REPORT

Hydrogeological Investigation

2451-2495 Danforth Avenue
Toronto, Ontario

Submitted to:

First Capital Asset Management LP

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Submitted by:

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November 8, 2024

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1.0 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by First Capital Asset Management LP ("FCAM" / "Client") to carry out a hydrogeological investigation in support of the proposed mix use development to be located at 2451-2495 Danforth Avenue in the City of Toronto, Ontario, M4C 1L1 (the "Site"), at the location shown on Figure 1 and Figure 2. The terms of reference for the hydrogeological consulting services are included in WSP's proposal No. CX22535291 dated July 5, 2022. Authorization to proceed with the investigation was received in the form of the signed Authorization to Proceed on August 5, 2022. Water takings in excess of 50 cubic metres per day (m^3/day) are regulated by the Ontario Ministry of the Environment, Conservation and Parks (MECP). A Permit or Agreement is required from the City of Toronto (City) for temporary and long-term discharges to the municipal sewer system.

The purposes of the assessment are: i) to assess temporary and long-term groundwater taking rates based on current design details and existing subsurface investigation data, and ii) to sample and assess existing groundwater quality to evaluate potential groundwater discharge options to the sewer system. An assessment of potential impacts to groundwater receptors and existing structures as a result of dewatering is provided. A recommended monitoring program is also included. It is understood that this report will be used in support of development applications to the City. This report was prepared in consideration of the Hydrological Review terms of reference outlined by the City (revised August 2018), Foundation Drainage Guidelines by the City, November 1, 2021, as well as the Ontario Water Resources Act, Ontario Regulation 387/04 and Toronto Municipal Code Chapter 681-Sewers. The hydrological review summary was prepared on November 8, 2024, by John Piersol, P.Geo., of WSP Canada Inc. and has been included as an attachment to this report.

This report should be read in conjunction with the *"Important Information and Limitations of This Report"* in Appendix A, which forms an integral part of this document. The reader's attention is specifically drawn to this information, as it is essential for the proper use and interpretation of this report. The factual data, interpretations and recommendations contained in this report pertain to a specific project as described in the report and are not applicable to any other project or site location. If the project is modified in concept, location or elevation, or if the project is not initiated within eighteen months of the date of the report, WSP should be given an opportunity to confirm that the recommendations in this report are still valid. It should be noted that this report addresses only the hydrogeological (physical) aspects of the subsurface conditions at the Site. The geotechnical (physical) aspects of the project are addressed by WSP under separate cover.

1.1 Scope of Work

The scope of work for the current hydrogeological investigation consisted of:

- Reviewing published information sources and data collected at the Site;
- Drilling and installation of monitoring wells as part of the concurrent environmental and geotechnical investigations;
- Collecting groundwater level measurements from the monitoring wells;
- Conducting hydraulic conductivity measurements at selected monitoring wells;
- Conducting groundwater quality sampling;
- Estimating both short-term and long-term dewatering requirements; and,

- Preparing a hydrogeological report suitable for submission to the City of Toronto in support of a development application.

2.0 PROJECT DESCRIPTION AND AVAILABLE INFORMATION

The Site is located at the southeast corner of the intersection of Danforth Avenue and Westlake Avenue, in the city of Toronto, Ontario. The Site is bordered by Danforth Avenue to the north, Westlake Avenue to the west, residential properties and Stephenson Park to the south, and commercial buildings to the east. The project area is currently occupied by a commercial property (grocery store) located centrally on the subject property with associated paved parking areas located to the east and west of the building. It is understood that the existing structures on Site are to be demolished as part of the construction process.

Based on the information and preliminary plans provided by the Client, it is understood that the existing building on the Site will be demolished and redeveloped with two 10-storey mixed-use buildings, with the remainder of the Site to include a driveway along the south property limits and a dedicated parkland area at the northwest corner. Two levels of underground parking is currently being considered for the development, anticipated to generally extend from lot-line to lot-line. For the purpose of this report, it is assumed that two levels of underground parking will be constructed and will extend approximately 7.0 m below ground surface (mbgs). Footings and elevator shafts are expected to typically extend no more than 2 m below the finished floor grade of the lowest level (9 mbgs). The footings and elevator shafts are proposed to be watertight.

3.0 INVESTIGATION OVERVIEW

3.1 Existing Reports

The following concurrent investigations have been carried out at the Site:

- WSP Canada Inc. Report No. 22535291 (1000), entitled, *"Geotechnical Investigation, Proposed Commercial and Residential Development, 2451-2495 Danforth Avenue, Toronto, Ontario"* dated February 26, 2024 (WSP 2024).

4.0 DESKTOP ASSESSMENT

4.1 Topography and Drainage

Based on survey data collected during the investigation, the ground surface at the Site is relatively flat, with a geodetic elevation ranging from approximately 131.2 metres above sea level (masl) to 130.2 masl. The ground surface in the vicinity of the Site slopes towards Lake Ontario to the South. The closest surface water feature to the Site is Taylor-Massey Creek, located approximately 1.2 km to the northeast of the Site. It is expected that surface water runoff at the Site would discharge to the municipal storm sewer system.

4.2 Physiography and Geology

The surficial geology aspects of the general Site area were reviewed from the following publications:

- Chapman, L.J., and Putnam, D.F., 2007, "The Physiography of Southern Ontario"; 4th Edition, Ontario Geological Survey; and,
- Sharpe, D.R., 1980. Quaternary Geology of Toronto and Surrounding Area; Ontario Geological Survey Preliminary Map P. 2204, Geological Series; scale 1:100,000.

Physiographic mapping in the area according to the above-noted reference indicates that the Site lies within the physiographic region of southern Ontario known as the Iroquois Plain. The Iroquois Plain region covers the border of the lake shore extending from the City of Trenton in the east to the city of St. Catharines in the southwest. The Iroquois Plain refers to an area of lowland that borders the present-day Lake Ontario, which was formed within the basin of Glacial Lake Iroquois, which was a larger and higher version of Lake Ontario. Lake Iroquois sediments consist both of granular soils (silt and sand) and finer-grained silt and clay soils. Apart from the naturally deposited soils within the study area, fills such as engineered fills and landscape fills are to be expected within the study area. The overburden within the Iroquois Plain in the vicinity of the study area is underlain by shale bedrock of the Georgian Bay Formation, which contains limestone interlayers. Surface and groundwater flow is predominantly to the south toward Lake Ontario.

The surficial geology mapping indicates that the Site lies within a region consisting of coarse-textured glaciolacustrine deposits of sand, gravel and minor silt and clay.

4.3 Groundwater Use

Municipally supplied potable water is expected in this portion of Toronto. Nevertheless, water well records in the vicinity of the Site were obtained from the MECP to assess potential groundwater use. Approximately 172 records for water wells located within 500 m of the Site were identified, and their locations are shown on Figure 3. Little information was provided on 33 of the records, which are not discussed further. The remaining 139 wells were constructed between 2004 and 2019, and are:

- Records of well abandonment or not used (6);
- Test holes, observation wells or wells used for monitoring purposes (131);
- One commercial water supply well (1); and,
- One dewatering well (1).

A commercial water supply well was identified approximately 300 m northwest of the Site. A table summarizing the water well records is provided in Appendix B.

4.4 Potential Contaminant Sources

WSP is currently preparing a Phase I ESA, which should be reviewed when available to identify any Areas of Potential Environmental Concern (APECs).

5.0 Field Investigation

5.1 Drilling and Well Installations

The combined geotechnical, hydrogeological and environmental field investigation for this assignment was carried out from September 11 to 12, September 14 to 17, and September 23, 2023, during which time seven boreholes (designated as BH23-1 to BH23-7) were advanced. The boreholes for the investigation were drilled using a standard track-mounted D-20 drill rig supplied and operated by Altech Drilling and Investigative Services Ltd. of Cambridge, Ontario, subcontracted to WSP. The approximate borehole locations are shown on Figure 2 and an inferred geologic cross section is shown on Figure 4. The Record of Borehole sheets can be found in Appendix C.

Each borehole was completed as a 50-millimetre (mm) diameter monitoring well, consisting of a PVC riser pipe, with a slotted screen sealed at a selected depth within the borehole. The annular borehole space around each screened interval was backfilled with silica sand, to a height of approximately 0.3 m above the top of the screen. The remaining annular space was backfilled to ground surface with bentonite chips. The well installation details are presented on the Record of Borehole sheets (Appendix C). The depths of the wells ranged from about 12.2 to 21.8 mbgs. Table 1 below outlines the monitoring well installation details.

The results of the drilling program indicated that overburden deposits at the Site generally consisted of surficial fill primarily composed of sand with minor gravel and silty sand overlying native deposits of sand to silty sand. Minor deposits of silty clay and silt were also noted in several boreholes. Bedrock was not encountered at any of the borehole locations.

Table 1: Monitoring Well Installation Details

Borehole ID	Ground Surface Elevation (masl)	Monitoring Well Depth (m)	Screened Elevations (masl)	Primary Screened Unit
BH23-1	131.1	18.1	115.1 – 113.0	Sand
BH23-2A	130.6	12.2	118.4 – 122.0	Silty Sand
BH23-2B	130.6	21.8	111.4 – 108.8	Silty Sand
BH23-3	131.2	21.2	112.1 – 110.0	Sand
BH23-4	130.6	12.2	122.0 – 118.4	Sand
BH23-5	130.2	12.1	122.7 – 119.1	Sand
BH23-6	130.9	21.4	111.3 – 109.6	Sand
BH23-7	130.5	18.1	115.8 – 112.4	Sand

5.2 Groundwater Level Measurements

Groundwater level measurements were collected at the Site starting in October 2023. Water levels were measured at each location with an electronic water level tape, which was cleaned between well locations. Per the City of Toronto Terms of Reference (TOR), groundwater levels were collected on a bi-weekly (i.e., every two weeks) basis for a period of three months. Table D1 attached, provides all available water level measurements collected to date as part of the current study.

The depth to groundwater at the Site was found to range from approximately 10.14 mbgs to 12.4 mbgs, where the ground surface is defined as the existing parking lot. The water table was found to be situated within the sand and silty sand layers, at elevations ranging from about 118.8 to 120.96 masl. It is expected that the depth to groundwater at the Site will vary both on a seasonal and year-over-year basis. The inferred groundwater flow direction is generally towards the south to southwest towards Lake Ontario and is shown on Figure 5.

Seasonal fluctuation in water levels on the Site should be expected. Given the limited number of monitoring events, seasonal trends could not be identified; however, shallow groundwater levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

5.3 Hydraulic Conductivity

To estimate the hydraulic conductivity of the soils adjacent to the intervals screened by the monitoring wells, single-well response tests were carried out by WSP in all monitoring wells, except BH23-4, which was noted to either be dry or have insufficient column to conduct testing. The tests were carried out by rapidly purging a known volume of water with a dedicated Waterra tube and foot valve and monitoring the subsequent water level recovery.

The data were analyzed using the AQTESOLV for Windows version 4.50 Professional software. The Bouwer-Rice (1976) method for unconfined conditions was used to analyse the single-well response testing data. The single-well response testing AQTESOLV results are provided in Appendix D. The estimated hydraulic conductivity values obtained from the rising head tests are summarized in Table 2 below.

Table 2: Single-Well Response Test Summary

Monitoring Well ID	Screened Interval (masl)	Groundwater Condition	Screened Unit	Est. Hydraulic Conductivity (m/s)
BH23-1	115.1 – 113.0	Unconfined	Sand	2 x 10-6
BH23-2A	122.0 – 118.4	Unconfined	Silty Sand	9 x 10-5
BH23-2B	111.4 – 108.8	Unconfined	Silty Sand	6 x 10-7
BH23-3	112.1 – 110.0	Unconfined	Sand	4 x 10-6
BH23-5	122.0 – 118.4	Unconfined	Sand	1 x 10-5
BH23-6	122.7 – 119.1	Unconfined	Sand	1 x 10-5
BH23-7	111.3 – 109.6	Unconfined	Sand	4 x 10-7

Notes:
masl = metres above sea level
m/s = metres per second

The estimated hydraulic conductivity of sand to silty sand layer, ranged from 9 x 10^{-5} m/s to 4 x 10^{-7} m/s, with a geometric mean of 4 x 10^{-6} m/s. The estimated hydraulic conductivities are within the typical range for the above soil type.

5.4 Groundwater Quality

Groundwater quality samples were collected from monitoring well BH23-6 on December 20, 2023 using low-flow sampling techniques, according to standard environmental practices. The samples were stored on ice following collection, and were delivered to Caduceon Laboratories of Richmond Hill, Ontario for analysis of the parameters stipulated under the City of Toronto Municipal Code, Chapter 681 (the 'Guidelines'). The laboratory analytical data sheets are provided in Appendix E.

On October 21, 2024, a groundwater quality sample was collected from BH23-6 using low-flow sampling techniques, according to standard environmental practices. The samples were stored on ice following collection, and were delivered to Bureau Veritas Laboratories of Mississauga, Ontario for analysis of the parameters stipulated under the City of Toronto Municipal Code, Chapter 681 (the 'Guidelines'). The laboratory analytical data sheets are provided in Appendix E.

Based on the sampling results for December 20, 2023, the analytical results indicate that the concentrations of all the analyzed parameters were below their respective Guideline values for both storm and sanitary sewer discharge, with the exception of total manganese [0.074 mg/L] and total suspended solids [TSS; 292 mg/L], each of which were reported at concentrations in excess of the storm sewer discharge guidelines. Elevated TSS concentrations are common for groundwater samples collected from relatively new monitoring wells completed in fine grained material, and the presence of elevated total manganese is assumed to be a consequence of the elevated TSS concentration. It is recommended that a professional dewatering and treatment specialist be consulted to evaluate treatment options (e.g., filtration and/or settling tanks together with contact media treatment using granular activated carbon and/or organoclay) for the noted groundwater quality issues.

Based on the sampling results for October 21, 2024, the analytical results indicate that the concentrations of all the analyzed parameters were below their respective Guideline values for both storm and sanitary sewer discharge. Prior to commencing any temporary construction dewatering activities, the suitability of the water for discharge will need to be confirmed by the contractor. It is recommended that samples be collected from the treatment system and submitted for laboratory analysis prior to commencing the full construction activities. The laboratory results should be provided to a Qualified Professional in order to confirm the discharge water is suitable for release under the applicable guidelines.

5.5 Hydrogeological Summary and Conceptual Site Model

For the purpose of estimating dewatering rates, the subsurface information obtained during the various investigations by WSP was reviewed to develop a conceptual model of the stratigraphic units that are present. The reported elevations of the contacts between the units are summarized in the following Table 4 and were used to approximate the thickness of the units.

Table 3: Conceptual Model Summary

Average Elevation (masl)	Thickness (m)	Hydraulic Conductivity (m/sec)	Description	
131.1 – 125.9	4.1	Not Assessed	“Fill”	Underlying the asphalt pavement, the Site is underlain by silty sand, sand, and gravel fill materials.
109.0 – 119.5	> 19.5 *(thickness not assessed)	4 x 10-7 to 9 x 10-5	“Sand; Silty Sand Unit”	The fill is underlain by non-cohesive sand and silty sand deposits. The units are grouped together for the purpose of the conceptual model. The unit is considered to be partially saturated and under unconfined conditions.

The highest groundwater elevation measured in the sand, silty sand to sandy silt unit (i.e., perched water table condition) was at monitoring well BH23-5 on October 21, 2024, at approximately 10.14 mbgs (120.96 masl).

Based on the results of the single-well response testing, the hydraulic conductivity of the sand, silty sand to sandy silt unit is estimated to be in the range of 4 x 10^{-7} m/s to 9 x 10^{-5} m/s. To be conservative, the maximum measured hydraulic conductivity of 9 x 10^{-5} m/s will be assigned to this unit for the dewatering evaluation.

Given the above hydraulic conductivity for the sand; silty sand unit and an assumed saturated thickness of approximately 1.76 m, the sand, silty sand to sandy silt unit was assigned a transmissivity (T = K b) of 13.7 m^2/day.

6.0 DEWATERING EVALUATION

For the purpose of determining dewatering rates and the zone of influences (“ZOI”), WSP has assumed that dewatering will be carried out as follows;

- WSP understands that building designs are preliminary and that finalized drawings are not available. For the purpose of this report, it is assumed that finished floor elevation will be approximately 124.0 masl, and that underground parking will generally extend building line to building line. The dimensions of the required excavation would be approximately 149 m wide by 38 m long, for an area of 5662 m^2 and a perimeter length of 374 m; The ground elevation is 131.0 masl.
- The depth to the finished floor elevation will be 7.0 mbgs (about elevation 124.0 masl), with elevator shafts and foundation footings up to 2 m below the finished floor elevation, for a total excavation depth of 9 m (about elevation 122.0 masl); The footings and elevator shafts are proposed to be watertight.
- In order to maintain a dry excavation, the dewatering level will be about 1.0 m below the bottom of the excavation, or approximately 8.0 mbgs (123 masl). The method of construction dewatering is to be solely determined by the Contractor based on their own independent assessment of the Site-specific conditions, and (if necessary) by their specialist dewatering contractor;
- The shallowest depth to groundwater was measured at approximately 10.14 mbgs (120.96 masl) measured in October of 2024. In accordance with the City of Toronto Foundation Drainage Guidelines, the monitoring conducted to date is considered to fall under Option 1 (Flexible, Year-Round). As such, an allowance of 2.8 m has been added to the highest measured groundwater level to account for seasonal fluctuations, for a maximum anticipated water level of 7.34 mbgs (123.76 masl). Based on this, and the excavation depths noted above, the required drawdown during dewatering is expected to be 0.76 m;
- Surface water runoff will be directed away from any open excavation; and,
- Groundwater should be pumped in a manner that prevents loss of ground.

Based on a review of the subsurface conditions and proposed servicing plans, it has been assumed that dewatering of the sand, silty sand and sandy silt deposits will be required to facilitate construction.

6.1 Dewatering Zone of Influence

The dewatering zone of influence (ZOI) represents the lateral extent of groundwater drawdown in response to dewatering. The dewatering ZOI is governed by the transmissivity of the hydrostratigraphic units and the depth of dewatering required. Applying the Theis analytical solution, the lateral extent of groundwater level drawdown can be estimated as follows:

$$s(r,t) = \frac{Q}{4\pi T} W\left(\frac{r^2 S}{4Tt}\right)$$

where $s(r,t)$ = drawdown at distance (r) and time (t) after the start of pumping
Q = pumping rate required to achieve desired drawdown at the source
T = aquifer transmissivity
S = aquifer storativity, and
W = Theis well function.

For the purpose of assessing the potential impacts of dewatering activities on the nearby natural environment and to local structures or services, it is conservatively estimated that seasonal fluctuations in groundwater levels are at least 0.5 m. Therefore, natural systems are expected to be able to tolerate at least a 0.5 m lowering in groundwater levels without an adverse effect. Therefore, the ZOI to a drawdown of 0.5 m is referred to herein as the "effective" ZOI.

Based on Theis analytical approach, the ZOI was estimated for the sand, silty sand to sandy silt unit during construction dewatering (i.e., drawdown of 0.76 m), assuming a transmissivity of 13.7 m^2/day; aquifer storativity of 0.1. Accordingly, it is estimated that a drawdown of 0 m will occur at approximately 90 m from the dewatering source area. The effective ZOI was estimated to be approximately 4 m.

