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PRELIMINARY GEOHYDROLOGY ASSESSMENT NORTHWESTERN CORNER OF REGIONAL ROAD 25 AND BRITANNIA ROAD MILTON, ONTARIO

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PREPARED FOR:

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1.0 INTRODUCTION

Mattamy (Milton West) Limited (the Client) intends to redevelop the property located at North-western corner of the intersection of Regional Road 25 and Britannia Road, Milton, Ontario (hereafter referred to as 'the Site'). MCR Engineers Ltd. (MCR) was retained to conduct a Geohydrology Assessment for the Site to evaluate the temporary dewatering and permanent drainage in relation to the proposed redevelopment.

1.1 SCOPE OF WORK

The objectives of the Geohydrology Assessment are to determine the following:

- Hydrogeological conditions of the Site, including the groundwater and phreatic surface, subsurface elevations and flow patterns and the interaction with the design and construction of the proposed development.
- Reviewing the available background information for the Site obtained from MCR's files, and architectural drawings.
- Estimate the potential temporary dewatering flow rates during construction and assessment of potential impacts on the surrounding environment.
- Estimate the long term flow rates from the Private Water Drainage System (PWDS) of the proposed building.
- Assess the permitting requirements for both dewatering and discharge with the Ministry of Environment, Conservation and Parks (MECP) and the Municipality of Halton (the City), respectively.
- Summarize the findings in a Geohydrology Assessment Report.

1.2 SITE DESCRIPTION

The Site is located at the northwestern corner of Regional Road 25 and Britannia Road, in a mixed-use rural, residential and commercial area of the city of Milton, Ontario. The site is irregular in shape with an approximate area of 41,511 m².

The Site is bounded by a pond to the north, Regional Road 25 to the east,

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Britannia Road to the south, and a pond/channel to the west. Etheridge Avenue bisects the Site, running west to east. The Site is presently a vacant lot.

Currently the Site does not have a Legal description. The topographic surveys are attached in Appendix A.

1.3 PROPOSED DEVELOPMENT

> The Site is proposed for residential development (Appendix B) and will consist of:

• North Block: A fifteen [15] storey building (Building 5), a twelve [12] storey building (Building 6), and a fourteen [14] storey building (Building 7)

over two [2] levels of underground parking.

South Block: A fifteen [15] storey building (Building 1), a thirteen [13] storey building (Building 2), an eleven [11] storey building (Building 3), and a fourteen [14] storey building (Building 4) over two [2] levels of

underground parking.

The finished floor elevation (FFE) at ground level is expected to range from elevations of 188.15 to 189.20 meters above sea level (masl). The P2 FFE will range from approximate elevations of 181.25 to 181.75 masl for the North Block

and at 181.05 masl for the South Block.

Presently it is assumed that the proposed buildings will be supported by conventional spread/strip footings founded in silty to sandy/clayey silt soils. The

size of the shoring play layout was assumed to cover approximately:

• **North Block**: 165 m by 80 m

• **South Block:** 210 m by 82 m

A sub-floor Private Water Drainage System (PWDS) with perimeter weeping tile will be required for the proposed development. A soldier pile and lagging shoring system is expected for temporary excavation.



1.4 PROPERTY OWNERSHIP

The Site is owned and intended for redevelopment by Mattamy (Milton West) Limited. The Owner is represented by Ms. Christine Chea, with the following contact information:

Ms. Christine Chea, MCIP, RPP Direction, Development, GTA Urban 3300 Bloor Street West, Suite 1800 Toronto, Ontario M8X 2X2

Email: christine.chea@mattamycorp.com

1.5 REVIEW OF PREVIOUS REPORTS

The following geo-environmental reports were provided for review prior to initiating the investigation:

- Shad & Associates Inc. report titled, Geotechnical Investigation Report, Proposed Residential Condominium Development, Framgard Property – Major Node, Regional Road 25, North of Britannia Road, Milton, Ontario, prepared for Mattamy Willmott Limited, dated March 2018.
- MCR report titled, Geotechnical Report, Residential Development, Regional Road 25 and Britannia Road, Milton, Ontario, prepared for Mattamy (Milton West) Limited, dated January 2024.



2.0 HYDROGEOLOGICAL CONDITIONS

2.1 PHYSICAL SETTING

The Site is located in the Town of Milton and is situated in a mixed-use rural, residential, and commercial area. The nearest major intersection is Regional Road 25 and Britannia Road, located southeast of the Site. A branch of The West Tributary of the Sixteen Mile Creek is located approximately 30 m west of the Site.

The Site is located at an elevation of approximately 184 to 186 m above sea level (asl) and the topography across the Site slopes from the north to south. The surrounding area slopes from northwest to southeast, towards the Sixteen Mile Creek.

The Site is bounded by the following properties/features:

North A pond

South Britannia Road

East Regional Road 25

West Pond/Channel

2.2 TOPOGRAPHY

According to the topographic map, published by the Government of Canada; Natural Resources Canada at the Government of Canada website: http://atlas.gc.ca/toporama/en/index.html, the ground surface at the Site slopes from north to south and the surrounding area sloping from northwest to southeast towards the Sixteen Mile Creek.

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

According to the geological map entitled "Quaternary Geology of Ontario, Southern Sheet", published by the Ontario Ministry of Development and Mines, dated 1991, the overburden in the study area consists mainly of Halton till, predominantly silt and clay, minor sand, basin and quiet water deposits. Groundwater flow is expected to be directed southeast towards the Sixteen Mile



Creek.

According to the Ontario Ministry of Development and Mines, Map No. 2554 "Bedrock Geology of Ontario, Southern Sheet, 1991", the bedrock typically consists of Upper Ordovician shale, limestone, dolostone and siltstone Queenston Formation. On a regional scale, groundwater is expected to flow south-east, towards the Sixteen Mile Creek.

2.4 LOCAL GEOLOGY AND HYDROGEOLOGY

On a local scale, geological conditions and hydrogeology are similar to the ones at a regional scale. Locally, near surface groundwater flow may be influenced by underground structures (e.g., service trenches, catch basins, and building foundations or surface watercourses). No surface water features are present onsite and there are no Provincially Significant Wetlands in the vicinity of the Site.



3.0 SCOPE OF INVESTIGATION

3.1 OVERVIEW OF SITE INVESTIGATION

- Initially, twelve boreholes (BH 1 to BH 12) were drilled by Shad & Associates Inc. from February to March 2018 to depths ranging from 7.80 to 8.10 m.
- Nine boreholes (BH 101 to BH 109) were drilled by MCR in December 2022 to January 2023 to depths ranging from 7.30 to 21.40 m.
- Boreholes 1, 3 to 5, 8 to 10 and 12 were equipped with monitoring wells for long-term groundwater monitoring and sampling.
- The borehole locations are shown in Drawing No. 1 and the records are presented in Appendix C.
- Groundwater levels were recorded from all available monitoring wells over various dates and the data is presented in Table 1.
- Groundwater samples were collected from BH 1 and 10 in December 2022 for chemical analysis of the Municipality of Halton Sewers By-Law criteria.

3.2 MONITORING WELL INSTALLATION

It is assumed that all monitoring wells by Shad and Associates Inc. were installed with a 50 mm diameter schedule, 40 PVC pipe and a 3.05 m long slotted well screen. Well screens were surrounded by a silica sand pack to at least 0.6 m above the top of screen with a bentonite seal extending from above the sand pack to within 0.5 m of the ground surface. All monitoring wells were completed with a flush mounted cover at ground surface. Monitoring well installation was done in accordance with the *Ontario Water Resources Act*, Sections 35 to 50.

3.3 ELEVATION SURVEYING

MCR elevations referred to in this report are metric and geodetic and are interpolated from the provided topographic survey prepared by Rady-Pentek & Edward Surveying Ltd., dated February 9 and April 13, 2018. Borehole elevations are shown on the borehole logs in Appendix C.



3.4 GROUNDWATER SAMPLING

All groundwater sampling activities were conducted in accordance with Ontario Regulation (O.Reg.)153/04, as amended to O.Reg.511/09, July 2011. All monitoring wells were developed prior to sampling activities using a Waterra Hydrolift II (HL-1217) inertial lift pump by purging at least three well volumes or until the monitoring well was purged dry. Groundwater samples were obtained at least 24 hours' post-development under static conditions. No samples were field filtered prior to laboratory analysis, in accordance with the standard.

3.5 GROUNDWATER ANALYSIS

A groundwater sample collected in December was submitted to ALS Laboratory Group (ALS) of Richmond Hill, Ontario, certified by the Canadian Association for Laboratory Accreditation (CALA), for chemical analysis. The Certificates of Analysis received are included in Appendix D. The contact information for the laboratory used is included below.

ALS Laboratory Group

95 West Beaver Creek Road Richmond Hill, ON L4B 1H2

All groundwater samples were submitted for bulk chemical analysis for the criteria provided in the *Ontario Halton Sanitary Sewer By-Law No. 02-03 (March 2003)*. The results of chemical analysis were compared to the criteria provided in *Table 1 – Limits for Sanitary and Combined Sewers Discharge and Table 2 – Limits for Storm Sewer Discharge*. These guidelines establish the maximum allowable concentrations of specific analytical parameters for water discharged into either the municipal sanitary and/or storm sewer system respectively.



4.0 INVESTIGATION RESULTS

4.1 GEOLOGY

The ground surface elevation across the Site varies from 187.50 masl (BH 104) to 184.70 masl (BH 1). Based on the investigations by MCR and Shad and Associates Inc., the geologic formations beneath the Site are illustrated in borehole logs (Appendix C) and include the following (from surface to depth):

Please note that boreholes 102, 103, 106 and 108 were straight drilled to 9.15 m due to proximity to Shad and Associates Inc. boreholes.

Fill: Compact fill material was encountered at the surface of all boreholes. The fill material extended to depths ranging from 0.4 to 0.9 m. The fill consisted of silty sand/sandy silt/clayey silt/silty clay, sand and gravel soils. The brown/dark brown to reddish brown fill was in a moist condition and contained some to trace of organics, clay, gravel, and rootlets.

For the purpose of offsite disposal, the type/quantity and extent of the existing fill should be explored by further test pit investigation prior to general excavation (prior to contract award).

Silty Sand/Sandy Silt: A dense silty sand/sandy silt till layer was encountered below the fill in boreholes 104, 105, 107 and 109. The brown silty sand/sandy silt layer was in a moist condition and contained traces of clay. The silty sand/sandy silt layer extended to the full depth of borehole 104 and a depth of 2.30 m in boreholes 105, 107 and 109.

Clayey Silt/Silty Clay (Till): A very stiff to hard clayey silt/silty clay till layer was encountered below the fill and silty sand/sandy silt layer in all boreholes (except 102, 103, 106 and 108). The reddish brown to grey clayey silt/silty clay till layer was in a moist to wet condition and contained some to trace of sand, gravel and shale fragments. The clayey silt/silty clay till layer extended to the full depth of boreholes 2, 3, 5, 8, 11 and 109 and to depths ranging from 4.55 to 10.65 m in all other boreholes.



Sand and Gravel/Silty Sand/Sandy Silt (Till): A very dense sand and gravel/silty sand/sandy silt till deposit was observed below the clayey silt/silty clay till layer in all boreholes. The brown to reddish brown sand and gravel/silty sand/sandy silt (till) deposit was in a moist to wet condition and contained traces of clay, gravel and shale fragments. The sand and gravel/silty sand/sandy silt till layer extended to a depth of 18.30 m in borehole 101 and to the full depth of all other boreholes.

Clayey Silt Till: A hard layer of clayey silt till was detected below the sand and gravel/silty sand/sandy silt till deposit in borehole 101. The reddish brown layer was in a moist condition and contained traces of sand, gravel and shale fragments. The clayey silt till layer extended to the full depth of borehole exploration.

It should be noted that the silt/clay/sand/till soil is unsorted deposit; therefore, boulders and cobbles are anticipated.

Groundwater: Upon completion of drilling all monitoring wells by Shad and Associates Inc. were dry.

On March 9, 2018, ground water levels were measured at depths ranging from 2.8 to 4.2 m in boreholes 1, 3 to 5, 9 to 10 and 12. On March 16, 2018, groundwater levels were measured at depths ranging from 2.9 to 6.4 m in boreholes 1, 3 to 5, 8 to 10 and 12.

On January 6, 2023, groundwater levels were measured at depths ranging from 0.74 to 3.76 m in boreholes 1, 3 to 5, 9 to 10 and 12. The results are summarized on the Record of Borehole Sheets in Appendix C and Table 1.

4.2 GROUNDWATER LEVEL MONITORING

All current and past groundwater monitoring data is presented in Table 1. It should be noted that groundwater levels are subject to seasonal fluctuations. All groundwater levels were measured manually using an electric water level meter and with respect to the geodetic borehole elevations within the property boundary. The monitoring wells must be decommissioned, prior to construction,



in accordance with Regulation 903 by a qualified contractor.

The interpreted groundwater flow direction is based on the 2018 and 2022 – 2023 round of water table elevation measurements, since this event provided the water table elevations from the majority of the monitoring wells. The interpreted local direction of hydraulic movement across the Site is inferred to be in a southern direction, towards the West Tributary of the Sixteen Mile Creek.

4.3 GROUNDWATER QUALITY

The groundwater samples collected from BH 1 and 10 in December 2022 were analyzed for the Municipality of Halton Sewers By-Law criteria. The results of chemical analysis (Table 2) indicate that the sample complies with the *Table 1 Limits for Sanitary & Combined Sewers Discharge* and *Table 2 Limits for Storm Sewer Discharge* for all parameters analyzed.

4.4 GROUNDWATER DISCHARGE ASSESSMENT

Presently, the groundwater onsite can be discharged to the Municipal sanitary/combined sewer system or storm sewer system with no additional filtration/treatment.



5.0 REVIEW AND EVALUATION

5.1 TEMPORARY DEWATERING ASSESSMENT

The excavation for the proposed two level underground parking structure will extend into native sandy silt soils. In order to protect the sides/bottom of the excavation from being disturbed by excess groundwater pressure, i.e., to prevent quicksand/dilating silt conditions, the groundwater table must be lowered 1.0 m below the bottom of the footing excavations.

Positive dewatering such as well points/eductors will be required for the proposed excavation. Onsite soil might be subject to localized piping during dewatering. Creation of piping channels may result in a substantial increase in the volume of both temporary dewatering and permanent drainage.

For the proposed two underground levels, groundwater is required to be drawn down 1 m below the underside of the combined footings. The assumed elevation of the footings is at approximately 179.75 masl for the North Block and 179.55 for the South Block. Therefore, groundwater will need to be lowered to an elevation of 178.75 masl for the North Block and 178.55 masl for the South Block.

The average ground water level recorded in the monitoring wells is at an elevation of 182.54 masl (Table 3), representing an approximate 3-4 m hydrostatic head requiring dewatering. The size of the shoring plan layout was assumed to cover approximately 165 m by 80 m and 210 m by 82 m for the North and South Blocks, respectively.

Theoretically, the groundwater drawdown for a single well pumping can be described as:

$$Q = -2\pi r K h \frac{dh}{dr} \tag{1}$$

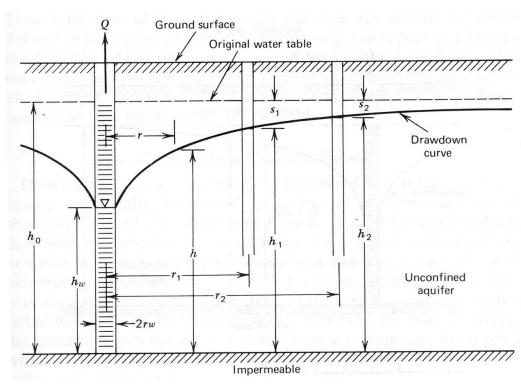
And further we have:

$$h^{2} = -\frac{Q}{\pi K} \ln(r/r_{w}) + h_{w}^{2}$$
 (2)



Where:

h [m] is the height of the water table above an impervious base Q [m^3 /day] is the rate of pumping discharge K [m/day] is hydraulic conductivity R [m] is the radius from the centre of well location r_w [m] is the radius of pumping well (see Schematic A below).



Schematic A: Radial flow to an unconfined aguifer (Todd 1980)

5.1.1 Numerical Analysis

The abovementioned Site parameters were used to calculate the estimated steady state discharge rate for temporary construction dewatering. Groundwater monitoring data is presented in Table 3. The calculations for temporary dewatering rates are shown in Tables 4.

From the observed soil types and based on soil sample descriptions (*Todd, 1980; Mays, 2001; and Craig, 2004*), the average hydraulic conductivity (K) of



the aquifer was estimated at 0.40 m/day.

The estimated steady state discharge rate for temporary construction dewatering was calculated at approximately:

Block	Discharge (m³/day)
North	174
South	201

It should be noted that the initial drawdown pumping rate and accumulation from rainfall will likely be higher.

5.2 PERMANENT FOUNDATION DRAIN FLOW RATES

For the proposed redevelopment, it is understood that average ground floor slab elevation (FFE) is expected to range from elevations of 188.15 to 189.20 meters above sea level (masl). The lowest P2 floor slab elevation is expected to range from elevations of 181.05 to 181.25 masl.

A sub-floor Private Water Drainage System (PWDS) with perimeter/underfloor weeping tile is proposed below the P2 level slab. The invert of the PWDS is assumed to be approximately 0.5 m below the FFE of the P2 slab, i.e., at approximately 179.55 to 180.75 masl.

The proposed PWDS is shown in Drawing No. 6. The slotted pipes should slope to a sump at a minimum 1% slope. Perimeter drainage pipes, with a positive gravity outlet, should be solid PVC with a minimum of 0.5% slope. In addition, silt traps must be provided at convenient/accessible locations.

5.2.1 Numerical Analysis

The abovementioned Site parameters were used to calculate the estimated steady state discharge rate for the PWDS. Groundwater monitoring data is presented in Table 3. The calculations for permanent drainage flow rates are shown in Table 5.



From the observed soil types and based on soil sample descriptions (*Todd, 1980; Mays, 2001; and Craig, 2004*), the average hydraulic conductivity (K) of the aquifer was estimated at 0.40 m/day.

The estimated steady state discharge rate for the PWDS was calculated at:

Block	Discharge (m³/day)
North	78
South	94

5.3 MECP PERMIT TO TAKE WATER REQUIREMENT

The Permit to Take Water (PTTW) requirements for construction site dewatering have been updated to the current O.Reg.63/16 amendment to Environmental Protection Act. In accordance with the updated regulation, construction site dewatering will require a complete PTTW application when water takings greater than 400,000 L/day are predicted. Groundwater taking between 50,000 L/day and 400,000 L/day will require a PTTW through a limited online application process. Groundwater taking from a proposed building structure by means of a PWDS will require a PTTW when water taking is greater than 50,000 L/day. The complete permit application process for PTTW takes approximately twelve weeks to review and is required prior to applying for the discharge permits.

The anticipated steady state temporary dewatering discharge rate was calculated at 174 m³/day and 201 m³/day for the North and South Blocks, respectively. Therefore, a limited PTTW application will be required to be applied for with the MECP for each Block.

The steady state flow rate from the PWDS was calculated at 78 m³/day and 94 m³/day for the North and South Blocks, respectively. Therefore, a complete PTTW application for the PWDS will be required for each Block.

In accordance with the current Ontario Regulation 387/04 for Water Taking, every person to whom a permit has been issued under Section 34 of the Act shall collect and record data on the volume of water taken daily. The data collected shall be measured by a flow meter or calculated using a method



acceptable to a Director.

5.4 MUNICIPAL DISCHARGE PERMIT REQUIREMENTS

The Municipality of Halton requires that any private water to be discharged into the city sewer system must have a permit or agreement in place in order to discharge; this applies to all water not purchased from the city water supply. For temporary dewatering during the construction phase, this includes all groundwater and storm water that is collected or encountered during site excavation. For the PWDS, this includes all groundwater that is constantly pumped as a result of the PWDS elevation located below the groundwater table elevation or through storm water infiltration.

The groundwater quality sample collected in December 2022 indicates that the water onsite could be discharged into the Municipal sanitary and combined sewer system or storm sewer system with no additional filtration or treatment. A short-term temporary discharge permit must be applied for construction dewatering with Municipality.

A long-term permanent discharge permit must be applied for the proposed PWDS since the drainage system is located below the long-term groundwater elevation. The permanent discharge permit will involve coordination with the mechanical and site servicing consultant to provide calculations and drawing specifications for the ultimate discharge location and the sampling port required by the Municipality.

5.5 ENVIRONMENTAL PROTECTION

The Site is located in the Sixteen Mile Creek drainage basin and a branch is approximately 30 m west of the Site. The Site is located within the Regional Municipality of Halton and there are potential potable groundwater issuers in the Vicinity of the Site. Therefore, the Site is located in a potable groundwater region as defined in Sections 35 to 37 of O.Reg. 153/04.

The proposed redevelopment plan will remove all the overburden to a depth of approximately 9 - 10 mbgs, from the interior Site area. Temporary groundwater



dewatering will lower the groundwater table to below the underground parking foundation levels. The extracted water will be discharged into the sanitary sewer or into the storm sewer. Updated groundwater monitoring will be conducted by the dewatering contractor prior to and during construction activities to ensure that no additional adverse groundwater impacts are identified throughout the project's construction.



6.0 CONCLUSIONS AND RECOMMENDATIONS

MCR Engineers Ltd. was retained to conduct a Geohydrology Assessment for the Site in relation to an administrative Plan of Subdivision and rezoning application. Etheridge Avenue bisects the Site, running west to east. The Site is presently a vacant lot.

The Site is proposed for residential development (Appendix B) and will consist of:

- **North Block:** A fifteen [15] storey building (Building 5), a twelve [12] storey building (Building 6), and a fourteen [14] storey building (Building 7) over two [2] levels of underground parking.
- **South Block:** A fifteen [15] storey building (Building 1), a thirteen [13] storey building (Building 2), an eleven [11] storey building (Building 3), and a fourteen [14] storey building (Building 4) over two [2] levels of underground parking.

The finished floor elevation (FFE) at ground level is expected to range from elevations of 188.15 to 189.20 meters above sea level (masl). The P2 FFE will range from approximate elevations of 181.25 to 181.75 masl for the North Block and at 181.05 masl for the South Block.

Presently it is assumed that the proposed buildings will be supported by conventional spread/strip footings founded in silty to sandy/clayey silt soils. The size of the shoring play layout was assumed to cover approximately:

North Block: 165 m by 80 m
 South Block: 210 m by 82 m

A sub-floor Private Water Drainage System (PWDS) with perimeter weeping tile will be required for the proposed development. A soldier pile and lagging shoring system is expected for temporary excavation.

The excavation for the proposed two level underground parking structure will extend into native sandy silt soils. In order to protect the sides/bottom of the excavation from being disturbed by excess groundwater pressure, i.e., to prevent quicksand/dilating



silt conditions, the groundwater table must be lowered 1.0 m below the bottom of the footing excavations.

Positive dewatering such as well points/eductors will be required for the proposed excavation. Onsite soil might be subject to localized piping during dewatering. Creation of piping channels may result in a substantial increase in the volume of both temporary dewatering and permanent drainage.

For the proposed two underground levels, groundwater is required to be drawn down 1 m below the underside of the combined footings. The assumed elevation of the footings is at approximately 179.75 masl for the North Block and 179.55 for the South Block. Therefore, groundwater will need to be lowered to an elevation of 178.75 masl for the North Block and 178.55 masl for the South Block.

The average ground water level recorded in the monitoring wells is at an elevation of 182.54 masl (Table 3), representing an approximate 3 - 4 m hydrostatic head requiring dewatering.

The steady-state discharge rate for temporary construction dewatering was calculated at 174 m³/day (32 USG/min) and 201 m³/day (37 USG/min) for the North and South Blocks, respectively Therefore, based on the amended O.Reg. 63/16 to the Environmental Protection Act, a limited PTTW application will be required from the MECP, and a temporary discharge permit might be required from the Municipality for each Block. It should be noted that the initial drawdown pumping rate and accumulation from rainfall will be higher and this should be confirmed by the dewatering contractor.

The steady state discharge rate for the PWDS was calculated at approximately 78 m³/day (14 USG/min) and 94 m³/day (17 USG/min) for the North and South Blocks, respectively. Therefore, a complete PTTW will be required from the MECP for the PWDS for each Phase. A long-term permanent discharge permit might be required from the Municipality since the drainage will be installed below the long-term groundwater elevation.

The selected dewatering contract must be performance driven and the contractor must provide a performance bond. In addition, upon completion of system's



installation, the contractor must produce a written statement that "The system installed is robust enough to lower and maintain groundwater at least 1.0 m below the lowest footing elevation, without impacting the integrity of shoring or foundation soils."

The Zone of Influence (ZOI) for construction dewatering ranges from 24 to 26 m. The ZOI for permanent drainage ranges from 11 to 13 m. As the ZOI for construction dewatering and permanent drainage may intercept the branch of the Sixteen Mile Creek to the west and south, an infiltration gallery, with approval from the Municipality and the MECP with an Environmental Compliance Approval (ECA), could be implemented to offset the potential of drying out the creek.

Presently, the groundwater onsite can be discharged to the Municipal sanitary/combined sewer system or storm sewer system with no additional filtration/treatment.

The application process, where a PTTW is required, can take at least three months for a review by the MECP and is required to be approved prior to applying for discharge permits. It is recommended that applications to the Municipality for discharge permits be applied for at least three months prior to the required start dates. Applications are to be supported by drawings and calculations provided by the mechanical and the site servicing consultant and coordination is required amongst all disciplines.



7.0 REFERENCES

- 1. Ontario Ministry of the Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April15, 2011.
- 2. Ministry of Northern Development and Mines. *Quaternary Geology of Toronto and Southern Ontario Southern, Sheet Map 2504*, 1980.
- 3. Ministry of Northern Development and Mines. *Bedrock Geology of Ontario-Southern Sheet*, 1991.
- 4. D.K. Todd, *Groundwater Hydrology*, 2nd Edition, John Wiley & Sons, New York, 1980.
- 5. L.W. Mays, *Water Resources Engineering*, 1st Edition, John Wiley & Sons, New York, 2001.
- 6. R.F. Craig, *Soil Mechanics*, 7th Edition, Spon Press, London, 2004.
- 7. Shad & Associates Inc. report titled, Geotechnical Investigation Report, Proposed Residential Condominium Development, Framgard Property Major Node, Regional Road 25, North of Britannia Road, Milton, Ontario, prepared for Mattamy Willmott Limited, dated March 2018.
- 8. MCR report titled, Geotechnical Report, Residential Development, Regional Road 25 and Britannia Road, Milton, Ontario, prepared for Mattamy (Milton West) Limited, dated January 2024.



8.0 STATEMENT OF LIMITATIONS

MCR Engineers Ltd. (MCR) conducted the work associated with this report in accordance with the scope of services, time and budget limitations imposed for this work. The work has been conducted according to reasonable and generally accepted local standards for an environmental consultant at the time of the work. No other warranty or representation, expressed or implied, is included or intended in this report.

The work was designed to provide an overall assessment of the environmental conditions at the Site. The conclusions presented in this report are based on the information obtained during the investigation. The work is intended to reduce the client's risk with respect to environmental impairment. No work can completely eliminate the possibility of further environmental impairment on the Site.

It should be noted that subsurface conditions might vary at locations and depths other than those locations where borings, surveys or explorations were made by MCR. Other contaminants, not tested for in this work, may also potentially be present on the Site. Even with exhaustive investigation, it is not possible to warranty the Site will be free of contaminants. Should conditions, not observed during the work, become apparent, MCR should be immediately notified to assess the situation and conduct additional work, where required. The findings of this report are based on conditions as they were observed at the time of the work.

No assurance is made regarding changes in conditions subsequent to the time of the work. Remediation cost estimates is based on the available information. The estimated costs for remediation only represent the costs for the clean-up of known contaminants that have been identified during the work. Additional costs may be incurred as a result of other contaminants or areas of contamination identified by subsequent work.

Regulatory statutes are subject to interpretation. These statutes and their interpretation may change over time, thus these issues should be reviewed with appropriate legal counsel.

MCR relied on information provided by others in this report. MCR cannot guarantee the accuracy, completeness and reliability of the information provided by others, although MCR staff attempted to seek clarification on information provided and verify authenticity, where practical.

The report and its attachments were prepared for and made available for the sole use of the client. MCR will not be responsible for any use or interpretation of the information contained in this report by any other party without the prior expressed written consent of MCR.



9.0 CLOSURE

In accordance with your request and authorization, MCR Engineers Ltd. completed this Geohydrology Assessment Report. This report presented the methodology, findings and conclusions of the investigation. The Statement of Limitations for all work performed as part of this investigation is included.

We trust that the information provided in this report is sufficient for your present requirements. Should you have any further questions, please do not hesitate to contact our office. Thank you for retaining MCR Engineers Ltd. for this project.

Respectfully,

MCR Engineers Ltd.



