GEMTEC
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Hydrogeological Investigation
Proposed Residential Development
665 Eliza Street
Arthur, Ontario

GEMTEC Project: 101764.038

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Submitted to:

Tribute/Sorbara Arthur Holdings Inc.
1815 Ironstone Manor, Unit 1
Pickering, Ontario
L1W 3W9

Hydrogeological Investigation
Proposed Residential Development
665 Eliza Street
Arthur, Ontario

January 15, 2025
GEMTEC Project: 101764.038

GEMTEC Consulting Engineers and Scientists Limited
850 Champlain Avenue, Unit 101
Oshawa, ON, Canada
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January 15, 2025 File: 101764.038 – Rev0

Tribute/Sorbara Arthur Holdings Inc.
1815 Ironstone Manor, Unit 1
Pickering, Ontario
L1W 3W9

Attention: Frank Zadorozniak, C.E.T.

Re: Hydrogeological Investigation Report
Proposed Residential Development, 665 Eliza Street, Arthur, Ontario

Please find enclosed our hydrogeological investigation report for the proposed residential subdivision located at 665 Eliza Street, Arthur, Ontario. This report was prepared by Andy Weatherson, M.Env.Sc., P.Geo., and reviewed by Dale Edwards, C.Tech. Please provide any comments on the draft report. Finalization of the report is planned following receipt of any consolidated comments on the draft report.

Andy Weatherson, M.Env.Sc., P.Geo.
Hydrogeologist

Dale Edwards, C.Tech.
Branch Manager - Oshawa

AW/CH/DBE/sv

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been retained by Tribute/Sorbara Arthur Holdings Inc. to carry out a hydrogeological investigation in support of a Draft Plan of Subdivision application for the proposed residential subdivision located at 665 Eliza Street, Arthur, Ontario, herein referred to as the 'site'. This report should be read in conjunction with the associated geotechnical investigation report (issued under separate cover; GEMTEC, 2024).

The purpose of the hydrogeological investigation was to characterize the general subsurface and groundwater conditions at the site by means of a limited number of boreholes and monitoring wells and, based on the information obtained, to provide hydrogeological recommendations for construction dewatering permitting needs and water disposal options, which could influence both design and construction of the development.

This report is subject to the *Conditions and Limitations of This Report*, which follows the text of the report, and are considered an integral part of the report (see Appendix A).

2.0 PROJECT DESCRIPTION AND SETTING

2.1 Project Description

The site is located approximately 400 metres (m) to 1,000 m south of Line 2 and east of Eliza Street in Arthur, Ontario, with an approximate area of 38.4 hectares (ha). The land use at the site is predominantly agricultural with a rural residence (and barn) occupying a portion of the west side of the site and a watercourse (tributary to Farleys Creek) running through the western portion of the site. The approximate site location and boundaries are shown on Figure 1, Site Plan, attached.

Based on the conceptual site plan provided, it is understood that the planned residential development will consist of single and semi-detached homes, townhouses, parklands, a stormwater management (SWM) pond, and internal roadways.

At the time of preparation of this report, details of the proposed development (e.g., site grading, building structures, servicing depths, SWM pond etc.) were not provided due to the preliminary stage of the project. Therefore, assumptions regarding excavation areas and depths were made for preliminary assessment of temporary construction dewatering permitting requirements.

2.2 Existing Reports

The following report and project documents have been provided to and considered by GEMTEC in the preparation of this report:

- Geotechnical Report titled "*Preliminary Geotechnical Investigation Report, 665 Eliza Street, Arthur, Ontario*" prepared by HLV2K Engineering Limited, dated May 5, 2022.

2.3 Topography, Drainage, and Natural Heritage

According to topographic mapping provided in the on-line Ministry of Natural Resources and Forestry (MNRF), *Make a Map: Natural Heritage Areas* tool (MNRF, 2023), existing site grades vary by approximately 3 m from approximately Elev. 464 m above mean sea level (amsl) (on the west side of the site) to Elev. 467 m amsl (on the east side of the site). A tributary to Farleys Creek is present along the west side of the site and drains to the northwest into Farleys Creek (MNRF, 2023). No wetlands are mapped on or in the vicinity of the site (see Figure 2, Topography and Natural Heritage, attached).

2.4 Physiography and Geology

The site is located within the physiographic region known as the Stratford Till Plain. At this location, undrumlinized till plains are the dominant physiographic landform (Chapman and Putnam, 1984).

Published surficial geology mapping (Ontario Geological Survey, 2010) indicates that the surficial soils at the site consist of clay to silt-textured till (Halton Till). Paleozoic bedrock geology mapping (Armstrong and Dodge, 2007) indicates that the overburden is underlain by dolostone, shale, and evaporites of the Salina Formation. Bedrock was not encountered within the boreholes advanced at the site as part of this investigation; however, based on the review of the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records, the depth to bedrock ranges from approximately 42 m to 48 m below ground surface (bgs).

2.5 MECP Water Well Records

A review of available MECP Water Well Records was carried out for the area within approximately 500 m of the Site (see Figure 4, MECP Well Records within 500 Metres, attached). The database indicated 18 records within this search area. Six of the records contained no information. Three are identified as monitoring wells and three wells are listed as not used. These wells are not considered further. Of the six remaining records, all six are identified as domestic or domestic/stock watering supply wells. A summary of the information provided on the records is presented in Table 2.1 below.

Table 2.1 – Well Records Review, Supply Well Summary

Well Type	Depth (m)			Overburden Source	Bedrock Source	Well Use	
	min	max	avg			DO, DO/ST	Other
Drilled	52.4	131.7	103.2	0	6	6	0
Totals	**-**	**-**	**-**	**0**	**6**	**6**	**0**

Notes:
- min = minimum
- max = maximum
- avg = arithmetic mean
- DO = Domestic, DO/ST = Domestic and stock watering.

One well record (#7425145) is reportedly located on the site (location not confirmed by GEMTEC). This well record did not contain any information other than it was installed in 2022. It is possible this well services the existing residential dwelling on the site.

The subsurface conditions reported in the remaining water well records within the search area were in general agreement with the published geological mapping. The subsurface conditions reported were predominantly comprised of deposits of clay and/or inferred glacial till with some silt and/or sand. The recorded depth to bedrock (limestone) ranged from 42.1 m to 47.9 m below ground surface (bgs), with an average depth of 44.8 m bgs (n = 6). The reported water source used by the water supply wells was limestone bedrock (all six wells). The dates of construction for the supply wells ranged from 1978 to 2022.

Typically, shallow dug and bored wells are the most susceptible to water level fluctuations and surficial sources of contamination. There are no shallow dug or bored supply wells within 500 m of the site, and the bedrock aquifer is hydraulically isolated from the ground surface by a vertically extensive aquitard composed of low permeability clay/till deposits.

2.6 Source Water Protection

The MECP Source Protection Information Atlas (MECP, 2023a) was reviewed to assess the presence of source water protection areas on the site including Wellhead Protection Areas (WHPA) associated with municipal groundwater supplies, Intake Protection Zones (IPZ) associated with municipal surface water supplies, Significant Groundwater Recharge Areas (SGRA) and Highly Vulnerable Aquifers (HVA).

The nearest WHPA is located about 550 m west of the site in Arthur, Ontario. Part of the site is mapped as an IPZ-3 associated with the tributary to Farleys Creek. There are no HVAs or SGRAs mapped within 500 m of the site.

2.7 Registered Water Takings

The Environmental Approvals and Registrations database (MECP, 2023b) was reviewed for nearby registered water takings. No active Permit to Take Water (PTTW) or Environmental Activity Sector Registry (EASR) entries for water takings were identified within 500 m of the site at the time of preparation of this report.

3.0 PREVIOUS INVESTIGATION

As noted above, a geotechnical investigation (HLV2K, 2022) was previously carried out at the site by others in 2022. As part of this investigation, six boreholes were advanced across the site to depths between about 5.8 m and 6.5 m bgs.

The described subsurface conditions consisted of topsoil, underlain by sandy silt to sandy clayey silt.

Three of the boreholes (Boreholes BH1 to BH3) were instrumented with shallow monitoring wells. Groundwater levels were manually monitored in the monitoring wells on April 12, 2022. The depth to groundwater at the monitoring wells ranged from about 1.1 m to 1.8 m bgs; approximately Elev. 462.4 m to Elev. 465.0 m amsl.

The approximate borehole locations from the previous geotechnical investigation are shown in Figure 1, attached.

The monitoring wells in Boreholes BH2 and BH3 could not be located by GEMTEC in 2024 and were assumed to be destroyed/decommissioned sometime after the HLV2K site visit on April 12, 2022.

4.0 CURRENT SITE INVESTIGATION METHODOLOGY

4.1 Geotechnical Investigation

The geotechnical investigation (GEMTEC, 2024) was carried out between June 25 and 27, 2024. Nine boreholes (Boreholes BH24-1 to BH24-9) were advanced between approximately 6.6 m and 9.6 m bgs (from Elev. 452.7 m to Elev. 458.8 m amsl).

Two additional boreholes (Boreholes BH24-10 and BH24-11) were drilled on July 25, 2024 in the general areas of HLV2K Monitoring Wells BH2 and BH3.

The Record of Borehole Sheets are provided in Appendix B; refer to the geotechnical investigation (GEMTEC, 2024) for details on the borehole drilling program.

4.2 Site Instrumentation

Monitoring wells were installed at three borehole locations (Boreholes BH24-1, BH24-6 and BH24-8). A bi-level monitoring well (i.e., shallow (S) and deep (D) monitoring well pairs installed in separate and adjacent boreholes) was installed at Borehole BH24-1 for a total of four monitoring wells.

Two additional monitoring wells were installed in Boreholes BH24-10 and BH24-11 to replace Boreholes BH2 and BH3.

The monitoring wells were constructed using nominal 50 mm diameter, Schedule 40 polyvinyl chloride (PVC) pipe with a No. 10 machine slotted screen (0.01-inch slot). The annular space between the monitoring well screen and surrounding soils was backfilled with a silica sand filter pack to a maximum of 0.3 m above the top of the screen, and the remainder of the annular space was sealed with bentonite. All monitoring wells were completed with above-ground protective steel casings. The monitoring well installation details are tabulated in Table C-1, and the measured groundwater depths and elevations are tabulated in Table C-2, Appendix C.

Following installation, the monitoring wells were developed to remove drilling fluids, solids or other particles that may have been introduced during drilling / installation. All monitoring wells were purged using dedicated 16 mm inside diameter low density polyethylene (LDPE) tubing and a D-25 Waterra™ foot valve. The monitoring wells were developed by removing three casing volumes or until dry.

In addition, a shallow piezometer (PZ) and staff gauge (SG) pair (PZ24-2/SG24-2) was installed at the site on July 9, 2024, in the on-site tributary to evaluate the vertical gradient at the south end of the tributary. The shallow piezometer was installed to an approximate depth of 0.9 m bgs.

J.D. Barnes Ltd. surveyed the GEMTEC monitoring wells and PZ/SG pair on September 4 and 20, 2024. The ground surface and top of pipe / post elevations were collected during the surveying. The elevations are geodetic and derived from GNSS observations using Natural Resources Canada's Geoid Model HTv2.0 (CGVD-1928:1978). The coordinates at the borehole locations were referenced to the Universal Transverse Mercator (UTM) Zone 17, NAD 1983.

4.3 Hydraulic Response Testing

In situ hydraulic response testing was carried out in four monitoring wells (Monitoring Wells BH1, BH24-1S, BH24-1D, and BH24-8) to estimate the bulk horizontal hydraulic conductivity (K_b) of the overburden materials adjacent to the screened intervals. The testing consisted of creating an instantaneous change through rapid well purging of the well by removing a known volume of water, followed by recording the time taken for the water level to return to static conditions (i.e., rising head test).

The data was analyzed using the Bouwer and Rice (1976) solution. A summary of the test results is provided in Table C-3, Appendix C. A sheet summarizing the test data, analysis interval, input parameters and estimated bulk hydraulic conductivity for each test is provided in Appendix D.

4.4 Groundwater and Surface Water Sampling

To evaluate disposal options for pumped groundwater from potential future construction dewatering activities, a groundwater sample was collected from the monitoring well installed in Borehole BH24-1S on July 11, 2024. In addition, a surface water grab sample (SW) was collected from the tributary to Farleys Creek to assess background surface water quality conditions in the on-site watercourse. The locations of the monitoring well and surface water sampling station are shown on Figure 1, attached.

Prior to collecting the groundwater sample, the monitoring well was purged in accordance with industry standards to obtain a representative sample. Following purging, the groundwater was sampled with the use of a dedicated bailer and poured directly into laboratory-supplied sample bottles. The groundwater was not field filtered to allow for comparison of the analytical results to the Wellington North *Sewer Use By-Law # 095-16*, *Schedule "B" Restricted Wastes Sanitary and Combined Sewer Discharges* (Sanitary Limits) and *Section 3 – Storm Sewer Requirements*

(Storm Limits). In addition and for discussion purposes, the results were compared to the *Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy* (now the MECP), *Table 2 – Table of PWQOs and Interim PWQOs* (PWQO) (reprinted February 1999).

The samples were packed into coolers with ice for transit to the analytical laboratory. The samples were taken to Bureau Veritas Laboratories (BV) in Mississauga, Ontario on the day of sampling.

5.0 SUBSURFACE CONDITIONS

As previously indicated, the soil and groundwater conditions identified in the boreholes are shown on the Record of Borehole Sheets in Appendix B.

The Record of Boreholes indicate the subsurface conditions at the specific borehole locations only. Boundaries between the different soils on the Records are often not distinct, but rather are transitional and have been interpreted. The precision with which subsurface conditions are indicated depends on the method of drilling, the frequency and recovery of samples, the method of sampling, and the uniformity of the subsurface conditions. Subsurface conditions at locations other than the boreholes may vary from the conditions encountered in the boreholes, both laterally and with depth. 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 soil descriptions in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves judgement and GEMTEC does not guarantee descriptions as exact but infers accuracy to the extent that is common in current geotechnical practice.

Generally, the subsurface conditions encountered over the site consist of the following:

- Surficial topsoil ranging in thickness from about 0.08 m to 0.13 m. The surficial topsoil was underlain by;
- A silty clay deposit in Boreholes BH24-1(S/D), BH24-2 to BH24-5, and BH24-7 to BH24-11 ranging in thickness from about 0.6 m to 6.4 m, underlain by;
- A cohesive silty clay till comprised silty clay to clayey silt (cohesive) was encountered in all boreholes underlying either the topsoil or silty clay deposit. The till extended to the termination depths of the boreholes, between about 6.2 m and 9.6 m bgs (El. 452.7 m to 458.8 m amsl);
- A non-cohesive silt and sand deposit (0.5 m thick) was encountered in Borehole BH24-7 interlayered with the cohesive till deposit; and,
- A non-cohesive deposit of silt (1.2 m thick) was encountered in Borehole BH24-8 underlying the silty clay deposit and overlying the silty clay till deposit.