6.2 Water Taking Needs

To assess potential temporary dewatering rates for building construction, the steady state dewatering rate was estimated for an excavation 149 m long by 38 m wide, with a drawdown of 0.76 m in the sand, silty sand to sandy silt unit. The modified Jacob's equation was applied using the aquifer parameters and conditions given above:

$$Q = \left[\frac{\pi K \left(H^2 - {h_w}^2\right)}{\ln\left(R_0/r_s\right)}\right] + \left[\frac{xK(H^2 - h^2)}{2L}\right]$$

where:

Q = Dewatering rate (m^3/s)
H = initial groundwater level
h = final groundwater level
K = hydraulic conductivity
x = total perimeter
L = line source distance, ZOI

The steady-state dewatering rate is therefore estimated to be 79 m^3/day. To account for potential heterogeneities in the overburden, a two times factor of safety was applied to the steady-state dewatering rate, for an estimated maximum of 158 m^3/day

6.2.1 Dewatering Rates for Removal from Storage and Precipitation Events

For short periods of time, higher dewatering rates will be required to remove groundwater from storage, and the ZOI. The volume of groundwater that could be freely released from storage was estimated to be approximately 107 m^3, requiring an additional pumping rate of up to 8 m^3/day (based on removal over 14 days).

Ontario Regulation 63/16 stipulates that stormwater (i.e., incidental rainfall) is no longer required to be accounted for in the dewatering permitting process for the upper limit of an EASR; however, any incidental precipitation, which does not infiltrate into the base of the excavation, will have to be removed and disposed of as part of the construction activities. Assuming a 30-mm rain event occurred over the excavation area during the high dewatering rate period, an additional pumping rate of 187 m^3/day would be required.

6.2.2 Total Construction Dewatering Rate

The following table summarizes the above estimated construction dewatering (short-term) rate. As noted above, a factor of safety of 2.0 has been applied to the steady-state dewatering rates used for permitting and design, to account for potential variability in the hydraulic conductivity of the subsurface units being dewatered.

Table 4: Summary of Total Construction Dewatering Capacity

Dewatering Source	Steady State Groundwater Inflow (Factor of Safety = 2.0) (m3/day)	Removal of Storage (m3/day)	Removal of 30 mm Precipitation Event (m3/day)	Total Construction Dewatering Capacity (m3/day)
Construction Dewatering	158	8	187	353

The sum of the factored steady state groundwater inflow rate, the initial removal of groundwater from storage and the management of incident precipitation is estimated to result in a total construction dewatering rate of 274 m^3/day (274,000 L/day) without safety factor; and 353 m^3/day (353,000 L/day) with safety factor, which is less than the 400 m^3/day threshold for which an EASR is required by the MECP. This finding should be reviewed during the completion of detailed design and the development of construction methods and plans.

6.2.3 Total Long-Term Dewatering Rate

The shallowest depth to groundwater was measured at approximately 10.14 mbgs (120.96 masl) measured in October of 2024. In accordance with the City of Toronto Foundation Drainage Guidelines, an allowance of 2.8 m has been added to the highest measured groundwater level to account for seasonal fluctuations, for a maximum anticipated water level of 7.34 mbgs (123.76 masl). Based on this, the foundation drainage is expected to be 0.16 m below the seasonal high water level (i.e.at the elevation of 123.60 m). A round of groundwater levels is recommended to be collected during May to confirm this assumption. The other option (Option 2) based on the City of Toronto Foundation Drainage Guidelines is to capture a minimum of six static groundwater level measurements, taken every two weeks, within the months of April, May and June.

Applying the modified Jacob's equation and assuming a long-term lowering of 0.16 m in the sand and silty sand unit, the long-term steady state dewatering rate from these units is estimated to be 43 m^3/day with a factor of safety of 2.0.

As per the City of Toronto requirement, the basement levels should include a "tanked" design able to withstand hydrostatic pressure and should not include a subgrade/sub-slab drainage system. Therefore, a long-term PTTW for groundwater flow is not anticipated to be required. The need to obtain a long-term sewer discharge permit from the City of Toronto is not anticipated.

7.0 ASSESSMENT OF POTENTIAL EFFECTS OF WATER TAKING

The following section assesses the potential impacts of the proposed water taking program on local groundwater resources, natural heritage features, surface water resources and with respect to existing structures.

7.1 Mobilization of Contaminants

As summarized in Section 5.4, based on the groundwater sampling conducted on December 30, 2023, the groundwater quality results indicate that constituent exceedances were identified in groundwater samples above the applicable criteria. Based on the available sampling results, potential impacts from mobilization of contaminants are expected at the Site during dewatering. The quality of the groundwater pumped during construction dewatering should be monitored for indications of increasing parameter concentrations that could

suggest the mobilization of contaminants. Given the above-stated potential contaminant sources, monitoring of the parameters included in the City Sewer Use By-Law should be adequate to screen for potential issues.

7.2 Groundwater Resources

The MECP Water Well Record database indicates that no water supply wells were identified within 500 m of the Site. This is consistent with the expectation that this urban core area of Toronto is supplied with municipally-sourced potable water. As such, no potential impacts to private water supply wells are expected as a result of the proposed water taking activities.

7.3 Surface Water Resources / Natural Heritage Features

Based on available mapping, Taylor-Massey Creek is located approximately 1.2 km northeast of the Site, The Don River is located approximately 4.9 km west of the Site and Lake Ontario is located approximately 2.5 km south of the Site and are therefore outside of the maximum effective ZOI (i.e.,90 m in the sand, and silty sand unit). Given the effective ZOI (See Section 6.1), the water taking activities are not expected to impact local surface water resources.

7.4 Geotechnical Assessment

As indicated above, the maximum drawdown at the pumping source is anticipated to be approximately 0.8 m. This decreases progressively with distance from the pumping source until reaching the effective ZOI of 4 m. It is anticipated that the dewatering will extend to about 1 m below the proposed foundation depths. As the construction methods and sequencing are not finalized, only preliminary and generalized comments on the potential dewatering impacts on structures can be made at this time. The conceptual stratigraphic model of the site consists of asphalt underlain by fill material, which overlays loose to very dense sand, silty sand to sandy silt and silt and interlayered hard silty clay deposits.

For the purpose of this assessment, the predicted zone of influence due to groundwater dewatering will depend on the depth of excavations, lateral extent (width) of the excavations, the nature of the excavation support (shoring) system used by the contractor and, most importantly, the depths and locations of the dewatering well points in relation to the relevant existing structures. The settlements at various distances from the source of the dewatering are summarized below:

Table 5: Summary of Anticipated Settlement Due to Dewatering

Distance from Pumping Source (m)	Anticipated Drawdown (m)	Increase in Effective Stress (kPa)	Approximate Total Settlement (mm)
1	0.8	8	<10
5	0.5	6	<5
10	0.3	3	
15	0.3	3	
20	0.2	2	

Based on the above, the predicted maximum settlements at distances of 5 m or more from the pumping source are within the typical tolerable limits for buildings and infrastructure. Any buildings or infrastructure located closer

than 5 m from the pumping source should be carefully located, monitored and, if necessary, temporarily supported or underpinned during active dewatering. It is recommended that pre-construction condition surveys be conducted on all buildings and infrastructure within 15 m of the pumping source, and that settlement tolerances for any existing settlement-sensitive utilities be confirmed with utility owners.

Geotechnical settlement assessment should be reviewed as the design progresses.

8.0 DISCHARGE PLAN

If the pumped water from the construction dewatering system is discharged to the municipal sewer, a temporary sewer discharge permit from the City will be required. The proposed layout of the construction dewatering, and discharge method should be determined by the Contractor, and likely by their specialist dewatering contractor. Guidance is provided in the sections that follow.

8.1 Discharge Criteria for Total Suspended Solids and Turbidity

The monitoring program (Section 9.0, below) describes the recommended procedures for monitoring the treated dewatering discharge in terms of field turbidity measurements, as well as the collection of total suspended solids (TSS) samples for laboratory analysis. The City Sewer Use By-Law stipulates a TSS limit of 350 mg/L for discharged water to the sanitary sewer and a TSS limit of 15 mg/L for the storm sewer. It is expected that treatment of the water pumped during construction dewatering to remove suspended sediment will be required prior to sewer discharge.

Based on the analytical results for TSS in the groundwater samples collected using a low-flow sampling technique (see Section 5.3), pre-treatment (e.g., settlement/sedimentation and/or filtration) to remove suspended sediment is not expected for groundwater discharged to the sanitary sewer but will likely be needed for groundwater discharged to the storm sewer.

8.2 Discharge Criterion for Temperature

The City Sewer Use By-Law states that the temperature of the discharge to the sanitary sewer can be no greater than 60 degrees Celsius and that the temperature of the discharge to the storm sewer can be no greater than 40 degrees Celsius. These temperatures are not considered a concern as the construction dewatering discharge is not expected to experience any significant heating other than that provided by the ambient air temperature and solar radiation and is not considered to be a concern in the long-term.

9.0 PROPOSED MONITORING, MITIGATION AND CONTINGENCY PLAN

The following section provides a recommended monitoring program for implementation during the operation of the temporary dewatering system. It is recommended that the data from the monitoring program be reviewed by the project hydrogeologist or engineer, and the program modified as appropriate.

9.1 Discharge Water Monitoring

The following construction dewatering monitoring program should be undertaken:

i) To monitor the discharge rates;
ii) To confirm that the groundwater discharged from the dewatering system meets the City Sewer Use By-Law*;* and,
iii) To respond to any changing conditions, such as discharge water quality non-compliance and spills.

The monitoring program is not intended to supersede any monitoring requirements that the City may impose.

- The contractor shall provide measurement controls suitable to measure and record the daily volume of water discharged (e.g., totalizer) and flow rate (e.g., flow meter) to confirm that discharge rates remain below the maximum permitted discharge rate;
- Prior to release of the water from the settling/holding tank to the sanitary or storm sewer, a sample should be collected and compared to the City Sewer Use By-Law. If the sample meets the applicable discharge limits, the water may be discharged to the sewer; if the sample does not meet the applicable discharge limits, the water should be hauled off-Site for disposal;
- Prior to initiating the main dewatering activities at the Site, at least one water quality sample shall be collected of the untreated water quality and at least one water quality sample shall be collected immediately after the Contractor's selected treatment system and submitted for laboratory analysis to confirm compliance with the parameters in the City Sewer Use By-Law. Corresponding measurements for field turbidity, temperature and pH will be manually collected at the same locations at the time of sampling. A Qualified Professional (QP) must review the results of the water quality analyses immediately to decide whether further treatment is required. If no water quality concerns are identified, the monitoring program will include frequent visual assessments, turbidity, temperature, and pH measurements and TSS sampling, with periodic more comprehensive sampling, to confirm compliance with the City Sewer Use By-Law discharge limits as detailed below;
- Storage tanks, or an equivalent measure, should be mobilized to the Site to temporarily contain the effluent generated at the commissioning of the system, pending the results of the initial effluent sampling event to determine whether additional treatment is in fact required;
- The settling tank and, as necessary any additional water treatment measures, should be implemented to control the concentration of TSS in the discharge water such that it remains below the maximum discharge concentration at all times. This will be confirmed with the following monitoring:
    a. Dewatering effluent shall be sampled on Day 1, Day 3 and then on a weekly basis and analyzed for TSS. If the water is sequestered and discharged intermittently (such as following rain events), the treated effluent will be sampled at least twice during the discharge event, and analyzed for TSS; and
    b. The turbidity of the dewatering effluent shall be monitored daily (or during intermittent discharge events) with a calibrated field unit, and a written log kept. Turbidity monitoring results are to be correlated with the TSS results from the laboratory and used as a daily indicator that TSS remains below 350 mg/L for water discharged to the sanitary sewer and below 15 mg/L for water discharged to the storm sewer. If the monitoring results indicate TSS is above the applicable discharge limit, additional treatment will be undertaken immediately to reduce TSS concentrations to under the applicable discharge limit. The additional treatment measures could include filtration and/or deployment of a second settling tank allowing longer residency periods for the dewatering effluent;
- Where additional treatment is required, the Contractor shall conduct daily sampling (or during intermittent discharge events) until the efficacy of the treatment is demonstrated. Water will not be permitted to be discharged to the sewer until the quality meets the City Sewer Use By-Law;

- Visual inspection of the discharge water shall be conducted at least once daily (or during intermittent discharge events) to ensure there is no visible oil or sheen, and a written log kept. Measurements of field turbidity and pH will be recorded at all discharge location(s) at least once daily (or during intermittent discharge events) to confirm that discharge quality maintains a turbidity level corresponding to ensuring that the concentration is below the required TSS limit, and that pH remains within a range between 6.0 and 11.5 for discharge to the sanitary sewer and between 6.0 and 9.5 for discharge to the storm sewer;
- Additional monitoring of the treated effluent should occur on Day 1, Day 3, then on a weekly basis for six weeks, and then on a monthly basis thereafter. If the discharge events are intermittent, monitoring of the first eight events should occur, followed by a reduced frequency as recommended by the project professional engineer or hydrogeologist. The samples should be analyzed for parameters contained in the City Sewer Use By-Law, or as recommended by the project professional engineer or hydrogeologist based on conditions at that time. Additional sampling events should also be considered whenever significant alterations (if any) are made to the dewatering system over the course of the project; and,
- Based on the water quality monitoring program, the need to maintain the treatment and mobilize any other necessary treatment measures should be evaluated on an on-going basis.

9.2 Groundwater Level Monitoring

If feasible within the Site boundaries, it is recommended that at least three monitoring wells be installed outside of the excavation walls to monitor groundwater elevations. If a dewatering array is to be installed around the excavation perimeter by the specialist dewatering contractor, these monitoring wells should be installed at the same time.

It is recommended that groundwater elevations be monitored in the existing monitoring well network (if accessible) at the Site during construction dewatering as long as possible until decommissioned during building construction activities.

Water levels should be monitored once in the available monitoring wells prior to the commencement of dewatering activities, followed by the selection of representative monitoring wells in which an automatic datalogger can be installed. Starting with the commencement of dewatering activities, groundwater levels are recommended to be monitored weekly for one month, including datalogger downloads. Subsequently, it is recommended that the groundwater levels be monitored and the dataloggers downloaded on a monthly basis, or as recommended by the project professional engineer or hydrogeologist.

10.0 MONITORING WELL DECOMMISSIONING

When no longer required, the monitoring wells installed at the Site should be decommissioned by a MECP-licensed Water Well Contractor in accordance with applicable legislation.

11.0 LIMITATIONS

This report was prepared for First Capital Asset Management LP to accompany development applications to the City of Toronto related to the proposed commercial and residential development at the Site. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the sole responsibility of such third parties. This report is subject to the *Important Information and Limitations of this Report*, as attached in Appendix A, and to any other limitations as stated in the WSP reports prepared for this Site on which this report relies.

WSP has relied in good faith on the data and information provided by First Capital Asset Management LP and others, and on other materials as noted in this report. WSP has assumed that the information provided was factual and accurate. WSP accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

12.0 REFERENCES

Powers, J. (1992). *Construction Dewatering: New Methods and Aplications, 2nd edition.*

Putnam, & Chapman. (2007). *The Physiography of Southern Ontario.* Ontario Geological Survey.

Sharpe, D. (1980). *Quaternary Geology of Toronto and the Surrounding Area.* Ontario Geological Survey.

Watters Environmental Group Inc. (2013). *Phase II Environmental Site Assessment, 2451 Danforth Avenue, Toronto, Ontario.*

Signature Page

WSP Canada Inc.

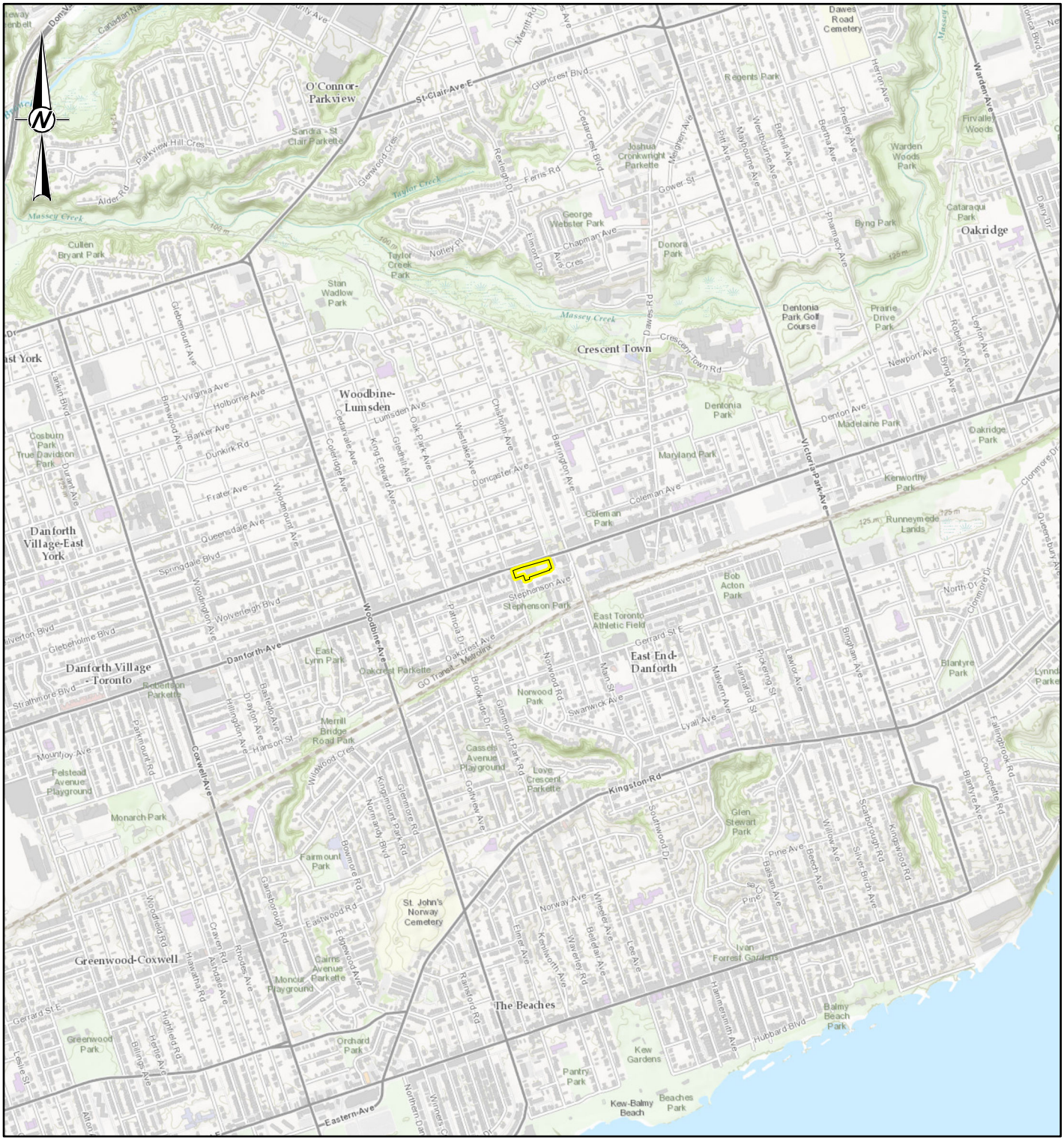
Syed Ali, Ph.D., P.Geo
Hydrogeologist

John Piersol, M.Sc., P.Geo
Principal Hydrogeologist

JP/SA/rk/lb

https://wsponline.sharepoint.com/sites/gld-165095/project files/6 deliverables/hydrog/22535291-r-rev0-fcam 2451 danforth hydrog-08nov2024.docx

Figures



LEGEND

SITE BOUNDARY

0 500 1,000

1:25,000 METRES

REFERENCE(S)

1. BASE MAP: YORK UNIVERSITY, CITY OF BRAMPTON, CITY OF TORONTO, REGION OF DURHAM, PROVINCE OF ONTARIO, ONTARIO MNR, ESRI CANADA, ESRI, HERE, GARMIN, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC, NRCAN
2. PROJECTION: NAD 1983 UTM ZONE 17N, TRANSVERSE MERCATOR

CLIENT
FIRST CAPITAL ASSET MANAGEMENT LP

PROJECT
GEOTECHNICAL AND HYDROGEOLOGICICAL EXPLORATION
2451-2495 DANFORTH AVENUE, TORONTO, ONTARIO

TITLE
KEY PLAN

CONSULTANT

wsp

YYYY-MM-DD	2024-02-09
DESIGNED	---
PREPARED	JT / JPR
REVIEWED	SAA
APPROVED	---

PROJECT NO.	CONTROL	REV.	FIGURE
22535291	0003	A	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm

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PLAN LEGEND

DEVELOPMENT BOUNDARY

MONITORING WELL

REFERENCES & DISCLAIMERS

MINISTRY OF ENVIRONMENT WATER WELL INFORMATION SYSTEM, KING'S PRINTER. LOCATION AND ELEVATIONS OF MAPPED WELLS ARE SUBJECT TO REVISION BASED ON DRILL RECORD OR FIELD VERIFICATION.

