analysis (mg/L)	Ambient Water Temperature in Kelvin (T)	рКа	f	Ammonia Un-ionized (Calculated) (mg/L) ^{x4}
				0.02* ²				0.02* ³
BH2-1	5/12/2022	10.60	7.25	0.02	283.76	9.70	0.003506	0.0001
BH HRW-1	5/12/2022	9.40	7.02	0.64	282.56	9.74	0.001882	0.0012
BH HRE-3	5/13/2022	11.70	7.21	<0.02	284.86	9.67	0.003483	-
BH9-1	2/8/2022	6.40	7.68	0.06	279.56	9.85	0.006745	0.0004
BH10-1	2/8/2022	3.90	7.81	0.08	277.06	9.94	0.007424	0.0006
BH PDC-6	5/31/2023	13.90	8.34	<0.02	287.05	9.59	0.052839	-
BH CN-1	2/8/2022	4.70	7.66	<0.02	277.86	9.91	0.005620	-

Notes:

*1 Water Temperature values obtained at the time of sample collection.

*2-Laboratory Reporting Detection Limit (RDL) for Total Ammonia = 0.02 mg/L.

*3-PWQO Threshold for Un-Ionized Ammonia = 0.02 mg/L.

*4- N/A = Un-Ionized Ammonia was not calculated for the sample of wells BH HRE-3 and BH CN-1 where the Total Ammonia Concentration was found to be below the Laboratory RDL.

*⁵ Due to water quality instrument malfunction, pH values obtained from laboratory results.



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 **105 Commerce Valley Drive West 7th Floor** MARKHAM, ON L3T7W3 (905) 886-7022 **ATTENTION TO: Brian Holden** PROJECT: 60636190 AGAT WORK ORDER: 22T861744 WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer DATE REPORTED: Feb 16, 2022 PAGES (INCLUDING COVER): 10 VERSION*: 1

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

- 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.

AGAT Laboratories (V1)

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(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT WORK ORDER: 22T861744 PROJECT: 60636190

Water Quality Assessment - PWQO (mg/L)

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

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Brian Holden

SAMPLED BY:

DATE REPORTED: 2022-02-16 DATE RECEIVED: 2022-02-08 SAMPLE DESCRIPTION: BH9-1 BH10-1 BHCN-1 SAMPLE TYPE: Water Water Water 2022-02-08 DATE SAMPLED: 2022-02-08 2022-02-08 09:30 10:45 13:00 Parameter Unit G/S RDL 3495250 3495271 RDL 3495272 µS/cm 2 2 Electrical Conductivity 762 589 1050 6.5-8.5 NA 7.81 NA bΗ pH Units 7.68 7.66 Saturation pH (Calculated) 6.75 7.50 6.59 Langelier Index (Calculated) 0.934 0.309 1.07 Hardness (as CaCO3) (Calculated) 0.5 394 128 0.5 460 mg/L Total Dissolved Solids 10 418 280 10 564 mg/L 5 5 Alkalinity (as CaCO3) mg/L 330 167 437 Bicarbonate (as CaCO3) mg/L 5 330 167 5 437 Carbonate (as CaCO3) mg/L 5 <5 <5 5 <5 Hydroxide (as CaCO3) 5 <5 5 <5 mg/L <5 Fluoride mg/L 0.05 < 0.05 0.37 0.05 < 0.05 Chloride 30.3 0.12 mg/L 0.10 61.6 78.9 Nitrate as N 0.05 3.90 1.66 0.05 < 0.05 mg/L Nitrite as N mg/L 0.05 < 0.05 0.93 0.05 < 0.05 Bromide mg/L 0.05 < 0.05 < 0.05 0.05 < 0.05 Sulphate 0.10 37.6 31.8 0.10 24.0 mg/L Ortho Phosphate as P mg/L 0.10 <0.10 <0.10 0.10 < 0.10 0.02 0.06 0.08 0.02 < 0.02 Ammonia as N ma/L Ammonia-Un-ionized (Calculated) mg/L 0.02 0.000002 0.00157 0.00280 0.000002 < 0.000002 0.02 <0.02 0.03 0.02 < 0.02 Total Phosphorus mg/L Total Organic Carbon 0.5 2.7 mg/L 0.5 1.3 1.2 True Colour TCU 5 <5 5 <5 <5 NTU Turbidity 0.5 5.2 10.0 0.5 2.0 Total Calcium mg/L 0.32 107 23.4 0.32 145 Total Magnesium mg/L 0.34 30.8 16.8 0.34 23.9 Total Potassium mg/L 1.15 4.42 2.14 1.15 3.44 22.0 82.9 0.45 58.4 Total Sodium mg/L 0.45 Aluminum-dissolved ma/L 0.004 < 0.004 0.007 0.004 < 0.004 < 0.001 0.002 0.001 < 0.001 Total Antimony mg/L 0.020 0.001

Certified By:

Irús Verastegui



ATTENTION TO: Brian Holden

SAMPLED BY:

AGAT WORK ORDER: 22T861744 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:

			V	later Quali	ty Assessm	ent - PWQ	0 (mg/L)	
DATE RECEIVED: 2022-02-08								DATE REPORTED: 2022-02-16
		-	CRIPTION: PLE TYPE: SAMPLED:	BH9-1 Water 2022-02-08 09:30	BH10-1 Water 2022-02-08 10:45		BHCN-1 Water 2022-02-08 13:00	
Parameter	Unit	G/S	RDL	3495250	3495271	RDL	3495272	
Total Arsenic	mg/L	0.1	0.003	<0.003	0.003	0.003	<0.003	
Total Barium	mg/L		0.002	0.091	0.051	0.002	0.078	
Total Beryllium	mg/L	*	0.001	<0.001	<0.001	0.001	<0.001	
Total Boron	mg/L	0.2	0.010	0.018	0.097	0.010	0.028	
Total Cadmium	mg/L	0.0002	0.0001	<0.0001	<0.0001	0.0001	<0.0001	
Fotal Chromium	mg/L		0.003	<0.003	<0.003	0.003	<0.003	
Fotal Cobalt	mg/L	0.0009	0.0005	<0.0005	<0.0005	0.0005	0.0005	
Fotal Copper	mg/L	0.005	0.001	0.001	0.001	0.001	<0.001	
otal Iron	mg/L	0.3	0.010	0.163	0.398	0.010	0.143	
otal Lead	mg/L	*	0.001	<0.001	<0.001	0.001	<0.001	
otal Manganese	mg/L		0.002	0.044	0.021	0.002	0.700	
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001	<0.0001	0.0001	<0.0001	
Total Molybdenum	mg/L	0.040	0.002	0.010	0.034	0.002	0.002	
Fotal Nickel	mg/L	0.025	0.003	< 0.003	<0.003	0.003	0.004	
Total Selenium	mg/L	0.1	0.002	0.003	<0.002	0.002	<0.002	
Fotal Silver	mg/L	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	
Fotal Strontium	mg/L		0.005	0.297	0.426	0.005	0.449	
Fotal Thallium	mg/L	0.0003	0.0003	<0.0003	<0.0003	0.0003	<0.0003	
Fotal Tin	mg/L		0.002	<0.002	0.005	0.002	0.002	
Fotal Titanium	mg/L		0.010	<0.010	0.030	0.010	<0.010	
Fotal Tungsten	mg/L	0.030	0.010	<0.010	<0.010	0.010	<0.010	
Fotal Uranium	mg/L	0.005	0.002	<0.002	0.012	0.002	<0.002	
otal Vanadium	mg/L	0.006	0.002	<0.002	0.002	0.002	<0.002	
Total Zinc	mg/L	0.030	0.020	<0.020	<0.020	0.020	<0.020	
Total Zirconium	mg/L	0.004	0.004	< 0.004	<0.004	0.004	<0.004	
Lab Filtration mercury				2022/02/10	2022/02/10		2022/02/10	
_ab Filtration Aluminum Dissolved				2022/02/10	2022/02/10		2022/02/10	

Certified By:

Inis Verastegui



AGAT WORK ORDER: 22T861744 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Brian Holden

SAMPLED BY:

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-02-08

DATE REPORTED: 2022-02-16

5835 COOPERS AVENUE

MISSISSAUGA, ONTARIO

http://www.agatlabs.com

CANADA L4Z 1Y2

TEL (905)712-5100 FAX (905)712-5122

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.

3495250-3495272 Diss.Al and Diss.Hg 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:

Inis Verastegui



Exceedance Summary

AGAT WORK ORDER: 22T861744 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
3495271	BH10-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	0.398
3495271	BH10-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Uranium	mg/L	0.005	0.012



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T861744 ATTENTION TO: Brian Holden

SAMPLED BY:

			Wate	er Ar	nalysi	is										
RPT Date: Feb 16, 2022			OUPLICATE	=		REFERE	NCE MA	TERIAL	METHOD	BLANK		МАТ	RIX SPI	IKE		
	Batah Sample	D	Dun #0		Method Blank	Measured		ptable nits		Acceptable		Limite		D	Accepta Limits	
PARAMETER	Batch Id	Dup #1	Dup #2	RPD		Value	Lower	Upper	Recovery	Lower	Upper	Recovery	Lower	Upper		
Water Quality Assessment - PW	/QO (mg/L)		•													
Electrical Conductivity	3495924	868	868	0.0%	< 2	97%	90%	110%								
pН	3495924	7.48	7.52	0.5%	NA	102%	90%	110%								
Total Dissolved Solids	3495250 3495250	418	424	1.4%	< 10	98%	80%	120%								
Alkalinity (as CaCO3)	3495924	78	79	1.3%	< 5	97%	80%	120%								
Bicarbonate (as CaCO3)	3495924	78	79	1.3%	< 5	NA										
Carbonate (as CaCO3)	3495924	<5	<5	NA	< 5	NA										
Hydroxide (as CaCO3)	3495924	<5	<5	NA	< 5	NA										
Fluoride	3494437	<0.05	<0.05	NA	< 0.05	101%	70%	130%	102%	80%	120%	104%	70%	130%		
Chloride	3494437	109	118	7.9%	< 0.10	97%	70%	130%	109%	80%	120%	107%	70%	130%		
Nitrate as N	3494437	1.10	1.19	7.9%	< 0.05	94%	70%	130%	104%	80%	120%	102%	70%	130%		
Nitrite as N	3494437	0.06	<0.05	NA	< 0.05	95%	70%	130%	93%	80%	120%	100%	70%	130%		
Bromide	3494437	<0.05	<0.05	NA	< 0.05	104%	70%	130%	101%	80%	120%	103%	70%	130%		
Sulphate	3494437	175	188	7.2%	< 0.10	97%	70%	130%	103%	80%	120%	NA	70%	130%		
Ortho Phosphate as P	3494437	<0.10	<0.10	NA	< 0.10	94%	70%	130%	97%	80%	120%	96%	70%	130%		
Ammonia as N	3496875	<0.02	<0.02	NA	< 0.02	106%	70%	130%	102%	80%	120%	92%	70%	130%		
Total Phosphorus	3496363	14.2	14.1	0.7%	< 0.02	97%	70%	130%	97%	80%	120%	NA	70%	130%		
Total Organic Carbon	3495250 3495250	1.3	1.2	NA	< 0.5	96%	90%	110%	98%	90%	110%	96%	80%	120%		
True Colour	3484205	<5	<5	NA	< 5	98%	90%	110%								
Turbidity	3495250 3495250	5.2	5.3	1.9%	< 0.5	99%	80%	120%								
Total Calcium	3501486	43.3	39.1	10.2%	< 0.10	99%	70%	130%	99%	80%	120%	104%	70%	130%		
Total Magnesium	3501486	6.33	5.72	10.1%	< 0.10	101%	70%	130%	102%	80%	120%	106%	70%	130%		
Total Potassium	3501486	4.25	3.16	29.4%	< 0.50	99%	70%	130%	100%	80%	120%	106%	70%	130%		
Total Sodium	3501486	694	640	8.1%	< 0.10	98%	70%	130%	98%	80%	120%	NA	70%	130%		
Aluminum-dissolved	3495250 3495250	<0.004	<0.004	NA	< 0.004	108%	70%	130%	112%	80%	120%	103%	70%	130%		
Total Antimony	3501728	2.41	2.50	3.7%	< 0.001	100%	70%	130%	101%	80%	120%	103%	70%	130%		
Total Arsenic	3501728	0.110	0.112	1.8%	< 0.003	95%	70%	130%	95%	80%	120%	91%	70%	130%		
Total Barium	3501728	0.016	0.016	0.0%	< 0.002	99%	70%	130%	102%	80%	120%	99%	70%	130%		
Total Beryllium	3501728	<0.002	<0.002	NA	< 0.001	105%	70%	130%	98%	80%	120%	79%	70%	130%		
Total Boron	3501728	13.7	14.3	4.3%	< 0.010	105%	70%	130%	98%	80%	120%	87%	70%	130%		
Total Cadmium	3501728	27.4	28.1	2.5%	< 0.0001	99%	70%	130%	96%	80%	120%	91%	70%	130%		
Total Chromium	3501728	0.610	0.619	1.5%	< 0.003	102%	70%	130%	97%	80%	120%	110%	70%	130%		
Total Cobalt	3501728	0.325	0.325	0.0%	< 0.0005		70%	130%	99%	80%	120%	106%	70%			
Total Copper	3501728	0.959	0.955	0.4%	< 0.001	101%		130%	99%		120%	99%		130%		
Total Iron	3501728	136	138	1.5%	< 0.010	102%	70%	130%	96%		120%	113%		130%		
Total Lead	3501728	3.76	3.88	3.1%	< 0.001	101%	70%	130%	94%	80%	120%	100%	70%	130%		
Total Manganese	3501728	2.94	2.89	1.7%	< 0.002	105%	70%	130%	100%	80%	120%	99%	70%	130%		
Dissolved Mercury	3495250 3495250	<0.0001	<0.0001	NA	< 0.0001	101%	70%	130%	99%	80%	120%	99%	70%			
Total Molybdenum	3501728	0.027	0.027	0.0%	< 0.002	106%	70%	130%	101%	80%	120%	113%		130%		
Total Nickel	3501728	8.52	8.65	1.5%	< 0.003	105%		130%	98%		120%	96%		130%		

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T861744 ATTENTION TO: Brian Holden SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 16, 2022			C	OUPLICATI	E		REFEREN	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Acceptable Limits		Recovery	Acceptable Limits		
		Ia					Value	Lower	Upper		Lower	Upper		Lower	Upper	
Total Selenium	3501728		0.159	0.134	17.1%	< 0.002	103%	70%	130%	103%	80%	120%	89%	70%	130%	
Total Silver	3501728		0.0058	0.0058	0.0%	< 0.0001	102%	70%	130%	100%	80%	120%	98%	70%	130%	
Total Strontium	3501728		0.456	0.465	2.0%	< 0.005	104%	70%	130%	97%	80%	120%	108%	70%	130%	
Total Thallium	3501728		0.134	0.135	0.7%	< 0.0003	100%	70%	130%	96%	80%	120%	97%	70%	130%	
Total Tin	3501728		0.388	0.392	1.0%	< 0.002	95%	70%	130%	93%	80%	120%	108%	70%	130%	
Total Titanium	3501728		0.081	0.070	14.6%	< 0.010	103%	70%	130%	95%	80%	120%	111%	70%	130%	
Total Tungsten	3501728		<0.020	<0.020	NA	< 0.010	94%	70%	130%	84%	80%	120%	98%	70%	130%	
Total Uranium	3501728		<0.004	<0.004	NA	< 0.002	104%	70%	130%	97%	80%	120%	108%	70%	130%	
Total Vanadium	3501728		0.030	0.030	0.0%	< 0.002	105%	70%	130%	98%	80%	120%	110%	70%	130%	
Total Zinc	3501728		8.05	8.10	0.6%	< 0.020	109%	70%	130%	115%	80%	120%	113%	70%	130%	
Total Zirconium	3501728		0.012	0.011	NA	< 0.004	103%	70%	130%	99%	80%	120%	109%	70%	130%	

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By:

Inis Verastegui

AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T861744 ATTENTION TO: Brian Holden

SAMPLED BY:

SAMPLING SITE:		SAMPLED BY:	1
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
рН	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 2120 B	NEPHELOMETER
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium			ICP/OES
Total Potassium Total Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES 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 PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T861744 ATTENTION TO: Brian Holden

SAMPLED BY:

SAMPLING SITE.		SAWFLED DT.	
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 31 B	¹² 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 mercury	SR-78-9001		FILTRATION
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION

Chain of Custody Record If this is a Drinking Water s		Ph: 9 Drinking Water Chain of Custody Form (potable	5835 Coopers Avenue Mississauga, Ontario L4Z 1Y2 005.712.5100 Fax: 905.712.5122 webearth.agatlabs.com water consumed by humans)	Laboratory Use Only Work Order #:2 Cooler Quantity:C Arrival Temperatures:	d Blue Chee ice
Report Information: Company: Contact: Bran holden / Phranish Parita Address: 155 Commarce Valley Dr W, 70 Markham, ON Markham, ON Phone: Ath 920 5590 Reports to be sent to: Harmich Parita @ accom.com 1. Email: Constant @ accom.com 2. Email: Bran Holden @ accom.tom Project Information: Bradon &	n Juur so	Regulatory Requirements: lease check all applicable boxes) Regulation 153/04 Excess Soils R40 Tableindicate One Tableindicate One Ind/Com Regulation 558 Res/Park Regulation 558 Oil Texture (check One) CCME Frine CCME Is this submission for a Record of Site Condition? Yes Yoo	6 Sewer Use Sanitary Storm Region Prov. Water Quality Objectives (PWQO) Other Indicate One Report Guideline on Certificate of Analysis Ves No	Rush TAT (Rush Surcharges Apply)	
Sampled By: Dividen Pir Un AGAT Quote #:PO: Please note: If quotation number is not provided, client will be billed full price for Invoice Information: Bill To Same: Ye Company: Contact: Address: Email:	S T No C G	W Ground Water O Oil Paint S Soil	A Field Filtered - Metals, Hg, CrVI, DOC Metals & Inorganics Metals & Inorganics Metals - CrVI, LHg, LHWSB EST Malyze F4G if required C Yes No PAHs POBs	Disposal Characterization TCLP: Mai D'Vocs DABNs DiapPDPOBS 999 Soils SPLP Rainwater Leach D metals D Vocs D SVOCS Soils Characterization Package MS Metals, BTEX, F1-F4 MON	Potentially Hazardous or High Concentration (Y/N)
Sample Identification Date Sampled Time Sampled Ph 9-1 7.8, 202 9.30 Ryn 10-1 1 10.4 Ryn CN-1 1 10.4 Anno Anno		rix Special Instructions			Norm Norm <th< th=""></th<>
Samples Relinquished By (Print Name and Sign): Samples Relinquished By (Print Name and Sign): Date Date Date Date Date Date	Time Time Time	Samples Received By (Print Name and Sign):	ign III Date Date	Time Time Time N°: Yellow Copy - AGA1 + White Copy	· 130122



CLIENT NAME: AECOM CANADA LTD 50 SPORTSWORLD CROSSING RD UNIT 290 KITCHENER, ON N2P0A4 (519) 650-5313 ATTENTION TO: Brian Holden PROJECT: Bradford Bypass (60636190) AGAT WORK ORDER: 23T030999 WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer DATE REPORTED: Jun 08, 2023 PAGES (INCLUDING COVER): 10 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.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.

AGAT Laboratories (V1)

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(APEGA)	
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Environmental Services Association of Alberta (ESAA)	

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AGAT WORK ORDER: 23T030999 PROJECT: Bradford Bypass (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:Sebastian Hackbusch

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2023-06-01

DATE RECEIVED: 2023-06-01				
	S	AMPLE DES		PDC6
			PLE TYPE:	Water
		DATE	SAMPLED:	2023-05-31 14:00
Parameter	Unit	G/S	RDL	5032248
Electrical Conductivity	µS/cm		2	282
рН	pH Units	6.5-8.5	NA	7.96
Saturation pH (Calculated)				7.39
Langelier Index (Calculated)				0.571
Hardness (as CaCO3) (Calculated)	mg/L		0.5	205
Total Dissolved Solids	mg/L		10	160
Alkalinity (as CaCO3)	mg/L		5	135
Bicarbonate (as CaCO3)	mg/L		5	135
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	0.24
Chloride	mg/L		0.10	8.07
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	19.0
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L	0.00	0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	<0.000002
Total Phosphorus	mg/L	Ŷ	0.02	0.12
Total Organic Carbon	mg/L		0.5	7.1
True Colour	TCU NTU		2.50	<2.50 59.9
Turbidity			0.5	
Total Calcium	mg/L		0.20	61.0 12.7
Total Magnesium Total Potassium	mg/L		0.10 0.50	12.7 5.06
Total Sodium	mg/L		0.50	5.06 44.9
Aluminum-dissolved	mg/L mg/L	*	0.004	44.9 0.025
Total Antimony	mg/L	0.020	0.004	<0.025
	mg/∟	0.020	0.001	<0.001



Certified By:



AGAT WORK ORDER: 23T030999 PROJECT: Bradford Bypass (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:Sebastian Hackbusch

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2023-06-01

DATE RECEIVED: 2023-06-01					DATE REPORTED: 2023-06-08
		DATES	PLE TYPE: SAMPLED:	PDC6 Water 2023-05-31 14:00	
Parameter	Unit	G/S	RDL	5032248	
Total Arsenic	mg/L	0.1	0.003	<0.003	
Total Barium	mg/L		0.002	0.079	
Total Beryllium	mg/L	*	0.001	<0.001	
Total Boron	mg/L	0.2	0.010	0.103	
Total Cadmium	mg/L	0.0002	0.0001	0.0002	
Total Chromium	mg/L		0.003	0.005	
Total Cobalt	mg/L	0.0009	0.0005	0.0012	
Total Copper	mg/L	0.005	0.001	0.004	
Total Iron	mg/L	0.3	0.010	3.07	
Total Lead	mg/L	*	0.001	0.002	
Total Manganese	mg/L		0.002	0.125	
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001	
Total Molybdenum	mg/L	0.040	0.002	0.017	
Total Nickel	mg/L	0.025	0.003	0.004	
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	0.314	
Total Thallium	mg/L	0.0003	0.0003	< 0.0003	
Total Tin	mg/L		0.002	0.014	
Total Titanium	mg/L		0.010	0.201	
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	0.006	
Total Zinc	mg/L	0.030	0.020	0.023	
Total Zirconium	mg/L	0.004	0.004	<0.004	
Lab Filtration Aluminum Dissolved				2023/06/05	
Lab Filtration mercury				2023/06/05	
Lab Filtration mercury				2023/06/05	





AGAT WORK ORDER: 23T030999 PROJECT: Bradford Bypass (60636190) 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford

ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

Water Quality Assessment - PWQO (mg/L)

DATE RECEI	IVED: 2023-06-01	DATE REPORTED: 2023-06-08
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 t	to the applicable standard for regulatory interpretation.
5032248	Diss.Al and Diss.Hg analysis completed on a lab filtered sample.	
	The calculation of Un-ionized Ammonia was based on lab measured parameters (pH and temperature) rather than the field parameters; t the time of pH measurement. Values are reported as calculated.	these were not provided to the lab. The temperature is recorded at

Un-ionized Ammonia detection limit is a calculated RDL

Analysis performed at AGAT Toronto (unless marked by *)





Exceedance Summary

AGAT WORK ORDER: 23T030999 PROJECT: Bradford Bypass (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
5032248	PDC6	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Cobalt	mg/L	0.0009	0.0012
5032248	PDC6	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	3.07



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

SAMPLING SITE:Bradford

AGAT WORK ORDER: 23T030999 ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

			Wate	er Ar	nalysi	is									
RPT Date: Jun 08, 2023			UPLICATE			REFERE	NCE MA	TERIAL	METHOD	BLANK	SPIKE	МАТ	ATRIX SPIKE		
PARAMETER	Batch Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recoverv		ptable nits	Recoverv		eptable nits	
	Id	Dup #1	Dup #2	N D		Value	Lower	Upper	Recovery	Lower	Upper	Recovery	Lower	Upper	
Water Quality Assessment - PWG	QO (mg/L)														
Electrical Conductivity	5030464	867	869	0.2%	< 2	99%	90%	110%							
рН	5030464	7.98	8.04	0.7%	NA	100%	90%	110%							
Total Dissolved Solids	5032412	402	412	2.5%	< 10	100%	80%	120%							
Alkalinity (as CaCO3)	5030464	354	356	0.6%	< 5	102%	80%	120%							
Bicarbonate (as CaCO3)	5030464	354	356	0.6%	< 5	NA									
Carbonate (as CaCO3)	5030464	<5	<5	NA	< 5	NA									
Hydroxide (as CaCO3)	5030464	<5	<5	NA	< 5	NA									
Fluoride	5029184	<0.05	<0.05	NA	< 0.05	100%	70%	130%	105%	80%	120%	100%	70%	130%	
Chloride	5029184	68.7	68.7	0.0%	< 0.10	94%	70%	130%	104%	80%	120%	103%	70%	130%	
Nitrate as N	5029184	0.56	0.57	1.8%	< 0.05	95%	70%	130%	102%	80%	120%	98%	70%	130%	
Nitrite as N	5029184	<0.05	<0.05	NA	< 0.05	100%	70%	130%	98%	80%	120%	99%	70%	130%	
Bromide	5029184	<0.05	<0.05	NA	< 0.05	107%	70%	130%	98%	80%	120%	94%	70%	130%	
Sulphate	5029184	31.6	31.5	0.3%	< 0.10	97%	70%	130%	105%	80%	120%	100%	70%	130%	
Ortho Phosphate as P	5029184	<0.10	<0.10	NA	< 0.10	105%	70%	130%	102%	80%	120%	105%	70%	130%	
Ammonia as N	5034058	<0.02	<0.02	NA	< 0.02	100%	70%	130%	103%	80%	120%	103%	70%	130%	
Total Phosphorus	5033578	<0.02	<0.02	NA	< 0.02	99%	70%	130%	104%	80%	120%	97%	70%	130%	
Total Organic Carbon	5034641	2.1	2.1	NA	< 0.5	92%	90%	110%	102%	90%	110%	93%	80%	120%	
True Colour	5030079	17.6	17.2	2.3%	< 2.5	95%	90%	110%							
Total Calcium	5032248 5032248	61.0	62.8	2.9%	< 0.20	97%	70%	130%	104%	80%	120%	97%	70%	130%	
Total Magnesium	5032248 5032248	12.7	12.8	0.8%	< 0.10	104%	70%	130%	101%	80%	120%	101%	70%	130%	
Total Potassium	5032248 5032248	5.06	4.49	11.9%	< 0.50	98%	70%	130%	104%	80%	120%	103%	70%	130%	
Total Sodium	5032248 5032248	44.9	45.3	0.9%	< 0.10	106%	70%	130%	108%	80%	120%	115%	70%	130%	
Aluminum-dissolved	5035208	0.008	0.007	NA	< 0.004	108%	70%	130%	92%	80%	120%	110%	70%	130%	
Total Antimony	5032248 5032248	<0.001	<0.001	NA	< 0.001	98%	70%	130%	101%	80%	120%	103%	70%	130%	
Total Arsenic	5032248 5032248	<0.003	<0.003	NA	< 0.003	100%	70%	130%	104%	80%	120%	110%	70%	130%	
Total Barium	5032248 5032248	0.079	0.084	6.1%	< 0.002	99%	70%	130%	99%	80%	120%	102%	70%	130%	
Total Beryllium	5032248 5032248	<0.001	<0.001	NA	< 0.001	93%	70%	130%	92%	80%	120%	92%	70%	130%	
Total Boron	5032248 5032248	0.103	0.102	1.0%	< 0.010	101%	70%	130%	103%	80%	120%	98%	70%	130%	
Total Cadmium	5032248 5032248	0.0002	0.0002	NA	< 0.0001	99%	70%	130%	101%	80%	120%	102%	70%	130%	
Total Chromium	5032248 5032248	0.005	0.006	NA	< 0.003	105%	70%	130%	95%	80%	120%	95%	70%	130%	
Total Cobalt	5032248 5032248	0.0012	0.0011	NA	< 0.0005	90%	70%	130%	102%	80%	120%	96%	70%	130%	
Total Copper	5032248 5032248	0.004	0.004	NA	< 0.001	98%	70%	130%	98%	80%	120%	100%	70%	130%	
Total Iron	5032248 5032248	3.07	3.08	0.3%	< 0.010	94%	70%	130%	104%	80%	120%	103%	70%	130%	
Total Lead	5032248 5032248	0.002	0.002	NA	< 0.001	97%		130%	96%	80%	120%	99%	70%	130%	
Total Manganese	5032248 5032248	0.125	0.140	11.3%	< 0.002	94%		130%	99%	80%	120%	99%	70%	130%	
Dissolved Mercury	5032248 5032248	<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	98%	80%	120%	100%	70%	130%	
Total Molybdenum	5032248 5032248	0.017	0.015	12.5%	< 0.002	99%	70%	130%	104%		120%	105%	70%	130%	
Total Nickel	5032248 5032248	0.004	0.004	NA	< 0.003	91%		130%	98%		120%	94%	70%		
Total Selenium	5032248 5032248	<0.002	<0.002	NA	< 0.002	99%		130%	94%		120%	97%		130%	

AGAT QUALITY ASSURANCE REPORT (V1)

Page 6 of 10

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

SAMPLING SITE:Bradford

AGAT WORK ORDER: 23T030999 ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

Water Analysis (Continued)

RPT Date: Jun 08, 2023			C	OUPLICATE	1		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	ptable nits	Recovery	Lin	eptable nits
		ld					Value	Lower	Upper		Lower	Upper		Lower	Upper
Total Silver	5032248	5032248	<0.0001	<0.0001	NA	< 0.0001	92%	70%	130%	97%	80%	120%	95%	70%	130%
Total Strontium	5032248	5032248	0.314	0.325	3.4%	< 0.005	102%	70%	130%	110%	80%	120%	120%	70%	130%
Total Thallium	5032248	5032248	<0.0003	< 0.0003	NA	< 0.0003	99%	70%	130%	100%	80%	120%	104%	70%	130%
Total Tin	5032248	5032248	0.014	0.015	6.9%	< 0.002	98%	70%	130%	99%	80%	120%	105%	70%	130%
Total Titanium	5032248	5032248	0.201	0.166	19.1%	< 0.010	106%	70%	130%	105%	80%	120%	106%	70%	130%
Total Tungsten	5032248 \$	5032248	<0.010	<0.010	NA	< 0.010	97%	70%	130%	102%	80%	120%	108%	70%	130%
Total Uranium	5032248	5032248	<0.002	<0.002	NA	< 0.002	97%	70%	130%	100%	80%	120%	105%	70%	130%
Total Vanadium	5032248	5032248	0.006	0.006	NA	< 0.002	94%	70%	130%	96%	80%	120%	98%	70%	130%
Total Zinc	5032248	5032248	0.023	<0.020	NA	< 0.020	99%	70%	130%	97%	80%	120%	99%	70%	130%
Total Zirconium	5032248	5032248	<0.004	<0.004	NA	< 0.004	104%	70%	130%	105%	80%	120%	114%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.





AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

AGAT WORK ORDER: 23T030999 ATTENTION TO: Brian Holden

FROJECT: Bladiold Bypass (0005019	.,	ATTENTION TO: I	
SAMPLING SITE:Bradford		SAMPLED BY:Sel	bastian Hackbusch
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis		I	
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pН	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	modified from 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-93-6000	modified from SM 2130 B	PC TITRATE
Total Calcium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Magnesium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Potassium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
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



Method Summary

CLIENT NAME: AECOM CANADA LTD PROJECT: Bradford Bypass (60636190)

SAMPLING SITE:Bradford

AGAT WORK ORDER: 23T030999 ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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
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 31 ⁻ B	¹² 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



Discourses on DN-78-1511-027

Chain of Custody Record	1 St.	29 84 2	Have feed Scan here quick sur	ofor a Ph:	905.71	ississa .2.510 w	uga, (0 Fax rebear	th.agat	L4Z 1 12.51	Y2 22	C	Vork Or Cooler (der #: Quantity		35	630 Sw	1.1	77524	0
Report Information: Company: AFCOM Car Contact: Brian Holdic Address: 242-52 Sportse Phone: Brian Holdic Reports to be sent to: 1. Email: 2. Email: Brian Holdic Project Information: Project: Site Location: Bradford	Fax: Tex: Co acc typess (to sing Rd, Kitchenar an.com	Re. (Picess T C C Soil C C C C C C C C C C C C C C C C C C C	gulatory Requirements: se check all applicable boxes; Regulation 153/04 able Indicate One Indicode One Indicode One Indicode One Indicode One Agriculture Texture (check One) Coarse Fine s this submission for a peoprd of Site Condition? Yes No	[[[Sev Sev Pro Obj Oth	wer Us Sanitary Regio V. Wat ective ler Indicat Guic Ste O	er Qual s (PWQ	ity O) on Iysis		Tu Re	votes: urnar egula ush T/	r TAT AT (Rush 3 Busin Days DR Dat DR Dat	Surcharge ess e Requir se provi xclusive	e (TA ass Apply) red (Ru de prid of we	161604	rges May A	Next Bu Day Apply): h TAT r holiday	-
Sampled By: AGAT Quote #: Please note: If quotation number is n Invoice Information: Company: Contact: Address: Email: Brian: Holder Concernent	PO: ot provided, client will E da LM Dort (ill To Same: Yes 🔽 No	GW	mple Matrix Legend Ground Water Oil Paint Soil Sediment Surface Water	Field Filtered - Metals, Hg, CrVI, DOC	& Inorganics	Reg 1 RCVI, DHg, DHWSB	F1-F4 PHCs E2			oclors []	Landfill Disposal Characterization TCLP: 3,0	SPLP Rainwater Leach	Characterization Package 906 88 Is, BTEX, F1-F4	Iphide	000			Potentially Hazardous or High Concentration (Y/N)
Sample Identification 1. Pocco 2. 3. 4. 4.	Date Sampled	Time # of Containen 2:95 AM 8 AM AM AM AM AM AM	s Sample Matrix 6W	Comments/ Special Instructions	Y/N	Metals	Metals -	5	Patts	PCBs	PCBs: Aroclors		Regulation 406 SPLP: D Metals	Regulat PH, ICPI	Corrosi	X			Potential
5. 6. 7. 8. 9.		AM PM AM PM AM PM AM PM AM PM AM PM				の時に開きた時に							001 001 001 001 001 001 001						
10. 11. Samples Relinquished By (Print Name and Sign): Samples Relinquished By (Print Name and Sign): Samples Relinquished By (Print Name and Sign):	hord	AM PM Date	2:30 AA	Samples Received By Aprint Name and Sign): Samples Received By (Print Name and Sign): Samples Received By (Print Name and Sign):				¥		ate	5		ne	10:4		Jn Page	of		

Any and all products and/or services provided by AGAT Labs are pursuant to the terms and conditions as set forth at www.agatlabs.com/termsandconditions unless otherwise agreed in a current written contractual document,

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CLIENT NAME: AECOM CANADA LTD 50 SPORTSWORLD CROSSING RD UNIT 290 KITCHENER, ON N2P0A4 (519) 650-5313 ATTENTION TO: Brian Holden PROJECT: Bradford Bypass (60636190) AGAT WORK ORDER: 23T030993 TRACE ORGANICS REVIEWED BY: Radhika Chakraberty, Trace Organics Lab Manager WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer DATE REPORTED: Jun 12, 2023 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.
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 contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.

AGAT Laboratories (V1)

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(APEGA)
Menters Francisco Aprillational Laboratory, Appendix (M/FALA)

Western Enviro-Agricultural Laboratory Association (WEALA) Environmental Services Association of Alberta (ESAA) AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. Measurement Uncertainty is not taken into consideration when stating conformity with a specified requirement.

Page 1 of 12



AGAT WORK ORDER: 23T030993 PROJECT: Bradford Bypass (60636190) 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford

ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

Sewer Use - Bradford Sanitary - Organics (2015)

DATE RECEIVED: 2023-06-01						DATE REPORTED: 2023-06-12
			-	SCRIPTION: MPLE TYPE: E SAMPLED:	POC7 Water 2023-05-31 12:45	
Parameter	Unit	G / S: A	G / S: B	RDL	5032384	
Oil and Grease (animal/vegetable) in water	mg/L	100		0.5	<0.5	
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5	
Methylene Chloride	µg/L	2000	5.2	0.3	<0.3	
cis- 1,2-Dichloroethylene	µg/L	4000	5.6	0.2	<0.2	
Chloroform	µg/L	40	2	0.2	<0.2	
Benzene	µg/L	10	2	0.2	<0.2	
Trichloroethylene	µg/L	400	8	0.2	<0.2	
trans-1,3-Dichloropropene	µg/L	140	5.6	0.30	<0.30	
Toluene	µg/L	270	2	0.2	<0.2	
Tetrachloroethene	µg/L	1000	4.4	0.1	<0.1	
Ethylbenzene	µg/L	160	2	0.1	<0.1	
1,1,2,2-Tetrachloroethane	µg/L	1400	17	0.1	<0.1	
1,4-Dichlorobenzene	µg/L	80	6.8	0.1	<0.1	
1,2-Dichlorobenzene	µg/L	50	5.6	0.1	<0.1	
Xylenes (Total)	µg/L	1400	4.4	0.2	<0.2	
PCBs	µg/L	1	0.4	0.2	<0.2	
Di-n-butyl phthalate	ug/L	80	15	0.5	<0.5	
Bis(2-éthylhexyl)phthalate	µg/L	12	8.8	0.5	<0.5	
Nonylphenols	ug/L	20		1	<1	
Nonylphenol Ethoxylates	ug/L	200		10	<10	
Surrogate	Unit	Ad	cceptable Limi	ts		
Toluene-d8	% Recovery		50-140		100	
4-Bromofluorobenzene	% Recovery		50-140		86	
Decachlorobiphenyl	%		50-140		114	
2,4,6-Tribromophenol	%		50-140		79	
Chrysene-d12	%		50-140		89	

Certified By:

R. Chakraberty



AGAT WORK ORDER: 23T030993 PROJECT: Bradford Bypass (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:Sebastian Hackbusch

Sewer Use - Bradford Sanitary - Organics (2015)

DAT	/ED: 2023-06-01 DATE REPORTED: 2023-06-12
Comr	RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM
	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.
50323	Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT WORK ORDER: 23T030993 PROJECT: Bradford Bypass (60636190) 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford

ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

DATE REPORTED: 2023-06-12

DATE RECEIVED: 2023-06-01

	S	SAMPLE DES	CRIPTION:	POC7
		SAM	PLE TYPE:	Water
		DATE	SAMPLED:	2023-05-31 12:45
Parameter	Unit	G/S	RDL	5032384
Biochemical Oxygen Demand, Carbonaceous	mg/L		2	<2

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)





AGAT WORK ORDER: 23T030993 PROJECT: Bradford Bypass (60636190) 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford

ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

Sewer Use - Bradford Sanitary Sewer Use By-Law - Inorganics (2015)

DATE RECEIVED: 2023-06-0	01					DATE REPORTED: 2023-06-12
				SCRIPTION:	POC7	
				MPLE TYPE:	Water	
			DATI	E SAMPLED:	2023-05-31 12:45	
Parameter	Unit	G / S: A	G / S: B	RDL	5032384	
рΗ	pH Units	6.0-9.5	6.0-9.5	NA	8.02	
Total Suspended Solids	mg/L	350	15	10	26[B-A]	
Fluoride	mg/L	10		0.05	<0.05	
Sulphate	mg/L	1500		0.10	86.5[<a]< td=""><td></td></a]<>	
Cyanide, SAD	mg/L	2	0.02	0.002	<0.002	
Phenols	mg/L	1	0.008	0.002	0.006[<b]< td=""><td></td></b]<>	
Total Kjeldahl Nitrogen	mg/L	100	1	0.10	0.11[<b]< td=""><td></td></b]<>	
Total Aluminum	mg/L	50		0.010	0.488[<a]< td=""><td></td></a]<>	
Total Antimony	mg/L	5		0.020	<0.020	
Total Arsenic	mg/L	1	0.02	0.015	<0.015	
Total Cadmium	mg/L	0.7	0.008	0.010	<0.010	
Total Chromium	mg/L	2	0.08	0.015	<0.015	
Total Cobalt	mg/L	5		0.010	<0.010	
Total Copper	mg/L	3	0.05	0.002	<0.002	
Total Lead	mg/L	1	0.12	0.020	<0.020	
Total Manganese	mg/L	5	0.15	0.020	0.033[<b]< td=""><td></td></b]<>	
Total Molybdenum	mg/L	5		0.020	<0.020	
Total Mercury	mg/L	0.010		0.0002	<0.0002	
Total Nickel	mg/L	2	0.08	0.015	<0.015	
Total Phosphorus	mg/L	10	0.4	0.02	0.03[<b]< td=""><td></td></b]<>	
Total Selenium	mg/L	1	0.02	0.002	<0.002	
Total Silver	mg/L	5	0.12	0.010	<0.010	
Total Tin	mg/L	5		0.020	<0.020	
Total Titanium	mg/L	5		0.010	0.014[<a]< td=""><td></td></a]<>	
Total Zinc	mg/L	2	0.04	0.020	<0.020	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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:

	<mark>agat</mark>	Laborato	ries AGAT WORK ORDER: 23T0309 PROJECT: Bradford Bypass (60	93		MISSIS	835 COOPERS AVENUE IISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.agatlabs.com	
CLIENT NAME	E: AECOM CANADA LTD			ATTENTION TO: Brian	Holden		,agallabo.com	
SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT	
5032384	POC7	ON Bradford SM	Sewer Use - Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	15	26	



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

SAMPLING SITE:Bradford

AGAT WORK ORDER: 23T030993 ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

Trace Organics Analysis

					•										
RPT Date: Jun 12, 2023				DUPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLAN	SPIKE	MAT	MATRIX SPIKE	
PARAMETER	Batch S	ample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery	1.1.	ptable nits	Recovery	1.10	eptable nits
		ia		-			value	Lower	Upper	-	Lower	Upper	-	Lower	Upper
Sewer Use - Bradford Sanitary - (Organics (2015	5)													
Oil and Grease (animal/vegetable) in water	5029315		< 0.5	< 0.5	NA	< 0.5	86%	70%	130%	91%	70%	130%	111%	70%	130%
Oil and Grease (mineral) in water	5029315		< 0.5	< 0.5	NA	< 0.5	90%	70%	130%	87%	70%	130%	80%	70%	130%
Methylene Chloride	5020774		<0.3	<0.3	NA	< 0.3	80%	50%	140%	87%	60%	130%	75%	50%	140%
cis- 1,2-Dichloroethylene	5020774		<0.2	<0.2	NA	< 0.2	116%	50%	140%	108%	60%	130%	111%	50%	140%
Chloroform	5020774		<0.2	<0.2	NA	< 0.2	98%	50%	140%	103%	60%	130%	109%	50%	140%
Benzene	5020774		<0.2	<0.2	NA	< 0.2	117%	50%	140%	91%	60%	130%	111%	50%	140%
Trichloroethylene	5020774		<0.2	<0.2	NA	< 0.2	90%	50%	140%	101%	60%	130%	115%	50%	140%
trans-1,3-Dichloropropene	5020774		<0.30	<0.30	NA	< 0.30	92%	50%	140%	76%	60%	130%	92%	50%	140%
Toluene	5020774		<0.2	<0.2	NA	< 0.2	108%	50%	140%	83%	60%	130%	106%	50%	140%
Tetrachloroethene	5020774		<0.1	<0.1	NA	< 0.1	116%	50%	140%	87%	60%	130%	114%	50%	140%
Ethylbenzene	5020774		<0.1	<0.1	NA	< 0.1	106%	50%	140%	81%	60%	130%	104%	50%	140%
1,1,2,2-Tetrachloroethane	5020774		<0.1	<0.1	NA	< 0.1	99%	50%	140%	92%	60%	130%	101%	50%	140%
1,4-Dichlorobenzene	5020774		<0.1	<0.1	NA	< 0.1	117%	50%	140%	95%	60%	130%	115%	50%	140%
1,2-Dichlorobenzene	5020774		<0.1	<0.1	NA	< 0.1	110%	50%	140%	92%	60%	130%	111%	50%	140%
PCBs	5034430		< 0.2	< 0.2	NA	< 0.2	93%	50%	130%	100%	50%	140%	100%	50%	140%
Di-n-butyl phthalate	5032384 503	2384	< 0.5	< 0.5	NA	< 0.5	85%	50%	140%	84%	50%	140%	106%	50%	140%
Bis(2-éthylhexyl)phthalate	5032384 503	2384	< 0.5	< 0.5	NA	< 0.5	79%	50%	140%	85%	50%	140%	79%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

R. Chakraberty

AGAT QUALITY ASSURANCE REPORT (V1)

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AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

SAMPLING SITE:Bradford

AGAT WORK ORDER: 23T030993 ATTENTION TO: Brian Holden

SAMPLED BY:Sebastian Hackbusch

			Water Analysis											
RPT Date: Jun 12, 2023			DUPLICATI	E		REFERENCE MATERIAL		METHOD	BLAN	K SPIKE	МАТ	RIX SP	IKE	
PARAMETER	Batch Samp	Dup #1	Dup #2	RPD	Method Blank	Measured Value		eptable mits	Recovery	1 1 1	eptable mits	Recovery		eptable mits
	I III					value	Lower	Upper	-	Lower	Upper	-	Lower	Upper
Sewer Use - Bradford Sanita	y Sewer Use By-Law	- Inorganic	s (2015)											
рН	5034862	7.94	8.01	0.9%	NA	100%	90%	110%						
Total Suspended Solids	5032876	<10	<10	NA	< 10	96%	80%	120%						
Fluoride	5029184	<0.05	<0.05	NA	< 0.05	100%	70%	130%	105%	80%	120%	100%	70%	130%
Sulphate	5029184	31.6	31.5	0.3%	< 0.10	97%	70%	130%	105%	80%	120%	100%	70%	130%
Cyanide, SAD	5032355	<0.002	<0.002	NA	< 0.002	93%	70%	130%	96%	80%	120%	90%	70%	130%
Phenols	5028686	0.003	0.004	NA	< 0.002	101%	90%	110%	99%	90%	110%	94%	80%	120%
Total Kjeldahl Nitrogen	5032384 503238	4 0.11	0.10	NA	< 0.10	101%	70%	130%	96%	80%	120%	89%	70%	130%
Total Aluminum	5032248	2.77	2.79	0.7%	< 0.010	94%	70%	130%	99%	80%	120%	116%	70%	130%
Total Antimony	5032248	<0.020	<0.020	NA	< 0.020	98%	70%	130%	101%	80%	120%	103%	70%	130%
Total Arsenic	5032248	<0.015	<0.015	NA	< 0.015	100%	70%	130%	104%	80%	120%	110%	70%	130%
Total Cadmium	5032248	<0.010	<0.010	NA	< 0.010	99%	70%	130%	101%	80%	120%	102%	70%	130%
Total Chromium	5032248	<0.015	<0.015	NA	< 0.015	105%	70%	130%	95%	80%	120%	95%	70%	130%
Total Cobalt	5032248	<0.010	<0.010	NA	< 0.010	90%	70%	130%	102%	80%	120%	96%	70%	130%
Total Copper	5032248	0.004	0.004	NA	< 0.002	98%	70%	130%	98%	80%	120%	100%	70%	130%
Total Lead	5032248	<0.020	<0.020	NA	< 0.020	97%	70%	130%	96%	80%	120%	99%	70%	130%
Total Manganese	5032248	0.125	0.140	11.3%	< 0.020	94%	70%	130%	99%	80%	120%	99%	70%	130%
Total Molybdenum	5032248	<0.020	<0.020	NA	< 0.020	99%	70%	130%	104%	80%	120%	105%	70%	130%
Total Mercury	5032384 503238	4 <0.0002	<0.0002	NA	< 0.0002	100%	70%	130%	101%	80%	120%	95%	70%	130%
Total Nickel	5032248	<0.015	<0.015	NA	< 0.015	91%	70%	130%	98%	80%	120%	94%	70%	130%
Total Phosphorus	5033578	<0.02	<0.02	NA	< 0.02	99%	70%	130%	104%	80%	120%	97%	70%	130%
Total Selenium	5032248	<0.002	<0.002	NA	< 0.002	99%	70%	130%	94%	80%	120%	97%	70%	130%
Total Silver	5032248	<0.010	<0.010	NA	< 0.010	92%	70%	130%	97%	80%	120%	95%	70%	130%
Total Tin	5032248	<0.020	<0.020	NA	< 0.020	98%	70%	130%	99%	80%	120%	105%	70%	130%
Total Titanium	5032248	0.201	0.166	19.1%	< 0.010	106%	70%	130%	105%	80%	120%	106%	70%	130%
Total Zinc	5032248	0.023	<0.020	NA	< 0.020	99%	70%	130%	97%	80%	120%	99%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.

CBOD5								
Biochemical Oxygen Demand, Carbonaceous	5032267	53	56	5.5%	< 2	75%	70% 130%)

Certified By:



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AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

AGAT WORK ORDER: 23T030993 ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford	1		ebastian Hackbusch
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Chrysene-d12			GC/MS
Nonylphenols	ORG-91-5122	modified ASTM D7485-16	CALCULATION
Nonylphenol Ethoxylates	ORG-91-5122	modified ASTM D7485-16	CALCULATION



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: Bradford Bypass (60636190)

AGAT WORK ORDER: 23T030993 ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford		SAMPLED BY:Sel	bastian Hackbusch
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis		1	
Biochemical Oxygen Demand, Carbonaceous	INOR-121-6023	SM 5210 B	INCUBATOR
рН	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Cyanide, SAD	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	SEGMENTED FLOW ANALYSIS
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	² CVAAS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS



Chain of Custody Record If this is a Dri		for a Ph: 905.71	5835 Coopers Avenue ssissauga, Ontario L4Z 1Y2 .2.5100 Fax: 905.712.5122 webearth.agatlabs.com	Laboratory Use Only Work Order #: 23T030993 Cooler Quantity: 110094 Arrival Temperatures: 9.519.719.0
Report Information: Company: Contact: Address: Addre		gulatory Requirements: e check ali applicable boxes)		Custody Seal Intact: TYes No ZN/A Notes: Dagged ice
Contact: Address: Phone: Reports to be sent to: 1. Email: 2. Email: Drian Holden @ aerom Drian Holden @ aerom	Soil Te	Res/Park]Agriculture Texture (Check One)	Sewer Use Sanitary Storm Cast Conclosure Region Prov. Water Quality Objectives (PWQO) Other Indicate One	Turnaround Time (TAT) Required: Regular TAT 5 to 7 Business Days Rush TAT (Rush Surcharges Apply) 3 Business 2 Business Days Next Business Days OR Date Required (Rush Surcharges May Apply):
Project Information: Project: Bradbard Bypacs (606 Ste Location: Bradbard Bypacs (606 Sampled By: Generation Placeburgh		cord of Site Condition? Cer	oport Guideline on rtificate of Analysis Yes No 0. Reg 153	Please provide prior notification for rush TAT *TAT is exclusive of weekends and statutory holidays For 'Same Day' analysis, please contact your AGAT CPM
AGAT Quote #:	To Same: Yes No O P S	mple Matrix Legend 00 Ground Water 01 Oil bh Paint set Soil sediment Surface Water bh	s & Inorganics s - 🗆 CrVi, 🖼 Hg, 🗆 HWSB F1-F4 PHCs	PCBS: Avocions C Landfill Disposal Characterization TCLP: Landfill Disposal Characterization TCLP: Regulation 406 SPLP Rainwater Leach PPL, ICPMS Metals DV0Cs C SPLP: C Metals DV0Cs C SPLP: C Metals DV0Cs C SPLP: C Metals DV0Cs C SPLP: C Metals DV0Cs C SPLP: C SPLP: C Metals DV0Cs C SPLP: C SPLP: C SPLP: C Metals DV0Cs C SPLP: C SPLP: C Metals DV0Cs C SPLP: C
Sample Identification Date Sampled	Time # of Sample Containers Matrix	Special Instructions	Metals & Metals - BTEX, F1 VOC PAHS	
1. POC7 05/31/23 1. 2.	AM PM	N	of the last loss	
3.	РМ АМ АМ АМ			
6. 7.	AM PM AM PM			
8. 9.	AM PM AM PM			
10. 11. Samples Relinquished By (Print Name and Sign): Setunction Hackbard	AM AM Date 06/01/23 10:30 HJM	Samples Received By (Print Name and Sign):	Date	1 10: 41Am
Samples Relinquished By (Print Name and Sign):	Date Time Date Time	Samples Received By (Print Name and Sign): Samples Received By (Print Name and Sign): and conditions as set forth at www.agetlabs.com/term	Date Date	Time Page of Time N°: T - 144426

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CLIENT NAME: AECOM CANADA LTD 105 Commerce Valley Drive West 7th Floor MARKHAM, ON L3T7W3 (905) 886-7022 ATTENTION TO: Brian Holden PROJECT: 60636190 AGAT WORK ORDER: 22T861747 TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist ULTRA TRACE REVIEWED BY: Emmanuelle St-Pierre, chimiste WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer DATE REPORTED: Feb 25, 2022 PAGES (INCLUDING COVER): 13 VERSION*: 2

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

I.	*	N	ο	t	e	s
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VERSION 2:Version 2 supersedes work order 22T861747 Version 1, issued February 18, 2022. Complete. VERSION 1:February 18, 2022 - Partial (excluding NP/NPE)

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.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta	
(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	

(APEGA) Western Enviro-Agricultural Laboratory Association (WEALA) Environmental Services Association of Alberta (ESAA) AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. Measurement Uncertainty is not taken into consideration when stating conformity with a specified requirement.

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AGAT WORK ORDER: 22T861747 PROJECT: 60636190

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

		3	sewer Use -	вгаатс	ord Sanitary/Storm	1 - Organics (2015)
DATE RECEIVED: 2022-02-08						DATE REPORTED: 2022-02-25
			SAMPLE DESCR SAMPL DATE SA	E TYPE:	BH AIP-3 Water 2022-02-08 13:45	
Parameter	Unit	G / S: A	G / S: B	RDL	3495536	
Oil and Grease (animal/vegetable) in water	mg/L	100		0.5	<0.5[<a]< td=""><td></td></a]<>	
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5[<a]< td=""><td></td></a]<>	
Methylene Chloride	µg/L	2000	5.2	0.3	<0.3[<b]< td=""><td></td></b]<>	
cis- 1,2-Dichloroethylene	µg/L	4000	5.6	0.2	<0.2[<b]< td=""><td></td></b]<>	
Chloroform	µg/L	40	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Benzene	µg/L	10	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Trichloroethylene	µg/L	400	8	0.2	<0.2[<b]< td=""><td></td></b]<>	
trans-1,3-Dichloropropene	µg/L	140	5.6	0.30	<0.30[<b]< td=""><td></td></b]<>	
Toluene	µg/L	270	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Tetrachloroethene	µg/L	1000	4.4	0.1	<0.1[<b]< td=""><td></td></b]<>	
Ethylbenzene	µg/L	160	2	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,1,2,2-Tetrachloroethane	µg/L	1400	17	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,4-Dichlorobenzene	µg/L	80	6.8	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,2-Dichlorobenzene	µg/L	50	5.6	0.1	<0.1[<b]< td=""><td></td></b]<>	
Xylenes (Total)	µg/L	1400	4.4	0.2	<0.2[<b]< td=""><td></td></b]<>	
PCBs	µg/L	1	0.4	0.2	<0.2[<b]< td=""><td></td></b]<>	
Di-n-butyl phthalate	ug/L	80	15	0.5	<0.5[<b]< td=""><td></td></b]<>	
Bis(2-éthylhexyl)phthalate	µg/L	12	8.8	0.5	<0.5[<b]< td=""><td></td></b]<>	
Surrogate	Unit	Ac	ceptable Limits			
Toluene-d8	% Recovery		50-140		101	
4-Bromofluorobenzene	% Recovery		50-140		80	
Decachlorobiphenyl	%		50-140		110	
2,4,6-Tribromophenol	%		50-140		89	
Chrysene-d12	%		50-140		74	

Certified By:

NPopukoloj



AGAT WORK ORDER: 22T861747 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

DATE RECEIVED: 2022-02-08 DATE REPORTED: 2022-02-25 Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM. Cut - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM.