5.1 Groundwater and Surface Water Levels

Groundwater and surface water levels were measured in all monitoring wells and the piezometer / surface gauge pair (installed by HLV2K and GEMTEC) on four events: July 9, July 18, August 2, and August 16, 2024. The groundwater levels at the monitoring wells ranged from 1.2 m bgs (Borehole BH24-1S) to 3.1 m bgs (Borehole BH24-1D) and from Elev. 459.2 m (Borehole BH24-1D) to Elev. 463.4 m amsl (Borehole BH24-11) during the last event on August 16, 2024. It is interpreted that some of the groundwater levels may not have stabilized during the monitoring period as a result of slow water level recovery in the cohesive glacial till. Active flow was observed at SG23-1 in the tributary to Farleys Creek during each monitoring event, with an approximate surface water elevation of Elev. 461.8 m amsl on August 16, 2024. The groundwater and surface water measurements for all monitoring locations and monitoring events completed by HLV2K and GEMTEC are provided in Table D-2, Appendix D.

It is important to note the groundwater levels represent small amounts of water trapped within the low-permeability till soils beneath the property and are not indicative of an aquifer that would be expected to yield significant volumes of groundwater.

The groundwater and surface water conditions described in this report refer only to those measured at the place and time of observation. Seasonal and annual fluctuations should be anticipated.

The groundwater elevation data on August 16, 2024, is presented on Figure 5, Groundwater Flow (August 16, 2024), attached. Groundwater flow was inferred to be southwest towards the tributary to Farleys Creek, generally following surface topography.

The vertical hydraulic gradient was assessed from the groundwater levels measured on August 16, 2024, at the location of the bi-level monitoring well pair (i.e., Borehole BH24-1S/D). The approximate vertical hydraulic gradient for the bi-level monitoring wells was -0.691 m/m (downward).

The vertical gradient at PZ23-1/SG23-1 appeared to be downward (indicating recharging conditions) on August 16, 2024.

5.2 Hydraulic Response Test Results

The data and results of the hydraulic response testing carried out in the monitoring wells are presented in Table C-3, Appendix C. Borehole BH23-1D was interpreted to be partially recovered prior to the hydraulic response test and is not discussed further in this report. A summary of the test results is provided in Table 5.1 below.

Table 5.1 – Summary Hydraulic Conductivity Estimates

Monitoring Well ID	Unit	No. of Tests	Hydraulic Conductivity K_b [m/s]
BH24-1S	(CL) Silty Clay	1	6×10^{-8}
BH24-8	(CL) Silty Clay Till	1	5×10^{-9}
BH1	Sandy Silt	1	5×10^{-9}

Notes: 1. K_b = bulk hydraulic conductivity; m/s = metres per second

The estimated hydraulic conductivity of the silty clay deposit at the tested location (Borehole BH24-1S) was approximately 6×10^{-8} m/s, which is slightly above the literature range for clay of 10^{-11} m/s to 10^{-8} m/s (Fetter, 1994).

The estimated hydraulic conductivity of the glacial till deposit at the tested location (Borehole BH24-8) was approximately 5×10^{-9} m/s, which is slightly below the literature range for till of 10^{-8} m/s to 10^{-6} m/s (Fetter, 1994).

The estimated hydraulic conductivity of the sandy silt deposit at the tested location (Borehole BH1) was approximately 5×10^{-9} m/s, which is slightly below the literature range for sandy silt of 10^{-8} m/s to 10^{-6} m/s (Fetter, 1994). However, the sandy silt deposit described in the HLV2K (2022) report may be a cohesive deposit as discussed in the GEMTEC (2024) geotechnical investigation report.

5.3 Groundwater and Surface Water Quality Results

A summary of the analytical results for the groundwater sample from Borehole BH24-1S as well as the surface water sample from the tributary to Farleys Creek at Station SW (SG24-1 location) collected July 11, 2024, with comparison to the Wellington North Sanitary and Storm Limits and/or PWQO, is presented in Table E-1 in Appendix E. The Laboratory Certificate of Analysis is also provided in Appendix E.

There were no exceedances of the Sanitary and Storm Limits in the groundwater sample. For discussion purposes, parameters with concentrations exceeding the PWQO are summarized in Table 5.2 below.

Table 5.2 – Summary of Water Quality Exceedances

Parameter	Water Quality Result	Sanitary Limits	Storm Limits	PWQO
Total Cobalt	0.0014 mg/L (BH24-1S)	5 mg/L	-	0.0009 mg/L
Total Copper	0.0057 mg/L (SW)	2 mg/L	0.01 mg/L	0.005 mg/L

Parameter	Water Quality Result	Sanitary Limits	Storm Limits	PWQO
Phenols-4AAP	0.0027 mg/L (SW)	0.1 mg/L	-	0.001 mg/L
Phosphorus	0.036 mg/L (BH24-1S) 0.82 mg/L (SW)	10 mg/L	0.4 mg/L	0.03 mg/L
Toluene	0.0029 mg/L (SW)	0.02 mg/L	-	0.0008 mg/L
Total Oil & Grease, Mineral/Synthetic	0.7 mg/L (BH24-1S) 0.6 mg/L (SW)	15 mg/L	-	0.5 mg/L

Notes: 1. = No Limit or PWQO for the accompanying parameter.

The concentrations of total cobalt, phosphorus, and total mineral/synthetic oil and grease in groundwater (Borehole BH24-1S) exceeded the PWQO. Total copper, phenols-4AAP, phosphorus, toluene, and total mineral/synthetic oil and grease in surface water (SW) also exceeded the PWQO.

It is expected that the elevated cobalt concentration is related to the dissolution of suspended clay minerals during sample acidification. The measured concentrations of toluene and oil and grease appear anomalous as the property is an agricultural field.

It is important to consider that the 4AAP laboratory analysis for Phenols detects a wide variety of naturally occurring organic substances, along with the chemical Phenol (C_6H_5OH). Measured exceedances of “Phenols” may not be indicative of a contamination issue, but rather groundwater that is influenced by natural environmental factors.

Treatment of pumped water from the excavations for sediment removal to meet the Storm Limit for TSS of 15 mg/L at the point(s) of discharge should be anticipated. Treatment measures may include sediment or weir tanks, filter bags or cannisters, and the like. Additional treatment may be required if discharge is to the natural environment.

6.0 PRELIMINARY ASSESSMENT OF WATER TAKING REQUIREMENTS

6.1 Temporary Construction Dewatering Permitting

Construction of the proposed development is anticipated to result in excavations below the water levels measured in the low-permeability till soils underlying the subject property. Excavations of variable dimensions and in variable soil conditions, including excavations for linear servicing and a SWM pond, will likely require some form of positive groundwater control.

As discussed in Section 2.1, details of the proposed development (e.g., site grading, building structures, servicing depths, SWM pond etc.) were not provided. As such, it has been preliminarily assumed that the proposed underground servicing excavation depths will be up to approximately

3 m bgs and the SWM pond will be excavated up to approximately 4 m bgs. A typical length of open servicing trench using a daily cut and cover method, and assumptions of seasonal high groundwater levels and soil conditions were used to assess temporary dewatering rates. The daily water taking rates presented in this section are conservative for permitting purposes; however, it is important to note detailed construction dewatering calculations to evaluate dewatering requirements must be prepared once detailed site information becomes available. Assessment of dewatering requirements, discharge treatment requirements, and discharge disposal options can only be provided once detailed site information becomes available.

The site is generally underlain by relatively low permeability cohesive glacial till, although a localized deposit of silty sand was also encountered (Borehole BH24-7). The steady state groundwater inflow rates for a typical length of linear servicing trench (i.e. 30 m) and for the SWM pond excavation are not likely to exceed 50,000 L/day. Accounting for higher dewatering rates when groundwater is first removed from storage, groundwater inflow rates may be greater than 400,000 L/day, and then decline toward the steady state rate. Further evaluation of dewatering requirements based on site design details will be necessary to accurately evaluate whether an EASR will suffice or whether a PTTW will be necessary.

If combined dewatering rates for the entire site exceed 400,000 L/day, this would result in the need to carry out a detailed investigation and prepare a Hydrogeological Investigation Report supporting an application for a Category 3 Permit to Take Water (PTTW) from the MECP. This would also require the preparation of a discharge plan. The report must generally include an assessment of potential impacts from construction dewatering on existing groundwater, surface water and natural heritage resources as well as potential geotechnical impacts to existing structures from dewatering-induced soil settlement. The discharge plan for the discharge of groundwater pumped during construction should consider source water protection areas, as well as potential impacts to existing surface water and natural heritage resources. A monitoring, mitigation and contingency program should be included in the reporting. It is noted that the MECP review of PTTW applications typically takes at least three months, which should be factored into the construction schedule. These findings should be re-evaluated as site designs progress, the final excavation dimensions are available, and construction methods and schedules are developed.

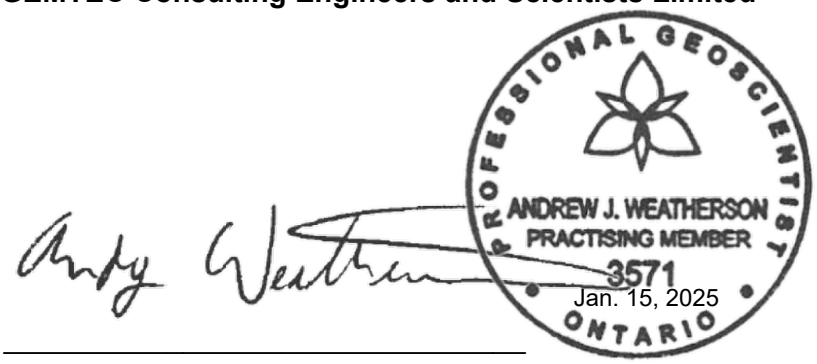
7.0 CLOSURE

We trust that this report meets your immediate requirements. If conditions that differ from those assumed in this geotechnical and hydrogeological investigation report are encountered during construction, GEMTEC should be given the opportunity to review the recommendations presented herein.

If you have any questions or require additional information, please contact the undersigned.

Regards,

GEMTEC Consulting Engineers and Scientists Limited



Andy Weatherson, M.Env.Sc., P.Geo.
Hydrogeologist

Dale Edwards, C.Tech.
Branch Manager – Oshawa

8.0 REFERENCES

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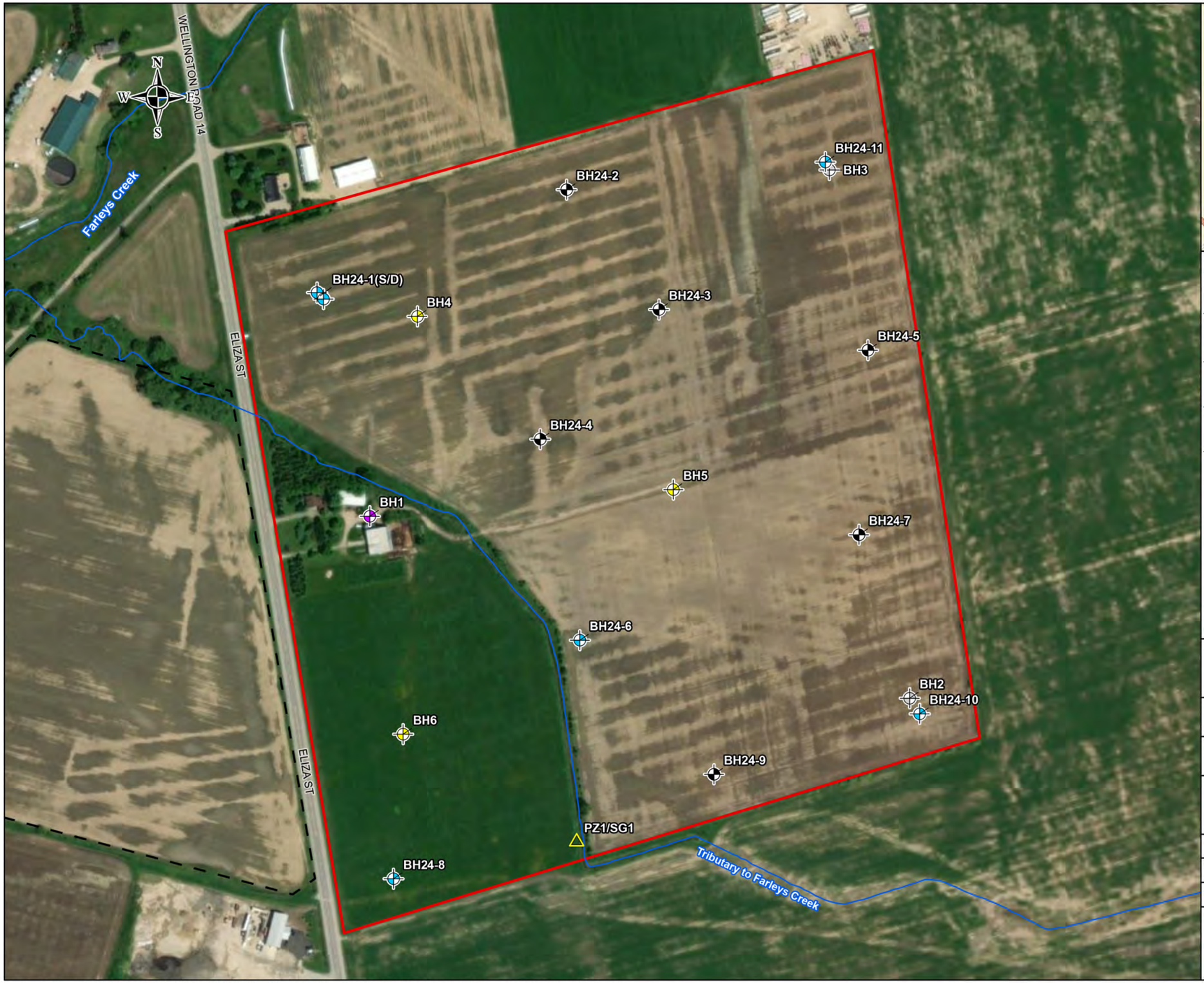
ATTACHMENTS

Figures



Legend

BH # BOREHOLE ID

- BOREHOLE LOCATION (GEMTEC, CURRENT INVESTIGATION)
- MONITORING WELL LOCATION (GEMTEC, CURRENT INVESTIGATION)
- WELL NEST LOCATION (GEMTEC, CURRENT INVESTIGATION)
- BOREHOLE LOCATION (HLV2K, 2022 INVESTIGATION)
- MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- DESTROYED MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- PIEZOMETER/ STAFF GAUGE (GEMTEC, CURRENT INVESTIGATION)
- WATERCOURSE
- SITE BOUNDARY
- WEST AREA

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. Service Layer Credits: World Imagery: Maxar, Microsoft
World Street Map: Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Scale: 1:3,500

0 25 50 100 150 200 Meters

Drawing: SITE PLAN

Client: TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED ARTHUR DEVELOPMENT (EAST)
665 ELIZA STREET, ARTHUR, ONTARIO

Drwn By:	K.C.	Chkd By:	A.W.
Project No.	101764.038	Revision No.	0
Date	SEPTEMBER 2024		**FIGURE 1**