ALIGNMENT OF ORTHOGRAPHIC IMAGERY IS APPROXIMATED TO SELECT FEATURES ON DATUM. AWAY FROM POINTS OF ALIGNMENT THE ORTHOGRAPHIC IMAGE MAY BE DIMENSIONALLY SKEWED OR PROJECTED OFF THE MAP DATUM PLANE.

0 10 20 30 m

1:500

PLOTTED 11X17" TABLOID

PROJECTION IS UTM NAD 83 ZONE 17

CLIENT
FIRST CAPITAL ASSET MANAGEMENT LP

PROJECT
GEOTECHNICAL AND HYDROGEOLOGICAL EXPLORATION
2451-2495 DANFORTH AVENUE, TORONTO, ONTARIO

TITLE
SITE PLAN

CONSULTANT

wsp

YYYY-MM-DD	2024-02-12
DESIGNED	XXX
PREPARED	XXX
REVIEWED	XXX
APPROVED	XXX

PROJECT NO.	CONTROL	REV.	FIGURE
22535291	0003	----	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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PLAN LEGEND

- DEVELOPMENT BOUNDARY WITH 200m OFFSET
- DEEP BORED WELL >10 M
- DRILLED OVERBURDEN WELL
- TEST OR OBSERVATION WELL
- RECORD OF ABANDONMENT
- INFORMATION UNRECORDED
- MONITORING WELL / MULTI-TAG
- RECORD OF DEWATERING NEST
- TEST BOREHOLE
- MONITORING WELL

REFERENCES & DISCLAIMERS

MINISTRY OF ENVIRONMENT WATER WELL INFORMATION SYSTEM, KING'S PRINTER. LOCATION AND ELEVATIONS OF MAPPED WELLS ARE SUBJECT TO REVISION BASED ON DRILL RECORD OR FIELD VERIFICATION.

ALIGNMENT OF ORTHOGRAPHIC IMAGERY IS APPROXIMATED TO SELECT FEATURES ON DATUM. AWAY FROM POINTS OF ALIGNMENT THE ORTHOGRAPHIC IMAGE MAY BE DIMENSIONALLY SKEWED OR PROJECTED OFF THE MAP DATUM PLANE.

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PROJECTION IS UTM NAD 83 ZONE 17

CLIENT
FIRST CAPITAL ASSET MANAGEMENT LP

PROJECT
GEOTECHNICAL AND HYDROGEOLOGICAL EXPLORATION
2451-2495 DANFORTH AVENUE, TORONTO, ONTARIO

TITLE
REPORTED WATER WELL RECORDS

CONSULTANT

YYYY-MM-DD	2024-02-12
DESIGNED	
PREPARED	JPR
REVIEWED	SAA
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
22535291	0003	----	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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W

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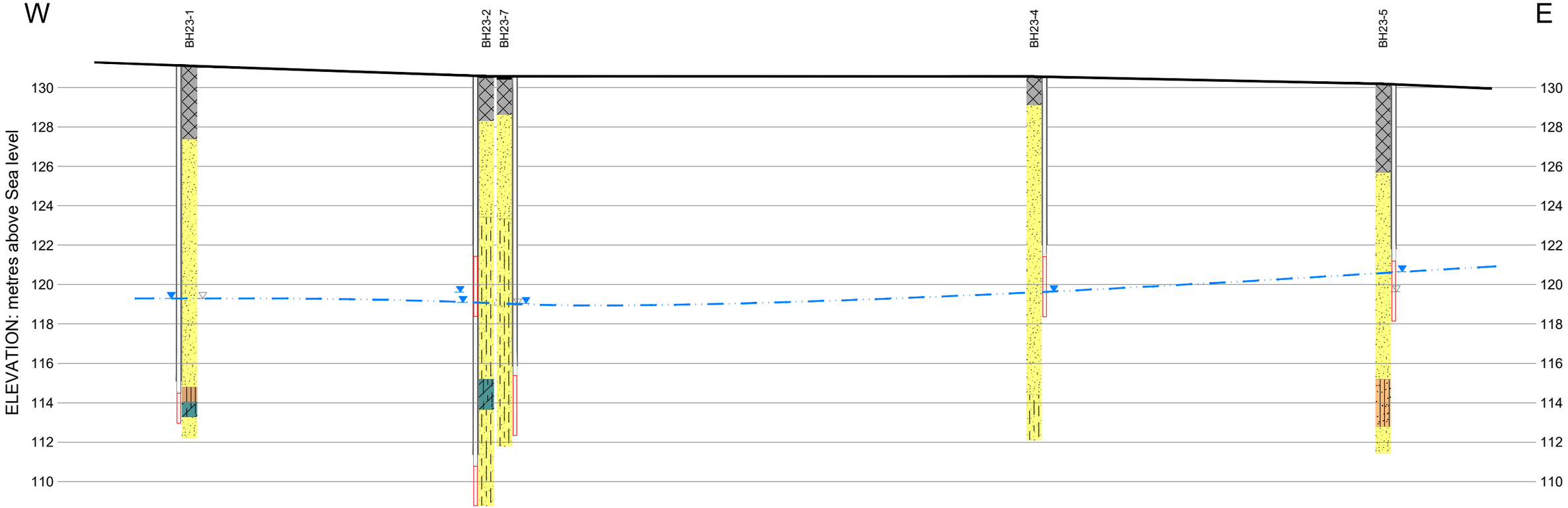

PLAN LEGEND

MONITORING WELL

SOIL PATTERN LEGEND AND GENERIC SHADING

- ORGANICS / TOPSOIL
- FILL
- SAND
- SAND TRACE SILT
- SILTY SAND
- SILT
- SANDY SILT
- SILTY CLAY

SECTION WELL SYMBOLS

BH1 — BOREHOLE ID

RECORDED STATIC WATER LEVEL

AS BUILT / PREVIOUS STATIC

SCREEN

NOTES

TO BE READ IN CONJUNCTION WITH REPORTING WITHIN WHICH ILLUSTRATION IS BOUND.
LOCATION AND ELEVATIONS OF FIELD VERIFIED WELLS ARE SUBJECT TO REVISION.

MONITORS SURVEYED ON GEODETIC DATUM NAD 83 ZONE 17 MASL.

STATIC WATER LEVELS 19 DECEMBER 2023.

0 10 20 30 m

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CLIENT
FIRST CAPITAL ASSET MANAGEMENT LP

PROJECT
GEOTECHNICAL AND HYDROGEOLOGICAL EXPLORATION
2451-2495 DANFORTH AVENUE, TORONTO, ONTARIO

TITLE
CROSS-SECTION A - A'

CONSULTANT

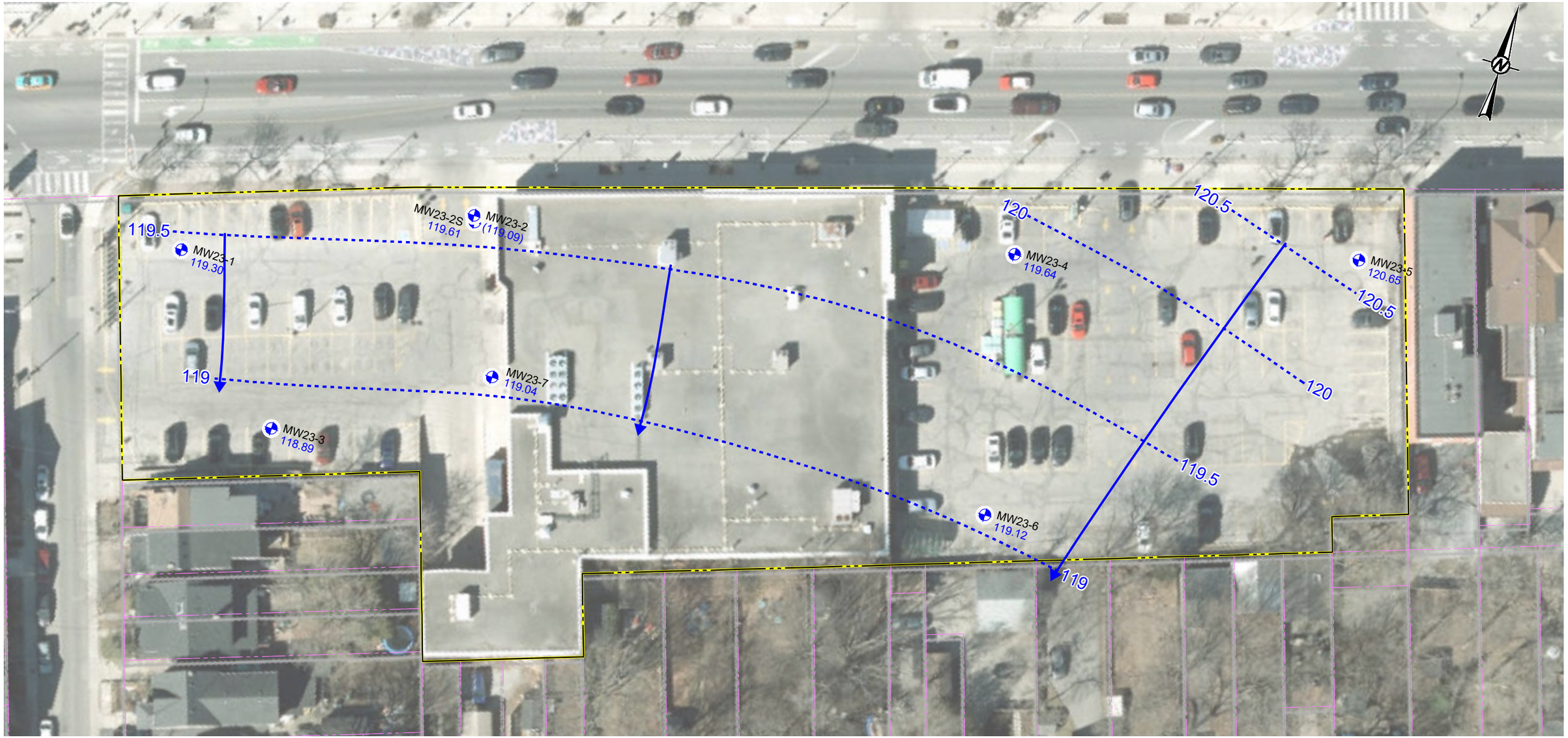
wsp

YYYY-MM-DD	2024-02-12
DESIGNED	
PREPARED	JPR
REVIEWED	SAA
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
22535291	0003	----	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm



PLAN LEGEND

- DEVELOPMENT BOUNDARY
- MONITORING WELL
- 119.35 STATIC WATER LEVEL ELEVATION (masl)
- INTERPOLATED GROUNDWATER CONTOUR (masl)
- INFERRED DIRECTION OF GROUNDWATER FLOW

REFERENCES & DISCLAIMERS

WATER LEVEL MONITORING 19 DECEMBER 2023.
INTERPOLATION USES HIGHEST POTENTIAL AT NESTED MONITORS.
LEVEL IN BRACKETS () STATIC WATER LEVEL FROM LOWER SCREEN AT NESTED MONITOR.

ALIGNMENT OF ORTHOGRAPHIC IMAGERY IS APPROXIMATED TO SELECT FEATURES ON DATUM. AWAY FROM POINTS OF ALIGNMENT THE ORTHOGRAPHIC IMAGE MAY BE DIMENSIONALLY SKEWED OR PROJECTED OFF THE MAP DATUM PLANE.

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PROJECTION IS UTM NAD 83 ZONE 17

CLIENT
FIRST CAPITAL ASSET MANAGEMENT LP

PROJECT
GEOTECHNICAL AND HYDROGEOLOGICAL EXPLORATION
2451-2495 DANFORTH AVENUE, TORONTO, ONTARIO

TITLE
GROUNDWATER FLOW

CONSULTANT

wsp

YYYY-MM-DD	2024-02-12
DESIGNED	XXX
PREPARED	XXX
REVIEWED	XXX
APPROVED	XXX

PROJECT NO.	CONTROL	REV.	FIGURE
22535291	0003	----	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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APPENDIX A

Important Information and Limitations of This Report

IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Standard of Care: WSP Canada Inc. (WSP) has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied is made.

Basis and Use of the Report: This report has been prepared for the specific site, design objective, development and purpose described to WSP by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. Any change of site conditions, purpose, development plans or if the project is not initiated within eighteen months of the date of the report may alter the validity of the report. WSP cannot be responsible for use of this report, or portions thereof, unless WSP is requested to review and, if necessary, revise the report.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without WSP's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, WSP may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to WSP. The report, all plans, data, drawings and other documents as well as all electronic media prepared by WSP are considered its professional work product and shall remain the copyright property of WSP, who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of WSP. The Client acknowledges that electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore the Client can not rely upon the electronic media versions of WSP's report or other work products.

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, communications between WSP and the Client, and to any other reports prepared by WSP for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. WSP can not be responsible for use of portions of the report without reference to the entire report.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the Client in the design of the specific project. The extent and detail of investigations, including the number of test holes, necessary to determine all of the relevant conditions which may affect construction costs would normally be greater than has been carried out for design purposes. Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.

Soil, Rock and Ground Water Conditions: Classification and identification of soils, rocks, and geologic units have been based on commonly accepted methods employed in the practice of geotechnical engineering and related disciplines. Classification and identification of the type and condition of these materials or units involves judgment, and boundaries between different soil, rock or geologic types or units may be transitional rather than abrupt. Accordingly, WSP does not warrant or guarantee the exactness of the descriptions.

Special risks occur whenever engineering or related disciplines are applied to identify subsurface conditions and even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions. The environmental, geologic, geotechnical, geochemical and hydrogeologic conditions that WSP interprets to exist between and beyond sampling points may differ from those that actually exist. In addition to soil variability, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.

Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

Sample Disposal: WSP will dispose of all uncontaminated soil and/or rock samples 90 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client’s expense. In the event that actual contaminated soils, fills or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.

Follow-Up and Construction Services: All details of the design were not known at the time of submission of WSP's report. WSP should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of WSP's report.

During construction, WSP should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not materially differ from those interpreted conditions considered in the preparation of WSP's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in WSP's report. Adequate field review, observation and testing during construction are necessary for WSP to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, WSP's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

APPENDIX B

MECP Water Well Records

LABEL	CON LOT	DATE mmm-yr	EASTING NORTHING	ELEV masl	WTR mbgl	FND Qu	SCR TOP mbgl	LEN m	SWL mbgl	RATE L/min	TIME min	PL mbgl	DRILLER METHOD	TYPE STAT	WELL NAME DESCRIPTION OF MATERIALS
6927642		Jan-04	636835 4838529	79.2	11.9	-	17.7	-3.4	12.2				1413 RC	DW NU	**MOE# 6927642** 0.0 BRWN SAND PCKD 12.2 BRWN FSND 18.3 BRWN FSND PCKD 21.0
6927643		Jan-04	636833 4838542	NR					NR				1413 -	- -	**MOE# 6927643 TAG#A003784** 0.0
6927734		Mar-04	636833 4838542	79.2					NR				6875 -	AB NU	**MOE# 6927734 TAG#A003784** 0.0
7120634		Jan-09	636757 4838350	131.7					NR				6607 -	TH MO	**MOE# 7120634 TAG#A081338** 0.0 BRWN SAND SOFT 10.7 GREY SAND SOFT 15.2
7154452		May-10	636793 4838632	129.8			28.0	-10.1	NR				6809 -	TH TH	**MOE# 7154452 TAG#A100807** 0.0 BRWN SAND DRY 31.1 BRWN SAND WBRG 38.1
7161372		Mar-11	636772 4838302	129.8			6.1	-3.0	NR				7241 DP	OW TH	**MOE# 7161372 TAG#A075585** 0.0 BRWN SAND WBRG 9.1
7196476		Oct-12	636538 4838569	131.7					NR				6032 -	- -	**MOE# 7196476 TAG#A102091** 0.0
7196510		Sep-12	636532 4838550	131.4	11.9	Un	10.7	-3.0	NR				6032 BR	OW -	**MOE# 7196510 TAG#A102901** 0.0 BRWN SAND LOOS 1.8 BRWN SAND DNSE 13.7
7205252		Jun-13	636751 4838651	129.8			3.4	-3.0	NR				7241 DP	TH -	**MOE# 7205252 TAG#A150579** 0.0 BRWN SAND GRVL FILL 0.3 BRWN CSND LOOS 4.3 BRWN CSND DNSE 6.4
7205253		Jun-13	636747 4838605	129.8			3.0	-3.0	NR				7241 DP	TH -	**MOE# 7205253 TAG#A146629** 0.0 BRWN FILL LOOS 0.3 BRWN SAND 5.8
7205254		Jun-13	636699 4838607	130.1			9.1	-3.0	NR				7241 DP	- -	**MOE# 7205254 TAG#A116713** 0.0 BLCK 0.9 BRWN SAND 12.2
7211130		Sep-13	636747 4838569	130.1	9.1	Un	12.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211130 TAG#A155404** 0.0 BRWN FILL SAND LOOS 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 15.2
7211131		Sep-13	636628 4838519	130.1	9.1	Un	15.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211131 TAG#A155403** 0.0 BRWN FILL SAND LOOS 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 18.3
7211132		Sep-13	636648 4838538	129.8	9.1	Un	12.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211132 TAG#A155402** 0.0 BRWN FILL SAND LOOS 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 15.2
7211133		Sep-13	636670 4838542	129.8	9.1	Un	12.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211133 TAG#A155401** 0.0 BRWN FILL SAND LOOS 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 15.2
7211134		Sep-13	636664 4838554	129.8	9.1	Un	12.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211134 TAG#A155400** 0.0 BRWN FILL SAND LOOS 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 15.2
7211135		Sep-13	636626 4838535	130.1	9.1	Un	12.2	-3.0	NR				7472 BR	OW MO	**MOE# 7211135 TAG#A155399** 0.0 BRWN SAND FILL SILT 1.5 BRWN SAND PCKD 8.8 GREY SAND PCKD 15.2
7219482		Oct-13	636532 4838379	130.5					NR				7215 -	- -	**MOE# 7219482 TAG#A155136** 0.0