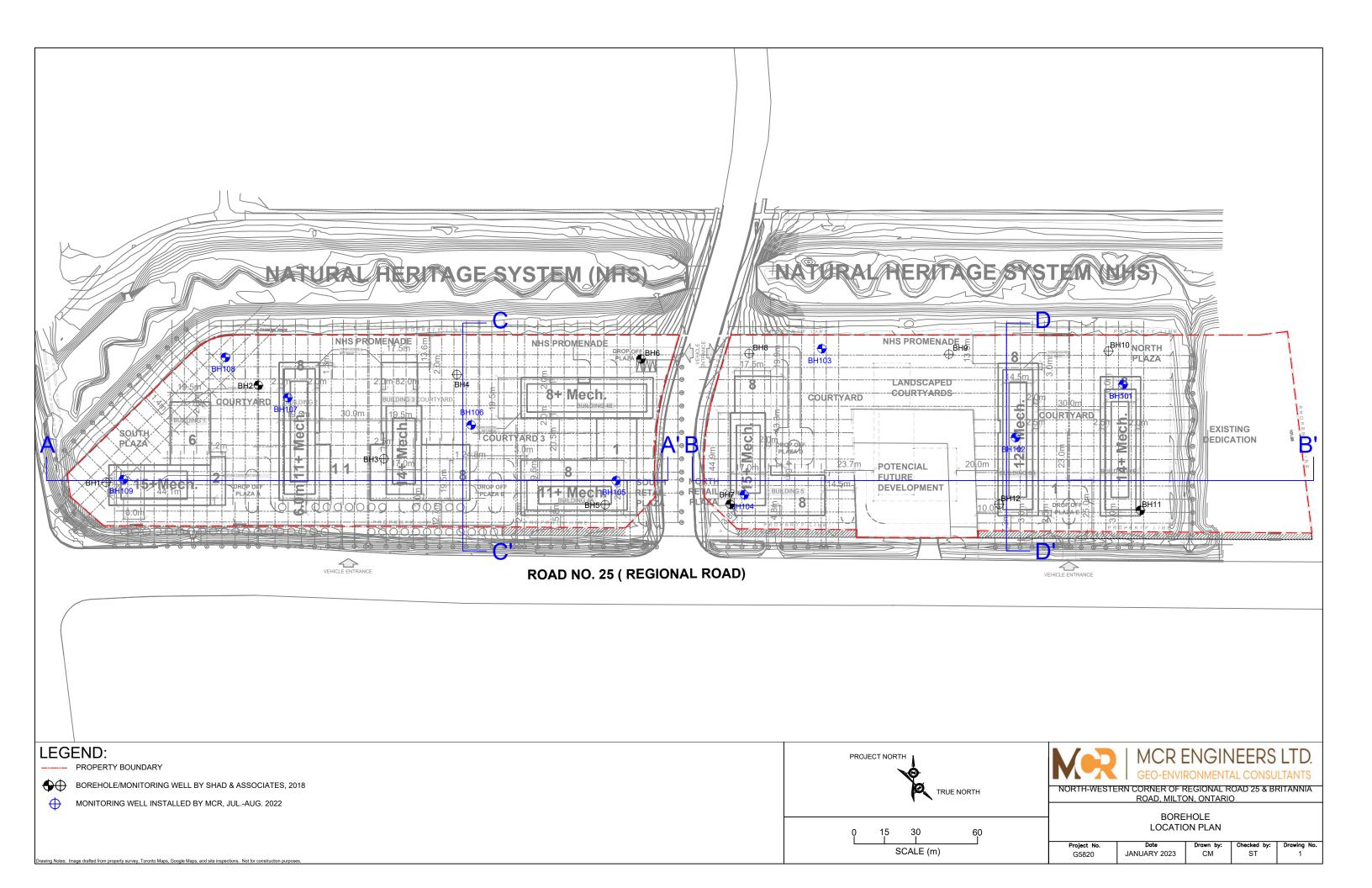
Prepared By:

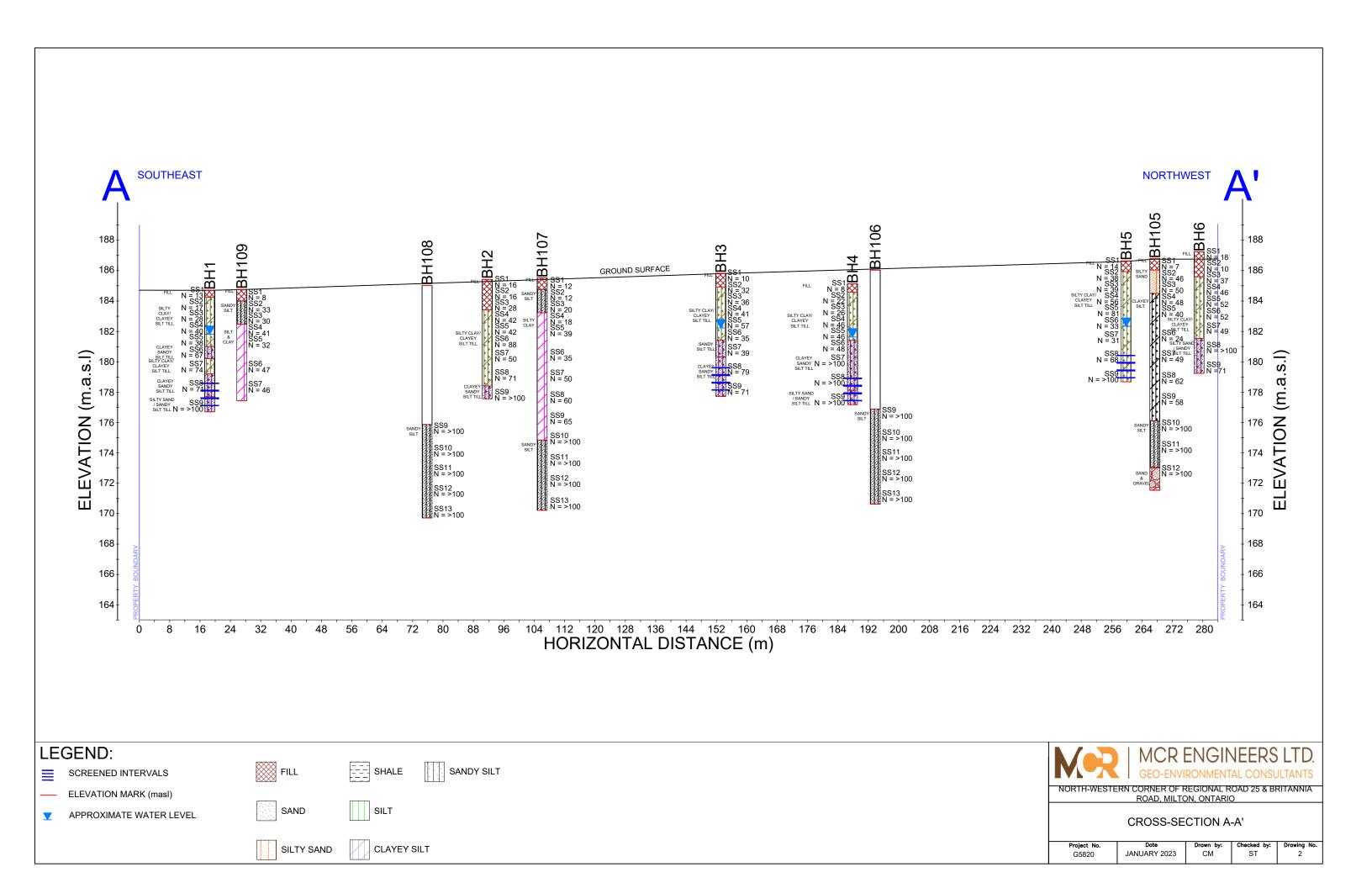
Richard Sukhu, P.Eng., B.Eng.

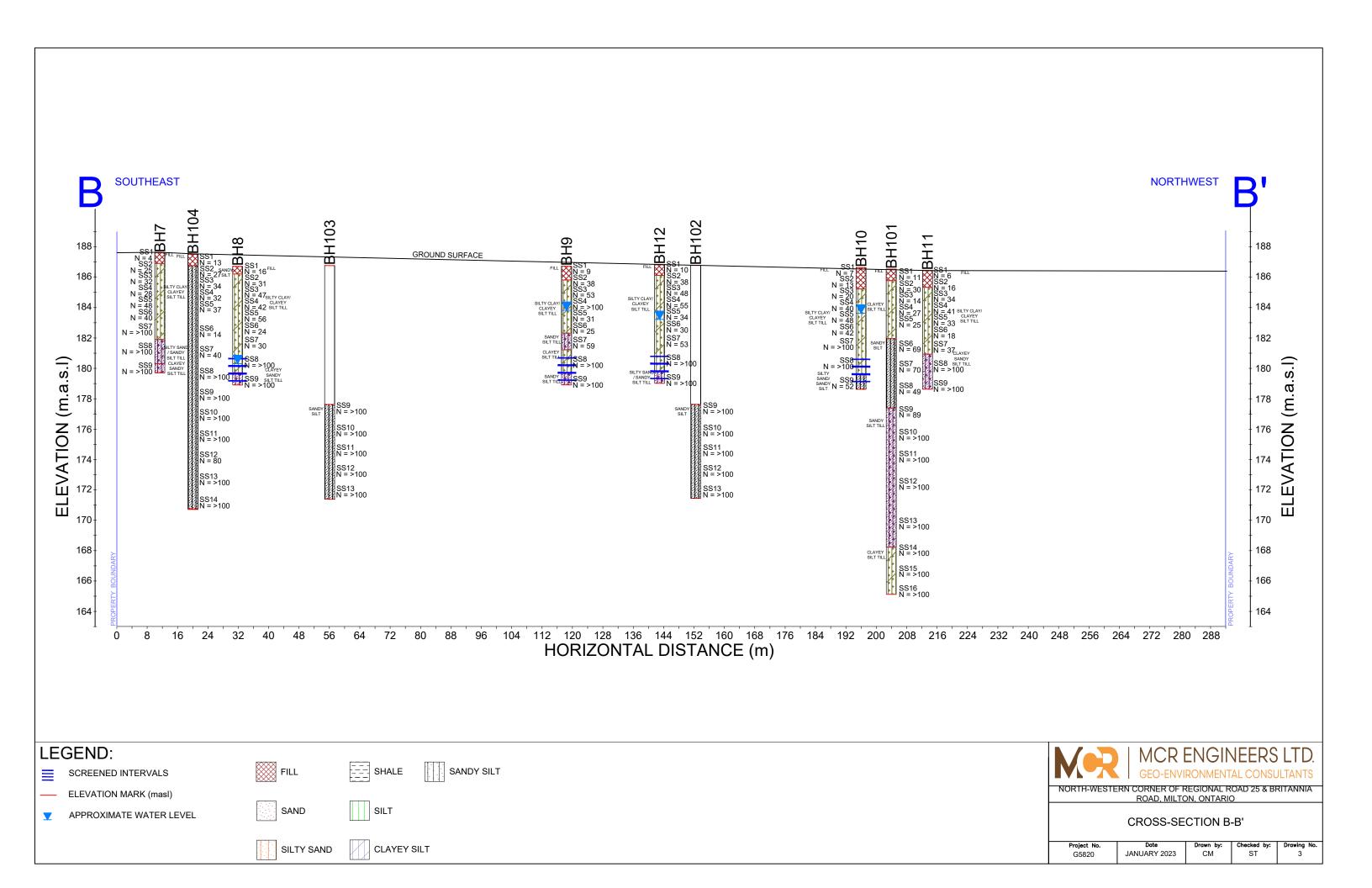
Reviewed By:

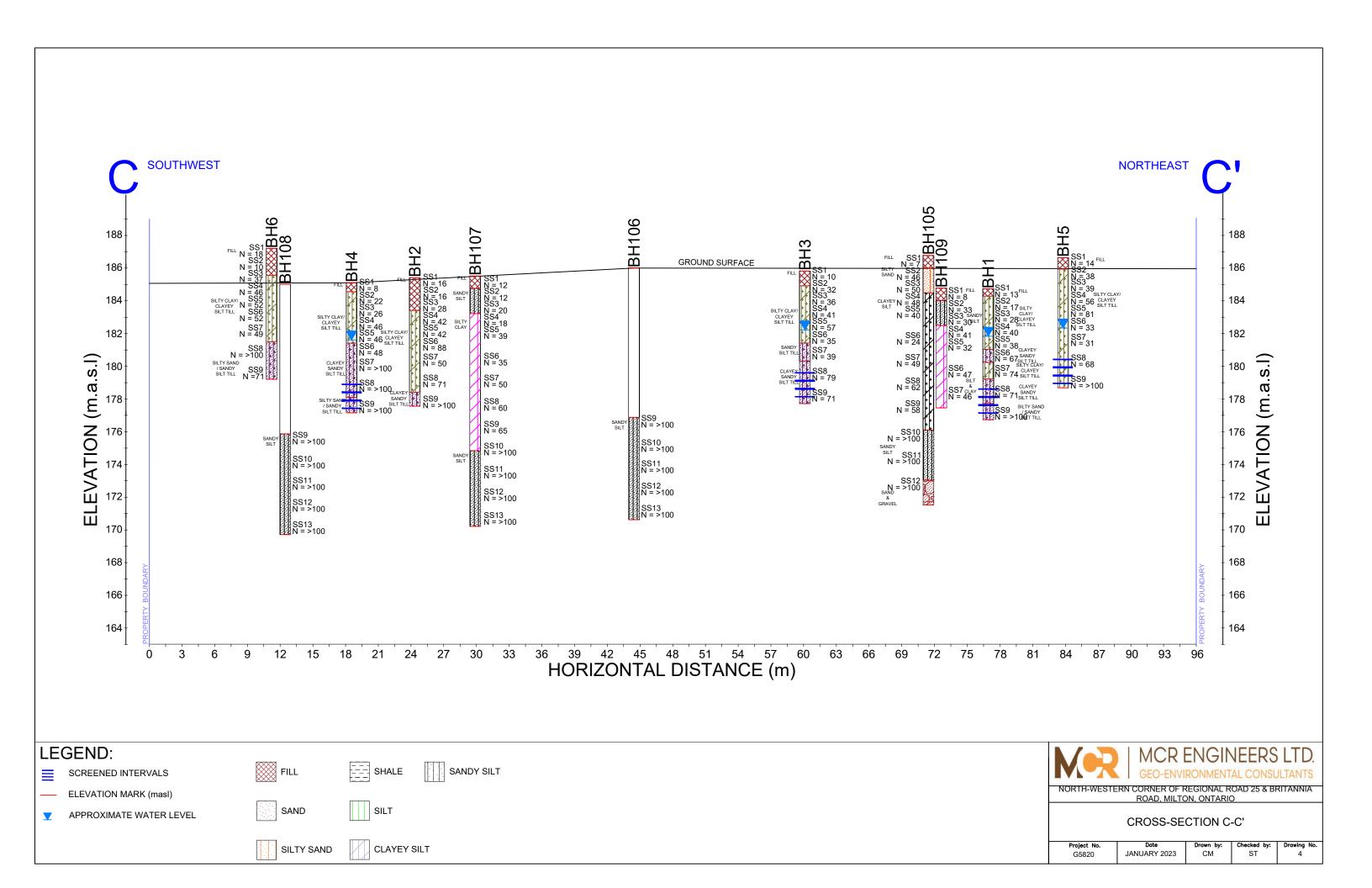
Lad Rak, P.Eng., M.Eng., QPesa

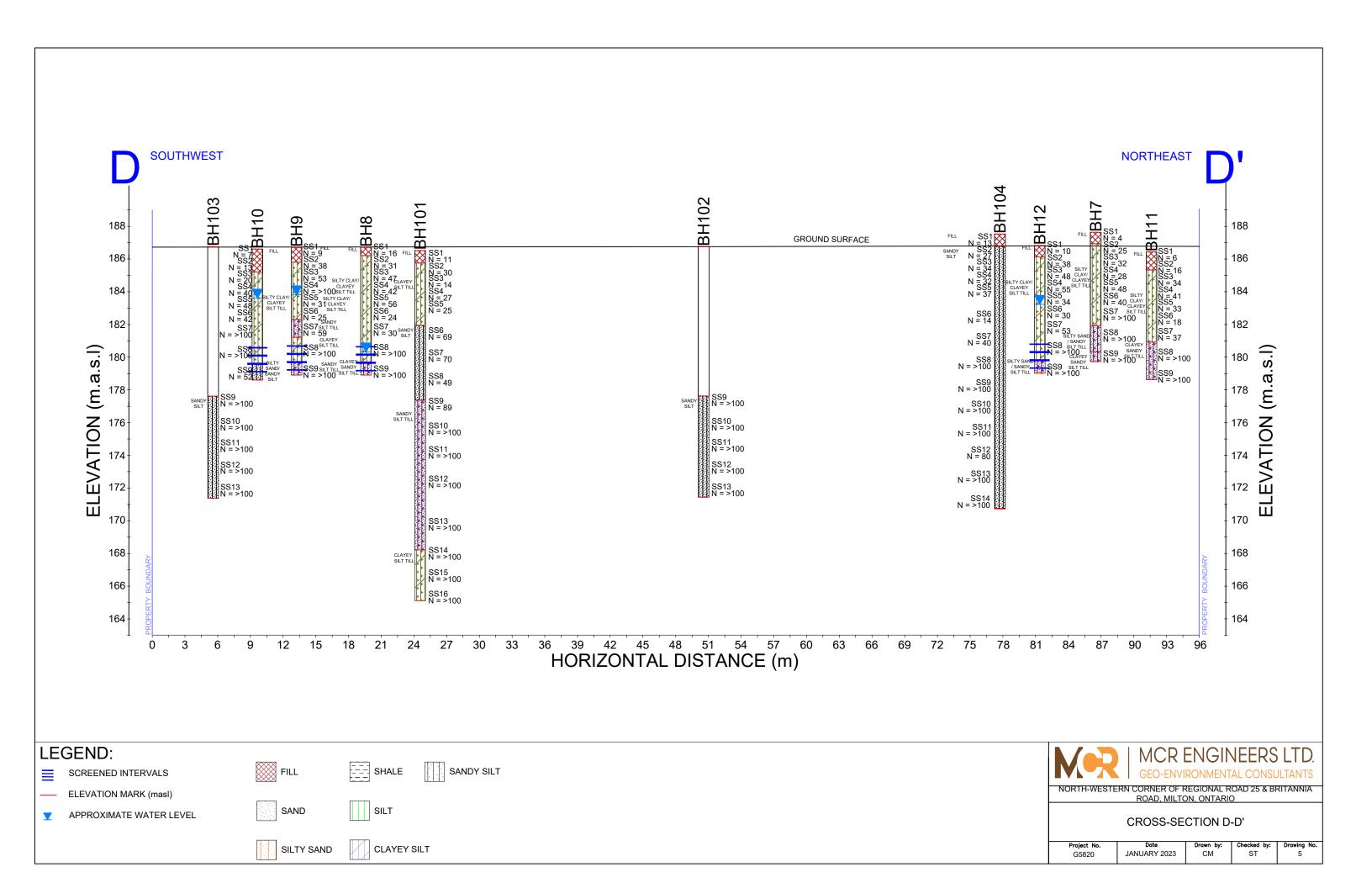
Date of Issue: January 19, 2024

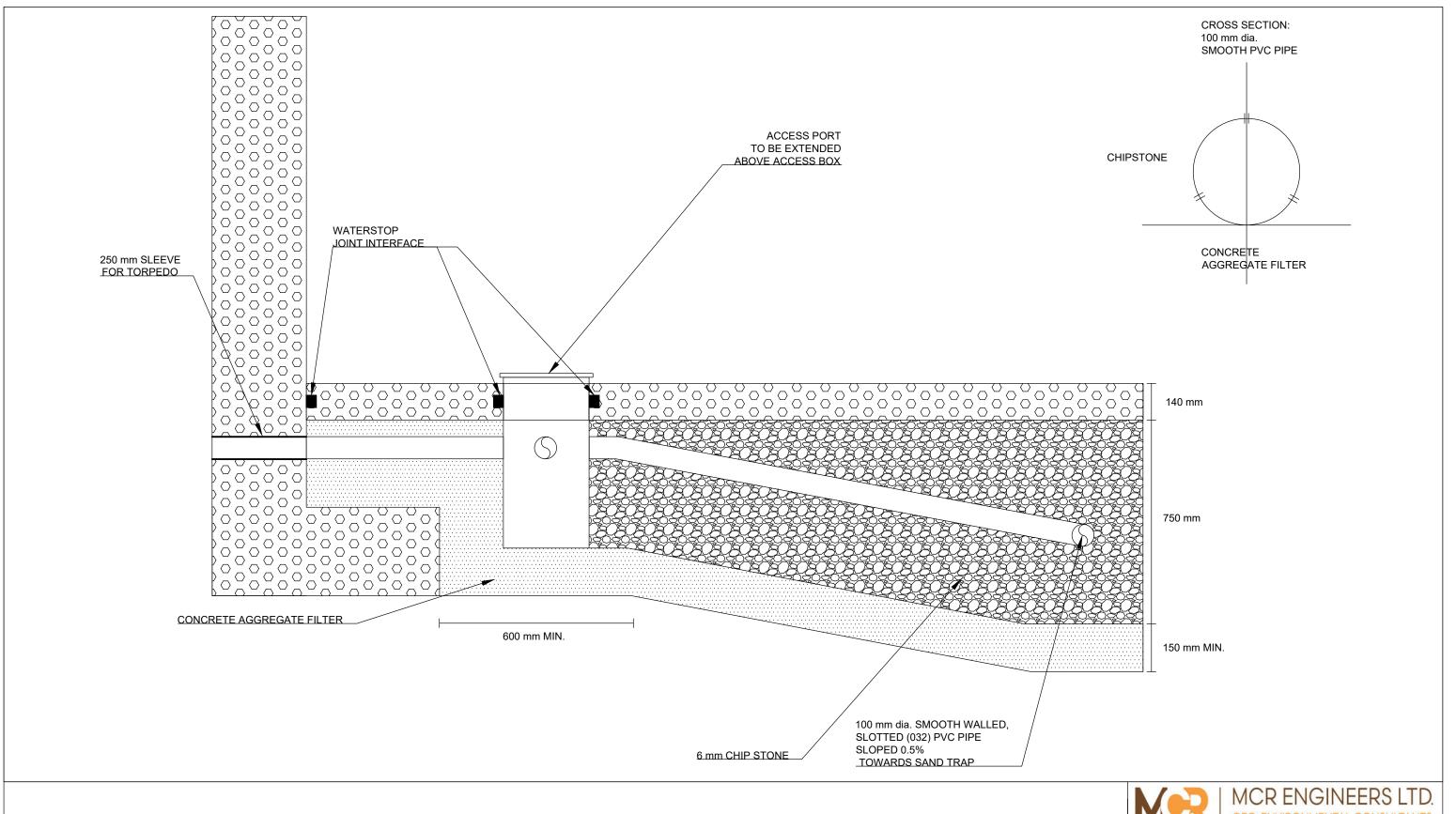














TABLES

MCR ENGINEERS LTD. **GEO-ENVIRONMENTAL CONSULTANTS**

TABLE 1			
CONSTRUCTIO	N DETAILS AND ELE	VATION OF MON	ITORING WELLS

	GROUND	LEVATION OF MONI		1		1	I	INSIDE	
MONITORING WELL ID	SURFACE ELEVATION	WATER LEVEL	GROUNDWATER ELEVATION (masl)	MEASUREMENT	DEPTH OF WELL	DEPTH OF BENTONITE	LENGTH OF SCREEN	DIAMETER OF PIPE (mm)	TOP OF MONITORING WELL
	(masl)	(mbgs) 2.80	(masl) 181.90	(mm/dd/yyyy) 3/9/2018	(mbgs)	(mbgs)	(m)	(mm)	
		2.90	181.80	3/16/2018					
		3.10	181.60	12/5/2022					
		2.80	181.90	1/6/2023					
		2.78	181.92	2/8/2023					
		2.62	182.08 182.48	3/8/2023 4/6/2023					
BH 1	184.70	2.52	182.18	5/8/2023	7.70	5.70	3.05	50	STICK-UP
		2.50	182.20	6/16/2023					
		2.52	182.18	7/12/2023					
		2.38	182.32	8/11/2023					
		2.60	182.10	9/15/2023					
		2.79	181.91 181.88	10/182023 11/17/2023					
		3.70	182.10	3/9/2018					
		3.60	182.20	3/16/2018					
		3.96	181.84	12/5/2022					
		3.74	182.06	1/6/2023					
		3.05	182.75 183.07	2/8/2023 3/8/2023					
		2.73 2.35	183.45	4/6/2023					
BH 3	185.80	2.40	183.40	5/8/2023	7.70	5.70	3.05	50	STICK-UP
		2.83	182.97	6/16/2023					
		2.90	182.90	7/12/2023					
		2.78	183.02	8/11/2023					
		2.86	182.94	9/15/2023					
		3.28	182.52	10/182023					
		3.32 3.60	182.48 181.50	11/17/2023 3/9/2018					
		3.50	181.60	3/9/2018					
		3.33	181.77	12/5/2022	,				
		3.26	181.84	1/6/2023			3.05		
		2.95	182.15	2/8/2023					
		2.76	182.34	3/8/2023	,				
BH 4	185.10	2.35	182.75 182.75	4/6/2023 5/8/2023	7.70	5.70		50	STICK-UP
		2.35	182.75	6/16/2023					
		2.49	182.61	7/12/2023					
		2.27	182.83	8/11/2023					
		2.51	182.59	9/15/2023	:				
		2.78	182.32	10/182023					
		2.84 4.20	182.26 182.40	11/17/2023 3/9/2018					
		4.30	182.30	3/16/2018					
		4.45	182.15	12/5/2022					
	186.60	0.74	185.86	1/6/2023		5.70	3.05	50	STICK-UP
		1.87	184.73	2/8/2023	7.70				
		1.30	185.30	3/8/2023					
BH 5		1.06 3.01	185.54 183.59	4/6/2023 5/8/2023					
		3.68	182.92	6/16/2023					
		3.65	182.95	7/12/2023					
		3.46	183.14	8/11/2023					
		3.67	182.93	9/15/2023					
		3.94	182.66	10/182023					
		4.02 DRY	182.58	11/17/2023 3/9/2018					
BH 8	186.70	6.40	180.30	3/16/2018	7.70	5.70	3.05	50	STICK-UP
		DESTROYED		12/5/2022					
		2.90	183.80	3/9/2018					
		2.90	183.80	3/16/2018					STICK-UP
		3.92	182.78 182.94	12/5/2022					
		3.29	183.41	2/8/2023					
		2.96	183.74	3/8/2023		5.70			
BH 9	186.70	2.58	184.12	4/6/2023	7.70		3.05	50	
Bira	100.70	2.53	184.17	5/8/2023	1.70	5.70		50	
		2.55	184.15	6/16/2023					
		2.50	184.20 184.53	7/12/2023 8/11/2023					
		2.57	184.13	9/15/2023					
		2.77	183.93	10/182023					
		2.88	183.82	11/17/2023	·				
		2.90	183.70	3/9/2018					
		3.00	183.60	3/16/2018	,				
		3.15 2.94	183.45 183.66	12/5/2022 1/6/2023					
		2.94	183.66	2/8/2023					
		2.71	183.89	3/8/2023					
BH 10	186.60	2.42	184.18	4/6/2023	7.70	5.70	3.05	50	STICK-UP
PLI IA	100.00	2.65	183.95	5/8/2023	7.70	5.70	3.03	50	STICK-UP
		2.60	184.00	6/16/2023					
		2.58	184.02	7/12/2023					
		2.53 2.64	184.07 183.96	8/11/2023 9/15/2023					
		2.84	183.76	10/182023					
		2.93	183.67	11/17/2023	·				
		3.60	183.20	3/9/2018					
		3.60	183.20	3/16/2018	,				
		4.03	182.77	12/5/2022	Į				
		3.72 3.55	183.08 183.25	1/6/2023 2/8/2023					
		3.29	183.51	3/8/2023					
DU: 40	400.5-	2.97	183.83	4/6/2023			0.05		07101
BH 12	186.80	3.23	183.57	5/8/2023	7.70	5.70	3.05	50	STICK-UP
		3.18	183.62	6/16/2023					
		3.13	183.67	7/12/2023					
		2.98	183.82	8/11/2023	,				
		3.25	183.55 183.38	9/15/2023 10/182023					
		3.42	183.34						
Min	184.70			11/17/2023	7.70	-	-	-	-
Min Max Average	184.70 186.80 186.13	3.46	183.34		7.70 7.70 7.70	-	-	-	-

MOTE:
mbgs - meters below ground surface
masi - meters above sea level
N/A - Not Applicable
NF - Not Found

MCR ENGINEERS LTD. GEO-ENVIRONMENTAL CONSULTANTS

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - HALTON REGION SEWERS BY-LAW DISCHARGE CRITERIA By-Law No. 02-03
MCR JOB#: G5820

SITE ADDRESS: Northwestern Corner of Regional Road 25 & Britannia Road, Milton, ON

PARAMETER	UNITS	LIMITS FOR STORM	LIMITS FOR SANITARY	BH 1	BH 10	
.,		SEWER DISCHARGE	DISCHARGE	08-Dec-22	08-Dec-22	
рН	pH Units	6.5 - 8.5	5.5 - 10.0	8.22	8.09	
Total Suspended Solids	mg/L	-	350	11.8	35.6	
Fluoride (F-)	mg/L	-	10	0.182	0.246	
Total Kjeldahl Nitrogen (TKN)	mg/L	-	100	0.112	0.259	
Total Phosphorus (P)	mg/L	-	10	0.0167	0.0244	
Sulfate (SO4)	mg/L	-	1500	305	385	
Total Cyanide (CN)	mg/L	-	2	<0.0020	<0.0020	
Escherichia Coli	CFU/100mL	200	-	<1	<1	
Total Aluminum (AI)	mg/L	-	50	0.387	0.514	
Total Antimony (Sb)	mg/L	-	5	<0.00100	<0.00100	
Total Arsenic (As)	mg/L	-	1	0.00461	0.00555	
Total Beryllium (Be)	mg/L	-	5	<0.000200	<0.000200	
Total Cadmium (Cd)	mg/L	-	0.7	<0.0000500	<0.0000500	
Total Chromium (Cr)	mg/L	-	5	<0.00500	<0.00500	
Total Cobalt (Co)	mg/L	-	5	0.00108	0.00144	
Total Copper (Cu)	mg/L	-	3	<0.00500	<0.00500	
Total Iron (Fe)	mg/L	-	50	0.777	0.879	
Total Lead (Pb)	mg/L	-	3	<0.000500	0.000546	
Total Manganese (Mn)	mg/L	-	5	0.51	0.304	
Total Mercury (Hg)	mg/L	-	0.01	<0.000050	<0.0000050	
Total Molybdenum (Mo)	mg/L	-	5	0.00532	0.0041	
Total Nickel (Ni)	mg/L	-	3	<0.00500	<0.00500	
Total Selenium (Se)	mg/L	-	1	<0.000500	<0.000500	
Total Silver (Ag)	mg/L	-	5	<0.000100	<0.000100	
Total Tin (Sn)	mg/L	-	5	0.00198	0.00173	
Total Titanium (Ti)	mg/L	-	5	0.00848	0.0109	
Total Zinc (Zn)	mg/L	-	3	<0.0300	<0.0300	
Biological Oxygen Demand	mg/L	-	300	<3.0	3.4	
Total Oil & Grease (Animal/Vegetable)	mg/L	-	150	<5.0	<5.0	
Total Oil & Grease Mineral/Synthetic	mg/L	-	15	<5.0	<5.0	
Phenols-4AAP	mg/L	-	1	<0.0010	0.0012	
Benzene	μg/L	-	10	<0.50	<0.50	
Chloroform	μg/L	-	40	<0.50	<0.50	
1,4-Dichlorobenzene	μg/L	-	80	<0.50	<0.50	
Dichloromethane (Methylene Chloride)	μg/L	-	2000	<1.0	<1.0	
Ethylbenzene	μg/L	-	160	<0.50	<0.50	
Tetrachloroethylene	μg/L	-	1000	<0.50	<0.50	
Toluene	μg/L	-	16	<0.50	<0.50	
Trichloroethylene	μg/L	-	400	<0.50	<0.50	
Naphthalene	μg/L	-	140	97.4	103	