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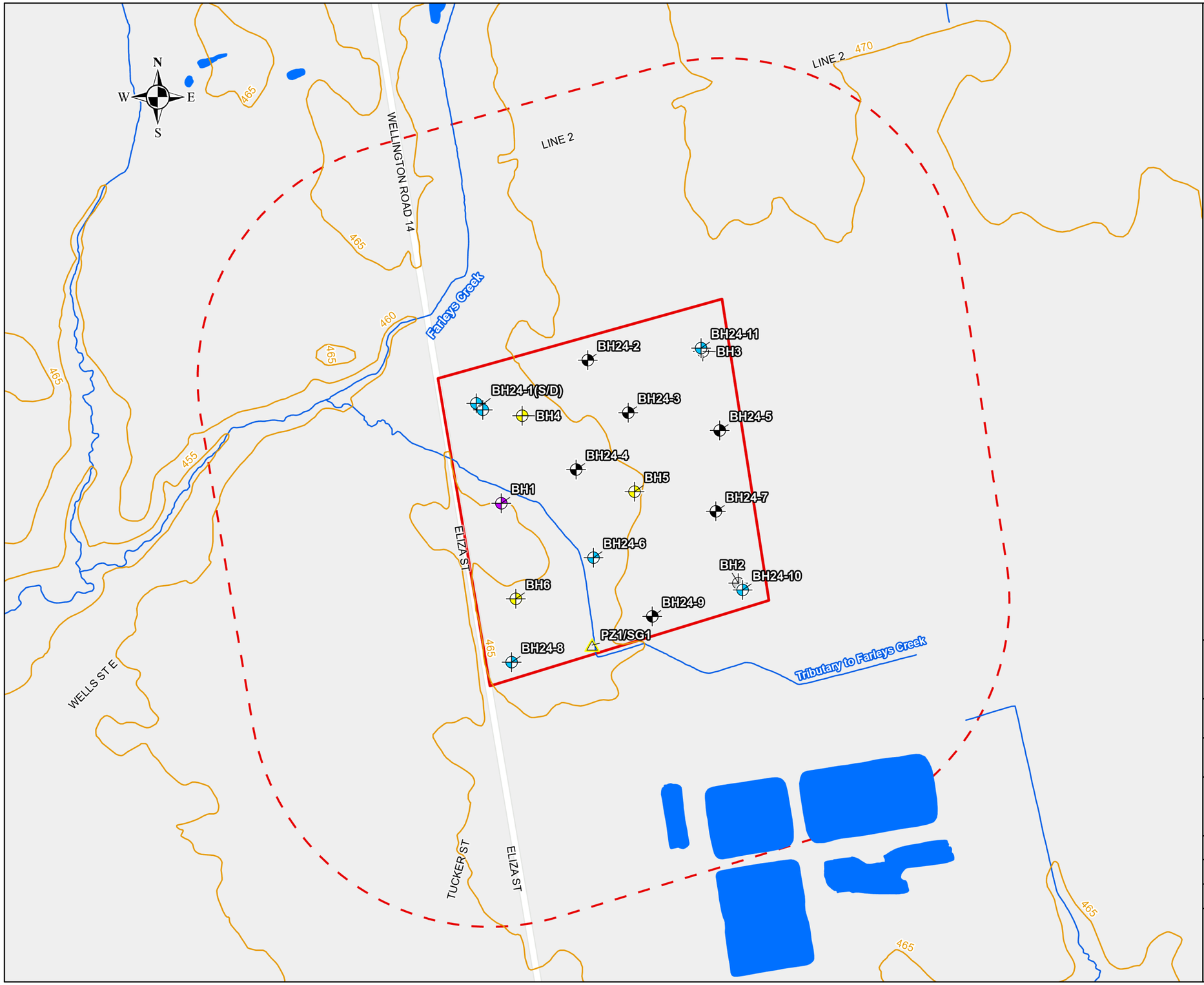


Legend

BH # BOREHOLE ID

- BOREHOLE LOCATION (GEMTEC, CURRENT INVESTIGATION)
- MONITORING WELL LOCATION (GEMTEC, CURRENT INVESTIGATION)
- WELL NEST LOCATION (GEMTEC, CURRENT INVESTIGATION)
- BOREHOLE LOCATION (HLV2K, 2022 INVESTIGATION)
- MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- DESTROYED MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- PIEZOMETER/ STAFF GAUGE (GEMTEC, CURRENT INVESTIGATION)
- ELEVATION CONTOURS (m amsl)
- WATERCOURSE
- WATERBODY
- 500 METRE RADIUS FROM SITE
- SITE BOUNDARY

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. m amsl = meters above mean sea level.
6. Service Layer Credits: Light Grey Canvas Background: Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

Scale:

1:8,000

0 75 150 300 450 600 Meters

Drawing: TOPOGRAPHY AND NATURAL HERITAGE

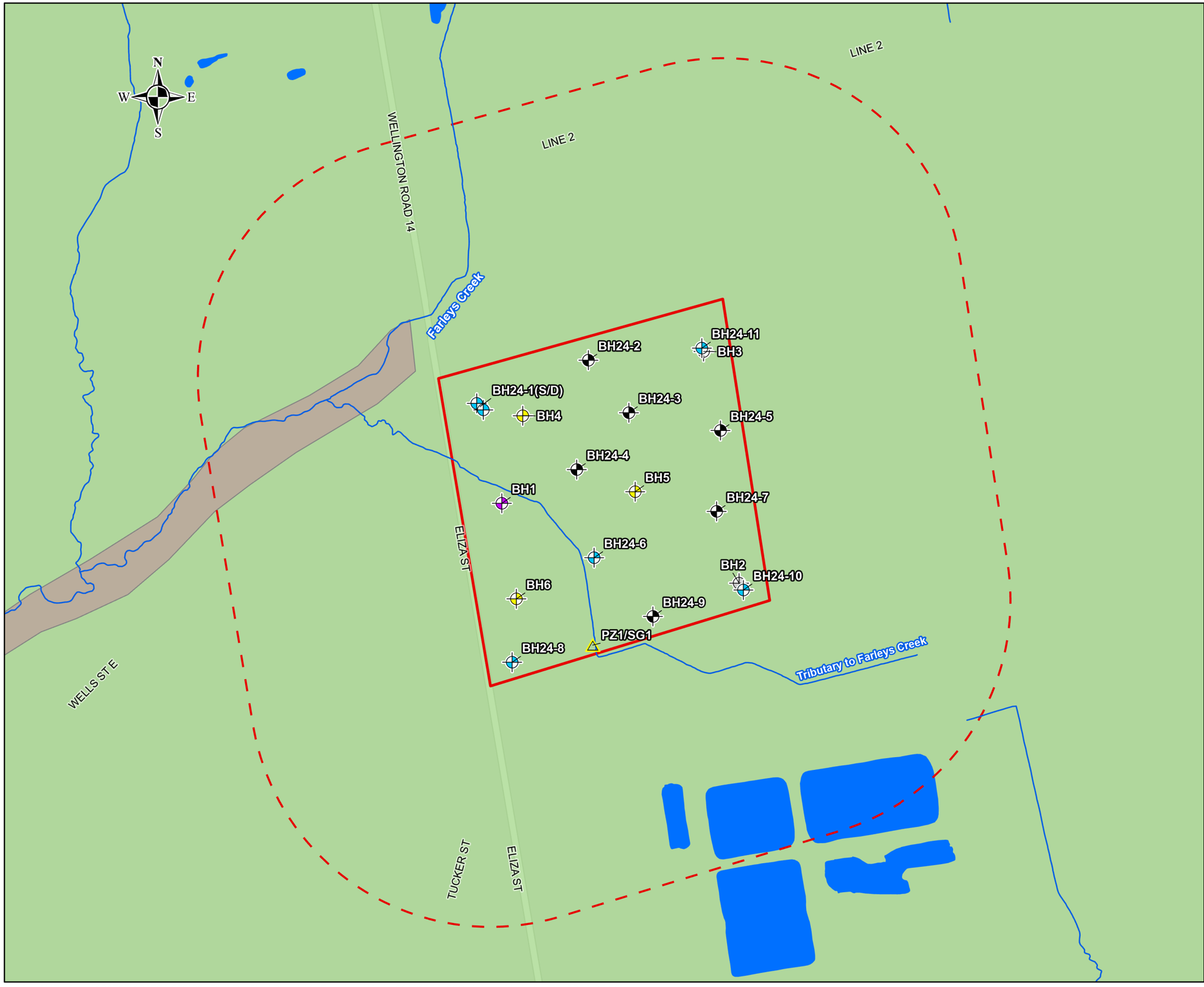
Client: TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED ARTHUR DEVELOPMENT (EAST)
665 ELIZA STREET, ARTHUR, ONTARIO

Drwn By:	K.C.	Chkd By:	A.W.
Project No.	101764.038	Revision No.	0
Date	SEPTEMBER 2024		**FIGURE 2**

GEMTEC
Consulting Engineers and Scientists
6695 Millcreek DR #7,
Mississauga, ON L5N 5M4
T: (416) 347-7427
www.gemtec.ca
graeme.skinner@gemtec.ca

Folder: N:\Projects\101700\101764.038\06_Civil Drafting\Sheets\1. Drawings\HydroG\101764_038_Arthur_HydroG_R0_2024-07-09\



Legend

BH # BOREHOLE ID

- BOREHOLE LOCATION (GEMTEC, CURRENT INVESTIGATION)
- MONITORING WELL LOCATION (GEMTEC, CURRENT INVESTIGATION)
- WELL NEST LOCATION (GEMTEC, CURRENT INVESTIGATION)
- BOREHOLE LOCATION (HLV2K, 2022 INVESTIGATION)
- MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- DESTROYED MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- PIEZOMETER/ STAFF GAUGE (GEMTEC, CURRENT INVESTIGATION)
- WATERCOURSE
- WATERBODY
- 500 METRE RADIUS FROM SITE
- SITE BOUNDARY

SURFICIAL GEOLOGY

- MODERN ALLUVIAL DEPOSITS (CLAY, SILT, SAND, GRAVEL, MAY CONTAIN ORGANIC DEPOSITS)
- HALTON TILL (CLAY TO SILT-TEXTURED TILL)

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. Service Layer Credits: Light Grey Canvas Background: Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

Scale: 1:8,000

0 75 150 300 450 600 Meters

Drawing: SURFICIAL GEOLOGY

Client: TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED ARTHUR DEVELOPMENT (EAST)
665 ELIZA STREET, ARTHUR, ONTARIO

Drwn By:	K.C.	Chkd By:	A.W.
Project No.	101764.038	Revision No.	0
Date	SEPTEMBER 2024		**FIGURE 3**

GEMTEC
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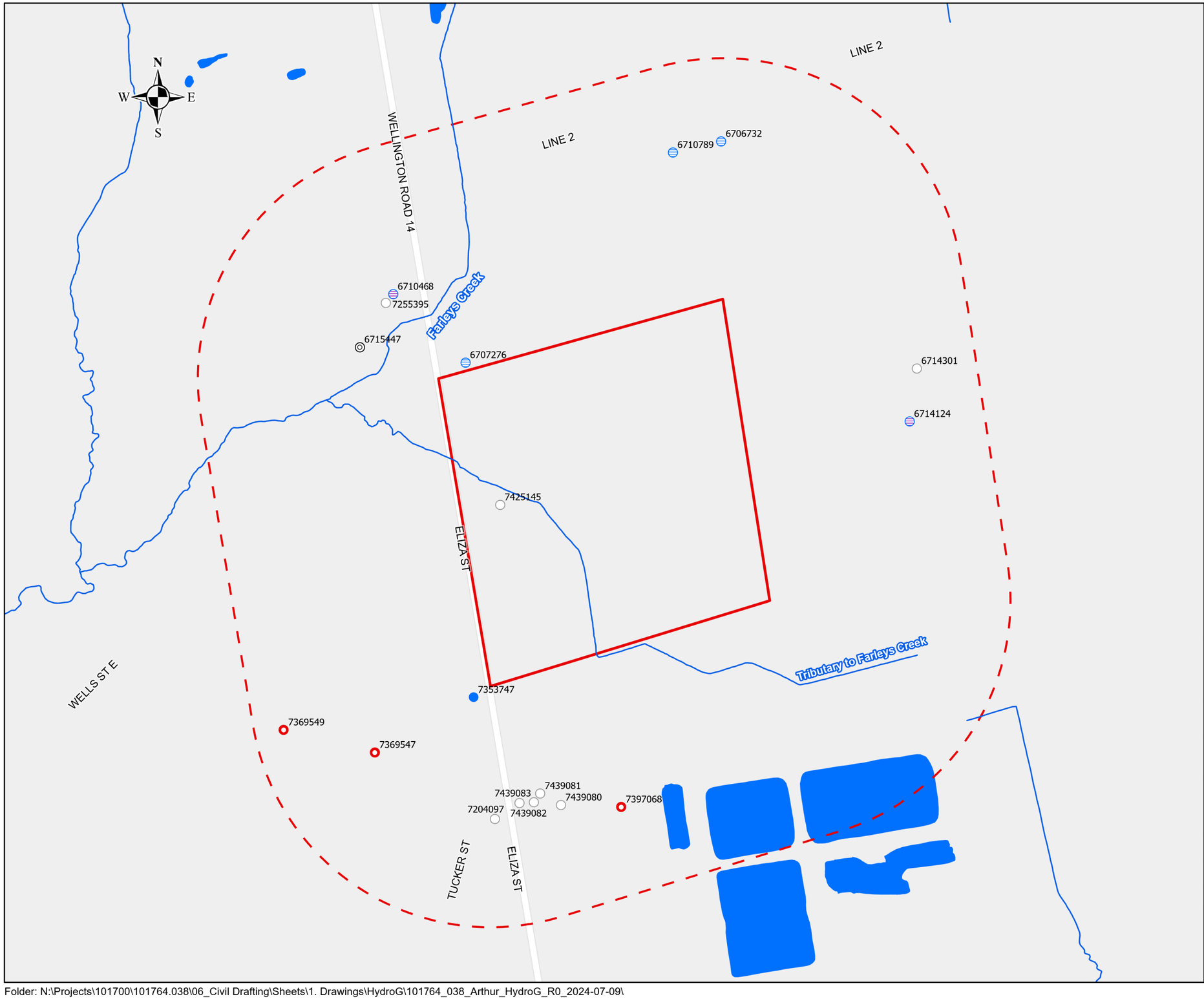

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WELL # WELL ID

- WATERCOURSE
- WATERBODY
- 500 METRE RADIUS FROM SITE
- SITE BOUNDARY

WELL TYPE

- SHALLOW (<10 M) DUG/BORED
- SHALLOW (<10M) DRILLED OVERBURDEN
- DEEP (>10M) DRILLED OVERBURDEN
- DRILLED BEDROCK
- NO INFORMATION/ALTERATION

WATER USE

- DOMESTIC SUPPLY
- LIVESTOCK AND DOMESTIC SUPPLY
- MONITORING AND TEST HOLE
- ABANDONED
- OTHER (NOT USED, UNKNOWN USE)

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. Service Layer Credits: Light Grey Canvas Background: Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: Esri, FAO, NOAA, USGS

Scale: 1:8,000

0 75 150 300 450 600 Meters

Drawing: MECP WATER WELL RECORDS WITHIN 500 M

Client: TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED ARTHUR DEVELOPMENT (EAST)
665 ELIZA STREET, ARTHUR, ONTARIO

Drwn By:	K.C.	Chkd By:	A.W.
Project No.	101764.038	Revision No.	0
Date	SEPTEMBER 2024		**FIGURE 4**