LABEL	CON LOT	DATE mmm-yr	EASTING NORTHING	ELEV masl	WTR mbgl	FND Qu	SCR TOP mbgl	LEN m	SWL mbgl	RATE L/min	TIME min	PL mbgl	DRILLER METHOD	TYPE STAT	WELL NAME DESCRIPTION OF MATERIALS
7221032		Apr-14	636505 4838425	130.1			9.4	-3.0	NR				7241 DP	TH TH	**MOE# 7221032 TAG#A160887** 0.0 GREY GRVL GRVL 0.9 BRWN SAND SAND LOOS 10.1 BRWN SAND SILT 12.5
7221033		Apr-14	636431 4838478	130.8			10.1	-3.0	NR				7241 DP	TH TH	**MOE# 7221033 TAG#A160974** 0.0 GREY 0.3 BRWN FILL SAND 1.8 BRWN SAND 10.1 BRWN SAND WBRG 13.1
7221034		Apr-14	636434 4838458	130.5			9.4	-3.0	NR				7241 DP	TH TH	**MOE# 7221034 TAG#A162958** 0.0 BLCK 1.2 BRWN FILL SAND 1.8 BRWN SAND 9.4 BRWN SAND WBRG 12.5
7221035		Apr-14	636444 4838485	130.8			10.1	-3.0	NR				7241 DP	TH TH	**MOE# 7221035 TAG#A162938** 0.0 GREY 1.5 BRWN FILL SAND 1.8 BRWN SAND SILT 10.7 BRWN SAND WBRG 13.1
7231798		Sep-14	636643 4838524	130.1			2.4	-1.5	NR				6032 BR	OW MO	**MOE# 7231798 TAG#A138149** 0.0 GREY SAND GRVL LOOS 0.6 BRWN SAND SILT DRY 1.8 BRWN SAND DNSE 3.7
7237204		Nov-14	636867 4838702	129.8			0.9	-0.9	NR				7472 BR	OW MO	**MOE# 7237204 TAG#A168459** 0.0 BRWN FSND LOOS 1.8
7237205		Nov-14	636924 4838748	129.5			3.0	-3.0	NR				7472 BR	OW MO	**MOE# 7237205 TAG#A168458** 0.0 BRWN FSND LOOS 6.1
7237206		Nov-14	636851 4838745	129.2			3.0	-3.0	NR				7472 BR	OW MO	**MOE# 7237206 TAG#A168460** 0.0 BRWN FSND LOOS 6.1
7275509		Oct-16	636542 4838490	130.1			10.7	-3.0	NR				1663 RC	OW MO	**MOE# 7275509 TAG#A213011** 0.0
7275510		Nov-16	636529 4838471	130.1			12.8	-5.2	12.5	36	180	14.6	1663 RC	TH TH	**MOE# 7275510 TAG#A213012** 0.0
7281146		Feb-17	636871 4838506	130.1					NR				7238 -	- -	**MOE# 7281146 TAG#A175263** 0.0
7281529		Jan-16	636423 4838461	130.5	7.0	Un	16.8	-3.0	NR				6032 BR	OW MO	**MOE# 7281529 TAG#A194304** 0.0 BLCK FILL LOOS 0.9 BRWN CLAY SILT DNSE 4.6 GREY CLAY SILT DNSE 19.8
7288788		Feb-17	636864 4838556	129.8					NR				7230 -	- -	**MOE# 7288788 TAG#A220801** 0.0
7299608		Sep-17	636822 4838555	129.8					NR				7464 -	- -	**MOE# 7299608 TAG#A224815** 0.0
7300002		Oct-17	636720 4838628	130.1	11.9	Un	9.1	-3.0	NR				7383 RC	TH TH	**MOE# 7300002 TAG#A238937** 0.0 BRWN FILL GRVL PCKD 1.5 BRWN SAND SILT DNSE 12.2
7300003		Oct-17	636705 4838636	130.1	11.6	Un	9.1	-3.0	NR				7383 RC	TH TH	**MOE# 7300003 TAG#A238936** 0.0 BRWN SAND SILT DNSE 12.2
7309167		Nov-16	636447 4838468	NR			16.2	0.0	NR				6032 RC	OW MO	**MOE# 7309167 TAG#A202467** 0.0 BRWN SAND GRVL DNSE 1.2 BRWN SAND SILT DNSE 12.8 BRWN SAND DNSE 14.6 BRWN SAND SILT 16.2
7312539		May-18	636925	NR	4.3	Un			NR				7215	-	**MOE# 7312539 TAG#A168458**

LABEL	CON LOT	DATE mmm-yr	EASTING NORTHING	ELEV masl	WTR mbgl	FND Qu	SCR TOP mbgl	LEN m	SWL mbgl	RATE L/min	TIME min	PL mbgl	DRILLER METHOD	TYPE STAT	WELL NAME DESCRIPTION OF MATERIALS
			4838742										-	-	0.0
7312540		May-18	636854	NR	4.6	Un			NR				7215	-	**MOE# 7312540 TAG#A168460**
			4838745										-	-	0.0
7314027		Jan-18	636952	NR			10.7	-3.0	NR				7383	-	**MOE# 7314027 TAG#A239007**
			4838485										BR	TH	0.0 SAND 13.7
7317750		Oct-17	636719	NR			8.8	-3.0	NR				6571	OW	**MOE# 7317750 TAG#A207367**
			4838617										RC	-	0.0 WSTE 0.3 SAND GRVL FILL 1.5 SAND 13.7
7317751		Oct-17	636745	NR			8.8	-3.0	NR				6571	OW	**MOE# 7317751 TAG#A207368**
			4838621										RC	-	0.0 WSTE 0.3 FILL 3.7 MSND 13.1
7317752		Oct-17	636739	NR			8.8	-3.0	NR				6571	-	**MOE# 7317752 TAG#A207369**
			4838648										RC	-	0.0 WSTE 0.3 FILL 3.0 FSND 13.1
7318887		Jun-18	636805	NR			9.1	-3.0	NR				6607	OW	**MOE# 7318887 TAG#A241278**
			4838340										BR	MO	0.0 BRWN SAND 12.2
7319486		Oct-17	636715	NR	10.7	Un	8.8	-3.0	NR				7383	-	**MOE# 7319486 TAG#A230286**
			4838671										BR	TH	0.0 SAND 11.9
7320255		Jun-18	636788	NR					NR				7531	-	**MOE# 7320255 TAG#A248767**
			4838703										-	-	0.0
7326743		Dec-18	636868	NR					NR				7464	-	**MOE# 7326743 TAG#A238674**
			4838485										-	-	0.0
7334474		Nov-18	636962	NR	10.1	Un	8.5	-3.0	NR				6032	OW	**MOE# 7334474 TAG#A244487**
			4838452										BR	TH	0.0 BRWN SAND 0.9 BRWN SAND 11.6
7336237		Feb-19	636826	NR					NR				6607	TH	**MOE# 7336237 TAG#A217760**
			4838579										BR	MO	0.0

QUALITY:		TYPE:		USE:		METHOD :	
Fr	Fresh	WS	Water Supply	CO	Comercial	NU	Not Used	CT	Cable Tool
Mn	Mineral	AQ	Abandoned Quality	DO	Domestic	IR	Irrigation	JT	Jetting
Sa	Salty	AS	Abandoned Supply	MU	Municipal	AL	Alteration	RC	Rotary Conventional
Su	Sulphur	AB	Abandonment Record	PU	Public	MO	Monitoring	RA	Rotary Air
--	Unrecorded	TH	Test Hole or Observation	ST	Stock	-	Not Recorded	BR	Boring

Easting and Northings UTM NAD 83 Zone 17, Translated from Recorded UTM NAD, subject to Field Verified Location or Improved Location Accuracy.

APPENDIX C

Borehole Logs

PROJECT: 22535291

RECORD OF BOREHOLE: BH23-1

SHEET 1 OF 3

LOCATION: N 4838546.34; E 636627.76

BORING DATE: September 11, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrich D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		131.10						
		ASPHALT (~50 mm) thick		0.00						
		FILL - (SP) gravelly SAND, trace fines; light brown; non-cohesive, moist, very loose to compact		0.05	1	SS	13	ND		50 mm Dia. Monitoring Well
1					2	SS	12	ND		
2					3	SS	5	ND		
					4	SS	2	ND		
3					5	SS	3	ND		
				127.37						
		(SP) SAND, some fines; light brown to brown; non-cohesive, moist, loose to very dense		3.73	6	SS	21	ND		
4										
					7	SS	33	ND		Bentonite
5										
6					8	SS	28	ND		
7										
					9	SS	40	ND	MH	
8										
9					10	SS	56	ND		
10										
		CONTINUED NEXT PAGE								

Diedrich D-20 Track Mount

200 mm O.D. Hollow Stem Auger

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-1

SHEET 2 OF 3

LOCATION: N 4838546.34; E 636627.76

BORING DATE: September 11, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*								
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND, some fines; light brown to brown; non-cohesive, moist, loose to very dense								
11					11	SS	81	ND		
12					12	SS	32	ND		Jan. 10, 2024
13										Bentonite
14					13	SS	48	ND		
15										
16				114.79	14	SS	6	ND		
		(ML) SILT, some sand to sandy, slight plasticity; brown; non-cohesive, moist, compact		16.31						Sand
				114.03	15A					
17		(CL) SILTY CLAY, trace sand; grey; cohesive, w<PL, very stiff		17.07	15B	SS	29	ND	MH	Screen
				113.27						
18		(SP) SAND; brown; non-cohesive, moist, compact		17.83	16	SS	23			
				112.20						
19		END OF BOREHOLE		18.90						
20		*CONTINUED NEXT PAGE*								

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-1

SHEET 3 OF 3

LOCATION: N 4838546.34; E 636627.76

BORING DATE: September 11, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* 100 200 300 400 / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ *ND = Not Detected* 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*								
		NOTE: 1. Groundwater level measurements in monitoring well as follows : Date Depth (m) Elev. (m) 24-Oct-23 11.66 119.44 26-Oct-23 11.73 119.37 13-Nov-23 11.77 119.33 06--Dec-23 11.94 119.16 19-Dec-23 11.81 119.30 10-Jan-24 11.80 119.30 21-Oct-24 11.70 119.40								
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-2

SHEET 1 OF 3

LOCATION: N 4838561.49; E 63666244.00

BORING DATE: September 12, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		130.57						23-2 (S) 23-2 (D)
0	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	ASPHALT (~100 mm) thick		0.00						
		FILL - (SM) SILTY SAND, some gravel; brown; non-cohesive, moist, very loose to compact		0.10	1	SS	10	ND		
1					2	SS	3	ND		
2				128.28	3	SS	2	ND		
		(SP) SAND, some fines; brown; non-cohesive, moist, loose to very dense		2.29	4	SS	8	ND		
3					5	SS	22	ND		
4					6	SS	29	ND		
5					7	SS	29	ND		
6					8	SS	52	ND		MH
7				123.41						
		(SM/SP) SILTY SAND to SAND; brown; non-cohesive, moist to wet, loose to very dense		7.16	9	SS	60	ND		
8										
9					10	SS	38	ND		
10		*CONTINUED NEXT PAGE*								

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-2

SHEET 2 OF 3

LOCATION: N 4838561.49; E 63666244.00

BORING DATE: September 12, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] (ND = Not Detected) 100 200 300 400	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] (ND = Not Detected) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3}	WATER CONTENT PERCENT Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---											23-2 (S) 23-2 (D)
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SM/SP) SILTY SAND to SAND; brown; non-cohesive, moist to wet, loose to very dense											
11					11	SS	51	ND					(D)
12					12	SS	10	ND				MH	
13													
14					13	SS	64	ND					
15				115.18	14A	SS	82/ 0.28	ND					
		(CL) SILTY CLAY, trace sand; brown to grey; cohesive, w~PL, hard		15.39	14B								
16													
17				113.63	15A	SS	89/ 0.25	ND					
		(SM) SILTY SAND; brown; non-cohesive, moist to wet, very dense		16.94	15B								
18													
19					16	SS	75	ND					
20		*CONTINUED NEXT PAGE*											

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-2

SHEET 3 OF 3

LOCATION: N 4838561.49; E 63666244.00

BORING DATE: September 12, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								23-2 (S) 23-2 (D)
20	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SM) SILTY SAND; brown; non-cohesive, moist to wet, very dense		108.78	17	SS	88/ 0.28	ND	○	
21		END OF BOREHOLE		21.79						
22		NOTES:								
23		1.Groundwater level measurements in monitoring well BH23-2S as follows:								
24		Date / Depth (m) / Elev. (m) 24-Oct-23 10.97 119.58 26-Oct-23 11.03 119.52 13-Nov-23 10.90 119.65 06--Dec-23 10.96 119.59 19-Dec-23 10.95 119.61 10-Jan-24 10.99 119.56 21-Oct-24 10.80 119.75								
25		2. Groundwater level measurements in monitoring well BH23-2D as follows:								
26		Date / Depth (m) / Elev. (m) 25-Oct-23 11.30 119.27 26-Oct-23 11.45 119.12 12-Nov-23 11.30 119.27 06--Dec-23 11.53 119.04 19-Dec-23 11.48 119.09 10-Jan-24 11.62 118.95 21-Oct-21 11.40 119.17								
27										
28										
29										
30										

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-3

SHEET 1 OF 3

LOCATION: N 4838527.70; E 636645.56

BORING DATE: September 15, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		131.19						
		ASPHALT (~70 mm) thick		0.00						
		FILL - (SP) SAND, some gravel, trace fines; brown; non-cohesive, moist, very loose to loose		0.07	1	SS	10	ND		50 mm Dia. Monitoring Well
1					2	SS	4	ND		
				129.74						
		(SP) SAND, trace to some fines; light brown; non-cohesive, moist, compact to very dense		1.45	3	SS	14	ND		
2					4	SS	16	ND		
3					5	SS	23	ND		
4					6	SS	79	ND		
5					7	SS	41	ND		Bentonite
6					8	SS	38	ND		
7										
8					9	SS	51	ND		
9										
10					10	SS	87	ND		
		CONTINUED NEXT PAGE								

Diedrich D-20 Track Mount

200 mm O.D. Hollow Stem Auger

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-3

SHEET 2 OF 3

LOCATION: N 4838527.70; E 636645.56

BORING DATE: September 15, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND, trace to some fines; light brown; non-cohesive, moist, compact to very dense								
11					11	SS	72	ND		
12					12	SS	72	ND		Jan. 10, 2024
13										
14					13	SS	85	ND		Bentonite
15										
16				114.89	14	SS	79	ND		
		(ML) SILT, trace sand; brown; non-cohesive, moist, very dense		16.30						
17					15	SS	50	ND	MH	
				113.51						
18		(SP) SAND, trace fines; brown; non-cohesive, moist to wet, very dense		17.68						
19					16	SS	85/0.28	ND		Sand
20					17	SS	65			Screen
		CONTINUED NEXT PAGE								

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-3

SHEET 3 OF 3

LOCATION: N 4838527.70; E 636645.56

BORING DATE: September 15, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
20	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND, trace fines; brown; non-cohesive, moist to wet, very dense			17	SS	65	⊕	○		Screen
21					18	SS	50/ 0.13	⊕ ND	○		
				109.57							
		END OF BOREHOLE		21.62							
22		NOTE:									
		1. Groundwater level measurements in monitoring well as follows :									
23		Date / Depth (m) / Elev. (m) 24-Oct-23 / 12.17 / 119.02 26-Oct-23 / 12.28 / 118.91 13-Nov-23 / 12.24 / 118.95 06--Dec-23 / 12.36 / 118.83 19-Dec-23 / 12.30 / 118.89 10-Jan-24 / 12.40 / 118.79 21-Oct-24 / 12.24 / 118.95									
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-4

SHEET 1 OF 3

LOCATION: N 4838576.99; E 636730.42

BORING DATE: September 23, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		130.55						
		ASPHALT (~70 mm) thick		0.00						
		FILL - (SP) SAND, trace gravel; brown; non-cohesive, moist, very loose to loose		0.07	1	SS	9	ND		50 mm Dia. Monitoring Well
1					2	SS	4	ND		
				129.10						
		(SP) SAND; brown; non-cohesive, moist, loose to very dense		1.45	3	SS	10	ND		
2					4	SS	17	ND		
3					5	SS	21	ND		
4					6	SS	25	ND		Bentonite
5					7	SS	64	ND		
6					8	SS	46	ND		
7										
8					9	SS	81	ND		
9										Sand
					10	SS	79	ND		Screen
10		*CONTINUED NEXT PAGE*								

Diedrich D-20 Track Mount

200 mm O.D. Hollow Stem Auger

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-4

SHEET 2 OF 3

LOCATION: N 4838576.99; E 636730.42

BORING DATE: September 23, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected (100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND; brown; non-cohesive, moist, loose to very dense									
11					11	SS	85	ND			Screen
12					12	SS	80	ND			
13											
14					13	SS	60	ND			
15					14	SS	50/0.15	ND			
16		(SM) SILTY SAND; brown; non-cohesive, moist, very dense		114.40 / 16.15							
17					15	SS	85/0.28	ND			
18					16	SS	50/0.15				
		END OF BOREHOLE		112.11 / 18.44							
19											
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-4

SHEET 3 OF 3

LOCATION: N 4838576.99; E 636730.42

BORING DATE: September 23, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected 100 200 300 400 / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
		NOTE: 1. Groundwater level measurements in monitoring well as follows : Date Depth (m) Elev. (m) 24-Oct-23 10.81 119.74 26-Oct-23 Dry - 13-Nov-23 Dry - 06--Dec-23 10.91 119.64 19-Dec-23 10.91 119.64 10-Jan-24 Dry - 21-Oct-24 10.63 119.92									
21											
22											
23											
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25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-5

SHEET 1 OF 3

LOCATION: N 4838589.30; E 636772.90

BORING DATE: September 16, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		130.18						
		ASPHALT (~70 mm) thick		0.00						
		FILL - (SP) SAND to gravelly SAND; brown; non-cohesive, moist, loose to dense		0.07	1	SS	5	ND		50 mm Dia. Monitoring Well
1					2	SS	7			
					3	SS	14			
2					4	SS	18			
3					5	SS	18			
4					6	SS	32			Bentonite
				125.68						
		(SP) SAND; brown; non-cohesive, moist, dense to very dense		4.50	7	SS	33	ND		
5										
6					8	SS	41			
7										
8					9	SS	74	ND		Sand
9					1	PMT	-			Screen
10		*CONTINUED NEXT PAGE*								

Diedrich D-20 Track Mount
200 mm O.D. Hollow Stem Auger

DEPTH SCALE
1 : 50

LOGGED: BN
CHECKED: AD

PROJECT: 22535291

LOCATION: N 4838589.30; E 636772.90

RECORD OF BOREHOLE: BH23-5

SHEET 2 OF 3

BORING DATE: September 16, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected (100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*									
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND; brown; non-cohesive, moist, dense to very dense			10	SS	74	ND	○		Jan.10, 2024 ▽
11											Screen
12					2	PMT	-				
13					11	SS	66	ND	○		
14											
15				115.18							
		(ML) Sandy SILT; brown; non-cohesive, moist, very dense		15.00							
16					3	PMT	-				
17					12	SS	50/ 0.15	ND	○		
				112.78							
		(SP) SAND; brown; non-cohesive, moist, very dense		17.40							
18											
19					13	SS	71	ND	○		
				111.43							
		END OF BOREHOLE		18.75							
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-5