3495536 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. Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

NPopukolof



AGAT WORK ORDER: 22T861747 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

Nonylphenol and Nonylphenol Ethoxylates (Ontario, mg/L)

DATE RECEIVED: 2022-02-08

	S	SAMPLE DESCRIPTION:			
		SAM	PLE TYPE:	Water	
		DATE	SAMPLED:	2022-02-08 13:45	
Parameter	Unit	G/S	RDL	3495536	
Total Nonylphenol	mg/L	20	0.001	<0.001	
NP1EO	mg/L		0.001	<0.001	
IP2EO	mg/L		0.0003	<0.0003	
Total Nonylphenol Ethoxylates	mg/L	0.2	0.001	<0.001	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON Bradford SN

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 Montréal (unless marked by *)

annanuelle Flerre

DATE REPORTED: 2022-02-25



AGAT WORK ORDER: 22T861747 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

CBOD5						
DATE RECEIVED: 2022-02-08						DATE REPORTED: 2022-02-25
SAMPLE TYPE: Wa DATE SAMPLED: 2022					BH AIP-3 Water 2022-02-08 13:45	
Parameter	Unit	G / S: A	G / S: B	RDL	3495536	
Biochemical Oxygen Demand, Carbonaceous	mg/L	300	15	2.00	<2.00[<b]< td=""><td></td></b]<>	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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 Halifax (unless marked by *)

Certified By:

Inis Verastegui



CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford Bypass (BPP)

Certificate of Analysis

AGAT WORK ORDER: 22T861747 PROJECT: 60636190 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.agatlabs.com

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)

DATE RECEIVED: 2022-02-08 **DATE REPORTED: 2022-02-25** SAMPLE DESCRIPTION: BH AIP-3 SAMPLE TYPE: Water DATE SAMPLED: 2022-02-08 13:45 Parameter Unit G / S: A G / S: B RDL 3495536 7.44 рΗ pH Units 6.0-9.5 6.0-9.5 NA Total Suspended Solids mg/L 350 15 10 308[B-A] Fluoride 10 0.05 <0.05[<A] mg/L Sulphate 0.19 mg/L 1500 14.8[<A] Total Cyanide 2 0.02 0.002 <0.002[<B] ma/L Phenols mg/L 1 0.008 0.002 0.036[B-A] Total Kjeldahl Nitrogen mg/L 100 1 0.10 0.16[<B] Total Aluminum mg/L 50 0.010 1.63[<A] Total Antimony mg/L 5 0.020 <0.020[<A] Total Arsenic mg/L 1 0.02 0.015 <0.015[<B] Total Cadmium mg/L 0.7 0.008 0.010 <0.010[<A] Total Chromium mg/L 2 0.08 0.015 <0.015[<B] Total Cobalt 5 0.010 mg/L <0.010[<A] 3 0.002 0.003[<B] Total Copper mg/L 0.05 Total Lead mg/L 1 0.12 0.020 <0.020[<B] 5 0.020 0.125[<B] Total Manganese mg/L 0.15 Total Molybdenum mg/L 5 0.020 <0.020[<A] 0.010 0.0002 Total Mercury mg/L <0.0002[<A] Total Nickel mg/L 2 0.08 0.015 <0.015[<B] Total Phosphorus mg/L 10 0.4 0.02 0.06[<B] Total Selenium 1 0.02 mg/L 0.002 <0.002[<B] 5 0.12 Total Silver mg/L 0.010 <0.010[<B] 5 Total Tin mg/L 0.020 <0.020[<A] Total Titanium mg/L 5 0.010 0.046[<A] 2 Total Zinc mg/L 0.04 0.020 <0.020[<B]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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. Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

3495536

Certified By:

Iris Verastegui



Exceedance Summary

AGAT WORK ORDER: 22T861747 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
3495536	BH AIP-3	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Phenols	mg/L	0.008	0.036
3495536	BH AIP-3	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	15	308



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861747 ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

			Trac	e Or	gani	cs Ar	nalys	is							
RPT Date: Feb 25, 2022			0	UPLICAT	E		REFERE		TERIAL	METHOD	BLANK	SPIKE	MATRIX SPIKE		
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Lie	ptable nits	Recovery	Lie	ptable nits
		ia					value	Lower	Upper	-	Lower Upper			Lower	Upper
Sewer Use - Bradford Sanitary/Storm - Organics (2015)															
Oil and Grease (animal/vegetable) in water	3478434		0.98	0.94	NA	< 0.5	101%	70%	130%	107%	70%	130%	102%	70%	130%
Oil and Grease (mineral) in water	3478434		0.73	0.71	NA	< 0.5	81%	70%	130%	83%	70%	130%	80%	70%	130%
Methylene Chloride	3501675		<0.3	<0.3	NA	< 0.3	76%	50%	140%	105%	60%	130%	105%	50%	140%
cis- 1,2-Dichloroethylene	3501675		<0.2	<0.2	NA	< 0.2	81%	50%	140%	90%	60%	130%	81%	50%	140%
Chloroform	3501675		<0.2	<0.2	NA	< 0.2	89%	50%	140%	94%	60%	130%	89%	50%	140%
Benzene	3501675		<0.2	<0.2	NA	< 0.2	97%	50%	140%	79%	60%	130%	109%	50%	140%
Trichloroethylene	3501675		<0.2	<0.2	NA	< 0.2	99%	50%	140%	103%	60%	130%	71%	50%	140%
trans-1,3-Dichloropropene	3501675		<0.30	<0.30	NA	< 0.30	102%	50%	140%	98%	60%	130%	92%	50%	140%
Toluene	3501675		0.6	0.6	NA	< 0.2	110%	50%	140%	98%	60%	130%	89%	50%	140%
Tetrachloroethene	3501675		<0.1	<0.1	NA	< 0.1	110%	50%	140%	112%	60%	130%	99%	50%	140%
Ethylbenzene	3501675		<0.1	<0.1	NA	< 0.1	116%	50%	140%	76%	60%	130%	82%	50%	140%
1,1,2,2-Tetrachloroethane	3501675		<0.1	<0.1	NA	< 0.1	116%	50%	140%	108%	60%	130%	76%	50%	140%
1,4-Dichlorobenzene	3501675		<0.1	<0.1	NA	< 0.1	112%	50%	140%	117%	60%	130%	106%	50%	140%
1,2-Dichlorobenzene	3501675		<0.1	<0.1	NA	< 0.1	110%	50%	140%	111%	60%	130%	98%	50%	140%
PCBs	3476343		< 0.2	< 0.2	NA	< 0.2	98%	50%	130%	103%	50%	140%	98%	50%	140%
Di-n-butyl phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	74%	50%	140%	75%	50%	140%	99%	50%	140%
Bis(2-éthylhexyl)phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	78%	50%	140%	89%	50%	140%	89%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

NPopuka

AGAT QUALITY ASSURANCE REPORT (V2)

Page 8 of 13

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861747

ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

			U	ltra T	race	Anal	ysis								
RPT Date: Feb 25, 2022				DUPLICAT	E		REFEREN	NCE MA	TERIAL	METHOD	BLANK	(SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Blank Measured		ptable nits	Recoverv	Lir	eptable nits	Recoverv	Acceptable Limits	
		ld					Value	Lower	Upper		Lower	Upper		Lower	Upper
Nonylphenol and Nonylphenol E	thoxylates	(Ontario,	mg/L)												
Total Nonylphenol	1	3498740	0.002	0.002	NA	< 0.001	NA	60%	140%	95%	60%	140%	NA	60%	140%
NP1EO	1	3498740	0.004	0.004	NA	< 0.001	NA	60%	140%	80%	60%	140%	NA	60%	140%
NP2EO	1	3498740	0.0012	0.0011	NA	< 0.0003	NA	60%	140%	99%	60%	140%	NA	60%	140%





AGAT QUALITY ASSURANCE REPORT (V2)

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Page 9 of 13



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861747 ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

			Wate	er Ar	nalysi	is								
RPT Date: Feb 25, 2022			DUPLICATE			REFERE	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MATRIX SPIKE		
PARAMETER	Batch Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	ptable nits	Recovery		eptable nits
	Id					Value	Lower Upper			Lower	Upper		Lower	Upper
Sewer Use - Bradford Sanitar	y/Storm Sewer Use By	-Law - Ino	rganics (20	015)										
рН	3495924	7.48	7.52	0.5%	NA	102%	90%	110%						
Total Suspended Solids	3495335	15	16	NA	< 10	98%	80%	120%						
Fluoride	3494437	<0.05	<0.05	NA	< 0.05	101%	70%	130%	102%	80%	120%	104%	70%	130%
Sulphate	3494437	175	188	7.2%	< 0.10	97%	70%	130%	103%	80%	120%	NA	70%	130%
Total Cyanide	3490367	0.004	0.004	NA	< 0.002	106%	70%	130%	104%	80%	120%	112%	70%	130%
Phenols	3495924	<0.002	<0.002	NA	< 0.002	101%	90%	110%	103%	90%	110%	105%	80%	120%
Total Kjeldahl Nitrogen	3497301	45.5	41.2	9.9%	< 0.10	100%	70%	130%	99%	80%	120%	94%	70%	130%
Total Aluminum	3501486	1.35	1.29	4.5%	< 0.010	106%	70%	130%	98%	80%	120%	109%	70%	130%
Total Antimony	3501486	<0.020	<0.020	NA	< 0.020	104%	70%	130%	93%	80%	120%	87%	70%	130%
Total Arsenic	3501486	<0.015	<0.015	NA	< 0.015	95%	70%	130%	95%	80%	120%	83%	70%	130%
Total Cadmium	3501486	<0.010	<0.010	NA	< 0.010	100%	70%	130%	95%	80%	120%	86%	70%	130%
Total Chromium	3501486	<0.015	<0.015	NA	< 0.015	100%	70%	130%	91%	80%	120%	89%	70%	130%
Total Cobalt	3501486	<0.010	<0.010	NA	< 0.010	101%	70%	130%	93%	80%	120%	89%	70%	130%
Total Copper	3501486	0.113	0.112	0.9%	< 0.002	100%	70%	130%	95%	80%	120%	84%	70%	130%
Total Lead	3501486	<0.020	<0.020	NA	< 0.020	99%	70%	130%	91%	80%	120%	82%	70%	130%
Total Manganese	3501486	0.146	0.150	2.7%	< 0.020	102%	70%	130%	93%	80%	120%	85%	70%	130%
Total Molybdenum	3501486	<0.020	<0.020	NA	< 0.020	107%	70%	130%	97%	80%	120%	95%	70%	130%
Total Mercury	3495335	<0.0002	<0.0002	NA	< 0.0002	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Nickel	3501486	<0.015	<0.015	NA	< 0.015	101%	70%	130%	94%	80%	120%	90%	70%	130%
Total Phosphorus	3495536 3495536	0.06	0.07	NA	< 0.02	104%	90%	110%	99%	90%	110%	100%	80%	120%
Total Selenium	3501486	<0.002	<0.002	NA	< 0.002	97%	70%	130%	100%	80%	120%	84%	70%	130%
Total Silver	3501486	<0.010	<0.010	NA	< 0.010	101%	70%	130%	95%	80%	120%	86%	70%	130%
Total Tin	3501486	<0.020	<0.020	NA	< 0.020	101%	70%	130%	91%	80%	120%	86%	70%	130%
Total Titanium	3501486	<0.010	<0.010	NA	< 0.010	102%	70%	130%	96%	80%	120%	94%	70%	130%
Total Zinc	3501486	0.026	0.033	NA	< 0.020	103%	70%	130%	97%	80%	120%	85%	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.

CBOD5

Biochemical Oxygen Demand,	3495321	<6.00	<6.00	NA	< 2	95%	70%	130%
Carbonaceous								

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.

Certified By:

Inis Verastegui

AGAT QUALITY ASSURANCE REPORT (V2)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific tests tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Page 10 of 13



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T861747

ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford Bypass (BPP))	SAMPLED BY:Dhwanish Parikh							
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE						
Trace Organics Analysis		1							
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE						
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE						
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION						
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS						
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD						
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD						
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS						
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS						
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS						
Chrysene-d12			GC/MS						
Ultra Trace Analysis									
Total Nonylphenol	TOX-151-19003F	ASTM D7065-6	LCMSMS						
NP1EO	TOX-151-19003F	ASTM D7065-6	LCMSMS						
NP2EO	TOX-151-19003F	ASTM D7065-6	LCMSMS						
Total Nonylphenol Ethoxylates	TOX-19003F	ASTM D7065-6	LCMSMS						



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T861747 ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford Bypass (BPP)

SAMPLED BY:Dhwanish Parikh

SAMPLING SITE:Bradford Bypass		SAMPLED BY:Dhwanish Parikh							
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE						
Water Analysis	1								
Biochemical Oxygen Demand, Carbonaceous	INOR-121-6023	SM 5210 B	INCUBATOR						
рН	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE						
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE						
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH						
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH						
Total Cyanide	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER						
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA						
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA						
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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						
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS						
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	² CVAAS						
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS						
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETR						
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS						

Chain of Custody Record						Pr f Custody Form (pota	: 905.71	ssissaug 2.5100 web	earth.ag	o L4Z .712.5 atlabs	1Y2 5122	w c	abora ^f ork Orde ooler Qu rrival Ter	er #:	2:		61=	74- 1-10-	$\frac{7}{2.2}$
Report Information: Company: AECom Canada	Ut.			Reg	sulatory Requ	irements:							ustody S lotes:	eal Intac	ct:	Yes	C]No	□N/A
Contact: Address: Addres	Fax:	1, 3m fu	m		egulation 153/04 ble <u>Indicate One</u> Jind/Com JRes/Park Agriculture exture (Check One) ICoarse	Excess Soils R Table	<u>э</u> в		Region Water Qu tives (PV			Tu	ırnaro egular ısh TA1	TAT F(Rush Sur Business	charges Ap	TAT) R	Busines	s Days	ext Business av
2. Email: Brin Holden Q allo	hn. (vho			1	Fine		-	Ir	dicate One	_				•	equired	(Rush Si	urcharge	s May Ap	ply):
Project Information: Project: G0626190 Site Location: Strend By fine (B)	y)			Ree	this submission of Site Co J Yes		Cer		uidellr e of An		s			T is excl	usive of	weekend	ds and st	for rush atutory f	
Sampled By: DAmanish Kirilly AGAT Quote #:	PO:			Sam	nple Matrix Le	gond	20	0. R	eg 153	-		0. R 55	1	eg 406					(N/A
Invoice Information: Company: Contact: Address: Email:	В	ill To Same: Yes	5 🗷 No 🗆	B GW O P S SD SW	Biota Ground Water Oil Paint Soil Sediment Surface Water		Field Filtered - Metals, Hg, CrvI, DOC	Inorganics	Metals - 🗆 CrVI, LI Hg, LI HWSB BTEX, F1-F4 PHCs Amelyan E4C if required F1 Vec T1 No.			oosal Characteriz	TCLP: DM&I DVOCS DABNS DB(a)PDPCBS Excess Soils SPLP Rainwater Leach SPI P: DMetals DVOCs DSVOCS	Soils Characterizat MS Metals, BTEX,	Salt - EC/SAR	solter Jamer We			Potentially Hazardous or High Concentration (Y/N)
Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	and the second se	iments/ Instructions	Y/N	Meta	BTEX, F1	PAHs	PCBs	VOC	Excess SPI P. [Excess pH, ICP	Salt -	12/12/		. 22	Poteni
Bn AIP-3 FZ	58,202		4	600	192.000										(+			
		AM PM			- K														
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Samples Relinquished By Print Name and Sign:	1	Date Date		100	Samples Received By (Print Num and Sign):	non	aig	N		Date		Time				221-6	0	13415121
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Document ID: DIV-78-1511-021									Pink	Сору -	Client	I Yellow	r Copy - A	GAT I	White Co	opy- AGAT		Page 1:	March 9, 2021 3 of 13



CLIENT NAME: AECOM CANADA LTD **105 COMMERCE VALLEY DR.W 7TH FLOOR** MARKHAM, ON L3T7W3 (905) 886-7022 **ATTENTION TO: Brian Holden** PROJECT: 60636190 AGAT WORK ORDER: 22T861751 **TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist** ULTRA TRACE REVIEWED BY: Emmanuelle St-Pierre, chimiste WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer DATE REPORTED: Feb 25, 2022 PAGES (INCLUDING COVER): 13 VERSION*: 2

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

*Notes VERSION 2: Version 2 supersedes work order 22T861751 Version 1, issued February 18, 2022. Complete. VERSION 1: February 18, 2022 - Partial (excluding NP/NPE)

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.
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- 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.

AGAT Laboratories (V2)

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Page 1 of 13

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AGAT WORK ORDER: 22T861751 PROJECT: 60636190

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish P.

				- Diaulu	nu Sannai y/	Storin - Organics (2013	·/
DATE RECEIVED: 2022-02-08							DATE REPORTED: 2022-02-25
			-	SCRIPTION: MPLE TYPE: SAMPLED:	BH 9-1 Water 2022-02-08 10:00		
Parameter	Unit	G / S: A	G / S: B	RDL	3495335		
Oil and Grease (animal/vegetable) in water	mg/L	100		0.5	<0.5[<a]< td=""><td></td><td></td></a]<>		
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5[<a]< td=""><td></td><td></td></a]<>		
Methylene Chloride	µg/L	2000	5.2	0.3	<0.3[<b]< td=""><td></td><td></td></b]<>		
cis- 1,2-Dichloroethylene	µg/L	4000	5.6	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Chloroform	µg/L	40	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Benzene	µg/L	10	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Trichloroethylene	µg/L	400	8	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
rans-1,3-Dichloropropene	µg/L	140	5.6	0.30	<0.30[<b]< td=""><td></td><td></td></b]<>		
Toluene	µg/L	270	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Tetrachloroethene	µg/L	1000	4.4	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
Ethylbenzene	µg/L	160	2	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,1,2,2-Tetrachloroethane	µg/L	1400	17	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,4-Dichlorobenzene	µg/L	80	6.8	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,2-Dichlorobenzene	µg/L	50	5.6	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
Xylenes (Total)	µg/L	1400	4.4	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
PCBs	µg/L	1	0.4	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Di-n-butyl phthalate	ug/L	80	15	0.5	<0.5[<b]< td=""><td></td><td></td></b]<>		
Bis(2-éthylhexyl)phthalate	µg/L	12	8.8	0.5	<0.5[<b]< td=""><td></td><td></td></b]<>		
Surrogate	Unit	Ac	cceptable Limi	ts			
Foluene-d8	% Recovery		50-140		96		
4-Bromofluorobenzene	% Recovery		50-140		102		
Decachlorobiphenyl	%		50-140		84		
2,4,6-Tribromophenol	%		50-140		89		
Chrysene-d12	%		50-140		78		

Certified By:

NPopukolof



AGAT WORK ORDER: 22T861751 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish P.

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

DATE RECEIVED: 2022-02-08 DATE REPORTED: 2022-02-25 Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM. 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.

3495335 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. Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

NPopukolof



AGAT WORK ORDER: 22T861751 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish P.

Nonylphenol and Nonylphenol Ethoxylates (Ontario, mg/L)

DATE RECEIVED: 2022-02-08

	S	AMPLE DESC	RIPTION:	BH 9-1
		SAMP	LE TYPE:	Water
		DATE S	AMPLED:	2022-02-08 10:00
Parameter	Unit	G/S	RDL	3495335
Total Nonylphenol	mg/L	20	0.001	<0.001
NP1EO	mg/L		0.001	<0.001
NP2EO	mg/L		0.0003	< 0.0003
Total Nonylphenol Ethoxylates	mg/L	0.2	0.001	<0.001

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON Bradford SN

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 Montréal (unless marked by *)

annanuelle Flerre

DATE REPORTED: 2022-02-25



AGAT WORK ORDER: 22T861751 **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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish P.

					CBOD	5
DATE RECEIVED: 2022-02-08						DATE REPORTED: 2022-02-25
			SAMPLE DE	SCRIPTION:	BH 9-1	
			SA	MPLE TYPE:	Water	
		DATE SAMPLED:		2022-02-08 10:00		
Parameter	Unit	G / S: A	G / S: B	RDL	3495335	
Biochemical Oxygen Demand, Carbonaceous	mg/L	300	15	2.00	<2.00[<b]< td=""><td></td></b]<>	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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 Halifax (unless marked by *)

Certified By:

Iris Verastegui



AGAT WORK ORDER: 22T861751 PROJECT: 60636190 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.agatlabs.com

ATTENTION TO: Brian Holden

CLIENT NAME: AECOM CANADA LTD SAMPLING SITE:Bradford Bypass (BPP)

SAMPLED BY:Dhwanish P.

Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)

DATE RECEIVED: 2022-02-0	08					DATE REPORTED	: 2022-0
			SAMPLE DE	SCRIPTION:	BH 9-1		
			SA	MPLE TYPE:	Water		
			DATE	E SAMPLED:	2022-02-08 10:00		
Parameter	Unit	G / S: A	G / S: B	RDL	3495335		
рН	pH Units	6.0-9.5	6.0-9.5	NA	7.75		
Total Suspended Solids	mg/L	350	15	10	15[B]		
Fluoride	mg/L	10		0.05	<0.05[<a]< td=""><td></td><td></td></a]<>		
Sulphate	mg/L	1500		0.10	37.6[<a]< td=""><td></td><td></td></a]<>		
Total Cyanide	mg/L	2	0.02	0.002	<0.002[<b]< td=""><td></td><td></td></b]<>		
Phenols	mg/L	1	0.008	0.002	0.014[B-A]		
Total Kjeldahl Nitrogen	mg/L	100	1	0.10	0.20[<b]< td=""><td></td><td></td></b]<>		
Total Aluminum	mg/L	50		0.010	0.167[<a]< td=""><td></td><td></td></a]<>		
Total Antimony	mg/L	5		0.020	<0.020[<a]< td=""><td></td><td></td></a]<>		
Total Arsenic	mg/L	1	0.02	0.015	<0.015[<b]< td=""><td></td><td></td></b]<>		
Total Cadmium	mg/L	0.7	0.008	0.010	<0.010[<a]< td=""><td></td><td></td></a]<>		
Total Chromium	mg/L	2	0.08	0.015	<0.015[<b]< td=""><td></td><td></td></b]<>		
Total Cobalt	mg/L	5		0.010	<0.010[<a]< td=""><td></td><td></td></a]<>		
Total Copper	mg/L	3	0.05	0.002	<0.002[<b]< td=""><td></td><td></td></b]<>		
Total Lead	mg/L	1	0.12	0.020	<0.020[<b]< td=""><td></td><td></td></b]<>		
Total Manganese	mg/L	5	0.15	0.020	0.042[<b]< td=""><td></td><td></td></b]<>		
Total Molybdenum	mg/L	5		0.020	<0.020[<a]< td=""><td></td><td></td></a]<>		
Total Mercury	mg/L	0.010		0.0002	<0.0002[<a]< td=""><td></td><td></td></a]<>		
Total Nickel	mg/L	2	0.08	0.015	<0.015[<b]< td=""><td></td><td></td></b]<>		
Total Phosphorus	mg/L	10	0.4	0.02	<0.02[<b]< td=""><td></td><td></td></b]<>		
Total Selenium	mg/L	1	0.02	0.002	<0.002[<b]< td=""><td></td><td></td></b]<>		
Total Silver	mg/L	5	0.12	0.010	<0.010[<b]< td=""><td></td><td></td></b]<>		
Total Tin	mg/L	5		0.020	<0.020[<a]< td=""><td></td><td></td></a]<>		
Total Titanium	mg/L	5		0.010	0.012[<a]< td=""><td></td><td></td></a]<>		
Total Zinc	mg/L	2	0.04	0.020	<0.020[<b]< td=""><td></td><td></td></b]<>		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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:

Iris Verastegui

	AGAT	Laborator	ies PROJECT: 60636190	•		MISSIS	OOPERS AVENUE SAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 /www.agatlabs.com
CLIENT NAM	IE: AECOM CANADA LTD			ATTENTION TO: Brian	Holden	mp./	www.agaliabs.com
SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3495335	BH 9-1	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Phenols	mg/L	0.008	0.014



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861751 ATTENTION TO: Brian Holden SAMPLED BY:Dhwanish P.

Trace Organics Analysis

RPT Date: Feb 25, 2022			C	UPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	IKE MATRIX SPIKE			
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery		ptable nits	Recovery	Lie	eptable nits	
		iu	-	-			Value	Lower	Upper	-	Lower	Upper	-	Lower	Upper	
Sewer Use - Bradford Sanitary/St	orm - Orga	nics (2015	5)													
Oil and Grease (animal/vegetable) in water	3478434		0.98	0.94	NA	< 0.5	101%	70%	130%	107%	70%	130%	102%	70%	130%	
Oil and Grease (mineral) in water	3478434		0.73	0.71	NA	< 0.5	81%	70%	130%	83%	70%	130%	80%	70%	130%	
Methylene Chloride	3497709		<0.3	<0.3	NA	< 0.3	117%	50%	140%	91%	60%	130%	99%	50%	140%	
cis- 1,2-Dichloroethylene	3497709		<0.2	<0.2	NA	< 0.2	98%	50%	140%	111%	60%	130%	99%	50%	140%	
Chloroform	3497709		8.3	7.8	6.1%	< 0.2	107%	50%	140%	116%	60%	130%	102%	50%	140%	
Benzene	3497709		<0.2	<0.2	NA	< 0.2	109%	50%	140%	97%	60%	130%	112%	50%	140%	
Trichloroethylene	3497709		<0.2	<0.2	NA	< 0.2	86%	50%	140%	116%	60%	130%	112%	50%	140%	
trans-1,3-Dichloropropene	3497709		<0.30	<0.30	NA	< 0.30	81%	50%	140%	88%	60%	130%	80%	50%	140%	
Toluene	3497709		<0.2	<0.2	NA	< 0.2	87%	50%	140%	102%	60%	130%	85%	50%	140%	
Tetrachloroethene	3497709		<0.1	<0.1	NA	< 0.1	86%	50%	140%	109%	60%	130%	89%	50%	140%	
Ethylbenzene	3497709		<0.1	<0.1	NA	< 0.1	73%	50%	140%	87%	60%	130%	71%	50%	140%	
1,1,2,2-Tetrachloroethane	3497709		<0.1	<0.1	NA	< 0.1	113%	50%	140%	105%	60%	130%	111%	50%	140%	
1,4-Dichlorobenzene	3497709		<0.1	<0.1	NA	< 0.1	118%	50%	140%	87%	60%	130%	101%	50%	140%	
1,2-Dichlorobenzene	3497709		<0.1	<0.1	NA	< 0.1	116%	50%	140%	116%	60%	130%	119%	50%	140%	
PCBs	3476343		< 0.2	< 0.2	NA	< 0.2	98%	50%	130%	103%	50%	140%	98%	50%	140%	
Di-n-butyl phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	74%	50%	140%	75%	50%	140%	99%	50%	140%	
Bis(2-éthylhexyl)phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	78%	50%	140%	89%	50%	140%	89%	50%	140%	

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

NPopukoh

AGAT QUALITY ASSURANCE REPORT (V2)

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

Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861751

ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish P.

			U	ltra T	race	Anal	ysis								
RPT Date: Feb 25, 2022			C	DUPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		otable nits	Recoverv	Lir	ptable nits	Recoverv	Lin	ptable nits
		ld					Value	Lower	Upper		Lower	Upper		Lower	Upper
Nonylphenol and Nonylphenol Et	hoxylates	(Ontario,	mg/L)												
Total Nonylphenol	1	3498740	0.002	0.002	NA	< 0.001	NA	60%	140%	95%	60%	140%	NA	60%	140%
NP1EO	1	3498740	0.004	0.004	NA	< 0.001	NA	60%	140%	80%	60%	140%	NA	60%	140%
NP2EO	1	3498740	0.0012	0.0011	NA	< 0.0003	NA	60%	140%	99%	60%	140%	NA	60%	140%





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AGAT QUALITY ASSURANCE REPORT (V2)

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Quality Assurance

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CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861751 ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish P.

				Wate	er Ar	nalysi	is								
RPT Date: Feb 25, 2022			D	UPLICATE			REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER		nple D	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery		ptable nits	Recovery		eptable nits
		a					value	Lower	Upper	-	Lower	Upper	-	Lower	Upper
Sewer Use - Bradford Sanitar	y/Storm Sewer Use	By-Law	w - Inor	ganics (20)15)										
рН	3495924	7	7.48	7.52	0.5%	NA	102%	90%	110%						
Total Suspended Solids	3495335 34953	335	15	16	NA	< 10	98%	80%	120%						
Fluoride	3494437	<(0.05	<0.05	NA	< 0.05	101%	70%	130%	102%	80%	120%	104%	70%	130%
Sulphate	3494437	1	175	188	7.2%	< 0.10	97%	70%	130%	103%	80%	120%	NA	70%	130%
Total Cyanide	3490367	0.	.004	0.004	NA	< 0.002	106%	70%	130%	104%	80%	120%	112%	70%	130%
Phenols	3495924	<0	0.002	<0.002	NA	< 0.002	101%	90%	110%	103%	90%	110%	105%	80%	120%
Total Kjeldahl Nitrogen	3497301	4	45.5	41.2	9.9%	< 0.10	100%	70%	130%	99%	80%	120%	94%	70%	130%
Total Aluminum	3501486	1	1.35	1.29	4.5%	< 0.010	106%	70%	130%	98%	80%	120%	109%	70%	130%
Total Antimony	3501486	<0	0.020	<0.020	NA	< 0.020	104%	70%	130%	93%	80%	120%	87%	70%	130%
Total Arsenic	3501486	<0	0.015	<0.015	NA	< 0.015	95%	70%	130%	95%	80%	120%	83%	70%	130%
Total Cadmium	3501486	<0	0.010	<0.010	NA	< 0.010	100%	70%	130%	95%	80%	120%	86%	70%	130%
Total Chromium	3501486	<0	0.015	<0.015	NA	< 0.015	100%	70%	130%	91%	80%	120%	89%	70%	130%
Total Cobalt	3501486	<0	0.010	<0.010	NA	< 0.010	101%	70%	130%	93%	80%	120%	89%	70%	130%
Total Copper	3501486	0.	.113	0.112	0.9%	< 0.002	100%	70%	130%	95%	80%	120%	84%	70%	130%
Total Lead	3501486	<0	0.020	<0.020	NA	< 0.020	99%	70%	130%	91%	80%	120%	82%	70%	130%
Total Manganese	3501486	0.	.146	0.150	2.7%	< 0.020	102%	70%	130%	93%	80%	120%	85%	70%	130%
Total Molybdenum	3501486	<0	0.020	<0.020	NA	< 0.020	107%	70%	130%	97%	80%	120%	95%	70%	130%
Total Mercury	3495335 34953	335 <0.	.0002	<0.0002	NA	< 0.0002	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Nickel	3501486	<0	0.015	<0.015	NA	< 0.015	101%	70%	130%	94%	80%	120%	90%	70%	130%
Total Phosphorus	3495536	0	0.06	0.07	NA	< 0.02	104%	90%	110%	99%	90%	110%	100%	80%	120%
Total Selenium	3501486	<0	0.002	<0.002	NA	< 0.002	97%	70%	130%	100%	80%	120%	84%	70%	130%
Total Silver	3501486	<0	0.010	<0.010	NA	< 0.010	101%	70%	130%	95%	80%	120%	86%	70%	130%
Total Tin	3501486	<0	0.020	<0.020	NA	< 0.020	101%	70%	130%	91%	80%	120%	86%	70%	130%
Total Titanium	3501486	<0	0.010	<0.010	NA	< 0.010	102%	70%	130%	96%	80%	120%	94%	70%	130%
Total Zinc	3501486	0.	.026	0.033	NA	< 0.020	103%	70%	130%	97%	80%	120%	85%	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.

CBOD5

Biochemical Oxygen Demand,	3495321	<6.00	<6.00	NA	< 2	95%	70%	130%
Carbonaceous								

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.

Certified By:

Inis Verastegui

AGAT QUALITY ASSURANCE REPORT (V2)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T861751

ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford Bypass (BPP)	SAMPLED BY:Dr	wanish P.				
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE				
Trace Organics Analysis							
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE				
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE				
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION				
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS				
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD				
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD				
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS				
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS				
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS				
Chrysene-d12			GC/MS				
Ultra Trace Analysis							
Total Nonylphenol	TOX-151-19003F	ASTM D7065-6	LCMSMS				
NP1EO	TOX-151-19003F	ASTM D7065-6	LCMSMS				
NP2EO	TOX-151-19003F	ASTM D7065-6	LCMSMS				
Total Nonylphenol Ethoxylates	TOX-19003F	ASTM D7065-6	LCMSMS				



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T861751 ATTENTION TO: Brian Holden

SAMPLING SITE:Bradford Bypass (BPP)

SAMPLED BY:Dhwanish P.

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			1
Biochemical Oxygen Demand, Carbonaceous	INOR-121-6023	SM 5210 B	INCUBATOR
рН	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	2 CVAAS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETR
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Chain of Custody Record		_		-	Ph: king Water Chain of Custody Form (potab	: 905 71	ssissau 2.5100 we	bearth	ario L4 05,712 agatlat	Z 1Y2 5122		Wo	borat rk Order oler Qua ival Tem	r #:	22	-	861	1 1	51 uz	2	
Report Information: Company: AECUM (angle Contact: Brian Holden /	ald a			Reg (Please	gulatory Requirements: e check all applicable boxes) egulation 153/04 Excess Soils R4		Isev						stody Se tes:	eal Inta	ct:		्प s	2 Le	No R	59	N/A
Address: Address: (us (uhmerce v. Markham, PN Phone: Reports to be sent to: 1. Email: 2. Email: Bright Holden (D)	Fax: (a) acrom.	, Jan flun		Ta	able	3	Prov Obje	Region A. Water ectives i er	PWQO)		_	Reg Rus	gular 1 sh TAT] ^{3 B} Day	(Rush Sur Usiness /S	rcharges S	Apply)	b Req to 7 Bus Busines ays sh Surch	siness ss	Days	,	ness
Project Information: Project: 6063690 Site Location: Bradford Bylass Sampled By: Description	(Bpe)			Re	s this submission for a cord of Site Condition?	Cer		Guide te of		sis		1	*TAT For 'Sam	l is excl	lusive o	of wee		and sta	tutory f	TAT holidays GAT CPN	
AGAT Quote #: Please note: If quotation number Invoice Information: Company: Contact: Address: Email:		be billed full price for a		В	mple Matrix Legend Biota Ground Water Oil Paint Soil Sediment Surface Water	Field Filtered - Metals, Hg, CrVI, DOC	& Inorganics	Metals - CrVI, CHg, CHWSB 23 BTFX, F1-F4 PHCs 25	uired 🗆 Yes 🗆 No			Landfill Disposal Characterization TCLP: 01-0 01-0-0005 □ ABNs □ Blaip □ PCBs 022 022	SPLP Rainwater Leach	iaracteri als, BTE	EC/SAR	had Sheve bye	1-1			1.11.2 1.1 2.2	IIIy Hazardous or High Concentration (Y/N)
Sample Identification	Dale Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals	Metals BTFX_F	Analyze F4G	PCBs	VOC	Landfill Disp TCLP: DM&I	Excess Soils SPLP: Meta	Excess pH, ICF	Salt - E	Road had					Potenti
Bn 9-1	Ebx, Wrz			6W												×					
		AM PM AM PM AM PM AM PM AM PM																			
		PM AM PM AM PM															22	FEI	3 8	412	13p
Samples Relinquished By (Print Name and Sign)	ł	Date Date	Time 3 i U Time	R	Samples Received By (Print Name and Sign): Samples Received By (Print Name and Sign) Samples Received By (Print Name and Sign):	r	5			Dat Dat Dat	c		Time				Page		_of _		
Samples Relinquished By (Print Name and Sign)		Date	Inne		Sumples necessed by (Print Name and Sign):			Pi	пк Сору			Yellow (Copy - A		White	Nº: 7 Copy-	• ملم	<u>30</u>	<u>73</u>	d: March 9.	2021

Page 13 of 13



CLIENT NAME: AECOM CANADA LTD **105 Commerce Valley Drive West 7th Floor** MARKHAM, ON L3T7W3 (905) 886-7022 **ATTENTION TO: Brian Holden** PROJECT: 60636190 AGAT WORK ORDER: 22T861752 **TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist** ULTRA TRACE REVIEWED BY: Emmanuelle St-Pierre, chimiste WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer DATE REPORTED: Feb 25, 2022 PAGES (INCLUDING COVER): 13 VERSION*: 2

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

<u>Notes</u>
VERSION 2:Version 2 supersedes work order 22T861752 Version 1, issued February 18, 2022. Complete. VERSION 1:February 18, 2022 - Partial (excluding NP/NPE)
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.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta
(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT WORK ORDER: 22T861752 PROJECT: 60636190

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

				Diadio	,	
DATE RECEIVED: 2022-02-08						DATE REPORTED: 2022-02-25
				CRIPTION: PLE TYPE: SAMPLED:	BH 10-4 Water 2022-02-08 11:30	
Parameter	Unit	G / S: A	G / S: B	RDL	3495321	
Oil and Grease (animal/vegetable) in water	mg/L	100		0.5	<0.5[<a]< td=""><td></td></a]<>	
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5[<a]< td=""><td></td></a]<>	
Methylene Chloride	µg/L	2000	5.2	0.3	<0.3[<b]< td=""><td></td></b]<>	
cis- 1,2-Dichloroethylene	µg/L	4000	5.6	0.2	<0.2[<b]< td=""><td></td></b]<>	
Chloroform	µg/L	40	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Benzene	µg/L	10	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Trichloroethylene	µg/L	400	8	0.2	<0.2[<b]< td=""><td></td></b]<>	
rans-1,3-Dichloropropene	µg/L	140	5.6	0.30	<0.30[<b]< td=""><td></td></b]<>	
Toluene	µg/L	270	2	0.2	<0.2[<b]< td=""><td></td></b]<>	
Tetrachloroethene	µg/L	1000	4.4	0.1	<0.1[<b]< td=""><td></td></b]<>	
Ethylbenzene	µg/L	160	2	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,1,2,2-Tetrachloroethane	µg/L	1400	17	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,4-Dichlorobenzene	µg/L	80	6.8	0.1	<0.1[<b]< td=""><td></td></b]<>	
1,2-Dichlorobenzene	µg/L	50	5.6	0.1	<0.1[<b]< td=""><td></td></b]<>	
Xylenes (Total)	µg/L	1400	4.4	0.2	<0.2[<b]< td=""><td></td></b]<>	
PCBs	µg/L	1	0.4	0.2	<0.2[<b]< td=""><td></td></b]<>	
Di-n-butyl phthalate	ug/L	80	15	0.5	<0.5[<b]< td=""><td></td></b]<>	
Bis(2-éthylhexyl)phthalate	µg/L	12	8.8	0.5	<0.5[<b]< td=""><td></td></b]<>	
Surrogate	Unit	Ad	cceptable Limits	;		
Toluene-d8	% Recovery		50-140		98	
4-Bromofluorobenzene	% Recovery		50-140		83	
Decachlorobiphenyl	%		50-140		106	
2,4,6-Tribromophenol	%		50-140		89	
Chrysene-d12	%		50-140		78	

Certified By:

NPopukolof



AGAT WORK ORDER: 22T861752 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

Sewer Use - Bradford Sanitary/Storm - Organics (2015)

DATE RECEIVED: 2022-02-08 Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; A Refers to ON Bradford SN, B Refers to ON Bradford SM

3495321
 Comments.
 Constrained of a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

DATE REPORTED: 2022-02-25

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AGAT WORK ORDER: 22T861752 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

Nonylphenol and Nonylphenol Ethoxylates (Ontario, mg/L)

DATE RECEIVED: 2022-02-08

	s	AMPLE DES	CRIPTION:	BH 10-4	
		SAM	PLE TYPE:	Water	
		DATE	SAMPLED:	2022-02-08 11:30	
Parameter	Unit	G/S	RDL	3495321	
otal Nonylphenol	mg/L	20	0.001	<0.001	
IP1EO	mg/L		0.001	<0.001	
IP2EO	mg/L		0.0003	<0.0003	
otal Nonylphenol Ethoxylates	mg/L	0.2	0.001	<0.001	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON Bradford SN

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 Montréal (unless marked by *)

annanuelle Flerre

DATE REPORTED: 2022-02-25



AGAT WORK ORDER: 22T861752 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 Bypass (BPP)

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

				CBOD5	
					DATE REPORTED: 2022-02-25
		SAMPLE DES	SCRIPTION:	BH 10-4	
		SAN	IPLE TYPE:	Water	
		DATE	SAMPLED:	2022-02-08 11:30	
Unit	G / S: A	G / S: B	RDL	3495321	
mg/L	300	15	6.00	<6.00[<b]< td=""><td></td></b]<>	
			SAN DATE Unit G/S: A G/S: B		SAMPLE TYPE: Water DATE SAMPLED: 2022-02-08 11:30 11:30 Unit G / S: A G / S: B RDL 3495321

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Brantford SN, B Refers to ON Bradford SM

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.

3495321 RDL for BOD is raised due to insufficient DO depletion at selected dilution levels.

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

Iris Verastegui



CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford Bypass (BPP)

Certificate of Analysis

AGAT WORK ORDER: 22T861752 PROJECT: 60636190 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.agatlabs.com

ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)

DATE RECEIVED: 2022-02-08 **DATE REPORTED: 2022-02-25** SAMPLE DESCRIPTION: BH 10-4 SAMPLE TYPE: Water DATE SAMPLED: 2022-02-08 11:30 Parameter Unit G / S: A G / S: B RDL 3495321 7.52 bН pH Units 6.0-9.5 6.0-9.5 NA Total Suspended Solids mg/L 350 15 10 10[<B] Fluoride 10 0.05 <0.05[<A] mg/L Sulphate mg/L 0.38 1500 10.6[<A] Total Cyanide 2 0.02 0.002 <0.002[<B] ma/L Phenols mg/L 1 0.008 0.002 0.041[B-A] Total Kjeldahl Nitrogen mg/L 100 1 0.10 1.28[B-A] Total Aluminum mg/L 50 0.010 0.124[<A] Total Antimony mg/L 5 0.020 <0.020[<A] Total Arsenic mg/L 1 0.02 0.015 <0.015[<B] Total Cadmium mg/L 0.7 0.008 0.010 <0.010[<A] Total Chromium mg/L 2 0.08 0.015 <0.015[<B] Total Cobalt 5 0.010 mg/L <0.010[<A] 3 0.002 <0.002[<B] Total Copper mg/L 0.05 Total Lead mg/L 1 0.12 0.020 <0.020[<B] 5 0.020 0.716[B-A] Total Manganese mg/L 0.15 Total Molybdenum mg/L 5 0.020 <0.020[<A] 0.010 0.0002 Total Mercury mg/L <0.0002[<A] Total Nickel mg/L 2 0.08 0.015 <0.015[<B] Total Phosphorus mg/L 10 0.4 0.02 0.03[<B] Total Selenium 1 0.02 mg/L 0.002 <0.002[<B] Total Silver 5 0.12 mg/L 0.010 <0.010[<B] 5 Total Tin mg/L 0.020 <0.020[<A] Total Titanium mg/L 5 0.010 <0.010[<A] 2 Total Zinc mg/L 0.04 0.020 <0.020[<B]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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. Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

3495321

Certified By:

Iris Verastegui



Exceedance Summary

AGAT WORK ORDER: 22T861752 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
3495321	BH 10-4	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Phenols	mg/L	0.008	0.041
3495321	BH 10-4	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Total Kjeldahl Nitrogen	mg/L	1	1.28
3495321	BH 10-4	ON Bradford SM	Sewer Use - Bradford Sanitary/Storm Sewer Use By-Law - Inorganics (2015)	Total Manganese	mg/L	0.15	0.716



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861752 ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

			Trac	e Or	ganio	cs Ar	nalys	is							
RPT Date: Feb 25, 2022			0	UPLICAT	E		REFERE		TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	ке
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured Value		eptable nits	Recovery	Lie	ptable nits	Recovery	Lie	ptable nits
		Iŭ					value	Lower	Upper		Lower	Upper		Lower	Upper
Sewer Use - Bradford Sanitary/St	orm - Orga	nics (201	5)												
Oil and Grease (animal/vegetable) in water	3478434		0.98	0.94	NA	< 0.5	101%	70%	130%	107%	70%	130%	102%	70%	130%
Oil and Grease (mineral) in water	3478434		0.73	0.71	NA	< 0.5	81%	70%	130%	83%	70%	130%	80%	70%	130%
Methylene Chloride	3497709		<0.3	<0.3	NA	< 0.3	117%	50%	140%	91%	60%	130%	99%	50%	140%
cis- 1,2-Dichloroethylene	3497709		<0.2	<0.2	NA	< 0.2	98%	50%	140%	111%	60%	130%	99%	50%	140%
Chloroform	3497709		8.3	7.8	6.1%	< 0.2	107%	50%	140%	116%	60%	130%	102%	50%	140%
Benzene	3497709		<0.2	<0.2	NA	< 0.2	109%	50%	140%	97%	60%	130%	112%	50%	140%
Trichloroethylene	3497709		<0.2	<0.2	NA	< 0.2	86%	50%	140%	116%	60%	130%	112%	50%	140%
trans-1,3-Dichloropropene	3497709		<0.30	<0.30	NA	< 0.30	81%	50%	140%	88%	60%	130%	80%	50%	140%
Toluene	3497709		<0.2	<0.2	NA	< 0.2	87%	50%	140%	102%	60%	130%	85%	50%	140%
Tetrachloroethene	3497709		<0.1	<0.1	NA	< 0.1	86%	50%	140%	109%	60%	130%	89%	50%	140%
Ethylbenzene	3497709		<0.1	<0.1	NA	< 0.1	73%	50%	140%	87%	60%	130%	71%	50%	140%
1,1,2,2-Tetrachloroethane	3497709		<0.1	<0.1	NA	< 0.1	113%	50%	140%	105%	60%	130%	111%	50%	140%
1,4-Dichlorobenzene	3497709		<0.1	<0.1	NA	< 0.1	118%	50%	140%	87%	60%	130%	101%	50%	140%
1,2-Dichlorobenzene	3497709		<0.1	<0.1	NA	< 0.1	116%	50%	140%	116%	60%	130%	119%	50%	140%
PCBs	3476343		< 0.2	< 0.2	NA	< 0.2	98%	50%	130%	103%	50%	140%	98%	50%	140%
Di-n-butyl phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	74%	50%	140%	75%	50%	140%	99%	50%	140%
Bis(2-éthylhexyl)phthalate	3480144		< 0.5	< 0.5	NA	< 0.5	78%	50%	140%	89%	50%	140%	89%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

NPopukoli

AGAT QUALITY ASSURANCE REPORT (V2)

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5835 COOPERS AVENUE MISSISSAUGA, ONTARIO

CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.agatlabs.com

Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861752

ATTENTION TO: Brian Holden

SAMPLED BY: Dhwanish Parikh

			U	ltra T	race	Anal	ysis								
RPT Date: Feb 25, 2022			C	DUPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	(SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recoverv	Acceptable Limits		Recoverv	Lin	ptable nits
		ld					Value	Lower	Upper			Upper	1		Upper
Nonylphenol and Nonylphenol E	hoxylates	(Ontario,	mg/L)												
Total Nonylphenol	1	3498740	0.002	0.002	NA	< 0.001	NA	60%	140%	95%	60%	140%	NA	60%	140%
NP1EO	1	3498740	0.004	0.004	NA	< 0.001	NA	60%	140%	80%	60%	140%	NA	60%	140%
NP2EO	1	3498740	0.0012	0.0011	NA	< 0.0003	NA	60%	140%	99%	60%	140%	NA	60%	140%





AGAT QUALITY ASSURANCE REPORT (V2)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:Bradford Bypass (BPP)

AGAT WORK ORDER: 22T861752 **ATTENTION TO: Brian Holden**

SAMPLED BY: Dhwanish Parikh

				Wate	er Ar	nalysi	is								
RPT Date: Feb 25, 2022			6	UPLICATE			REFERE	NCE MA	TERIAL	METHOD	BLAN	(SPIKE	MAT	RIX SPI	IKE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured	Acceptable Limits		Recovery	1.1.	eptable nits	Recovery	1.10	eptable nits
		Ια					Value	Lower	Upper		Lower	Upper		Lower	Upper
Sewer Use - Bradford Sanitary/	Storm Sewer	Use By-	Law - Inoi	rganics (20	15)										
рН	3495924		7.48	7.52	0.5%	NA	102%	90%	110%						
Total Suspended Solids	3495335		15	16	NA	< 10	98%	80%	120%						
Fluoride	3494437		<0.05	<0.05	NA	< 0.05	101%	70%	130%	102%	80%	120%	104%	70%	130%
Sulphate	3494437		175	188	7.2%	< 0.10	97%	70%	130%	103%	80%	120%	NA	70%	130%
Total Cyanide	3490367		0.004	0.004	NA	< 0.002	106%	70%	130%	104%	80%	120%	112%	70%	130%
Phenols	3495924		<0.002	<0.002	NA	< 0.002	101%	90%	110%	103%	90%	110%	105%	80%	120%
Total Kjeldahl Nitrogen	3497301		45.5	41.2	9.9%	< 0.10	100%	70%	130%	99%	80%	120%	94%	70%	130%
Total Aluminum	3501486		1.35	1.29	4.5%	< 0.010	106%	70%	130%	98%	80%	120%	109%	70%	130%
Total Antimony	3501486		<0.020	<0.020	NA	< 0.020	104%	70%	130%	93%	80%	120%	87%	70%	130%
Total Arsenic	3501486		<0.015	<0.015	NA	< 0.015	95%	70%	130%	95%	80%	120%	83%	70%	130%
Total Cadmium	3501486		<0.010	<0.010	NA	< 0.010	100%	70%	130%	95%	80%	120%	86%	70%	130%
Total Chromium	3501486		<0.015	<0.015	NA	< 0.015	100%	70%	130%	91%	80%	120%	89%	70%	130%
Total Cobalt	3501486		<0.010	<0.010	NA	< 0.010	101%	70%	130%	93%	80%	120%	89%	70%	130%
Total Copper	3501486		0.113	0.112	0.9%	< 0.002	100%	70%	130%	95%	80%	120%	84%	70%	130%
Total Lead	3501486		<0.020	<0.020	NA	< 0.020	99%	70%	130%	91%	80%	120%	82%	70%	130%
Total Manganese	3501486		0.146	0.150	2.7%	< 0.020	102%	70%	130%	93%	80%	120%	85%	70%	130%
Total Molybdenum	3501486		<0.020	<0.020	NA	< 0.020	107%	70%	130%	97%	80%	120%	95%	70%	130%
Total Mercury	3495335		<0.0002	< 0.0002	NA	< 0.0002	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Nickel	3501486		<0.015	<0.015	NA	< 0.015	101%	70%	130%	94%	80%	120%	90%	70%	130%
Total Phosphorus	3495536		0.06	0.07	NA	< 0.02	104%	90%	110%	99%	90%	110%	100%	80%	120%
Total Selenium	3501486		<0.002	<0.002	NA	< 0.002	97%	70%	130%	100%	80%	120%	84%	70%	130%
Total Silver	3501486		<0.010	<0.010	NA	< 0.010	101%	70%	130%	95%	80%	120%	86%	70%	130%
Total Tin	3501486		<0.020	<0.020	NA	< 0.020	101%	70%	130%	91%	80%	120%	86%	70%	130%
Total Titanium	3501486		<0.010	<0.010	NA	< 0.010	102%	70%	130%	96%	80%	120%	94%	70%	130%
Total Zinc	3501486		0.026	0.033	NA	< 0.020	103%	70%	130%	97%	80%	120%	85%	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 NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

CBOD5

Biochemical Oxygen Demand,	3495321 3495321	<6.00	<6.00	NA	< 2	95%	70%	130%
Carbonaceous								

Comments: If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By:

Inis Verastegui

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AGAT QUALITY ASSURANCE REPORT (V2)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:Bradford Bypass (BPP)

PROJECT: 60636190

AGAT WORK ORDER: 22T861752 ATTENTION TO: Brian Holden

SAMPLED BY:Dhwanish Parikh

PARAMETER	AGAT S.O.P		ANALYTICAL TECHNIQUE
Trace Organics Analysis	AGAT 0.0.1		
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
		modified from EPA 5030B & EPA	
Methylene Chloride	VOL-91-5001	8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Chrysene-d12			GC/MS
Ultra Trace Analysis			
Total Nonylphenol	TOX-151-19003F	ASTM D7065-6	LCMSMS
NP1EO	TOX-151-19003F	ASTM D7065-6	LCMSMS
NP2EO	TOX-151-19003F	ASTM D7065-6	LCMSMS
Total Nonylphenol Ethoxylates	TOX-19003F	ASTM D7065-6	LCMSMS



Method Summary

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CLIENT NAME: AECOM CANADA PROJECT: 60636190	LTD	AGAT WORK OR ATTENTION TO: I	
SAMPLING SITE:Bradford Bypass	(BPP)	SAMPLED BY:Dh	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Biochemical Oxygen Demand, Carbonaceous	INOR-121-6023	SM 5210 B	INCUBATOR
рН	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	² CVAAS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETR
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A,	ICP-MS

Total Nickel	MET-93-6103	3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETR
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Chain of Custody Record						Pi f Custody Form (pota	n: 905.71	ississa 2.510 w	iuga, (10 Fax vebear	th.aga	L4Z 1 712.51 labs.c	.Y2 .22	Co	ork Orde		22	-78		752 1.5)- 1
Report Information: Company: Accum Canada Contact: Bright Holden Address: IUS Commerce V Mardinam, and Mardinam, and Phone: Active Accumation: Reports to be sent to: 1. Email: 2. Email: Contact: Project Information: Project: Site Location: State for a By Russ (Bhirmin ally BY Fax: Qac (Um. Ac (Um. (Oh)	W, 7mg	time	(Please c Please c Table Table Table Table Table Table C Soil Te: C C F Is * Rec	And/Com Res/Park ggriculture Xture (Check One) Coarse This submission ord of Site Co	Table Indicate On Regulation 55 CCME	Re Cer	Prc Ob Otr	Regi Dv. Wa jective ner Indica : Guild ate o	ter Qua es (PWC te One deline of Ana	lity 20) 9 on		Tu Re;	sh TA a b c c c c c c c c c c c c c	TAT F(Rush Su Busines ays R Date I Please	Fime archarge iss Requir e provi	s Apply) 2 E Day ed (Rush de prior n	Requ o 7 Busin Business ys n Surchan notificati	ness Days	Next B Day Apply): sh TAT	-
Sample Identification	PO:	be billed full price for a bill To Same: Yes		B GW O P S SD	ple Matrix Le, Biota Ground Water Oil Paint Soil Sediment Surface Water	<u> </u>	 Field Filtered - Metals, Hg, CNI, DOC 	-	Metals - CrVI, CHg, CHWSB	LP62		PCBs	fill Disposal Characterization TCLP: 000	s SPLP Rainwater Leach 0	aracterization Package 906		Bradding Scirer USC	ise cont	act your /	AGAT C	Potentially Hazardous or High Concentration (Y/N)
B1 10-4	Sampled	Sampled		Matrix GW	Special	Instructions		N I	2			7									24
Samples Relinquished By (Print Name and Sign): Samples Relinquished By (Print Name and Sign): Samples Relinquished By (Print Name and Sign):		Date Date Date		Ð	Samples Received By (7 Samples Received By (7 Samples Received By (7		orai	m				Date Date Date	Vallau	Time	2	White	Nº: T Copy- A0		FEB of 073	g 4 31	1:43;

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CLIENT NAME: AECOM CANADA LTD **105 COMMERCE VALLEY DR.W 7TH FLOOR** MARKHAM, ON L3T7W3 (905) 886-7022 **ATTENTION TO: Dhwanish Parikh** PROJECT: 60636190 AGAT WORK ORDER: 22T894872 WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager DATE REPORTED: May 25, 2022 PAGES (INCLUDING COVER): 10 VERSION*: 1

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

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- 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.

AGAT Laboratories (V1)

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(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT WORK ORDER: 22T894872 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:BPP

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY:Dhwanish Parikh

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-05-12

DATE RECEIVED: 2022-05-12							DATE REPORTED: 2022-05-25
	S	AMPLE DES	CRIPTION:	BH2-1		HRW-1	
		SAM	PLE TYPE:	Water		Water	
		DATE	SAMPLED:	2022-05-12		2022-05-12	
Denemation	11	0/0		11:45	DDI	12:45	
Parameter	Unit	G/S	RDL	3851210	RDL	3851283	
Electrical Conductivity	µS/cm		2	1010	2	1350	
pH	pH Units	6.5-8.5	NA	7.83	NA	7.52	
Saturation pH (Calculated)				6.13		6.13	
Langelier Index (Calculated)				1.70		1.39	
Hardness (as CaCO3) (Calculated)	mg/L		0.5	1840	0.5	1270	
Total Dissolved Solids	mg/L		10	568	10	924	
Alkalinity (as CaCO3)	mg/L		5	315	5	469	
Bicarbonate (as CaCO3)	mg/L		5	315	5	469	
Carbonate (as CaCO3)	mg/L		5	<5	5	<5	
Hydroxide (as CaCO3)	mg/L		5	<5	5	<5	
Fluoride	mg/L		0.05	<0.05	0.05	<0.05	
Chloride	mg/L		0.12	189	0.12	200	
Nitrate as N	mg/L		0.05	< 0.05	0.05	<0.05	
Nitrite as N	mg/L		0.05	<0.05	0.05	<0.05	
Bromide	mg/L		0.05	<0.05	0.05	<0.05	
Sulphate	mg/L		0.10	7.69	0.10	5.87	
Ortho Phosphate as P	mg/L		0.10	<0.10	0.10	<0.10	
Ammonia as N	mg/L		0.02	0.02	0.02	0.64	
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	0.000829	0.000002	0.0133	
Total Phosphorus	mg/L	*	0.02	1.38	0.06	1.72	
Total Organic Carbon	mg/L		0.5	5.5	0.5	13.1	
True Colour	TCU		5.00	<5.00	5.00	18.5	
Turbidity	NTU		0.9	1430	0.5	645	
Total Calcium	mg/L		0.32	626	0.32	455	
Total Magnesium	mg/L		0.34	66.2	0.34	31.5	
Total Potassium	mg/L		1.15	9.73	1.15	6.39	
Total Sodium	mg/L		0.45	102	0.45	92.0	
Aluminum-dissolved	mg/L	*	0.004	<0.004	0.004	< 0.004	
Total Antimony	mg/L	0.020	0.001	<0.001	0.001	<0.001	





AGAT WORK ORDER: 22T894872 PROJECT: 60636190 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE: BPP

ATTENTION TO: Dhwanish Parikh

SAMPLED BY:Dhwanish Parikh

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-05-12

DATE RECEIVED: 2022-05-12						DATE REPORTED: 2022-05-25
		SAMPLE DESCRIPTI			HRW-1 Water 2022-05-12 12:45 3851283	
		SAMPLE TY DATE SAMPL				
Parameter	Unit	G/S RD		RDL		
otal Arsenic	mg/L	0.1 0.00	3 0.029	0.003	0.008	
otal Barium	mg/L	0.00	2 0.450	0.002	0.196	
otal Beryllium	mg/L	* 0.00	1 0.001	0.001	<0.001	
otal Boron	mg/L	0.2 0.01	0 0.092	0.010	0.053	
otal Cadmium	mg/L	0.0002 0.00	0.0002	0.0001	0.0001	
otal Chromium	mg/L	0.00	3 0.045	0.003	0.026	
otal Cobalt	mg/L	0.0009 0.00	5 0.0178	0.0005	0.0186	
otal Copper	mg/L	0.005 0.00	1 0.050	0.001	0.034	
otal Iron	mg/L	0.3 0.1	43.5	0.10	55.3	
otal Lead	mg/L	* 0.00	1 0.022	0.001	0.014	
otal Manganese	mg/L	0.00	2 1.51	0.002	6.54	
Dissolved Mercury	mg/L	0.0002 0.00	<0.0001	0.0001	<0.0001	
otal Molybdenum	mg/L	0.040 0.00	2 0.004	0.002	0.003	
otal Nickel	mg/L	0.025 0.00	3 0.040	0.003	0.031	
otal Selenium	mg/L	0.1 0.00	2 0.010	0.002	0.009	
otal Silver	mg/L	0.0001 0.00	<0.0001	0.0001	<0.0001	
otal Strontium	mg/L	0.00	5 1.42	0.005	1.04	
otal Thallium	mg/L	0.0003 0.00	3 0.0005	0.0003	0.0003	
otal Tin	mg/L	0.00	2 <0.002	0.002	<0.002	
otal Titanium	mg/L	0.1) 1.39	0.010	0.957	
otal Tungsten	mg/L	0.030 0.01	0 <0.010	0.010	<0.010	
otal Uranium	mg/L	0.005 0.00	2 0.003	0.002	<0.002	
otal Vanadium	mg/L	0.006 0.00	2 0.070	0.002	0.044	
otal Zinc	mg/L	0.030 0.02	0 0.100	0.020	0.068	
otal Zirconium	mg/L	0.004 0.00	4 0.010	0.004	0.009	
ab Filtration Aluminum Dissolved			5/13/2022		5/13/2022	
ab Filtration mercury			5/13/2022		5/13/2022	



DATE REPORTED: 2022-05-25



AGAT WORK ORDER: 22T894872 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:BPP

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

ATTENTION TO: Dhwanish Parikh

SAMPLED BY: Dhwanish Parikh

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-05-12

DATE REPORTED: 2022-05-25

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.

3851210-3851283 Diss.Al and Diss.Hg completed on a lab filtered sample.

Un-ionized Ammonia RDL is a calculated detection limit. The calculation of Un-ionized Ammonia was based on lab measured parameters (pH and temperature) rather than the field parameters, these were not provided to the lab. The temperature is recorded at the time of pH measurement. Values are reported as calculated. Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)





Exceedance Summary

AGAT WORK ORDER: 22T894872 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: Dhwanish Parikh

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Cobalt	mg/L	0.0009	0.0178
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Copper	mg/L	0.005	0.050
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	43.5
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Nickel	mg/L	0.025	0.040
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Thallium	mg/L	0.0003	0.0005
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Vanadium	mg/L	0.006	0.070
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zinc	mg/L	0.030	0.100
3851210	BH2-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zirconium	mg/L	0.004	0.010
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Cobalt	mg/L	0.0009	0.0186
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Copper	mg/L	0.005	0.034
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	55.3
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Nickel	mg/L	0.025	0.031
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Vanadium	mg/L	0.006	0.044
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zinc	mg/L	0.030	0.068
3851283	HRW-1	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zirconium	mg/L	0.004	0.009



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:BPP

AGAT WORK ORDER: 22T894872 ATTENTION TO: Dhwanish Parikh SAMPLED BY:Dhwanish Parikh

Water Analysis

			vvale		laiyəl	3								
RPT Date: May 25, 2022			UPLICATE			REFERE	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
DADAMETED	Batah Sample	Dun #1	Dum #2	RPD	Method Blank	Measured		eptable nits	Basavan	Lin	ptable nits	Beeeverv		ptable nits
PARAMETER	Batch	Dup #1	Dup #2	RPD		Value	Lower	Upper	Recovery		Upper	Recovery	Lower	Uppe
Water Quality Assessment - P	WQO (mg/L)													
Electrical Conductivity	3861980	849	853	0.5%	< 2	100%	90%	110%	NA			NA		
рН	3861980	7.79	7.87	1.0%	NA	101%	90%	110%	NA			NA		
Total Dissolved Solids	3854516	332	334	0.6%	< 10	100%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	3861980	395	407	3.0%	< 5	90%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	3861980	395	407	3.0%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	3861980	<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	3861980	<5	<5	NA	< 5	NA			NA			NA		
Fluoride	3867019	<0.05	<0.05	NA	< 0.05	105%	70%	130%	105%	80%	120%	103%	70%	130%
Chloride	3867019	197	197	0.0%	< 0.10	89%	70%	130%	102%	80%	120%	NA	70%	130%
Nitrate as N	3867019	2.09	2.10	0.5%	< 0.05	96%	70%	130%	102%	80%	120%	102%	70%	130%
Nitrite as N	3867019	<0.05	<0.05	NA	< 0.05	100%	70%	130%	108%	80%	120%	113%	70%	130%
Bromide	3867019	<0.05	<0.05	NA	< 0.05	96%	70%	130%	99%	80%	120%	96%	70%	130%
Sulphate	3867019	16.4	16.5	0.6%	< 0.10	101%	70%	130%	105%	80%	120%	104%	70%	130%
Ortho Phosphate as P	3867019	<0.10	<0.10	NA	< 0.10	105%	70%	130%	104%	80%	120%	104%	70%	130%
Ammonia as N	3864487	23.0	22.9	0.4%	< 0.02	101%	70%	130%	101%	80%	120%	108%	70%	130%
Total Phosphorus	3861920	1.20	1.21	0.8%	< 0.02	95%	70%	130%	102%	80%	120%	NA	70%	130%
Total Organic Carbon	3851038	1.0	1.1	NA	< 0.5	97%	90%	110%	95%	90%	110%	93%	80%	120%
True Colour	3854513	<5.00	<5.00	NA	< 5	102%	90%	110%	NA			NA		
Turbidity	3851035	0.8	0.8	NA	< 0.5	100%	80%	120%	NA			NA		
Total Calcium	3851035	102	99.2	2.8%	< 0.10	94%	70%	130%	94%	80%	120%	93%	70%	130%
Total Magnesium	3851035	17.9	17.2	4.0%	< 0.10	94%	70%	130%	94%	80%	120%	95%	70%	130%
Total Potassium	3851035	1.93	1.69	NA	< 0.50	93%	70%	130%	93%	80%	120%	93%	70%	130%
Total Sodium	3851035	27.3	26.2	4.1%	< 0.10	95%	70%	130%	94%	80%	120%	96%	70%	130%
Aluminum-dissolved	3851210 3851210	<0.004	<0.004	NA	< 0.004	95%	70%	130%	96%	80%	120%	92%	70%	130%
Total Antimony	3851035	<0.001	<0.001	NA	< 0.001	105%	70%	130%	102%	80%	120%	106%	70%	130%
Total Arsenic	3851035	<0.003	<0.003	NA	< 0.003	96%	70%	130%	96%	80%	120%	102%	70%	130%
Total Barium	3851035	0.090	0.091	1.9%	< 0.002	101%	70%	130%	103%	80%	120%	105%	70%	130%
Total Beryllium	3851035	<0.001	<0.001	NA	< 0.001	96%	70%	130%	97%	80%	120%	102%	70%	130%
Total Boron	3851035	0.013	0.013	NA	< 0.010	96%	70%	130%	95%	80%	120%	96%	70%	130%
Total Cadmium	3851035	<0.0001	<0.0001	NA	< 0.0001	103%	70%	130%	102%	80%	120%	105%	70%	130%
Total Chromium	3851035	<0.003	<0.003	NA	< 0.003	100%	70%	130%	101%	80%	120%	104%	70%	130%
Total Cobalt	3851035	<0.0005	<0.0005	NA	< 0.0005	98%		130%	106%	80%	120%	100%		130%
Total Copper	3851035	0.002	0.001	NA	< 0.001	96%	70%	130%	104%	80%	120%	95%	70%	130%
Total Iron	3851035	0.222	0.217	2.3%	< 0.010	98%	70%	130%	106%		120%	99%	70%	130%
Total Lead	3851035	<0.001	<0.001	NA	< 0.001	100%	70%	130%	99%	80%	120%	98%	70%	130%
Total Manganese	3851035	0.020	0.021	4.7%	< 0.002	100%	70%	130%	107%	80%	120%	102%	70%	
Dissolved Mercury	3860252	<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	99%	80%	120%	93%	70%	130%
Total Molybdenum	3851035	<0.002	<0.002	NA	< 0.002	100%		130%	104%		120%	108%	70%	130%
Total Nickel	3851035	< 0.003	<0.003	NA	< 0.003	96%	70%	130%	104%	80%	120%	97%	70%	130%

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:BPP

AGAT WORK ORDER: 22T894872 ATTENTION TO: Dhwanish Parikh SAMPLED BY:Dhwanish Parikh

Water Analysis (Continued)

RPT Date: May 25, 2022			[OUPLICATE	Ξ		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	ptable nits	Recovery	Lie	ptable nits
		ld					Value	Lower	Upper	-	Lower	Upper		Lower	Upper
Total Selenium	3851035		0.002	<0.002	NA	< 0.002	106%	70%	130%	98%	80%	120%	99%	70%	130%
Total Silver	3851035		<0.0001	<0.0001	NA	< 0.0001	94%	70%	130%	105%	80%	120%	95%	70%	130%
Total Strontium	3851035		0.222	0.232	4.3%	< 0.005	98%	70%	130%	108%	80%	120%	102%	70%	130%
Total Thallium	3851035		<0.0003	< 0.0003	NA	< 0.0003	98%	70%	130%	104%	80%	120%	105%	70%	130%
Total Tin	3851035		<0.002	<0.002	NA	< 0.002	99%	70%	130%	102%	80%	120%	103%	70%	130%
Total Titanium	3851035		<0.010	<0.010	NA	< 0.010	106%	70%	130%	95%	80%	120%	107%	70%	130%
Total Tungsten	3851035		<0.010	<0.010	NA	< 0.010	93%	70%	130%	91%	80%	120%	94%	70%	130%
Total Uranium	3851035		0.002	0.002	NA	< 0.002	97%	70%	130%	104%	80%	120%	106%	70%	130%
Total Vanadium	3851035		<0.002	<0.002	NA	< 0.002	102%	70%	130%	110%	80%	120%	107%	70%	130%
Total Zinc	3851035		<0.020	<0.020	NA	< 0.020	99%	70%	130%	100%	80%	120%	106%	70%	130%
Total Zirconium	3851035		< 0.004	< 0.004	NA	< 0.004	100%	70%	130%	99%	80%	120%	100%	70%	130%

Comments: NA Signifies Not Applicable

Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.





AGAT QUALITY ASSURANCE REPORT (V1)

Page 7 of 10

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T894872 ATTENTION TO: Dhwanish Parikh

SAMPLING SITE: BPP		SAMPLED BY:Dh	wanish Parikh
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis		I	
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
рН	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	modified from 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
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 PROJECT: 60636190

SAMPLING SITE:BPP

AGAT WORK ORDER: 22T894872 ATTENTION TO: Dhwanish Parikh

SAMPLED BY:Dhwanish Parikh

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 31 B	¹² 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

Chain of Custody Record			-	-4		Pł i Custody Form (pota	n: 905.71	ssissaug 2 5100 weł	Fax: 90 bearth a	irio L4 05 712 Igatlab	Z 1Y2 5122		rder #: Quantit	/:	e Only 22 [[0 	arcy		71 614	0
Report Information: Company: Address: Contact: Dhu-anish Parilah Address: Io5 (upmerce Val Matchell I UN Phone: Reports to be sent to: 1. Email: 1. Email: Dhu-anish Pintuh (Constant) Project Information: Project: Site Location: SPP Sampled By: Dhu-anish Pintuh (Constant)	- Bron lig DY V - Fax: - Daccom, accom,	him the		(Pieaso Tat Soil Te Soil Te Soil Te Soil Te	A guilatory Requ check all applicable boxes aguilation 153/04 ble Indicate One Ind/Com Res/Park Agriculture exture (check One) Coarse Fine this submission cord of Site Co Yes	Excess Soils R Table Indicate On Regulation 55 CCME On for a	e 8 [Othe	Region Water (ctives (F n ndicate On Guidel re of A	e ine o	n	Notes: Turna Regula Rush 1	round ar TAT AT (Rust 3 Busir Days OR Dat Plea *TAT is e	L Tim Surcharg ess e Requ se prov exclusiv		7 Business vs Surcha	iness Da	nys Next E Day ay Apply) ush TAT ory holid	lays
AGAT Quote #: Please note: If quotation number is Invoice Information: Company: Contact: Address: Email:	PO: not provided, client will	be billed full price for a		B GW O P S SD SW	ple Matrix Le, Biota Ground Water Oil Paint Soil Sediment Surface Water	gend	Field Filtered - Metals, Hg, CrVI, DOC	: Inorganics	□ CrVI, □ Hg, □ F4 PHCs	e F4G if required 🗆 Yes 🗆 No		Uisposal Unaracterization ICLP: M&I □VOCs □ABNs □B(a)P□PCBs Soils SPLP Rainwater Leach] Metals □ voCs □ svo Soils Characterization	ICPMS Metals, BTEX, F1-F4 00 - EC/SAR	AA (ANTO)	2.4.4.1.1.1.1.1.1.1.			Potentially Hazardous or High Concentration (χ, ν)
Sommers Rithinguestions By (Print Namur and Sagu).	Date Sampled May 12, 22 May 12, 22	Time Sampled 1145 AM PM 12-45 AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM AM PM AM AM PM AM AM PM AM AM AM AM AM AM AM AM AM AM AM AM AM	Time	Sample Matrix GW GW		Instructions	Y/N	Metals	Metals - BTEX, F1	Analyze Paralyze Paralyze Paralyze	E Caracteria Contracteria Contr		Split-IC Excess	PH, ICP	Warn X X	122	2167	12	Potential
Samples Relinguished By (Print Name and Sign): Sumples Relinguished By (Print Name and Sign): Decument ID: DIV 78-1511.021		Date Date	1 Ime Ime	<u>ب</u> د	Samples Received By (I		(may		Pin	k Copy	Date Date - Clien		Time - AGAT	I Whit	N ^u : T te Copy- AG	Page 13	。 09	f 23	ch 9, 2021 10



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

Disclaimer:

*Notes

- 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.

AGAT Laboratories (V1)

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(APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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AGAT WORK ORDER: 22T895412 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:BPP

ATTENTION TO: Dhwanish Parikh

SAMPLED BY: Dhwanish Parikh

Bradford Sanitary - Organics (2015)

					DATE REPORTED: 2022-05-25
		SA	MPLE TYPE:	BH CN-3 Water 2022-05-13 14:45	
Unit	G / S: A	G / S: B	RDL	3856457	
mg/L	100		0.5	1.12[<a]< td=""><td></td></a]<>	
mg/L	15		0.5	<0.5	
µg/L	2000	5.2	0.3	<0.3	
µg/L	4000	5.6	0.2	<0.2	
µg/L	40	2	0.2	<0.2	
µg/L	10	2	0.2	<0.2	
µg/L	400	8	0.2	<0.2	
µg/L	140	5.6	0.30	<0.30	
µg/L	270	2	0.2	<0.2	
µg/L	1000	4.4	0.1	<0.1	
µg/L	160	2	0.1	<0.1	
µg/L	1400	17	0.1	<0.1	
µg/L	80	6.8	0.1	<0.1	
µg/L	50	5.6	0.1	<0.1	
µg/L	1400	4.4	0.2	<0.2	
µg/L	1	0.4	0.2	<0.2	
ug/L	80	15	0.5	0.69[<b]< td=""><td></td></b]<>	
µg/L	12	8.8	0.5	0.59[<b]< td=""><td></td></b]<>	
Unit	Ad	cceptable Limi	ts		
% Recovery		50-140		98	
% Recovery		50-140		80	
%		50-140		75	
%		50-140		83	
%		50-140		74	
	mg/L mg/L μg/L μg/L	mg/L 100 mg/L 15 µg/L 2000 µg/L 4000 µg/L 40 µg/L 10 µg/L 10 µg/L 10 µg/L 10 µg/L 10 µg/L 10 µg/L 100 µg/L 1000 µg/L 1000 µg/L 160 µg/L 160 µg/L 1400 µg/L 1400 µg/L 12 µg/L 12 Unit Ac % Recovery % % %	Unit G/S: A G/S: B mg/L 100 1 mg/L 100 1 mg/L 2000 5.2 µg/L 2000 5.6 µg/L 400 2 µg/L 400 3 µg/L 400 3 µg/L 10 2 µg/L 10 2 µg/L 10 2 µg/L 100 4.4 µg/L 1000 4.4 µg/L 1400 4.4 µg/L 140 4.4 µg/L 1 0.4 µg/L 12 8.8 µg/L 12 8.8 µg/L 12 8.8 µg/L 12 <t< td=""><td>mg/L 100 0.5 mg/L 15 0.5 μg/L 2000 5.2 0.3 μg/L 4000 5.6 0.2 μg/L 40 2 0.2 μg/L 10 2 0.2 μg/L 10 2 0.2 μg/L 400 8 0.2 μg/L 140 5.6 0.30 μg/L 1400 8 0.2 μg/L 140 5.6 0.30 μg/L 140 5.6 0.30 μg/L 1000 4.4 0.1 μg/L 160 2 0.1 μg/L 160 2 0.1 μg/L 160 3 0.1 μg/L 160 2 0.1 μg/L 1400 4.4 0.2 μg/L 1 0.4 0.2 μg/L 12 8.8 0.5 μ</td><td>SAMPLE TYPE: DATE SAMPLENWater 2022.05.01 214.4SUnitG/S: AG/S: BRDL3856457mg/L1000.5RDL3856457mg/L1000.50.5<0.5</td>µg/L20005.20.3<0.3</t<>	mg/L 100 0.5 mg/L 15 0.5 μg/L 2000 5.2 0.3 μg/L 4000 5.6 0.2 μg/L 40 2 0.2 μg/L 10 2 0.2 μg/L 10 2 0.2 μg/L 400 8 0.2 μg/L 140 5.6 0.30 μg/L 1400 8 0.2 μg/L 140 5.6 0.30 μg/L 140 5.6 0.30 μg/L 1000 4.4 0.1 μg/L 160 2 0.1 μg/L 160 2 0.1 μg/L 160 3 0.1 μg/L 160 2 0.1 μg/L 1400 4.4 0.2 μg/L 1 0.4 0.2 μg/L 12 8.8 0.5 μ	SAMPLE TYPE: DATE SAMPLENWater 2022.05.01 214.4SUnitG/S: AG/S: BRDL3856457mg/L1000.5RDL3856457mg/L1000.50.5<0.5

Certified By:

NPopukolof



AGAT WORK ORDER: 22T895412 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:BPP

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY: Dhwanish Parikh

Bradford Sanitary - Organics (2015)

DATE RECEIVED: 2022-05-13

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM 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.

3856457 Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G. Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

NPopukoloj

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



AGAT WORK ORDER: 22T895412 PROJECT: 60636190 5835 COOPERS AVENUE MISSISSAUGA, ONTARIO CANADA L4Z 1Y2 TEL (905)712-5100 FAX (905)712-5122 http://www.aqatlabs.com

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:BPP

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY: Dhwanish Parikh

Nonylphenol and Nonylphenol Ethoxylates (Ontario, mg/L)

DATE RECEIVED: 2022-05-13

	S	AMPLE DES	CRIPTION:	BH CN-3
		SAM	PLE TYPE:	Water
	2022-05-13 14:45			
Parameter	Unit	G/S	RDL	3856457
Total Nonylphenol	mg/L	20	0.001	0.029
NP1EO	mg/L		0.001	<0.001
NP2EO	mg/L		0.0003	<0.0003
Total Nonylphenol Ethoxylates	mg/L	0.2	0.001	<0.001

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON Bradford SN

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 Montréal (unless marked by *)





AGAT WORK ORDER: 22T895412 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:BPP

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

ATTENTION TO: Dhwanish Parikh

SAMPLED BY:Dhwanish Parikh

Bradford Sanitary Sewer Use By-Law - Inorganics (2015)

DATE RECEIVED: 2022-05-1	3					DATE REPOR
			SAMPLE DES	SCRIPTION:	BH CN-3	
			SAN	IPLE TYPE:	Water	
			DATE	SAMPLED:	2022-05-13 14:45	
Parameter	Unit	G / S: A	G / S: B	RDL	3856457	
pН	pH Units	6.0-9.5	6.0-9.5	NA	7.91	
CBOD (5)	mg/L	300	15	2	4[<b]< td=""><td></td></b]<>	
Total Suspended Solids	mg/L	350	15	10	544[>A]	
Fluoride	mg/L	10		0.05	<0.05	
Sulphate	mg/L	1500		0.10	2.79[<a]< td=""><td></td></a]<>	
Total Cyanide	mg/L	2	0.02	0.002	<0.002	
Phenols	mg/L	1	0.008	0.002	0.021[B-A]	
Total Kjeldahl Nitrogen	mg/L	100	1	0.10	1.86[B-A]	
Total Aluminum	mg/L	50		0.010	3.88[<a]< td=""><td></td></a]<>	
Total Antimony	mg/L	5		0.020	<0.020	
Total Arsenic	mg/L	1	0.02	0.015	<0.015	
Total Cadmium	mg/L	0.7	0.008	0.010	<0.010	
Total Chromium	mg/L	2	0.08	0.015	<0.015	
Total Cobalt	mg/L	5		0.010	<0.010	
Total Copper	mg/L	3	0.05	0.002	0.011[<b]< td=""><td></td></b]<>	
Total Lead	mg/L	1	0.12	0.020	<0.020	
Total Manganese	mg/L	5	0.15	0.020	0.282[B-A]	
Total Molybdenum	mg/L	5		0.020	0.030[<a]< td=""><td></td></a]<>	
Total Mercury	mg/L	0.010		0.0002	<0.0002	
Total Nickel	mg/L	2	0.08	0.015	<0.015	
Total Phosphorus	mg/L	10	0.4	0.02	0.14[<b]< td=""><td></td></b]<>	
Total Selenium	mg/L	1	0.02	0.002	<0.002	
Total Silver	mg/L	5	0.12	0.010	<0.010	
Total Tin	mg/L	5		0.020	<0.020	
Total Titanium	mg/L	5		0.010	0.193[<a]< td=""><td></td></a]<>	
Total Zinc	mg/L	2	0.04	0.020	0.022[<b]< td=""><td></td></b]<>	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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:

Iris Verastegui



Exceedance Summary

AGAT WORK ORDER: 22T895412 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: Dhwanish Parikh

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3856457	BH CN-3	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Phenols	mg/L	0.008	0.021
3856457	BH CN-3	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Kjeldahl Nitrogen	mg/L	1	1.86
3856457	BH CN-3	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Manganese	mg/L	0.15	0.282
3856457	BH CN-3	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	15	544
3856457	BH CN-3	ON Bradford SN	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	350	544



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:BPP

AGAT WORK ORDER: 22T895412 ATTENTION TO: Dhwanish Parikh SAMPLED BY:Dhwanish Parikh

Trace Organics Analysis

					•										
RPT Date: May 25, 2022			[DUPLICAT	LICATE			REFERENCE MATERIAL			BLANK	(SPIKE	MATRIX SPIKE		
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery	1.10	ptable nits	Recovery	Lin	ptable nits
		Ia					value	Lower	Upper	-	Lower	Upper		Lower	Upper
Bradford Sanitary - Organics (20	15)														
Oil and Grease (animal/vegetable) in water	3842894		< 0.5	< 0.5	NA	< 0.5	102%	70%	130%	104%	70%	130%	105%	70%	130%
Oil and Grease (mineral) in water	3842894		< 0.5	< 0.5	NA	< 0.5	84%	70%	130%	81%	70%	130%	83%	70%	130%
Methylene Chloride	3870416		<0.3	<0.3	NA	< 0.3	119%	50%	140%	111%	60%	130%	90%	50%	140%
cis- 1,2-Dichloroethylene	3870416		<0.2	<0.2	NA	< 0.2	100%	50%	140%	82%	60%	130%	104%	50%	140%
Chloroform	3870416		<0.2	<0.2	NA	< 0.2	102%	50%	140%	88%	60%	130%	114%	50%	140%
Benzene	3870416		<0.2	<0.2	NA	< 0.2	87%	50%	140%	77%	60%	130%	97%	50%	140%
Trichloroethylene	3870416		<0.2	<0.2	NA	< 0.2	100%	50%	140%	80%	60%	130%	96%	50%	140%
trans-1,3-Dichloropropene	3870416		<0.30	<0.30	NA	< 0.30	110%	50%	140%	101%	60%	130%	80%	50%	140%
Toluene	3870416		<0.2	<0.2	NA	< 0.2	101%	50%	140%	109%	60%	130%	107%	50%	140%
Tetrachloroethene	3870416		<0.1	<0.1	NA	< 0.1	73%	50%	140%	76%	60%	130%	92%	50%	140%
Ethylbenzene	3870416		<0.1	<0.1	NA	< 0.1	80%	50%	140%	84%	60%	130%	89%	50%	140%
1,1,2,2-Tetrachloroethane	3870416		<0.1	<0.1	NA	< 0.1	107%	50%	140%	106%	60%	130%	113%	50%	140%
1,4-Dichlorobenzene	3870416		<0.1	<0.1	NA	< 0.1	113%	50%	140%	119%	60%	130%	102%	50%	140%
1,2-Dichlorobenzene	3870416		<0.1	<0.1	NA	< 0.1	110%	50%	140%	98%	60%	130%	102%	50%	140%
PCBs	3862608		3.22	3.12	3.2%	< 0.2	102%	50%	130%	105%	50%	140%	102%	50%	140%
Di-n-butyl phthalate	3870416		< 0.5	< 0.5	NA	< 0.5	74%	50%	140%	84%	50%	140%	84%	50%	140%
Bis(2-éthylhexyl)phthalate	3870416		< 0.5	< 0.5	NA	< 0.5	71%	50%	140%	78%	50%	140%	74%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

NPopukoli

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:BPP

AGAT WORK ORDER: 22T895412 ATTENTION TO: Dhwanish Parikh SAMPLED BY:Dhwanish Parikh

Ultra Trace Analysis

							-								
RPT Date: May 25, 2022	DUPLICATE				REFERENCE MATERIAL			METHOD	BLANK	SPIKE	MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recoverv	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nonylphenol and Nonylphenol E	hoxylates	(Ontario, I	ng/L)												
Total Nonylphenol	1	NA	NA	NA	0.0%	< 0.001	NA	60%	140%	85%	60%	140%	NA	60%	140%
NP1EO	1	NA	NA	NA	0.0%	< 0.001	NA	60%	140%	75%	60%	140%	NA	60%	140%
NP2EO	1	NA	NA	NA	0.0%	< 0.0003	NA	60%	140%	89%	60%	140%	NA	60%	140%

Certified By:



AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE: BPP

AGAT WORK ORDER: 22T895412 **ATTENTION TO: Dhwanish Parikh** SAMPLED BY: Dhwanish Parikh

Water Analysis

RPT Date: May 25, 2022			C	UPLICATE	E		REFERE	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MATRIX SP		KE
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery		ptable nits	Recovery		ptable nits
		Ia	-				value	Lower	Upper	-	Lower	Upper	-	Lower	Upper
Bradford Sanitary Sewer Use E	sy-Law - Inorg	ganics (20	015)												
рН	3854680		7.67	7.77	1.3%	NA	102%	90%	110%						
CBOD (5)	3856457 3	856457	4	4	NA	< 2	100%	75%	125%						
Total Suspended Solids	3866570		26400	27400	3.7%	< 10	98%	80%	120%						
Fluoride	3862718		<0.05	<0.05	NA	< 0.05	106%	70%	130%	105%	80%	120%	114%	70%	130%
Sulphate	3862718		51.6	52.8	2.3%	< 0.10	100%	70%	130%	105%	80%	120%	105%	70%	130%
Total Cyanide	3834137		<0.002	<0.002	NA	< 0.002	91%	70%	130%	106%	80%	120%	105%	70%	130%
Phenols	3860260		<0.002	<0.002	NA	< 0.002	95%	90%	110%	98%	90%	110%	105%	80%	120%
Total Kjeldahl Nitrogen	3854132		0.12	0.12	NA	< 0.10	103%	70%	130%	100%	80%	120%	102%	70%	130%
Total Aluminum	3854128		0.061	0.064	4.8%	< 0.010	104%	70%	130%	111%	80%	120%	101%	70%	130%
Total Antimony	3854128		<0.020	<0.020	NA	< 0.020	95%	70%	130%	101%	80%	120%	97%	70%	130%
Total Arsenic	3854128		<0.015	<0.015	NA	< 0.015	97%	70%	130%	99%	80%	120%	101%	70%	130%
Total Cadmium	3854128		<0.010	<0.010	NA	< 0.010	101%	70%	130%	99%	80%	120%	104%	70%	130%
Total Chromium	3854128		<0.015	<0.015	NA	< 0.015	105%	70%	130%	100%	80%	120%	104%	70%	130%
Total Cobalt	3854128		<0.010	<0.010	NA	< 0.010	103%	70%	130%	103%	80%	120%	103%	70%	130%
Total Copper	3854128		<0.002	<0.002	NA	< 0.002	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Lead	3854128		<0.020	<0.020	NA	< 0.020	103%	70%	130%	103%	80%	120%	93%	70%	130%
Total Manganese	3854128		0.055	0.060	NA	< 0.020	102%	70%	130%	100%	80%	120%	101%	70%	130%
Total Molybdenum	3854128		<0.020	<0.020	NA	< 0.020	105%	70%	130%	102%	80%	120%	108%	70%	130%
Total Mercury	3861810		<0.0002	< 0.0002	NA	< 0.0002	102%	70%	130%	99%	80%	120%	98%	70%	130%
Total Nickel	3854128		<0.015	<0.015	NA	< 0.015	103%	70%	130%	103%	80%	120%	102%	70%	130%
Total Phosphorus	3852324		0.04	0.04	NA	< 0.02	95%	70%	130%	102%	80%	120%	97%	70%	130%
Total Selenium	3854128		0.004	0.008	NA	< 0.002	101%	70%	130%	105%	80%	120%	100%	70%	130%
Total Silver	3854128		<0.010	<0.010	NA	< 0.010	95%	70%	130%	103%	80%	120%	96%	70%	130%
Total Tin	3854128		<0.020	<0.020	NA	< 0.020	99%	70%	130%	100%	80%	120%	94%	70%	130%
Total Titanium	3854128		<0.010	<0.010	NA	< 0.010	104%	70%	130%	108%	80%	120%	99%	70%	130%
Total Zinc	3854128		0.022	0.028	NA	< 0.020	105%	70%	130%	98%	80%	120%	97%	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.