GEMTEC
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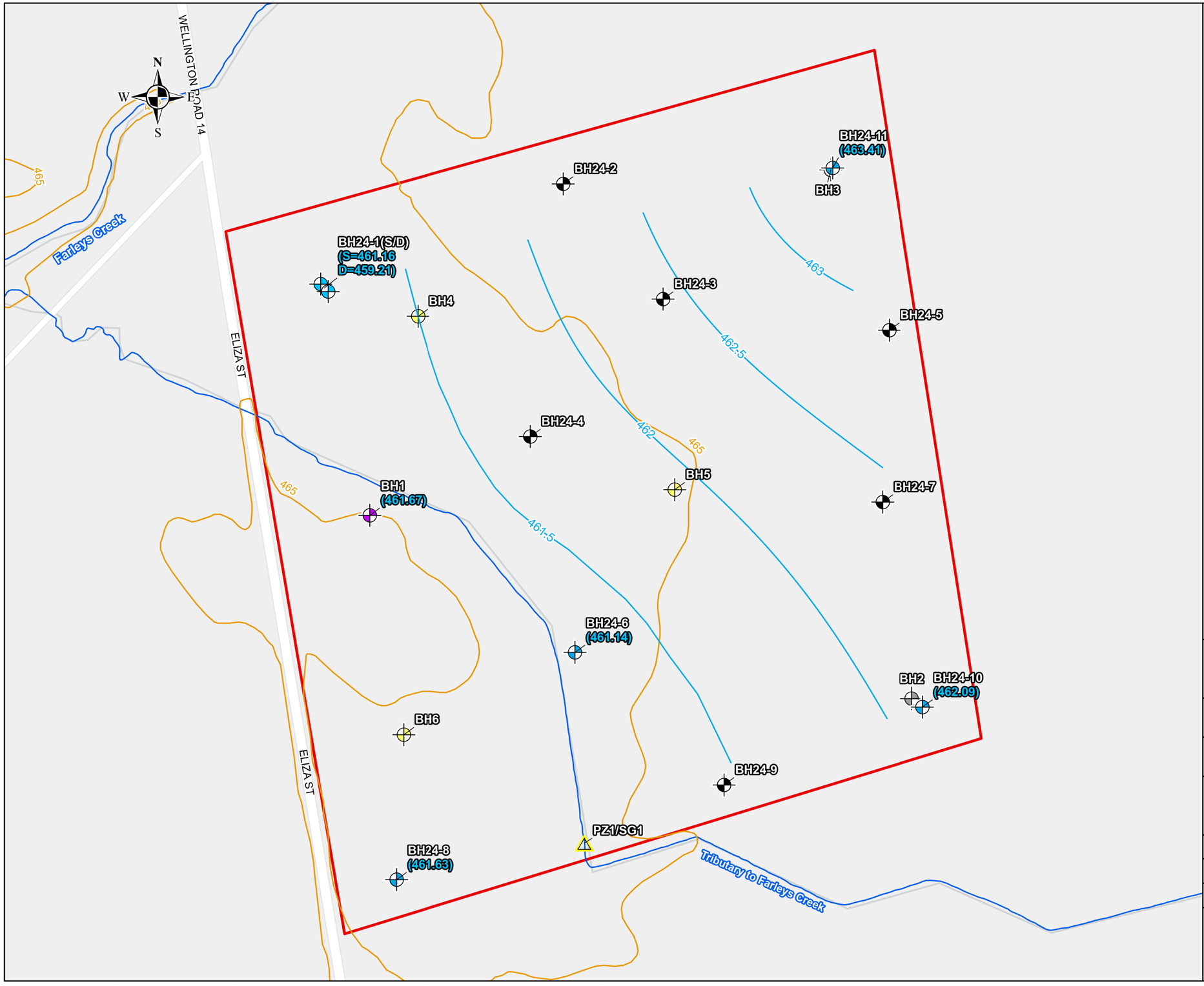
Folder: N:\Projects\101700\101764.038\06_Civil Drafting\Sheets\1. Drawings\HydroG\101764_038_Arthur_HydroG_R0_2024-07-09\



Legend

BH # BOREHOLE ID
460.95 GROUNDWATER ELEVATIONS, (m amsl) (AUGUST 16, 2024)

- BOREHOLE LOCATION (GEMTEC, CURRENT INVESTIGATION)
- MONITORING WELL LOCATION (GEMTEC, CURRENT INVESTIGATION)
- WELL NEST LOCATION (GEMTEC, CURRENT INVESTIGATION)
- BOREHOLE LOCATION (HLV2K, 2022 INVESTIGATION)
- MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- DESTROYED MONITORING WELL LOCATION (HLV2K, 2022 INVESTIGATION)
- PIEZOMETER/ STAFF GAUGE (GEMTEC, CURRENT INVESTIGATION)
- GROUNDWATER CONTOUR (m amsl)
- ELEVATION CONTOURS (m amsl)
- WATERCOURSE
- WATERBODY
- SITE BOUNDARY

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. m amsl=metres above mean sea level
5. Service Layer Credits: Light Grey Canvas Background: Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

Scale: 1:3,500

0 25 50 100 150 200 Meters

Drawing: GROUNDWATER FLOW (AUGUST 16, 2024)

Client: TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED ARTHUR DEVELOPMENT (EAST)
665 ELIZA STREET, ARTHUR, ONTARIO

Drwn By:	K.C.	Chkd By:	A.W.
Project No.	101764.038	Revision No.	0
Date	SEPTEMBER 2024		**FIGURE 5**

GEMTEC
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APPENDIX A

Conditions and Limitations of This Report

GEMTEC
Consulting Engineers and Scientists

Conditions and Limitations of This Report

1. **Standard of Care:** GEMTEC has prepared this report in a manner consistent with generally accepted engineering or environmental consulting practice in the jurisdiction in which the services are provided at the time of the report. No other warranty, expressed or implied is made.
2. **Copyright:** The contents of this report are subject to copyright owned by GEMTEC, save to the extent that copyright has been legally assigned by us to another party or is used by GEMTEC under license. To the extent that GEMTEC owns the copyright in this report, it may not be copied without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to the Client in confidence and must not be disclosed or copied to third parties without the prior written agreement of GEMTEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.
3. **Complete Report:** This report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEMTEC by the Client, communications between GEMTEC and the Client and to any other reports prepared by GEMTEC 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. GEMTEC can not be responsible for use of portions of the report without reference to the entire report.
4. **Basis of Report:** This Report has been prepared for the specific site, development, design objectives and purposes that were described to GEMTEC 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. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this report expressly addresses the proposed development, design objectives and purposes. Any change of site conditions, purpose or development plans may alter the validity of the report and GEMTEC cannot be responsible for use of this report, or portions thereof, unless GEMTEC is requested to review any changes and, if necessary, revise the report.
5. **Time Dependence:** If the proposed project is not undertaken by the Client within 18 months following the issuance of this report, or within the timeframe understood by GEMTEC to be contemplated by the Client, the guidance and recommendations within the report should not be considered valid unless reviewed and amended or validated by GEMTEC in writing.
6. **Use of This 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 GEMTEC'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, GEMTEC 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.

   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.
7. **No Legal Representations:** GEMTEC makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

8. **Decrease in property value:** GEMTEC shall not be responsible for any decrease, real or perceived, of the property or site's value or failure to complete a transaction, as a consequence of the information contained in this report.
9. **Reliance on Provided Information:** The evaluation and conclusions contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations. information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of misstatements, omissions, misrepresentations. or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
10. **Investigation Limitations:** Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions but even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions.

    The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. Accordingly, GEMTEC does not warrant or guarantee the exactness of of the subsurface descriptions.

    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.

    In addition, 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.
11. **Sample Disposal:** GEMTEC will dispose of all uncontaminated soil and/or rock samples 60 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.
12. **Follow-Up and Construction Services:** All details of the design were not known at the time of submission of GEMTEC's report. GEMTEC 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 GEMTEC's report.

    During construction, GEMTEC 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 GEMTEC's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in GEMTEC's report. Adequate field review, observation and testing during construction are necessary for GEMTEC 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, GEMTEC'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.

13. **Changed Conditions:** Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that GEMTEC be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that GEMTEC be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.
14. **Drainage:** Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. GEMTEC takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

APPENDIX B

Abbreviations and Terminology Used on
Records of Boreholes
Record of Borehole Sheets (GEMTEC and HLV2K)

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

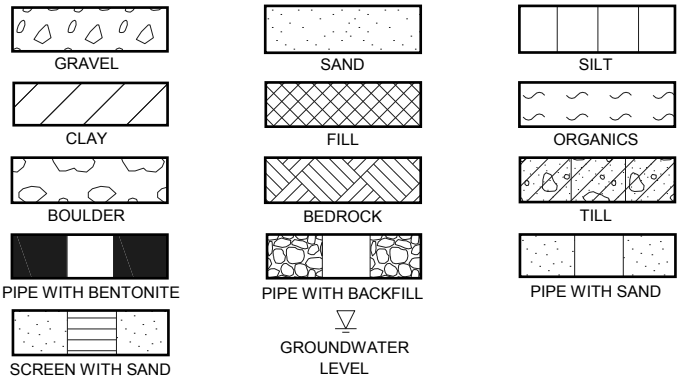
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

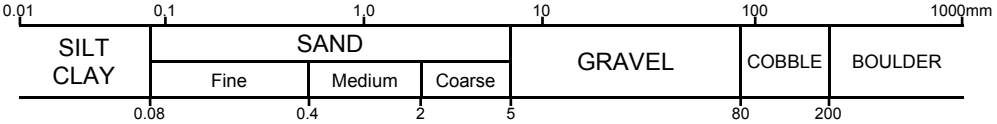
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

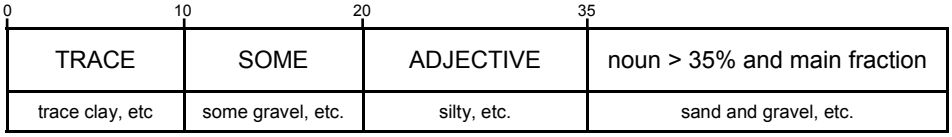


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



RECORD OF BOREHOLE : BH24-1(D)

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

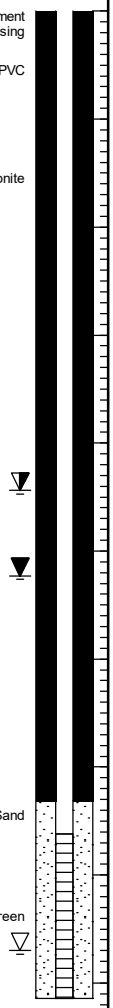
SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING
		Ground Surface		462.29					
0	Power Auger Solid Stem Auger (100mm)	TOPSOIL		462.16	1A				
		(CL) SILTY CLAY, some sand, trace gravel; light brown; cohesive, w<PL, firm to hard		0.13	1B	SS	356	4	
1		- rootlet between approximately 0.1 m and 0.7 m depths			2	SS	152	9	
2					3	SS	432	15	
					4	SS	356	22	
3		- grey at approximately 3.0 m depth			5	SS	457	32	MH
4									
					6	SS	432	35	
5									
6					7	SS	457	65	
		(CL) SILTY CLAY, sandy to some sand, trace gravel; grey (TILL); cohesive, w<PL, hard		455.74 6.55					
7									
8					8	SS	457	48	
9					9	SS	457	45	
				452.69 9.60					
10		End of Borehole							
11		Notes:							
		1. Borehole was dry upon completion of drilling.							
12		2. Monitoring well installed as shown upon completion of drilling.							
13		3. Stabilized groundwater levels measured in the monitoring well are as follows:							
14		Date / Depth (m) / Elev. (m) 07/09/2024 / 8.7 / 453.6 07/18/2024 / 5.2 / 457.1 08/02/2024 / 4.4 / 457.9 08/16/2024 / 3.1 / 459.2							

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P, W, W_L
10 20 30 40 50 60 70 80 90

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/07/09	8.7	453.6
24/07/18	5.2	457.1
24/08/02	4.4	457.9

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-1(S)

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Solid Stem Auger (100mm)	Ground Surface		462.37				
		See Borehole BH24-1 (D) for soil description						
6				455.97				
		End of Borehole		6.40				

Notes:

1. Borehole advanced through augering without sample collection to approximately 6.4 m depth. Adjacent to Borehole BH24-1 (D).

2. Monitoring well installed as shown upon completion of drilling.

3. Stabilized groundwater levels measured in the monitoring well are as follows:

Date	Depth (m)	Elev. (m)
07/09/2024	1.1	461.3
07/18/2024	0.7	461.7
08/02/2024	1.0	461.4
08/16/2024	1.2	461.2

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m

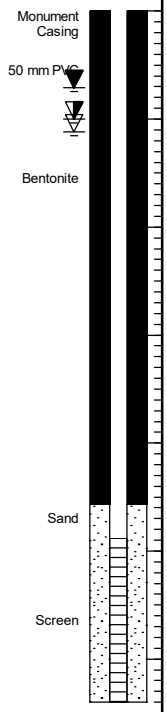
SHEAR STRENGTH (Cu), kPA
NATURAL REMOULDED

WATER CONTENT, %
W_P W W_L

10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/07/09	1.1	461.3
24/07/18	0.7	461.7
24/08/02	1.0	461.4

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764 038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-2

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		464.05				
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		463.95 / 0.10	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; dark brown, mottled; cohesive, w~PL, firm			1B	SS	76	7
1					2	SS	457	7
		(CL) SILTY CLAY, sandy to some sand, trace to some gravel; brown to grey (TILL); cohesive, w<PL to w~PL, very stiff to hard		462.68 / 1.37	3	SS	406	20
2					4	SS	457	27
3		- grey at approximately 3.0 m depth			5	SS	381	26
4								
5					6	SS	432	34
6								
					7	SS	457	27
		End of Borehole		457.50 / 6.55				
7		Notes:						
		1. Borehole was dry upon completion of drilling.						
8		2. Borehole was backfilled with bentonite upon completion of drilling.						
9								
10								
11								
12								
13								
14								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Backfilled with Bentonite

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-3

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		463.44				
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		463.31	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; mottled grey and brown; cohesive, w<PL, firm to stiff		0.13	1B	SS	305	6
1					2	SS	101	13
		(CL) SILTY CLAY, some sand, trace to some gravel; brown to grey (TILL); cohesive, w<PL, very stiff to hard		462.07 1.37	3	SS	457	22
2					4	SS	457	32
3					5	SS	432	28
4								
		- grey at approximately 4.6 m depth			6	SS	457	33
5								
6					7	SS	356	46
		End of Borehole		456.89 6.55				
7		Notes:						
		1. Borehole was dry upon completion of drilling.						
8		2. Borehole was backfilled with bentonite upon completion of drilling.						
9								
10								
11								
12								
13								
14								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P W W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Backfilled with Bentonite

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-4

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 26 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Solid Stem Auger (100mm)	Ground Surface		462.97				
		TOPSOIL		462.87 0.10	1A			
		(CL) SILTY CLAY, trace sand; grey, mottled brown, rootlets; cohesive, w~PL, soft to firm			1B	SS	356	3
1					2	SS	279	6
		(CL) SILTY CLAY, some sand, trace gravel; brown (TILL); cohesive, w<PL to w~PL, stiff to very stiff		461.60 1.37	3	SS	457	17
2		- auger grinding at approximately 2.4 m depth			4	SS	381	21
3		- grey at approximately 3.0 m depth			5	SS	356	8
4								
5					6	SS	406	15
6		- coarse gravel fragments at approximately 6.0 m depth			7	SS	457	25
		End of Borehole		456.42 6.55				
7		Notes:						
		1. Borehole was dry upon completion of drilling.						
8		2. Borehole was backfilled with bentonite upon completion of drilling.						
9								
10								
11								
12								
13								
14								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Backfilled with Bentonite