SHEET 3 OF 3

LOCATION: N 4838589.30; E 636772.90

BORING DATE: September 16, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* 100 200 300 400 / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ *ND = Not Detected* 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
		NOTE: 1. Groundwater level measurements in monitoring well as follows : Date Depth (m) Elev. (m) 25-Oct-23 10.50 120.60 26-Oct-23 10.48 120.62 13-Nov-23 10.43 120.68 06--Dec-23 10.57 120.53 19-Dec-23 10.46 120.65 10-Jan-24 10.54 120.56 21-Oct-24 10.14 120.96									
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-6

SHEET 1 OF 3

LOCATION: N 4838543.89; E 636736.50

BORING DATE: September 17, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		130.91						
		ASPHALT (~70 mm) thick		0.00						
		FILL - (SP) SAND, trace to some gravel; brown; non-cohesive, moist		0.07	1	SS	23	ND		50 mm Dia. Monitoring Well
1					2	SS	10	ND		
				129.46						
		(SP) SAND; brown; non-cohesive, moist, compact to very dense		1.45	3	SS	15	ND		
2					4	SS	20	ND		
3					5	SS	18			
4					6	SS	26			
					7	SS	46			Bentonite
5	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger									
6						SS				
7										
8					PMT	1	-			
9					9	SS	50/ 0.15	ND		
10		*CONTINUED NEXT PAGE*								

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DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

PROJECT: 22535291

RECORD OF BOREHOLE: BH23-6

SHEET 2 OF 3

LOCATION: N 4838543.89; E 636736.50

BORING DATE: September 17, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected (100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*									
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND; brown; non-cohesive, moist, compact to very dense									
11					PMT	2	-				
12					10	SS	88	ND			Jan. 10, 2024
13											
14					PMT	3	-				
15					11	SS	50/0.15	ND			Bentonite
16											
17				114.01	12	SS	50/0.13	ND			
		(ML) Sandy SILT; brown; non-cohesive, moist, very dense		16.90							
				113.28							
18		(SP) SAND, trace fines; brown; non-cohesive, wet to moist, very dense		17.63							
19					13	SS	89/0.28	ND			
20					14	SS	50/0.15				Sand Screen
		CONTINUED NEXT PAGE									

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-6

SHEET 3 OF 3

LOCATION: N 4838543.89; E 636736.50

BORING DATE: September 17, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								
20	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SP) SAND, trace fines; brown; non-cohesive, wet to moist, very dense			14	SS		ND		
		(ML) Sandy SILT; brown; non-cohesive, moist, very dense		110.18 / 20.73						Screen
21				109.42 / 21.49	15	SS	50/ 0.15	ND	MH	
		END OF BOREHOLE								
22		NOTE:								
		1. Groundwater level measurements in monitoring well as follows :								
23		Date / Depth (m) / Elev. (m) 24-Oct-23 / 11.68 / 119.23 26-Oct-23 / 11.78 / 119.13 13-Nov-23 / 11.71 / 119.20 06--Dec-23 / 11.80 / 119.11 19-Dec-23 / 11.79 / 119.12 10-Jan-24 / 11.83 / 119.08 21-Oct-24 / 11.72 / 119.20								
24										
25										
26										
27										
28										
29										
30										

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

LOCATION: N 4838542.33; E 636670.74

RECORD OF BOREHOLE: BH23-7

SHEET 1 OF 3

BORING DATE: September 14, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		130.48						
		ASPHALT (~100 mm) thick		0.00						
		FILL - (SP) SAND, some gravel, trace fines; brown; non-cohesive, moist, loose		0.10	1	SS	9	ND		Concrete 50 mm Dia. Monitoring Well
1					2	SS	4	ND		
					3A	SS	9	ND		
				128.60						
2		(SP) SAND, some fines; brown; non-cohesive, moist, loose to very dense		1.88	3B					
					4	SS	29	ND		
3					5	SS	26	ND		
4					6	SS	34	ND		
					7	SS	61	ND		Bentonite
5										
6						SS	62	ND		
7				123.32						
		(SM) SILTY SAND; brown; moist to wet		7.16	9	SS	50/0.13	ND		
8										
9										
					10	SS	13	ND	MH	
10		*CONTINUED NEXT PAGE*								

Diedrich D-20 Track Mount

200 mm O.D. Hollow Stem Auger

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-7

SHEET 2 OF 3

LOCATION: N 4838542.33; E 636670.74

BORING DATE: September 14, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 100 200 300 400) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*								
10	Diedrich D-20 Track Mount; 200 mm O.D. Hollow Stem Auger	(SM) SILTY SAND; brown; moist to wet								
11					11	SS	12	ND		
12					12	SS	14	ND		Bentonite
13										
14					13	SS	26	ND		
15		- Sandy SILT interlayers from 15.2 m to 16.9 m			14	SS	60	ND	MH	Sand
16										
17					15A / 15B	SS	50/0.10	ND		Screen
18										
				111.79	16	SS	46/0.25	ND		
		END OF BOREHOLE		18.69						
19										
20		*CONTINUED NEXT PAGE*								

Jan.10, 2024

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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PROJECT: 22535291

RECORD OF BOREHOLE: BH23-7

SHEET 3 OF 3

LOCATION: N 4838542.33; E 636670.74

BORING DATE: September 14, 2023

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

DRILL RIG: Diedrichl D-20 Track Mount

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected 100 200 300 400 / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
		NOTE: 1. Groundwater level measurements in monitoring well as follows : Date Depth (m) Elev. (m) 24-Oct-23 11.24 119.24 26-Oct-23 11.42 119.06 13-Nov-23 11.39 119.09 06--Dec-23 11.46 119.02 19-Dec-23 11.44 119.04 10-Jan-24 11.52 118.96 21-Oct-24 11.42 119.06									
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

LOGGED: BN

CHECKED: AD

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APPENDIX D

Single Well Response Testing Results

Table 1
Groundwater Level Measurements

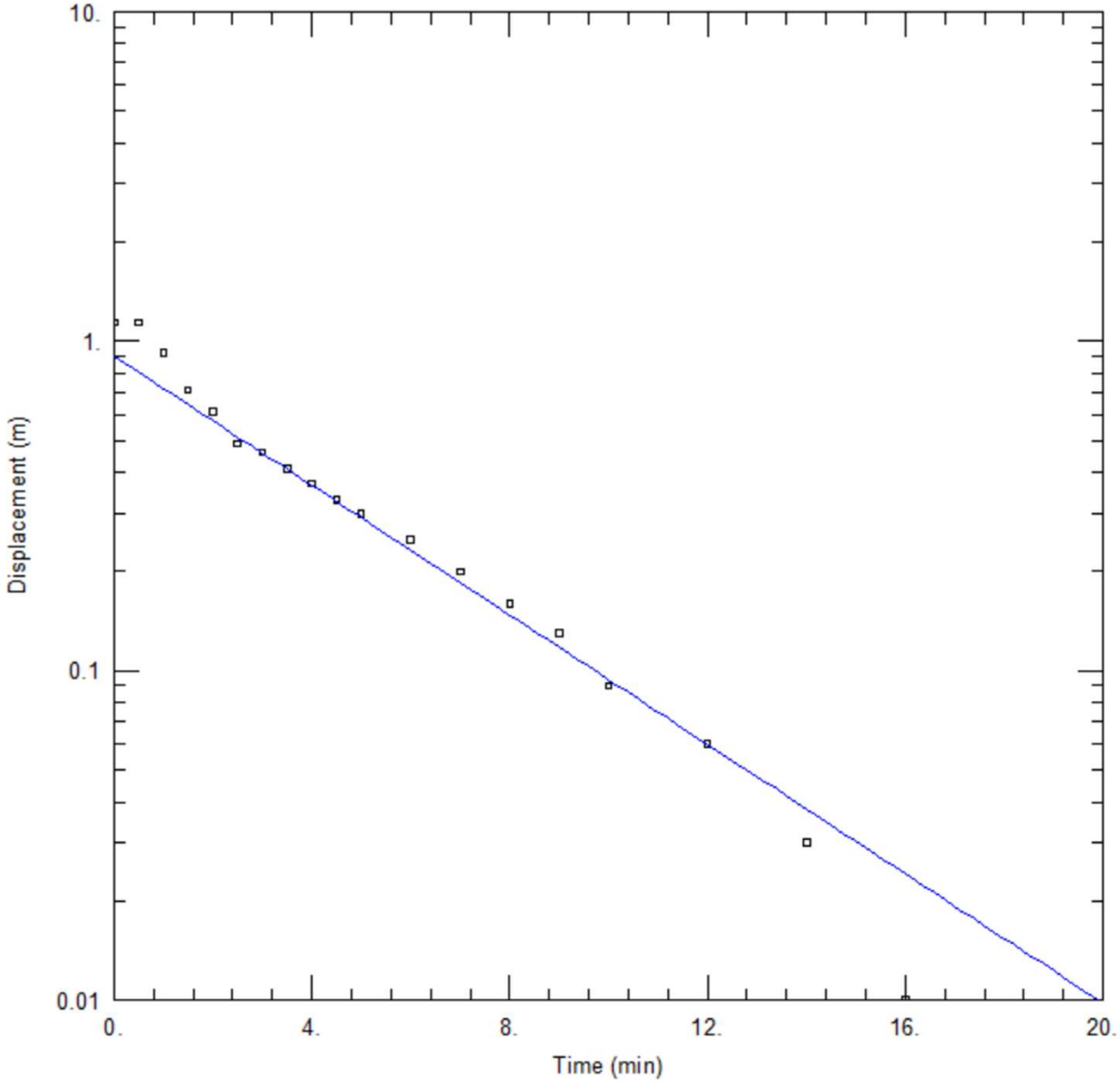
Well ID	Ground Surface (masl)	Measurement Date	Water Level (mbgs)	Water Level (masl)
BH23-1	131.10	24-Oct-23	11.66	119.44
		26-Oct-23	11.73	119.37
		13-Nov-23	11.77	119.33
		6-Dec-23	11.94	119.16
		19-Dec-23	11.81	119.30
		10-Jan-24	11.91	119.19
		30-Jan-24	11.80	119.30
		21-Oct-24	11.70	119.40
BH23-2A	130.55	24-Oct-23	10.97	119.58
		26-Oct-23	11.03	119.52
		13-Nov-23	10.90	119.65
		6-Dec-23	10.96	119.59
		19-Dec-23	10.95	119.61
		10-Jan-24	10.96	119.59
		30-Jan-24	10.99	119.56
		21-Oct-24	10.80	119.75
BH23-2B	130.57	25-Oct-23	11.30	119.27
		26-Oct-23	11.45	119.12
		13-Nov-23	11.30	119.27
		6-Dec-23	11.53	119.04
		19-Dec-23	11.48	119.09
		10-Jan-24	11.60	118.97
		30-Jan-24	11.62	118.95
		21-Oct-24	11.40	119.17
BH23-3	131.19	24-Oct-23	12.17	119.02
		26-Oct-23	12.28	118.91
		13-Nov-23	12.24	118.95
		6-Dec-23	12.36	118.83
		19-Dec-23	12.30	118.89
		10-Jan-24	12.34	118.85
		30-Jan-24	12.40	118.79
		21-Oct-24	12.24	118.95
BH23-4	130.55	24-Oct-23	10.81	119.74
		26-Oct-23	-	-
		13-Nov-23	-	-

Table 1
Groundwater Level Measurements

Well ID	Ground Surface (masl)	Measurement Date	Water Level (mbgs)	Water Level (masl)
		6-Dec-23	10.91	119.64
		19-Dec-23	10.91	119.64
		10-Jan-24	10.89	119.66
		30-Jan-24	-	-
		21-Oct-24	10.63	119.92
BH23-5	131.10	25-Oct-23	10.50	120.60
		26-Oct-23	10.48	120.62
		13-Nov-23	10.43	120.68
		6-Dec-23	10.57	120.53
		19-Dec-23	10.46	120.65
		10-Jan-24	10.46	120.64
		30-Jan-24	10.54	120.56
		21-Oct-24	10.14	120.96
BH23-6	130.91	25-Oct-23	11.68	119.23
		26-Oct-23	11.78	119.13
		13-Nov-23	11.71	119.20
		6-Dec-23	11.80	119.11
		19-Dec-23	11.79	119.12
		10-Jan-24	11.79	119.12
		30-Jan-24	11.83	119.08
		21-Oct-24	11.72	119.19
BH23-7	130.48	24-Oct-23	11.24	119.24
		26-Oct-23	11.42	119.06
		13-Nov-23	11.39	119.09
		6-Dec-23	11.46	119.02
		19-Dec-23	11.44	119.04
		10-Jan-24	11.53	118.95
		30-Jan-24	11.52	118.96
		21-Oct-24	11.42	119.06

Notes:

1. mbtoc meters below top of casing
2. masl meters above sea level
3. mbgs meters below ground surface
4. Table to be read in conjunction with accompanying report



WELL TEST ANALYSIS

Data Set: C:\...\BH23-1.aqt
Date: 01/29/24 Time: 12:54:58

PROJECT INFORMATION

Company: WSP Canada
Client: Sobeys
Project: CA-GLD-22535291
Test Well: BH23-1
Test Date: 23-Nov-2023

AQUIFER DATA

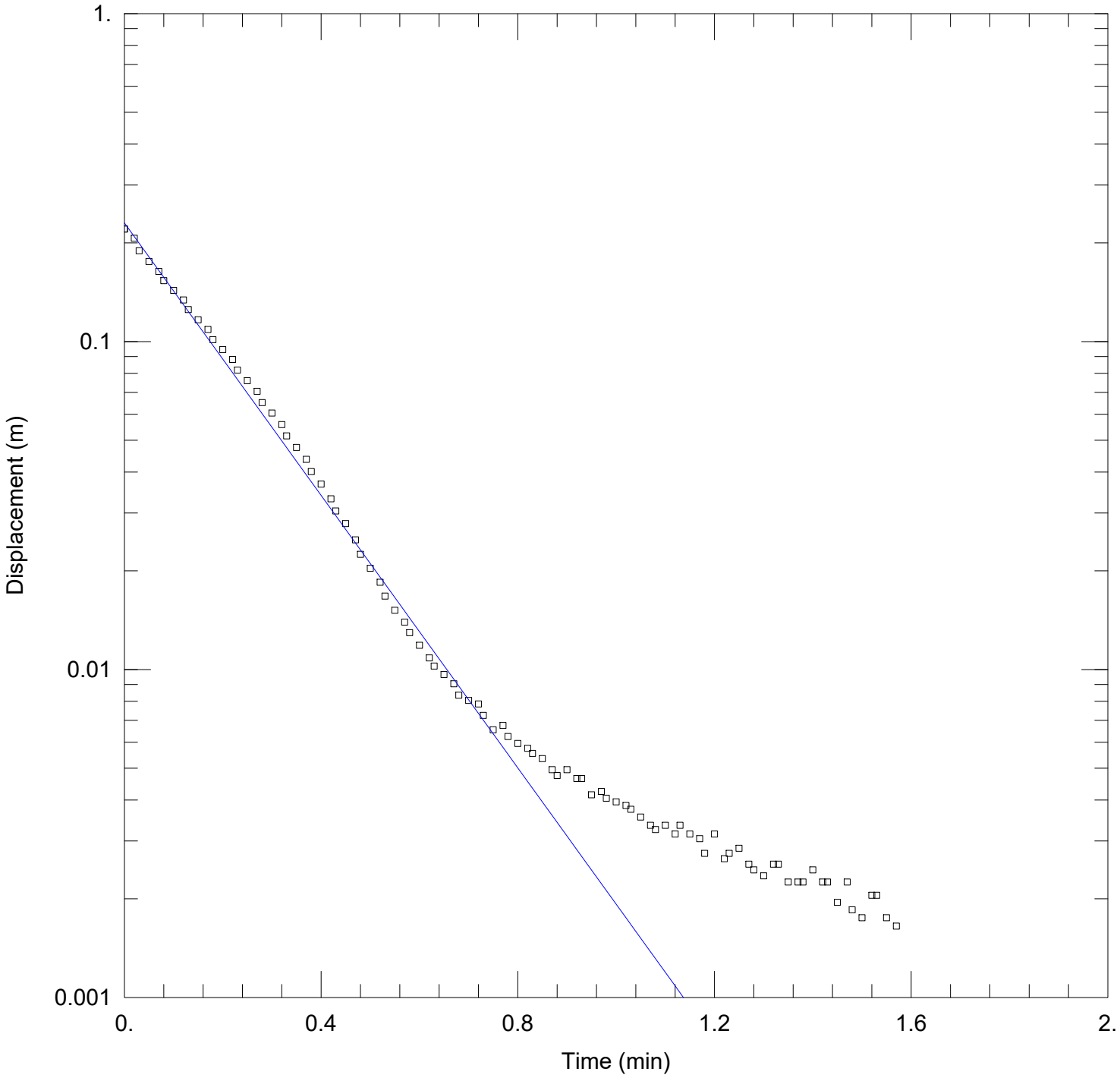
Saturated Thickness: 6.35 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-1)

Initial Displacement: 1.14 m
Total Well Penetration Depth: 6.35 m
Casing Radius: 0.025 m
Static Water Column Height: 6.35 m
Screen Length: 2.1 m
Well Radius: 0.1 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.624E-6 m/sec
y0 = 0.902 m



WELL TEST ANALYSIS

Data Set: C:\Users\sali\Downloads\BH23-2A.aqt
Date: 04/09/24 Time: 10:40:18

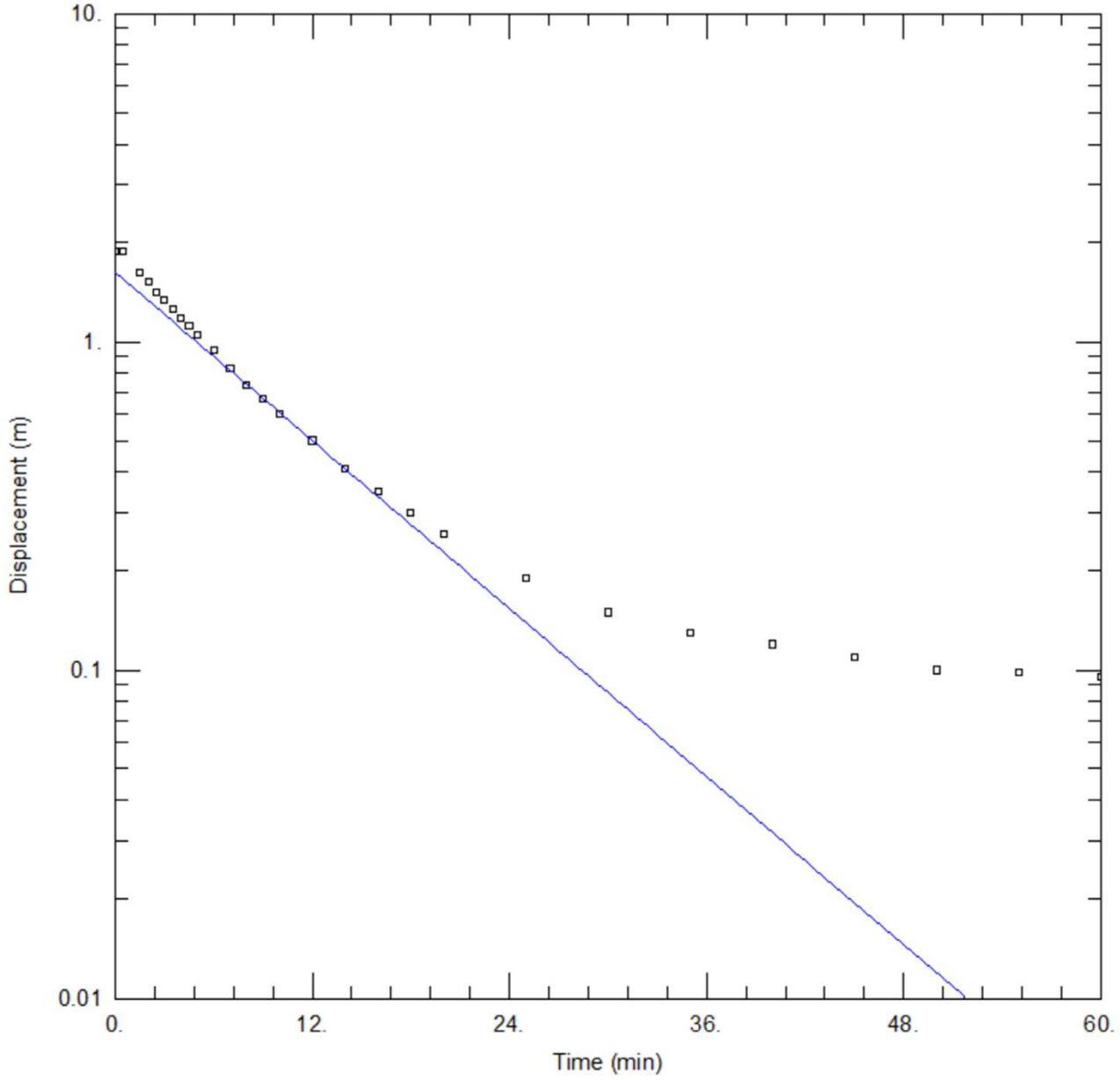
PROJECT INFORMATION

Company: WSP Canada
Client: FCAM
Test Well: BH23-2A
Test Date: 30-Jan-2024

AQUIFER DATA

Saturated Thickness: 4. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-2A)