Note:

BOLD	Exceeds Criteria - Halton Region Sanitary By-Law
BOLD	Non-Detect Exceeds Criteria - Halton Region Sanitary By-Law
BOLD	Exceeds Criteria - Halton Region Storm By-Law
BOLD	Non-Detect Exceeds Criteria - Halton Region Storm By-Law

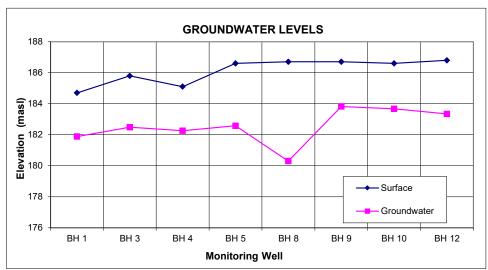
Project: Proposed Residential Development

Location: Northwest corner of Regional Road 25 & Britannia Road, Toronto, ON

Date: January-24 Project #: G5820

TABLE 3
GROUNDWATER MONITORING DATA

Borehole	Surface	Water Level		Surface Water Lev		Monitoring Date	
Number	Elevation	Depth	Elevation		NOTES		
	(masl)	(mbgs)	(masl)	(mm/dd/yyy)	NOTES		
BH 1	184.70	2.82	181.88	11/17/2023			
BH 3	185.80	3.32	182.48	11/17/2023			
BH 4	185.10	2.84	182.26	11/17/2023			
BH 5	186.60	4.02	182.58	11/17/2023			
BH 8	186.70	6.40	180.30	3/16/2018			
BH 9	186.70	2.88	183.82	11/17/2023			
BH 10	186.60	2.93	183.67	11/17/2023			
BH 12	186.80	3.46	183.34	11/17/2023			
Average	186.13	3.58	182.54				
Max			183.82				



Project: Proposed Residential Development

Location: Northwest corner of Regional Road 25 & Britannia Road, Toronto, ON

Date: January-24 Project #: G5820

TABLE 4
DISCHARGE ESTIMATION OF CONSTRUCTION DEWATERING

Site Parameters	North Block	South Block	Units
Initial Water Level before Dewatering	182.54	182.54	
Lowest Water Level during Construction Dewatering	178.75	178.55	` '
Length of Site X	165.00	210.00	(m)
Width of Site W	80.00	82.00	(m)
Equivalent Radius r _e	64.82	74.04	(m)
Hydraulic Conductivity of Aquifer (k)	0.40	0.40	(m/day)
Aquifer Bottom Elevation	176.75	176.55	(m)
Applied Radius of Influence (Ro)	24.47	25.76	(m)
Height btw Initial Water Level and Aquifer Bottom (H)	5.79	5.99	(m)
Height btw Lowest Water Level and Aquifer Bottom (hw)	2.00	2.00	(m)
Radius of Influence (R)	89.29	99.80	(m)
Factor of Safety (FS)	1.50	1.50	

$$Q = \frac{\pi k (H^2 - h_w^2)}{Ln(R/r)}$$

Estimated steady-state discharge of dewatering	174	201 (m ³ /day)
	32	37 (USG/min)

Project: Proposed Residential Development

Location: Northwest corner of Regional Road 25 & Britannia Road, Toronto, ON

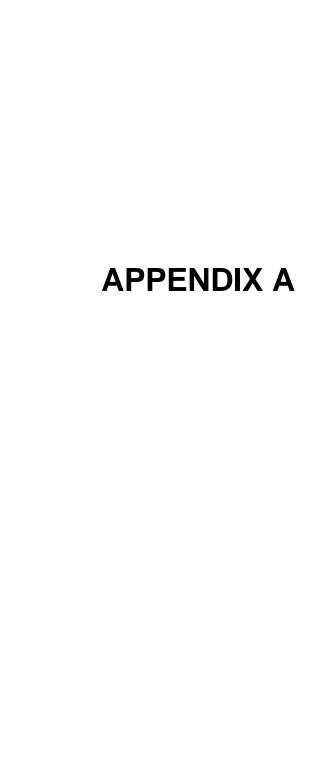
Date: January-2 Project #: G5820

TABLE 5 DISCHARGE ESTIMATION OF PERMANENT DRAINAGE SYSTEM

Site Parameters	North Block	South Block	Units
Initial Water Level before Dewatering	182.54	182.54	(m)
Lowest Water Level under PDS conditions	180.75	180.55	(m)
Length of Site X	165.00	210.00	(m)
Width of Site W	80.00	82.00	(m)
Equivalent Radius r _e	64.82	74.04	(m)
Hydraulic Conductivity of Aquifer (k)	0.40	0.40	(m/day)
Aquifer Bottom Elevation	179.75	179.55	(m)
Applied Radius of Influence (Ro)	11.56	12.85	(m)
Height btw Initial Water Level and Aquifer Bottom (H)	2.79	2.99	(m)
Height btw Lowest Water Level and Aquifer Bottom (hw)	1.00	1.00	(m)
Radius of Influence (R)	76.38	86.89	(m)
Factor of Safety (FS)	1.50	1.50	

$$Q = \frac{\pi k (H^2 - h_w^2)}{Ln(R/r)}$$

Estimated steady-state discharge of dewatering	78	94 (m³/day)
	14	17 (USG/min)



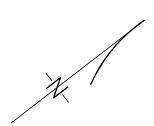
179 180 187.00 (C) 181 ____ ,-- 182 STREET WIDENING 183 184 BLOCK 262 BLOCK PART 185 PLAN 20R-20160 PART OF LOT 6, CONCESSION 2, NEW SURVEY //wⁱll. 186 BLOCK 187 BLOCK 188 189 ---() 190 - 2 188.00-NEW SURVEY) -(7) ()191 25, TRANSFERRED TO THE Ω. BY-LAW 10-04 (UNREGISTERED)) 192 PART 00-1440/97, PLAN 20R-19779 CV. PLAN ZOR-10 \bigcirc AND 193 104) 2 A / ORDER-IN-COUNCIL OC NRT 2, PLAN P-1738-10. BETWEEN CONCESSIONS 2 194 ROAD 195 196 (PART 2, PL/ ALLOWANCE BETWEEN C (FORMERLY THE KING'S HIGHWAY MUNIOPALITY OF HALTON BY ORDER-<₹ 197 PART PLAN 20R-20160 (BY REGIONAL REGIONAL PART OF LOT 6, CONCESSION 2, NEW SURVEY Ω 198 (ROAD ETHERIDGE A VENUE 33 \odot BLOCK 137 Tol of BLU. <1 BLOCK PART Ω. PLAN 20R--20160 \bigcirc α : PART OF LOT 6, Ω. CONCESSION 2, NEW SURVEY 111 © RADY-PENTEK & EDWARD SURVEYING LTD., O.L.S. 2018.

PLAN OF TOPOGRAPHY

SCALE 1:1000

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DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.



LEGEND

−W− −GR−	DENOTES OVERHEAD WIRE DENOTES GUIDE RAIL METAL
UP	DENOTES UTILITY POLE
INV	DENOTES INVERT ELEVATION
GLB	DENOTES GROUND LEVEL BOX UTILITY
МН	DENOTES MANHOLE
MHW	DENOTES MANHOLE WATER
MHSA	DENOTES MANHOLE SANITARY
MHST	DENOTES MANHOLE STORM
LS	DENOTES LAMP STANDARD
CB	DENOTES CATCH BASIN
	DENOTES CURB INLET
WV	DENOTES WATER VALVE
Ø	DENOTES DIAMETER
\downarrow	DENOTES ANCHOR

BOUNDARY NOTE

THIS IS NOT A PLAN OF SURVEY. BOUNDARIES ARE NOT CERTIFIED BY THIS PLAN, AND ARE HAS BEEN TAKEN FROM R-PE CAD FILE Nos. 14014S8F AND 14235S10.

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC AND REFERRED TO THE MTO BENCHMARK NO 00819828156 HAVING AN ORTHOMETRIC ELEVATION OF 187.173 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD—1928:1978).

BENCHMARK LOCATED ON A CONCRETE AND STEEL BRIDGE CARRYING HWY 25 OVER SIXTEEN MILE CREEK, 3.2 KM SOUTH OF HWY 25, AND CPR OVERPASS AT MILTON, 71.0 M SOUTH OF DRIVEWAY TO SARGENT FARMS. TABLET IS SET HORIZONTALLY IN EAST FACE OF CONCRETE COPING, 7.1 M EAST OF CENTRELI NE OF HWY 25, 87 CM NORTH OF SOUTHEAST END OF BRIDGE, 10 CM BELOW TOP OF COPING, 54 CM ABOVE GROUND.

FIELD OBSERVATIONS

THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE $\frac{27}{}^{th}$ DAY OF MARCH , 2018

AMENDED PLAN TO SHOW ADDITIONAL TOPOGRAPHIC FEATURES ON THE HOLDOUT PARCEL WITH FIELD OBSERVATIONS COMPLETED THE $\frac{13}{10}^{th}$ DAY OF $\frac{13}{10}^{th}$ APRIL , 2018

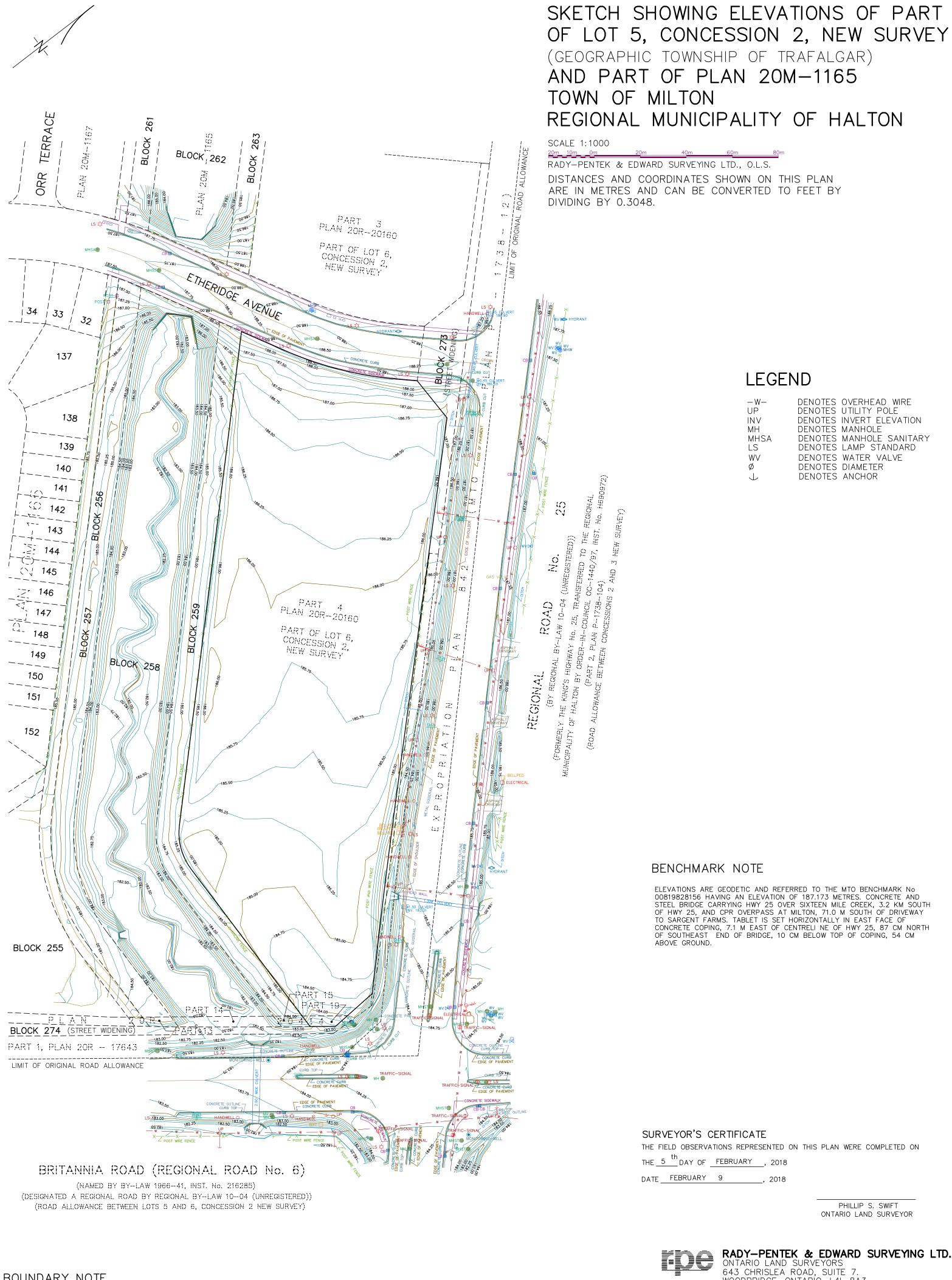


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JOB No. 14-014 CAD FILE 14014tp22a



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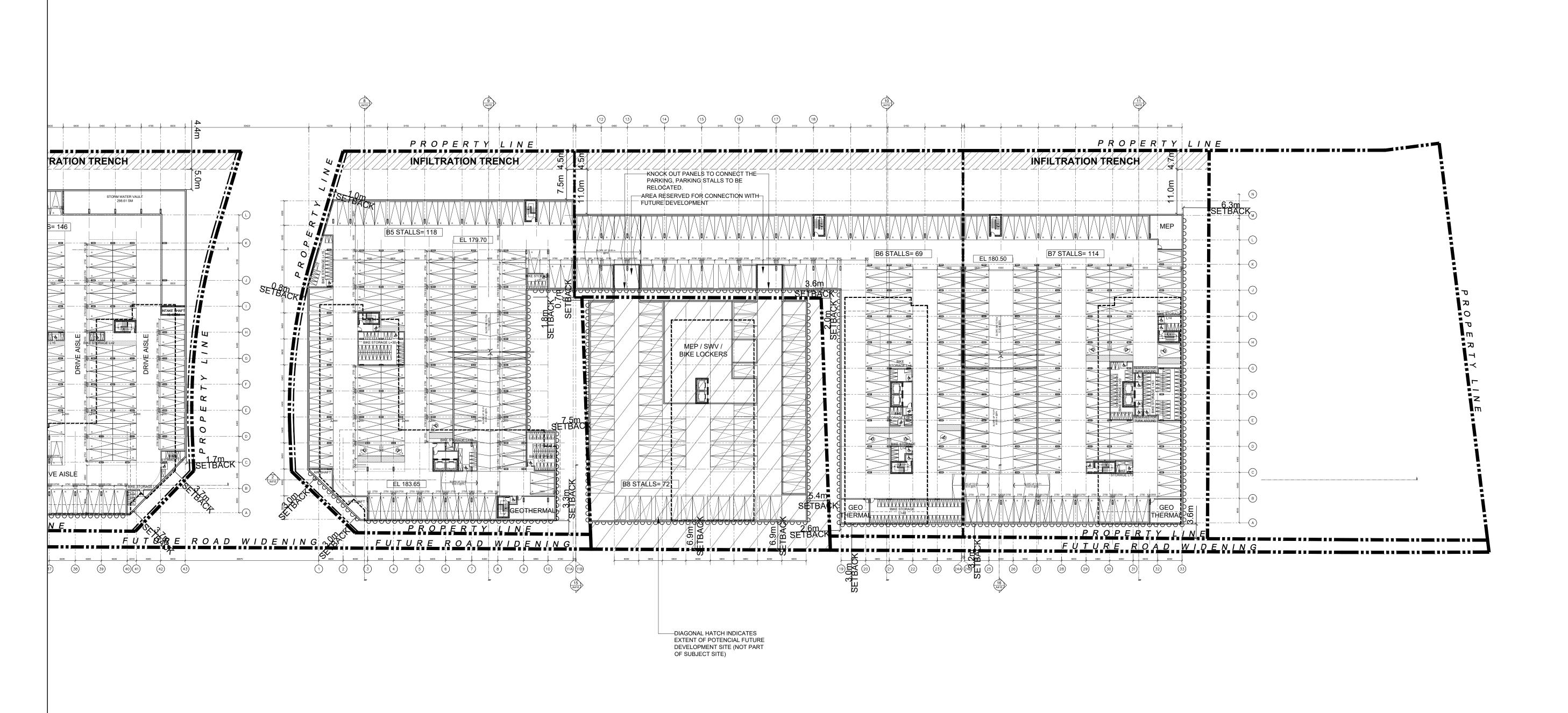
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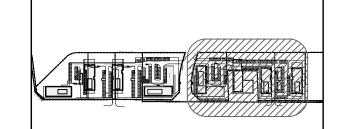
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Feb. 12, 2018 - 16:58







KEYPLAN

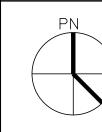
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FRAMGARD MATTAMY

MILTON WEST, ONTARIO

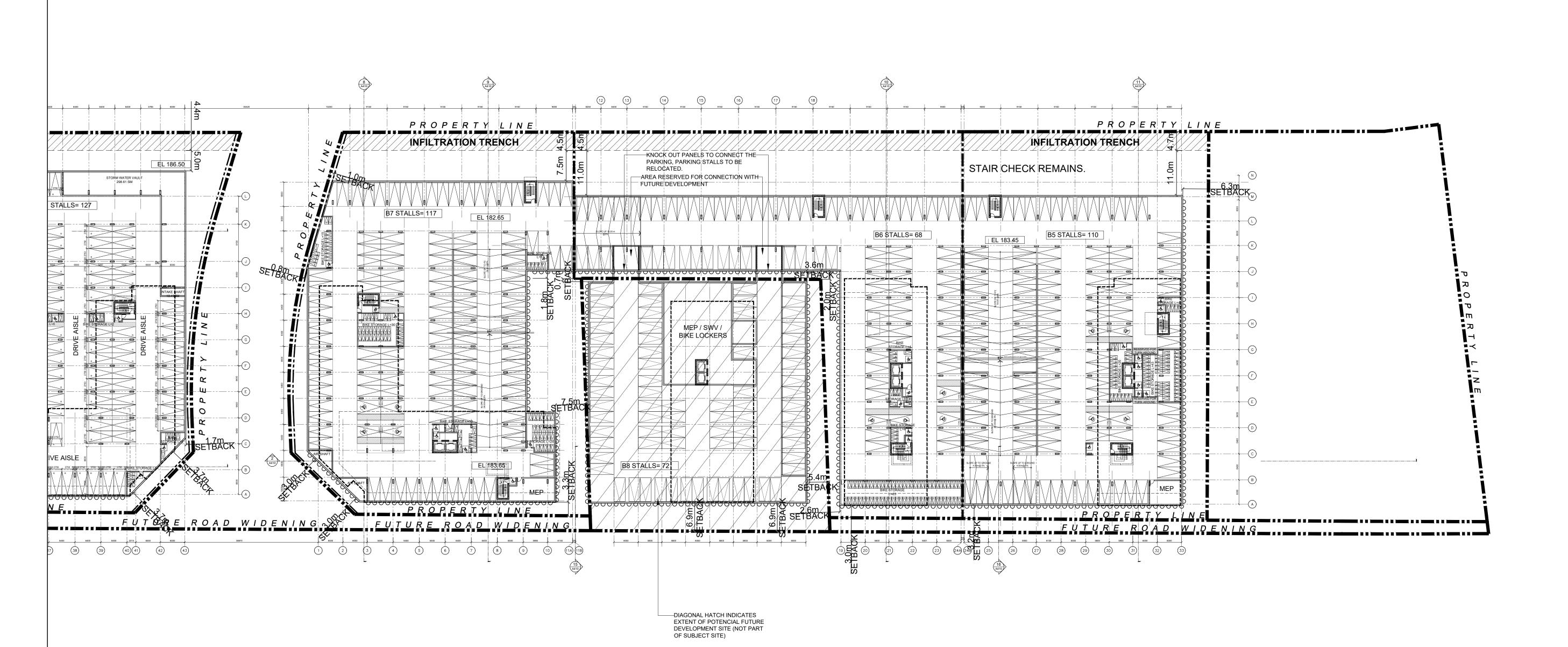


1:500 2024-01-16

NORTH BLOCK PARKING LEVEL P2

Project No. **22-210**

A203



KEYPLAN

REISSUED FOR ZBA 31 AUGUST 2023 ISSUED FOR ZBA 28 JULY 2023

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CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS ON THE JOB.

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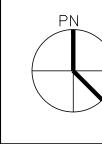
130 QUEENS QUAY EAST, SUITE 700, WEST TOWER
TORONTO, ON CANADA M5A 0P6

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INFO@COREARCHITECTS.COM

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FRAMGARD MATTAMY

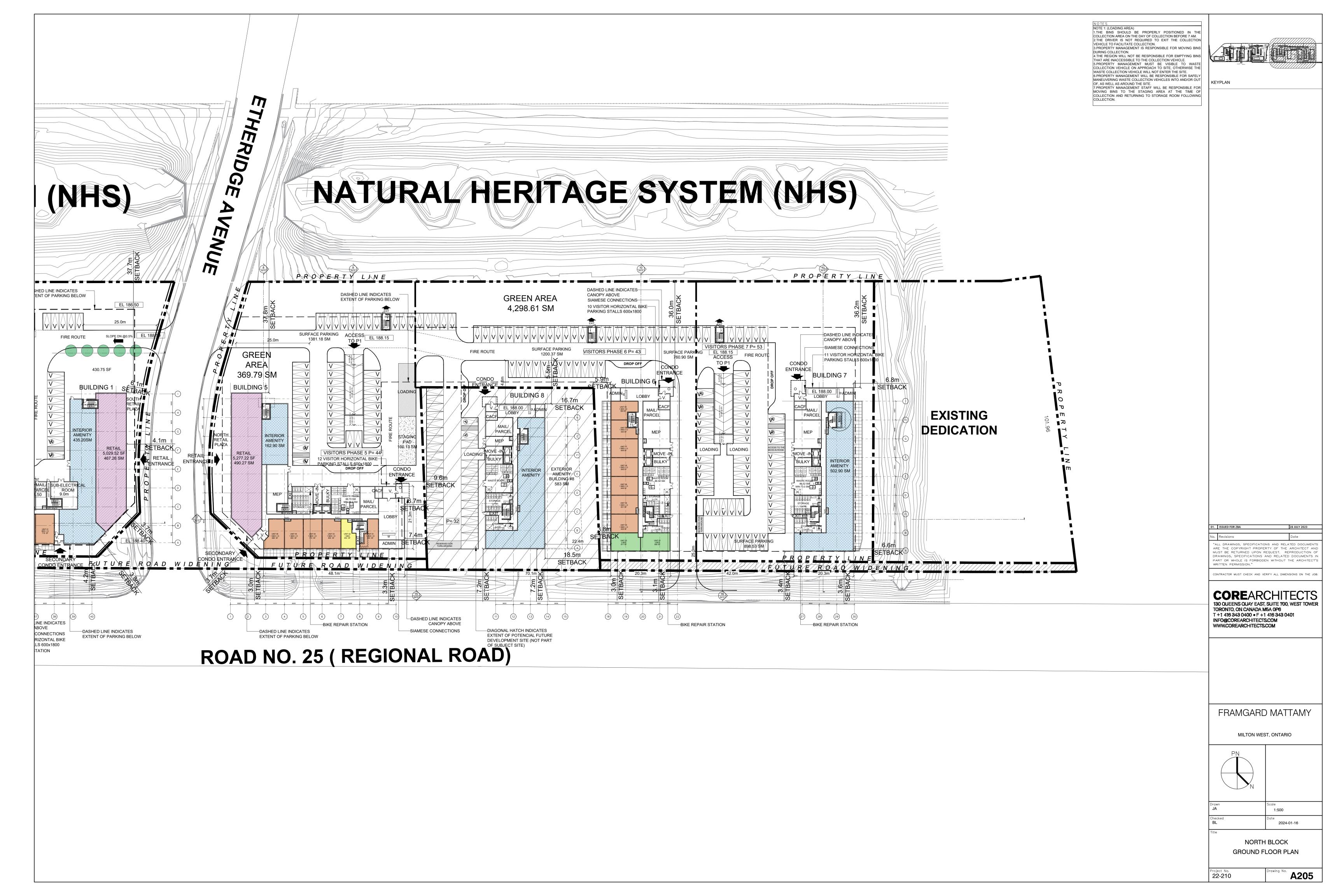
MILTON WEST, ONTARIO

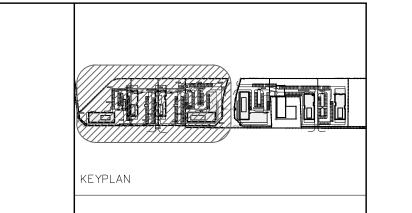


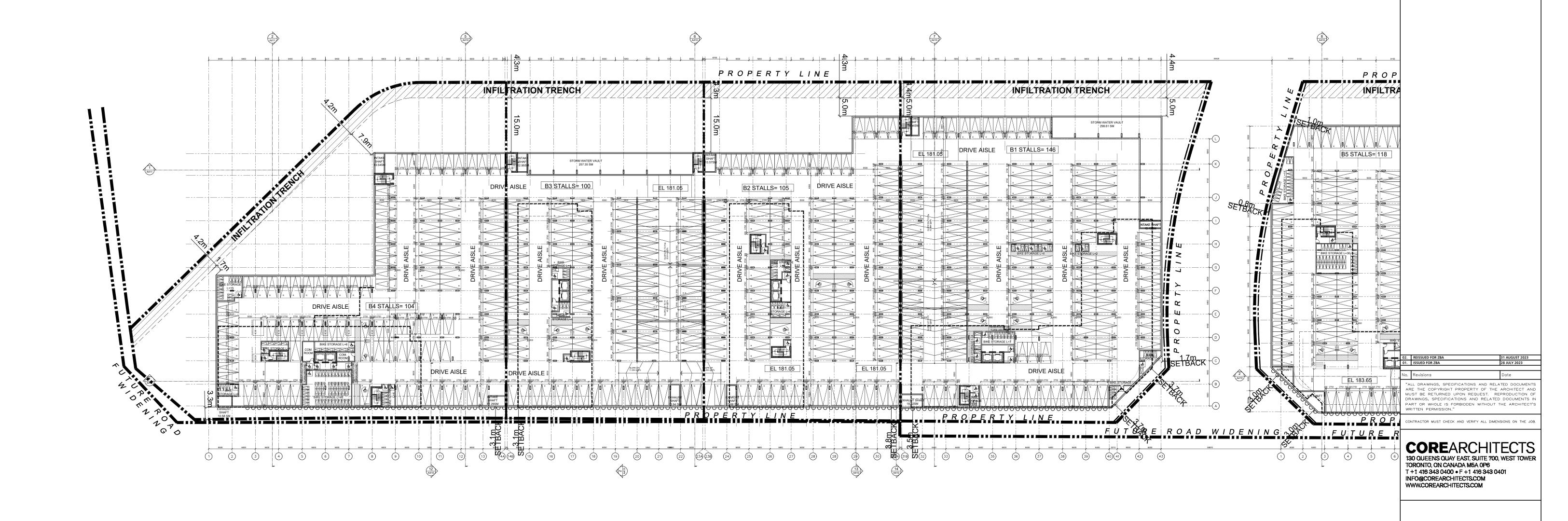
> NORTH BLOCK PARKING LEVEL P1

Project No. Dro

Drawing No. **A204**

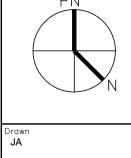






FRAMGARD MATTAMY

MILTON WEST, ONTARIO



 Drawn
 Scale

 JA
 1:500

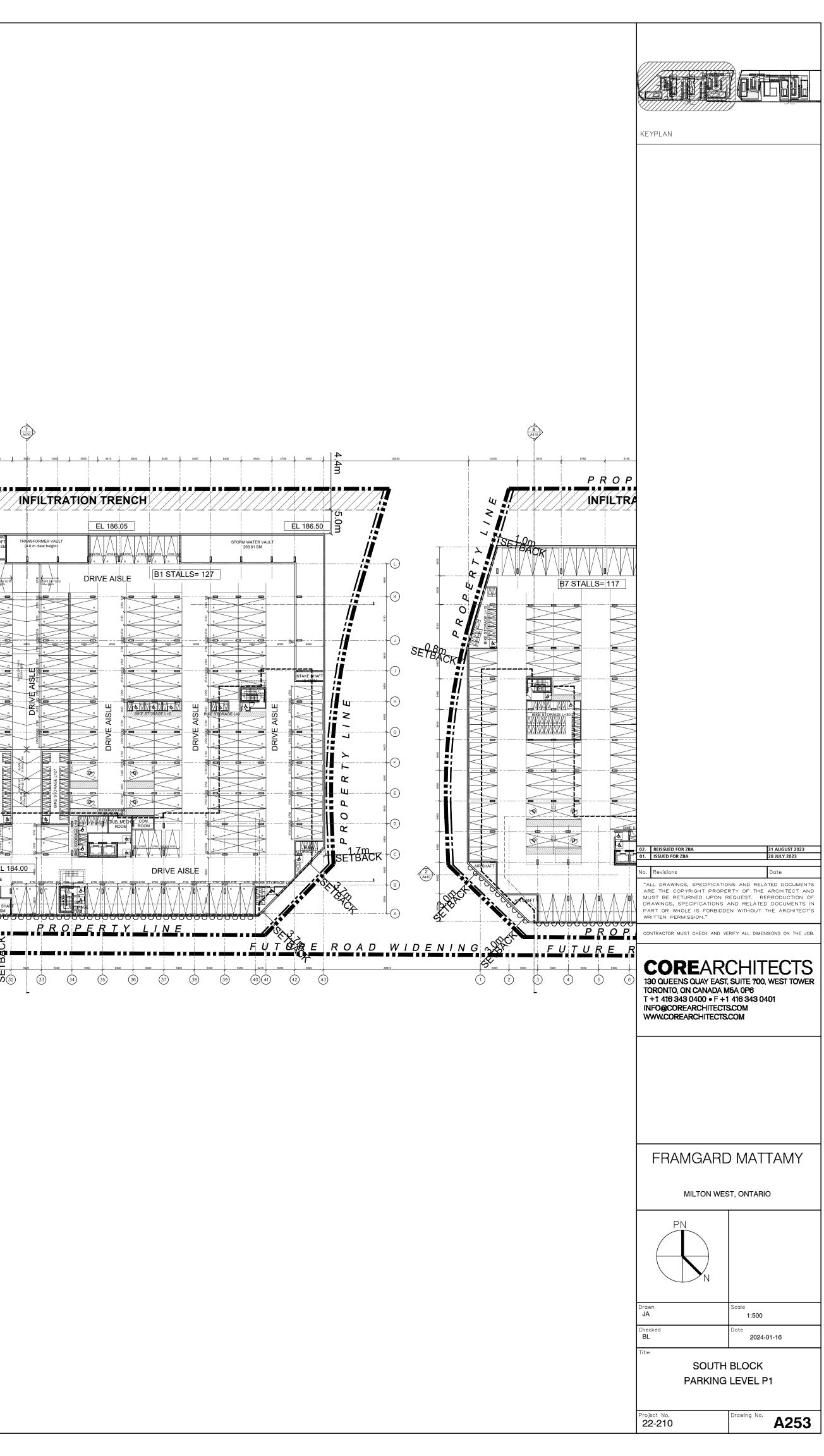
 Checked
 Date

 BL
 2024-01-16

SOUTH BLOCK PARKING LEVEL P2

Project No. 22-210

Drawing No. **A252**



EL 186.50

B DRIVE AISLE



PROJECT : G5820

LOCATION : North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario

STARTED : December 20, 2022 COMPLETED : December 20, 2022

WATER LEVEL:

m bgs

MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1
DATUM Geodetic

	욷			—				_	(ppm)		8		nat V rem V	- •		- X	₹ĕ∣	PIEZOMETER
(metres)	BORING METHOD	DESC	CRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	100 200 % LEL - (hex 20 40	kane)	400 	WA7	TER CC	NTENT	50 8 -, PERCI 	0 ENT wl 0	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATIOI
\Box		GROUND SURFACE			186.50								10	3.9				
		FILL: clayey silt, trace of grinclusions, rootlets, di CLAYEY SILT TILL:			_ 185.74 0.76	2	SS	30					14.5 O	5.9				
		trace of sand and gra stiff.	vel, reddish brown, moist, very			4	SS	14 27					12.7 O 14					
					101 02	5	SS	25				F.4	0					
		SANDY SILT: some clay and gravel very dense to dense.	reddish brown, moist to wet,		_ 181.9 <u>3</u> 4.57	6	SS					5.4 O 5.5 O						
			47.00			7	SS					5.9						
	RING	- some clayey silt sea	ms at 7.62 m.		_ 177.36. 9.14	8	SS					0	14.	8				
o	R BOF	trace of gravel, clay, r	eddish brown, most to wet,		9.14	9	SS					6.8	0					
2	POWE	- moist, shale fragme	nts from 10.67 m to 13.72 m.				SS					٥	9.2					
1		- shale fragments at 1	3.87 m.				SS						13.6 O					
6						-13 -	SS	>100				8 0	3.3					
8		CLAYEY SILT TILL: trace of sand and gra	vel, reddish brown, moist, hard.		_ 168.21 _ 18.29	-14 -	SS	>100				Č	3.9					
0		- grey shale fragment	s from 19.81 m to 21.39 m.			-15 -	- 88	>100				Ċ	9.3					
2		End of Borehole Note:			_ 165.11. 21.39	-16-	SS	>100					14.1 O					
4																		
5																		
8																		
			WATER ELEVATIO															