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-5

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 27 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Solid Stem Auger (100mm)	Ground Surface		464.65				
		TOPSOIL		464.57 / 0.08	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; brown; cohesive, w>PL, firm to stiff			1B	SS	101	5
1					2	SS	406	9
		(CL) SILTY CLAY, some sand, some gravel; brown (TILL); cohesive, w<PL to w~PL, firm to hard		463.28 / 1.37	3	SS	330	26
2					4	SS	406	44
3		- grey below approximately 3.0 m depth			5	SS	457	39
4								
		- silty clay lens between approximately 4.5 m and 4.7 m depths			6A			
5					6B	SS	432	22
6					7	SS	457	26
				458.10 / 6.55				
7		End of Borehole						
8		Notes:						
9		1. Groundwater level was measured at approximately 5.3 m depth below ground surface upon completion of drilling.						
10		2. Borehole was backfilled with bentonite upon completion of drilling.						
11								
12								
13								
14								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Backfilled with Bentonite

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-6

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 26 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		462.47				
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		462.39 0.08	1A			
		(CL) SILTY CLAY, some sand, some gravel; brown, oxidation staining (TILL); cohesive, w<PL to w~PL, firm to hard			1B	SS	305	4
1		- silty sand lens between approximately 1.0 m and 1.2 m depths			2	SS	457	12
		- auger grinding between approximately 1.5 m and 1.8 m depths			3	SS	432	34
2		- grey at approximately 2.3 m depth			4	SS	457	34
3					5	SS	330	31
4								
5					6	SS	432	24
6								
					7	SS	330	17
				455.92 6.55				
7		End of Borehole						
8		Notes:						
9		1. Groundwater level measured at approximately 3.0 m below ground surface upon completion of drilling.						
10		2. Monitoring well installed as shown upon completion of drilling.						
11		3. Stabilized groundwater levels measured in the monitoring well are as follows:						
12								
13								
14								

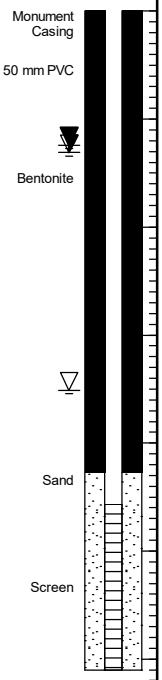
Date	Depth (m)	Elev. (m)
07/09/2024	3.5	459.0
07/18/2024	1.2	461.2
08/02/2024	1.3	461.2
08/16/2024	1.3	461.1

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P W W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/07/09	3.5 ▽	459.0
24/07/18	1.2 ▼	461.2
24/08/02	1.3 ▼	461.2

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764 038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-7

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 27 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		464.17						
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		464.09 / 0.08	1A					
		(CL) SILTY CLAY, trace sand; brown, oxidation staining; cohesive, w~PL, firm		463.48 / 0.69	1B	SS	229	7		
1		(CL) SILTY CLAY, some sand, trace gravel; brown; cohesive, w~PL to w>PL, stiff to very stiff			2	SS	457	14		
2					3	SS	457	20		Backfilled with Bentonite
					4	SS	330	21		
3					5	SS	457	27		
4				459.60						
		(ML) SILT and SAND; grey; non-cohesive, wet, compact		4.57 / 459.14	6	SS	457	12	MH	
5		(CL) SILTY CLAY, trace to some sand, some gravel; brown (TILL); cohesive, w~PL, very stiff		5.03						
6					7	SS	406	19		
				457.62						
7		End of Borehole		6.55						
		Notes:								
		1. Groundwater level measured at approximately 3.3 m below ground surface upon completion of drilling.								
		2. Borehole was backfilled with bentonite upon completion of drilling.								
8										
9										
10										
11										
12										
13										
14										

SOIL PROFILE / SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764 038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-8

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 26 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		463.20				
0	Power Auger Solid Stem Auger (100mm)	TOPSOIL		463.12 0.08	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; brown to grey; cohesive, w<PL to w>PL, firm to hard			1B	SS	152	5
1		- rootlets between approximately 0.1 m and 0.7 m depths			2	SS	457	15
					3	SS	457	25
2					4	SS	457	41
				460.31				
3		(ML) SILT, slight plasticity, trace sand, some gravel; grey; non-cohesive, w<PL, very dense		2.89	5	SS	457	85
				459.16				
4		(CL) SILTY CLAY, some sand, trace gravel; grey (TILL); cohesive, w<PL to w~PL, very stiff to hard		4.04				
					6A	SS	457	33
5					6B			
6					7	SS	51	25
7								
					8	SS	457	36
8				455.12				
		End of Borehole		8.08				
9								
10								
11								
12								
13								
14								

Notes:

1. Borehole was dry upon completion of drilling.

2. Monitoring well installed as shown upon completion of drilling.

3. Stabilized groundwater levels measured in the monitoring well are as follows:

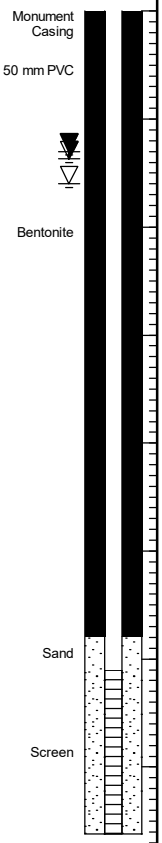
Date	Depth (m)	Elev. (m)
07/09/2024	1.6	461.6
07/18/2024	1.3	461.9
08/02/2024	1.4	461.8
08/16/2024	1.6	461.6

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % W_P W W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING: MH

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/07/09	1.6 ▽	461.6
24/07/18	1.3 ▼	461.9
24/08/02	1.4 ▼	461.8

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764 038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-9

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jun 27 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		463.62				
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		463.54 0.08	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; brown, rootlets; cohesive, w<PL, firm			1B	SS	381	5
1					2	SS	356	7
		(CL) SILTY CLAY, some sand, trace gravel; brown (TILL); cohesive, w<PL, very stiff to hard		462.22 1.40	3	SS	457	29
2								
					4	SS	406	35
3		- silty sand seam at approximately 3.0 m depth			5	SS	457	54
		- grey at approximately 3.0 m depth						
4								
					6	SS	457	75
5								
6					7	SS	457	33
				457.07 6.55				
7		End of Borehole						
		Notes:						
8		1. Borehole was dry upon completion of drilling.						
		2. Borehole was backfilled with bentonite upon completion of drilling.						
9								
10								
11								
12								
13								
14								

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Backfilled with Bentonite

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764 038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-10

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jul 25 2024

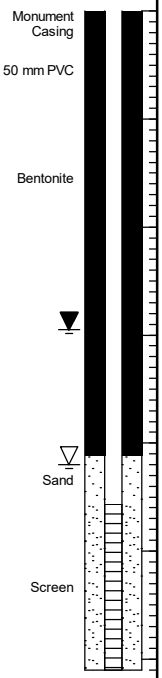
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		465.04				
0	Power Auger / Solid Stem Auger (100mm)	TOPSOIL		464.96 0.08	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; brown, rootlets; cohesive, w>PL, firm			1B	SS	229	7
1		(CL) SILTY CLAY, some sand, trace gravel; brown (TILL); cohesive, w<PL, stiff to hard		463.94 1.10				
					2	SS	305	13
2								
3					3	SS	330	31
4								
					4	SS	457	29
5								
6					5	SS	457	19
				458.49 6.55				
7		End of Borehole						
8		Notes:						
		1. Borehole was dry upon completion of drilling.						
		2. Borehole was backfilled with bentonite upon completion of drilling.						
9		3. Stabilized groundwater levels measured in the monitoring well are as follows:						
		Date / Depth (m) / Elev. (m)						
		08/02/2024 / 4.2 / 460.8						
10		08/16/2024 / 3.0 / 462.1						
11								
12								
13								
14								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/08/02	4.2 ▽	460.8
24/08/16	3.0 ▼	462.1

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

GEO - BOREHOLE LOG 101764.038(E).GPJ GEMTEC 2018.GDT 9/24/24

RECORD OF BOREHOLE : BH24-11

CLIENT: Tribute/Sorbara Arthur Holdings inc.
PROJECT: 665 Eliza Street, Arthur, Ontario
JOB#: 101764.038
LOCATION: See Borehole Location Plan

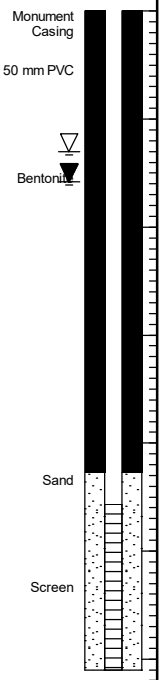
SHEET: 1 OF 1
DATUM: Unknown
BORING DATE: Jul 25 2024

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Solid Stem Auger (100mm)	Ground Surface		464.99				
		TOPSOIL		464.89	1A			
		(CL) SILTY CLAY, trace sand, trace gravel; dark brown, mottled; cohesive, w~PL, firm		0.10	1B	SS	254	9
1		(CL) SILTY CLAY, sandy to some sand, trace to some gravel; grey and brown (TILL); cohesive, w<PL to w~PL, very stiff to hard		463.89 1.10				
2					2	SS	51	23
3					3	SS	432	26
4								
5					4	SS	457	24
6								
				458.77	5	SS	203	53 /0.13
		End of Borehole		6.22				

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, % (W, W_P, W_L)
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



Notes:

1. Borehole was dry upon completion of drilling.

2. Monitoring well installed as shown upon completion of drilling.

3. Stabilized groundwater levels measured in the monitoring well are as follows:

Date	Depth (m)	Elev. (m)
08/02/2024	1.3	463.7
08/16/2024	1.6	463.4

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
24/08/02	1.3	463.7
24/08/16	1.6	463.4

GEMTEC
Consulting Engineers and Scientists

LOGGED: ED
CHECKED: PM

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH1

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4854920.919 E 537459.8331

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-04-2022

REF. NO.: 2200583AG

DRAWING NO.: 1

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
464.2							464
0.0	**Topsoil:** 750 mm						
463.4							463
0.8	**Sandy Clayey Silt Till:** trace gravel, brown, moist, compact		1	SS	10		
			2	SS	31	W. L. 462.4 m Apr 22, 2012	462
			3	SS	26		
461.2							461
3.0	**Sandy Silt:** organic material, trace gravel, dark brown, moist to wet, very dense Wet below 3.2 m		4	SS	42		
			5	SS	49		460
			6	SS	51		459
458.7							
5.5	**Sandy Silt:** some clay, trace gravel, brown, moist, very dense		7	SS	59		458
			8	SS	48		
457.4							
6.8	**End of Borehole:** borehole terminated at 6.8 m Upon completion: 1) Cave-in: Open 2) Water: 6.5 m bgs						

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
- ○ UNCONFINED
- ● QUICK TRIAXIAL
- + FIELD VANE & Sensitivity
- × LAB VANE

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%) (10 20 30)

53.7 Φ

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH2

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4854755.33 E 537951.79

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-05-2022

REF. NO.: 2200583AG

DRAWING NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
466.2												
0.0	**Topsoil:** 750 mm						466					
465.5												
0.8	**Sandy Clayey Silt Till:** trace gravel, brown, moist, compact to dense		1	SS	15	W. L. 465.1 m Apr 22, 2012						9 25 42 24
			2	SS	33		464					
			3	SS	34		463					
			4	SS	32		462					
			5	SS	32		461					
	Grey soil below 3.0 m		6	SS	58							
			7	SS	52		460					
459.7												
6.5	**End of Borehole:** borehole terminated at 6.5 m Upon completion: 1) Cave-in: Open 2) Water: 6.1 m bgs											

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH3

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4854755.367 E 537951.9106

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-04-2022

REF. NO.: 2200583AG

DRAWING NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
466.3							
0.0	**Topsoil:** 750 mm						466
465.5							
0.8	**Sandy Clayey Silt Till:** trace gravel, brown, moist, compact to very dense		1	SS	13		465
			2	SS	23		464
			3	SS	40		463
			4	SS	33		462
			5	AS	30		461
	Wet below 4.6 m		6	SS	40		460
			7	SS	95		
459.8							
6.5	**End of Borehole:** borehole terminated at 6.5 m Upon completion: 1) Cave-in: Open 2) Water: 5.8 m bgs						

W. L. 465.0 m
Apr 22, 2012

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH4

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4855102.789 E 537503.1211

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-04-2022

REF. NO.: 2200583AG

DRAWING NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
464.6												
0.0	**Topsoil:** 750 mm											
463.8							464					
0.8	**Sandy Silt:** some clay, trace gravel, brown, moist, compact to dense		1	SS	19							
			2	SS	28		463					
			3	SS	28		462					
			4	SS	28		461					9 36 35 20
	Wet below 4.6 m		5	SS	37		460					
			6	SS	34							
			7	SS	39		459					
458.4												
6.2	**End of Borehole:** borehole terminated at 6.5 m Upon completion: 1) Cave-in: Open 2) Water: 5.8 m bgs											

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH5

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4854945.149 E 537736.3816

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-05-2022

REF. NO.: 2200583AG

DRAWING NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
464.1							464
0.0	**Topsoil:** 750 mm						
463.3							
0.8	**Sandy Clayey Silt Till:** trace gravel, brown, moist, compact to very dense		1	SS	10		463
			2	SS	30		462
			3	SS	54		461
			4	SS	46		460
			5	SS	52		459
	Wet grey soil below 4.6 m		6	SS	37		
			7	SS	52		458
457.9							
6.2	**End of Borehole:** borehole terminated at 6.2 m Upon completion: 1) Cave-in: Open 2) Water: 6.0 m bgs						

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
- ○ UNCONFINED
- ● QUICK TRIAXIAL
- + FIELD VANE & Sensitivity
- × LAB VANE

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
1	23	51	25	

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

HLV2K ENGINEERING LIMITED

LOG OF BOREHOLE BH6

PROJECT: Geotechnical Investigations

CLIENT: Claybourne Developments Inc. C/O Tribute Acquisitions Ltd.