WELL TEST ANALYSIS

Data Set: C:\...\BH23-2B.aqt
Date: 02/14/24 Time: 10:38:03

PROJECT INFORMATION

Company: WSP Canada
Client: Sobeys
Project: CA-GLD-22535291
Test Well: BH23-2B
Test Date: 23-Nov-2023

AQUIFER DATA

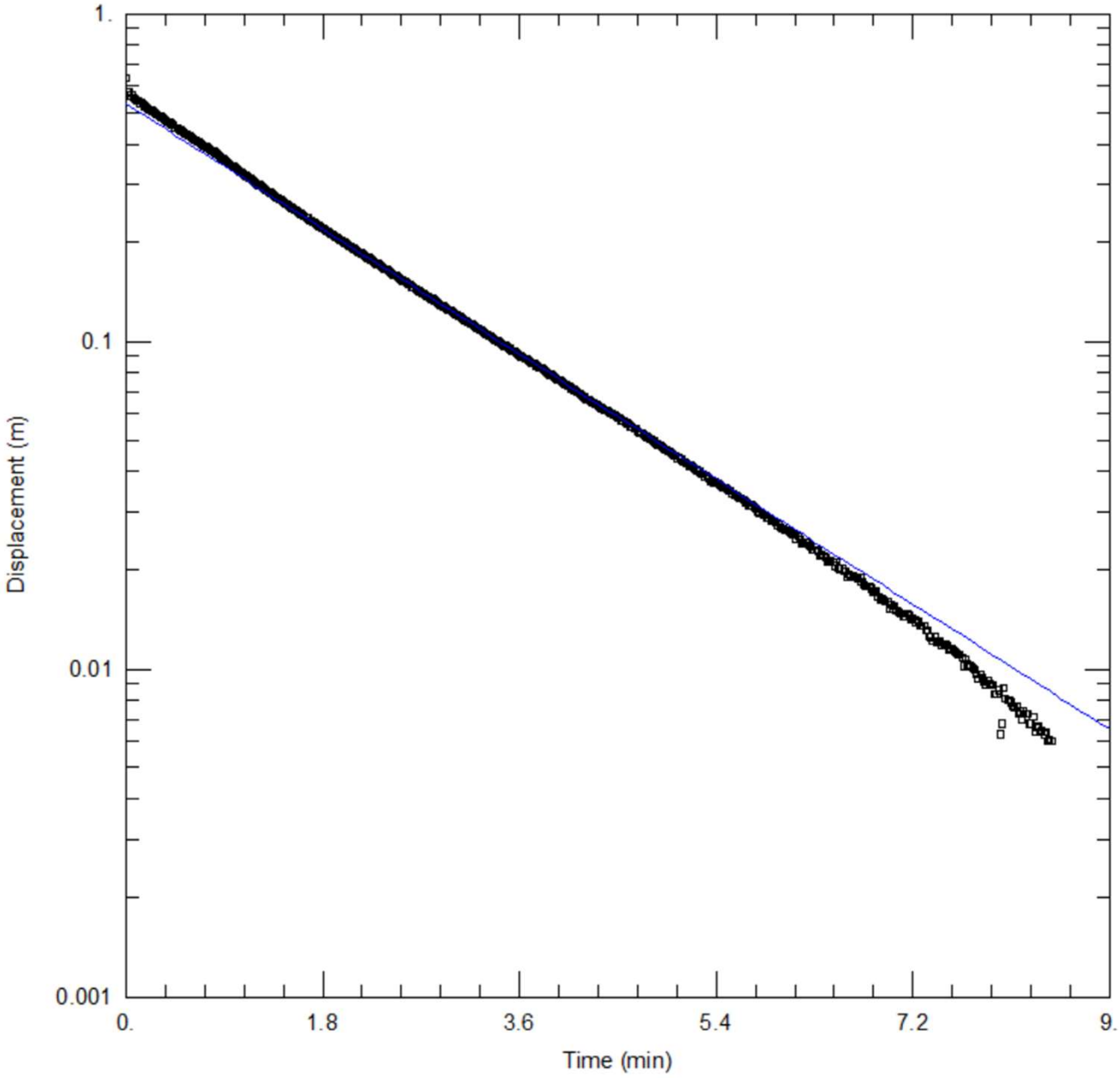
Saturated Thickness: 4.9 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-2B)

Initial Displacement: 1.89 m
Total Well Penetration Depth: 10.48 m
Casing Radius: 0.025 m
Static Water Column Height: 10.48 m
Screen Length: 2.59 m
Well Radius: 0.1 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.425E-7 m/sec
y0 = 1.626 m



WELL TEST ANALYSIS

Data Set: C:\...\BH23-3.aqt
Date: 02/14/24 Time: 15:04:18

PROJECT INFORMATION

Company: WSP Canada
Client: FCAM
Test Well: BH23-3
Test Date: 30-Jan-2024

AQUIFER DATA

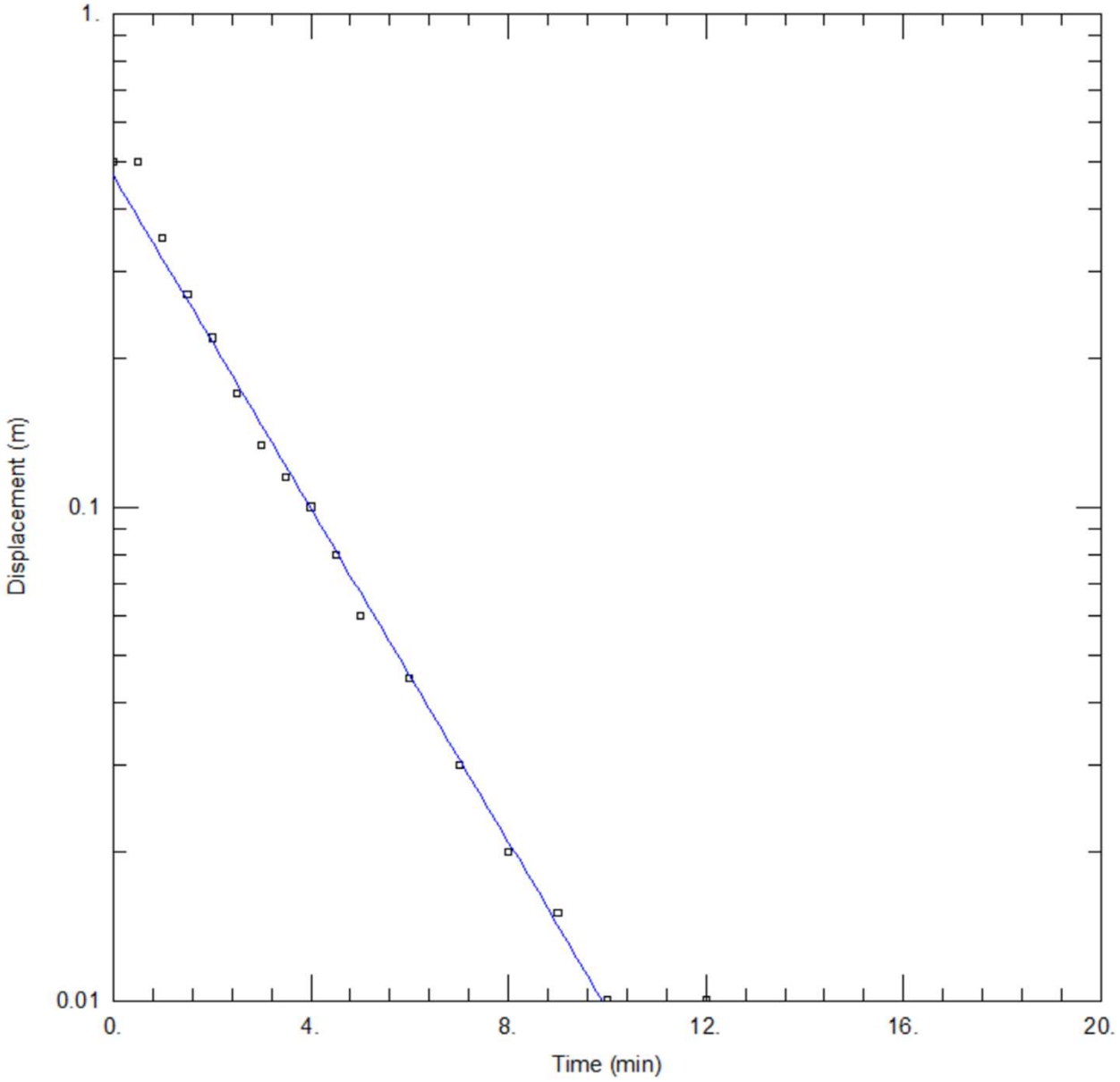
Saturated Thickness: 3.9 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-3)

Initial Displacement: 0.638 m
Total Well Penetration Depth: 8.75 m
Casing Radius: 0.025 m
Static Water Column Height: 8.75 m
Screen Length: 2.1 m
Well Radius: 0.1 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.709E-6 m/sec
y0 = 0.5304 m



WELL TEST ANALYSIS

Data Set: C:\...\BH23-5.aqt
Date: 01/29/24 Time: 13:09:22

PROJECT INFORMATION

Company: WSP Canada
Client: Sobeys
Project: CA-GLD-22535291
Test Well: BH23-5
Test Date: 23-Nov-2023

AQUIFER DATA

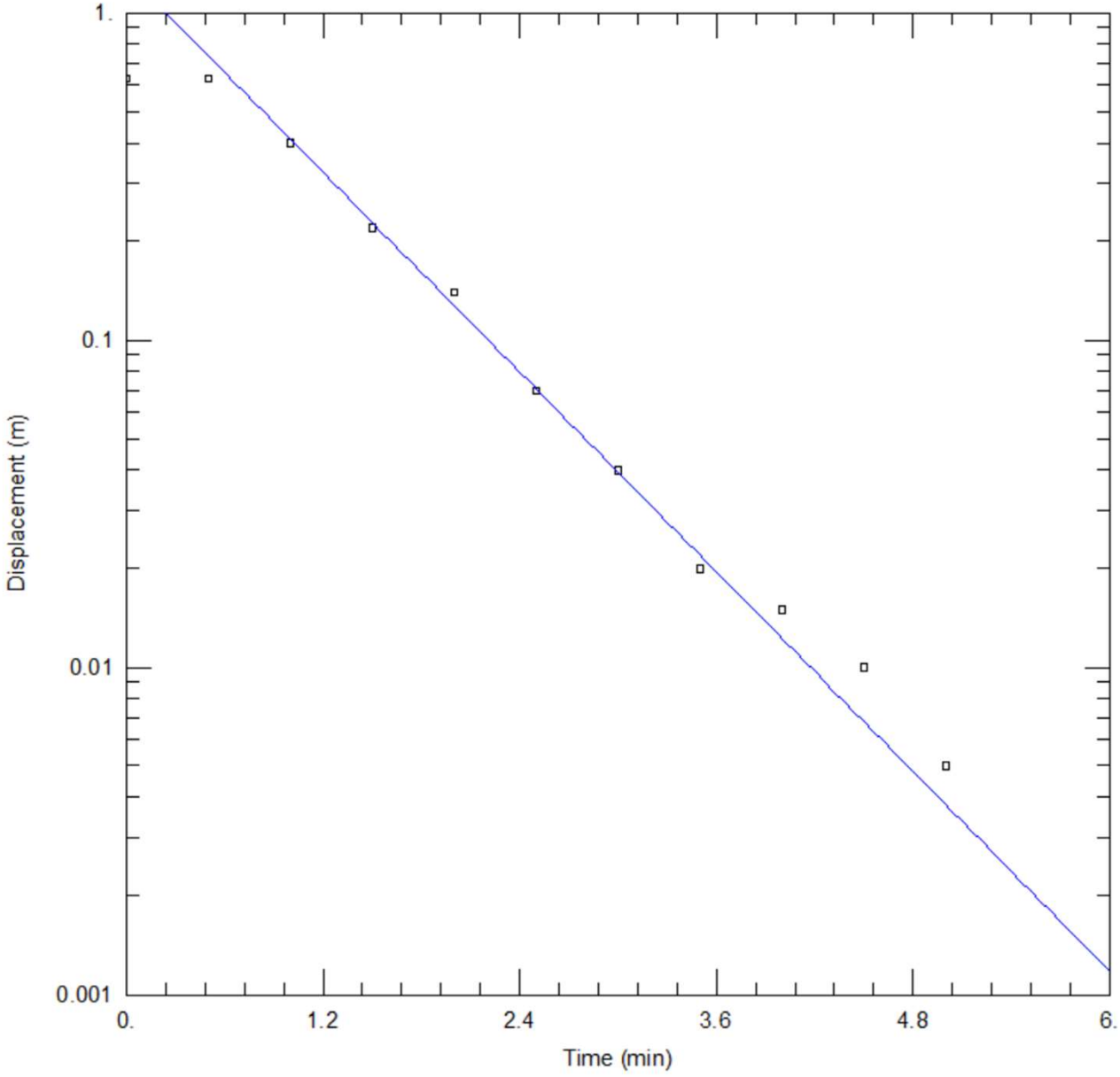
Saturated Thickness: 1.62 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-5)

Initial Displacement: 0.5 m
Total Well Penetration Depth: 1.62 m
Casing Radius: 0.025 m
Static Water Column Height: 1.62 m
Screen Length: 1.62 m
Well Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.403E-5 m/sec y0 = 0.4693 m



WELL TEST ANALYSIS

Data Set: C:\...\BH23-6.aqt
Date: 02/14/24 Time: 10:38:49

PROJECT INFORMATION

Company: WSP Canada
Client: Sobeys
Project: CA-GLD-22535291
Test Well: BH23-6
Test Date: 23-Nov-2023

AQUIFER DATA

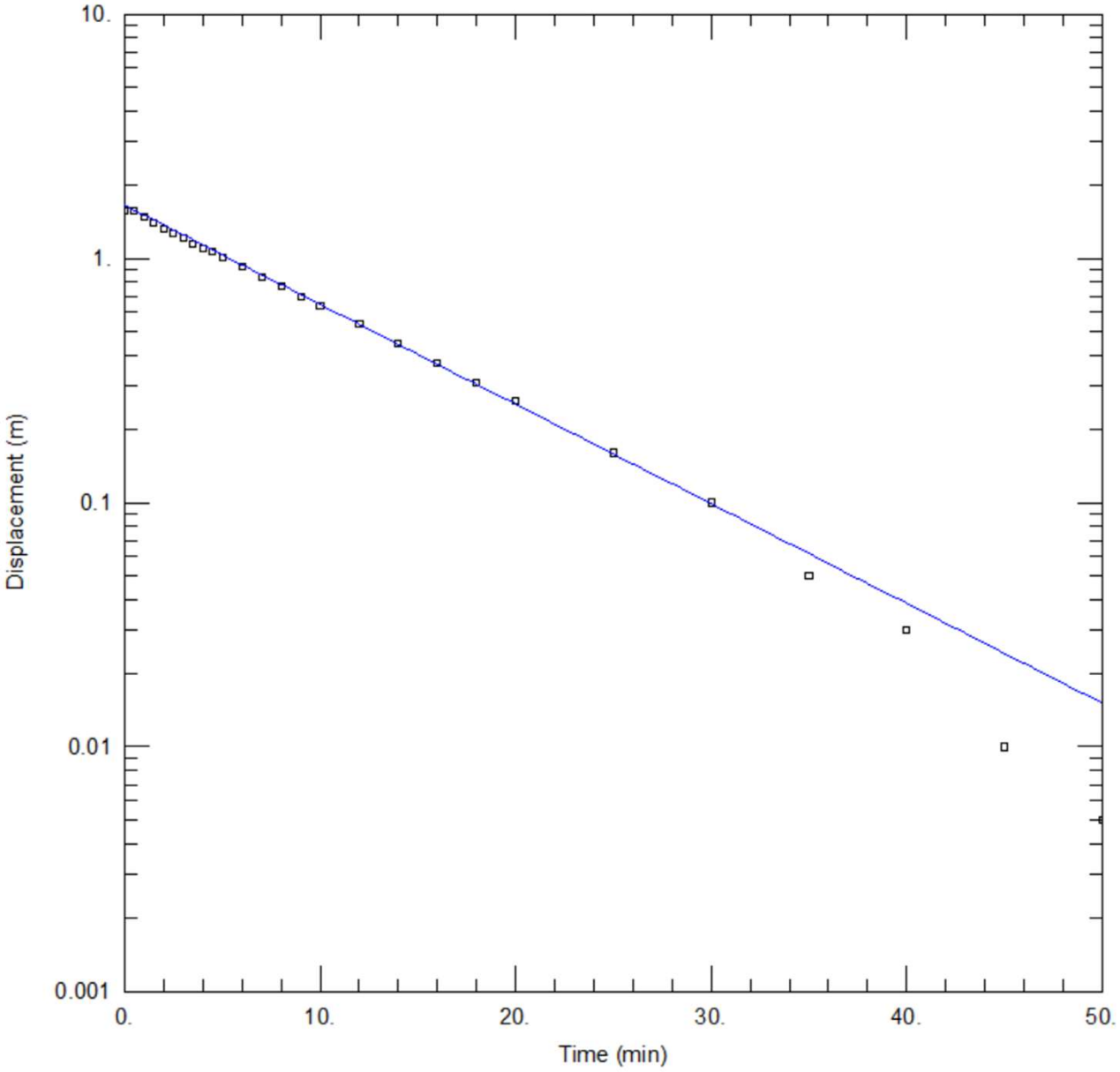
Saturated Thickness: 3.1 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-6)

Initial Displacement: 0.63 m
Total Well Penetration Depth: 9.64 m
Casing Radius: 0.025 m
Static Water Column Height: 9.64 m
Screen Length: 1.7 m
Well Radius: 0.1 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.078E-5 m/sec
y0 = 1.325 m