WATER LEVEL:

CHECKED : CM

PROJECT : G5820

LOCATION : North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario

MC CLYMONT & RAK ENGINEERS, INC. SHEET 1 OF 1

STARTED : December 21, 2022 COMPLETED : December 21, 2022

DATUM Geodetic

Description	- 1		TED : December 21, 2022						ODCAN	UIC V	ADOLIE	DEAL	DINICC	CUEA	D CT	ENCT	III. Cu	VD-		JIVI C	Geodetic
DESCRIPTION Section	, l	ДQ	SOIL PROFILE			SA	MPL	ES		NIC V	APUUF	K KEAI		SHEA	nat \	K⊏NGT /- ♣ /- ♣	п: Сu,	Q - X	: _,	<u>ي</u> [
STRAIGHT DRILLING TO 9.14 m. 189.75	es)	ÆT⊦		TO.		~		3m		20	0 30	00 4		2	1em 1	40		80	, ANC	STIN	PIEZOMETER OR
GROWN SUPFACE 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186.75 186	metr	<u>6</u>	DESCRIPTION	A PL		眉	띮	S/0.						-	_	ONTE	IT PE	_	⊢ Ĕ	Ű	STANDPIPE
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11 SS 100 0 0 13.3 0 0 0 0 0 0 0 0 0			brown, wet, very dense.																		
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	Ī		End of Borehole	1	15.32	13	-55	7100													
	3		Note:			1															
GROUNDWATER ELEVATIONS																					
GROUNDWATER ELEVATIONS						1															
GROUNDWATER ELEVATIONS						1															
GROUNDWATER ELEVATIONS SHALLOW/SINGLE INSTALLATION DEEP/DUAL INSTALLATION LOGGED: BR																					
GROUNDWATER ELEVATIONS	3					1															
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GROUNDWATER ELEVATIONS																					
GROUNDWATER ELEVATIONS						1															
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¥ SHALLOW/SINGLE INSTALLATION DEEP/DUAL INSTALLATION LOGGED : BR																					
				N						TAL	LATI	ON			LOGG	ED	: В	R			
WATER LEVEL: m bgs WATER LEVEL: CHECKED : CM			WATER LEVEL: m bgs		V	νAΤ	ER L	_EVE	:L:						CHEC	KED	: C	М			

G5820 **PROJECT**

North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario LOCATION

December 21, 2022 STARTED SHEET 1 OF 1 COMPLETED : December 21, 2022 DATUM Geodetic

щ	C	2	SOIL PROFILE			SA	MPL	ES	ORGAN (ppm)	VIC V	'APOUF		DINGS ⊗	SHEA	R STRE	NGTH: - ∯ - ●	Cu, KF	Pa Q - X	ن ا	
DEPTH SCALE (metres)	BORING METHOD			LOT		~		3m	100	20	00 30		00		rem V 0 4		30	J - ▲ B0	ADDITIONAL LAB. TESTING	PIEZOMETER OR
PTH (met	U		DESCRIPTION	TAP	ELEV.	NUMBER	TYPE	BLOWS/0.3m	% LEL	- (he	exane)			WAT	ER CC	NTENT	PERC	ENT	B. 75	STANDPIPE INSTALLATION
DE	BOR B			STRATA PLOT	(m)	N	-	BLO\	20	4	0 6	0 8	30	wp 1	0 2	0 3	30	l wl 40	\[\]	o.ı, i.e.b i.i.o.i
			GROUND SURFACE	Ű	186.75															
			STRAIGHT DRILLING TO 9.14 m.																	-
																				<u>.</u>
: -2																				
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<u>-</u> 4] _
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-6		띪																		<u>-</u>
	SING	AUG																		-
[BOF	TEM																		-
-	POWER BORING	HOLLOW STEM AUGER																		
- 8		10L																		_
- -					177 61									۶ ا	5					-
			SANDY SILT: some clay, some gravel, shale fragments, reddish brown, wet, very dense.		177.61 9.14	9	SS	>100						Ŏ	.5					
- 10			brown, wet, very dense.																	_
															2					
-						10	SS	>100						0	_					-
-																				
- 12															44.4					<u>-</u>
						11	SS	>100							11.1 O					
-																				-
															11					
- -14						12	SS	>100							þ.,					_
- -																				
-															12.7 O					- -
-	H		End of Borehole	11:1:1	171.38 15.37	13	SS	>100							0					
16			Note:																	<u>-</u>
-																				-
18																				-
- - -																				- -
- - - - - - - - - - - - - - - -			GROUNDWATER ELEVATIO	NS SIN		<u> </u>	Ш													<u> </u>
			✓ SHALLOW/SINGLE INSTALLATIO			ים.	=FP	וח/	JAL INS	ΤΔΙ	ΙΔΤΙ	ON			1000	-D ·	P.D.			
			WATER LEVEL: m bgs				ER L			, i 🗥	- <u>-</u>	J14			LOGGE CHECK	ED :	BR CM			
			-																	

MCR LOG ENVIRONMENTAL 5820.GPJ 1-26-23

MC CLYMONT & RAK ENGINEERS, INC.

PROJECT : G5820

LOCATION : North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario

SHEET 1 OF 1

STARTED : December 19, 2022 COMPLETED : December 19, 2022

WATER LEVEL:

m bgs

DATUM Geodetic

MC CLYMONT & RAK ENGINEERS, INC.

	호	SOIL PROFILE			SAN	MPLE	S	ppm)			DINGS ⊗	0.1.2.7	nat V	ENGTH	. Ou, 11	Q - X U - A	무일	
(metres)	BORING METHOD		STRATA PLOT	E, E	띪		BLOWS/0.3m	100 20		00 4	100		20	40	60	80	ADDITIONAL LAB. TESTING	PIEZOMETEI OR
(me	SING	DESCRIPTION	TA F	ELEV. DEPTH	NUMBER	TYPE	WS/C	% LEL - (he	exane)					ONTENT	Γ, PER		B. TE	STANDPIPE INSTALLATIO
	BOR		STR/	(m)	ĭ	' i	BLO	20 4	0 6	0	80	wp		20 :	30	⊣ wl 40	< 5	
		GROUND SURFACE		187.50									10.1					
		FILL: sand and gravel, reddish brown, dry, compact.	\bowtie		1	SS 1	13						12.4 O					
		SANDY SILT:	$\stackrel{\circ}{ }$	_ 186.74 0.76	2	SS 2	,,						13.4 O					
		trace of gravel, reddish brown, moist to wet, compact to very dense.			2	33 2	•											
					3	ss 3	34						12.9 O					
					4	SS 3							11.1					
							_						11.7					
					5	ss 3	37						0'''					
		- trace of clay, compact from 4.57 m to 6.10 m.				_							12.8					
		- trace of clay, compact from 4.57 m to 6.10 m.			6	SS 1	14						12.8 O					
		- some clay some gravel, shale fragments from 6.10				_						8	.2					
		- some clay, some gravel, shale fragments from 6.10 m to 16.79 m.			7	SS 4	10					0						
	SOLID STEM AUGER																	
	M AUC				8	SS >1	100						9.8					
	STE																	
	00				9	SS >1	100					6	.7					
۱																		
0																		
					10	SS >1	100					7. O	2					
2													10.7					
					11	SS>1	100						b'''					
													10.5					
4					12	SS 8	30						10.5 O					
					40	001	100						10.5					
					13	SS >1	100					'						
3																		
-		End of Borehole		170.71 16.79	14	88 -1	100						14.1 O	2				
		Note:																
3																		
ٔ																		
		GROUNDWATER ELEVATIO																

WATER LEVEL:

CHECKED : CM

G5820 **PROJECT**

North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario LOCATION

December 22, 2022 STARTED

SHEET 1 OF 1 DATUM Geodetic

MC CLYMONT & RAK ENGINEERS, INC.

COMPLETED : December 22, 2022

ыl	QC	-	SOIL PROFILE			SA	MPL	ES	ORGANIC VAPOUR RE	ADINGS ⊗	SHEAR STRENGTH: Cu, KPa nat V - ♣ Q - ★ rem V - ● U - ▲	. (1)	
DEPTH SCALE (metres)	ORING METHOD	t		TO.				Æ	100 200 300	400	rem V - ● U - ▲ 20 40 60 80	ADDITIONAL LAB. TESTING	PIEZOMETER
netre	IG M		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	% LEL - (hexane)	<u> </u>	WATER CONTENT, PERCENT		OR STANDPIPE
ا _ ا	JRIN		DESCRIPTION	RAT,	DEPTH (m)	NON		ŏ	,		wp ───── wl	ADĽ LAB.	INSTALLATIO
	<u> </u>	4		ST	(m)	Ĺ		В	20 40 60	80	10 20 30 40	\perp	
_	4	_	GROUND SURFACE FILL:	 	186.75						19.2	+	
			sand, organics, rootlets, dark brown, moist, loose.			1	SS	7					
		ŀ	SILTY SAND:	\longrightarrow	185.99 0.76	2	ss	16			19.5		
			brown, moist, dense.			_		-0					
2					:	3	ss	50			19.5		
_		ŀ	CLAYEY SILT:		184.46 2.29	_					119		
			some sand, shale fragments, reddish brown to grey, moist to wet, hard to very stiff.	\mathbb{W}	1	4	ss	48			0 11.9 O		
			most to wet, hard to very sun.		1	5	00	40			10.2		
					1	3	33	40					
4]								
				Ш							11.4		
				\mathbb{Z}	-	6	SS	24					
				\mathbb{W}	1								
6	1	품		\mathbb{R}	1						70		
	SING:	AUG	- hard from 6.10 m to 10.67 m.		1	7	SS	49			7.2		
	8	∑ L]								
	WER.	S S		\mathbb{H}									
	POWER BORING	3		\mathbb{W}		8	SS	62			7.4		
8		Ĭ		\mathbb{W}	1								
				\mathbb{W}	1								
					1	_	00				10.3		
					1	9	55	58			$\begin{bmatrix} & \phi & & & & & & & & & & & & & & & & & $		
10]								
		L		Ш	176.08 10.67						10		
			SANDY SILT: some clay, some gravel, shale fragments, reddish brown, wet, very dense.		10.67	10	SS	>100			φ		
			brown, wet, very dense.		1								
12											12.2		
					•	11	SS	>100			0 12.3		
,,		ŀ	SAND & GRAVEL:	•	173.03 13.72	12	SS	- 100			12.4 O		
14			brown, wet, very dense.	•				1.00					
					:								
	_	4	End of Borehole	• •	171.51 15.24	-							
		- 1	Note:		.5.24								
16													
18													
					L_	L							
			GROUNDWATER ELEVATION	ONS									
			$\overline{oldsymbol{arphi}}$ shallow/single installatio	N	Ţ	, - DI	EEF	P/Dl	IAL INSTALLATION		LOGGED : BR		
			WATER LEVEL: m bgs	-			ER L				CHECKED : CM		

G5820 PROJECT

North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario LOCATION

MC CLYMONT & RAK ENGINEERS, INC.

STARTED

January 3, 2023 January 3, 2023

SHEET 1 OF 1 DATUM Geodetic

	00		SOIL PROFILE			SA	MPL	ES	(ppm)	IIC VA	APOUR		NNGS ⊗	SHEA	R STRI nat V	NGTH - ∯ - ●	Cu, K	Pa Q - 🗶	ا ن	
(metres)	BORING METHOD			TO.		~		3m	100	200	30		00	2	rem V	- • 10 (50	U - ▲ 80	ADDITIONAL LAB. TESTING	PIEZOMETER OR
netre	9		DESCRIPTION	A PL	ELEV.	IBEF	TYPE	S/0.3	% LEL					WA		NTENT	PFR		ĔĦ	STANDPIPE
=	N.N.		DESCRIPTION	STRATA PLOT	DEPTH	NUMBER	≧	BLOWS/0.3m		()	/		_	wp	<u> </u>	ow		l wl	AB.	INSTALLATION
\perp	BC	\perp		ST	(m)	_		BL	20	40	60) 8	80 		0 2	20 :	30	40		
4	4	\downarrow	GROUND SURFACE	_	186.00															
			STRAIGHT DRILLING TO 9.14 m.																	
		<u>بر</u>																		
	9	9																		
	찡	Σ																		
	R 1	SI																		
	POWER BORING	<u>ا</u> م																		
	ءَ ا	┇┃																		
	-	۱-																		
		ŀ	SANDY SILT:	1111	176.86 9.14	_									13 O					
			some clay, some gravel, shale fragments, reddish brown, wet, very dense.			9	SS	>100							0					
			brown, wet, very dense.		1															
			- trace of shale, gravel from 10.67 m to 15.24 m.]	10	SS	>100							9.4)					
			-																	
2					1										0.6					
						11	SS	>100							9.6					
															11					
1			- moist from 13.72 m to 15.24 m.			12	SS	>100							þ.					
					170.61 15.39	13	SS	>100							11.1 O					
			End of Borehole		15.39															
3			Note:																	
-																				
-																				
3																				
3																				
L			GROUNDWATER ELEVATION											I				1	<u> </u>	

MCR LOG ENVIRONMENTAL 5820.GPJ 1-26-23

WATER LEVEL: m bgs WATER LEVEL:

LOGGED : BR CHECKED : CM

PROJECT : G5820

LOCATION : North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario

STARTED : January 3, 2023

SHEET 1 OF 1
DATUM Geodetic

MC CLYMONT & RAK ENGINEERS, INC.

COMPLETED: January 3, 2023

(metres)	H	}	SOIL PROFILE	<u> </u>			MPL	-	(ppm)		0 30		DINGS ⊗ 400		nat \ rem \	/ - • / - • 40		KPa Q - X U - △ 80	ADDITIONAL LAB. TESTING	PIEZOMETER
metre	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	100 % LEL					-		ONTE	60 NT, PEI	_	OITIOI TES!	OR STANDPIPE
-	SORIN		DEGGIN HON	TRAT	DEPTH (m)	NUN	ĭ	3LOW	20	40		1	80	wp		20	30	—l wl 40	ADI	INSTALLATION
\dashv	Ī	+	GROUND SURFACE	S	185.50				-				+			Ť	Ť	+	+	
1			FILL: sand, trace of gravel, organics, brown, moist,		8	1	SS	12												
		ŀ	compact. SANDY SILT:	-	184.74 0.76															
			trace of clay, brown, moist, compact.		.]	2	SS	12												
					· 	3	SS	20												
		ŀ	SILTY CLAY:		183.21 2.29	4	ss	18							14 O	.4				
			reddish brown, moist to wet, very stiff to hard.																	
						5	SS	39							12.8 O					
															12.3 O					
						6	SS	35							0					
	g	JGER				7	SS	50								17.4				
	ORIN	MAL					33	30								<u> </u>				
	ÆR B	N STE																		
	POWER BORING	SLG SLG				8	SS	60							11.4 O					
		Ĭ																		
						9	SS	65						,	10.7 O					
					174.83										12.7					
			SANDY SILT: some clay, some gravel, shale fragments, reddish brown, wet, very dense.		174.83 10.67	10	SS	>100							12.7 O					
			brown, wet, very dense.																	
2						11	SS	>100						,	9.9					
							00,	100												
.					· 	12	SS	>100						ي ا	9.1					
1					.]			100												
															4.4					
ł		\dashv	End of Borehole	1:13	170.21 15.29	13	SS	>100							14 O	.0				
,			Note:																	
3																				
3																				
			GROUNDWATER ELEVATION	ONS	3															

WATER LEVEL:

CHECKED : CM

MCR LOG ENVIRONMENTAL 5820.GPJ 1-26-23

WATER LEVEL:

m bgs

PROJECT : G5820

LOCATION : North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario

MC CLYMONT & RAK ENGINEERS, INC. SHEET 1 OF 1

STARTED : COMPLETED :

January 3, 2023 January 3, 2023

DATUM Geodetic

پ	BORING METHOD	SOIL PROFILE	1.		SA	MPL		(ppm)	io va	I JUN I	READINGS ⊗	SHE	nat \ rem \	ENGTH ′ - ∯ ′ - ●	i. Ou, r	Q - X U - A	₽ Q Q	DI===:
(metres)	MET,		STRATA PLOT		l K		BLOWS/0.3m	100	200	300	400 I		20	40	60	80	ADDITIONAL LAB. TESTING	PIEZOMETER OR
(me	NG	DESCRIPTION	TAF	ELEV. DEPTH	NUMBER	TYPE	WS/0	% LEL	- (hex	ane)				ONTEN	T, PER		DOIT B. TE	STANDPIPE INSTALLATION
1	BOR		TRA	(m)	≥	-	BLO.	20	40	60	80	w	→ 10	20 W	30	⊣ wl 40	₹₹	
\dashv	Ŧ	GROUND SURFACE	0	185.00			-	Ť	Ť	Ť		+		1	+	+	\vdash	
\dashv		STRAIGHT DRILLING TO 9.14 m.	1	100.00														
.																		
													1					
													1					
													1					
	POWER BORING HOLLOW STEM AUGER																	
- [POWER BORING LLOW STEM AUG																	
	WER																	
	읽																	
	Ĭ																	
		CANDY OF T	1.1.7	175.86 9.14									10.9					
		SANDY SILT: some clay, some gravel, shale fragments, reddish brown, wet, very dense.			9	SS	>100						Р					
0		brown, wet, very dense.																
				-	10	SS	>100						12.7					
							1											
				1														
2													9.2					
					11	SS	>100						9.2)					
				•														
ا ،					12	SS	 - 						9.2)					
4																		
				1														
				169.71 15.29	4	96	100					,	8.6 O					
		End of Borehole		15.29	13	30	100					1	1					
6		Note:																
- [
- [
8																		
_		I GROUNDWATER ELEVATION	L DNS	<u> </u>	<u> </u>							1						
					, - DI	EEP	P/DL	JAL INS	ΓALL	.ATIO	N		LOGG	ED ·	BR			
8		$\stackrel{ extstyle }{ ule}$ SHALLOW/SINGLE INSTALLATION WATER LEVEL: m bgs		Ţ			P/DU	Jal ins ⁻ :L:	ΓALL	.ATIO	N		LOGG	ED :				

G5820 PROJECT

North-western corner of Regional Road 25 and Britannia Road, Milton, Ontario LOCATION

STARTED January 3, 2023 MC CLYMONT & RAK ENGINEERS, INC.

SHEET 1 OF 1 DATUM Geodetic

(metres)	BORING METHOD		SOIL PROFILE	I ⊢	1	SA	MPL		ORGANIC VAPOUR R (ppm)	\otimes	SHEAR STRENGTH nat V - • rem V - •	Q - X U - A	ING ING	PIEZOMETER
etres)	ME	. ME		STRATA PLOT	FI EV	Ä	ш	BLOWS/0.3m	100 200 300	400	20 40	60 80	ADDITIONAL LAB. TESTING	OR STANDPIPE
Ĕ.	O N		DESCRIPTION	ATA	ELEV. DEPTH (m)	UMB	TYPE	/SMC	% LEL - (hexane)		WATER CONTENT wp I OW	T, PERCENT	AB. T	INSTALLATION
	ď			STR	(m)	z		BLC	20 40 60	80		30 40		
			GROUND SURFACE		184.75									
			FILL: sand, trace of gravel, organics, rootlets, brown, moist, loose.	\bowtie	1	١.					13.1 O			
			moist, loose.	\bowtie		1	SS	8						
				\bowtie	183.99									
			SANDY SILT: trace of clay, reddish brown, moist, dense.		183.99 0.76	2	ss	33			11			
			•		1	Ĺ					ĭ			
					1						13.3			
					:	3	SS	30						
2														
		ŀ	SILT & CLAY:		182.46 2.29						12.4			
			some sand, trace of gravel, shale fragments, reddish brown, moist, hard.			4	ss	41			0 12.4			
	POWER BORING	JGER									40.4			
	NIN	MAL				5	ss	32			13.4 O			
	ER B	/ STE												
	OWE	LOW												
ı	"	된												
						6	SS	47			9.8			
,														
						7	00	40			9.3			
						 	SS	40						
					177 43									
Ī			End of Borehole		177.43 7.32									
			Note:											
,														
			GROUNDWATER ELEVATION	ÖNS	;			_		1	1 1			
			$\overline{igspace}$ shallow/single installation			, ח-	FFP	ורו/י	IAL INSTALLATION	N	LOGGED :	BR		
			WATER LEVEL: m bgs	•		VAT				-	LUGGED :	DL		

RECORD OF BOREHOLE 1 Project No.: T18721 ORIGINATED BY: M.Z. CLIENT: Mattamy Willmott Limited March 1, 2018 DATE: LOCATION: COMPILED BY: M.Z. Milton, ON 83 Citation Dr, Unit 9, BOREHOLE TYPE: Solid Stem Augers DATUM: Geodetic CHECKED BY: H.S. Vaughan, Ontario, L4K 2Z6 **SOIL PROFILE SAMPLES** WATER CONTENT REMARKS AND DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 MONITORING GROUND WATER CONDITIONS SAMPLE NUMBER (%) **GRAIN SIZE** (cm) DEPTH SCALE (metres) PLOT WELL DISTRIBUTION 'N" VALUES ELEVATION (metres) DESCRIPTION RECOVERY (%) SHEAR STRENGTH kPa STRATA TYPE GR SA SI CL 40 60 80 100 5 15 25 35 184.7 Ground Surface dark mottled brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains SS 33 1 13 184.3 some rootlets, damp 13 reddish brown 13 Silty Clay/Clayey Silt Till 2 SS 25 17 some sand, occ. oxidized fissures damp, very stiff 13 3 SS 28 28 2 March 9, 2018 Gradation Analysis March 16, 2018 13 S(4): 2 15 51 32 occ. shale fragments hard SS 25 40 3-13 5 SS 30 38 181.0 reddish brown ٥٠ Clayey Sandy Silt Till .0. 9 occ. silt seams, trace sand seams SS 6 41 67 occ. oxidized fissures damp, hard ٥٥ 180.2 9 reddish brown Silty Clay/Clayey Silt Till 7 SS 38 74 occ. gravel, occ. oxidized fissures damp, hard 5-Practical Auger 179.2 Refusal @ ~5.5m , α (° • Γο. due to possible grey Clayey Sandy Silt Till cobble/boulder ٥° borehole moved 1m occ. oxidized fissures to the east and redamp, hard 6 drilled. ۰0° 10 SS 25 8 71 • Q ° , Q., ۰0° 177.7

				F	REC	OR	D OF B	ORE	НС	LE	1								
Project	No.: T	18721	CLIENT	:		Mat	tamy Willm	ott Lir	nited	l			ORIGINA	ATED	BY:	M.Z			
DATE:			LOCATI	ON:		Milt	on, ON						COMPIL	ED B\	/:	M.Z		SHAD & ASS	OCIATES INC.
DATUM	: G	eodetic	BOREH	OLE	TYPE	: Soli	id Stem Au	gers					CHECKE	ED BY	:	H.S		83 Citatio	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE				AMPL												vaugnan, o.	
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	1	RES 20 4 SHEA	SISTAN 0 60	ICE PL 0 80 ENGT	0 100		(ª	%)	35 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	_ _ _	grey Silty Sand/Sandy Silt Till occ. gravel, occ. shale fragments	. G.* * G.*											10	0				
176.7	8 -	damp, very dense End of Borehole	4.6.4	9	SS	18	50/13cm												
	- - -	Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry																	
	_	Measured Water Level in installed Monitoring Well on:																	
	9-	March 9, 2018: 2.8m March 16, 2018: 2.9m																	
	- - -																		
	_ _ _																		
	10																		
	- - -																		
	- - -																		
	11																		
	- - -																		
	- - -																		
	12																		
	- - -																		
	13																		
	14																		
	- -																		

RECORD OF BOREHOLE 2 Project No.: T18721 ORIGINATED BY: M.Z. CLIENT: Mattamy Willmott Limited March 1, 2018 COMPILED BY: M.Z. DATE: LOCATION: Milton, ON 83 Citation Dr, Unit 9, BOREHOLE TYPE: Solid Stem Augers Geodetic DATUM: CHECKED BY: H.S. Vaughan, Ontario, L4K 2Z6 **SOIL PROFILE SAMPLES** WATER CONTENT REMARKS AND DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 MONITORING GROUND WATER CONDITIONS SAMPLE NUMBER (%) **GRAIN SIZE** (cm) DEPTH SCALE (metres) PLOT WELL DISTRIBUTION 'N" VALUES ELEVATION (metres) DESCRIPTION RECOVERY (%) STRATA I SHEAR STRENGTH kPa TYPE GR SA SI CL 40 60 80 100 5 15 25 35 185.4 Ground Surface dark mottled brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains SS 41 1 16 185.0 some rootlets, damp 8 mottled reddish brown Compacted Silty Clay/Clayey Silt Fill damp, very stiff 15 SS 28 2 16 184.1 16 very stiff 3 SS 20 18 2reddish brown Silty Clay/Clayey Silt Till trace to some sand 15 occ. oxidized fissures SS 28 42 damp, hard 3occ. gravel, occ. shale fragments 13 5 SS 35 10 trace to some sand SS 6 35 88 10 SS 30 7 50 greyish brown 5 sandy silt till seams grey 6 occ. silty sand/sandy silt till SS 28 8 71

178.4

				F	REC	OR	D OF B	ORE	НО	LE	2									
Project	No.: <u>T</u>	18721	CLIENT:			Mat	tamy Willm	ott Lir	nited				ORIGIN	IATE	D B	Y: N	I.Z.			
DATE:		arch 1, 2018	LOCATION	ON:		Milt	on, ON						COMP	LED	BY:	N	I.Z.		SHAD & ASSO	OCIATES INC
DATUM		eodetic	BOREH	OLE	TYPE		d Stem Au						CHECK	(ED E	BY:	Н	.s.		83 Citatio	n Dr, Unit 9,
		SOIL PROFILE				AMPL													vaugnan, Or	ntario, L4K 2Z6
				8		_		œ		RF.S	MATRI	NCF P	ETRATIOI LOT	1 M	ATE	R CC (%)		NT	MONITORING	REMARKS AND
ELEVATION (mefres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	A	SHEA		RENGT	0 100 H kPa 0 100	5	5 1	15		35	WELL	DISTRIBUTION (%) GR SA SI CL
177.6	_ _ _	grey Clayey Sandy Silt Till damp, hard	* D*			12	50/13cm								9					
1//.6	8-	End of Borehole		9	SS	13	50/130111								0					
	- - -	Cave-in Depth on Completion: 7.2m Groundwater Depth on Completion: Dry	,																	
	-																			
	_ _																			
	9-																			
	_																			
	-																			
	10																			
	_																			
	-																			
	_ -																			
	11 -																			
	_																			
	_ 																			
	_ _																			
	12-																			
	-																			
	13																			
	-																			
	14																			
	-																			

				F	REC	OR	D OF B	ORE	HOLE 3				
Project l	No.: 1	18721	CLIENT	:		Mat	tamy Willm	ott Li	mited	ORIGINA	TED BY: M.Z.		
DATE:		March 1, 2018	LOCATI	ON:		Milt	on, ON			COMPILE	ED BY: M.Z.	SHAD & ASSO	OCIATES INC.
DATUM:	: (Geodetic	BOREH	OLE	TYPE	: Soli	d Stem Au	gers		CHECKE	D BY: H.S.	83 Citation Vaughan, On	Dr, Unit 9, tario, L4K 2Z6
		SOIL PROFILE			S	AMPL	.ES		DYNAMIC CONE PE	-NETRATION	WATER CONTENT		REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	"N"VALUES	GROUND WATER CONDITIONS		PLOT 80 100 GTH kPa	(%) 5 15 25 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
185.8	0-	Ground Surface									25	<u> </u>	
185.4	- - - -	dark mottled brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains some rootlets, damp mottled reddish brown		1	SS	33	10				14		
	-	Compacted Silty Clay/Clayey Silt Fi	I 🔛										
184.9	1 - 1 -	brown, occ. reddish brown Silty Clay/Clayey Silt Till		2	SS	25	32				13		
	-	trace to some sand occ. oxidized fissures damp, hard											
	-	uamp, naru		3	SS	23	36				18		
	2-				33	23					0		
	-												
	- - -			4	SS	35	41				12		
	-												
	3-			5	SS	28	57				11	ırch 9, 2018	
	-				00	20						March 9	
	-												
	4-			6	SS	38	35				13		
181.4	-	grey											
	- - - - 5	grey Sandy Silt Till some clay, occ. oxidized fissures damp, hard		7	SS	35	39				90		
	5 -												
180.3	-	-											
	-		, G.										
	-	grey Clayey Sandy Silt Till	• 0.										
	6 - - -	trace shale fragments damp, hard	. D.	7	SS	30	79						
	-		. G. . G.								9		
	-	-	, D.,										
	7-		, D.										
	-	-	. O.										
		1	. A	1						1 1			

					F	REC	OR	D OF B	ORE	HOLE 3				\wedge
Project	No.:T	18721	CLIE	NT:			Mat	tamy Willm	ott Lir	nited	ORIGINA	ATED BY: M.Z.		
DATE:	М	arch 1, 2018	LOCA	ATIO	N:		Milt	on, ON			COMPIL	ED BY: M.Z.	SHAD & ASSO	OCIATES INC.
DATUM	: G	eodetic	BORI	EHO	LE .	ГҮРЕ	: Soli	d Stem Aug	gers		CHECKE	ED BY: H.S.	83 Citation	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE				S	AMPL	.ES				WATER CONTENT	, g ,	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	100	SIKAIA PLUI	SAMPLE NUMBER	ш	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	RESISTANCE 20 40 60 SHEAR STREN	E PLOT 80 100	(%)	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELE (n	DEF (m		0 ~	- W	SAI	TYPE	REC	z :	8 8	20 40 60	80 100	5 15 25 35		
	-	grey Clayey Sandy Silt Till	0	7. 										
177.7	8— 8—	Clayey Sandy Sitt Fill damp, hard	0 3	3 M	9	SS	30	71				10		
	-	Cave-in Depth on Completion: 7.3m Groundwater Depth on Completion: Dry	,											
	- - -	Measured Water Level in installed Monitoring Well on:												
	9-	March 9, 2018: 3.7m March 16, 2018: 3.6m												
	- - -											-		
	_													
	10 — - -													
	_											-		
	- - -													
	11 —													
	- - -											-		
	- 12													
	-													
	- - -											-		
	13													
	-													
	- - -													
	14 — - -													
	- - -											-		
	- - -													

				F	REC	OR	D OF B	ORE	HOLE 4				
Project	No.:	T18721	CLIENT	:		Mat	tamy Willm	ott Lir	nited	ORIGINA	ATED BY: M.Z.		
DATE:		March 1, 2018	LOCATI	ON:		Milt	on, ON			COMPIL	ED BY: M.Z.	SHAD & ASSO	OCIATES INC.
DATUM	l:	Geodetic	BOREH	OLE	TYPE	: Sol	id Stem Au	gers		CHECKE	ED BY: H.S.	83 Citatio Vaughan, Or	n Dr, Unit 9, Itario, L4K 2Z6
		SOIL PROFILE			S	AMPI	LES		DVII ANII O	ONE DENETRATION	WATER CONTENT		REMARKS AND
TION es)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER		RECOVERY (cm)	N " VALUES	GROUND WATER CONDITIONS		ONE PENETRATION STANCE PLOT 60 80 100 STRENGTH kPa	(%)	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%)
ELEVATION (metres)	DEPTH (metr		STRAT	SAMPL	TYPE	RECO/	>	GROUP	20 40	A	5 15 25 35		GR SA SI CL
185.1		Ground Surface										+	
184.5	0	dark brown Silty Clay/Clayey Silt Fill some topsoil, damp		1	SS	38	8				16		
		occ. organic stains											
	1	trace to some sand	-	2	SS	30	22				15 •		
		occ. oxidized fissures damp, very stiff											
				3	SS	25	26				17		
	2										-		
		hard		4	SS	28	46				13		
	3	_										2018	
		-		5	SS	20	46				13	March 9, 2018	
181.4													
	4	reddish brown Clayey Sandy Silt Till occ. oxidized fissures damp, hard		6	SS	20	48				10		
			-										
		occ. shale fragments		7	ss	13	50/8cm				9		
	5	_									-		
		-											
	6	_									_		
				8	SS	15	78/23cm				10		
		=											
178.1	7												
	′	=	, <u>C</u> ,										
]	٠٥٠										

				F	REC	OR	D OF B	ORE	HO	LE 4	1							3	
Project	No.: T	18721	CLIENT				tamy Willm						ORIGINA	ATED	BY:	M.Z			
DATE:		arch 1, 2018	LOCATI	ON:		Milt	ton, ON						COMPIL	ED B	Υ:	M.Z		SHAD & ASS	OCIATES INC.
DATUM	: G	eodetic	BOREH	OLE	TYPE	: Sol	id Stem Au	gers					CHECKE	ED BY	Y: .	H.S		83 Citatio	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE			s	AMPI	LES		DVN	A 1410	CONE	DENE	DATION	WA	TER	CON.	TENT	J	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		RES) 4(SHEAF	ISTANO 0 60 R STRE	CE PLO 80 ENGTH	100 kPa ▲		(%)		MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(1) 177.1	11	Silty Sand/Sandy Silt Till damp, very dense End of Borehole Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry Measured Water Level in installed Monitoring Well on: March 9, 2018: 3.6m March 16, 2018: 3.5m	.0.		SS SYMPLE STATE OF TABLE STATE	18	50/10cm	GRO				80		5	9	25	35		GR SA SI CL

					2FC	OR.	D OF B	∩RF	HΩ	l F	5							5000
Project	No.:]	18721	CLIENT:		\LC		tamy Willm				3		ORIGINA	ATED	BY:	M.Z.		
DATE:			LOCATI	ON:		Milt	on, ON						COMPIL	ED B	Y:	M.Z.		
DATUM			BOREH	OLE	TYPE	: Soli	d Stem Au	gers					CHECKE	D BY	' :	H.S.	83 Citat	on Dr, Unit 9, Ontario, L4K 2Z6
		SOIL PROFILE				AMPL											vaugnan,	
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		RE:	SISTAN 10 60 IR STR	CE PL) 8(E NGT I) 100		(°	25 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
186.6	0-	Ground Surface	×××××														-	
185.9	- - - - -	dark brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains dam	0	1	SS	20	14									23		
	1- 1- -	reddish brown Silty Clay/Clayey Silt Till trace to some sand occ. oxidized fissures		2	SS	23	38							_	14			
	-	damp, hard																
	- - - - 2			3	SS	20	39								14			
		-																
	-			4	ss	30	56								13			
	3-													-				
	-	occ. shale fragments		5	ss	35	81								12			
	-														40		March 9, 2018	
	4 - - -	greyish reddish brown		6	SS	18	33								13		March 9, 201	
	-	occ. clayey sandy silt till												1	1			
	5- 5-	seams/interbeddings		7	SS	20	31							_	0			
	6-	grey		8	SS	25	68								1200			

				F	REC	OR	D OF B	ORE	HOLE	5						<i>19</i>	
Project	No.: T	18721	CLIENT				tamy Willm				ORIG	SINA	ED B	Y: M.	Z.		
DATE:		arch 1, 2018	LOCATI	ON:		Mili	ton, ON				COM	PILE	D BY:	M.	Z.	SHAD & ASSO	OCIATES INC
DATUM		eodetic	BOREH	OLE	TYPE	: Sol	id Stem Au	gers			CHE	CKEI	BY:	Н.	S.	83 Citatio	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE			S	AMP	LES		DVNAMI	CONE	ENETDATI	ION	WATE	R CO	NTENT		REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		SISTANC 40 60	80 100 NGTH kPa) 		(%)		MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
178.7	10	End of Borehole Cave-in Depth on Completion: 7.3m Groundwater Depth on Completion: Dry Measured Water Level in installed Monitoring Well on: March 9, 2018: 4.2m March 16, 2018: 4.3m		9 P	SS SS	20	50/10cm			40 60	80 101		9 0	5.5.2	5 35		

Project No.: T18721

CLIENT:

Mattamy Willmott Limited

ORIGINATED BY: M.Z.

DATE: February 28, 2018 LOCATION: Milton, ON COMPILED BY: M.Z. 83 Citation Dr, Unit 9, BOREHOLE TYPE: Solid Stem Augers DATUM-

DATUM:	Ge	eodetic	BOREH	OLE	TYPE	: Sol	id Stem Auç	gers					CHE	CKE	D BY	:	H.S.		Vaughan, O	n Dr. Unit 9, ntario, L4K 2Z6
		SOIL PROFILE			S	AMPI	LES		DVN	AMIC C	- אבי	DENIE	TDAT	rion	WAT	ER C	ONT	ENT		REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		RESIS 40 SHEAR	TANO 60 STRE	CE PL 80	.OT) 1: H kPa	00		(%	6)	35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
187.2	0	Ground Surface																		
	- - - - - -	dark mottled brown, occ. reddish brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains occ. gravel, damp		1	SS	46	18									13				
	1— 1—			2	SS	13	10									15				
	=															17				
185.5	2	brown, occ. reddish brown Silty Clay/Clayey Silt Till some sand, occ. oxidized fissures		3	SS	35	37									13				
	-	damp, hard																		Gradation Analysis
	- - - -	reddish brown occ.shale fragments		4	SS	15	46									13				S(4): 2 18 47 33
	3																			
	- - - -			5	SS	46	52									13				
	-																			
	4-			6	ss	20	52									2				
	-																			
	- - - -			7	ss	35	49								1	2				
	5 —	grey																		
								, 2018												
181.5	-							K February 28, 2018												
	6	greyish reddish brown	4 (S.º					Febr												
	0]	Silty Sand/Sandy Silt Till occ. oxidzied fissures	* O.*					-							10)				Gradation Analysis S(8): 12 33 46 9
	=	damp, very dense	4.0.4	8	SS	20	79/28cm								0					12 33 46 9
	-		* Ö^	-																
	7		4 (S.4																	
	· =		404																	
			6-4-3 4-13-4																	

					REC	OR	D OF B	ORE	HOLE 6			-	443.0
Project	No.:	T18721	CLIENT				ttamy Willn			ORIGINA	ATED BY: M.Z.		\triangle
DATE:		February 28, 2018	LOCATI	ON:		Mil	ton, ON			COMPIL	ED BY: M.Z.		CIATES INC
DATUM		Geodetic	BOREH	OLE	TYPE		id Stem Au			CHECKE	ED BY: H.S.	83 Citatio	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE				AMP					WATER CONTENT	vaagnan, or	REMARKS AND
N (CALE	DESCRIPTION	PLOT	SAMPLE NUMBER		۲۲ (cm)	UES	WATER	PER PRINCIPIE PR	CE PLOT	(%)	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%)
ELEVATION (metres)	DEPTH SCALE (metres)	,	STRATA PLOT		TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	SHEAR STRE 20 40 60	A	5 15 25 35		GR SA SI CL
		-	4 G4										
179.2	8		4.04 4.04	9	SS	18	71				8		
	9	Cave-in Depth on Completion: 7.5m Groundwater Depth on Completion: 6.0r	n										
	10												
	12												
	13												

RECORD OF BOREHOLE 7 Project No.: T18721 ORIGINATED BY: M.Z. CLIENT: Mattamy Willmott Limited February 28, 2018 COMPILED BY: M.Z. DATE: LOCATION: Milton, ON 83 Citation Dr, Unit 9, BOREHOLE TYPE: Solid Stem Augers Geodetic DATUM: CHECKED BY: H.S. Vaughan, Ontario, L4K 2Z6 **SOIL PROFILE SAMPLES** WATER CONTENT REMARKS AND DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 MONITORING GROUND WATER CONDITIONS SAMPLE NUMBER (%) **GRAIN SIZE** (cm) DEPTH SCALE (metres) WELL STRATA PLOT DISTRIBUTION 'N" VALUES ELEVATION (metres) DESCRIPTION RECOVERY (%) SHEAR STRENGTH kPa TYPE GR SA SI CL 40 60 80 100 5 15 25 35 187.6 Ground Surface Granular Fill 187.5 dark brown Silty Clay/Clayey Silt Fill SS 25 1 4 20 some topsoil, some organic stains damp 186.9 brown, occ. reddish brown 14 Silty Clay/Clayey Silt Till 2 SS 35 25 some sand, occ. oxidized fissures damp, very stiff 14 hard 3 SS 25 32 2 -----Gradation Analysis S(4): 8 15 43 34 13 very stiff SS 30 28 3-12 hard 5 SS 28 48 11 SS 6 38 40

11

9

Gradation Analysis

S(8): 8 38 46 8

grey

Silty Sand/Sandy Silt Till

occ. oxidzied fissures moist, very dense

5-

6

181.9

180.3

SS 30

SS 30

8

70/28cm

80/28cm

February 28, 2018

RECORD OF BOREHOLE 7																					
Project No.: T18721 DATE: February 28, 2018 DATUM: Geodetic		CLIENT:				Mattamy Willmott Limited						ORIGINATED BY: M.Z.									
		LOCATION:				Milton, ON						COMPILED BY: M.Z. CHECKED BY: H.S.									
																			SHAD & ASSOCIATES INC. 83 Citation Dr, Unit 9,		
							Solid Stem Augers MPLES											Vaughan, Ontario, L4K 2Z6			
		SOIL PROFILE					AIVIFL		-	DYNAMIC CONE PE RESISTANCE						WATER CONTENT			NT		REMARKS AND
z	DEPTH SCALE (metres)			STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	20 40 60			0 8	80 100		(%)				MONITORING WELL	Grain Size Distribution (%) Gr sa si cl
ELEVATION (metres)		DESCRIPTION			MPLEN					SHEAR STRENG A 20 40 60				A		5 15 25 35					
ELI (r	85			IS WAZ	8	₹	8	Z	88	2	20 2	10 6	0 8	0 100	5	1	5	25	35		
	.	grey Clayey Sandy Silt Till						5040	-							9					
179.7	8-	occ. oxidized fissures damp, hard	_/		9	SS	20	50/13cm								Ĭ					
	0	End of Borehole Cave-in Depth on Completion: 7.5m																			
		Groundwater Depth on Completion:7.3r	m																		
	9-																				
		- - -																			
		_																			
	10 -	_																			
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)FC	OP.	D OF BO)DE	HOLE 8			
Project	No.:	T18721	CLIEN		\L		tamy Willm			TED BY: M.Z.		\triangle
DATE:		March 2, 2018	LOCAT	ION:		Milt	on, ON		COMPILI	ED BY: M.Z.	SHAD & ASSO	
DATUM		Geodetic	BORE	HOLE	TYPE	: Soli	d Stem Aug	ers	CHECKE	D BY: H.S.	83 Citation	n Dr, Unit 9, Itario, L4K 2Z6
		SOIL PROFILE		Τ		AMPL				WATER CONTENT	ruugiiuii, oi	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100	(%) 5 15 25 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
186.7		Ground Surface								45		
186.2	0	dark brown Sitty Clay/Clayey Sitt Fill some organic stains, some topsoil damp		1	SS	35	16			7		
	1.	reddish brown Silty Clay/Clayey Silt Till trace to some sand occ. oxidized fissures		2	ss	20	21	-		12		
	1.	occ. Oxidized fissures damp, hard		2 * *	33	30	31					
		-		3	SS	30	47			12		
	2									-		
		- - - -		4	SS	35	42			12		
	3.			5	SS	30	56			12		
	4	very stiff						-		11		
	·	grey		6	SS	30	24	-				
				7	ss	38	30			14		
	5											
	6	4				16	EOMO			9	ch 16, 2018	
179.7		occ. gravel, hard		8	SS	10	50/10cm			0		
110.1	7		. D	Ç.								

)EC	·	D OF B	^DE	 	0									
Project I	No.: <u>T</u> 1	8721	CLIENT:		KEU		tamy Willm					ORIGINA	ATED	BY	: M.	Z .			
			LOCATI	ON.															
DATE:			LOCATI									COMPIL						83 Citation	Dr, Unit 9,
DATUM:	G	eodetic SOIL PROFILE	BOREH	OLE .		: Sol	id Stem Au	gers	 			CHECK	ED BY	<u>/:</u>	Н.	S.		Vaughan, On	tario, L4K 2Z6
		SOIL PROFILE		~		AIVIPI	_E3				E PENE	TRATION	WA			NTEI	NT	MONITORING	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	 SHEA	10 6 NR STR	0 80 RENGT	0 100	5		(%) 5 2	25	35	WELL	Grain Size Distribution (%) Gr sa si cl
	-	grey Clayey Sandy Silt Till	. B.	}									8						
178.9	-	damp, hard End of Borehole	۰۵.		SS	10	50/13cm						0						
	8 -	Cave-in Depth on Completion: 7.0m Groundwater Depth on Completion: Dry																	
	-	Measured Water Level in installed Monitoring Well on:																	
		March 9, 2018: Dry March 16, 2018: 6.4m																	
	9-																		
	- - -																		
	=																		
	10																		
	- - -																		
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	11																		
	-																		
	- - -																		
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	44																		
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				F	REC	OR	D OF B	ORE	HOL	E 9				
Project	No.: <u>T1</u>	8721	CLIENT	:		Mat	tamy Willm	ott Lir	nited		ORIGINA	ATED BY: M.Z.		
DATE:	Ma	arch 2, 2018	LOCATI	ION:		Milt	on, ON				COMPIL	ED BY: M.Z.	SHAD & ASS	OCIATES INC.
DATUM	: Ge	eodetic	BOREH	OLE	TYPE	: Sol	id Stem Au	gers			CHECK	ED BY: H.S.	83 Citatio	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE			S	AMPI	_ES					WATER CONTENT	J	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		RESISTAN 40 6i IEAR STR	PENETRATION ICE PLOT 0 80 100 ENGTH kPa 0 80 100	(%) 5 15 25 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
186.7	0	Ground Surface	****											
		dark brown Silty Clay/Clayey Silt Fill some topsoil some organic stains, some rootlets damp		1	SS	35	9					25		
185.8	1-	reddish brown Silty Clay/Clayey Silt Till		2	SS	25	38					_ 14 •		
	-	trace to some sand occ. oxidized fissures damp, hard												
	2—			3	SS	20	53					12		
	-			4	SS	15	50/13cm					11	March 9, 2018	
	3-	greyish reddish brown		5	SS	30	31					12		
	- - - -			0	35	30	31							
	4-	grey very stiff		6	ss	35	25					11		
182.3				o o										
	5	brownish grey Sandy Silt Till trace to some clay damp, very dense	. D.		SS	28	59					9		
181.2			• B.º	0										
	6—	brownish grey Clayey Silt Till occ. clayey sandy silt till interbedding: damp, hard	5	8	SS	35	95/23cm					8 0		
179.7	7			0								-		
	-		٠D°											

				F	REC	OR	D OF B	ORE	НО	LE 9								
Project I	No.: _T	18721	CLIENT	:		Mat	ttamy Willn	nott Lir	nited			ORIGINA	ATED E	3Y: N	1.Z.			
DATE:			LOCATI	ON:		Milt	ton, ON					COMPIL	ED BY	': <u>N</u>	1.Z.		SHAD & ASSO	OCIATES INC.
DATUM:	G	eodetic	BOREH	OLE	TYPE	: Sol	id Stem Au	gers				CHECK	ED BY:	H	I.S.		83 Citation Vaughan, Or	n Dr, Unit 9, ntario, L4K 2Z6
		SOIL PROFILE			S	AMPI	LES		DV	IAMIC C	ONE DEN	ETRATION	WAT	ER C	ONTE	NT		REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	N " VALUES	GROUND WATER CONDITIONS		RESIS 20 40	STANCE F 60 8 STRENG	LOT 30 100	_	(%))		MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ш		grey Sandy Silt Till	• Ø.	0	-	~	=	00										
178.9	-	trace to some clay, damp, very dense	3000	3	SS	15	50/5cm						8				لثينا ∨لثينا	
	8-	End of Borehole Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry																
	- - -	Measured Water Level in installed Monitoring Well on:											_					
	9	March 9, 2018: 2.9m March 16, 2018: 2.9m																
	9 - -																	
	- - -																	
	10																	
	- - -																	
	- - -																	
	11 —																	
	- - -																	
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	12																	
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	- - -																	
	13																	
	- - -																	
	- - -																	
	14 —																	
	-																	
	- -																	

RECORD OF BOREHOLE 10 Project No.: T18721 ORIGINATED BY: M.Z. CLIENT: Mattamy Willmott Limited March 2, 2018 COMPILED BY: M.Z. DATE: LOCATION: Milton, ON 83 Citation Dr, Unit 9, BOREHOLE TYPE: Solid Stem Augers DATUM: Geodetic CHECKED BY: H.S. Vaughan, Ontario, L4K 2Z6 **SOIL PROFILE SAMPLES** WATER CONTENT REMARKS AND DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 MONITORING GROUND WATER CONDITIONS SAMPLE NUMBER (%) **GRAIN SIZE** (cm) DEPTH SCALE (metres) WELL STRATA PLOT DISTRIBUTION 'N" VALUES ELEVATION (metres) RECOVERY DESCRIPTION (%) SHEAR STRENGTH kPa TYPE GR SA SI CL 40 60 80 100 5 15 25 35 186.6 Ground Surface dark brown Clayey Silt Fill 13 some topsoil, some organic stains, some SS 30 7 1 rootlets, damp to moist 185.9 brown 10 Compacted Silty Clay/Clayey Silt Fill 2 SS 28 13 damp, stiff 185.2 trace organic stains reddish brown 15 3 SS 18 20 Silty Clay/Clayey Silt Till trace to some sand occ. oxidized fissures damp, very stiff March 9, 2018, 14 March 16, 2018 hard SS 23 40 3-13 5 SS 30 48 16 SS 6 28 42 11 SS 30 90/28cm grey 5-6 8 50/13cm 8 SS 23 occ. sandy silt till seams 179.6

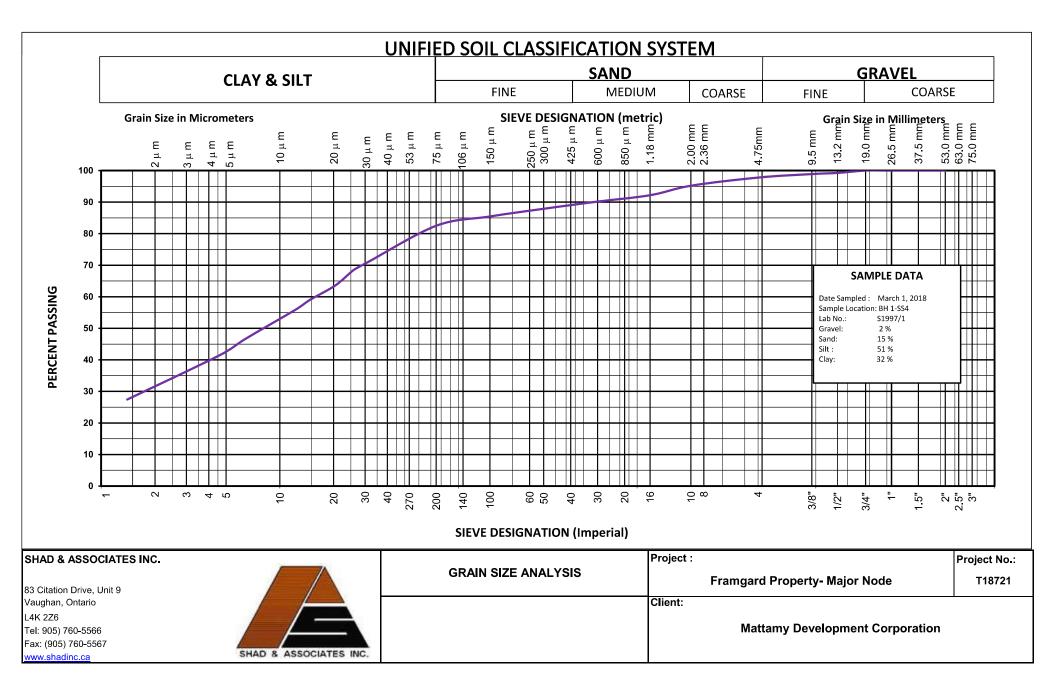
					REC	OR	D OF B	ORE	НО	LE	10							r ₂	
Project	No.: T	18721	CLIENT				tamy Willn						ORIGINA	ATEI) BY	: M.	Z.,		
DATE:			LOCAT	ION:		Mil	ton, ON						COMPIL	.ED E	3Y:	М.	z.		
DATUM					TYPE		id Stem Au						CHECK					83 Citatio	n Dr, Unit 9,
DATOM		SOIL PROFILE	DOILLI			AMP		iguis .					OnLord						ntario, L4K 2Z6
				8						RE:	SISTAN	NCE P	ETRATION LOT	W		(%)	ITENT	MONITORING	REMARKS AND GRAIN SIZE
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	A 2	SHEA		RENGT	0 100 TH kPa 0 100	5			5 35	WELL	DISTRIBUTION (%) GR SA SI CL
		grey Silty Sand/ Sandy Silt moist to wet, very dense		9	SS	30	52								1	18			
178.6	8-	End of Borehole																	
	- - -	Cave-in Depth on Completion: 7.6m Groundwater Depth on Completion: Dry																	
	- - -	Measured Water Level in installed Monitoring Well on:																	
	9-	March 9, 2018: 2.9m March 16, 2018: 3.0m																	
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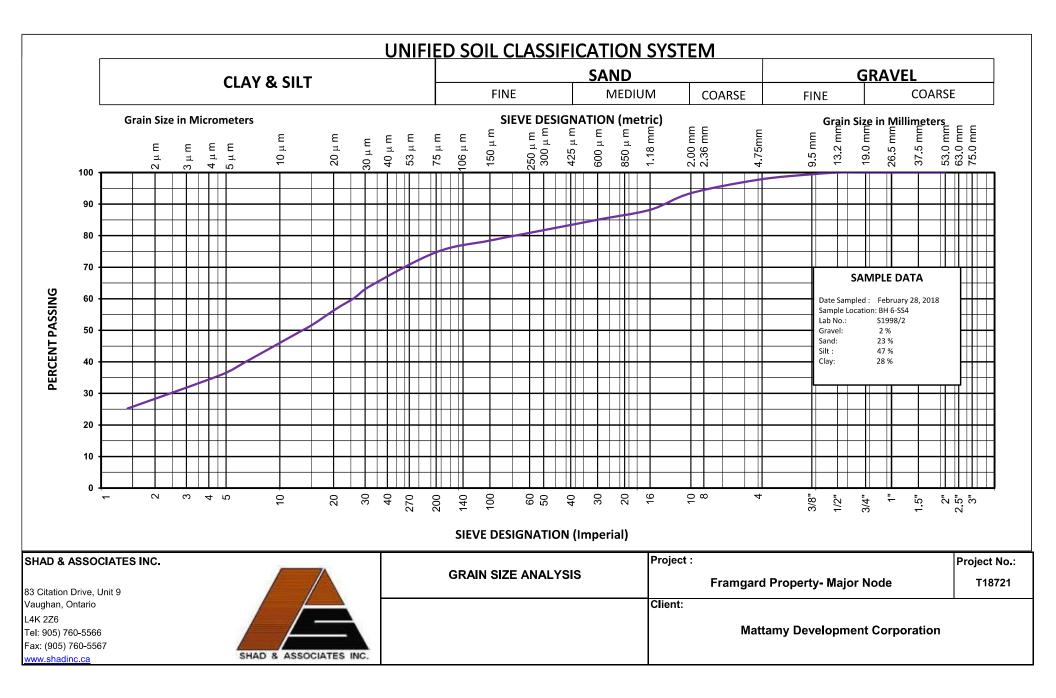
				-	REC	OR.	D OF BO)RF	HOLE 11				Fact of
Project	No.: T	18721	CLIENT		\LO		tamy Willm			ORIGINA	TED BY: M.Z.		\triangle
DATE:			LOCATI	ON:		Milt	on, ON			COMPILI	ED BY: M.Z.	SHAD & ASSO	OCIATES INC
DATUM	: G	eodetic	BOREH	OLE	TYPE	: Soli	d Stem Aug	ers		CHECKE	D BY: H.S.	83 Citation	n Dr, Unit 9, Itario, L4K 2Z6
		SOIL PROFILE			S	AMPL	.ES				WATER CONTENT		DEMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PI RESISTANCI 20 40 60 SHEAR STREM 20 40 60	E PLOT 80 100 IGTH kPa	(%) 5 15 25 35	MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
186.4		Ground Surface					-						
185.9	0 - -	Topsoil	ll ll ll	1	SS	35	6				33 0		
185.7	- - - -	mottled dark brown Silty Clay/Clayey Silt Fill some organic stains, damp									20		
185.3	1— 1— 1—	brown Compacted Silty Clay/Clayey Silt Fil damp, stiff	'	2	SS	35	16				13		
	-	very stiff											
	- - - -	brown, occ. reddish brown Silty Clay/Clayey Silt Till trace to some sand occ. oxidized fissures		3	SS	28	34				13		
	2— - -	damp,hard											
	- - - -			4	SS	30	41				12		
	3			5	SS	30	33				14 •		
	- - -												
	4	grey damp to moist, very stiff		6	SS	23	18				16		
	-												
	- - - -	hard		7	SS	28	37				8 0		
180.9	5— - - - -												
	- - - 6-	grey Clayey Sandy Silt Till damp, hard	. D. . D. . D.								8		
	7		30,0,0,0,0,0,0,		SS	25	50/13cm						

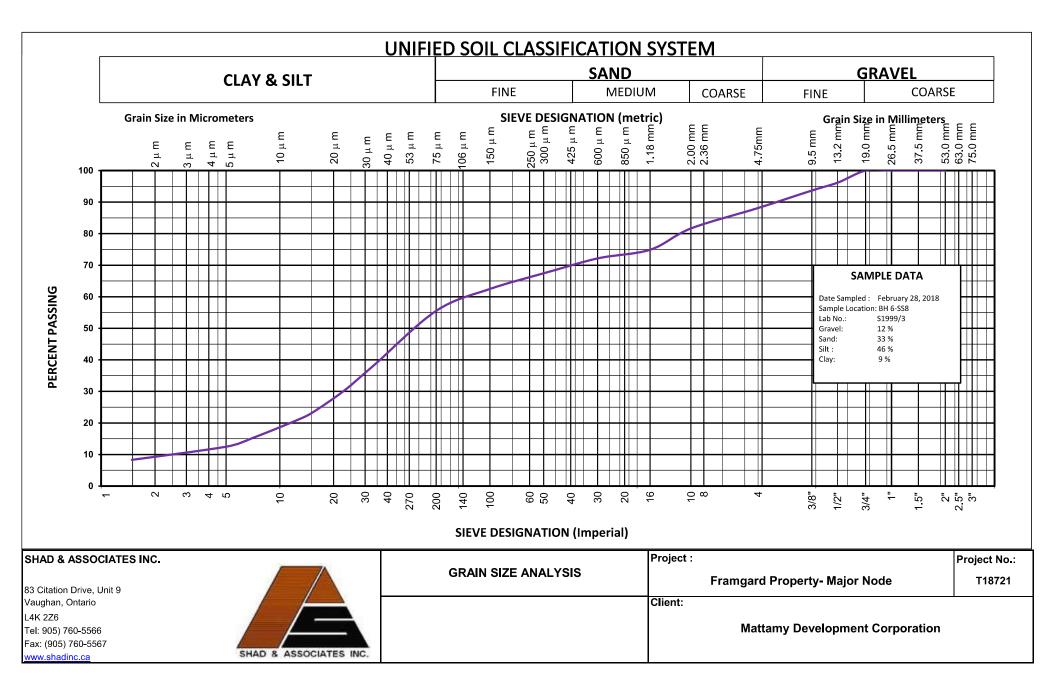
					REC	OR	D OF B	ORE	НО	LE	11							\top	<i>r</i>	
Project	No.: T	18721	CLIENT				tamy Willn						OR	GINA'	TED	BY:	M.Z			
DATE:		larch 2, 2018	LOCATI	ON:		Milt	on, ON						CO	MPILE	D B	Y :	M.Z			
DATUM		eodetic			TYPE		id Stem Au							ECKE					83 Citatio	n Dr, Unit 9,
DATE OF THE PROPERTY OF THE PR		SOIL PROFILE	DOTTE			AMPI		90.0											vaugnan, Oi	ntario, L4K 2Z6
				出				<u>~</u>		RE:	CONE SISTAN	NCE P	LOT		WA		CON [.] %)	TENT	MONITORING	REMARKS AND GRAIN SIZE
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	A 2	SHEA	40 6 AR STR 40 6	RENGT			5			35	WELL	DISTRIBUTION (%) GR SA SI CL
		grey Clayey Sandy Silt Till damp, hard	. B.		SS	13	50/13cm								8					
178.6	-	End of Borehole		3	33	13	50/13011													
	8— — — —	Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry																		
	- - - -																			
	9																			
	- - - -																			
	10																			
	- - - -																			
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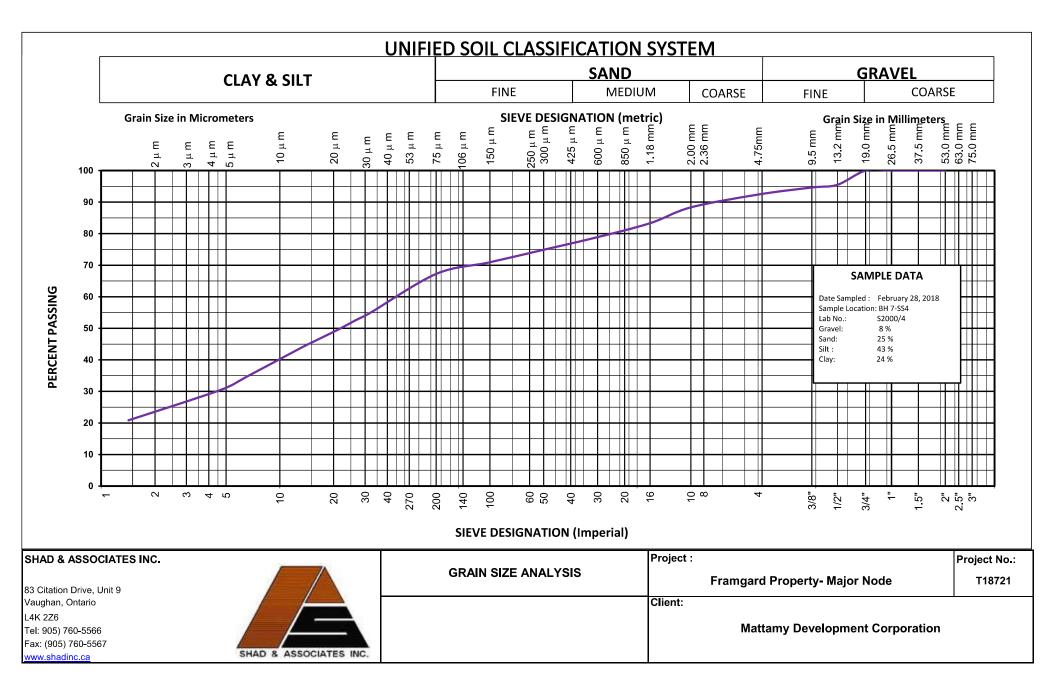
				F	REC	OR	D OF B	ORE	HO	LE	12						32	
Project	No.: T1	18721	CLIENT:		`-		tamy Willm				-	(ORIGINA	ATED E	BY: M.Z.			
DATE:			LOCATI	ON:		Milt	on, ON					(OMPIL	ED BY	: M.Z.		SHAD & ASSO	OCIATES INC
DATUM			BOREH	OLE	TYPE	: Sol	id Stem Au	gers				(CHECKE	D BY:	H.S.		83 Citation	n Dr, Unit 9, Itario, L4K 2Z6
		SOIL PROFILE			S	AMPI	_ES							WAT	ER CONTE	:NIT	.	REMARKS AND
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS		RES 20 4 SHEA	CONE SISTANO 0 60 R STRE	DE PLO 80 NGTH	100	-	(%)		MONITORING WELL	GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
186.8		Ground Surface															+	
400.4	0 -	dark brown Silty Clay/Clayey Silt Fill some topsoil, some organic stains some rootlets, damp to moist	е	1	SS	38	10								23			
186.1	- - 1- -	brown to reddish brown Silty Clay/Clayey Silt Till trace to some sand		2	SS	30	38								3			
	- - -	some topsoil, occ. oxidized fissures damp, hard																
		occ. shale fragments		3	SS	35	48							1				
	2-													-				
	- - - - -			4	SS	23	55							1′				
	3-																18	
	- - - -			5	SS	30	34							1			March 9, 2018	
															3			
	4-	greyish reddish brown		6	SS	35	30											
	- - -													10				
	5—	grey		7	SS	35	53							-				
	- - -																	
	_ _ _																	
	6-													8				
		occ. gravel		8	SS	20	50/13cm							0				
	- - - -																	
179.8	7		.															
	-		. G.√															

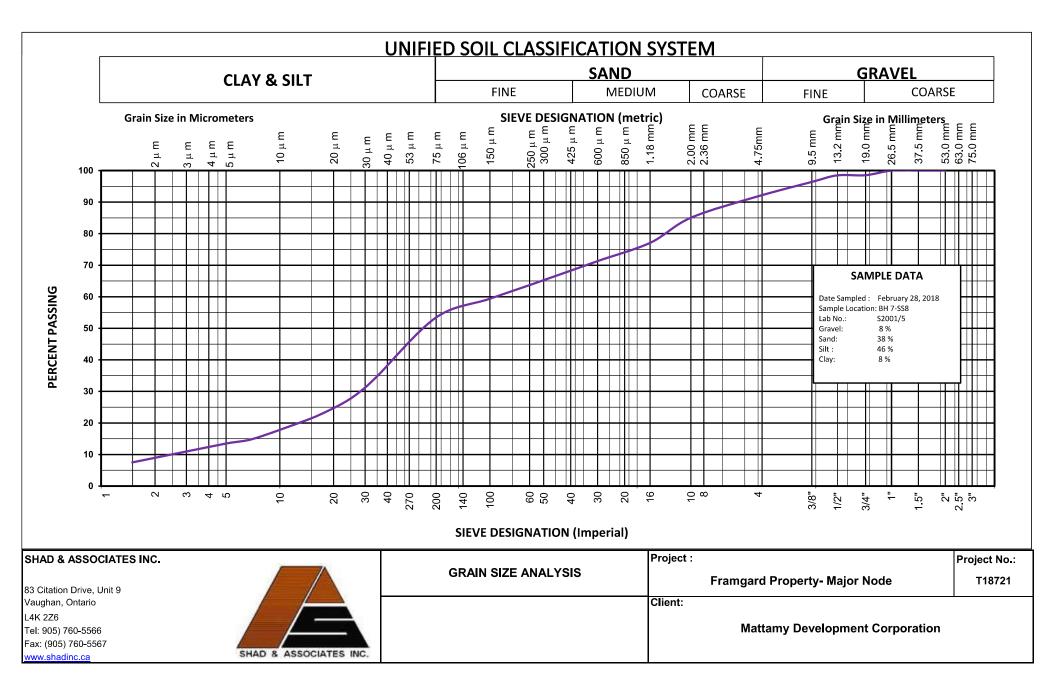
Project No					2 – ()	:OR	D OF B		HOLE 12				
	o.: <u>T</u>	18721	CLIENT:		\LU		tamy Willm			ORIGIN <i>A</i>	ATED BY: M.Z.		\triangle
DATE:		arch 2, 2018	LOCATI	ON:		Mil	ton, ON			COMPIL	ED BY: M.Z.		
DATUM:		eodetic			TVDE		id Stem Au				ED BY: H.S.	83 Citatio	n Dr, Unit 9,
DATOW.		SOIL PROFILE	BOKLIN	OLL		AMP		yeis		CILCRE		Vaughan, Oi	ntario, L4K 2Z6
				8				er Er		NCE PLOT	(%)	MONITORING	REMARKS AND GRAIN SIZE
NOI (s	SCALE s)	DESCRIPTION	PLOT	NUMB		ERY (cm	LUES	D WATE	20 40 €	60 80 100	(70)	WELL	DISTRIBUTION (%)
ELEVATION (metres)	DEPTH SCALE (metres)		STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	20 40 6	RENGTH kPa 60 80 100	5 15 25 35		GR SA SI CL
		grey Silty Sand/ Sandy Silt Till	, O.		·						6		
179.0	-	damp, very dense End of Borehole	٠٥٠	9	SS	10	50/13cm				0		
	8-	Cave-in Depth on Completion: 6.7m Groundwater Depth on Completion: Dry											
	- - -	Measured Water Level in installed Monitoring Well on:											
	-	March 9, 2018: 3.6m March 16, 2018: 3.6m											
	9-												
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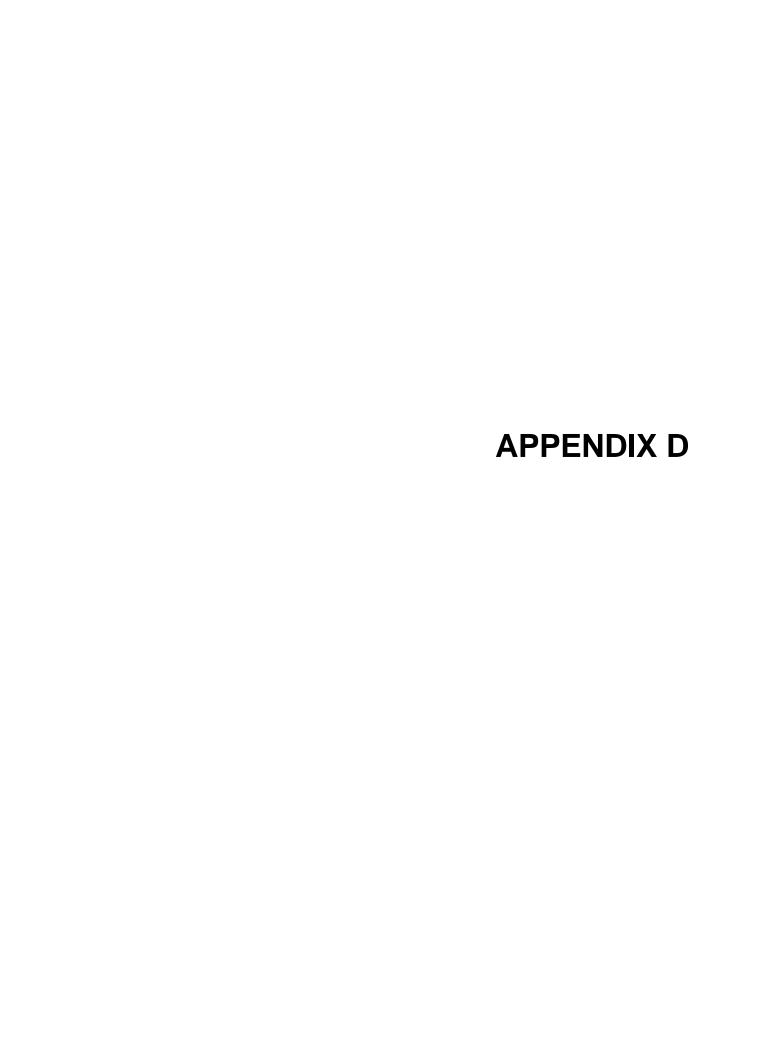














CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : WT2224508 Page

Amendment : 1

Address

Site

Client : McClymont & Rak Engineers Inc. Laboratory : Waterloo - Environmental

Contact : Richard Sukhu Account Manager : Emily Smith

: 111 Zenway Blvd. Unit 4 Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

: 1 of 5

 Telephone
 : 416 675 0160
 Telephone
 : +1 519 886 6910

 Project
 : 5820
 Date Samples Received
 : 08-Dec-2022 13:54

PO : ---- Date Analysis Commenced : 08-Dec-2022
C-O-C number : 20-1000498 Issue Date : 15-Mar-2023 16:31

Sampler : CLIENT

Vaughan ON Canada L4H 3H9

Quote number : 2022 Price List

No. of samples received : 2
No. of samples analysed : 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Metals, Waterloo, Ontario
Manuel TavaraTello	Supervisor - Semi-Volatile Extractions	Organics, Waterloo, Ontario
Ruby Sujeepan		Microbiology, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key: LOR: Limit of Reporting (detection limit).

Unit	Description
μg/L	micrograms per litre
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical
	Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

<: less than.

Page

3 of 5 WT2224508 Amendment 1 Work Order:

Client McClymont & Rak Engineers Inc.

Project

Analytical Results

-			Client sample ID	BH-10]			
Sub-Matrix: Groundwater		S	ampling date/time	08-Dec-2022					
(Matrix: Water)				09:57					
Analyte	Method	LOR	Unit	WT2224508-001		HALSUB	HALSUB		
						SAN	STM		
Physical Tests									
pH	E108	0.10	pH units	8.09		6 - 10 pH units	6.5 - 8.5 pH units	 	
Solids, total suspended [TSS]	E160	3.0	mg/L	35.6		350 mg/L		 	
Anions and Nutrients									
Fluoride	E235.F	0.020	mg/L	0.246	DLDS	10 mg/L		 	
Kjeldahl nitrogen, total [TKN]	E318	0.050	mg/L	0.259		100 mg/L		 	
Phosphorus, total	E372-U	0.0020	mg/L	0.0244		10 mg/L		 	
Sulfate (as SO4)	E235.SO4	0.30	mg/L	385	DLDS	1500 mg/L		 	
Cyanides									
Cyanide, strong acid	E333	0.0020	mg/L	<0.0020		2 mg/L		 	
dissociable (Total)									
Microbiological Tests									
Coliforms, Escherichia coli [E. coli]	E012A.EC	1	CFU/100mL	Not Detected			200 CFU/100mL	 	
Total Metals									
Aluminum, total	E420	0.0030	mg/L	0.514	DLHC	50 mg/L		 	
Antimony, total	E420	0.00010	mg/L	<0.00100	DLHC	5 mg/L		 	
Arsenic, total	E420	0.00010	mg/L	0.00555	DLHC	1 mg/L		 	
Beryllium, total	E420	0.000020	mg/L	<0.000200	DLHC	5 mg/L		 	
Cadmium, total	E420	0.0000050	mg/L	<0.0000500	DLHC	1 mg/L		 	
Chromium, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Cobalt, total	E420	0.00010	mg/L	0.00144	DLHC	5 mg/L		 	
Copper, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Iron, total	E420	0.010	mg/L	0.879	DLHC	50 mg/L		 	
Lead, total	E420	0.000050	mg/L	0.000546	DLHC	3 mg/L		 	
Manganese, total	E420	0.00010	mg/L	0.304	DLHC	5 mg/L		 	
Mercury, total	E508	0.0000050	mg/L	<0.0000050		0.05 mg/L		 	
Molybdenum, total	E420	0.000050	mg/L	0.00410	DLHC	5 mg/L		 	
Nickel, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Selenium, total	E420	0.000050	mg/L	<0.000500	DLHC	5 mg/L		 	
Silver, total	E420	0.000010	mg/L	<0.000100	DLHC	5 mg/L		 	
Tin, total	E420	0.00010	mg/L	0.00173	DLHC	5 mg/L		 	

Page : 4 of 5

Work Order : WT2224508 Amendment 1

Client : McClymont & Rak Engineers Inc.

Project : 5820



Analyte	Method	LOR	Unit	WT2224508-001	HALSUB	HALSUB		
				(Continued)	SAN	STM		
Total Metals - Continued								
Titanium, total	E420	0.00030	mg/L	0.0109 DLHC	5 mg/L		 	
Zinc, total	E420	0.0030	mg/L	<0.0300 DLHC	3 mg/L		 	
Aggregate Organics								
Biochemical oxygen demand [BOD]	E550	2.0	mg/L	3.4	300 mg/L		 	
Oil & grease (gravimetric)	E567	5.0	mg/L	<5.0			 	
Oil & grease, animal/vegetable (gravimetric)	EC567A.SG	5.0	mg/L	<5.0	150 mg/L		 	
Oil & grease, mineral (gravimetric)	E567SG	5.0	mg/L	<5.0	15 mg/L		 	
Phenols, total (4AAP)	E562	0.0010	mg/L	0.0012	1 mg/L		 	
Volatile Organic Compounds	[Drycleaning]							
Dichloromethane	E611F	1.0	μg/L	<1.0	2000 μg/L		 	
Tetrachloroethylene	E611F	0.50	μg/L	<0.50	1000 μg/L		 	
Trichloroethylene	E611F	0.50	μg/L	<0.50	400 μg/L		 	
Benzene	E611F	0.50	μg/L	<0.50	10 μg/L		 	
Ethylbenzene	E611F	0.50	μg/L	<0.50	160 μg/L		 	
Toluene	E611F	0.50	μg/L	<0.50	16 μg/L		 	
Chloroform	E611F	0.50	μg/L	<0.50	40 μg/L		 	
Dichlorobenzene, 1,4-	E611F	0.50	μg/L	<0.50	80 μg/L		 	
Volatile Organic Compounds	Surrogates							
Bromofluorobenzene, 4-	E611F	1.0	%	93.8			 	
Difluorobenzene, 1,4-	E611F	1.0	%	101			 	

Please refer to the General Comments section for an explanation of any qualifiers detected.

No Breaches Found

Key:

HALSUB Ontario Halton Sanitary Sewer By-law No. 02-03 (MAR, 2003)

SAN Halton Sanitary Sewer By-Law No. 02-03
STM Halton Storm Sewer By-Law No, 02-03

Page : 5 of 5

Work Order: WT2224508 Amendment 1

Client : McClymont & Rak Engineers Inc.

Project : 582



Analytical Results

			Client sample ID	BH-10]			
Sub-Matrix: Water		Sa	ampling date/time	09-Mar-2023				
(Matrix: Water)			, ,	08:00				
Analyte	Method	LOR	Unit	WT2224508-002	HALSUB			
					SAN			
Polycyclic Aromatic Hydroca	arbons							
Naphthalene	E641A	0.050	μg/L	<0.050	140 μg/L	 	 	
Chrysene-d12	E641A	0.1	%	97.2		 	 	
Naphthalene-d8	E641A	0.1	%	103		 	 	
Phenanthrene-d10	E641A	0.1	%	111		 	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.

No Breaches Found

Key:

HALSUB Ontario Halton Sanitary Sewer By-law No. 02-03 (MAR, 2003)

SAN Halton Sanitary Sewer By-Law No. 02-03



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **WT2224508** Page : 1 of 10

Amendment : 1

Client : McClymont & Rak Engineers Inc. Laboratory : Waterloo - Environmental

Contact : Richard Sukhu Account Manager : Emily Smith

Address :111 Zenway Blvd. Unit 4 Address :60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

 Telephone
 :416 675 0160
 Telephone
 :+1 519 886 6910

 Project
 :5820
 Date Samples Received
 : 08-Dec-2022 13:54

 PO
 :--- Issue Date
 : 15-Mar-2023 15:19

C-O-C number : 20-1000498
Sampler : CLIENT
Site :----

Quote number : 2022 Price List

No. of samples received :2
No. of samples analysed :2

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

Vaughan ON Canada L4H 3H9

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

Page 3 of 10

Work Order: WT2224508 Amendment 1 Client McClymont & Rak Engineers Inc.

Project



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water		Evaluation: × =	Holding time exceedance; ✓ = Within Holding Time

Matrix: Water						raidation. • -	Holding time exce	euance, •	- ٧٧١٤١١١١١	Holding Till
Analyte Group	Method	Sampling Date	Ext	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH-10	E550	08-Dec-2022					12-Dec-2022	4 days	4 days	✓
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) BH-10	E567SG	08-Dec-2022	15-Dec-2022	28 days	7 days	✓	15-Dec-2022	40 days	0 days	√
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) BH-10	E567	08-Dec-2022	15-Dec-2022	28 days	7 days	✓	15-Dec-2022	40 days	0 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) BH-10	E562	08-Dec-2022	14-Dec-2022				15-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] BH-10	E235.F	08-Dec-2022	13-Dec-2022				13-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH-10	E235.SO4	08-Dec-2022	13-Dec-2022				13-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) BH-10	E318	08-Dec-2022	15-Dec-2022				16-Dec-2022	28 days	8 days	✓

Page : 4 of 10

Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.



Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Ti
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)				1						
Amber glass total (sulfuric acid) BH-10	E372-U	08-Dec-2022	15-Dec-2022				16-Dec-2022	28 days	8 days	✓
Cyanides : Total Cyanide				I						
UV-inhibited HDPE - total (sodium hydroxide) BH-10	E333	08-Dec-2022	09-Dec-2022				09-Dec-2022	14 days	1 days	✓
Microbiological Tests : E. coli (MF-mFC-BCIG)										
Sterile HDPE (Sodium thiosulphate) [ON MECP] BH-10	E012A.EC	08-Dec-2022					10-Dec-2022	48 hrs	47 hrs	4
Physical Tests : pH by Meter										
HDPE [ON MECP]										
BH-10	E108	08-Dec-2022	13-Dec-2022				14-Dec-2022	14 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH-10	E160	08-Dec-2022					13-Dec-2022	7 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
BH-10	E641A	09-Mar-2023	10-Mar-2023	105 days	92 days	✓	13-Mar-2023	40 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP] BH-10	E508	08-Dec-2022	14-Dec-2022				14-Dec-2022	28 days	6 days	√
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) BH-10	E420	08-Dec-2022	08-Dec-2022				09-Dec-2022	180 days	1 days	*
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-10	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓

Page : 5 of 10

Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Matrix: Water					E	valuation: × =	Holding time excee	edance ; •	✓ = Within	Holding Time
Analyte Group	Method	Sampling Date	e Extraction / Preparation Analysis					sis		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-10	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-10	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-10	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Page : 6 of 10

Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Court Cou	Matrix: Water		Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.										
Bitchemical Doygen Demand - 5 day	Quality Control Sample Type			Co	ount)						
Blochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓	Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation					
Ecoling Ecol	Laboratory Duplicates (DUP)												
Puoride in Water by IC	Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	✓					
PH by Meter E108 776528 1 20 5.0 5.0 √	E. coli (MF-mFC-BCIG)	E012A.EC	774372	1	10	10.0	5.0	✓					
Penels (AAP) in Water by Colorimetry E562 778188 1 19 5.2 5.0	Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓					
Sulfate in Water by IC E233 SO4 776531 1 11 9.0 5.0 ✓ 70fat (yande E333 773103 1 8 12.5 5.0 ✓ 70fat (yande) E318 777106 E318 777106 1 1 6 6.2 5.0 ✓ 70fat (yande) E518 777108 1 1 8 12.5 5.0 ✓ 70fat (yande) Total Kyater by CVAAS E508 777748 1 1 8 12.5 5.0 ✓ 70fat Marcury in Water by CVAAS E508 777748 1 1 8 12.5 5.0 ✓ 70fat Marcury in Water by CVAAS E508 777748 1 1 20 5.0 5.0 ✓ 70fat Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ 70fat Phosphorus by Colourimetry (0.002 mg/L) E572-U 778870 E160 775870 1 1 8 5.5 4.7 ✓ 770870 1 3 33.3 5.0 ✓ 770870 1 3 33.3 5.0 ✓ 770870 1 3 33.3 5.0 ✓ 770870 1 3 3 33.3 5.0 ✓ 770870 1 3 3 33.3 5.0 ✓ 770870 1 3 3 33.3 5.0 ✓ 770870 1 3 3 33.3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 1 3 3 3 3 3 5.0 ✓ 770870 770870 1 3 1 16 6 6.2 5.0 ✓ 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 770870 77087	pH by Meter	E108	776528	1	20	5.0	5.0	✓					
Total Cyanide	Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓					
Tatal Kipidahi Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 20 5.0 5.0 ✓ Total metasis in Water by CRC (ICPMS E420 7772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourinetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ Total Phosphorus by Colourinetry (0.002 mg/L) E160 775520 1 18 5.5 4.7 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 16 6.2 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E611F 776870 1 11 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E650 7772861 1 11 9.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E641A 859428 1 11 9.0 5.0 ✓ VCOS (Full List) by Headspace by Gravimetry E662 778198 1 10 9.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E633 778528 1 11 9.0 5.0 ✓ VCOS (Full List) by Fluorescence (Low Level) E638 777198 1 11 9.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E631F 776870 1 18 5.5 5.0 ✓ VCOS (Full List) by Headspace GC-MS E631F 776870 1 18 5.5 5.0 ✓ VCOS (Full List) by Headspace GC-MS E650 777483 1 16 6.2 5.0 ✓ VCOS (Full List) by Headspace GC-MS E650 777483 1 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E650 777483 1 10 10 10.0 5.0 ✓ VCOS (Full List) by Headspace GC-MS E650 777483 1 10	Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓					
Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 √	Total Cyanide	E333	773103	1	8	12.5	5.0	✓					
Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 Total Phosphorous by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Grawimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Ebotherical Coversor E611F 776870 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 18 5.0 ✓ Ebotamical Coversor E67878 776830 1 16 6.2 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ PAHs by Hexane LVI GC-MS E6978 772960 1 13 7.6 5.0 ✓ PAHs by Hexane LVI GC-MS E641A 859428 1 19 5.2 5.	Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓					
Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775620 1 18 5.5 4.7 ✓ ✓ Laboratory Control Samples (LCS) Laboratory Control Samples (LCS) E611F 776870 Total Phosphorus by Colourimetry (0.002 mg/L) E550 775633 1 16 6.2 5.0 ✓ ✓ ✓ Laboratory Control Samples (LCS) E235.F 776533 1 10 10 10 10 5.0 ✓ ✓ ✓ Mineral Oil & Grease by Gravimetry E567 772961 11 11 9.0 5.0 ✓ ✓ ✓ Mineral Oil & Grease by Gravimetry E567 772961 11 11 9.0 5.0 ✓ ✓ ✓ Mineral Oil & Grease by Gravimetry E567 772961 11 11 9.0 5.0 ✓ ✓ ✓ Mineral Oil & Grease by Gravimetry E567 772960 1 11 9.0 5.0 ✓ ✓ ✓ Mineral Oil & Grease by Gravimetry E567 772960 1 11 9.0 5.0 ✓ ✓ Mineral Oil & Grease by Gravimetry E568 772961 1 11 9.0 5.0 ✓ ✓ ✓ Phenolic Alapha in Water by IC E235.F F76533 1 11 9.0 5.0 ✓ ✓ Phenolic Alapha in Water by IC E235.F Total Kjeldahi Nitrogen by Fluorescence (Low Level) E333 773103 1 8 1 8 12.5 5.0 ✓ Total Mercury in Water by CRC ICPMS E420 772786 1 1 1 20 5.0 ✓ Total Marenury in Water by CRC ICPMS E440 772786 1 1 1 20 5.0 ✓ Total Phesphorus by Colourimetry (0.002 mg/L) E372-U Total Phesphorus by Colourimetry (0.002 mg/L) E658 776633 1 16 6 6 775630 1 178197 1 20 5.0 5.0 ✓ Total Phesphorus by CRC ICPMS E6116 776670 1 1 1 1 1 20 5.0 5.0 ✓ Total Phesphorus by CRC ICPMS E610 772786 1 1 1 20 5.0 5.0 ✓ Total Phesphorus by CRC ICPMS E610 776787 1 1 1 1 1 20 5.0 5.0 ✓ Total Phesphorus by CRC ICPMS E610 776787 1 1 1 1 1 1 1 1 2 5 5 5 7 5 7 Total Phesphorus by CRC ICPMS E610 776787 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Mercury in Water by CVAAS	E508	777748	1	8	12.5	5.0	✓					
TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Laboratory Control Samples (LCS) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓ PAH by Hexane LVI GC-MS E641A 859428 1 11 9.0 5.0 ✓ Phenols (AAAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Phenols (AAAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cy	Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓					
VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Laboratory Control Samples (LCS) Biochemical Coxygen Demand - 5 day E550 775433 1 16 6.2 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 110.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓ Oil & Grease by Gravimetry E567 772960 1 11 9.0 5.0 ✓ PHs by Meter E567SG 772961 1 11 9.0 5.0 ✓ PHs by Meter E567SG 776528 1 11 9.0 5.0 ✓ PH by Meter E108 776528 1 19 5.2 5.0 ✓ Phenois (AAPA) in Water by CClorimetry E562 778198 1 19 5.2 5.0 ✓ Total Cyanide E333 77310	Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓					
VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Laboratory Control Samples (LCS) Biochemical Coxygen Demand - 5 day E550 775433 1 16 6.2 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 110.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓ Oil & Grease by Gravimetry E567 772960 1 11 9.0 5.0 ✓ PHs by Meter E567SG 772961 1 11 9.0 5.0 ✓ PHs by Meter E567SG 776528 1 11 9.0 5.0 ✓ PH by Meter E108 776528 1 19 5.2 5.0 ✓ Phenois (AAPA) in Water by CClorimetry E562 778198 1 19 5.2 5.0 ✓ Total Cyanide E333 77310	TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓					
Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓	VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0						
Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 √	Laboratory Control Samples (LCS)												
Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓ Oil & Grease by Gravimetry E567 772960 1 13 7.6 5.0 ✓ PAHs by Hexane LVI GC-MS E641A 859428 1 11 9.0 5.0 ✓ Ph by Meter E108 776528 1 20 5.0 5.0 ✓ Phenols (4AAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Mercury in Water by CVAAS E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CRC ICPMS E420 772785 1 8 12.5 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 </td <td>Biochemical Oxygen Demand - 5 day</td> <td>E550</td> <td>775463</td> <td>1</td> <td>16</td> <td>6.2</td> <td>5.0</td> <td>✓</td>	Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	✓					
Oil & Grease by Gravimetry E567 772960 1 13 7.6 5.0 ✓ PAHs by Hexane LVI GC-MS E641A 859428 1 11 9.0 5.0 ✓ pH by Meter E108 776528 1 20 5.0 5.0 ✓ Phenols (4AAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F <td>Fluoride in Water by IC</td> <td>E235.F</td> <td>776533</td> <td>1</td> <td>10</td> <td>10.0</td> <td>5.0</td> <td>✓</td>	Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓					
PAHs by Hexane LVI GC-MS E641A 859428 1 11 9.0 5.0 ✓ pH by Meter E108 776528 1 20 5.0 5.0 ✓ Phenols (4AAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOcs (Full List) by Headspace GC-MS	Mineral Oil & Grease by Gravimetry	E567SG	772961	1	11	9.0	5.0	✓					
pH by Meter	Oil & Grease by Gravimetry	E567	772960	1	13	7.6	5.0	✓					
pH by Meter E108 776528 1 20 5.0 5.0 ✓ Phenols (4AAP) in Water by Colorimetry E562 778198 1 19 5.2 5.0 ✓ Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 18 5.5 4.7 ✓ Wethod Blanks (MB) E50 <td>PAHs by Hexane LVI GC-MS</td> <td>E641A</td> <td>859428</td> <td>1</td> <td>11</td> <td>9.0</td> <td>5.0</td> <td>✓</td>	PAHs by Hexane LVI GC-MS	E641A	859428	1	11	9.0	5.0	✓					
Sulfate in Water by IC E235.SO4 776531 1 11 9.0 5.0 ✓ Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total Phosphorus by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 76870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A,EC 774372 1 10 10.0 5.0 ✓	pH by Meter	E108	776528	1	20	5.0	5.0	✓					
Total Cyanide E333 773103 1 8 12.5 5.0 ✓ Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓	Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓					
Total Kjeldahl Nitrogen by Fluorescence (Low Level) E318 778196 1 16 6.2 5.0 ✓ Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Method Blanks (MB) E550 775463 1 16 6.2 5.0 ✓ ** ** ** ** ** ** ** ** **	Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓					
Total Mercury in Water by CVAAS E508 777748 1 8 12.5 5.0 ✓ Total metals in Water by CRC ICPMS Total Phosphorus by Colourimetry (0.002 mg/L) E372-U T78197 T78197 T78197 T1 20 5.0 5.0 ✓ T78197 T88 T98 T98 T98 T98 T98 T98 T	Total Cyanide	E333	773103	1	8	12.5	5.0	✓					
Total metals in Water by CRC ICPMS E420 772785 1 20 5.0 5.0 ✓ Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 778197 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓					
Total Phosphorus by Colourimetry (0.002 mg/L) E372-U T78197 1 20 5.0 5.0 ✓ TSS by Gravimetry VOCs (Full List) by Headspace GC-MS E611F T76870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E. coli (MF-mFC-BCIG) E012A.EC T74372 Mineral Oil & Grease by Gravimetry E372-U T78197 1 20 5.0 5.0 ✓ 4.7 ✓ 4.7 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 5.0 ✓ 6.2 5.0 ✓ 6.2 5.0 ✓ 6.2 6.2 6.2 6.2 6.2 6.2 6.2	Total Mercury in Water by CVAAS	E508	777748	1	8	12.5	5.0	✓					
TSS by Gravimetry E160 775520 1 18 5.5 4.7 ✓ VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC Mineral Oil & Grease by Gravimetry E160 775520 1 18 5.5 4.7 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓					
VOCs (Full List) by Headspace GC-MS E611F 776870 1 3 33.3 5.0 ✓ Method Blanks (MB) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓					
Method Blanks (MB) Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓					
Biochemical Oxygen Demand - 5 day E550 775463 1 16 6.2 5.0 ✓ E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓					
E. coli (MF-mFC-BCIG) E012A.EC 774372 1 10 10.0 5.0 ✓ Fluoride in Water by IC E235.F 776533 1 10 10.0 5.0 ✓ Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	Method Blanks (MB)												
Fluoride in Water by IC	Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	✓					
Mineral Oil & Grease by Gravimetry E567SG 772961 1 11 9.0 5.0 ✓	E. coli (MF-mFC-BCIG)	E012A.EC	774372	1	10	10.0	5.0	✓					
	Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓					
Oil & Grease by Gravimetry E567 772960 1 13 7.6 5.0 ✓	Mineral Oil & Grease by Gravimetry	E567SG	772961	1	11	9.0	5.0	✓					
	Oil & Grease by Gravimetry	E567	772960	1	13	7.6	5.0	✓					

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Client : McClymont & Rak Engineers Inc.



Matrix: Water		Evaluati	ion: × = QC freque	ency outside sp	ecification; ✓ = 0	QC frequency wit	hin specification
Quality Control Sample Type			Co	ount		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
PAHs by Hexane LVI GC-MS	E641A	859428	1	11	9.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓
Total Cyanide	E333	773103	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	777748	1	8	12.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓
Matrix Spikes (MS)							
Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓
Total Cyanide	E333	773103	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	777748	1	8	12.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓

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Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
E. coli (MF-mFC-BCIG)	E012A.EC	Water	ON E3433 (mod)	Following filtration (0.45 µm), and incubation at 44.5±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated.
	Waterloo -			0 0
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Waterloo -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
				filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	Waterloo -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV
	10/-41			detection.
	Waterloo -			
Sulfate in Water by IC	Environmental	Water	EPA 300.1 (mod)	
Suitate III Water by IC	E235.SO4	vvalei	EPA 300.1 (III0u)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Waterloo -			detection.
	Environmental			
Total Kjeldahl Nitrogen by Fluorescence (Low	E318	Water	Method Fialab 100,	TKN in water is determined by automated continuous flow analysis with membrane
Level)	20.0		2018	diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
2010.7	Waterloo -		20.0	This method is approved under US EPA 40 CFR Part 136 (May 2021).
	Environmental			
Total Cyanide	E333	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow
				Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis.
	Waterloo -			
	Environmental			Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up
				to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002	E372-U	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated
mg/L)				persulfate digestion of the sample.
	Waterloo -			
	Environmental			
Total metals in Water by CRC ICPMS	E420	Water	EPA 200.2/6020B	Water samples are digested with nitric and hydrochloric acids, and analyzed by
			(mod)	Collision/Reaction Cell ICPMS.
	Waterloo -			
	Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered
				by this method.

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Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
	Waterloo -			
	Environmental			
Biochemical Oxygen Demand - 5 day	E550	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.
	Waterloo -			
	Environmental			Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to
	Waterloo -			form a red complex which is measured colorimetrically.
	Environmental			
Oil & Grease by Gravimetry	E567	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
	Waterloo -			
	Environmental			
Mineral Oil & Grease by Gravimetry	E567SG	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine
	Waterloo -			Mineral Oil and Grease.
	Environmental			
VOCs (Full List) by Headspace GC-MS	E611F	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the
	Waterloo -			headspace autosampler, causing VOCs to partition between the aqueous phase and
	Environmental			the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
	Waterloo -			
	Environmental			
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
	Waterloo -			
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the
	Waterloo -		,	analytical method as TKN. This method is unsuitable for samples containing high levels
	Environmental			of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	Waterloo -			
	Environmental			
	1	1		

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Work Order : WT2224508 Amendment 1
Client : McClymont & Rak Engineers Inc.



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry	EP567	Water	BC MOE Lab Manual	The entire water sample is extracted with hexane by liquid-liquid extraction.
			(Oil & Grease) (mod)	
	Waterloo -			
	Environmental			
VOCs Preparation for Headspace Analysis	EP581	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the
				headspace autosampler. An aliquot of the headspace is then injected into the
	Waterloo -			GC/MS-FID system.
	Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are
				extracted using a hexane liquid-liquid extraction.
	Waterloo -			
	Environmental			

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order :WT2224508

Amendment : 1

Client : McClymont & Rak Engineers Inc.

Contact : Richard Sukhu

Address :111 Zenway Blvd. Unit 4

Vaughan ON Canada L4H 3H9

Telephone

Project : 5820 PO : ____

C-O-C number : 20-1000498

Sampler : CLIENT 416 675 0160

Site :--

Quote number : 2022 Price List

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 10

Laboratory : Waterloo - Environmental

Account Manager : Emily Smith

Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

Telephone :+1 519 886 6910
Date Samples Received :08-Dec-2022 13:54

Date Analysis Commenced : 08-Dec-2022

Issue Date : 15-Mar-2023 15:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario	
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario	
Jon Fisher	Department Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario	
Jon Fisher	Department Manager - Inorganics	Waterloo Metals, Waterloo, Ontario	
Manuel TavaraTello	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario	
Ruby Sujeepan		Waterloo Microbiology, Waterloo, Ontario	
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario	

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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 775520)											
WT2224429-001	Anonymous	Solids, total suspended [TSS]		E160	5.0	mg/L	218	234	7.09%	20%		
Physical Tests (QC	Lot: 776528)											
WT2224728-001	Anonymous	pH		E108	0.10	pH units	8.00	7.99	0.125%	4%		
Anions and Nutrien	ts (QC Lot: 776531)											
WT2224766-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	31.3	31.1	0.474%	20%		
Anions and Nutrien	ts (QC Lot: 776533)											
WT2224766-002	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.051	0.051	0.00003	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 778196)											
WT2224280-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.50	mg/L	68.6	70.7	3.04%	20%		
Anions and Nutrien	ts (QC Lot: 778197)											
WT2224280-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	5.35	5.37	0.359%	20%		
Cyanides (QC Lot:	773103)											
WT2224459-002	Anonymous	Cyanide, strong acid dissociable		E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
		(Total)										
Microbiological Tes WT2224517-001	Anonymous	California Fasharishia sali IF sali		E012A.EC	<u> </u>	CFU/100mL	<1	<1	0	Diff <2x LOR		
	,	Coliforms, Escherichia coli [E. coli]		L012A.LC	'	CI O/TOOIIL	~1	- 1	0	DIII \ZX LOIX		
Total Metals (QC L	,		7400 00 5	E 400	0.0000		.0.0000	.0.000		D:# -0 1 0D		
WT2224434-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR		
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00406	0.00416	2.46%	20%		
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR		
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000081	0.0000065	0.0000016	Diff <2x LOR		
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00012	0.0000008	Diff <2x LOR		
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Iron, total	7439-89-6	E420	0.010	mg/L	0.571	0.581	1.67%	20%		
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000132	0.000135	0.000003	Diff <2x LOR		
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0672	0.0690	2.67%	20%		
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00240	0.00249	3.61%	20%		
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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water							Labora	tory Duplicate (D	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lo	ot: 772785) - continued										
WT2224434-001	Anonymous	Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	
Total Metals (QC Lo	ot: 777748)										
WT2224508-001	BH-10	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	
Aggregate Organics	(QC Lot: 775463)										
WT2224508-001	BH-10	Biochemical oxygen demand [BOD]		E550	3.0	mg/L	3.4	<3.0	12.8%	30%	
Aggregate Organics	(QC Lot: 778198)										
WT2224462-001	Anonymous	Phenols, total (4AAP)		E562	0.0010	mg/L	0.0015	<0.0010	0.0005	Diff <2x LOR	
Volatile Organic Co	mpounds (QC Lot: 7768	70)									
WT2224508-001	BH-10	Benzene	71-43-2	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Chloroform	67-66-3	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Dichlorobenzene, 1,4-	106-46-7	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Dichloromethane	75-09-2	E611F	1.0	μg/L	<1.0	<1.0	0	Diff <2x LOR	
		Ethylbenzene	100-41-4	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Tetrachloroethylene	127-18-4	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Toluene	108-88-3	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	
		Trichloroethylene	79-01-6	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR	

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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 775520)						
Solids, total suspended [TSS]		E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 776531)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 776533)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 778196)						
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 778197)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	
Cyanides (QCLot: 773103)						
Cyanide, strong acid dissociable (Total)		E333	0.002	mg/L	<0.0020	
Microbiological Tests (QCLot: 774372)						
Coliforms, Escherichia coli [E. coli]		E012A.EC	1	CFU/100mL	<1	
otal Metals (QCLot: 772785)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	

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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820

Sub-Matrix: Water



nalyte	CAS Number	Method	LOR	Unit	Result	Qualifier
otal Metals (QCLot: 777748)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.000050	
ggregate Organics (QCLot: 772960)						
Oil & grease (gravimetric)		E567	5	mg/L	<5.0	
aggregate Organics (QCLot: 772961)						
Oil & grease, mineral (gravimetric)		E567SG	5	mg/L	<5.0	
ggregate Organics (QCLot: 775463)						
Biochemical oxygen demand [BOD]		E550	2	mg/L	<2.0	
ggregate Organics (QCLot: 778198)						
Phenols, total (4AAP)		E562	0.001	mg/L	<0.0010	
olatile Organic Compounds (QCLot: 7	76870)					
Benzene	71-43-2	E611F	0.5	μg/L	<0.50	
Chloroform	67-66-3	E611F	0.5	μg/L	<0.50	
Dichlorobenzene, 1,4-	106-46-7	E611F	0.5	μg/L	<0.50	
Dichloromethane	75-09-2	E611F	1	μg/L	<1.0	
Ethylbenzene	100-41-4	E611F	0.5	μg/L	<0.50	
Tetrachloroethylene	127-18-4	E611F	0.5	μg/L	<0.50	
Toluene	108-88-3	E611F	0.5	μg/L	<0.50	
Trichloroethylene	79-01-6	E611F	0.5	μg/L	<0.50	
olycyclic Aromatic Hydrocarbons (QC	Lot: 859428)					
Naphthalene	91-20-3	E641A	0.05	μg/L	<0.050	

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Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 775520)									
Solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	100	85.0	115	
Physical Tests (QCLot: 776528)									
pH		E108		pH units	7 pH units	101	98.0	102	
Anions and Nutrients (QCLot: 776531)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 776533)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 778196)									
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	110	75.0	125	
Anions and Nutrients (QCLot: 778197)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.845 mg/L	98.3	80.0	120	
Cyanides (QCLot: 773103)									
Cyanide, strong acid dissociable (Total)		E333	0.002	mg/L	0.25 mg/L	91.0	80.0	120	
Total Metals (QCLot: 772785)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	96.7	80.0	120	
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	99.0	80.0	120	
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	102	80.0	120	
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	93.7	80.0	120	
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	97.1	80.0	120	
Chromium, total	7440-47-3		0.0005	mg/L	0.0125 mg/L	95.6	80.0	120	
Cobalt, total	7440-48-4		0.0001	mg/L	0.0125 mg/L	96.5	80.0	120	
Copper, total	7440-50-8		0.0005	mg/L	0.0125 mg/L	95.6	80.0	120	
ron, total	7439-89-6		0.01	mg/L	0.05 mg/L	94.5	80.0	120	
Lead, total	7439-92-1		0.00005	mg/L	0.025 mg/L	94.7	80.0	120	
Manganese, total	7439-96-5		0.0001	mg/L	0.0125 mg/L	96.7	80.0	120	
Molybdenum, total	7439-98-7		0.00005	mg/L	0.0125 mg/L	96.4	80.0	120	
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	95.7	80.0	120	
Selenium, total	7782-49-2		0.00005	mg/L	0.05 mg/L	95.6	80.0	120	
Silver, total	7440-22-4		0.00001	mg/L	0.005 mg/L	88.7	80.0	120	
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	94.9	80.0	120	

Page : 8 of 10

Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 772785) - continued									
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	90.9	80.0	120	
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	97.8	80.0	120	
Total Metals (QCLot: 777748)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.0	80.0	120	
Aggregate Organics (QCLot: 772960)									
Oil & grease (gravimetric)		E567	5	mg/L	200 mg/L	98.0	70.0	130	
Aggregate Organics (QCLot: 772961)									
Oil & grease, mineral (gravimetric)		E567SG	5	mg/L	100 mg/L	85.7	70.0	130	
Aggregate Organics (QCLot: 775463)									
Biochemical oxygen demand [BOD]		E550	2	mg/L	198 mg/L	105	85.0	115	
Aggregate Organics (QCLot: 778198)									
Phenols, total (4AAP)		E562	0.001	mg/L	0.02 mg/L	105	85.0	115	
Volatile Organic Compounds (QCLot: 7768		50445	0.5				70.0	100	
Benzene	71-43-2		0.5	μg/L	100 μg/L	95.6	70.0	130	
Chloroform	67-66-3		0.5	μg/L	100 μg/L	90.5	70.0	130	
Dichlorobenzene, 1,4-	106-46-7		0.5	μg/L	100 μg/L	96.4	70.0	130	
Dichloromethane	75-09-2		1	μg/L	100 μg/L	102	70.0	130	
Ethylbenzene	100-41-4		0.5	μg/L	100 μg/L	92.6	70.0	130	
Tetrachloroethylene	127-18-4	E611F	0.5	μg/L	100 μg/L	93.2	70.0	130	
Toluene	108-88-3		0.5	μg/L	100 μg/L	99.0	70.0	130	
Trichloroethylene	79-01-6	E611F	0.5	μg/L	100 μg/L	94.9	70.0	130	
Polycyclic Aromatic Hydrocarbons (QCLot									
Naphthalene	91-20-3	E641A	0.05	μg/L	0.5263 μg/L	76.1	50.0	140	

Page : 9 of 10

Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water							Matrix Spike	e (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ents (QCLot: 776531)									
WT2224766-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	96.7 mg/L	100 mg/L	96.7	75.0	125	
Anions and Nutri	ents (QCLot: 776533)									
WT2224766-002	Anonymous	Fluoride	16984-48-8	E235.F	0.956 mg/L	1 mg/L	95.6	75.0	125	
Anions and Nutri	ents (QCLot: 778196)									
WT2224280-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	ND mg/L	2.5 mg/L	ND	70.0	130	
Anions and Nutri	ents (QCLot: 778197)									
WT2224280-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130	
Cyanides (QCLo	t: 773103)				112 1119/2					
WT2224459-002	Anonymous	Cyanide, strong acid dissociable (Total)		E333	0.232 mg/L	0.25 mg/L	92.6	75.0	125	
Total Metals (QC	,	o, among and another than		2000	0.232 mg/L	0.25 mg/L	32.0	70.0	120	
WT2224480-001	Anonymous	Aluminum, total	7400 00 5	E400	ND === //	0.4//	ND	70.0	400	
W12224460-001	Anonymous	Antimony, total	7429-90-5 7440-36-0	E420 E420	ND mg/L	0.1 mg/L	ND 97.2	70.0	130	
		Arsenic, total	7440-36-0 7440-38-2	E420	0.0486 mg/L 0.0504 mg/L	0.05 mg/L 0.05 mg/L	101	70.0 70.0	130 130	
		Beryllium, total	7440-36-2	E420	0.00491 mg/L	0.005 mg/L	98.3	70.0	130	
		Cadmium, total	7440-43-9	E420	0.00491 mg/L 0.00480 mg/L	0.005 mg/L	96.1	70.0	130	
		Chromium, total	7440-47-3	E420	0.0127 mg/L	0.0125 mg/L	102	70.0	130	
		Cobalt, total	7440-48-4	E420	0.0120 mg/L	0.0125 mg/L	96.1	70.0	130	
		Copper, total	7440-50-8	E420	0.0113 mg/L	0.0125 mg/L	90.8	70.0	130	
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	
		Lead, total	7439-92-1	E420	0.0239 mg/L	0.025 mg/L	95.7	70.0	130	
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	
		Molybdenum, total	7439-98-7	E420	0.0122 mg/L	0.0125 mg/L	97.6	70.0	130	
		Nickel, total	7440-02-0	E420	0.0232 mg/L	0.025 mg/L	92.8	70.0	130	
		Selenium, total	7782-49-2	E420	0.0494 mg/L	0.05 mg/L	98.8	70.0	130	
		Silver, total	7440-22-4	E420	0.00456 mg/L	0.005 mg/L	91.1	70.0	130	
		Tin, total	7440-31-5	E420	0.0235 mg/L	0.025 mg/L	94.0	70.0	130	
		Titanium, total	7440-32-6	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	
		Zinc, total	7440-66-6	E420	0.0228 mg/L	0.025 mg/L	91.0	70.0	130	
Total Metals (QC	Lot: 777748)									
WT2224854-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000953 mg/L	0.0001 mg/L	95.3	70.0	130	

Page : 10 of 10

Work Order: WT2224508 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Orgar	nics (QCLot: 778198)									
WT2224462-001	Anonymous	Phenols, total (4AAP)		E562	0.0203 mg/L	0.02 mg/L	102	75.0	125	
Volatile Organic	Compounds (QCLot: 77	6870)								
WT2224508-001	BH-10	Benzene	71-43-2	E611F	96.8 μg/L	100 μg/L	96.8	60.0	140	
		Chloroform	67-66-3	E611F	94.8 μg/L	100 μg/L	94.8	60.0	140	
		Dichlorobenzene, 1,4-	106-46-7	E611F	101 μg/L	100 μg/L	101	60.0	140	
		Dichloromethane	75-09-2	E611F	105 μg/L	100 μg/L	105	60.0	140	
		Ethylbenzene	100-41-4	E611F	94.1 µg/L	100 μg/L	94.1	60.0	140	
		Tetrachloroethylene	127-18-4	E611F	91.2 μg/L	100 μg/L	91.2	60.0	140	
		Toluene	108-88-3	E611F	101 μg/L	100 μg/L	101	60.0	140	
		Trichloroethylene	79-01-6	E611F	94.2 μg/L	100 μg/L	94.2	60.0	140	



Canada Toll Free: 1 800 668 9878

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SUSPECTED HAZARD (

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Report To

Company:

McChymant & Rak

Contact and company name below will appear on the final report

Phone:

Contact:

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Merge QC/QCI Reports with COA X YES NO NO NA NA Compare Results to Criteria on Report - provide details below if box checked

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Select Report Format:

Reports / Recipients **≭**

Company address below will appear on the final report

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Waterloo **Environmental Division** Work Order Reference WT2224508

Page



Routine [R] if received by 3pm M-F - no surcharges apply

1 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

2 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

2 day [P3] if received by 3pm M-F - 20% rush surcharge minimum

1 day [P3] if received by 3pm M-F - 100% rush surcharge minimum

Turnaround Time (TAT) Requested

Same day (EZ) If received by 10am M-S > 200% rush surcharge Additionally apply forush requests on weekends, statutory holidays and non-ro.

Telephone: +1 519 886 6910

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Chain of Custody (COC) / Analytical Request Form

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Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	MCCYMONT & RAK GNAINGERS	Select Report Format: [X PDF] EXCEL] EDD (DIGITAL)	X Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	CHARD SOME	Merge QC/QCI Reports with COA SYPES □ NO □ NA	1 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:		Compare Results to Criteria on Report - provide details below if box checked	3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: X EMAIL MAIL FAX	1 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	111 ZENWAY BUD	Email 1 or Fax CLACA MCLACK, LOND Same day [EZ] if received by 10am MrS - 200% rush surcharge. Addition	Same day [E2] if received by 10em M-S - 200% rush surcharge. Addition
City/Province:	LAKCHAN / ON	Email 2	L-1 may apply to rush requests on weekends, statutory holidays and non-routin
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Waterloo
Work Order Reference
WT2224508

Environmental Division

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please cont

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Email 3

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	Released by: MCA	SHIPMENT	ON PS SAA	Are samples for human consumption/ use?		Are samples taken from a Regulated DW System?	Drinking Water (DW) Samples' (client use)											(ALS use only)	ALS Sample #	VALACION STV) # Jabus voos aprilisty	LSD:	PO/AFE:	(大くう) #dob	ALS Account # / Quote #	Projec	Contact:	
ONS AND SAMPLING INFORMATION	Date: 3/9/23	SHIPMENT RELEASE (client use)	A CANADA MANAGA MAN	20,20	- Seto								, 1970年,1970年,在1980年,在1980年,中国大学的大学,在1980年,1980年,1980年,1980年,1980年,1980年,1980年,1980年,1980年,1980年,1980年,1980年,1					(This description will appear on the report)	Sample Identification and/or Coordinates	e e e e e e e e e e e e e e e e e e e					Project Information		
	Time: Received by:	j.,	ere ar de de la laconstante de		CONTROL MINISTER		(EXCO)	Notes / Specify Limits for result evaluation by selecting from drop-down below		A CONTRACTOR OF THE CONTRACTOR			A PART AND STREET S				Ø	report)	dinates	ALS Contact:	Location:	Requisitioner:	Major/Minor Code:	AFE/Cost Center:	Oilar	Email 2	
WHITE - LABORATORY COPY	Date	INITIAL SHIPMENT RECEPTION (ALS use only)		(メンロン	1	(Excel COC only)	lation by selecting from drop-down			www.mm.nishadi.nishab.diadakidi.nishabayaanaa		BERNAMAN AND AND AND AND AND AND AND AND AND A	en der de de la company de			9-Mar-28 8:00	-yy) (I	Date Time	Sampler:			Routing Code:	PO#	Oil and Gas Required Fields (client use)		
COPY YELLOW - CLIENT COPY	Time R			11.fbvl	Cooler Custody Seals Infact	Subanssion Co	Cooling Method	below					7.7.7				50 2 X	17	JM Ø	BER L	É	Ť.	*******		AIN	H	
	Received by: FM C	FINAL SHIPM		SUITIAL COOLER TEMPERATURES °C	Seals Intact TIS _ D WA	ubungsion Comments identified on Sample Receipt Notification.	TO NOW []	SAMPLERECEIPT			Andrea Control of the							5 5	e le V	ton net aph	s fr	by 1	er er	re	1		The second secon
	Date Dodg U3 U9	FINAL SHIPMENT RECEPTION (ALS: use only)	7.3		Sample Cus	EVE.	☐ ICE HAGIG ☐ FROZEN ☐ !	SAMPLE RECEIPT DETAILS (ALS use only)			The state of the s	manufacture of the state of the				The second section of the section of th		AND TO SHARE THE PROPERTY OF T								Telephone : - 1 519 886 6910	
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white report copy. WHITE - LABORATORY COPY

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

OR 359

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **WT2224510** Page : 1 of 5

Amendment : 1

Address

Client : McClymont & Rak Engineers Inc. Laboratory : Waterloo - Environmental

Contact : Richard Sukhu Account Manager : Emily Smith

: 111 Zenway Blvd. Unit 4 Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

 Telephone
 : 416 675 0160
 Telephone
 : +1 519 886 6910

 Project
 : 5820
 Date Samples Received
 : 08-Dec-2022 13:54

 PO
 : --- Date Analysis Commenced
 : 08-Dec-2022

Sampler : CLIENT Site : ----

Quote number : 2022 Price List

No. of samples received : 2
No. of samples analysed : 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

Vaughan ON Canada L4H 3H9

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Metals, Waterloo, Ontario
Manuel TavaraTello	Supervisor - Semi-Volatile Extractions	Organics, Waterloo, Ontario
Ruby Sujeepan		Microbiology, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key: LOR: Limit of Reporting (detection limit).

Unit	Description
μg/L	micrograms per litre
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Qualifiers

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample
	tested.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical
	Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLQ	Detection Limit raised due to co-eluting interference. Mass Spectrometry qualifier ion
	ratio did not meet acceptance criteria.

<: less than.

Page

3 of 5 WT2224510 Amendment 1 Work Order:

Client McClymont & Rak Engineers Inc.

Project

Analytical Results

-			Client sample ID	BH-1					
Sub-Matrix: Groundwater		S	ampling date/time	08-Dec-2022					
(Matrix: Water)			, 5	09:45					
Analyte	Method	LOR	Unit	WT2224510-001		HALSUB	HALSUB		
						SAN	STM		
Physical Tests									
рН	E108	0.10	pH units	8.22		6 - 10 pH units	6.5 - 8.5 pH units	 	
Solids, total suspended [TSS]	E160	3.0	mg/L	11.8		350 mg/L		 	
Anions and Nutrients									
Fluoride	E235.F	0.020	mg/L	0.182	DLDS	10 mg/L		 	
Kjeldahl nitrogen, total [TKN]	E318	0.050	mg/L	0.112		100 mg/L		 	
Phosphorus, total	E372-U	0.0020	mg/L	0.0167		10 mg/L		 	
Sulfate (as SO4)	E235.SO4	0.30	mg/L	305	DLDS	1500 mg/L		 	
Cyanides									
Cyanide, strong acid	E333	0.0020	mg/L	<0.0020		2 mg/L		 	
dissociable (Total)									
Microbiological Tests									
Coliforms, Escherichia coli [E. coli]	E012A.EC	1	CFU/100mL	Not Detected			200 CFU/100mL	 	
Total Metals									
Aluminum, total	E420	0.0030	mg/L	0.387	DLHC	50 mg/L		 	
Antimony, total	E420	0.00010	mg/L	<0.00100	DLHC	5 mg/L		 	
Arsenic, total	E420	0.00010	mg/L	0.00461	DLHC	1 mg/L		 	
Beryllium, total	E420	0.000020	mg/L	<0.000200	DLHC	5 mg/L		 	
Cadmium, total	E420	0.0000050	mg/L	<0.0000500	DLHC	1 mg/L		 	
Chromium, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Cobalt, total	E420	0.00010	mg/L	0.00108	DLHC	5 mg/L		 	
Copper, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Iron, total	E420	0.010	mg/L	0.777	DLHC	50 mg/L		 	
Lead, total	E420	0.000050	mg/L	<0.000500	DLHC	3 mg/L		 	
Manganese, total	E420	0.00010	mg/L	0.510	DLHC	5 mg/L		 	
Mercury, total	E508	0.0000050	mg/L	<0.0000050		0.05 mg/L		 	
Molybdenum, total	E420	0.000050	mg/L	0.00532	DLHC	5 mg/L		 	
Nickel, total	E420	0.00050	mg/L	<0.00500	DLHC	3 mg/L		 	
Selenium, total	E420	0.000050	mg/L	<0.000500	DLHC	5 mg/L		 	
Silver, total	E420	0.000010	mg/L	<0.000100	DLHC	5 mg/L		 	
Tin, total	E420	0.00010	mg/L	0.00198	DLHC	5 mg/L		 	

Page : 4 of 5

Work Order : WT2224510 Amendment 1

Client : McClymont & Rak Engineers Inc.

Project : 582



Analyte	Method	LOR	Unit	WT2224510-001		HALSUB	HALSUB		
				(Continued)		SAN	STM		
Total Metals - Continued									
Titanium, total	E420	0.00030	mg/L	0.00848	DLHC	5 mg/L		 	
Zinc, total	E420	0.0030	mg/L	<0.0300	DLHC	3 mg/L		 	
Aggregate Organics									
Biochemical oxygen demand [BOD]	E550	2.0	mg/L	<3.0	BODL	300 mg/L		 	
Oil & grease (gravimetric)	E567	5.0	mg/L	<5.0				 	
Oil & grease, animal/vegetable (gravimetric)	EC567A.SG	5.0	mg/L	<5.0		150 mg/L		 	
Oil & grease, mineral (gravimetric)	E567SG	5.0	mg/L	<5.0		15 mg/L		 	
Phenols, total (4AAP)	E562	0.0010	mg/L	<0.0010		1 mg/L		 	
Volatile Organic Compounds	[Drycleaning]								
Dichloromethane	E611F	1.0	μg/L	<1.0		2000 μg/L		 	
Tetrachloroethylene	E611F	0.50	μg/L	<0.50		1000 μg/L		 	
Trichloroethylene	E611F	0.50	μg/L	<4.00	DLQ	400 μg/L		 	
Benzene	E611F	0.50	μg/L	<0.50		10 μg/L		 	
Ethylbenzene	E611F	0.50	μg/L	<0.50		160 μg/L		 	
Toluene	E611F	0.50	μg/L	<0.50		16 μg/L		 	
Chloroform	E611F	0.50	μg/L	<0.50		40 μg/L		 	
Dichlorobenzene, 1,4-	E611F	0.50	μg/L	<0.50		80 μg/L		 	
Volatile Organic Compounds	Surrogates								
Bromofluorobenzene, 4-	E611F	1.0	%	93.2				 	
Difluorobenzene, 1,4-	E611F	1.0	%	100				 	

Please refer to the General Comments section for an explanation of any qualifiers detected.

No Breaches Found

Key:

HALSUB Ontario Halton Sanitary Sewer By-law No. 02-03 (MAR, 2003)

SAN Halton Sanitary Sewer By-Law No. 02-03
STM Halton Storm Sewer By-Law No, 02-03

Page : 5 of 5

Work Order : WT2224510 Amendment 1

Client : McClymont & Rak Engineers Inc.

Project : 582



Analytical Results

			Client sample ID	BH-1]			
Sub-Matrix: Water		Sa	ampling date/time	09-Mar-2023				
(Matrix: Water)			, ,	08:00				
Analyte	Method	LOR	Unit	WT2224510-002	HALSUB			
					SAN			
Polycyclic Aromatic Hydroca	arbons							
Naphthalene	E641A	0.050	μg/L	<0.050	140 μg/L	 	 	
Chrysene-d12	E641A	0.1	%	92.6		 	 	
Naphthalene-d8	E641A	0.1	%	97.4		 	 	
Phenanthrene-d10	E641A	0.1	%	105		 	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.

No Breaches Found

Key:

HALSUB Ontario Halton Sanitary Sewer By-law No. 02-03 (MAR, 2003)

SAN Halton Sanitary Sewer By-Law No. 02-03



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **WT2224510** Page : 1 of 10

Amendment :1

Client : McClymont & Rak Engineers Inc. Laboratory : Waterloo - Environmental

Contact : Richard Sukhu Account Manager : Emily Smith

Address :111 Zenway Blvd. Unit 4 Address :60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

 Telephone
 :416 675 0160
 Telephone
 :+1 519 886 6910

 Project
 :5820
 Date Samples Received
 : 08-Dec-2022 13:54

 PO
 :--- Issue Date
 : 15-Mar-2023 16:17

C-O-C number : 20-1000499
Sampler : CLIENT
Site :----

Quote number ; 2022 Price List

No. of samples received :2
No. of samples analysed :2

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

Vaughan ON Canada L4H 3H9

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

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Work Order : WT2224510 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water					Ev	raluation: × =	Holding time excee	edance ; •	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pro	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH-1	E550	08-Dec-2022					12-Dec-2022	4 days	4 days	✓
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
BH-1	E567SG	08-Dec-2022	15-Dec-2022	28	7 days	✓	15-Dec-2022	40 days	0 days	✓
				days						
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
BH-1	E567	08-Dec-2022	15-Dec-2022	28	7 days	✓	15-Dec-2022	40 days	0 days	✓
				days						
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP]										
BH-1	E562	08-Dec-2022	14-Dec-2022				15-Dec-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP]	E005 E	00 D 0000	40.5				40.5	00.1		,
BH-1	E235.F	08-Dec-2022	13-Dec-2022				13-Dec-2022	28 days	5 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]	E005 004	00 D 0000	40 D 0000				40 D 0000	00 4-00	C days	√
BH-1	E235.SO4	08-Dec-2022	13-Dec-2022				13-Dec-2022	28 days	5 days	▼
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]	E318	08-Dec-2022	15-Dec-2022				16-Dec-2022	00 day:-	0 days	1
BH-1	E318	υδ-Dec-2022	15-Dec-2022				10-Dec-2022	28 days	o days	*

Page : 4 of 10

Work Order : WT2224510 Amendment 1
Client : McClymont & Rak Engineers Inc.



atrix: Water					Εν	/aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Ti
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH-1	E372-U	08-Dec-2022	15-Dec-2022				16-Dec-2022	28 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
BH-1	E333	08-Dec-2022	09-Dec-2022				09-Dec-2022	14 days	1 days	✓
Microbiological Tests : E. coli (MF-mFC-BCIG)										
Sterile HDPE (Sodium thiosulphate) [ON MECP]										
BH-1	E012A.EC	08-Dec-2022					10-Dec-2022	48 hrs	47 hrs	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
BH-1	E108	08-Dec-2022	13-Dec-2022				14-Dec-2022	14 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP]										
BH-1	E160	08-Dec-2022					13-Dec-2022	7 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
BH-1	E641A	09-Mar-2023	10-Mar-2023	105	92	✓	13-Mar-2023	40 days	3 days	✓
				days	days					
otal Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
BH-1	E508	08-Dec-2022	09-Dec-2022				09-Dec-2022	28 days	1 days	✓
otal Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
BH-1	E420	08-Dec-2022	08-Dec-2022				09-Dec-2022	180	1 days	✓
								days		
/olatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH-1	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓

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Work Order : WT2224510 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Matrix: Water					Ev	/aluation: ≭ =	Holding time excee	edance ; 🔻	/ = Within	Holding Time
Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holding	Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS	3									
Glass vial (sodium bisulfate) BH-1	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-1	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH-1	E611F	08-Dec-2022	13-Dec-2022				13-Dec-2022	14 days	5 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Page : 6 of 10

Work Order : WT2224510 Amendment 1
Client : McClymont & Rak Engineers Inc.

Project : 5820



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Quality Control Sample Type			C	ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	1
E. coli (MF-mFC-BCIG)	E012A.EC	774372	1	10	10.0	5.0	1
Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	<u> </u>
pH by Meter	E108	776528	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	1
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	1
Total Cyanide	E333	773103	1	8	12.5	5.0	1
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	1
Total Mercury in Water by CVAAS	E508	773013	1	5	20.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	1
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	1
TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	1
Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	1
Mineral Oil & Grease by Gravimetry	E567SG	772961	1	11	9.0	5.0	✓
Oil & Grease by Gravimetry	E567	772960	1	13	7.6	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	859428	1	11	9.0	5.0	✓
pH by Meter	E108	776528	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓
Total Cyanide	E333	773103	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	773013	1	5	20.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	775463	1	16	6.2	5.0	1
E. coli (MF-mFC-BCIG)	E012A.EC	774372	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	772961	1	11	9.0	5.0	✓
Oil & Grease by Gravimetry	E567	772960	1	13	7.6	5.0	1

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Work Order : WT2224510 Amendment 1
Client : McClymont & Rak Engineers Inc.



Matrix: Water	Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specific									
Quality Control Sample Type			Co	unt		Frequency (%))			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Method Blanks (MB) - Continued										
PAHs by Hexane LVI GC-MS	E641A	859428	1	11	9.0	5.0	✓			
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓			
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓			
Total Cyanide	E333	773103	1	8	12.5	5.0	✓			
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓			
Total Mercury in Water by CVAAS	E508	773013	1	5	20.0	5.0	✓			
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓			
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓			
TSS by Gravimetry	E160	775520	1	18	5.5	4.7	✓			
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓			
Matrix Spikes (MS)										
Fluoride in Water by IC	E235.F	776533	1	10	10.0	5.0	✓			
Phenols (4AAP) in Water by Colorimetry	E562	778198	1	19	5.2	5.0	✓			
Sulfate in Water by IC	E235.SO4	776531	1	11	9.0	5.0	✓			
Total Cyanide	E333	773103	1	8	12.5	5.0	✓			
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	778196	1	16	6.2	5.0	✓			
Total Mercury in Water by CVAAS	E508	773013	1	5	20.0	5.0	✓			
Total metals in Water by CRC ICPMS	E420	772785	1	20	5.0	5.0	✓			
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	778197	1	20	5.0	5.0	✓			
VOCs (Full List) by Headspace GC-MS	E611F	776870	1	3	33.3	5.0	✓			

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Client : McClymont & Rak Engineers Inc.

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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
E. coli (MF-mFC-BCIG)	E012A.EC	Water	ON E3433 (mod)	Following filtration (0.45 µm), and incubation at 44.5±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated.
	Waterloo -			
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Waterloo -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			pri dilodia de inicadarea in die ilota maini die recommendea re minate nota dilie.
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	Waterloo -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Waterloo -			45.55.55.11
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Waterloo -			
	Environmental			
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
Level)	Waterloo -		2010	This method is approved under US EPA 40 CFR Part 136 (May 2021).
	Environmental			This method is approved under GO ETA 40 OF ICT art 150 (May 2021).
Total Cyanide	E333	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow
	Waterloo -			Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis.
	Environmental			Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up
	Liviloiiileitai			to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002	E372-U	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
mg/L)	Waterloo -			persultate digestion of the sample.
	Environmental			
Total metals in Water by CRC ICPMS	E420	Water	EPA 200.2/6020B	Water samples are digested with nitric and hydrochloric acids, and analyzed by
	Waterloo -		(mod)	Collision/Reaction Cell ICPMS.
	Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered
	Environmental			` '
				by this method.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction
				with stannous chloride, and analyzed by CVAAS
	Waterloo -			
District Common Description	Environmental	10/	A DI I A 5040 D (*** 1)	
Biochemical Oxygen Demand - 5 day	E550	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.
	Waterloo -			
	Environmental			Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to
	Waterloo -			form a red complex which is measured colorimetrically.
	Environmental			, ,
Oil & Grease by Gravimetry	E567	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
	Waterloo -			
	Environmental			
Mineral Oil & Grease by Gravimetry	E567SG	Water	BC MOE Lab Manual	The entire water sample is extracted with hexane, followed by silica gel treatment after
			(Oil & Grease) (mod)	which the extract is evaporated to dryness. The residue is then weighed to determine
	Waterloo -			Mineral Oil and Grease.
	Environmental			
VOCs (Full List) by Headspace GC-MS	E611F	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the
	Waterloo -			headspace autosampler, causing VOCs to partition between the aqueous phase and
	Environmental			the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
	Waterloo -			
	Environmental			
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
	Waterloo -			
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the
	Waterloo -		,	analytical method as TKN. This method is unsuitable for samples containing high levels
	Environmental			of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	Waterloo -			
	Environmental			
		1	1	

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry	EP567	Water	BC MOE Lab Manual	The entire water sample is extracted with hexane by liquid-liquid extraction.
			(Oil & Grease) (mod)	
	Waterloo -			
	Environmental			
VOCs Preparation for Headspace Analysis	EP581	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the
				headspace autosampler. An aliquot of the headspace is then injected into the
	Waterloo -			GC/MS-FID system.
	Environmental			
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are
				extracted using a hexane liquid-liquid extraction.
	Waterloo -			
	Environmental			

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order :WT2224510

Amendment : 1

Client : McClymont & Rak Engineers Inc.

Contact : Richard Sukhu

Address :111 Zenway Blvd. Unit 4

Vaughan ON Canada L4H 3H9

Telephone

Project : 5820 PO : ----

C-O-C number : 20-1000499

Sampler : CLIENT 416 675 0160

Site :--

Quote number : 2022 Price List

No. of samples received : 2
No. of samples analysed : 2

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Laboratory : Waterloo - Environmental

Account Manager : Emily Smith

Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

Telephone :+1 519 886 6910
Date Samples Received :08-Dec-2022 13:54

Date Analysis Commenced : 08-Dec-2022

Issue Date : 15-Mar-2023 15:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario	
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario	
Jon Fisher	Department Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario	
Jon Fisher	Department Manager - Inorganics	Waterloo Metals, Waterloo, Ontario	
Manuel TavaraTello	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario	
Ruby Sujeepan		Waterloo Microbiology, Waterloo, Ontario	
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario	

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 775520)											
WT2224429-001	Anonymous	Solids, total suspended [TSS]		E160	5.0	mg/L	218	234	7.09%	20%		
Physical Tests (QC	Lot: 776528)											
WT2224728-001	Anonymous	рН		E108	0.10	pH units	8.00	7.99	0.125%	4%		
Anions and Nutrien	ts (QC Lot: 776531)											
WT2224766-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	31.3	31.1	0.474%	20%		
Anions and Nutrien	ts (QC Lot: 776533)											
WT2224766-002	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.051	0.051	0.00003	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 778196)											
WT2224280-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.50	mg/L	68.6	70.7	3.04%	20%		
Anions and Nutrien	ts (QC Lot: 778197)											
WT2224280-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	5.35	5.37	0.359%	20%		
Cyanides (QC Lot:	773103)											
WT2224459-002	Anonymous	Cyanide, strong acid dissociable (Total)		E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
Microbiological Tes	ts (QC Lot: 774372)											
WT2224517-001	Anonymous	Coliforms, Escherichia coli [E. coli]		E012A.EC	1	CFU/100mL	<1	<1	0	Diff <2x LOR		
Total Metals (QC Lo	ot: 772785)											
WT2224434-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR		
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00406	0.00416	2.46%	20%		
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR		
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000081	0.0000065	0.0000016	Diff <2x LOR		
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00012	0.0000008	Diff <2x LOR		
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Iron, total	7439-89-6	E420	0.010	mg/L	0.571	0.581	1.67%	20%		
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000132	0.000135	0.000003	Diff <2x LOR		
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0672	0.0690	2.67%	20%		
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00240	0.00249	3.61%	20%		
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		

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Work Order: WT2224510 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water				Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
Total Metals (QC Lo	ot: 772785) - continued													
WT2224434-001	Anonymous	Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR				
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR				
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR				
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR				
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR				
Total Metals (QC Lo	ot: 773013)													
WT2224505-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR				
Aggregate Organics	s (QC Lot: 775463)													
WT2224508-001	Anonymous	Biochemical oxygen demand [BOD]		E550	3.0	mg/L	3.4	<3.0	12.8%	30%				
Aggregate Organics	s (QC Lot: 778198)													
WT2224462-001	Anonymous	Phenols, total (4AAP)		E562	0.0010	mg/L	0.0015	<0.0010	0.0005	Diff <2x LOR				
Volatile Organic Co	mpounds (QC Lot: 7768	70)												
WT2224508-001	Anonymous	Benzene	71-43-2	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
		Chloroform	67-66-3	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
		Dichlorobenzene, 1,4-	106-46-7	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
		Dichloromethane	75-09-2	E611F	1.0	μg/L	<1.0	<1.0	0	Diff <2x LOR				
		Ethylbenzene	100-41-4	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
	Tetrachloroethylene		127-18-4	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
		Toluene	108-88-3	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				
		Trichloroethylene	79-01-6	E611F	0.50	μg/L	<0.50	<0.50	0	Diff <2x LOR				

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Client: McClymont & Rak Engineers Inc.

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

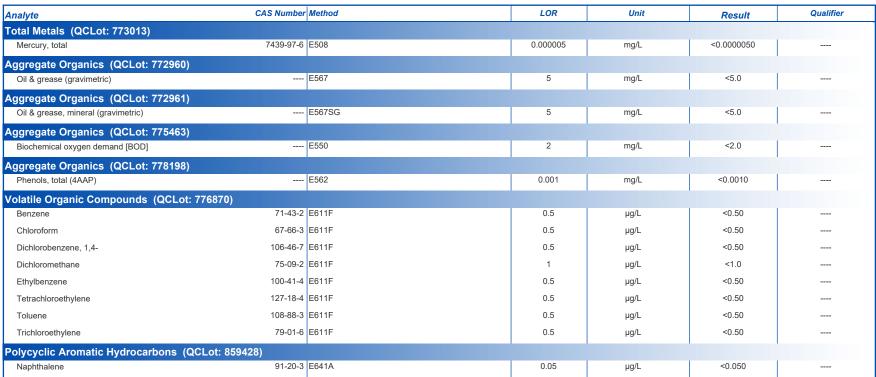
Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 775520)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 776531)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 776533)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 778196)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
nions and Nutrients (QCLot: 778197)					
Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Cyanides (QCLot: 773103)					
Cyanide, strong acid dissociable (Total)	E333	0.002	mg/L	<0.0020	
ficrobiological Tests (QCLot: 774372)					
Coliforms, Escherichia coli [E. coli]	E012A.EC	1	CFU/100mL	<1	
otal Metals (QCLot: 772785)					
Aluminum, total	7429-90-5 E420	0.003	mg/L	<0.0030	
Antimony, total	7440-36-0 E420	0.0001	mg/L	<0.00010	
Arsenic, total	7440-38-2 E420	0.0001	mg/L	<0.00010	
Beryllium, total	7440-41-7 E420	0.00002	mg/L	<0.000020	
Cadmium, total	7440-43-9 E420	0.000005	mg/L	<0.0000050	
Chromium, total	7440-47-3 E420	0.0005	mg/L	<0.00050	
Cobalt, total	7440-48-4 E420	0.0001	mg/L	<0.00010	
Copper, total	7440-50-8 E420	0.0005	mg/L	<0.00050	
Iron, total	7439-89-6 E420	0.01	mg/L	<0.010	
Lead, total	7439-92-1 E420	0.00005	mg/L	<0.000050	
Manganese, total	7439-96-5 E420	0.0001	mg/L	<0.00010	
Molybdenum, total	7439-98-7 E420	0.00005	mg/L	<0.000050	
Nickel, total	7440-02-0 E420	0.0005	mg/L	<0.00050	
Selenium, total	7782-49-2 E420	0.00005	mg/L	<0.000050	
Silver, total	7440-22-4 E420	0.00001	mg/L	<0.000010	
Tin, total	7440-31-5 E420	0.0001	mg/L	<0.00010	
Titanium, total	7440-32-6 E420	0.0003	mg/L	<0.00030	
Zinc, total	7440-66-6 E420	0.003	mg/L	<0.0030	

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Client: McClymont & Rak Engineers Inc.

Project : 5820

Sub-Matrix: Water





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Work Order: WT2224510 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water					Laboratory Co	ontrol Sample (LCS)	Report		
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 775520)									
Solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	100	85.0	115	
Physical Tests (QCLot: 776528)									
рН		E108		pH units	7 pH units	101	98.0	102	
Anions and Nutrients (QCLot: 776531)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 776533)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 778196)									
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	110	75.0	125	
Anions and Nutrients (QCLot: 778197)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.845 mg/L	98.3	80.0	120	
Cyanides (QCLot: 773103)									
Cyanide, strong acid dissociable (Total)		E333	0.002	mg/L	0.25 mg/L	91.0	80.0	120	
Total Metals (QCLot: 772785)									
Aluminum, total	7429-90-5		0.003	mg/L	0.1 mg/L	96.7	80.0	120	
Antimony, total	7440-36-0		0.0001	mg/L	0.05 mg/L	99.0	80.0	120	
Arsenic, total	7440-38-2		0.0001	mg/L	0.05 mg/L	102	80.0	120	
Beryllium, total	7440-41-7		0.00002	mg/L	0.005 mg/L	93.7	80.0	120	
Cadmium, total	7440-43-9		0.000005	mg/L	0.005 mg/L	97.1	80.0	120	
Chromium, total	7440-47-3		0.0005	mg/L	0.0125 mg/L	95.6	80.0	120	
Cobalt, total	7440-48-4		0.0001	mg/L	0.0125 mg/L	96.5	80.0	120	
Copper, total	7440-50-8		0.0005	mg/L	0.0125 mg/L	95.6	80.0	120	
Iron, total	7439-89-6		0.01	mg/L	0.05 mg/L	94.5	80.0	120	
Lead, total	7439-92-1		0.00005	mg/L	0.025 mg/L	94.7	80.0	120	
Manganese, total	7439-96-5		0.0001	mg/L	0.0125 mg/L	96.7	80.0	120	
Molybdenum, total	7439-98-7 7440-02-0		0.00005 0.0005	mg/L	0.0125 mg/L	96.4	80.0 80.0	120 120	
Nickel, total	7440-02-0 7782-49-2		0.0005	mg/L	0.025 mg/L	95.7	80.0 80.0	120	
Selenium, total	7782-49-2 7440-22-4			mg/L	0.05 mg/L	95.6		120	
Silver, total	7440-22-4 7440-31-5		0.00001 0.0001	mg/L	0.005 mg/L	88.7	80.0 80.0	120	
Tin, total	/440-31-5	E42U	0.0001	mg/L	0.025 mg/L	94.9	80.0	120	

Page : 8 of 10

Work Order: WT2224510 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water				Laboratory Control Sample (LCS) Report									
					Spike	Recovery (%)	Recovery	Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier				
Total Metals (QCLot: 772785) - continued													
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	90.9	80.0	120					
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	97.8	80.0	120					
Total Metals (QCLot: 773013)													
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120					
Aggregate Organics (QCLot: 772960)													
Oil & grease (gravimetric)		E567	5	mg/L	200 mg/L	98.0	70.0	130					
Aggregate Organics (QCLot: 772961)													
Oil & grease, mineral (gravimetric)		E567SG	5	mg/L	100 mg/L	85.7	70.0	130					
Aggregate Organics (QCLot: 775463)													
Biochemical oxygen demand [BOD]		E550	2	mg/L	198 mg/L	105	85.0	115					
Aggregate Organics (QCLot: 778198)													
Phenols, total (4AAP)		E562	0.001	mg/L	0.02 mg/L	105	85.0	115					
Volatile Organic Compounds (QCLot: 77687	70)												
Benzene	71-43-2	E611F	0.5	μg/L	100 μg/L	95.6	70.0	130					
Chloroform	67-66-3	E611F	0.5	μg/L	100 μg/L	90.5	70.0	130					
Dichlorobenzene, 1,4-	106-46-7	E611F	0.5	μg/L	100 μg/L	96.4	70.0	130					
Dichloromethane	75-09-2	E611F	1	μg/L	100 μg/L	102	70.0	130					
Ethylbenzene	100-41-4	E611F	0.5	μg/L	100 μg/L	92.6	70.0	130					
Tetrachloroethylene	127-18-4	E611F	0.5	μg/L	100 μg/L	93.2	70.0	130					
Toluene	108-88-3	E611F	0.5	μg/L	100 μg/L	99.0	70.0	130					
Trichloroethylene	79-01-6	E611F	0.5	μg/L	100 μg/L	94.9	70.0	130					
Polycyclic Aromatic Hydrocarbons (QCLot:									1				
Naphthalene	91-20-3	E641A	0.05	μg/L	0.5263 μg/L	76.1	50.0	140					

Page : 9 of 10

Work Order: WT2224510 Amendment 1
Client: McClymont & Rak Engineers Inc.

Project : 5820



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water	milou, buonground lovor	Matrix Spike (MS) Report									
					Spi	ike	Recovery (%)	Recovery	/ Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
Anions and Nutri	ents (QCLot: 776531)										
WT2224766-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	96.7 mg/L	100 mg/L	96.7	75.0	125		
Anions and Nutri	ents (QCLot: 776533)										
WT2224766-002	Anonymous	Fluoride	16984-48-8	E235.F	0.956 mg/L	1 mg/L	95.6	75.0	125		
Anions and Nutri	ents (QCLot: 778196)										
WT2224280-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	ND mg/L	2.5 mg/L	ND	70.0	130		
Anions and Nutri	ents (QCLot: 778197)										
WT2224280-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.1 mg/L	ND	70.0	130		
Cyanides (QCLo	t: 773103)										
WT2224459-002	Anonymous	Cyanide, strong acid dissociable (Total)		E333	0.232 mg/L	0.25 mg/L	92.6	75.0	125		
Total Metals (QC	Lot: 772785)										
WT2224480-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130		
		Antimony, total	7440-36-0	E420	0.0486 mg/L	0.05 mg/L	97.2	70.0	130		
		Arsenic, total	7440-38-2	E420	0.0504 mg/L	0.05 mg/L	101	70.0	130		
		Beryllium, total	7440-41-7	E420	0.00491 mg/L	0.005 mg/L	98.3	70.0	130		
		Cadmium, total	7440-43-9	E420	0.00480 mg/L	0.005 mg/L	96.1	70.0	130		
		Chromium, total	7440-47-3	E420	0.0127 mg/L	0.0125 mg/L	102	70.0	130		
		Cobalt, total	7440-48-4	E420	0.0120 mg/L	0.0125 mg/L	96.1	70.0	130		
		Copper, total	7440-50-8	E420	0.0113 mg/L	0.0125 mg/L	90.8	70.0	130		
		Iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130		
		Lead, total	7439-92-1	E420	0.0239 mg/L	0.025 mg/L	95.7	70.0	130		
		Manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130		
		Molybdenum, total	7439-98-7	E420	0.0122 mg/L	0.0125 mg/L	97.6	70.0	130		
		Nickel, total	7440-02-0	E420	0.0232 mg/L	0.025 mg/L	92.8	70.0	130		
		Selenium, total	7782-49-2	E420	0.0494 mg/L	0.05 mg/L	98.8	70.0	130		
		Silver, total	7440-22-4	E420	0.00456 mg/L	0.005 mg/L	91.1	70.0	130		
		Tin, total	7440-31-5	E420	0.0235 mg/L	0.025 mg/L	94.0	70.0	130		
		Titanium, total	7440-32-6	E420	ND mg/L	0.0125 mg/L	ND	70.0	130		
		Zinc, total	7440-66-6	E420	0.0228 mg/L	0.025 mg/L	91.0	70.0	130		
Total Metals (QC	Lot: 773013)										
WT2224507-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000909 mg/L	0.0001 mg/L	90.9	70.0	130		

Page : 10 of 10

Work Order: WT2224510 Amendment 1
Client: McClymont & Rak Engineers Inc.



Sub-Matrix: Water	b-Matrix: Water						Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Organ	ics (QCLot: 778198)									
WT2224462-001	Anonymous	Phenols, total (4AAP)		E562	0.0203 mg/L	0.02 mg/L	102	75.0	125	
Volatile Organic	Compounds (QCLot: 77	6870)								
WT2224508-001	Anonymous	Benzene	71-43-2	E611F	96.8 μg/L	100 μg/L	96.8	60.0	140	
		Chloroform	67-66-3	E611F	94.8 μg/L	100 μg/L	94.8	60.0	140	
		Dichlorobenzene, 1,4-	106-46-7	E611F	101 μg/L	100 μg/L	101	60.0	140	
		Dichloromethane	75-09-2	E611F	105 μg/L	100 μg/L	105	60.0	140	
		Ethylbenzene	100-41-4	E611F	94.1 μg/L	100 μg/L	94.1	60.0	140	
		Tetrachloroethylene	127-18-4	E611F	91.2 μg/L	100 μg/L	91.2	60.0	140	
		Toluene	108-88-3	E611F	101 μg/L	100 μg/L	101	60.0	140	
		Trichloroethylene	79-01-6	E611F	94.2 μg/L	100 μg/L	94.2	60.0	140	

Chain of Custody (COC) / Analytical Request Form



Canada Toli Free: 1 800 668 9878

COC Number: 20 - 1000499

Page () of ()

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Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

coc Number: 20 - 887463

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY, By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy. 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

02-359