PROJECT LOCATION: 665 Eliza Street, Arthur, Ontario

DATUM: Geodetic

BH LOCATION: See Borehole Location Plan N 4854722.572 E 537490.1166

DRILLING DATA

Method: Hollow Stem Auger

Diameter: 150mm

Date: Apr-05-2022

REF. NO.: 2200583AG

DRAWING NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
464.6							
0.0	**Topsoil:** 750 mm						464
463.8							
0.8	**Sandy Clayey Silt Till:** trace gravel, brown, moist to wet, compact to dense		1	SS	10		463
			2	SS	20		462
			3	SS	40		461
			4	SS	28		460
			5	SS	38		459
			6	SS	28		
458.4			7	SS	20		
6.2	**End of Borehole:** borehole terminated at 6.2 m Upon completion: 1) Cave-in: Open 2) Water: Dry						

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
- ○ UNCONFINED
- ● QUICK TRIAXIAL
- + FIELD VANE & Sensitivity
- × LAB VANE

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	2	29	43	26

GROUNDWATER ELEVATIONS

Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

APPENDIX C

Tables

Table C-1: Monitoring Well Construction Information - Proposed Arthur Development (East), 665 Eliza Street, Arthur, Ontario

Well Name	UTM Coordinates (approximate)		Installation Date	Ground Surface Elevation	Top of Casing Elevation	Measured Stick up	Top of Screen	Bottom of Screen	Top of Screen	Bottom of Screen	Screened Lithology
	Easting	Northing		(m amsl)	(m amsl)	(m)	(m bgs)	(m bgs)	(m amsl)	(m amsl)	
BH24-1S	537414	4855122	25-Jun-24	462.37	463.44	1.07	4.88	6.40	457.49	455.97	(CL) Silty Clay
BH24-1D	537414	4855122	25-Jun-24	462.29	463.26	0.97	7.62	9.14	454.67	453.15	(CL) Silty Clay Till
BH24-6	537651	4854809	26-Jun-24	462.47	463.36	0.89	4.57	6.10	457.90	456.37	(CL) Silty Clay Till
BH24-8	537481	4854592	26-Jun-24	463.20	464.02	0.82	6.10	7.62	457.10	455.58	(CL) Silty Clay Till
BH24-10	537961	4854742	25-Jul-24	465.04	465.84	0.80	4.57	6.10	460.47	458.94	(CL) Silty Clay Till
BH24-11	537874	4855244	25-Jul-24	464.99	465.85	0.86	4.57	6.10	460.42	459.75	(CL) Silty Clay Till

Notes:

m - metre
m amsl - metres above mean sea level
m bgs - metres below ground surface
UTM - Universal Transverse Mercator, Zone 17T

Table C-2: Groundwater and Surface Water Depths and Elevations - Proposed Arthur Development (East), 665 Eliza Street, Arthur, Ontario

Well Name	Ground Surface Elevation	Top of Casing Elevation	Measured Stick up	Top of Screen	Bottom of Screen	Screened Lithology	April 12, 2022		July 9-11, 2024		July 18, 2024		August 2, 2024		August 16, 2024	
							WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.
	(m amsl)	(m amsl)	(m)	(m amsl)	(m amsl)		(m bgs)	(m amsl)	(m bgs)	(m amsl)	(m bgs)	(m amsl)	(m bgs)	(m amsl)	(m bgs)	(m amsl)
GEMTEC Monitoring Wells, Piezometers, and Staff Gauges																
BH24-1S	462.37	463.44	1.07	457.49	455.97	(CL) Silty Clay	N/I	N/I	1.12	461.25	0.71	461.66	1.00	461.37	1.21	461.16
BH24-1D	462.29	463.26	0.97	454.67	453.15	(CL) Silty Clay Till	N/I	N/I	8.70	453.59	5.23	457.06	4.44	457.85	3.08	459.21
BH24-6	462.47	463.36	0.89	457.90	456.37	(CL) Silty Clay Till	N/I	N/I	3.51	458.96	1.24	461.23	1.31	461.16	1.33	461.14
BH24-8	463.20	464.02	0.82	457.10	455.58	(CL) Silty Clay Till	N/I	N/I	1.60	461.60	1.30	461.90	1.37	461.83	1.57	461.63
BH24-10	465.04	465.84	0.74	460.47	458.94	(CL) Silty Clay Till	N/I	N/I	N/I	N/I	N/I	N/I	4.20	460.84	2.95	462.09
BH24-11	464.99	465.85	0.91	460.42	459.75	(CL) Silty Clay Till	N/I	N/I	N/I	N/I	N/I	N/I	1.30	463.69	1.58	463.41
PZ24-1	461.83	463.48	1.65	459.58	459.28	N/A	N/I	N/I	Dry	<459.28	0.45	461.38	0.37	461.46	0.34	461.49
SG24-1	461.73	463.22	1.49	N/A	N/A	N/A	N/I	N/I	-0.07	461.80	-0.18	461.91	-0.10	461.83	-0.04	461.77
HLV2K Monitoring Wells																
BH1	463.03	463.89	0.86	204.33	202.81	Sandy Silt	1.82	461.21	2.45	460.58	1.28	461.75	2.11	460.92	1.36	461.67
BH2*	N/A	N/A	N/A	N/A	N/A	Sandy Clayey Silt Till	1.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH3*	N/A	N/A	N/A	N/A	N/A	Sandy Clayey Silt Till	1.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

- \- \- Not Measured
- \- Negative values indicate that water levels are above the ground surface.
- Elev. - Elevation
- m - metre
- m amsl - metres above mean sea level
- m bgs - metres below ground surface
- m toc - metres below top of casing
- WL - Water Level
- N/A - Not available/applicable
- N/I - Not installed
- * - BH2 and BH3 were assumed to have been destroyed after the April 12, 2022 site visit by HLV2K.

Water levels measured on April 12, 2022 were obtained from the HLV2K report titled "Preliminary Geotechnical Investigation

Table C-3: Summary of Hydraulic Conductivity Values - Single Well Response Tests - Proposed Arthur Development (East), 665 Eliza Street, Arthur, Ontario

Well Name	Date of Test	Ground Surface Elevation (m amsl)	Top of Screen (m bgs)	Bottom of Screen (m bgs)	Top of Screen (m amsl)	Bottom of Screen (m amsl)	Screened Lithology	Type of Test	Hydraulic Conductivity Estimate (m/s)
GEMTEC Monitoring Wells									
BH24-1S	9-Jul-24	462.37	4.88	6.40	457.49	455.97	(CL) Silty Clay	Rising Head	6E-08
BH24-1D	9-Jul-24	462.29	7.62	9.14	454.67	453.15	(CL) Silty Clay Till	Rising Head	- -
BH24-8	11-Jul-24	463.20	6.10	7.62	457.10	455.58	(CL) Silty Clay Till	Rising Head	5E-09
HLV2K Monitoring Wells									
BH1	11-Jul-24	463.03	3.25	6.30	459.78	456.73	Sandy Silt	Rising Head	5E-09

Notes:

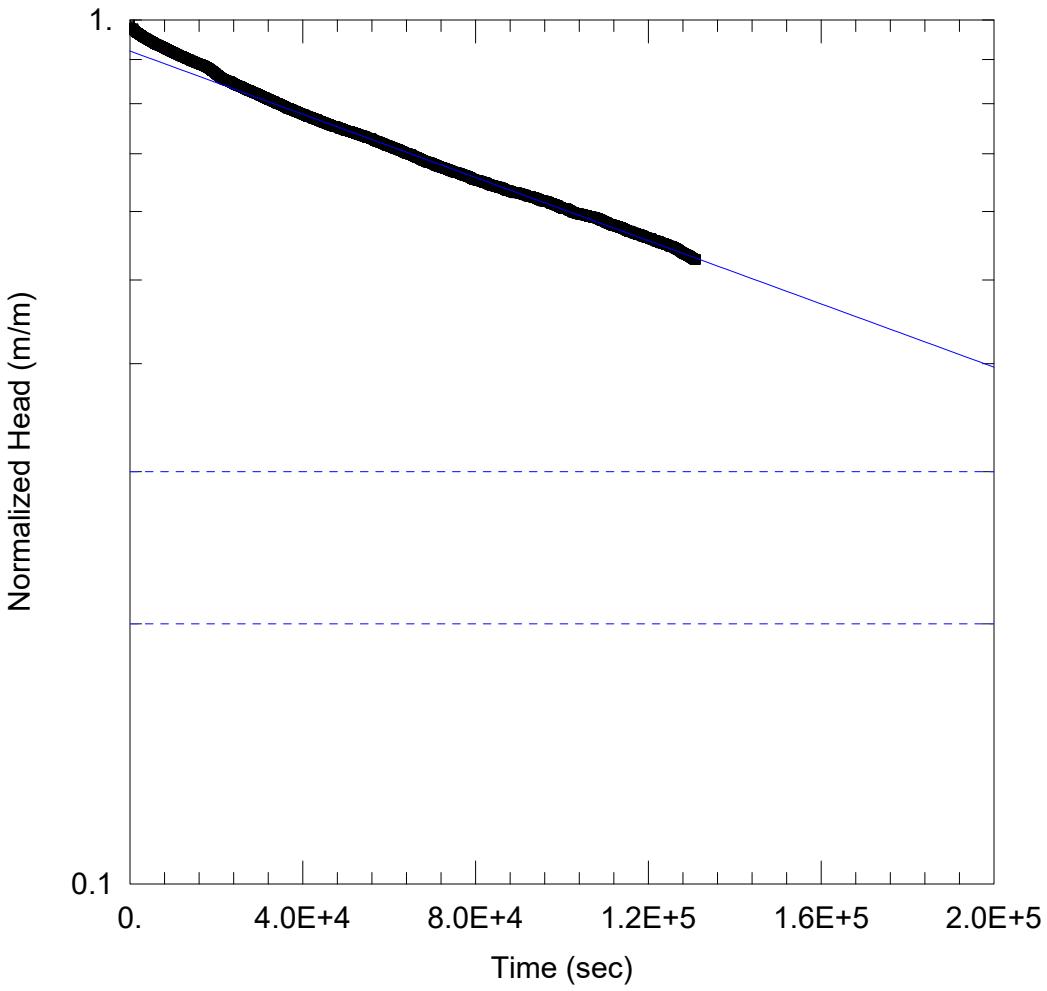
All test were analysed using Bouwer and Rice (1976)

- - Monitoring well interpreted to be partially recovered prior to testing and as such, hydraulic conductivity has been omitted from results.
m amsl - metres above mean sea level
m bgs - meters below groundsurface
m/s - meters per second

Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

APPENDIX D

Hydraulic Conductivity Testing Results



BH1 RISING HEAD TEST

Data Set: N:\Projects\101700\101764.038\05_Technical Work\HG\Analysis\BH1_K-Test_AW.aqt
Date: 07/23/24 Time: 13:37:04

PROJECT INFORMATION

Company: GEMTEC
Client: Tribute/Sorbara
Project: 101764.038
Location: Arthur, ON
Test Well: BH1
Test Date: July 11, 2024

AQUIFER DATA

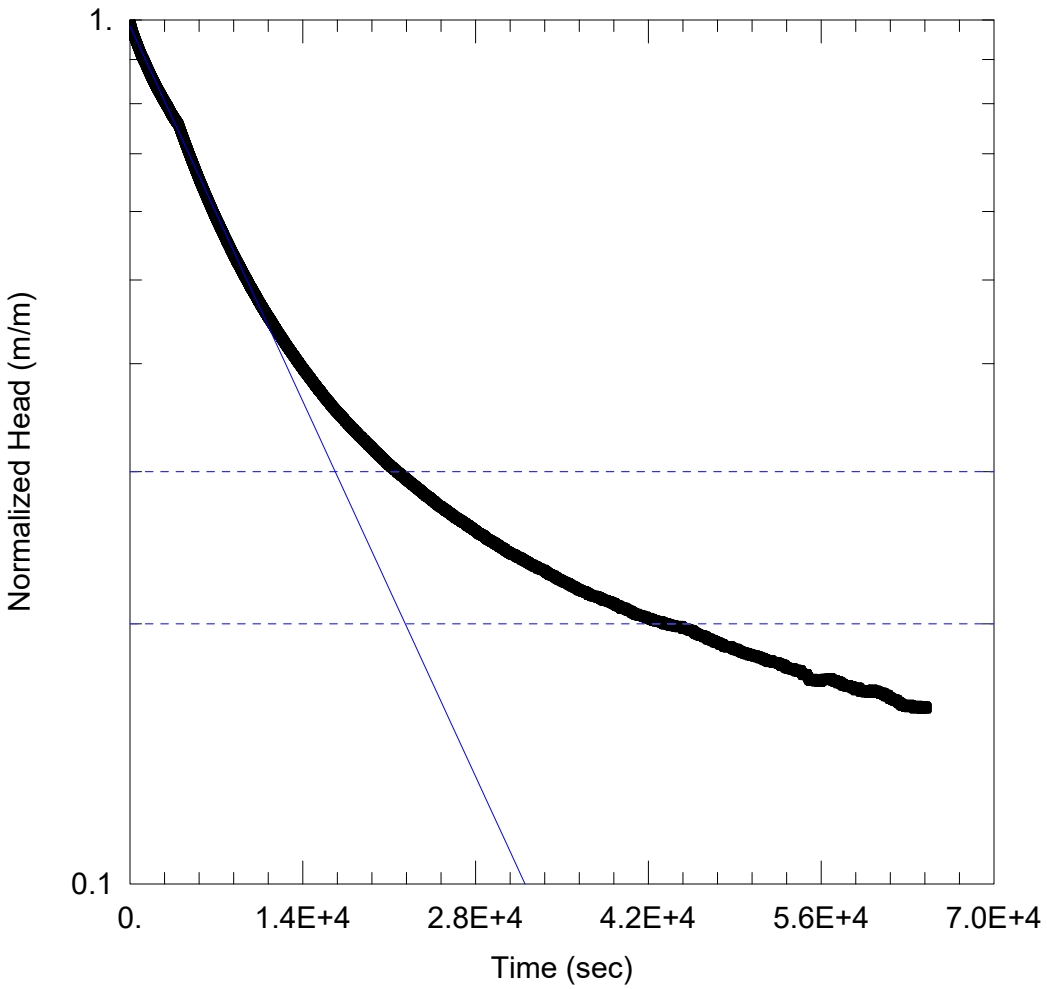
Saturated Thickness: 3.91 m
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (BH1)

Initial Displacement: 2.459 m
Total Well Penetration Depth: 3.91 m
Casing Radius: 0.0254 m
Static Water Column Height: 3.91 m
Screen Length: 3.35 m
Well Radius: 0.075 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.9E-9 m/sec
y0 = 2.263 m



BH24-1S RISING HEAD TEST

Data Set: N:\Projects\101700\101764.038\05_Technical Work\HG\Analysis\BH24-1S_K-Test_AW.aqt
Date: 08/28/24 Time: 08:03:44

PROJECT INFORMATION

Company: GEMTEC
Client: Tribute/Sorbara
Project: 101764.038
Location: Arthur, ON
Test Well: BH24-1S
Test Date: July 9, 2024