WELL TEST ANALYSIS

Data Set: C:\...\BH23-7.aqt
Date: 01/29/24 Time: 13:21:21

PROJECT INFORMATION

Company: WSP Canada
Client: Sobeys
Project: CA-GLD-22535291
Test Well: BH23-7
Test Date: 23-Nov-2023

AQUIFER DATA

Saturated Thickness: 6.7 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH23-7)

Initial Displacement: 1.57 m
Total Well Penetration Depth: 6.7 m
Casing Radius: 0.025 m
Static Water Column Height: 6.7 m
Screen Length: 3.45 m
Well Radius: 0.1 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.39E-7 m/sec
y0 = 1.65 m

APPENDIX E

Laboratory Analysis Results

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured. Canadian owned.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G113740 **REPORT No: 23-035689 - Rev. 0**

Report To:
WSP Canada Inc. - Barrie
121 Commerce Park Drive, Unit L
Barrie, ON L4N 8X1

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

Attention: Patrick Merritt

DATE RECEIVED: 2023-Dec-20
DATE REPORTED: 2024-Jan-02
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: CA-GLD-22535291 (2000)
P.O. NUMBER: Sobeys Danforth

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2023-Dec-21	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2023-Dec-21	BOD-001	SM 5210B
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2023-Dec-21	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Cyanide Total (Liquid)	1	KINGSTON	JMACINNES	2023-Dec-27	CN-001	SM 4500-CN-E
E.Coli m-TECH Media (Liquid)	1	BARRIE	IMANOJ	2023-Dec-21	EC-001	MECP E3371
Chromium VI (Liquid)	1	OTTAWA	STAILLON	2023-Dec-27	D-CRVI-01	MECP E3056
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2023-Dec-27	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	APRUDYVUS	2023-Dec-27	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2023-Dec-22	D-HG-02	SM 3112B
Nonylphenols (Subcontracted)	1	SGS_LAKEFIELD	CBURKE	2023-Dec-29		Subcontracted
Oil & Grease (Liquid)	1	KINGSTON	TMCBRYDE	2023-Dec-27	O&G-001	SM 5520
PCB's (Liquid)	1	KINGSTON	CSUMMERHAYS	2023-Dec-28	PCB-001	EPA 8081
Phenols (Liquid)	1	KINGSTON	JMACINNES	2023-Dec-28	PHEN-01	MECP E3179
SVOC - Semi-Volatiles (Liquid)	1	KINGSTON	PRANA	2023-Dec-28	NAB-W-001	EPA 8270D
TP & TKN (Liquid)	1	KINGSTON	JYEARWOOD	2023-Dec-22	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	KKHUTSYYEVA	2023-Dec-27	TSS-001	SM 2540D
VOC-Volatiles Full (Water)	1	RICHMOND_HILL	CBURKE	2023-Dec-22	C-VOC-02	EPA 8260

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

Parameter	Units	R.L.	Limits	Client I.D. / Sample I.D. / Date Collected	BH23-6 / 23-035689-1 / 2023-Dec-20
					-
E coli	CFU/100mL	1			5
pH @25°C	pH units	-	11.5, 9.5	SAN, STORM	7.87
Fluoride	mg/L	0.1	10	SAN	<0.7
BOD5	mg/L	3	300, 15	SAN, STORM	<3
Total Suspended Solids	mg/L	3	350, 15	SAN, STORM	292
Phosphorus (Total)	mg/L	0.01	10, 0.4	SAN, STORM	0.06
Total Kjeldahl Nitrogen	mg/L	0.1	100	SAN	0.3
Cyanide (Total)	mg/L	0.005	2, 0.02	SAN, STORM	0.010
Phenolics	mg/L	0.001	1, 0.008	SAN, STORM	<0.001
Aluminum (Total)	mg/L	0.01	50	SAN	0.91
Cadmium (Total)	mg/L	0.005	0.7, 0.008	SAN, STORM	<0.005
Chromium (Total)	mg/L	0.002	4, 0.08	SAN, STORM	0.003
Cobalt (Total)	mg/L	0.005	5	SAN	0.005
Copper (Total)	mg/L	0.002	2, 0.04	SAN, STORM	0.006
Lead (Total)	mg/L	0.02	1, 0.12	SAN, STORM	<0.02
Manganese (Total)	mg/L	0.001	5, 0.05	SAN, STORM	0.074
Molybdenum (Total)	mg/L	0.01	5	SAN	<0.01
Nickel (Total)	mg/L	0.01	2, 0.08	SAN, STORM	<0.01
Silver (Total)	mg/L	0.005	5, 0.12	SAN, STORM	<0.005
Tin (Total)	mg/L	0.05	5	SAN	<0.05
Titanium (Total)	mg/L	0.005	5	SAN	0.039

Michelle Dubien
Data Specialist

Parameter	Units	R.L.	Limits	Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
					-
Zinc (Total)	mg/L	0.005	2, 0.04	SAN, STORM	0.012
Antimony (Total)	mg/L	0.0005	5	SAN	0.0007
Arsenic (Total)	mg/L	0.0005	1, 0.02	SAN, STORM	0.0005
Selenium (Total)	mg/L	0.005	1, 0.02	SAN, STORM	<0.005
Chromium (VI)	mg/L	0.01	2, 0.04	SAN, STORM	<0.01
Mercury	mg/L	0.00002	0.01, 0.0004	SAN, STORM	<0.00002
pH (Client Data)	pH units	-			7.75
Temperature (Client Data)	°C	-			12.3

Michelle Dubien
Data Specialist

				Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
Parameter	Units	R.L.	Limits		-
Benzene	mg/L	0.0005	0.01, 0.002	SAN, STORM	<0.0005
Chloroform	mg/L	0.001	0.04, 0.002	SAN, STORM	0.002
Dichlorobenzene,1,2-	mg/L	0.0005	0.05, 0.0056	SAN, STORM	<0.0005
Dichlorobenzene,1,4-	mg/L	0.0005	0.08, 0.0068	SAN, STORM	<0.0005
Dichloroethylene,1,2-cis-	mg/L	0.0005	4, 0.0056	SAN, STORM	<0.0005
Dichloropropene,1,3-trans-	mg/L	0.0005	0.14, 0.0056	SAN, STORM	<0.0005
Ethylbenzene	mg/L	0.0005	0.16, 0.002	SAN, STORM	<0.0005
Dichloromethane (Methylene Chloride)	mg/L	0.005	2, 0.0052	SAN, STORM	<0.005
Tetrachloroethane,1,1,2,2-	mg/L	0.0005	1.4, 0.017	SAN, STORM	<0.0005
Tetrachloroethylene	mg/L	0.0005	1, 0.0044	SAN, STORM	<0.0005
Toluene	mg/L	0.0005	0.016, 0.002	SAN, STORM	<0.0005
Trichloroethylene	mg/L	0.0005	0.4, 0.0076	SAN, STORM	<0.0005
Xylene, m,p-	mg/L	0.001			<0.001
Xylene, m,p,o-	mg/L	0.0011	1.4, 0.0044	SAN, STORM	<0.0011
Xylene, o-	mg/L	0.0005			<0.0005
Oil and Grease (Mineral)	mg/L	1.0	15	SAN	<1.0
Oil and Grease (Anim/Veg)	mg/L	1.0	150	SAN	<1.0

Michelle Dubien
Data Specialist

				Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
Parameter	Units	R.L.	Limits		-
Acenaphthene	mg/L	0.00005			<0.00005
Acenaphthylene	mg/L	0.00005			<0.00005
Anthracene	mg/L	0.00005			<0.00005
Benzo[a]anthracene	mg/L	0.00005			<0.00005
Benzo(a)pyrene	mg/L	0.00001			<0.00001
Benzo(b)fluoranthene	mg/L	0.00005			<0.00005
Benzo(g,h,i)perylene	mg/L	0.00005			<0.00005
Benzo(k)fluoranthene	mg/L	0.00005			<0.00005
Bis(2-ethylhexyl) Phthalate	mg/L	0.005	0.012, 0.0088	SAN, STORM	<0.005
Chrysene	mg/L	0.00005			<0.00005
Dibenzo(a,h)anthracene	mg/L	0.00005			<0.00005
Di-n-Butyl Phthalate	mg/L	0.001	0.08, 0.015	SAN, STORM	<0.001
Dichlorobenzidine,3,3'-	mg/L	0.0005	0.002, 0.0008	SAN, STORM	<0.0005
Fluoranthene	mg/L	0.00005			<0.00005
Fluorene	mg/L	0.00005			<0.00005
Indeno(1,2,3,-cd)Pyrene	mg/L	0.00005			<0.00005
Methylnaphthalene,1-	mg/L	0.00005			<0.00005
Methylnaphthalene,2-(1-)	mg/L	0.001			<0.001
Methylnaphthalene,2-	mg/L	0.00005			<0.00005
Naphthalene	mg/L	0.00005			<0.00005
Pentachlorophenol	mg/L	0.0002	0.005, 0.002	SAN, STORM	<0.0002

Michelle Dubien
Data Specialist

				Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
Parameter	Units	R.L.	Limits		-
Phenanthrene	mg/L	0.00005			<0.00005
Pyrene	mg/L	0.00005			<0.00005
Total PAH	mg/L	0.0001	0.005, 0.002	SAN, STORM	<0.0001

				Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
Parameter	Units	R.L.	Limits		-
Poly-Chlorinated Biphenyls (PCB's)	mg/L	0.00005	0.001, 0.0004	SAN, STORM	<0.00005
Identification Comment	-	-			-

Subcontracted Analyses

				Client I.D.	BH23-6
				Sample I.D.	23-035689-1
				Date Collected	2023-Dec-20
Parameter	Units	R.L.	Limits		-
Nonylphenol Monoethoxylate	mg/L	-			<0.01
Nonylphenol Diethoxylate	mg/L	-			<0.01
Nonylphenols	mg/L	-	0.02, 0.001	SAN, STORM	<0.001
Nonylphenol Ethoxylates	mg/L	-	0.2, 0.01	SAN, STORM	<0.01

: City of Toronto Sewer Use By-Law
SAN: Sanitary Sewer By Law
STORM: Storm Sewer By Law

Michelle Dubien
Data Specialist

Summary of Exceedances		
Sanitary Sewer By Law		
BH23-6	**Found Value**	**Limit**
Total Suspended Solids	292	350
Manganese (Total)	0.074	5
Storm Sewer By Law		
BH23-6	**Found Value**	**Limit**
Total Suspended Solids	292	15
Manganese (Total)	0.074	0.05

Michelle Dubien
Data Specialist

GENERAL SAMPLE SUBMISSION FORM

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured. Proudly Canadian.

SAMPLES SUBMITTED TO: Kingston [ ] Ottawa [ ] Richmond Hill [X] Barrie [ ] Windsor [ ]

TESTING REQUIREMENTS

[ ] O'Reg 153/04 Table (1 - 9) ____ Record of Site ____
[ ] O'Reg 406/19 Table (1 - 9.1) ____ SPLP Table (1-9.1) ____
[ ] RPI [ ] ICC [ ] Agricultural
[ ] Coarse [ ] Medium/Fine [ ] O'Reg 558 TCLP
[ ] MISA [ ] PWQO [ ] Landfill Monitoring
[ ] Other: Toronto Sani / Storm Sewer use By-law

REPORT NUMBER (Lab Use): 23-035689

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [ ] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Organization: WSP	Address: 121 Commerce Park Dr. Unit L Barrie	Invoicing Address (if different):
Contact: Patrick Merritt		
Tel: 905 751 6097 Fax:	Quote #:	Project Name or #: Schuys Dunlop
Email: Patrick.Merritt@wsp.com	P.O. #: CA-GLD-22535291 (2000)	Additional Info:
Additional Info (email, cell, etc):		

ANALYSES REQUESTED

Toronto Sani + Storm Sewer use By-law

Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)
*Must be arranged in advance

[ ]	Platinum*	200% Surcharge
[ ]	Gold*	100% Surcharge
[ ]	Silver	50% Surcharge
[ ]	Bronze	25% Surcharge
[X]	Standard	5-7 days
[ ]	Specific Date:	

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No.	Sample Source and/or Sample Identification	S.P.L. (Watertrax)	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided	X	Field pH	Field Temp.	# Bottles/ Sample	Field Filtered Y/N
1	BH23-6		GW	23-12-20	13:30	X		7.78	12.3	15	N

K - 1L amber (*2), 1L amber (O:G), geochem, nutrients, phenols, CN
O - geochem, metals, Hg, CrVI
RH - vials
B - bacti
SGS - 1L amber (NP/NPE)

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Patrick Merritt →	
Sign:	→	
	23-12-20 1510 →	
	Date (yy-mm-dd) Time:	Date (yy-mm-dd) Time:

SHIPPING INFORMATION

[ ] Courier (Client account)
[ ] Courier (Caduceon account)
[X] Drop Off
[ ] Caduceon (Pick-up)

Invoice:
# of Pieces: 1

REPORTING / INVOICING

[ ] Report by Fax
[X] Report by Email
[X] Invoice by Email
[ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): C. Burke Signature:
Date Received (yy-mm-dd): 23-12-20 Time Received: 15:25
Laboratory Prepared Bottles: [X] Yes [ ] No
Sample Temperature °C: 4 Labeled by:

Comments:

Page 1 of 1

G 113740

SGS

Request for Laboratory Services and CHAIN OF CUSTODY (General)

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365 Web: www.ca.sgs.com

SGS Environmental Services - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com

Laboratory Information Section

Received Date (mm/dd/yyyy): __ __ / __ __ / __ __ __ __ | LAB LIMS #:

Received Time (After Hours Only): __ __ : __ __ | Temperature Upon Receipt (°C):

Billing & Reporting Information

Invoice/Receipt to (3):

Company:	Caduceon Environmental Laboratories
Attention:	Christine Burke
Address:	112 Commerce Park Drive, Unit L Barrie ON L4N 8W8
Email:	cburke@caduceonlabs.com, tsexsmith@caduceonlabs.com

Project Name/Number: | P.O. #: 23-035689

Quote #:

Attached Parameter List: ☐ YES ☐ NO

Turnaround Time

Is *Rush Turnaround Time Required? ☐ YES ☑ NO

Specify:

* Rush TA Requests Require Lab Approval

Client Information/Report To:

Company Name:	Caduceon Environmental Laboratories	Phone Number:	289-475-5442
Contact Name:	Christine Burke	Fax Number:	866-562-1963
Address:	Same as Above	E-mail:	Same as Above
Copy to:			

Client Lab #:

Sample Information

Sample Identifier	Date Sampled (mm/dd/yy)	Time Sampled	# of Bottles	Analysis Requested (please enter the analysis required below and check off which analysis applies to each sample)							
				nonylphenols	nonylphenol ethoxylates						
BH23-6 (35689-1)	12-20-23	13:30	1	X	X						

Sampled By (1):	Client	(Signature)		Date:	12/20/23 (mm/dd/yy)
Relinquished by (2):	C. Burke	(Signature)		Date:	12/20/23 (mm/dd/yy)

Note: (1) Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. (2) Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). (3) Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request.

Your Project #: 22535291
Site Location: DANFORTH
Your C.O.C. #: C#1018511-01-01

Attention: Samara Kadhim

WSP Canada Inc.
2 International Boulevard
Suite 201
Toronto, ON
CANADA M9W 1A2

Report Date: 2024/10/30
Report #: R8383907
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X0209
Received: 2024/10/21, 15:59

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Sewer Use By-Law Semivolatile Organics	1	2024/10/28	2024/10/30	CAM SOP 00301	EPA 8270 m
Biochemical Oxygen Demand (BOD)	1	2024/10/23	2024/10/28	CAM SOP-00427	SM 24 5210B m
Chromium (VI) in Water	1	N/A	2024/10/23	CAM SOP-00436	EPA 7199 m
Total Cyanide	1	2024/10/22	2024/10/22	CAM SOP-00457	OMOE E3015 5 m
Fluoride	1	2024/10/23	2024/10/24	CAM SOP-00449	SM 24 4500-F C m
Mercury in Water by CVAA	1	2024/10/23	2024/10/23	CAM SOP-00453	EPA 7470A m
Total Metals Analysis by ICPMS	1	2024/10/23	2024/10/23	CAM SOP-00447	EPA 6020B m
E.coli, (CFU/100mL)	1	N/A	2024/10/21	CAM SOP-00552	SM9222B, MECP E3371
Total Nonylphenol in Liquids by HPLC	1	2024/10/26	2024/10/28	CAM SOP-00313	In-house Method
Nonylphenol Ethoxylates in Liquids: HPLC	1	2024/10/26	2024/10/28	CAM SOP-00313	In-house Method
Animal and Vegetable Oil and Grease	1	N/A	2024/10/26	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2024/10/26	2024/10/26	CAM SOP-00326	EPA1664B m,SM5520B m
Polychlorinated Biphenyl in Water	1	2024/10/24	2024/10/24	CAM SOP-00309	EPA 8082A m
Phenols (4AAP)	1	N/A	2024/10/28	CAM SOP-00444	OMOE E3179 m
pH	1	2024/10/23	2024/10/24	CAM SOP-00413	SM 24th-4500H+ B
Total Kjeldahl Nitrogen in Water	1	2024/10/24	2024/10/28	CAM SOP-00938	OMOE E3516 m
Total PAHs (1)	1	N/A	2024/10/28	CAM SOP - 00301	
Mineral/Synthetic O & G (TPH Heavy Oil) (2)	1	2024/10/26	2024/10/26	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	1	2024/10/23	2024/10/25	CAM SOP-00428	SM 24 2540D m
Volatile Organic Compounds in Water	1	N/A	2024/10/23	CAM SOP-00228	EPA 8260D

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Your Project #: 22535291
Site Location: DANFORTH
Your C.O.C. #: C#1018511-01-01

Attention: Samara Kadhim

WSP Canada Inc.
2 International Boulevard
Suite 201
Toronto, ON
CANADA M9W 1A2

Report Date: 2024/10/30
Report #: R8383907
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X0209

Received: 2024/10/21, 15:59

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Total PAHs include only those PAHs specified in the sewer use by-by-law.
(2) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ashton Gibson, Project Manager
Email: ashton.gibson@bureauveritas.com
Phone# (905)817-5765

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID				AGLK53			AGLK53		
Sampling Date				2024/10/21 12:30			2024/10/21 12:30		
COC Number				C#1018511-01-01			C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch	MW23-6 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Total Animal/Vegetable Oil and Grease	mg/L	-	150	<0.50	0.50	9713931			
Inorganics									
Total BOD	mg/L	15	300	<2	2	9718434			
Fluoride (F-)	mg/L	-	10	<0.10	0.10	9720608			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	100	1.1	0.20	9723655	0.87	0.20	9723655
pH	pH	6.0:9.5	6.0:11.5	7.92		9720609			
Phenols-4AAP	mg/L	0.008	1.0	<0.0010	0.0010	9727865			
Total Suspended Solids	mg/L	15	350	10	10	9716231			
Total Cyanide (CN)	mg/L	0.02	2	0.0082	0.0050	9715276			
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L	-	-	<0.50	0.50	9726651			
Total Oil & Grease Mineral/Synthetic	mg/L	-	15	<0.50	0.50	9726653			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

NONYL PHENOL AND NONYL PHENOL ETHOXYLATE (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
Miscellaneous Parameters						
Nonylphenol Ethoxylate (Total)	mg/L	0.01	0.2	<0.005	0.005	9726659
Nonylphenol (Total)	mg/L	0.001	0.02	<0.001	0.001	9726658