Certified By:

Inis Verastegui

AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

AGAT WORK ORDER: 22T895412 ATTENTION TO: Dhwanish Parikh

SAMPLING SITE:BPP	SAMPLED BY:Dhwanish Parikh									
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE							
Trace Organics Analysis		1	1							
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE							
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE							
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION							
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS							
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD							
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD							
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS							
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS							
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS							
Chrysene-d12			GC/MS							
Ultra Trace Analysis										
Total Nonylphenol	TOX-151-19003F	ASTM D7065-6	LCMSMS							
NP1EO	TOX-151-19003F	ASTM D7065-6	LCMSMS							
NP2EO	TOX-151-19003F	ASTM D7065-6	LCMSMS							
Total Nonylphenol Ethoxylates	TOX-19003F	ASTM D7065-6	LCMSMS							



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190 SAMPLING SITE:BPP

AGAT WORK ORDER: 22T895412 ATTENTION TO: Dhwanish Parikh

SAMPLED BY:Dhwanish Parikh

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis	•		
pH CBOD (5)	INOR-93-6000 INOR-93-6006	modified from SM 4500-H+ B Modified from SM 5210 B	PC TITRATE DO METER
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Chain of Custody Record If this le	1	_	_	2S king Water Chain of		'h: 905 71	ississa L2.510 W	auga, ()O Fax vebear	th.agat	L4Z 1) 12.512	2 2	Wo	rk Orde oler Qua	-	1	Blk	~		-	2
Report Information:	a Drinking water	sample, plea	1	sulatory Requ		adie water (consum	nea by r	iumans)			Cu	stody S	eal Inta	ict:	□Yes		 □No	<u> </u>]N/A
Company: AElom Canada CA. Contact: Dhouanish Parillen (D) Address: 105 commerce vally Marchain on Phone: Reports to be sent to: 1. Email: Ehrenish Parillen @ accommended 2. Email: Brion Holden @ accommended Project Information:	ecom (on	m flue	(Please	check all applicable boxes) egulation 153/04 ble <u>Indicate One</u> Ind/Com Res/Park Agriculture exture (Check One)	Excess Soils F Table Indicate OF Regulation 55 CCME	ne 58 [[Prc Ob Oth	Regi Regi Dv. War jective ner Indica	te One tellne f Ana	on		No Tur Reg Rus	tes: naro gular sh TAT Da Da	und 1 TAT (Rush Su Busines ys 2 Date F Please	rcharges / S [Required	(TAT) F 5 to T Apply) 2 But Days d (Rush S e prior no	Require Business Siness Surcharge	ed: ss Days	Next Bus Day Apply): n TAT	siness
Project: 66636190 Site Location: 599 Sampled By: Drownigh Perilling] Yes 🗔	No		Ye												holidays	
Sampled By: PO: PO:PO:PO:	will be billed full price for Bill To Same: Ye	- 1	в	pple Matrix Leg Biota Ground Water Oil Paint Soil Sediment Surface Water	end	Field Filtered - Metals, Hg, CrVI, DOC	& Inorganics	Metals - CrVI, CHg, CHWSB	BTEX, F1-F4 PHCs Analyze F4G if required □ Yes □ No			Landfill Disposal Characterization TCLP: 1,0 5,7 TCLP: DM&I DVOCS DABNS DB(a)P DPCBS 833	s SPLP Rainwater Leach tals □vocs □ svocs	haracteriza stals, BTEX,	2/SAR) Brd - Severus	m & Sanitry		uter sets in a la con	Potentially Hazardous or High Concentration (Y/N)
Sample Identification Date Samplec	Time Sampled	# of Containers	Sample Matrix	and the second se	nents/ structions	Y/N	Metals	Metals	BTEX, F Analyze	PAHS	voc	TCLP:	10 41	Excess pH, ICP	Salt - EC/SAR	Brad	3	100		Potential
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Samples Relinquished by (Pont Name and Sept). Samples Relinquished By (Print Name and Sign):	Man 12, 1 Date	×22 Time	1.55	Samples Received By (Pr	Ramp nt Name and Sign):	alaju	90	A		/	ate		Time				22 MA	of_	510	red h
Samples Relinquished By (Print Name and Sign):	Date	Time		Samples Received By (Pr	nt Name and Sign):	_	_	_	-	D	ate		Time	1		vº: T ′	100	71	C	_



CLIENT NAME: AECOM CANADA LTD **105 Commerce Valley Drive West 7th Floor** MARKHAM, ON L3T7W3 (905) 886-7022 **ATTENTION TO: Dhwanish Parikh** PROJECT: 60636190 AGAT WORK ORDER: 22T895413 **TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist** ULTRA TRACE REVIEWED BY: Roza Makhtari, Chimiste, AGAT Montréal WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer DATE REPORTED: May 25, 2022 PAGES (INCLUDING COVER): 18 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.

AGAT Laboratories (V1)

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(APEGA)	
Western Enviro-Agricultural Laboratory Association (WEALA)	

Environmental Services Association of Alberta (ESAA)

Page 1 of 18

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AGAT WORK ORDER: 22T895413 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:

ATTENTION TO: Dhwanish Parikh

SAMPLED BY:

Bradford Sanitary - Organics (2015)

DATE RECEIVED: 2022-05-13						DATE REPORTED: 202	22-05-2
			SAMPLE DES	CRIPTION:	BH HRW-4		
			SAM	PLE TYPE:	Water		
			DATE	SAMPLED:	2022-05-13 10:45		
Parameter	Unit	G / S: A	G / S: B	RDL	3856467		
Oil and Grease (animal/vegetable) in water	mg/L	100		0.5	2.33[<a]< td=""><td></td><td></td></a]<>		
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5[<a]< td=""><td></td><td></td></a]<>		
Methylene Chloride	µg/L	2000	5.2	0.3	<0.3[<b]< td=""><td></td><td></td></b]<>		
cis- 1,2-Dichloroethylene	µg/L	4000	5.6	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Chloroform	μg/L	40	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Benzene	μg/L	10	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Trichloroethylene	µg/L	400	8	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
rans-1,3-Dichloropropene	µg/L	140	5.6	0.30	<0.30[<b]< td=""><td></td><td></td></b]<>		
Foluene	µg/L	270	2	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Tetrachloroethene	µg/L	1000	4.4	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
Ethylbenzene	µg/L	160	2	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,1,2,2-Tetrachloroethane	µg/L	1400	17	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,4-Dichlorobenzene	µg/L	80	6.8	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
1,2-Dichlorobenzene	µg/L	50	5.6	0.1	<0.1[<b]< td=""><td></td><td></td></b]<>		
Xylenes (Total)	µg/L	1400	4.4	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
PCBs	µg/L	1	0.4	0.2	<0.2[<b]< td=""><td></td><td></td></b]<>		
Di-n-butyl phthalate	ug/L	80	15	0.5	<0.5[<b]< td=""><td></td><td></td></b]<>		
Bis(2-éthylhexyl)phthalate	µg/L	12	8.8	0.5	<0.5[<b]< td=""><td></td><td></td></b]<>		
Surrogate	Unit	A	cceptable Limits	3			
Toluene-d8	% Recovery		50-140		70		
4-Bromofluorobenzene	% Recovery		50-140		93		
Decachlorobiphenyl	%		50-140		77		
2,4,6-Tribromophenol	%		50-140		78		
Chrysene-d12	%		50-140		79		

NPopukolof **Certified By:**



AGAT WORK ORDER: 22T895413 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY:

Bradford Sanitary - Organics (2015)

DATE RECEIVED: 2022-05-13

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM 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.

3856467 Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G. Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY:

Nonylphenol and Nonylphenol Ethoxylates (Ontario, mg/L)

DATE RECEIVED: 2022-05-13

	SAMPLE DESCRIPTION:								
		SAM	PLE TYPE:	Water					
		DATE	SAMPLED:	2022-05-13 10:45					
Parameter	Unit	G/S	RDL	3856467					
Total Nonylphenol	mg/L	20	0.001	<0.001					
NP1EO	mg/L		0.001	<0.001					
NP2EO	mg/L		0.0003	<0.0003					
Total Nonylphenol Ethoxylates	mg/L	0.2	0.001	<0.001					

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON Bradford SN

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 Montréal (unless marked by *)





AGAT WORK ORDER: 22T895413 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

SAMPLED BY:

Bradford Sanitary Sewer Use By-Law - Inorganics (2015)

DATE REPORTED: 2022-05-25 DATE RECEIVED: 2022-05-13 SAMPLE DESCRIPTION: BH HRW-4 SAMPLE TYPE: Water DATE SAMPLED: 2022-05-13 10:45 Parameter Unit G / S: A G / S: B RDL 3856467 рΗ pH Units 6.0-9.5 6.0-9.5 NA 7.76 CBOD (5) mg/L 300 15 2 2[<B] 350 15 10 Total Suspended Solids mg/L 2600[>A] Fluoride 10 0.05 <0.05[<A] mg/L Sulphate 1500 0.10 2.03[<A] mg/L Total Cyanide mg/L 2 0.02 0.002 <0.002[<B] Phenols mg/L 1 0.008 0.002 0.064[B-A] Total Kjeldahl Nitrogen mg/L 100 0.10 2.27[B-A] 1 Total Aluminum mg/L 50 0.10 32.5[<A] Total Antimony mg/L 5 0.040 <0.040[<A] Total Arsenic mg/L 1 0.02 0.030 <0.030[<A] 0.7 Total Cadmium mg/L 0.008 0.020 <0.020[<A] Total Chromium 2 0.08 0.030 mg/L 0.044[<B] Total Cobalt mg/L 5 0.020 0.022[<A] Total Copper mg/L 3 0.05 0.004 0.065[B-A] 1 0.12 0.040 <0.040[<B] Total Lead mg/L Total Manganese mg/L 5 0.15 0.040 1.86[B-A] 5 Total Molybdenum mg/L 0.040 <0.040[<A] Total Mercury mg/L 0.010 0.0002 <0.0002[<A] 2 0.08 0.030 Total Nickel mg/L 0.044[<B] 0.4 Total Phosphorus mg/L 10 0.02 1.29[B-A] 0.02 0.004 <0.004[<B] Total Selenium mg/L 1 Total Silver mg/L 5 0.12 0.020 <0.020[<B] Total Tin mg/L 5 0.040 <0.040[<A] Total Titanium mg/L 5 0.020 1.14[<A] 2 Total Zinc mg/L 0.04 0.040 0.104[B-A]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to ON Bradford SN, B Refers to ON Bradford SM

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 *)

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AGAT WORK ORDER: 22T895413 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY:

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-05-13

DATE RECEIVED: 2022-05-13				
	S	AMPLE DES	CRIPTION:	BH HRE-3
l l		SAM	PLE TYPE:	Water
			SAMPLED:	2022-05-13
Parameter	Unit	G/S	RDL	3856468
Electrical Conductivity	µS/cm		2	636
рН	pH Units	6.5-8.5	NA	7.89
Saturation pH (Calculated)				6.79
Langelier Index (Calculated)				1.10
Hardness (as CaCO3) (Calculated)	mg/L		0.5	337
Total Dissolved Solids	mg/L		10	368
Alkalinity (as CaCO3)	mg/L		5	351
Bicarbonate (as CaCO3)	mg/L		5	351
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.10	2.72
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	13.1
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	< 0.00002
Total Phosphorus	mg/L	*	0.02	<0.02
Total Organic Carbon	mg/L		0.5	4.6
True Colour	TCU		5.00	<5.00
Turbidity	NTU		0.5	45.1
Total Calcium	mg/L		0.32	128
Total Magnesium	mg/L		0.34	4.27
Total Potassium	mg/L		1.15	<1.15
Total Sodium	mg/L		0.45	20.9
Aluminum-dissolved	mg/L	*	0.004	< 0.004
Total Antimony	mg/L	0.020	0.001	<0.001
Total Arsenic	mg/L	0.1	0.003	<0.003



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AGAT WORK ORDER: 22T895413 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

DATE REPORTED: 2022-05-25

SAMPLED BY:

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2022-05-13

DATE RECEIVED. 2022-03-13				
		SAMPLE DES	CRIPTION:	BH HRE-3
		SAM	PLE TYPE:	Water
		DATES	SAMPLED:	2022-05-13
Parameter	Unit	G/S	RDL	3856468
Total Barium	mg/L		0.002	0.024
Total Beryllium	mg/L	*	0.001	<0.001
Total Boron	mg/L	0.2	0.010	0.065
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	0.0013
Total Copper	mg/L	0.005	0.001	0.003
Total Iron	mg/L	0.3	0.010	1.20
Total Lead	mg/L	*	0.001	<0.001
Total Manganese	mg/L		0.002	0.714
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Total Molybdenum	mg/L	0.040	0.002	<0.002
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	0.320
Total Thallium	mg/L	0.0003	0.0003	<0.0003
Total Tin	mg/L		0.002	0.007
Total Titanium	mg/L		0.010	0.042
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	<0.020
Total Zirconium	mg/L	0.004	0.004	<0.004
Lab Filtration Aluminum Dissolved				2022/5/16
Lab Filtration mercury				2022/5/16



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CANADA L4Z 1Y2

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AGAT WORK ORDER: 22T895413 PROJECT: 60636190

CLIENT NAME: AECOM CANADA LTD

SAMPLING SITE:

ATTENTION TO: Dhwanish Parikh

SAMPLED BY:

Water Quality Assessment - PWQO (mg/L)

DATE RECEI	VED: 2022-05-13 DATE REPORTED: 2022-05-25
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.
3856468	Dilution required, RDL has been increased accordingly.
	The calculation of Lippionized Ammonia was based on lab measured parameters (nH and temporature) rether than the field parameters: these were not provided to the lab. The temperature is recorded

The calculation of Un-ionized Ammonia was based on lab measured parameters (pH and temperature) rather than the field parameters; these were not provided to the lab. The temperature is recorded at the time of pH measurement. Values are reported as calculated.

Un-ionized Ammonia detection limit is a calculated RDL

Analysis performed at AGAT Toronto (unless marked by *)



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CANADA L4Z 1Y2

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Exceedance Summary

AGAT WORK ORDER: 22T895413 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: Dhwanish Parikh

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Phenols	mg/L	0.008	0.064
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Copper	mg/L	0.05	0.065
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Kjeldahl Nitrogen	mg/L	1	2.27
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Manganese	mg/L	0.15	1.86
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Phosphorus	mg/L	0.4	1.29
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	15	2600
3856467	BH HRW-4	ON Bradford SM	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Zinc	mg/L	0.04	0.104
3856467	BH HRW-4	ON Bradford SN	Bradford Sanitary Sewer Use By-Law - Inorganics (2015)	Total Suspended Solids	mg/L	350	2600
3856468	BH HRE-3	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Cobalt	mg/L	0.0009	0.0013
3856468	BH HRE-3	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	1.20



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh SAMPLED BY:

Trace Organics Analysis

Ind Ind <th></th> <th></th>		
PARAMETER Batch Sample Id Dup #1 Dup #2 RPD Blank Measured Value Limits Recovery Limits Recovery Limits Lower Upper Recovery Limits Recovery Limits Recovery Limits Lower Upper Recovery Limits Limits Limits Lower Limits Limits	BLANK SPIKE MAT	RIX SPIKE
Bradford Sanitary - Organics (2015) Lower Upper Lower Upper Lower Upper Oil and Grease (animal/vegetable) 3842894 < 0.5 < 0.5 NA < 0.5 102% 70% 130% 104% 70% 130%	Limito	Acceptable Limits
Oil and Grease (animal/vegetable) 3842894 < 0.5 < 0.5 NA < 0.5 102% 70% 130% 104% 70% 130%	Lower Upper	Lower Upper
in water Oil and Grease (mineral) in water 3842894 < 0.5		
Methylene Chloride 3870416 <0.3 <0.3 NA <0.3 119% 50% 140% 111% 60% 130% cis- 1,2-Dichloroethylene 3870416 <0.2	70% 130% 105%	70% 130%
cis-1,2-Dichloroethylene 3870416 <0.2	70% 130% 83%	70% 130%
Chloroform 3870416 <0.2 <0.2 NA < 0.2 102% 50% 140% 88% 60% 130% Benzene 3870416 <0.2	60% 130% 90%	50% 140%
Benzene 3870416 <0.2 <0.2 NA <0.2 87% 50% 140% 77% 60% 130% Trichloroethylene 3870416 <0.2	60% 130% 104%	50% 140%
Trichloroethylene 3870416 <0.2 <0.2 NA <0.2 100% 50% 140% 80% 60% 130% trans-1,3-Dichloropropene 3870416 <0.30	60% 130% 114%	50% 140%
trans-1,3-Dichloropropene 3870416 <0.30	60% 130% 97%	50% 140%
Toluene 3870416 <0.2 <0.2 NA < 0.2 101% 50% 140% 109% 60% 130% Tetrachloroethene 3870416 <0.1	60% 130% 96%	50% 140%
Tetrachloroethene 3870416 <0.1 <0.1 NA <0.1 73% 50% 140% 76% 60% 130% Ethylbenzene 3870416 <0.1	60% 130% 80%	50% 140%
Ethylbenzene 3870416 <0.1 <0.1 NA <0.1 80% 50% 140% 84% 60% 130% 1,1,2,2-Tetrachloroethane 3870416 <0.1	60% 130% 107%	50% 140%
1,1,2,2-Tetrachloroethane 3870416 <0.1 <0.1 NA <0.1 107% 50% 140% 106% 60% 130% 1 1,4-Dichlorobenzene 3870416 <0.1	60% 130% 92%	50% 140%
1,4-Dichlorobenzene 3870416 <0.1 <0.1 NA < 0.1 113% 50% 140% 119% 60% 130%	60% 130% 89%	50% 140%
	60% 130% 113%	50% 140%
1.2-Dichlorobenzene 3870416 <0.1 <0.1 NA <0.1 110% 50% 140% 98% 60% 130%	60% 130% 102%	50% 140%
	60% 130% 102%	50% 140%
Di-n-butyl phthalate 3870416 < 0.5 < 0.5 NA < 0.5 74% 50% 140% 84% 50% 140%	50% 140% 84%	50% 140%
Bis(2-éthylhexyl)phthalate 3870416 < 0.5 < 0.5 NA < 0.5 71% 50% 140% 78% 50% 140%	50% 140% 74%	50% 140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

NPopukot

AGAT QUALITY ASSURANCE REPORT (V1)

Page 10 of 18

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh

SAMPLED BY:

			U	ltra T	race	Anal	ysis								
RPT Date: May 25, 2022			C	UPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	IKE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	ptable nits	Recoverv	Lin	eptable mits
		ld					Value	Lower	Upper	,		Upper	,		Upper
Nonylphenol and Nonylphenol	Ethoxylates ((Ontario, I	mg/L)												
Total Nonylphenol	1	NA	NA	NA	0.0%	< 0.001	NA	60%	140%	85%	60%	140%	NA	60%	140%
NP1EO	1	NA	NA	NA	0.0%	< 0.001	NA	60%	140%	75%	60%	140%	NA	60%	140%
NP2EO	1	NA	NA	NA	0.0%	< 0.0003	NA	60%	140%	89%	60%	140%	NA	60%	140%





AGAT QUALITY ASSURANCE REPORT (V1)

Page 11 of 18

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 **ATTENTION TO: Dhwanish Parikh** SAMPLED BY:

Water Analysis

RPT Date: May 25, 2022			C	UPLICATE	1		REFEREN	NCE MA	TERIAL	METHOD	BLANK	SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured Value		ptable nits	Recovery	Lin	ptable nits	Recovery		ptable nits
		Ia					value	Lower	Upper		Lower	Upper	-	Lower	Uppe
Bradford Sanitary Sewer Use	By-Law - Inor	ganics (20	015)												
рН	3854680		7.67	7.77	1.3%	NA	102%	90%	110%						
CBOD (5)	3856457		4	4	NA	< 2	100%	75%	125%						
Total Suspended Solids	3866570		26400	27400	3.7%	< 10	98%	80%	120%						
Fluoride	3862718		<0.05	<0.05	NA	< 0.05	106%	70%	130%	105%	80%	120%	114%	70%	130%
Sulphate	3862718		51.6	52.8	2.3%	< 0.10	100%	70%	130%	105%	80%	120%	105%	70%	130%
Total Cyanide	3834137		<0.002	<0.002	NA	< 0.002	91%	70%	130%	106%	80%	120%	105%	70%	130%
Phenols	3860260		<0.002	<0.002	NA	< 0.002	95%	90%	110%	98%	90%	110%	105%	80%	120%
Total Kjeldahl Nitrogen	3854132		0.12	0.12	NA	< 0.10	103%	70%	130%	100%	80%	120%	102%	70%	130%
Total Aluminum	3854128		0.061	0.064	4.8%	< 0.010	104%	70%	130%	111%	80%	120%	101%	70%	130%
Total Antimony	3854128		<0.020	<0.020	NA	< 0.020	95%	70%	130%	101%	80%	120%	97%	70%	130%
Total Arsenic	3854128		<0.015	<0.015	NA	< 0.015	97%	70%	130%	99%	80%	120%	101%	70%	130%
Total Cadmium	3854128		<0.010	<0.010	NA	< 0.010	101%	70%	130%	99%	80%	120%	104%	70%	130%
Total Chromium	3854128		<0.015	<0.015	NA	< 0.015	105%	70%	130%	100%	80%	120%	104%	70%	130%
Total Cobalt	3854128		<0.010	<0.010	NA	< 0.010	103%	70%	130%	103%	80%	120%	103%	70%	130%
Total Copper	3854128		<0.002	<0.002	NA	< 0.002	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Lead	3854128		<0.020	<0.020	NA	< 0.020	103%	70%	130%	103%	80%	120%	93%	70%	130%
Total Manganese	3854128		0.055	0.060	NA	< 0.020	102%	70%	130%	100%	80%	120%	101%	70%	130%
Total Molybdenum	3854128		<0.020	<0.020	NA	< 0.020	105%	70%	130%	102%	80%	120%	108%	70%	130%
Total Mercury	3861810		<0.0002	< 0.0002	NA	< 0.0002	102%	70%	130%	99%	80%	120%	98%	70%	130%
Total Nickel	3854128		<0.015	<0.015	NA	< 0.015	103%	70%	130%	103%	80%	120%	102%	70%	130%
Total Phosphorus	3852324		0.04	0.04	NA	< 0.02	95%	70%	130%	102%	80%	120%	97%	70%	130%
Total Selenium	3854128		0.004	0.008	NA	< 0.002	101%	70%	130%	105%	80%	120%	100%	70%	130%
Total Silver	3854128		<0.010	<0.010	NA	< 0.010	95%	70%	130%	103%	80%	120%	96%	70%	130%
Total Tin	3854128		<0.020	<0.020	NA	< 0.020	99%	70%	130%	100%	80%	120%	94%	70%	130%
Total Titanium	3854128		<0.010	<0.010	NA	< 0.010	104%	70%	130%	108%	80%	120%	99%	70%	130%
Total Zinc	3854128		0.022	0.028	NA	< 0.020	105%	70%	130%	98%	80%	120%	97%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Water Quality Assessment - PWQO (mg/L)

······································													
3854680	629	641	1.9%	< 2	103%	90%	110%						
3854680	7.67	7.77	1.3%	NA	102%	90%	110%						
3866735	450	454	0.9%	< 10	102%	80%	120%						
3854680	359	373	3.8%	< 5	89%	80%	120%						
3854680	359	373	3.8%	< 5	NA								
3854680	<5	<5	NA	< 5	NA								
3854680	<5	<5	NA	< 5	NA								
3862718	<0.05	<0.05	NA	< 0.05	106%	70%	130%	105%	80%	120%	114%	70%	130%
3862718	809	807	0.2%	< 0.10	91%	70%	130%	102%	80%	120%	NA	70%	130%
	3854680 3866735 3854680 3854680 3854680 3854680 3854680 3862718	3854680 629 3854680 7.67 3866735 450 3854680 359 3854680 359 3854680 359 3854680 <5	3854680 629 641 3854680 7.67 7.77 3866735 450 454 3854680 359 373 3854680 359 373 3854680 <5	3854680 629 641 1.9% 3854680 7.67 7.77 1.3% 3866735 450 454 0.9% 3854680 359 373 3.8% 3854680 359 373 3.8% 3854680 <5	3854680 629 641 1.9% < 2 3854680 7.67 7.77 1.3% NA 3866735 450 454 0.9% < 10	3854680 629 641 1.9% < 2 103% 3854680 7.67 7.77 1.3% NA 102% 3866735 450 454 0.9% < 10	3854680 629 641 1.9% < 2 103% 90% 3854680 7.67 7.77 1.3% NA 102% 90% 3866735 450 454 0.9% <10	3854680 629 641 1.9% < 2 103% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3866735 450 454 0.9% <10	3854680 629 641 1.9% < 2 103% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3866735 450 454 0.9% <10	3854680 629 641 1.9% < 2 103% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3866735 450 454 0.9% <10	3854680 629 641 1.9% < 2	3854680 629 641 1.9% < 2	3854680 629 641 1.9% < 2 103% 90% 110% 3854680 7.67 7.77 1.3% NA 102% 90% 110% 3866735 450 454 0.9% <10

AGAT QUALITY ASSURANCE REPORT (V1)

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AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.



Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh SAMPLED BY:

Water Analysis (Continued)

	mato	. <i>,</i>	., 0.0											
RPT Date: May 25, 2022			DUPLICATE	E		REFERE		TERIAL	METHOD	BLANK		MAT	RIX SPI	KE
PARAMETER	Batch Sar	nple Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	ptable nits	Recovery		eptable nits
PARAMETER	Batch	d Dup#1	Dup #2	RPD		Value	Lower	Upper	Recovery	Lower	Upper	Recovery	Lower	Upper
Nitrate as N	3862718	2.17	2.19	0.9%	< 0.05	94%	70%	130%	102%	80%	120%	102%	70%	130%
Nitrite as N	3862718	<0.11	<0.11	NA	< 0.05	106%	70%	130%	108%	80%	120%	109%	70%	130%
Bromide	3862718	<0.11	<0.11	NA	< 0.05	101%	70%	130%	99%	80%	120%	96%	70%	130%
Sulphate	3862718	51.6	52.8	2.3%	< 0.10	100%	70%	130%	105%	80%	120%	105%	70%	130%
Ortho Phosphate as P	3862718	<0.26	<0.26	NA	< 0.10	106%	70%	130%	104%	80%	120%	112%	70%	130%
Ammonia as N	3852325	<0.02	<0.02	NA	< 0.02	106%	70%	130%	104%	80%	120%	96%	70%	130%
Total Phosphorus	3852324	0.04	0.04	NA	< 0.02	95%	70%	130%	102%	80%	120%	97%	70%	130%
Total Organic Carbon	3867073	1.3	1.4	NA	< 0.5	101%	90%	110%	94%	90%	110%	93%	80%	120%
True Colour	3854657	<5.00	<5.00	NA	< 5	102%	90%	110%						
Turbidity	3856468 38564	68 45.1	44.3	1.8%	< 0.5	101%	80%	120%						
Total Calcium	3851035	97.4	99.4	2.0%	< 0.10	95%	70%	130%	96%	80%	120%	96%	70%	130%
Total Magnesium	3851035	16.6	17.3	4.1%	< 0.10	95%	70%	130%	96%	80%	120%	97%	70%	130%
Total Potassium	3851035	1.64	1.77	NA	< 0.50	96%	70%	130%	97%	80%	120%	96%	70%	130%
Total Sodium	3851035	26.2	27.2	3.7%	< 0.10	95%	70%	130%	99%	80%	120%	99%	70%	130%
Aluminum-dissolved	3854513	<0.004	< 0.004	NA	< 0.004	98%	70%	130%	102%	80%	120%	93%	70%	130%
Total Antimony	3854128	<0.001	<0.001	NA	< 0.001	95%	70%	130%	101%	80%	120%	97%	70%	130%
Total Arsenic	3854128	0.004	0.004	NA	< 0.003	97%	70%	130%	99%	80%	120%	101%	70%	130%
Total Barium	3854128	0.243	0.243	0.0%	< 0.002	105%	70%	130%	105%	80%	120%	107%	70%	130%
Total Beryllium	3854128	<0.001	<0.001	NA	< 0.001	102%	70%	130%	108%	80%	120%	104%	70%	130%
Total Boron	3854128	0.173	0.172	0.6%	< 0.010	101%	70%	130%	100%	80%	120%	99%	70%	130%
Total Cadmium	3854128	0.0002	0.0004	NA	< 0.0001	101%	70%	130%	99%	80%	120%	104%	70%	130%
Total Chromium	3854128	<0.003	<0.003	NA	< 0.003	105%	70%	130%	100%	80%	120%	104%	70%	130%
Total Cobalt	3854128	<0.0005	<0.0005	NA	< 0.0005	103%	70%	130%	103%	80%	120%	103%	70%	130%
Total Copper	3854128	0.002	0.002	NA	< 0.001	103%	70%	130%	99%	80%	120%	99%	70%	130%
Total Iron	3854128	7.03	7.16	1.8%	< 0.010	99%	70%	130%	102%	80%	120%	93%	70%	130%
Total Lead	3854128	<0.001	<0.001	NA	< 0.001	103%	70%	130%	103%	80%	120%	93%	70%	130%
Total Manganese	3854128	0.055	0.060	8.7%	< 0.002	102%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Mercury	3849717	<0.0001	<0.0001	NA	< 0.0001	102%	70%	130%	99%	80%	120%	95%	70%	130%
Total Molybdenum	3854128	<0.002	<0.002	NA	< 0.002	105%	70%	130%	102%	80%	120%	108%	70%	130%
Total Nickel	3854128	<0.003	<0.003	NA	< 0.003	103%	70%	130%	103%	80%	120%	102%	70%	130%
Total Selenium	3854128	0.004	0.008	NA	< 0.002	101%	70%	130%	105%	80%	120%	100%	70%	130%
Total Silver	3854128	<0.0001	<0.0001	NA	< 0.0001	95%	70%	130%	103%	80%	120%	96%	70%	130%
Total Strontium	3854128	2.12	2.15	1.4%	< 0.005	98%	70%	130%	99%	80%	120%	100%	70%	130%
Total Thallium	3854128	<0.0003	<0.0003	NA	< 0.0003	98%	70%	130%	108%	80%	120%	96%	70%	130%
Total Tin	3854128	<0.002	<0.002	NA	< 0.002	99%		130%	100%	80%	120%	94%	70%	130%
Total Titanium	3854128	<0.010	<0.010	NA	< 0.010	104%		130%	108%		120%	99%	70%	130%
Total Tungsten	3854128	<0.010	<0.010	NA	< 0.010	92%	70%	130%	94%	80%	120%	90%	70%	130%
Total Uranium	3854128	<0.002	<0.002	NA	< 0.002	99%	70%	130%	110%	80%	120%	105%	70%	130%
Total Vanadium	3854128	<0.002	<0.002	NA	< 0.002	102%	70%	130%	103%		120%	106%	70%	130%

AGAT QUALITY ASSURANCE REPORT (V1)

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Quality Assurance

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh SAMPLED BY:

Water Analysis (Continued)

					-	-		-							
RPT Date: May 25, 2022			0	UPLICAT	E		REFEREN	ICE MA	TERIAL	METHOD	BLANK	(SPIKE	MAT	RIX SPI	KE
PARAMETER	Batch	Sample	Dup #1	Dup #2	RPD	Method Blank	Measured		ptable nits	Recovery	Lin	eptable nits	Recovery	Lin	ptable nits
		ld	•				Value	Lower	Upper	-	Lower	Upper	-	Lower	Upper
Total Zinc	3854128		0.022	0.028	NA	< 0.020	105%	70%	130%	98%	80%	120%	97%	70%	130%
Total Zirconium	3854128		<0.004	<0.004	NA	< 0.004	104%	70%	130%	102%	80%	120%	104%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.





AGAT QUALITY ASSURANCE REPORT (V1)

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Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh

SAMPLED BY:

SAMPLING SITE:	1	SAMPLED BT:	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 1664A & SM 5520	BALANCE
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	CALCULATION
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 8081A & 8082	GC/ECD
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
Bis(2-éthylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270E	GC/MS
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Chrysene-d12			GC/MS
Ultra Trace Analysis			
Total Nonylphenol	TOX-151-19003F	ASTM D7065-6	LCMSMS
NP1EO	TOX-151-19003F	ASTM D7065-6	LCMSMS
NP2EO	TOX-151-19003F	ASTM D7065-6	LCMSMS
Total Nonylphenol Ethoxylates	TOX-19003F	ASTM D7065-6	LCMSMS



Method Summary

CLIENT NAME: AECOM CANADA LTD

AGAT WORK ORDER: 22T895413 **ATTENTION TO: Dhwanish Parikh**

PROJECT: 60636190 SAMPLING SITE:

SAMPLED BY:

SAMPLING SITE:		SAMPLED BY:	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis		1	
рН	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
CBOD (5)	INOR-93-6006	Modified from SM 5210 B	DO METER
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	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 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 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
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	² CVAAS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
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 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 Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Electrical Conductivity	INOR-93-6000	modified from SM 2510 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



Method Summary

CLIENT NAME: AECOM CANADA LTD

PROJECT: 60636190

SAMPLING SITE:

AGAT WORK ORDER: 22T895413 ATTENTION TO: Dhwanish Parikh SAMPLED BY:

SAMPLING SITE:		SAMPLED BY:	
PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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
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	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	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 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 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 Iron	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 311 B	¹² CVAAS
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 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 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

Chain of Custody Record If this is a Drinking Water sample	10.577	Ph: 90	5835 Coopers Avenue Mississauga, Ontario L4Z 1Y2)5.712,5100 Fax: 905,712.5122 webearth.agatlabs.com vater consumed by humans)	Laboratory Use Only Work Order #: 227895413 Cooler Quantity: B1kC(fige ige) Arrival Temperatures: 7.57276
Report Information: Company: AL-lon Canada (A) Contact: Onwarish Renken / Brian Holden Address: US Commerce valley Dr w, 7th flour, Mandaan, on Phone: 4 16 120 554 0 Reports to be sent to: 1. Email: 2. Email: Brian. Holden @ accom.com Project Information: Brian. Holden @ accom.com Project: GOG 3619 0 Site Location: BPP Sampled By: Dreamsh Reiter	(Pica	egulatory Requirements: ease check all applicable boxes) Regulation 153/04 Table	Sewer Use Barnitary Fistorn Card Region Drov, Water Quality Objectives (PWQO) Other Indicate One Report Guideline on Certificate of Analysis Yes No	Custody Seal Intact: Yes No N/A Notes:
Sampled By:	В	ample Matrix Legend Biota W Ground Water Oil Paint Soil D Sediment N Surface Water	Field Filtered - Metals, Hg, C/N, DOC Metals & Inorganics Metals - C/V, DHK, DHWSB Metals - C/V, DHK, DHWSB BTEX, F1-F4 PHCs Analyze F4G if required D Yes PAHs	Process Solis SPLP Rainwater Leach Excess Solis SPLP Rainwater Leach SPLP: I metals I vocs I svocs Excess Solis SPLP Rainwater Leach PH, ICPMS Metals, BTEX, F1-F4 Satt - EC/SAR Satt - EC/SAR Satt - EC/SAR Solis Characterization Package Broullond Scimbul CSbbm & Scimbul
	of Sample Matrix I GW GW	x Special Instructions	∑ Field F ∑ Field F Metals & Ino Metals & Ino Metals F1F4 Metals F1F4 Metals F1F4 Metals F1F4 Metals F1F4 Metals F1F4 Metals F1F4 Metals F1F4	Process Solis Process Solis Process Solis Process Solis Procentially Haz
Samples, Relinquilshed By (Print Name and Sign): Date Samples, Relinquished By (Print Name and Sign): Date Samples, Relinquished By (Print Name and Sign): Date	Time Time Time	Samples Received By (Print Prine and Sign): Smirles Received By (Print Name and Sign): Samples Received By (Print Name and Sign):	Pink Copy - Client I	Time Page of Time Nº: T 130719 Yellow Copy - AGAT White Copy- AGAT White Copy- AGAT



Appendix D

MECP Water Well Records, PTTWs and EASR Summary

Well I.D.	Construction Date	Well Depth (m)	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
5700298	9/25/1946	69.80	-	24 44240100	17	614605.4	4886697	Test Hole	-
5705276	10/23/1965	71.32	FRESH	34.44240189	17 17	611912.4	4885944	Water Supply	Livestock
5705281 5705282	11/23/1966 10/17/1964	18.29 9.75	FRESH FRESH	9.753600121 2.43840003	17	611032.4 611916.4	4887084 4886385	Water Supply Water Supply	Livestock Livestock
5705283	9/22/1966	22.56	FRESH	12.80160046	17	611548.4	4887351	Water Supply	Domestic
5705284	9/11/1967	12.19	FRESH	1.828799963	17	611398.4	4887145	Water Supply	Domestic
5705287	10/12/1964	15.85	FRESH	4.87680006	17	613703.4	4886880	Water Supply	Livestock
5705288	5/3/1961	17.07	FRESH	6.096000195	17	614514.4	4886953	Water Supply	Domestic
5705289	8/3/1962	6.10	FRESH	1.828799963	17	614014.4	4886806	Water Supply	Domestic
5705290	8/3/1962	5.49	FRESH	1.828799963	17	614079.4	4886816	Water Supply	Domestic
5705291	10/1/1963	7.62	FRESH	2.43840003	17	614384.4	4886912	Water Supply	Domestic
5705292	10/28/1964	12.80	FRESH	2.43840003	17	614121.4	4887843	Water Supply	Livestock
5705293	6/7/1966	8.53	Not stated	1.828799963	17	614204.4	4886827	Water Supply	Domestic
5705294	4/20/1967	10.67	FRESH	4.87680006	17 17	614096.4	4888144	Water Supply	Domestic
5705295 5705300	2/10/1966 3/6/1959	10.67 14.94	FRESH FRESH	8.83920002	17	614660.4 608629.4	4887003 4886557	Water Supply Water Supply	Domestic Livestock
5705300	5/1/1965	14.33	FRESH	4.57200027	17	608802.4	4880337	Water Supply	Livestock
5705306	11/26/1961	14.02	FRESH	6.096000195	17	614070.4	4888254	Water Supply	Domestic
5705307	6/3/1966	14.63	FRESH	12.19200039	17	614205.4	4888385	Water Supply	Domestic
5705308	8/23/1963	14.63	FRESH	11.27760029	17	614250.4	4888475	Water Supply	Domestic
5705413	7/29/1968	9.45	FRESH	4.267199993	17	614084.4	4888173	Water Supply	Domestic
5705414	7/8/1968	9.45	FRESH	4.267199993	17	614054.4	4888133	Water Supply	Domestic
5705458	7/9/1968	11.89	FRESH	2.43840003	17	611454.4	4886843	Water Supply	Domestic
5705471	5/8/1968	12.19	FRESH	3.352800131	17	609176.6	4886614	Water Supply	Domestic
5705763	10/4/1968	13.11	FRESH	6.096000195	17	614214.4	4888303	Water Supply	Domestic
5705984	8/1/1968	8.53	FRESH	5.486400127	17	613914.4	4888203	Water Supply	Domestic
5706117	11/25/1968	8.84	FRESH	3.352800131	17	614314.4	4887563	Water Supply	Domestic
5706124	9/21/1968	21.64	FRESH	14.6303997	17	609884.4	4883983	Water Supply	Livestock
5706125	10/23/1968	8.53	FRESH	3.657599926	17	614004.4	4888163	Water Supply	Domestic
5706692	7/2/1969	15.85	FRESH	10.36320019	17	611496.6	4887103	Water Supply	Domestic
5707014	10/25/1969	15.24	FRESH	4.572000027	17	614374.4	4886923	Water Supply	Domestic
5707015 5707030	10/31/1969 9/24/1969	15.24	FRESH FRESH	4.267199993	17 17	614374.4	4886903	Water Supply	Domestic
5707030	12/11/1969	17.37 17.37	FRESH	6.705600262 10.36320019	17	609464.4 614214.4	4885393 4886853	Water Supply Water Supply	Livestock Domestic
5707572	9/30/1970	11.58	Not stated	7.315199852	17	611414.4	4887273	Water Supply	Domestic
5707747	11/12/1970	110.64	FRESH	6.400800228	17	609864.4	4883723	Water Supply	Commerical
5707770	7/31/1970	10.97	FRESH	7.315199852	17	613914.4	4888123	Water Supply	Domestic
5708033	5/7/1971	11.89	FRESH	9.448800087	17	614064.4	4888243	Water Supply	Domestic
5708661	11/15/1971	13.41	FRESH	8.534399986	17	614214.4	4888363	Water Supply	Domestic
5708749	12/23/1971	10.67	FRESH	3.657599926	17	614139.4	4886823	Water Supply	Domestic
5709152	5/4/1972	8.23	FRESH	4.267199993	17	613944.4	4888153	Water Supply	Domestic
5709159	6/9/1972	13.41	FRESH	8.534399986	17	614114.4	4888173	Water Supply	Domestic
5709180	7/7/1972	11.58	FRESH	8.534399986	17	614114.4	4888273	Water Supply	Domestic
5709181	7/8/1972	10.67	FRESH	5.486400127	17	613874.4	4888243	Water Supply	Domestic
5709444	10/16/1972	7.32	FRESH	5.486400127	17	611614.4	4887423	Water Supply	Domestic
5709446	8/10/1972	15.85	FRESH	12.80160046	17	614314.4	4887763	Water Supply	Domestic
5710485	10/19/1973	16.76	FRESH	11.88720036	17	615307.4	4887212	Water Supply	Domestic
5710718	9/13/1973	17.07	FRESH	4.87680006	17	611484.4	4886920	Water Supply	Domestic
5711354	6/25/1974	15.24	FRESH	7.924799919	17	608777.4	4886579	Water Supply	Domestic
5711738	8/13/1974	12.80	FRESH	6.705600262	17	613843.4	4888209	Water Supply	Domestic
5711739 5711907	3/19/1974 11/15/1974	15.24 9.75	FRESH FRESH	10.97280025 4.267199993	17 17	613910.4 611489.4	4888224 4886773	Water Supply Water Supply	Domestic
5711907	8/16/1974	9.75	FRESH	4.267199993	17	611489.4 611264.4	4886773	Water Supply Water Supply	Domestic Domestic
5713983	9/27/1976	8.23	FRESH	5.486400127	17	611264.4	4887343 4887023	Water Supply Water Supply	Domestic
5714081	3/21/1977	68.58	FRESH	18.28800011	17	609164.4	4884123	Water Supply	Domestic
5715129	4/12/1978	50.90	FRESH	15.84959984	17	614964.4	4887123	Water Supply Water Supply	Domestic
5715181	3/31/1978	108.20	FRESH	7.315199852	17	616114.4	4887373	Observation Wells	Not Used
5716038	1/8/1979	24.99	Not stated	18.89760017	17	609314.4	4883673	Water Supply	Livestock
5716219	6/5/1979	16.76	FRESH	9.144000053	17	614414.4	4888023	Water Supply	Industrial
5716593	9/13/1979	13.72	SALTY	2.133599997	17	608914.4	4885623	Water Supply	Livestock
5716598	9/24/1979	15.24	FRESH	3.657599926	17	609164.4	4886673	Water Supply	Domestic
5716611	11/19/1979	43.28	FRESH	29.26079941	17	611364.4	4887023	Water Supply	Domestic
5716995	6/9/1980	12.50	FRESH	5.486400127	17	611514.4	4887073	Water Supply	Domestic
5717000	6/16/1980	13.72	FRESH	4.572000027	17	614614.4	4886973	Water Supply	Domestic
5717319	11/4/1980	13.41	FRESH	2.43840003	17	609164.4	4887973	Water Supply	Domestic
5717528	8/11/1981	104.24	FRESH	9.144000053	17	609864.4	4883823	Water Supply	Domestic
5718149	6/14/1982	107.29	FRESH	24.38400078	17	609214.4	4884023	Water Supply	Public
5718237	3/5/1982	11.28	Not stated	3.048000097	17 17	609064.4	4884423	Water Supply	Domestic
5718402 5719105	10/18/1982 11/19/1983	18.59 17.37	Not stated Not stated	6.096000195 6.096000195	17 17	611414.4 613764.4	4887123 4886723	Water Supply Water Supply	Domestic
5719105	6/2/1983	9.75	FRESH	0	17	613764.4 612314.4	4886723	Water Supply Water Supply	Domestic Domestic
5720665	6/20/1985	9.75	Not stated	4.572000027	17	612314.4	4886223	Water Supply	Domestic
5720005	4/14/1986	108.51	FRESH	56.69280243	17	614536	4887760	Water Supply	Domestic
	3/10/1986	17.07	Not stated	6.096000195	17	611307	4887249	Water Supply Water Supply	Domestic
5/213/5				2.070000170	.,	5007			
5721375 5721377	4/30/1986	22.25	Not stated	6.096000195	17	614737.4	4887702	Water Supply	Domestic
5721375 5721377 5721577		22.25 15.54	Not stated Not stated	6.096000195 6.096000195	17 17	614737.4 614263	4887702 4888247	Water Supply Water Supply	Domestic Domestic

5722073	Construction Date	Well Depth (m)	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
	7/20/1986	20.42	FRESH	0	17	609164.4	4887319	Water Supply	Domestic
5722617	10/8/1987	16.76	Not stated	3.048000097	17	611426	4887099	Water Supply	Domestic
5722789	12/11/1987	91.44	FRESH	39.92879868	17	615356.4	4887906	Water Supply	Domestic
5722790	12/4/1987	140.21	FDFCU	110 000000	17	615356.4	4887906	-	-
5723028 5723565	8/13/1987 6/8/1988	133.20 12.19	FRESH Not stated	113.0808029 8.534399986	17 17	614247.6 609419.4	4888431 4885953	Water Supply	Industrial Domestic
5723566	6/13/1988	52.12	FRESH	0.034399900	17	615313.6	4887193	Water Supply Water Supply	Domestic
5724025	9/29/1988	41.76	FRESH	18.28800011	17	615060.6	4887113	Water Supply	Domestic
5724233	9/20/1988	17.07	Not stated	3.048000097	17	614762	4888397	Water Supply	Domestic
5724485	10/26/1988	21.64	Not stated	1.524000049	17	611456	4887377	Water Supply	Domestic
5724486	10/24/1988	19.20	Not stated	9.144000053	17	614566.6	4888323	Water Supply	Domestic
5724780	2/10/1989	21.34	Not stated	15.23999977	17	608571.4	4887127	Water Supply	Domestic
5724784	1/29/1989	21.34	Not stated	9.144000053	17	615356.4	4887906	Water Supply	Domestic
5724930	4/1/1989	17.07	Not stated	9.144000053	17	614162.6	4888010	Water Supply	Domestic
5725215	4/28/1989	17.37	Not stated	3.048000097	17	611270	4887308	Water Supply	Domestic
5725216 5725332	3/10/1989 7/19/1989	11.89 70.41	Not stated FRESH	3.048000097 35.96640015	17 17	613892.6 614811.6	4888131 4888250	Water Supply Water Supply	Domestic Domestic
5725332	7/26/1989	42.06	FRESH	6.096000195	17	615475	4887474	Water Supply Water Supply	Commerical
5725334	6/2/1989	52.43	TRESH	0.070000173	17	611782.4	4886727	Observation Wells	Not Used
5725416	5/24/1989	48.77	FRESH	16.76399994	17	611782.4	4886727	Observation Wells	Not Used
5725701	10/3/1989	86.26	FRESH	53.34000015	17	614598.6	4888328	Water Supply	Domestic
5725793	7/20/1989	17.07	Not stated	6.096000195	17	614664	4888150	Water Supply	Domestic
5725796	7/20/1989	17.07	Not stated	6.096000195	17	614785	4888265	Water Supply	Domestic
5726072	12/1/1989	82.60	FRESH	42.97679901	17	614685.6	4888220	Water Supply	Domestic
5726116	12/8/1989	76.81	FRESH	39.01440048	17	614719.6	4888225	Water Supply	Domestic
5726158	3/1/1989	19.51	Not stated	9.144000053	17	614628.6	4888219	Water Supply	Domestic
5726159 5726241	12/10/1989	22.56	Not stated	6.096000195	17	614559	4888334	Water Supply	Domestic
5726341 5726406	2/22/1990 3/30/1990	74.37 92.96	FRESH FRESH	28.65120125 54.86400223	17 17	614657.6 614605.6	4888192 4888208	Water Supply Water Supply	Domestic Domestic
5726435	3/8/1990	92.90	FRESH	21.33600044	17	616050	4887428	Water Supply Water Supply	Municipal
5726774	5/25/1990	36.58	FRESH	2.133599997	17	615356.4	4887906	Water Supply	Domestic
5726775	3/21/1990	25.60	TREON	2.100077777	17	615356.4	4887906	Unfinished	Not Used
5727068	8/13/1990	79.25	FRESH	55.77840042	17	614791	4888320	Water Supply	Domestic
5727102	4/2/1990	24.38	Not stated	6.096000195	17	614314	4888367	Water Supply	Domestic
5727105	3/15/1990	24.38	Not stated	10.66800022	17	614346	4888266	Water Supply	Domestic
5727173	8/17/1990	79.25	FRESH	48.76800156	17	614746	4888398	Water Supply	Domestic
5727174	8/27/1990	91.74	FRESH	57.91200256	17	615356.4	4887906	Water Supply	Commerical
5727932	12/15/1990	102.11			17	609423.6	4883770	Test Hole	-
5727933	12/20/1990	38.10	FRESH	2.743200064	17	609420.6	4883770	Water Supply	Not Used
5728079	5/20/1991	23.77	Not stated	7.010400295	17	614572.6	4888347	Water Supply	Domestic
5728081 5728146	5/19/1991 9/19/1990	29.57 51.82	Not stated FRESH	12.19200039 5.486400127	17 17	611418 615502	4887163 4887721	Water Supply Water Supply	Domestic Industrial
5728140	6/21/1991	50.29	FRESH	15.23999977	17	611601.6	4887166	Water Supply Water Supply	Domestic
5728634	9/9/1991	53.34	FRESH	13.23777777	17	611582.6	4887124	Water Supply	Domestic
5729040	3/13/1992	76.20	FRESH	42.67200089	17	614551.6	4887133	Water Supply	Domestic
5729093	3/24/1992	67.36	FRESH	5.486400127	17	609419.4	4885953	Water Supply	Domestic
5729685	9/16/1992	51.82	FRESH	29.56559944	17	611659	4887164	Water Supply	Domestic
5729716	10/21/1992	12.19	FRESH	3.048000097	17	610907.6	4887131	Water Supply	Domestic
5730035	4/8/1993	97.54	FRESH	58.82640076	17	614006.6	4888328	Water Supply	Domestic
5730093	7/23/1993	45.11	FRESH	15.5447998	17	615616	4887202	Water Supply	Commerical
5730441	11/3/1993	67.67	FRESH	29.56559944	17	611472.6	4887303	Water Supply	Domestic
5730719	5/5/1994	96.01	FRESH	59.43600082	17	614324	4888346	Water Supply	Domestic
5730801 5731304	2/25/1994 11/7/1994	100.58 112.78	FRESH FRESH	11.58240032 27.73680115	17 17	609691.4 615707.6	4884595 4887307	Water Supply Test Hole	Industrial Municipal
5731304	11/9/1994	35.97	FRESH	21.13000113	17	615707.6	4887307 4887311	Test Hole	Municipal
5731305	12/21/1994	86.87	FRESH	59.43600082	17	614381.6	4888356	Water Supply	Domestic
5731750	8/16/1995				17	609691.4	4884595	Abandoned-Quality	Domestic
5731783	7/19/1995	23.77	FRESH	0	17	611610	4886975	Water Supply	Domestic
5731785	7/4/1995	12.19	FRESH	8.83920002	17	609691.4	4884595	Water Supply	Domestic
5732097	12/15/1995	61.57	FRESH	33.52799988	17	614449	4887195	Water Supply	Domestic
5732627	11/22/1996	96.62	Not stated		17	616028	4887449	Abandoned-Supply	Municipal
5732750	9/2/1996	14.63	Not stated	3.048000097	17	611956	4886385	Water Supply	Domestic
5734015	1/5/1999	91.44	FRESH	38.10000229	17	614160	4886818	Water Supply	Domestic
5734100	3/9/1999	100.58	FRESH	54.86400223	17 17	613810	4886710	Water Supply	Domestic
5734245 5734465	6/16/1999 8/23/1999	97.54 23.16	FRESH FRESH	54.86400223 10.97280025	17 17	613644 614020	4886697 4888236	Water Supply Water Supply	Domestic
5734465	8/23/1999 8/24/1999	44.20	FRESH	10.77200020	17	609529	4888236 4886841	Water Supply Water Supply	Domestic Domestic
5734872	10/5/1999	92.05	FRESH	61.26480103	17	614137	4887505	Water Supply	Domestic
5734873	9/23/1999	137.77		0.120100100	17	614357	4887786	Abandoned-Quality	Not Used
5734920	9/10/1999	18.90	FRESH	7.924799919	17	612057	4886273	Water Supply	Domestic
5734969	12/17/1999	92.05	FRESH	64.61759949	17	614258	4888304	Water Supply	Domestic
F305005	4/2/2001	91.44			17	611505	4887020	Abandoned-Supply	-
5735993	4/13/2001	20.73	FRESH	1.524000049	17	611604	4887045	Water Supply	Domestic
5735994							4005440		D
5735994 5736280	8/28/2001	73.15	FRESH	26.82240105	17	609567	4885448	Water Supply	Domestic
5735994		73.15	FRESH	26.82240105	17 17 17	609567 614315 614323	4885448 4887041 4887066	Water Supply Abandoned-Other Abandoned-Other	Not Used Not Used