AQUIFER DATA

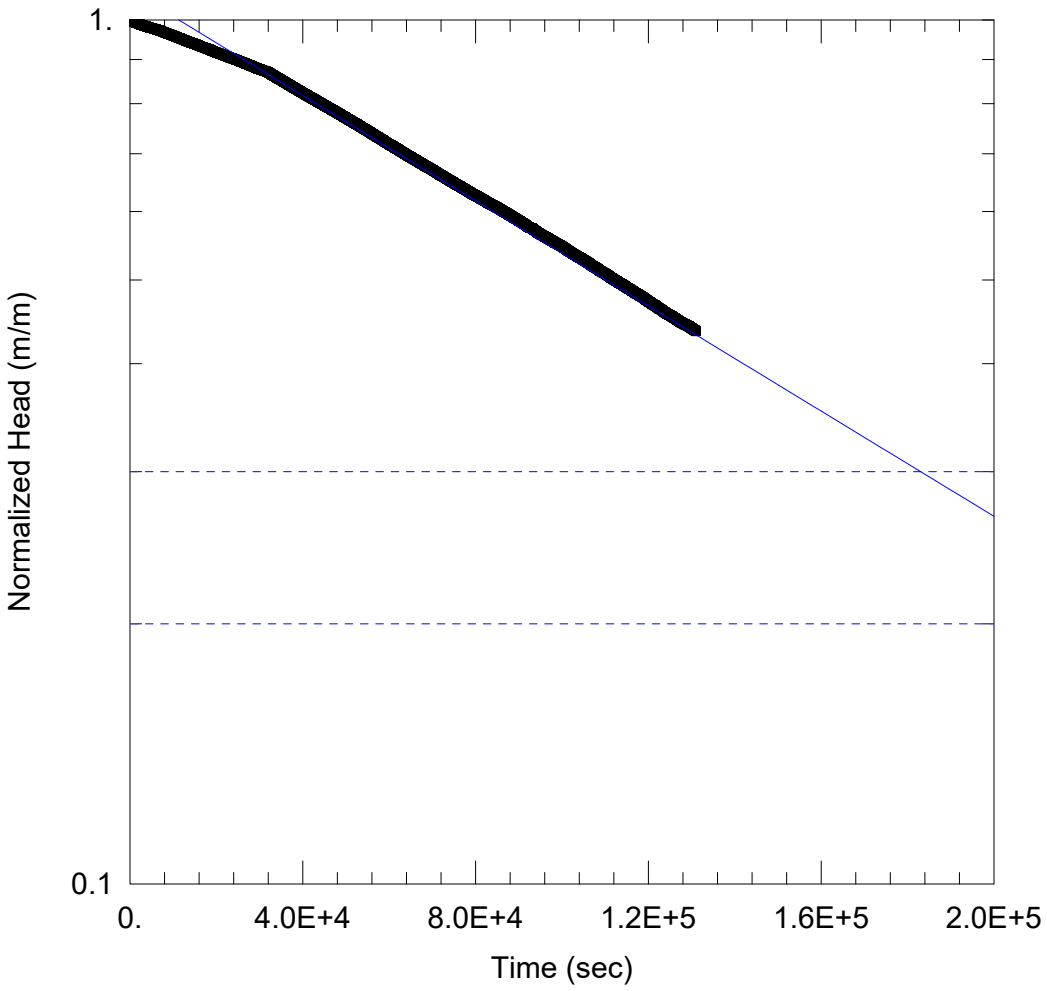
Saturated Thickness: 5.4 m
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (BH24-1S)

Initial Displacement: 4.976 m
Total Well Penetration Depth: 6.4 m
Casing Radius: 0.0254 m
Static Water Column Height: 5.4 m
Screen Length: 1.825 m
Well Radius: 0.0508 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.6E-8 m/sec
y0 = 4.896 m



BH24-8 RISING HEAD TEST

Data Set: N:\Projects\101700\101764.038\05_Technical Work\HG\Analysis\BH24-8_K-Test_AW.aqt
Date: 07/23/24 Time: 12:03:51

PROJECT INFORMATION

Company: GEMTEC
Client: Tribute/Sorbara
Project: 101764.038
Location: Arthur, ON
Test Well: BH24-8
Test Date: July 11, 2024

AQUIFER DATA

Saturated Thickness: 6.04 m
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (BH24-8)

Initial Displacement: 5.259 m
Total Well Penetration Depth: 6.04 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.04 m
Screen Length: 1.825 m
Well Radius: 0.0508 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.1E-9 m/sec
y0 = 5.691 m

APPENDIX E

Water Quality Results

GEMTEC
Consulting Engineers and Scientists

Table E-1
Summary of Groundwater Quality Analytical Results
Proposed Arthur Development (East), 665 Eliza Street, Arthur, Ontario

Sample Location					Arthur East	Arthur East
Sample Date					11-Jul-24	11-Jul-24
Sample ID					24-1S	SW
Sampling Company					GEMTEC	GEMTEC
Laboratory					BV	BV
Laboratory Work Order					C4L1871	C4L1871
Laboratory Sample ID					ZRV553	ZRV554
Sample Matrix	Units	Sanitary	Storm	PWQO	Groundwater	Surface Water
General Chemistry						
Biochemical Oxygen Demand	mg/L	300	n/v	n/v	4	9
Chemical Oxygen Demand	mg/L	600	n/v	n/v	8.9	48
Cyanide	mg/L	1.2	0.02	0.005	<0.005	<0.005
pH, lab	pH	6.0-10.5	6.0-9.0	6.5-8.5	7.73	7.25
Phenols-4AAP	mg/L	0.1	n/v	0.001	0.001	0.0027
Phosphorus	mg/L	10	0.4	0.03	0.036	0.82
Sulphide	mg/L	1	n/v	n/v	<0.02	<0.02
Sulphide (as H_2S), Calculated	mg/L	1	n/v	n/v	<0.021	<0.021
Total Animal/Vegetable Oil and Grease, Calculated	mg/L	150	n/v	n/v	0.6	0.8
Total Kjeldahl Nitrogen	mg/L	50	n/v	n/v	0.67	1.4
Total Suspended Solids	mg/L	300	15	n/v	10	10
Petroleum Hydrocarbons						
Total Oil & Grease, Mineral/Synthetic	mg/L	15	n/v	0.5	0.7	0.6
Total Oil & Grease	mg/L	n/v	n/v	n/v	1.3	1.4
Total Metals						
Arsenic	mg/L	1	n/v	0.1	0.0036	<0.001
Cadmium	mg/L	0.7	0.001	0.0002	<0.00009	0.0002
Chromium	mg/L	3	0.2	0.0089	<0.005	<0.005
Cobalt	mg/L	5	n/v	0.0009	0.0014	0.00053
Copper	mg/L	2	0.01	0.005	0.002	0.0057
Lead	mg/L	3	0.05	0.005	<0.0005	<0.0005
Mercury	mg/L	0.1	0.001	0.0002	<0.0001	<0.0001
Molybdenum	mg/L	5	n/v	0.04	0.015	<0.0005
Nickel	mg/L	2	0.05	0.025	0.0015	0.0014
Selenium	mg/L	2	n/v	0.1	<0.002	<0.002
Silver	mg/L	1	n/v	0.0001	<0.00009	<0.00009
Zinc	mg/L	2	0.05	0.03	0.0072	0.007
Microbiological Analysis						
Fecal Coliforms	cfu/100mL	n/v	200	n/v	0	>200,000
Pesticides & Herbicides						
Hexachlorobenzene	mg/L	0.0001	n/v	0.0000065	<0.000005	***<0.00001***
Polychlorinated Biphenyls						
Polychlorinated Biphenyls (PCBs)	mg/L	0.004	n/v	0.000001	***<0.00005***	***<0.0001***
Volatile Organic Compounds						
Benzene	mg/L	0.01	n/v	0.1	<0.0002	<0.0002
Dichlorobenzene, 1,2-	mg/L	0.05	n/v	0.0025	<0.0004	<0.0004
Dichlorobenzene, 1,4-	mg/L	0.08	n/v	0.004	<0.0004	<0.0004
Ethylbenzene	mg/L	0.06	n/v	0.008	<0.0002	<0.0002
Toluene	mg/L	0.02	n/v	0.0008	<0.0002	0.0029
Xylene, p+m-	mg/L	n/v	n/v	0.002	<0.0002	<0.0002
Xylene, o-	mg/L	n/v	n/v	0.04	<0.0002	<0.0002
Total Xylenes	mg/L	0.3	n/v	n/v	<0.0002	<0.0002

Notes:

Sanitary	Wellington North Sewer Use By-Law No. 095-16, *Schedule "B" Restricted Wastes Sanitary and Combined Sewer Discharges.*
Storm	Wellington North Sewer Use By-Law No. 095-16, *Section 3 - Storm Sewer Requirements.*
PWQO	Provincial Water Quality Objectives, *Table 2 - Table of PWQOs and Interim PWQOs*
6.5	Bold font = concentration greater than Sanitary and Combined Sewer Discharge Limit.
6.5	underlined font = concentration greater than Storm Sewer Discharge Limit.
6.5	Shaded cell = concentration greater than Table 2 - Table of PWQOs and Interim PWQOs Objective.
<	Concentration less than the accompanying reportable detection limit.
<0.50	Italicized font = reportable detection limit was greater than applicable criteria.
n/v	No value.

Your Project #: 101764.038(3)
Your C.O.C. #: C#1000533-01-01

Attention: Matt Frendo-Cumbo

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2024/07/23
Report #: R8246430
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C4L1871
Received: 2024/07/11, 17:38

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Biochemical Oxygen Demand (BOD)	2	2024/07/13	2024/07/18	CAM SOP-00427	SM 24 5210B m
Chemical Oxygen Demand	2	N/A	2024/07/18	CAM SOP-00416	SM 24 5220 D m
Total Cyanide	2	2024/07/15	2024/07/15	CAM SOP-00457	OMOE E3015 5 m
Sulphide as H2S	2	N/A	2024/07/17		
Mercury in Water by CVAA	2	2024/07/18	2024/07/18	CAM SOP-00453	EPA 7470A m
Total Metals Analysis by ICPMS	2	2024/07/17	2024/07/17	CAM SOP-00447	EPA 6020B m
Fecal coliform, (CFU/100mL)	2	N/A	2024/07/12	CAM SOP-00552	SM9222D, MECP E3371
Animal and Vegetable Oil and Grease	2	N/A	2024/07/16	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	2	2024/07/15	2024/07/16	CAM SOP-00326	EPA1664B m,SM5520B m
OC Pesticides (Selected) & PCB (1)	2	2024/07/16	2024/07/16	CAM SOP-00307	EPA 8081B/ 8082A
OC Pesticides Summed Parameters	2	N/A	2024/07/12	CAM SOP-00307	EPA 8081B/ 8082A
Phenols (4AAP)	2	N/A	2024/07/18	CAM SOP-00444	OMOE E3179 m
pH	2	2024/07/13	2024/07/13	CAM SOP-00413	SM 24th-4500H+ B
Sulphide	2	N/A	2024/07/16	CAM SOP-00455	SM 24 4500-S G m
Total Kjeldahl Nitrogen in Water	2	2024/07/17	2024/07/19	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2024/07/17	2024/07/18	CAM SOP-00407	SM 24 4500-P I
Mineral/Synthetic O & G (TPH Heavy Oil) (2)	2	2024/07/15	2024/07/16	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	2	2024/07/17	2024/07/18	CAM SOP-00428	SM 24 2540D m
Volatile Organic Compounds in Water	2	N/A	2024/07/15	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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or

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Your Project #: 101764.038(3)
Your C.O.C. #: C#1000533-01-01

Attention: Matt Frendo-Cumbo

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2024/07/23
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CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C4L1871

Received: 2024/07/11, 17:38

implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane
(2) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

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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 #: C4L1871
Report Date: 2024/07/23

GEMTEC LIMITED
Client Project #: 101764.038(3)
Sampler Initials: CC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZRV553				ZRV554			
Sampling Date		2024/07/11 13:40				2024/07/11 15:00			
COC Number		C#1000533-01-01				C#1000533-01-01			
	UNITS	24 - 1S	RDL	MDL	QC Batch	SW	RDL	MDL	QC Batch
Calculated Parameters									
Total Animal/Vegetable Oil and Grease	mg/L	0.60	0.50	0.10	9510704	0.80	0.50	0.10	9510704
Sulphide (as H2S)	mg/L	<0.021	0.021	0.011	9511733	<0.021	0.021	0.011	9511733
Inorganics									
Total BOD	mg/L	4	2	0.5	9513077	9	2	0.5	9513077
Total Chemical Oxygen Demand (COD)	mg/L	8.9	4.0	3.0	9520737	48	4.0	3.0	9520737
Total Kjeldahl Nitrogen (TKN)	mg/L	0.67	0.50	0.30	9520764	1.4	1.0	0.60	9520764
pH	pH	7.73			9513743	7.25			9513743
Phenols-4AAP	mg/L	0.0010	0.0010	0.00040	9522326	0.0027	0.0010	0.00040	9522326
Total Phosphorus	mg/L	0.036	0.004	0.001	9520818	0.82	0.004	0.001	9520818
Total Suspended Solids	mg/L	10	10	9.6	9519481	10	10	9.6	9519524
Sulphide	mg/L	<0.020	0.020	0.010	9517187	<0.020	0.020	0.010	9517187
Total Cyanide (CN)	mg/L	<0.0050	0.0050	0.00028	9514465	<0.0050	0.0050	0.00028	9514465
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L	1.3	0.50	0.10	9515551	1.4	0.50	0.10	9515551
Total Oil & Grease Mineral/Synthetic	mg/L	0.70	0.50	0.10	9515553	0.60	0.50	0.10	9515553

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		ZRV553	ZRV554			
Sampling Date		2024/07/11 13:40	2024/07/11 15:00			
COC Number		C#1000533-01-01	C#1000533-01-01			
	UNITS	24 - 1S	SW	RDL	MDL	QC Batch
Metals						
Mercury (Hg)	mg/L	<0.00010	<0.00010	0.00010	0.000050	9522377
Total Arsenic (As)	ug/L	3.6	<1.0	1.0	0.10	9519817
Total Cadmium (Cd)	ug/L	<0.090	0.20	0.090	0.050	9519817
Total Chromium (Cr)	ug/L	<5.0	<5.0	5.0	0.40	9519817
Total Cobalt (Co)	ug/L	1.4	0.53	0.50	0.080	9519817
Total Copper (Cu)	ug/L	2.0	5.7	0.90	0.80	9519817
Total Lead (Pb)	ug/L	<0.50	<0.50	0.50	0.060	9519817
Total Molybdenum (Mo)	ug/L	15	<0.50	0.50	0.10	9519817
Total Nickel (Ni)	ug/L	1.5	1.4	1.0	0.40	9519817
Total Selenium (Se)	ug/L	<2.0	<2.0	2.0	0.20	9519817
Total Silver (Ag)	ug/L	<0.090	<0.090	0.090	0.020	9519817
Total Zinc (Zn)	ug/L	7.2	7.0	5.0	1.0	9519817

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		ZRV553	ZRV554			
Sampling Date		2024/07/11 13:40	2024/07/11 15:00			
COC Number		C#1000533-01-01	C#1000533-01-01			
	UNITS	24 - 1S	SW	RDL	MDL	QC Batch
Volatile Organics						
Benzene	ug/L	<0.20	<0.20	0.20	0.020	9513591
1,2-Dichlorobenzene	ug/L	<0.40	<0.40	0.40	0.050	9513591
1,4-Dichlorobenzene	ug/L	<0.40	<0.40	0.40	0.050	9513591
Ethylbenzene	ug/L	<0.20	<0.20	0.20	0.010	9513591
Toluene	ug/L	<0.20	2.9	0.20	0.010	9513591
p+m-Xylene	ug/L	<0.20	<0.20	0.20	0.010	9513591
o-Xylene	ug/L	<0.20	<0.20	0.20	0.010	9513591
Total Xylenes	ug/L	<0.20	<0.20	0.20	0.010	9513591
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	101	102			9513591
D4-1,2-Dichloroethane	%	113	112			9513591
D8-Toluene	%	94	93			9513591

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Bureau Veritas ID		ZRV553			ZRV554			
Sampling Date		2024/07/11 13:40			2024/07/11 15:00			
COC Number		C#1000533-01-01			C#1000533-01-01			
	UNITS	24 - 1S	RDL	MDL	SW	RDL	MDL	QC Batch
Calculated Parameters								
Total PCB	ug/L	<0.05	0.05	N/A	<0.1	0.1	N/A	9510981
Pesticides & Herbicides								
Hexachlorobenzene	ug/L	<0.005	0.005	0.001	<0.01	0.01	0.002	9516483
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	95			76			9516483
Decachlorobiphenyl	%	83			90			9516483

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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MICROBIOLOGY (WATER)

Bureau Veritas ID		ZRV553	ZRV554		
Sampling Date		2024/07/11 13:40	2024/07/11 15:00		
COC Number		C#1000533-01-01	C#1000533-01-01		
	UNITS	24 - 1S	SW	MDL	QC Batch
Microbiological					
Fecal coliform	CFU/100mL	0	>200000	N/A	9512702

QC Batch = Quality Control Batch
N/A = Not Applicable

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GENERAL COMMENTS

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

Package 1	20.0°C

Revised Report [2024/07/23]: Phosphorus removed from metals analysis.
Revised Report [2024/07/22]: Report ID amended to 24 - 1S per client request.