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

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Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
Metals						
Chromium (VI)	ug/L	40	2000	0.63	0.50	9719156
Mercury (Hg)	mg/L	0.0004	0.01	<0.00010	0.00010	9718712
Total Aluminum (Al)	ug/L	-	50000	200	4.9	9718500
Total Antimony (Sb)	ug/L	-	5000	<0.50	0.50	9718500
Total Arsenic (As)	ug/L	20	1000	<1.0	1.0	9718500
Total Cadmium (Cd)	ug/L	8	700	0.22	0.090	9718500
Total Chromium (Cr)	ug/L	80	4000	<5.0	5.0	9718500
Total Cobalt (Co)	ug/L	-	5000	<0.50	0.50	9718500
Total Copper (Cu)	ug/L	40	2000	3.8	0.90	9718500
Total Lead (Pb)	ug/L	120	1000	0.57	0.50	9718500
Total Manganese (Mn)	ug/L	50	5000	6.8	2.0	9718500
Total Molybdenum (Mo)	ug/L	-	5000	<0.50	0.50	9718500
Total Nickel (Ni)	ug/L	80	2000	2.0	1.0	9718500
Total Phosphorus (P)	ug/L	400	10000	<100	100	9718500
Total Selenium (Se)	ug/L	20	1000	<2.0	2.0	9718500
Total Silver (Ag)	ug/L	120	5000	<0.090	0.090	9718500
Total Tin (Sn)	ug/L	-	5000	1.2	1.0	9718500
Total Titanium (Ti)	ug/L	-	5000	<5.0	5.0	9718500
Total Zinc (Zn)	ug/L	40	2000	29	5.0	9718500

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
Semivolatile Organics						
Di-N-butyl phthalate	ug/L	15	80	<2	2	9729790
Bis(2-ethylhexyl)phthalate	ug/L	8.8	12	<2	2	9729790
3,3'-Dichlorobenzidine	ug/L	0.8	2	<0.8	0.8	9729790
Pentachlorophenol	ug/L	2	5	<1	1	9729790
Phenanthrene	ug/L	-	-	<0.2	0.2	9729790
Anthracene	ug/L	-	-	<0.2	0.2	9729790
Fluoranthene	ug/L	-	-	<0.2	0.2	9729790
Pyrene	ug/L	-	-	<0.2	0.2	9729790
Benzo(a)anthracene	ug/L	-	-	<0.2	0.2	9729790
Chrysene	ug/L	-	-	<0.2	0.2	9729790
Benzo(b/j)fluoranthene	ug/L	-	-	<0.2	0.2	9729790
Benzo(k)fluoranthene	ug/L	-	-	<0.2	0.2	9729790
Benzo(a)pyrene	ug/L	-	-	<0.2	0.2	9729790
Indeno(1,2,3-cd)pyrene	ug/L	-	-	<0.2	0.2	9729790
Dibenzo(a,h)anthracene	ug/L	-	-	<0.2	0.2	9729790
Benzo(g,h,i)perylene	ug/L	-	-	<0.2	0.2	9729790
Dibenzo(a,i)pyrene	ug/L	-	-	<0.2	0.2	9729790
Benzo(e)pyrene	ug/L	-	-	<0.2	0.2	9729790
Perylene	ug/L	-	-	<0.2	0.2	9729790
Dibenzo(a,j) acridine	ug/L	-	-	<0.4	0.4	9729790
7H-Dibenzo(c,g) Carbazole	ug/L	-	-	<0.4	0.4	9729790
1,6-Dinitropyrene	ug/L	-	-	<0.4	0.4	9729790
1,3-Dinitropyrene	ug/L	-	-	<0.4	0.4	9729790
1,8-Dinitropyrene	ug/L	-	-	<0.4	0.4	9729790
Calculated Parameters						
Total PAHs (18 PAHs)	ug/L	2	5	<1	1	9714918
Surrogate Recovery (%)						
2,4,6-Tribromophenol	%	-	-	86		9729790

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
2-Fluorobiphenyl	%	-	-	71		9729790
D14-Terphenyl (FS)	%	-	-	105		9729790
D5-Nitrobenzene	%	-	-	71		9729790
D8-Acenaphthylene	%	-	-	75		9729790

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

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Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
Volatile Organics						
Benzene	ug/L	2	10	<0.20	0.20	9715921
Chloroform	ug/L	2	40	1.6	0.20	9715921
1,2-Dichlorobenzene	ug/L	5.6	50	<0.40	0.40	9715921
1,4-Dichlorobenzene	ug/L	6.8	80	<0.40	0.40	9715921
cis-1,2-Dichloroethylene	ug/L	5.6	4000	<0.50	0.50	9715921
trans-1,3-Dichloropropene	ug/L	5.6	140	<0.40	0.40	9715921
Ethylbenzene	ug/L	2	160	<0.20	0.20	9715921
Methylene Chloride(Dichloromethane)	ug/L	5.2	2000	<2.0	2.0	9715921
1,1,2,2-Tetrachloroethane	ug/L	17	1400	<0.40	0.40	9715921
Tetrachloroethylene	ug/L	4.4	1000	<0.20	0.20	9715921
Toluene	ug/L	2	16	<0.20	0.20	9715921
Trichloroethylene	ug/L	7.6	400	<0.20	0.20	9715921
p+m-Xylene	ug/L	-	-	<0.20	0.20	9715921
o-Xylene	ug/L	-	-	<0.20	0.20	9715921
Total Xylenes	ug/L	4.4	1400	<0.20	0.20	9715921
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	-	-	103		9715921
D4-1,2-Dichloroethane	%	-	-	110		9715921
D8-Toluene	%	-	-	93		9715921

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Bureau Veritas ID				AGLK53		
Sampling Date				2024/10/21 12:30		
COC Number				C#1018511-01-01		
	UNITS	Criteria	Criteria-2	MW23-6	RDL	QC Batch
PCBs						
Total PCB	ug/L	0.4	1	<0.05	0.05	9722834
Surrogate Recovery (%)						
Decachlorobiphenyl	%	-	-	90		9722834

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law
Criteria-2: Toronto Sanitary and Combined Sewers Discharge Guidelines. Referenced to the Chapter 681.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

MICROBIOLOGY (WATER)

Bureau Veritas ID			AGLK53		
Sampling Date			2024/10/21 12:30		
COC Number			C#1018511-01-01		
	UNITS	Criteria	MW23-6	RDL	QC Batch
Microbiological					
Escherichia coli	CFU/100mL	200	<10	10	9714920

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Toronto Storm Sewer Discharge Use By-Law

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

TEST SUMMARY

Bureau Veritas ID: AGLK53
Sample ID: MW23-6
Matrix: Water

Collected: 2024/10/21
Shipped:
Received: 2024/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sewer Use By-Law Semivolatile Organics	GC/MS	9729790	2024/10/28	2024/10/30	Kathy Horvat
Biochemical Oxygen Demand (BOD)	DO	9718434	2024/10/23	2024/10/28	Nusrat Naz
Chromium (VI) in Water	IC	9719156	N/A	2024/10/23	Harpuneet Kaur
Total Cyanide	SKAL/CN	9715276	2024/10/22	2024/10/22	Prgya Panchal
Fluoride	ISE	9720608	2024/10/23	2024/10/24	Nachiketa Gohil
Mercury in Water by CVAA	CV/AA	9718712	2024/10/23	2024/10/23	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	9718500	2024/10/23	2024/10/23	Azita Fazaeli
E.coli, (CFU/100mL)	PL	9714920	N/A	2024/10/21	Farhana Rahman
Total Nonylphenol in Liquids by HPLC	LC/FLU	9726658	2024/10/26	2024/10/28	Michael Huynh
Nonylphenol Ethoxylates in Liquids: HPLC	LC/FLU	9726659	2024/10/26	2024/10/28	Michael Huynh
Animal and Vegetable Oil and Grease	BAL	9713931	N/A	2024/10/26	Automated Statchk
Total Oil and Grease	BAL	9726651	2024/10/26	2024/10/26	Jay Hareshkumar Vaghasia
Polychlorinated Biphenyl in Water	GC/ECD	9722834	2024/10/24	2024/10/24	Svitlana Shaula
Phenols (4AAP)	TECH/PHEN	9727865	N/A	2024/10/28	Sachi Patel
pH	AT	9720609	2024/10/23	2024/10/24	Nachiketa Gohil
Total Kjeldahl Nitrogen in Water	SKAL	9723655	2024/10/24	2024/10/28	Kruti Jitesh Patel
Total PAHs	CALC	9714918	N/A	2024/10/28	Automated Statchk
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	9726653	2024/10/26	2024/10/26	Jay Hareshkumar Vaghasia
Total Suspended Solids	BAL	9716231	2024/10/23	2024/10/25	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9715921	N/A	2024/10/23	Manpreet Sarao

Bureau Veritas ID: AGLK53 Dup
Sample ID: MW23-6
Matrix: Water

Collected: 2024/10/21
Shipped:
Received: 2024/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	9723655	2024/10/24	2024/10/28	Kruti Jitesh Patel

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9715921	4-Bromofluorobenzene	2024/10/23	103	70 - 130	103	70 - 130	103	%				
9715921	D4-1,2-Dichloroethane	2024/10/23	106	70 - 130	105	70 - 130	106	%				
9715921	D8-Toluene	2024/10/23	99	70 - 130	100	70 - 130	94	%				
9722834	Decachlorobiphenyl	2024/10/24	132 (1)	60 - 130	84	60 - 130	92	%				
9729790	2,4,6-Tribromophenol	2024/10/29			93	10 - 130	59	%				
9729790	2-Fluorobiphenyl	2024/10/29			77	30 - 130	69	%				
9729790	D14-Terphenyl (FS)	2024/10/29			96	30 - 130	100	%				
9729790	D5-Nitrobenzene	2024/10/29			76	30 - 130	70	%				
9729790	D8-Acenaphthylene	2024/10/29			81	30 - 130	71	%				
9715276	Total Cyanide (CN)	2024/10/22	96	80 - 120	100	80 - 120	<0.0050	mg/L	NC	20		
9715921	1,1,2,2-Tetrachloroethane	2024/10/23	97	70 - 130	96	70 - 130	<0.40	ug/L	NC	30		
9715921	1,2-Dichlorobenzene	2024/10/23	100	70 - 130	100	70 - 130	<0.40	ug/L	NC	30		
9715921	1,4-Dichlorobenzene	2024/10/23	100	70 - 130	100	70 - 130	<0.40	ug/L	NC	30		
9715921	Benzene	2024/10/23	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30		
9715921	Chloroform	2024/10/23	103	70 - 130	103	70 - 130	<0.20	ug/L	1.0	30		
9715921	cis-1,2-Dichloroethylene	2024/10/23	106	70 - 130	104	70 - 130	<0.50	ug/L	NC	30		
9715921	Ethylbenzene	2024/10/23	96	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
9715921	Methylene Chloride(Dichloromethane)	2024/10/23	104	70 - 130	103	70 - 130	<2.0	ug/L	NC	30		
9715921	o-Xylene	2024/10/23	100	70 - 130	104	70 - 130	<0.20	ug/L	NC	30		
9715921	p+m-Xylene	2024/10/23	94	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
9715921	Tetrachloroethylene	2024/10/23	98	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
9715921	Toluene	2024/10/23	99	70 - 130	99	70 - 130	<0.20	ug/L	NC	30		
9715921	Total Xylenes	2024/10/23					<0.20	ug/L	NC	30		
9715921	trans-1,3-Dichloropropene	2024/10/23	115	70 - 130	104	70 - 130	<0.40	ug/L	NC	30		
9715921	Trichloroethylene	2024/10/23	102	70 - 130	102	70 - 130	<0.20	ug/L	NC	30		
9716231	Total Suspended Solids	2024/10/25			100	80 - 120	<10	mg/L	13	20		
9718434	Total BOD	2024/10/28					<2	mg/L	1.1	30	99	80 - 120
9718500	Total Aluminum (Al)	2024/10/23	102	80 - 120	100	80 - 120	<4.9	ug/L	10	20		
9718500	Total Antimony (Sb)	2024/10/23	104	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
9718500	Total Arsenic (As)	2024/10/23	103	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
9718500	Total Cadmium (Cd)	2024/10/23	99	80 - 120	99	80 - 120	<0.090	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9718500	Total Chromium (Cr)	2024/10/23	98	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
9718500	Total Cobalt (Co)	2024/10/23	95	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
9718500	Total Copper (Cu)	2024/10/23	100	80 - 120	97	80 - 120	<0.90	ug/L	1.4	20		
9718500	Total Lead (Pb)	2024/10/23	93	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
9718500	Total Manganese (Mn)	2024/10/23	97	80 - 120	96	80 - 120	<2.0	ug/L	4.7	20		
9718500	Total Molybdenum (Mo)	2024/10/23	104	80 - 120	98	80 - 120	<0.50	ug/L	10	20		
9718500	Total Nickel (Ni)	2024/10/23	95	80 - 120	96	80 - 120	<1.0	ug/L	11	20		
9718500	Total Phosphorus (P)	2024/10/23	108	80 - 120	94	80 - 120	<100	ug/L	NC	20		
9718500	Total Selenium (Se)	2024/10/23	101	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
9718500	Total Silver (Ag)	2024/10/23	95	80 - 120	95	80 - 120	<0.090	ug/L	NC	20		
9718500	Total Tin (Sn)	2024/10/23	101	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
9718500	Total Titanium (Ti)	2024/10/23	104	80 - 120	96	80 - 120	<5.0	ug/L	NC	20		
9718500	Total Zinc (Zn)	2024/10/23	98	80 - 120	101	80 - 120	<5.0	ug/L	4.1	20		
9718712	Mercury (Hg)	2024/10/23	100	75 - 125	100	80 - 120	<0.00010	mg/L	NC	20		
9719156	Chromium (VI)	2024/10/23	107	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
9720608	Fluoride (F-)	2024/10/24	106	80 - 120	107	80 - 120	<0.10	mg/L	8.0	20		
9720609	pH	2024/10/24			102	98 - 103			0.52	N/A		
9722834	Total PCB	2024/10/24	130	60 - 130	89	60 - 130	<0.05	ug/L	NC	40		
9723655	Total Kjeldahl Nitrogen (TKN)	2024/10/28	103	80 - 120	101	80 - 120	<0.10	mg/L	NC	20	98	80 - 120
9726651	Total Oil & Grease	2024/10/26			99	80 - 110	<0.50	mg/L	0.25	25		
9726653	Total Oil & Grease Mineral/Synthetic	2024/10/26			96	65 - 130	<0.50	mg/L	0.52	25		
9726658	Nonylphenol (Total)	2024/10/28	90	50 - 130	100	50 - 130	<0.001	mg/L	0.78	40		
9726659	Nonylphenol Ethoxylate (Total)	2024/10/28	86	50 - 130	94	50 - 130	<0.005	mg/L	NC	40		
9727865	Phenols-4AAP	2024/10/28	99	80 - 120	103	80 - 120	<0.0010	mg/L	NC	20		
9729790	1,3-Dinitropyrene	2024/10/29			115	30 - 130	<0.4	ug/L	3.9	40		
9729790	1,6-Dinitropyrene	2024/10/29			96	30 - 130	<0.4	ug/L	3.7	40		
9729790	1,8-Dinitropyrene	2024/10/29			117	30 - 130	<0.4	ug/L	2.7	40		
9729790	3,3'-Dichlorobenzidine	2024/10/29			108	30 - 130	<0.8	ug/L	9.0	40		
9729790	7H-Dibenzo(c,g) Carbazole	2024/10/29			82	30 - 130	<0.4	ug/L	0.29	40		
9729790	Anthracene	2024/10/29			89	30 - 130	<0.2	ug/L	0.84	40		
9729790	Benzo(a)anthracene	2024/10/29			98	30 - 130	<0.2	ug/L	6.2	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9729790	Benzo(a)pyrene	2024/10/29			104	30 - 130	<0.2	ug/L	1.6	40		
9729790	Benzo(b/j)fluoranthene	2024/10/29			99	30 - 130	<0.2	ug/L	4.6	40		
9729790	Benzo(e)pyrene	2024/10/29			96	30 - 130	<0.2	ug/L	1.4	40		
9729790	Benzo(g,h,i)perylene	2024/10/29			102	30 - 130	<0.2	ug/L	0.51	40		
9729790	Benzo(k)fluoranthene	2024/10/29			89	30 - 130	<0.2	ug/L	13	40		
9729790	Bis(2-ethylhexyl)phthalate	2024/10/29			97	30 - 130	<2	ug/L	6.0	40		
9729790	Chrysene	2024/10/29			94	30 - 130	<0.2	ug/L	1.4	40		
9729790	Dibenzo(a,h)anthracene	2024/10/29			103	30 - 130	<0.2	ug/L	0.93	40		
9729790	Dibenzo(a,i)pyrene	2024/10/29			65	30 - 130	<0.2	ug/L	0.75	40		
9729790	Dibenzo(a,j) acridine	2024/10/29			95	30 - 130	<0.4	ug/L	2.1	40		
9729790	Di-N-butyl phthalate	2024/10/29			96	30 - 130	<2	ug/L	3.0	40		
9729790	Fluoranthene	2024/10/29			99	30 - 130	<0.2	ug/L	3.0	40		
9729790	Indeno(1,2,3-cd)pyrene	2024/10/29			115	30 - 130	<0.2	ug/L	13	40		
9729790	Pentachlorophenol	2024/10/29			37	30 - 130	<1	ug/L	2.9	40		
9729790	Perylene	2024/10/29			101	30 - 130	<0.2	ug/L	1.4	40		
9729790	Phenanthrene	2024/10/29			86	30 - 130	<0.2	ug/L	0.38	40		
9729790	Pyrene	2024/10/29			100	30 - 130	<0.2	ug/L	3.8	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Surrogate recovery was above the upper control limit due to matrix interference. This may represent a high bias in some results.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Farhana Rahman

Farhana Rahman, Senior Analyst

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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MICRO

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#23879 WSP Canada Inc.	Company Name:		Quotation #:	C41059	Bureau Veritas Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Samara Kadhim, Syed Ali	P.O. #:			1018511
Address:	2 International Boulevard Suite 201	Address:		Project:	22535291	COC #:	Project Manager:
	Toronto ON M9W 1A2			Project Name:		C#1018511-01-01	Ashton Gibson
Tel:	(416) 798-0065 Fax: (905) 550-2288	Tel:	437 925 7137 Fax:	Site #:	Dundas		
Email:	capayablesinvoice@wsp.com	Email:	Samara.Kadhim@wsp.com, syed.ali2@wsp.com	Sampled By:	Samara		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☑ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☑ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality City of Toronto	
☐ Table ___	☐ PWQO ☐ Reg 406 Table ___	
	☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Toronto Sanitary&Storm Sewer (100-2016)	O-Reg 153 VOCs by HS (Water)	# of Bottles	Comments
1		MW23-6	Oct 21, 2024	12:30 pm	GW	N	X		18	
2										
3										
4										
5										
6										
7										
8										
9										
10										

21-Oct-24 15:59
Ashton Gibson
C4X0209
KK5 ENV-1652

NONT-2024-10-5003

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Samara Kadhim S/K	Oct 21, 2024	4:00pm	SK SUGAR SELVAN	2024/10/21	15:59	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 4 | 9 | 5
Custody Seal Present ☐ Yes ☐ No
Intact ☐ ☐

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client
ICE

Bureau Veritas Canada (2019) Inc.

Bureau Veritas Job #: C4X0209
Report Date: 2024/10/30

WSP Canada Inc.
Client Project #: 22535291
Site Location: DANFORTH
Sampler Initials: SK

Exceedance Summary Table – Toronto Storm Sewer

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Exceedance Summary Table – Toronto Sanitary Sewer

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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