Well I.D.	Construction Date	1 1 1	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
5736515	11/22/2001	77.72	FDFCU		17	615353.6	4887905	Abandoned-Other	Not Used
5736566	12/31/2001	17.68	FRESH	27 70520025	17	610006.6	4886141	Water Supply	Domestic
5737202 5739594	7/9/2002 3/7/2005	72.54 42.70	FRESH	37.79520035 20.37000084	17 17	615353.6 611724	4887905 4886575	Water Supply	Domestic Commerical
5739594	4/13/2005	42.70 52.10	FRESH	29.7000084	17	611724	4886575	Water Supply Water Supply	Domestic
5739993	6/24/2005	52.10	TRESH	29.7000070	17	614419	4886913	Abandoned-Other	Not Used
5740281	10/3/2005	5.00			17	613134	4886773	-	-
5740630	4/5/2006	60.96		31.89999962	17	611567	4887297	Water Supply	Domestic
6900164	6/1/1963	6.10	FRESH	1.524000049	17	621883.5	4888534	Water Supply	Domestic
6900172	11/2/1962	33.22	FRESH	9.144000053	17	623447.5	4889448	Water Supply	Livestock
6900173	6/3/1960	9.14	FRESH	1.524000049	17	623527.5	4889807	Water Supply	Livestock
6900174	12/10/1962	7.01	FRESH	3.048000097	17	623632.5	4889858	Water Supply	Domestic
6900175	10/5/1966	44.81	FRESH	10.66800022	17	623227.4	4890297	Water Supply	Domestic
6900176	1/5/1967	49.68	FRESH	9.144000053	17	623227.4	4890297	Water Supply	Domestic
6900177	5/3/1967	14.94	FRESH	7.619999886	17	623167.4	4890256	Water Supply	Domestic
6900178 6900327	10/2/1967 4/12/1955	4.57 12.19	FRESH FRESH	0.609600008 3.657599926	17 17	623163.4 625273.5	4890151 4888917	Water Supply	Livestock Domestic
6900327 6900344	8/18/1962	12.19	FRESH	4.572000027	17	623876.5	4889571	Water Supply Water Supply	Livestock
6900345	8/19/1965	15.24	FRESH	7.924799919	17	623860.5	4889661	Water Supply	Livestock
6900346	12/18/1958	6.71	FRESH	3.048000097	17	623786.5	4890215	Water Supply	Livestock
6900347	5/22/1960	10.67	FRESH	3.048000097	17	624636.5	4890749	Water Supply	Domestic
6900348	9/25/1967	10.67	FRESH	3.048000097	17	624642.5	4890528	Water Supply	Domestic
6900759	5/29/1964	15.85	FRESH	1.219200015	17	621817.5	4888390	Water Supply	Domestic
6900819	4/16/1964	6.71	FRESH	2.43840003	17	619883.5	4887921	Water Supply	Domestic
6900821	7/9/1963	4.57	FRESH	1.828799963	17	619222.5	4887600	Water Supply	Domestic
6901688	9/24/1962	12.19	FRESH	3.048000097	17	617387.4	4887802	Water Supply	Domestic
6902668	4/10/1959	3.66	FRESH		17	617734.5	4887382	Abandoned-Quality	Not Used
6902669	3/10/1948	57.30	FRESH		17	617469.4	4888293	Water Supply	Commerical
6909019	9/9/1968	12.19	FRESH	6.096000195	17	624264.5	4890553	Water Supply	Domestic
6909021	5/15/1968	72.85	FRESH	0.914399981	17	619514.5	4887673	Water Supply	Domestic
6909373 6909515	8/20/1969 10/2/1969	66.14 70.71	FRESH FRESH	-0.914399981 3.657599926	17 17	621544.4 619064.5	4889853 4888143	Water Supply Water Supply	Domestic Domestic
6909515 6909832	5/2/1970	18.90	FRESH	0.914399981	17	619064.5	4888143	Water Supply Water Supply	Domestic
6910580	10/26/1971	12.80	FRESH	9.753600121	17	623614.5	4889763	Water Supply	Domestic
6910848	1/12/1972	6.40	FRESH	1.828799963	17	619914.5	4887848	Water Supply	Domestic
6910968	4/23/1971	3.35	FRESH	1.828799963	17	621489.4	4889873	Observation Wells	Not Used
6911493	5/22/1973	23.47			17	619161.7	4887623	Abandoned-Quality	-
6911499	5/21/1973	17.07	FRESH	3.657599926	17	619186.7	4887598	Water Supply	Domestic
6911657	6/20/1973	8.84	FRESH	1.828799963	17	620017.8	4888151	Water Supply	Domestic
6911658	6/19/1973	8.84	FRESH	1.524000049	17	619967.8	4888172	Water Supply	Domestic
6911787	10/8/1973	14.63	FRESH	1.219200015	17	619111.7	4887673	Water Supply	Domestic
6911801	12/7/1973	6.40	FRESH	4.267199993	17	621914.5	4888496	Water Supply	Domestic
6912025	4/22/1974	79.25	FRESH	6.705600262	17	619375.7	4887667	Water Supply	Domestic
6912042	5/27/1974	17.07	FRESH	0.609600008	17	619316.7	4887513	Water Supply	Domestic
6912147	6/12/1974	16.15	FRESH	0.914399981	17	619305.7	4887538	Water Supply	Domestic
6912158	7/24/1974	16.15	FRESH FRESH	0.914399981	17 17	619350.8	4887506	Water Supply	Domestic
6912408 6912418	10/31/1974 11/8/1974	73.15 65.84	Not stated	10.66800022 0	17	617818.7 621809.5	4887315 4889004	Water Supply Water Supply	Domestic Domestic
6912423	3/23/1974	76.20	Not stated	1.828799963	17	619329.7	4887715	Water Supply	Domestic
6912424	2/26/1974	29.26	Not stated	6.705600262	17	619117.7	4887747	Water Supply	Domestic
6912425	1/16/1974	71.63	Not stated	9.144000053	17	619096.7	4887639	Water Supply	Domestic
6912505	9/11/1974	14.94	FRESH	0.914399981	17	619153.7	4887687	Water Supply	Domestic
6912621	4/8/1975	71.32	FRESH	3.657599926	17	618132.7	4887694	Water Supply	Commerical
6912875	8/29/1975	65.53	FRESH	0.609600008	17	621752.4	4889258	Water Supply	Domestic
6912879	5/25/1975	19.20	FRESH	2.133599997	17	619096.5	4887619	Water Supply	Domestic
6912890	2/14/1975	15.54	FRESH	4.572000027	17	619264.5	4887576	Water Supply	Domestic
6913093	12/1/1975	14.63	FRESH	2.43840003	17	619231.5	4887635	Water Supply	Domestic
6913132 6012122	9/16/1975	13.72	FRESH	1.828799963	17 17	619212.5	4887709	Water Supply	Domestic
6913133 6913143	9/16/1975 12/17/1975	13.72 10.67	FRESH FRESH	2.133599997 3.657599926	17	619230.5 623725.5	4887709 4889863	Water Supply Water Supply	Domestic Domestic
6913143 6914054	8/9/1977	73.15	Not stated	3.03737720	17	623725.5	4889863 4890273	Test Hole	Not Used
6914034 6914136	6/13/1977	8.84	FRESH	0.304800004	17	623614.4	4890273	Water Supply	Domestic
6914130	6/23/1977	8.23	FRESH	3.048000097	17	623584.5	4899803	Water Supply	Domestic
6914561	6/22/1978	15.54	FRESH	2.133599997	17	621764.5	4888623	Water Supply	Domestic
6914630	5/31/1978	40.84	FRESH	6.096000195	17	624114.5	4890523	Water Supply	Domestic
6914737	6/6/1978	9.14	FRESH	3.048000097	17	623614.4	4890573	Water Supply	Domestic
6914742	9/8/1978	21.34	FRESH	7.619999886	17	625214.5	4888873	Water Supply	Domestic
6914824	10/31/1978	15.24	FRESH	2.43840003	17	621864.5	4888523	Water Supply	Domestic
6915013	2/23/1979	37.49	FRESH	10.66800022	17	624214.5	4890673	Water Supply	Domestic
6915104	5/29/1979	13.72	FRESH	4.572000027	17	623614.5	4889423	Water Supply	Domestic
6915115	8/17/1979	59.13	FRESH	0.304800004	17	621914.5	4888723	Water Supply	Domestic
6915372	3/20/1980	59.74	Not stated	7.010400295	17 17	619814.2	4887924	Water Supply	Domestic
6915374	4/22/1980	62.79	Not stated	6.400800228 3.048000097	17 17	619711.8 621864.5	4887923 4888673	Water Supply Water Supply	Domestic Domestic
	0/6/1070	17 07	FDF/0 .			17 1004 ()	40000/3	νναισι συμμιγ	DOILIESIIC
6915429	9/6/1979 6/19/1980	17.07 64.31	FRESH Not stated						
	9/6/1979 6/19/1980 7/17/1980	17.07 64.31 6.40	Not stated FRESH	6.705600262 1.219200015	17 17 17	619761.8 621614.4	4887923 4889623	Water Supply Water Supply	Domestic Domestic

Well I.D.	Construction Date	Well Depth (m)	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
6917280	11/6/1984	70.10	FRESH	10.66800022	17	619867	4888518	Water Supply	Domestic
6917379	6/6/1984	60.05	FRESH	7.924799919	17	618210	4888144	Water Supply	Domestic
6917777	11/15/1985	84.43	FRESH	14.02080059	17	623123.81	4890298.9	Water Supply	Livestock
6918208	8/18/1986	16.15	FRESH	2.743200064	17	619923	4888218	Water Supply	Domestic
6918570	8/23/1986	28.96	FRESH	7.619999886	17	623639	4889840	Water Supply	Domestic
6919029	9/6/1987	128.02	FRESH	58.21680069	17	623647	4889859	Water Supply	Domestic
6919030	9/12/1987	129.54	FRESH	57.91200256	17	623647	4889859	Water Supply	Domestic
6919418	4/6/1988	71.63	FRESH	0	17	623104	4890304	Water Supply	Domestic
6919423	7/30/1987	19.20	FRESH	1.219200015	17	619864	4888508	Water Supply	Domestic
6919429	4/13/1988	80.47	FRESH	29.87039948	17	625214.5	4888917	Water Supply	Domestic
6919715	8/8/1988	20.73	FRESH	1.219200015	17	619964	4888011	Water Supply	Domestic
6919838	6/29/1988	12.19	Not stated	1.828799963	17	619765	4887926	Water Supply	Domestic
6920602	8/14/1989	17.98	FRESH	3.352800131	17	619722	4887909	Water Supply	Domestic
6920796	10/26/1989	16.15	FRESH	1.219200015	17	619766	4887918	Water Supply	Domestic
6920798	11/18/1989	16.76	FRESH	1.828799963	17	619679	4887895	Water Supply	Domestic
6920839	1/11/1990	23.77	FRESH	7.619999886	17	623659	4889818	Water Supply	Domestic
6921153	7/5/1990	49.38	FRESH	5.181600094	17	619962	4888009	Water Supply	Domestic
6921530	7/11/1991	16.15	FRESH	2.43840003	17	619769	4887914	Water Supply	Domestic
6921569	9/11/1991	15.24	FRESH	2.133599997	17	619952	4887998	Water Supply	Domestic
6921996	8/19/1982	84.73	FRESH	16.76399994	17	624234	4890638	Water Supply	Domestic
6921997	8/22/1992	85.34	FRESH	12.19200039	17	623652	4890568	Water Supply	Domestic
6921998	8/14/1992	85.34	FRESH	13.71600056	17	623574	4890508	Water Supply	Domestic
6922219	4/28/1993	15.85	FRESH	1.219200015	17	619924	4887970	Water Supply	Domestic
6922291	6/30/1993	27.13	FRESH	0.304800004	17	619595	4887869	Water Supply	Domestic
6922348	9/10/1993	22.86	FRESH	2.133599997	17	618963	4887455	Water Supply	Domestic
6922378	9/9/1993	73.76	FRESH	40.050	17	619641	4887875	Water Supply	Domestic
6922460	12/10/1993	71.02	FRESH	10.05840015	17	623573.13	4890126.76	Water Supply	Domestic
6922975	11/15/1994	52.73	FRESH	4.267199993	17	621887.5	4888499.82	Water Supply	Domestic
6923707	9/18/1996	41.45	FRESH	7.619999886	17	624246	4890627	Water Supply	Domestic
6923976	7/11/1997	3.05		- / / 000000 /	17	619141	4887602	Abandoned-Other	Not Used
6924522	7/28/1998	70.71	FRESH	7.619999886	17	621692	4889576	Water Supply	Domestic
6924647	10/19/1998	79.86	FRESH	18.59280014	17	623667	4890196	Water Supply	Domestic
6924966	7/23/1999		FRESH	0.304800004	17	624878	4888738	Water Supply	Domestic
6925001	9/17/1999	8.23	FRESH	2.743200064	17	619978	4887904	Water Supply	Domestic
6925015	9/20/1999	87.78	FRESH	23.77440071	17	623631.75	4889801.97	Water Supply	Domestic
6925018	9/29/1999	89.00	FRESH	21.94560051	17	623652	4889833	Water Supply	Domestic
6925785	10/29/1991	10.67	FDECU	1.706879973	17	623617	4890190	Observation Wells	Not Used
6925885	6/4/2001	16.15	FRESH	6.400800228	17	622677.6	4889501	Water Supply	Domestic
6925921	8/16/2001	21.03	FRESH	1.828799963	17	618959.7	4887454	Water Supply	Domestic
6925949	7/28/2001	76.50	FRESH	13.71600056	17	624459.6	4890989	Water Supply	Domestic
6925950	8/21/2001	(4.02	EDECU	20 47000054	17	624459.6	4890989	Abandoned-Quality	Not Used
6926293	2/4/2002	64.92	FRESH	30.47999954	17	622593.6	4889923	Water Supply	Domestic
6926709	10/22/2002	15.54	FRESH	2.43840003	17	620852.7	4888493	Water Supply	Domestic
6926787 6927136	11/8/2002 6/27/2003				17 17	618879.7 624542.6	4887841 4890584	Abandoned-Other	Not Used Not Used
6928251	8/19/2004	88.69	FRESH	22.86000061	17	623211	4890584	Abandoned-Other Water Supply	Domestic
6928251	8/19/2004				17				
6930273	4/25/2004	61.26 9.10	FRESH FRESH	3.349999905	17	623212 624134	4890113 4890186	Water Supply Observation Wells	Domestic
6930644	6/22/2006	9.10	FRESH		17	619729	4890180		-
7035810	9/18/2006	12.10	FRESH		17		4890304	Observation Wells	-
7035810	9/18/2006	12.10	ΙΝΈΟΠ		17	624624 616920	4890304 4887689	Abandoned-Other	-
7039486	1/6/2007				17	616920	4887689 4887691	Abandoned-Other Abandoned-Other	-
7039488	5/28/2007				17	616918	4887691 4889536	ANGUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	-
7045983	6/18/2007	75.29	FRESH	9.509759903	17	623871	4889536		-
7103547	10/25/2007	78.64	Untested	24.24379349	17	609482	4890508	Water Supply	 Domestic
7103547	1/25/2008	70.07	Unicolou	27.27317347	17	609306	4883600	Abandoned-Other	Not Used
7103558	1/25/2008			1.799999952	17	609306	4883600	Abandoned-Other	Not Used
7103559	1/25/2008			1.74000001	17	609292	4883605	Abandoned-Other	Not Used
7103560	1/25/2008		<u> </u>	3.40000095	17	609306	4883612	Abandoned-Other	Not Used
7103561	1/25/2008			8.199999809	17	609293	4883612	Abandoned-Other	Not Used
7103562	1/25/2008			1.139999986	17	609266	4883612	Abandoned-Other	Not Used
7105302	4/23/2008	21.33	FRESH		17	610003	4885729	Water Supply	Livestock
7107247	4/14/2008	30.50	011		17	610003	4885864	Abandoned-Supply	Domestic
7107247	4/10/2008	102.10			17	610022	4885714	Abandoned-Supply	Domestic
7109739	7/22/2008	23.16	FRESH	3.404616117	17	623446	4890264	Water Supply	Domestic
7114467	9/30/2008				17	619640	4887827	· · · · · · · · · · · · · · · · · · ·	-
7121278	1/11/2009	70.41	FRESH	15.63624001	17	619584	4887907	Water Supply	Commerical
7123256	4/23/2009	81.08	FRESH	35.05200195	17	625208	4889029	Water Supply	Domestic
7131129	8/31/2009	0.100		00100200170	17	624875	4888737	Abandoned-Other	Not Used
7139928	1/7/2010	6.10			17	615495	4887058	Test Hole	Test Hole
7140470	11/5/2009	6.10	Untested	1.889760017	17	612554	4886559	Abandoned-Other	Other
7140471	11/5/2009	7.01	Untested	1.889760017	17	612567	4886547	Abandoned-Other	Not Used
7140952	6/10/2009				17	613660	4886693	Abandoned-Supply	Other
/140907					17	613659	4886702	Abandoned-Other	-
	5/28/2009				1 1/	515007			1
7140953	5/28/2009 5/20/2010	10.97		1.828799963	17	624513	4890659	Abandoned-Other	Not Used
	5/28/2009 5/20/2010 5/20/2010	10.97 46.63	Untested	1.828799963 21.67127991	17 17	624513 624588	4890659 4890769	Abandoned-Other Abandoned-Other	Not Used Not Used

Well I.D.	Construction Date	Well Depth (m)	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
7148111	5/14/2010	9.14	Untested	3.048000097	17	624918	4888820	Abandoned-Other	Not Used
7148502	4/29/2010	4.40			17	614690	4887031	Abandoned-Other	-
7153416 7153637	10/1/2010 8/18/2010	4.60			17 17	614547 624598	4887108 4888704	Test Hole Abandoned-Other	Test Hole Not Used
7153638	8/18/2010				17	624615	4888730	Abandoned-Other	-
7154911	11/11/2010				17	615266	4887178	Abandoned-Supply	-
7154912	11/11/2010				17	615264	4887179	Abandoned-Other	-
7166452	3/31/2011	0.75	Untested	0.609600008	17	614662	4886980	Abandoned-Other	Not Used
7171274 7171275	10/17/2011 10/17/2011	8.75 8.68			17 17	624057 624835	4892150 4889662	Observation Wells Observation Wells	Not Used Not Used
7171275	8/11/2011	0.00			17	624835	4889807		-
7172335	6/23/2010				17	614941	4887803		-
7176515	7/26/2011		Untested	3.048000097	17	615223	4887154	Abandoned-Other	Not Used
7178301	12/16/2011	83.82	FRESH	45.82668304	17	614664	4888184	Water Supply	Domestic
7182552	4/19/2012	0.14			17	624425	4891167		-
7183033 7184407	6/12/2012 7/18/2012	9.14			17 17	624644 624644	4888984 4888984	Observation Wells Abandoned-Other	Monitoring Other
7190075	10/12/2012				17	623448	4890252	Abandoned-Supply	Domestic
7198799	5/30/2012				17	619761	4887944		-
7203592	6/6/2013				17	613716	4886744	Abandoned-Other	-
7204260	6/4/2013	6.10			17	621812	4888854	Observation Wells	-
7208408	6/11/2013				17	609874	4883760	Abandoned-Other	-
7211014 7212332	3/27/2013 6/11/2013				17 17	619767 609874	4887945 4883760	Abandoned-Other	-
7212332	5/9/2013	85.34	FRESH	48.50891876	17	609874	4883760 4888167	Water Supply	- Domestic
7225772	7/13/2014	00.01			17	611994	4885857		-
7227551	8/25/2014				17	624346	4891128		-
7236241	12/17/2014				17	615725	4887301	Abandoned-Other	Other
7236242	12/18/2014				17	615723	4887290	Abandoned-Other	Other
7236243 7237658	12/15/2014 12/4/2014				17 17	616045 609673	4887424 4885311	Abandoned-Other	Other
7237058	11/3/2014				17	621840	4888964	<u> </u>	-
7241686	12/3/2014	6.10			17	608932	4883777		-
7243635	5/1/2015				17	611779	4886041		
7243636	6/1/2015	7.62			17	611776	4886038	Observation Wells	Monitoring and Test Hole
7251673	8/20/2015	15.85	FRESH	1.828799963	17	619910	4887824	Water Supply	Domestic
7254463 7260179	11/25/2015 11/26/2015	9.14	Untested		17 17	609065 614500	4883523 4888050	Monitoring and Test Hole	Monitoring and Test Hole
7262975	4/28/2016	4.50			17	611558	4885906	Observation Wells	- Monitoring
7282693	1/12/2017	65.23	FRESH	1.524000049	17	621580	4889470	Water Supply	Domestic
7286172	9/20/2016				17	609890	4883802		-
7291854	7/20/2017				17	611051	4887045	Abandoned-Other	-
7294550	7/28/2017	(10			17	612216	4886037		-
7296474 7296475	8/2/2017 8/1/2017	6.10 5.18			17 17	611992 612034	4886328 4886339	Monitoring and Test Hole Monitoring and Test Hole	Test Hole Test Hole
7296475	8/1/2017	5.49			17	612034	4886340	Monitoring and Test Hole	Test Hole
7296477	8/1/2017	6.10			17	611999	4886356	Monitoring and Test Hole	Test Hole
7300962	11/7/2017		Untested		17	614449	4886866	Observation Wells	Monitoring
7301874	11/9/2017				17	614139	4888282	Abandoned-Other	-
7302531	10/27/2017	28.65	FRESH	9.083040237	17	614150	4888203	Water Supply	Domestic
7304976 7306613	1/12/2018 8/18/2017	6.10 4.60	Untested		17 17	608929 614831	4883767 4886554	Observation Wells Observation Wells	Test Hole Test Hole
7306613	1/23/2018	4.60 6.10	Untested		17	614831	4886554 4884039	Monitoring and Test Hole	Test Hole
7309267	2/27/2018	1.83	Unicolou		17	625189	4889035	Abandoned-Other	-
7310386	2/2/2018	4.90			17	608983	4883519		Test Hole
7314497	4/6/2018				17	614492	4886802		-
7320841	6/27/2018		11.0 0		17	609060	4883524	Abandoned-Other	-
7338306 7346733	6/21/2019 10/30/2019		Untested Untested	<u> </u>	17 17	612315 609590	4886240 4883547	Abandoned-Other	
7346733	10/30/2019		Untested		17	609590	4883547 4883538	Abandoned-Other Abandoned-Other	-
7346735	10/31/2019		Untested		17	609450	4883480	Abandoned-Other	
7349701	11/4/2019	12.19			17	615001	4887092	Monitoring and Test Hole	Monitoring and Test Hole
7349764	11/7/2019	6.10			17	615127	4887173	Monitoring and Test Hole	Monitoring and Test Hole
7349765	11/6/2019	12.19			17	615086	4887119	Monitoring and Test Hole	Monitoring and Test Hole
7349766 7349767	11/5/2019	3.66			17 17	615002	4887173 4887132	Monitoring and Test Hole	Monitoring and Test Hole Monitoring and Test Hole
7355668	11/5/2019 2/26/2020	6.10	Untested		17	615017 622147	4887132 4888841	Monitoring and Test Hole Abandoned-Other	
7355669	2/25/2020		Untested		17	622166	4889114	Abandoned-Other	-
7355670	2/26/2020		Untested		17	622239	4888843	Abandoned-Other	-
7355671	2/25/2020		Untested		17	622011	4889064	Abandoned-Other	-
7355672	2/25/2020		Untested		17	622088	4889086	Abandoned-Other	-
7355673	2/26/2020		Untested		17 17	622161	4888965	Abandoned-Other	-
7355674 7355675	2/24/2020 2/24/2020		Untested Untested		17 17	622140 622184	4889011 4888900	Abandoned-Other Abandoned-Other	-
7355675	2/24/2020		Untested		17	622184	4888900	Abandoned-Other	-
7355677	2/28/2020		Untested		17	622111	4888904	Abandoned-Other	-
1333011						-			

Well I.D.	Construction Date	Well Depth (m)	Water Kind	Static Level (m)	UTM Zone	Easting	Northing	Final Status	Primary Water Use
7355679	2/28/2020		Untested		17	622082	4888991	Abandoned-Other	-
7355680	2/28/2020		Untested		17	622119	4888880	Abandoned-Other	-
7355681	2/28/2020		Untested		17	621907	4888880	Abandoned-Other	-
7355682	2/27/2020		Untested		17	621808	4888806	Abandoned-Other	-
7355683	2/27/2020		Untested		17	621812	4888850	Abandoned-Other	-
7355684	2/26/2020		Untested		17	621890	4888867	Abandoned-Other	-
7355712	2/28/2020	7.62	Untested		17	621782	4888940	Observation Wells	Monitoring
7355713	2/24/2020	15.24	Untested		17	621885	4889133	Observation Wells	Monitoring
7355714	2/27/2020	14.94	Untested		17	621994	4888652		Monitoring
7355715	2/25/2020	7.62	Untested		17	621991	4888654	Observation Wells	Monitoring
7357115	3/17/2020	1.86			17	611588	4885756	Observation Wells	Monitoring
7357116	3/17/2020	6.10			17	611584	4885733	Observation Wells	Monitoring
7357117	3/17/2020	6.10			17	611623	4885737	Observation Wells	Monitoring
7357118	3/17/2020	6.10			17	611628	4885752	Observation Wells	Monitoring
7358302	4/28/2020				17	623625	4890057	Abandoned-Other	Monitoring
7358303	4/28/2020				17	623625	4890057	Abandoned-Other	Monitoring
7360267	6/1/2020		Untested		17	609252	4885145	Abandoned-Other	-
7365424	7/29/2020				17	611682	4885999		-
7367430	8/10/2020				17	621826	4888612		-
7367431	8/10/2020				17	621756	4888946		-
7370507	7/20/2020				17	615568	4887225		-
7373980	3/24/2020	9.14	Untested		17	609409	4883570	Observation Wells	Monitoring
7377569	10/8/2020				17	614324	4888132		-
7379049	12/10/2020				17	624601	4889580		-
7379050	12/10/2020				17	624096	4889791		-
7379051	12/10/2020				17	624343	4890084		-
7380053	3/23/2020	9.14	Untested		17	609402	4883575	Observation Wells	Monitoring
7380054	3/23/2020	9.14	Untested		17	609434	4883584	Observation Wells	Monitoring

TABLE D-2 PERMIT TO TAKE WATER (PTTW)

PermitNo	Parmit Owner	Purpose	Issued	Expiry	Type	UTM Zone	Easting	Northing	Max. (L/day)	Max (Days/year)	Max. (Hrs.klay)	Max. (Limin)
2071-8PDQUN		Agricultural	5/15/2020	11/30/2029	Surface Water	17	616434	4887505	5184000	150	24	3600
2558-9HTJP9	-	Agricultural	5/27/2014	5/27/2024	Surface Water	17	619442	4888043	1362960	15	12	1893
2584-ATBPLB	Silver Lakes Golf & Country Club Ltd.	Commercial	12/5/2017	11/24/2027	Ground Water	17	619214	4888674	1963440	180	12	2727
3707-8LWM8E		Agricultural	2/18/2020	2/18/2030	Surface Water	17	616433	4888056	3270585	20	24	2271
6538-AUQLDJ		Agricultural	2/23/2018	1/8/2028	Surface Water	17	624158	4890418	3815000	10	24	2650
3015-99WEWA	The Corporation of the Town of Bradford West Gwillinbury	Water Supply	8/23/2013	12/31/2021	Ground Water	17	616050	4887415	1637280	365	24	1137
4046-80MRUW	The Corporation of the Town of Bradford West Gwillimbury	Water Supply	2/10/2011	12/31/2021	Ground Water	17	616050	4887415	1637280	365	24	1137
5377-8PYNOG	The Corporation of the Town of Bradford West Gwillimbury	Water Supply	1/9/2012	12/31/2021	Ground Water	17	616050	4887415	1637280	365	24	1137
6728-9NLQ2F	The Regional Municipality of York	Water Supply	912/2014	12/31/2023	Ground Water	17	625047	4889143	6546384	365	24	4546.1

- Information is not available.

ENVIRONMENTAL SECTOR AND REGISTRY (EASR)

EASR No.	Registrant Name	Address	Municipality	Date	Approval Type
R-010-5110578003	AGC AUTOMOTIVE CANADA INC	120 ARTESIAN INDUSTRIAL PKY	BRADFORD	11/19/2021 1:40:45 PM	EASR-Air Emissions
R-001-9110519558	Assured Automotive (2017) Inc.	435 DISSETTE ST	BRADFORD	7/6/2018 3:29:01 PM	EASR-Automotive Refinishing Facility
R-003-7424328975	MITEK CANADA, INC	100 INDUSTRIAL RD	BRADFORD	6/12/2014 4:09:31 PM	EASR-Heating System
R-003-4626787321	ROYAL WOODWORKING CO LIMITED	ROYAL WOODWORKING CO LIMITED	BRADFORD	8/18/2016 2:55:39 PM	EASR-Heating System
R-010-2113130806	AURORA CANNABIS ENTERPRISES INC.	100 REAGEN'S INDUSTRIAL PKY	BRADFORD	4/21/2021 5:51:14 PM	EASR-Air Emissions



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