Sample ZRV554 [SW] : OC Pesticide Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9513077	NNA	QC Standard	Total BOD	2024/07/18		93	%	80 - 120
9513077	NNA	Method Blank	Total BOD	2024/07/18	<2		mg/L	
9513077	NNA	RPD [ZRV553-13]	Total BOD	2024/07/18	7.6		%	30
9513591	MS4	Matrix Spike	4-Bromofluorobenzene	2024/07/15		101	%	70 - 130
			D4-1,2-Dichloroethane	2024/07/15		108	%	70 - 130
			D8-Toluene	2024/07/15		101	%	70 - 130
			Benzene	2024/07/15		105	%	70 - 130
			1,2-Dichlorobenzene	2024/07/15		106	%	70 - 130
			1,4-Dichlorobenzene	2024/07/15		107	%	70 - 130
			Ethylbenzene	2024/07/15		104	%	70 - 130
			Toluene	2024/07/15		105	%	70 - 130
			p+m-Xylene	2024/07/15		104	%	70 - 130
			o-Xylene	2024/07/15		102	%	70 - 130
9513591	MS4	Spiked Blank	4-Bromofluorobenzene	2024/07/15		101	%	70 - 130
			D4-1,2-Dichloroethane	2024/07/15		106	%	70 - 130
			D8-Toluene	2024/07/15		100	%	70 - 130
			Benzene	2024/07/15		102	%	70 - 130
			1,2-Dichlorobenzene	2024/07/15		100	%	70 - 130
			1,4-Dichlorobenzene	2024/07/15		101	%	70 - 130
			Ethylbenzene	2024/07/15		100	%	70 - 130
			Toluene	2024/07/15		101	%	70 - 130
			p+m-Xylene	2024/07/15		100	%	70 - 130
			o-Xylene	2024/07/15		101	%	70 - 130
9513591	MS4	Method Blank	4-Bromofluorobenzene	2024/07/15		102	%	70 - 130
			D4-1,2-Dichloroethane	2024/07/15		108	%	70 - 130
			D8-Toluene	2024/07/15		96	%	70 - 130
			Benzene	2024/07/15	<0.20		ug/L	
			1,2-Dichlorobenzene	2024/07/15	<0.40		ug/L	
			1,4-Dichlorobenzene	2024/07/15	<0.40		ug/L	
			Ethylbenzene	2024/07/15	<0.20		ug/L	
			Toluene	2024/07/15	<0.20		ug/L	
			p+m-Xylene	2024/07/15	<0.20		ug/L	
			o-Xylene	2024/07/15	<0.20		ug/L	
			Total Xylenes	2024/07/15	<0.20		ug/L	
9513591	MS4	RPD	Benzene	2024/07/15	0.70		%	30
			1,2-Dichlorobenzene	2024/07/15	NC		%	30
			1,4-Dichlorobenzene	2024/07/15	NC		%	30
			Ethylbenzene	2024/07/15	NC		%	30
			Toluene	2024/07/15	3.2		%	30
			p+m-Xylene	2024/07/15	0		%	30
			o-Xylene	2024/07/15	NC		%	30
			Total Xylenes	2024/07/15	0		%	30
9513743	GTK	Spiked Blank	pH	2024/07/13		102	%	98 - 103
9513743	GTK	RPD	pH	2024/07/13	0.20		%	N/A
9514465	GYA	Matrix Spike	Total Cyanide (CN)	2024/07/15		99	%	80 - 120
9514465	GYA	Spiked Blank	Total Cyanide (CN)	2024/07/15		102	%	80 - 120
9514465	GYA	Method Blank	Total Cyanide (CN)	2024/07/15	<0.0050		mg/L	
9514465	GYA	RPD	Total Cyanide (CN)	2024/07/15	NC		%	20
9515551	AW5	Spiked Blank	Total Oil & Grease	2024/07/16		98	%	80 - 110
9515551	AW5	RPD	Total Oil & Grease	2024/07/16	0.25		%	25
9515551	AW5	Method Blank	Total Oil & Grease	2024/07/16	<0.50		mg/L	
9515553	AW5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2024/07/16		96	%	65 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9515553	AW5	RPD	Total Oil & Grease Mineral/Synthetic	2024/07/16	0.52		%	25
9515553	AW5	Method Blank	Total Oil & Grease Mineral/Synthetic	2024/07/16	<0.50		mg/L	
9516483	MAK	Matrix Spike	2,4,5,6-Tetrachloro-m-xylene	2024/07/16		59	%	50 - 130
			Decachlorobiphenyl	2024/07/16		65	%	50 - 130
			Hexachlorobenzene	2024/07/16		71	%	50 - 130
9516483	MAK	Spiked Blank	2,4,5,6-Tetrachloro-m-xylene	2024/07/16		77	%	50 - 130
			Decachlorobiphenyl	2024/07/16		117	%	50 - 130
			Hexachlorobenzene	2024/07/16		77	%	50 - 130
9516483	MAK	RPD	Hexachlorobenzene	2024/07/16	2.7		%	30
			Hexachlorobenzene	2024/07/16	NC		%	30
9516483	MAK	Method Blank	2,4,5,6-Tetrachloro-m-xylene	2024/07/16		72	%	50 - 130
			Decachlorobiphenyl	2024/07/16		116	%	50 - 130
			Hexachlorobenzene	2024/07/16	<0.005		ug/L	
9517187	TAK	Matrix Spike	Sulphide	2024/07/16		93	%	80 - 120
9517187	TAK	Spiked Blank	Sulphide	2024/07/16		101	%	80 - 120
9517187	TAK	Method Blank	Sulphide	2024/07/16	<0.020		mg/L	
9517187	TAK	RPD	Sulphide	2024/07/16	NC		%	20
9519481	MV1	Spiked Blank	Total Suspended Solids	2024/07/18		99	%	80 - 120
9519481	MV1	Method Blank	Total Suspended Solids	2024/07/18	<10		mg/L	
9519481	MV1	RPD	Total Suspended Solids	2024/07/18	5.7		%	20
9519524	RTB	Spiked Blank	Total Suspended Solids	2024/07/18		98	%	80 - 120
9519524	RTB	Method Blank	Total Suspended Solids	2024/07/18	<10		mg/L	
9519524	RTB	RPD	Total Suspended Solids	2024/07/18	12		%	20
9519817	AFZ	Matrix Spike	Total Arsenic (As)	2024/07/17		98	%	80 - 120
			Total Cadmium (Cd)	2024/07/17		98	%	80 - 120
			Total Chromium (Cr)	2024/07/17		95	%	80 - 120
			Total Cobalt (Co)	2024/07/17		94	%	80 - 120
			Total Copper (Cu)	2024/07/17		95	%	80 - 120
			Total Lead (Pb)	2024/07/17		94	%	80 - 120
			Total Molybdenum (Mo)	2024/07/17		99	%	80 - 120
			Total Nickel (Ni)	2024/07/17		92	%	80 - 120
			Total Selenium (Se)	2024/07/17		103	%	80 - 120
			Total Silver (Ag)	2024/07/17		95	%	80 - 120
			Total Zinc (Zn)	2024/07/17		98	%	80 - 120
9519817	AFZ	Spiked Blank	Total Arsenic (As)	2024/07/17		101	%	80 - 120
			Total Cadmium (Cd)	2024/07/17		101	%	80 - 120
			Total Chromium (Cr)	2024/07/17		99	%	80 - 120
			Total Cobalt (Co)	2024/07/17		98	%	80 - 120
			Total Copper (Cu)	2024/07/17		98	%	80 - 120
			Total Lead (Pb)	2024/07/17		98	%	80 - 120
			Total Molybdenum (Mo)	2024/07/17		100	%	80 - 120
			Total Nickel (Ni)	2024/07/17		98	%	80 - 120
			Total Selenium (Se)	2024/07/17		109	%	80 - 120
			Total Silver (Ag)	2024/07/17		97	%	80 - 120
			Total Zinc (Zn)	2024/07/17		104	%	80 - 120
9519817	AFZ	Method Blank	Total Arsenic (As)	2024/07/17	<1.0		ug/L	
			Total Cadmium (Cd)	2024/07/17	<0.090		ug/L	
			Total Chromium (Cr)	2024/07/17	<5.0		ug/L	
			Total Cobalt (Co)	2024/07/17	<0.50		ug/L	
			Total Copper (Cu)	2024/07/17	<0.90		ug/L	
			Total Lead (Pb)	2024/07/17	<0.50		ug/L	
			Total Molybdenum (Mo)	2024/07/17	<0.50		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Nickel (Ni)	2024/07/17	<1.0		ug/L	
			Total Selenium (Se)	2024/07/17	<2.0		ug/L	
			Total Silver (Ag)	2024/07/17	<0.090		ug/L	
			Total Zinc (Zn)	2024/07/17	<5.0		ug/L	
9519817	AFZ	RPD	Total Arsenic (As)	2024/07/17	16		%	20
			Total Cadmium (Cd)	2024/07/17	NC		%	20
			Total Chromium (Cr)	2024/07/17	NC		%	20
			Total Cobalt (Co)	2024/07/17	NC		%	20
			Total Copper (Cu)	2024/07/17	7.2		%	20
			Total Lead (Pb)	2024/07/17	2.2		%	20
			Total Molybdenum (Mo)	2024/07/17	1.1		%	20
			Total Nickel (Ni)	2024/07/17	9.0		%	20
			Total Selenium (Se)	2024/07/17	NC		%	20
			Total Silver (Ag)	2024/07/17	NC		%	20
			Total Zinc (Zn)	2024/07/17	3.0		%	20
9520737	VRO	Matrix Spike [ZRV553-06]	Total Chemical Oxygen Demand (COD)	2024/07/18		99	%	80 - 120
9520737	VRO	Spiked Blank	Total Chemical Oxygen Demand (COD)	2024/07/18		97	%	80 - 120
9520737	VRO	Method Blank	Total Chemical Oxygen Demand (COD)	2024/07/18	<4.0		mg/L	
9520737	VRO	RPD [ZRV553-06]	Total Chemical Oxygen Demand (COD)	2024/07/18	NC		%	20
9520764	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/07/18		105	%	80 - 120
9520764	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/07/18		96	%	80 - 120
9520764	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/07/18		95	%	80 - 120
9520764	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/07/18	<0.10		mg/L	
9520764	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2024/07/18	0		%	20
9520818	SPC	Matrix Spike	Total Phosphorus	2024/07/18		103	%	80 - 120
9520818	SPC	QC Standard	Total Phosphorus	2024/07/18		102	%	80 - 120
9520818	SPC	Spiked Blank	Total Phosphorus	2024/07/18		102	%	80 - 120
9520818	SPC	Method Blank	Total Phosphorus	2024/07/18	<0.004		mg/L	
9520818	SPC	RPD	Total Phosphorus	2024/07/18	1.5		%	20
9522326	CPO	Matrix Spike	Phenols-4AAP	2024/07/18		102	%	80 - 120
9522326	CPO	Spiked Blank	Phenols-4AAP	2024/07/18		102	%	80 - 120
9522326	CPO	Method Blank	Phenols-4AAP	2024/07/18	<0.0010		mg/L	
9522326	CPO	RPD	Phenols-4AAP	2024/07/18	3.3		%	20
9522377	ANF	Matrix Spike	Mercury (Hg)	2024/07/18		93	%	75 - 125
9522377	ANF	Spiked Blank	Mercury (Hg)	2024/07/18		95	%	80 - 120
9522377	ANF	Method Blank	Mercury (Hg)	2024/07/18	<0.00010		mg/L	
9522377	ANF	RPD	Mercury (Hg)	2024/07/18	NC		%	20
			Mercury (Hg)	2024/07/18	NC		%	20
			Mercury (Hg)	2024/07/18	NC		%	20
			Mercury (Hg)	2024/07/18	NC		%	20

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.

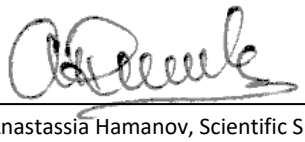
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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).

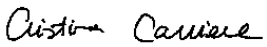
Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VALIDATION SIGNATURE PAGE

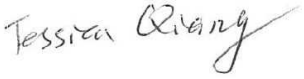
The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist



Cristina Carriere, Senior Scientific Specialist



Jessica (Ya Ping) Qiang, Analyst II

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

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ORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT II	
Company Name:	#35525 GEMTEC LIMITED	Company Name:	#32770 GEMTEC LIMITED	Quotation #:	C35256
Attention:	Invoicing	Attention:	Matt Frendo-Cumbo	P.O. #:	
Address:	32 Steacie Drive Ottawa ON K2K 2A9	Address:	850 Champlain Ave Unit 101 Oshawa ON L1J8C3	Project:	101764.038(3)
Tel:	(613) 836-1422 Fax: (613) 836-9731	Tel:	(289) 274-8476 Fax:	Project Name:	
Email:	accountspayable@gemtec.ca	Email:	matt.frendo-cumbo@gemtec.ca	Site #:	
				Sampled By:	Chloe Choi

aboratory Use Only:

s Job #:	Bottle Order #:
	1000533
COC #:	Project Manager:
C#1000533-01-01	Katherine Szozda

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 ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☑ Sanitary Sewer Bylaw ☐ Reg 558. ☑ Storm Sewer Bylaw ☐ MISA Municipality Wellington North ☑ PWQO ☐ Reg 406 Table ☐ Other	

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

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	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Wellington North Sanitary/Comb (095-16)	Fecal coliform, (CFU/100mL)	Total Phosphorus (Colourimetric)	# of Bottles	Comments
1		24-1S	July 11, 2024	1:40PM	GW		✓	✓	✓		
2		SW	↓	3:00PM	SW	Y	✓	✓	✓		
3											
4											
5											
6											
7											
8											
9											
10											

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Chloe Choi	24/07/11		A Smith Sukeerna A Smith Sukeerna	2024/07/11	17:38	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	19/20/21	Present	✓	
		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.

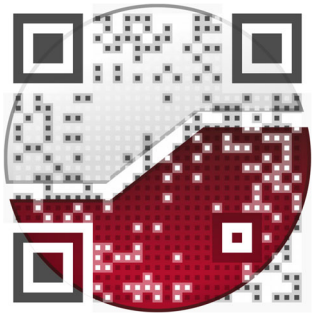
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

19/20/20

Bureau Veritas Canada (2019) Inc.

experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnement
structural	structures
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité