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PRELIMINARY HYDROGEOLOGICAL REPORT

TOWN OF CALEDON
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12506 Heart Lake Road, Caledon, ON

Project #: 24-0825
Prepared for: Tribal Partners (Canada) Inc.
Date: January 10, 2025

Report Version: 01

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January 10, 2025

Tribal Partners (Canada) Inc.
201 – 2700 Steeles Avenue West
Vaughan, Ontario L4K 3C8

Attention: Carleigh Oude-Reimerink, Vice President, Development

SUBJECT: PRELIMINARY HYDROGEOLOGICAL REPORT, 12506 HEART LAKE ROAD, CALEDON, ON

EnVision Consultants Ltd. is pleased to present the enclosed Preliminary Hydrogeological Report for the above-noted property. The report describes the interpreted hydrogeological conditions based on our assessment and provides conclusions for your consideration.

We thank you for utilizing EnVision for this assignment. If there are any questions regarding the enclosed report, please do not hesitate to contact us.

Yours sincerely,



Rob Byers, P.Geo.,
Senior Hydrogeologist
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QUALITY MANAGEMENT

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PREPARED BY	Sam Harding		
SIGNATURE			
REVIEWED BY	Rob Byers		
SIGNATURE			
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1. INTRODUCTION

EnVision Consultants Ltd. (EnVision) was retained by Tribal Partners (Canada) Inc. (the 'Client') to conduct a preliminary hydrogeological investigation at the property located at 12506 Heart Lake Road, Caledon, ON (the 'Site'). It is our understanding that this assessment has been requested for due diligence purposes and property acquisition.

The location of the Site, together with a 500-m buffer around the property, representing the 'Study Area' are presented on the attached Figure 1.

1.1. OBJECTIVES AND SCOPE OF WORK

The objective of this preliminary hydrogeological report is to characterize the geological and hydrogeological conditions at the Site and Study Area to:

- Identify key groundwater features including ground/surface water interactions at the Site and surrounding areas.
- Provide a summary of relevant Source Water Protection Policies that may impact future development.
- Identify any nearby groundwater users that could be impacted by future development and provide a summary of mitigation measures.
- Conduct a preliminary assessment of the soil conditions at site, including the unsaturated infiltration potential at several borehole locations by way of grain size analysis and interpretation to aid in future LID and Stormwater Management design.
- Identify the shallow groundwater levels across the site and develop conceptual understanding of potential groundwater constraints for development.
- Assess long-term stabilized groundwater levels with the installation of real-time data logger pressure transducer devices at all onsite-monitoring wells for the collection of one-year's worth of groundwater level data.
- Assess potential impacts and provide mitigation measures to aid in design purposes
- Assess any need for short-term groundwater control during future construction activities

1.2. SITE DESCRIPTION

The Site currently features agricultural land generally bound by Kilmanagh Creek and Old School Road to the north, an existing residential development and Bonnieglen Farm Road to the west, Heart Lake Road to the east, and agricultural lands and Highway 410 to the south. The proposed development includes up to 1.9 Million square feet of industrial space with the associated parking and landscape areas, a stormwater management pond, and a potential extension of Dougall Avenue.

1.3. POLICY AND REGULATORY OVERVIEW

A review of the Source Water Protection Policy areas indicates that the Site falls within the Toronto Source Water Protection Area. The Site is not located within any well head protection areas or intake

protection zones and is not considered a highly vulnerable aquifer (Ministry of the Environment, Conservation and Parks, 2021).

A review of the Toronto and Region Conservation Authority Mapping (Toronto and Region Conservation Authority, 2023) indicates approximately 0.12 km^2 of the Site area on the west side of the property falls within the regulated area. Figure 1 depicts the regulated area in relation to the Site boundary.

2. REGIONAL SETTING

2.1. GEOLOGY

2.1.1. Physiography

The Site is located within the physiographic region known as the South Slope (Chapman, 2007). The South Slope feature represents the southern flank of the Oak Ridges Moraine landform. In the area of the Site, the South Slope is comprised of successive layers of glacial material deposited during ice advance and retreat cycles.

2.1.2. Overburden Geology

Based on a review of the public geological mapping of the Study Area, the majority of the surficial material consists of clay to silt-textured till derived from glaciolacustrine deposits or shale (Ministry of Northern Development, Mines and Forestry, 2013). Modern alluvial deposits of clay, silt, sand and gravel are located in proximity to the Campbell Cross Creek on the northwest side of the Site. Figure 3 presents the surficial geology across the Site Area.

2.1.3. Bedrock Geology

Bedrock mapping of the Study Area identifies the bedrock as the Queenston formation; a mix of shale, siltstone, dolostone and limestone (Sharpe D. , 1980). The depth to the bedrock is expected at more than 30m below the ground surface (m BGS) and is not considered hydrogeologically significant to the Site.

2.2. HYDROGEOLOGICAL SETTING

2.2.1. Study Area Review of MECP Well Records

EnVision reviewed the online Ministry of the Environment, Conservation and Parks (MECP) Water Well Record information system to determine the number and reported use of water wells present within the Study Area. The results of this search have been tabulated in Appendix A and plotted in Figure 3.

The MECP WWR database indicated that there are forty-three (43) water wells in the Study Area. Of the well records returned in the search, eleven (11) were determined to be observation wells, test holes or monitoring wells, eleven (11) wells were determined to be abandoned or unknown and twenty-one (21) wells were determined to be water supply wells.

Of the water supply wells returned in the search, fourteen (14) are listed for domestic use with well depths of 9.8m and 61.3m BGS. The construction date of the domestic supply wells range from 1965 to 2013. It is understood that the residences within the study area were converted to a municipal water supply system. However, there is still a possibility that some homes/properties did not convert or use groundwater to supplement supply. To confirm the potential users of groundwater within the Study area, it is recommended that a water well reconnaissance survey be conducted prior to construction.

2.2.2. Hydrostratigraphy

Based on a review of the public records, and journals (Gerber, 2018) the stratigraphic sequence below the Study Area is anticipated to consist of the following general sequence:

- Upper undifferentiated sediments (shallow aquitard)
- Halton Till consisting of low permeable silts and clays that can be feature sand and silt seams embedded within fractured/weathered material of moderate permeability – (confining aquitard)
- Bedrock limestone/shale (Queenston Formation) which can serve as an aquifer in the upper weathered portions.

2.2.3. Permit to Take Water and Construction Dewatering EASR Search

The MECP maintains an online database and GIS mapping service that contains all registered Permit to Take Water and Construction Dewatering EASR filings (Ministry of the Environment, 2018). A review of this service indicates that there are no active/registered PTTW or EASRs for construction dewatering within the Study Area, however, one (1) expired PTTW was returned in the search and is summarized below.

- Permit to Take Water – expired – for a Dewatering Array located along Heart Lake Road starting just north of Mayfield Road to Old School Road, Caledon, ON -on behalf of the Regional Municipality of Peel (max volume of 3,466,500 L/day)

3. SITE SETTING

3.1. SURFACE WATER FEATURES

The Site Area encompasses two different watersheds, at the north corner of the Site, The Campbells Cross Creek, a tributary of the Humber River runs from west to east. The creek is a part of the West Humber River watershed and flows southeast where it connects to the West Humber River approximately 11km southeast of the Site.

Inside the study area, the Spring Creek flows from north to south approximately 475m northeast of the Site boundary. The Spring Creek is a part of the Etobicoke Creek watershed and flows to the south where it connects to the Etobicoke East Branch approximately 4.7km south of the Site.

The TRCA Regulation Mapping tool indicates an unevaluated wetland surrounding the Campbells Cross Creek at the north corner of the Site. The wetland represents a potentially significant groundwater recharge area.

3.2. TOPOGRAPHY AND DRAINAGE

Based on topographic profile from the Provincial Digital Elevation Model, the elevation across the Site ranges from approximately 261 to 272m ASL. The Site generally slopes gently from south to north but dips more severely near the Campbells Cross Creek which is situated at 261m ASL.

The current Site conditions feature uneven, tilled soil at the surface. Precipitation collects in low areas of the uneven ground where it slowly infiltrates due to the high clay content in the soil. Runoff on the north side of the Site is directed towards the Campbells Cross Creek.

4. FIELD INVESTIGATION

4.1. BOREHOLE DRILLING

The field investigation included a joint geotechnical, environmental and hydrogeological drilling program. In total, seventeen (17) boreholes (designated as BH24-1 to BH24-17) to depths ranging from 6.2m to 8.2m below the existing ground surface. During the drilling activity, solid stem augers were used to advance all boreholes. Six (6) of the boreholes were completed as 50-mm PVC monitoring wells. Drilling activities, including soil sampling and environmental testing were overseen by EnVision staff and detailed in the geotechnical and environmental Site assessment programs. These reports are presented under separate covers. The boreholes and monitoring well locations are highlighted in Figure 4, with borehole logs provided in Appendix B.

4.2. SOIL DESCRIPTIONS

Soil conditions in the boreholes are briefly presented below

4.2.1. Topsoil/ Fill Material/ Disturbed Native Soils

A 180mm to 300mm thick layer of topsoil was encountered at the location of boreholes except BH24-13 where granular material (sand and gravel) was encountered below the ground surface.

Underlying the topsoil in the boreholes, generally firm to very stiff fill material or weathered/disturbed native soils generally consisting of silty clay to clayey silt mixed with topsoil and organics were encountered which extended to depths varying from 0.8m to 1.7m below the existing ground surface. Cohesionless disturbed soils consisting of sandy silt to silty sand were found in Boreholes BH24-1, BH24-2 and BH24-5 below topsoil which extended to depths of 0.5m to 0.8m below the existing ground surface. In BH24-15 weathered/disturbed sandy silt was found at a depth of 0.8m which extended to 1.5m.

It should be noted that the disturbed native soil layer identified beneath this distinct upper topsoil layer also contains organics and is intermixed with topsoil, and as such, the thickness of stripping will be greater than the top layer thickness shown on the borehole log sheet. The topsoil thickness explored at borehole locations may not be representative for the site and should not be relied on to calculate topsoil quantities. Test pits should be carried out to explore and quantify the thickness of topsoil across the site more accurately.

4.2.2. Glacial Till Deposits of Silty Clay to Clayey Silt

Below fill material or disturbed native silty clay to clayey silt in all boreholes (BH24-01 through BH24-17) except BH24-15, glacial till deposits of silty clay to clayey silt were encountered which extended to depths varying from 5.6m to the termination depths of boreholes. In BH24-15, glacial till deposits of clayey silt were encountered at a depth of 3.3m which extended to the termination depth of 6.7m. Seams/lenses of sand/silty sand were also encountered within silty clay to clayey silt till. Glacial till deposits of sandy silt were also encountered within silty clay to clayey silt till at varying depths in

boreholes BH24-1, BH24-4, BH24-5, BH24-8, BH24-10, BH24-11 and BH24-16. A cohesionless deposit of silty sand was also encountered within the glacial till deposits of silty clay to clayey silt in Borehole BH24-14.

4.2.3. Glacial Till Deposits of Sandy Silt

Glacial till deposits of sandy silt were encountered in BH24-1, BH24-4, BH24-5, BH24-8, BH24-10, BH24-11, BH24-15 and BH24-16 at depths ranging from 1.5m to 7.2mbgs which extended to depths ranging from 2.4m to the maximum explored depths of 6.3m to 8.2mbgs.

4.2.4. Cohesionless Deposits of Silty Sand, Sand, Sand and Gravel

Water bearing cohesionless deposits of silty sand, sandy silt, and sand were encountered in Boreholes BH24-12, BH24-14 and BH24-17 at depths of 6.1m to 6.4m which extended to the termination depths of 6.7m in BH24-12 and BH24-17 and to 7m in BH24-14. In BH24-15, a cohesionless deposit of sand and gravel was encountered at a depth of 2.4m which extended to 3.3mbgs.

4.2.5. Silty Clay

Below glacial till deposits of clayey silt till in BH24-12, a cohesive deposit of silty clay was encountered at a depth of 5.6m which extended to 6.5mbgs.

4.3. MONITORING WELL INSTALLATION

Monitoring wells were installed in boreholes BH24-1, BH24-3, BH24-7, BH24-9, BH24-14 and BH24-15 upon completion of drilling. The monitoring wells were constructed using a 50mm diameter environmental-grade, flush-threaded polyvinyl chloride (PVC) pipe, including a screen section with a factory machined slot width of 0.25mm and was completed with a PVC riser pipe. All the pipe material and screen sections were wrapped in plastic which was removed just prior to installation to minimize the potential for contamination. The base of the monitoring wells were covered with a PVC cap to prevent the influx of sediment. Clean silica filter grade sand supplied in bags from a commercial supplier of well sand was placed in the annular space between the pipe and the walls of the borehole. The monitoring wells were constructed in accordance with Ontario Regulation 903 (amended by O. Reg. 372/07) by extending an impermeable bentonite grout layer from approximately 0.6m above the top of the screened interval to the ground surface. The monitoring wells were completed by installing a protective well cover finished with flush-mount casing. Well construction details are provided on the respective borehole logs presented in Appendix B. Ground levels at each monitoring well location was surveyed to an elevation datum and reported on the borehole logs.

4.4. GROUNDWATER LEVEL MONITORING

EnVision reported groundwater levels at BH24-3 and BH24-14 three (3) times between December 4 and December 17 2024 and BH24-1, BH24-7, BH24-9 and BH24-15 twice (2) between December 13 and December 17 2024. During the current monitoring period, the groundwater level in the overburden ranged from 1.9 to 6.5m BGS corresponding to an elevation of 270.9 to 265.4m ASL.

The groundwater flow direction has been modeled based on groundwater readings from December 13, 2024, and are presented in Figure 5. Based on simple interpolation, the groundwater flow direction at the Site is to the southwest with a calculated hydraulic gradient of 0.0057 unitless.

Groundwater levels will continue to be monitored for a period of one year, with a conclusion date set for December 2025. Three (3) Solinst Levellogger pressure transducer devices have been installed in BH24-1, BH24-9 and BH24-14. The devices collect hourly readings which will be compensated with respect to barometric pressure to collect continuous data throughout the monitoring period.

4.5. HYDRAULIC CONDUCTIVITY ASSESSMENT

4.5.1. Grain Size Distribution

EnVision has reviewed grain size distribution plots from the geotechnical field investigation and has tabulated estimated hydraulic conductivity (K) using a variety of empirical relationships. Details are included on the calculation sheets in Appendix D. *Table 4-1* presents a summary of the estimated K value for each of the soil samples. The provided value is the geometric average value from selected empirical relations, as outlined in Appendix D.

Table 4-1: Summary of Estimated K (Grain Size Relationships)

BH ID	SAMPLE ID	DEPTH		SOIL UNIT	HYDRAULIC CONDUCTIVITY
		From (m)	To (m)		(m/sec)
BH24-1	SS8	7.6	8.2	Sandy Silt Till	$2.4 X10^{-8}$
BH24-3	SS3	1.6	2.2	Silty Clay Till/ Clayey Silt Till	$7.7 X10^{-9}$
BH24-4	SS5	3.0	3.6	Clayey Silt Till	$6.4 X10^{-8}$
BH24-6	SS3	1.5	2.1	Silty Clay Till/ Clayey Silt Till	$1.1 X10^{-8}$
BH24-8	SS6	4.6	5.2	Sandy Silt Till	$6.2 X10^{-8}$
BH24-10	SS4	2.3	2.9	Silty Clay Till/ Clayey Silt Till	$1.2 X10^{-8}$
BH24-11	SS5	3.0	3.6	Clayey Silt Till	$3.3 X10^{-8}$
BH24-14	SS9	6.1	6.3	Silty Sand	$6.6 X10^{-7}$
BH24-15	SS6	3.8	4.4	Clayey Silt Till/ Silty Clay Till	$7.4 X10^{-8}$

BH ID	SAMPLE ID	DEPTH		SOIL UNIT	HYDRAULIC CONDUCTIVITY
BH24-15	SS4B+5A	2.4	3.3	Sand and Gravel	1.8 X10^{-4}

Based on grain size analysis, the hydraulic conductivity of the overburden layer ranges from 1.8 X10^{-4} to 7.7 X10^{-9} m/sec.

4.5.2. In-Situ Single Well Response Testing (SWRT)

EnVision conducted confirmatory SWRTs at three (3) monitoring wells on Site (BH24-1, BH24-3, and BH24-14). In advance of performing SWRTs, the monitoring wells were developed to remove the potential presence of fine sediments. The development process involved purging of the monitoring wells to induce the flow of fresh formation water through the screen. The monitoring well water levels were permitted to fully recover prior to performing SWRTs.

During the SWRT, a slug of water was near-instantaneously removed from the well and the response in water level was recorded. The K values for each of the tested wells were calculated from the SWRT data using Aqtesolv Software and the Bouwer-Rice solutions for confined conditions. The semi-log plots for normalized drawdown versus time are included in Appendix E**.** *Table 4-2* presents a summary of the in-situ rising head test results.

Table 4-2: Summary of In-Situ Hydraulic Conductivity Results

BH ID	TESTING BY	SCREEN DEPTH		SOIL UNIT	HYDRAULIC CONDUCTIVITY – BOUWER-RICE	
		From (m)	To (m)		(m/sec)	(m/day)
BH24-1	EnVision	4.6	7.6	Silty Clay Till/ Clayey Silt Till/ Sandy Silt Till	1.5 X10^{-8}	1.3 X10^{-3}
BH24-3	EnVision	3.1	6.1	Silty Clay Till/ Clayey Silt Till	1.7 X10^{-9}	1.5 X10^{-4}
BH24-14	EnVision	4.6	7.6	Silty Clay Till/ Clayey Silt Till/ Silty Sand	4.5 X10^{-8}	3.9 X10^{-3}

Based on In-Situ single well response testing, the hydraulic conductivity of the overburden ranges from 4.5 X10^{-8} to 1.7 X10^{-9} m/sec.

4.6. INFILTRATION RATE ESTIMATION

The hydraulic conductivity of the unsaturated shallow material was estimated from grain size distribution plots. The range of conductivity of the shallow clayey silt till to silty clay till layer across the

Site ranged from 7.4 X10^{-8} to 1.7 X10^{-9} m/sec. These values fall within the typical range for fine textured glaciolacustrine deposits.

The following estimation of percolation rates are based on the "Low Impact Development Stormwater Management Planning and Design Guide" Appendix C: Site Evaluation and Testing Protocol. A relationship between hydraulic conductivity and percolation or infiltration rate can be approximated using the relationship set out in the Table C-1 of the guideline. Based on a review of the conductivity ranges for the site, the expected infiltration rate for the shallow soils is estimated to range from 1 to 4 mm/hr. This range must be confirmed by way of in-situ infiltration testing at the location and elevation of any proposed infiltration galleries. This value is to be considered for informational purposes only, until it can be confirmed by way of appropriate field study.

It is also noted that future grading efforts for the development could introduce imported soils of unknown hydraulic characteristics and therefore additional information will be required.

Any infiltration features must also be constructed to maintain a separation from the seasonal high groundwater levels, which have yet to be established for this property. Additional groundwater monitoring may be required at location of any future LID features.

4.7. GROUNDWATER QUALITY ASSESSMENT

On November 20, 2024, EnVision staff collected representative groundwater samples from BH24-3 and BH24-14. The samples were collected using clean bailer equipment and decanted into pre-filled laboratory supplied vials for a comprehensive analytical assessment of metals, inorganics, and calculated parameters. The results of the sample event were compared against the Provincial Water Quality Objectives (PWQOs). *Table 4-3* presents a summary of all exceedances when compared to PWQOs. A summary of the analytical results and the laboratory Certificate of Analysis (CofA) are enclosed in Appendix F.

Table 4-3: Summary of Groundwater Exceedances Against Provincial Water Quality Objectives

PARAMETER	UNITS	PWQO (GOVERNMENT OF ONTARIO, 2016)	RESULTS BH24-3 (DEC 17, 2024)	RESULTS BH24-14 (DEC 17, 2024)
COBALT (CU)	ug/L	0.9	0.78	**2.1**
IRON (FE)	ug/L	300	**620**	**320**
URANIUM (U)	ug/L	5	**8.1**	2.4

NOTES:

BOLD = EXCEEDS PWQO'S

Results from BH24-3 indicate two (2) exceedances when compared to PWQO. The exceedances include total iron and total uranium.

Results from BH24-14 indicate two (2) exceedances when compared to PWQO. The exceedances include total cobalt and total iron.

Results from BH24-3 indicate elevated levels of nitrite (0.090 mg/L) and nitrate (9.54 mg/L). These elevated concentrations are likely due to the use of fertilizers and other agricultural products.

5. GROUNDWATER CONTROL

5.1. PROJECT OVERVIEW

It is our understanding that this report has been requested for due diligence purposes for the potential acquisition of the property, however, we understand that the proposed development will feature up to 1.9 million square feet of industrial space with associated parking and landscaped areas, a stormwater management pond, and a potential extension of Dougall Avenue.

Based on data collected by EnVision to date, the groundwater elevation across the Site ranges from 265.4 (6.5m BGS at BH24-1 on December 17, 2024) to 270.9m ASL (1.9m BGS at BH24-14 on December 4, 2024).

The shallow overburden across the Site is generally described as clayey silt to silty clay Halton Till. Hydraulic conductivity testing through grain size analysis and In-Situ single well response testing indicates the hydraulic conductivity of this unit to range from $7.4 X10^{-8}$ to $1.7 X10^{-9}$ m/sec.

Deposits of cohesionless soils such as sand and gravel (only encountered in BH24-15), sand, sandy silt, and sandy silt till were encountered at depths ranging from 270.3 (2.3m BGS at BH24-16) to 264.9m ASL (6.5m BGS at BH24-12). Based on grain size analysis and In-Situ single well response testing, the hydraulic conductivity of these layers ranges from $2.4 X10^{-8}$ to $1.8 X10^{-4}$ m/sec.

It is expected that the proposed development will feature slab-on-grade construction along with shallow works for the installation of linear infrastructure. Based on the groundwater elevations, soil types and estimated hydraulic conductivity values for the Site, it is estimated that any shallow excavation will result in minimal water takings.

6. IMPACT ASSESSMENT

6.1. IMPACTS TO GROUNDWATER USERS

Based on the water well records summary, potential groundwater users have been identified within the Study Area, and as such they may be negatively impacted by development. As mentioned in Section 2.2.1, it is recommended that a water well reconnaissance survey be completed to identify the nature of use, and condition of any wells in the area. The information should be documented, and a pro-active monitoring program should be implemented prior to construction to ensure that the quantity and quality of the wells remain unaffected.

6.2. WATER QUALITY IMPACTS

The proposed post-development conditions are expected to include new roadways and paved areas. These areas may be a future source of contamination to groundwater infiltration or surface water runoff by winter road de-icing agents. The most effective method of reducing potential impacts from salt or other winter road de-icing agents is to minimize the mass/volume of material applied through the use of Best Management Practices (BMPs). Any pervious areas used for winter snow storage may also become potential sources of contamination from winter road de-icing agents. BMPs recommend storing snow on impervious surfaces.

The driveway and roadway areas may also be potential sources of petroleum hydrocarbons. These are typically contained in vehicles. These potential releases could result in impairment of water quality by infiltrating into the groundwater. The risk of significant impact from spills at the Site is low considering the only traffic will be through industrial use.

6.3. LONG-TERM GROUNDWATER DRAINAGE

For linear infrastructure, the introduction of bedding materials (granular) along trenching may act as a conduit for shallow groundwater flow. To protect against this, the use of clay collars is recommended, and should be incorporated into future design.

It is expected that the proposed development will be completed with slab-on-grade construction with no basements, resulting in no permanent groundwater drainage.

7. CLOSING

7.1. CONCLUSIONS

Based on the information obtained through this Hydrogeological Investigation, Envision presents the following conclusions and recommendations:

- The Site is situated within the physiographic region of Southern Ontario known as the South Slope;
- The surficial material has been mapped and consists of surficial material consists of clay to silt-textured till derived from glaciolacustrine deposits or shale;
- Bedrock identified as the Queenston formation is found at more than 30 m below ground surface;
- The MECP WWR database indicated that there are forty-three (43) water wells in the Study Area. Of the well records returned in the search, eleven (11) were determined to be observation wells, test holes or monitoring wells, eleven (11) wells were determined to be abandoned or unknown and twenty-one (21) wells were determined to be water supply wells;
- During the current monitoring period, the groundwater level in the overburden ranged from 1.9 to 6.5m BGS corresponding to an elevation of 270.9 to 265.4m ASL.
- Based on a total of ten (10) grain size distribution profiles, the approximated hydraulic conductivity of the overburden material ranges from 1.8 $X10^{-4}$ to 7.7 $X10^{-9}$ m/sec;
- Based on In-Situ single well response testing, the hydraulic conductivity of the overburden ranges from 4.5 $X10^{-8}$ to 1.7 $X10^{-9}$ m/sec;
- Based on a review of the conductivity ranges for the site, the expected infiltration rate for the shallow soils is estimated to range from 1 to 4 mm/hr.
- Groundwater sampling results from BH24-3 indicate two (2) exceedances when compared to PWQO. The exceedances include total iron and total uranium.;
- Groundwater sampling results from BH24-14 indicate two (2) exceedances when compared to PWQO. The exceedances include total cobalt and total iron;
- Results from BH24-3 indicate elevated levels of nitrite and nitrate;
- Based on the groundwater elevations, soil types and estimated hydraulic conductivity values for the Site, it is estimated that any shallow excavation will result in minimal water takings.

Based on the above conclusions, the following recommendations are provided:

1) All estimates provided should be revised during detailed design work as more information becomes available, including building footprint, depth of excavation, type of foundation, shoring selection, and other information;
2) A long-term groundwater level program is underway to establish the peak maximum anticipated groundwater levels at the Site with results anticipated in late December 2025;

7.2. QUALIFICATION OF THE ASSESSORS

Robin Byers, P.Geo., B.Sc. is a Senior Hydrogeologist and is a practicing member of the Professional Geoscientists of Ontario with over 9 years of hydrogeological experience working in the Greater Toronto Area and Southern Ontario. He has experience in physical and chemical hydrogeology with foundational knowledge of well construction and design, groundwater modeling, pumping test analysis, and construction dewatering. Rob is also a qualified person as defined by O.Reg 63/16 for purposes of preparing water taking and discharge plans.

7.3. CERTIFICATION AND SIGNATURES

EnVision confirms the conclusions and findings of the Hydrogeological Investigation.



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7.4. QUALIFIER

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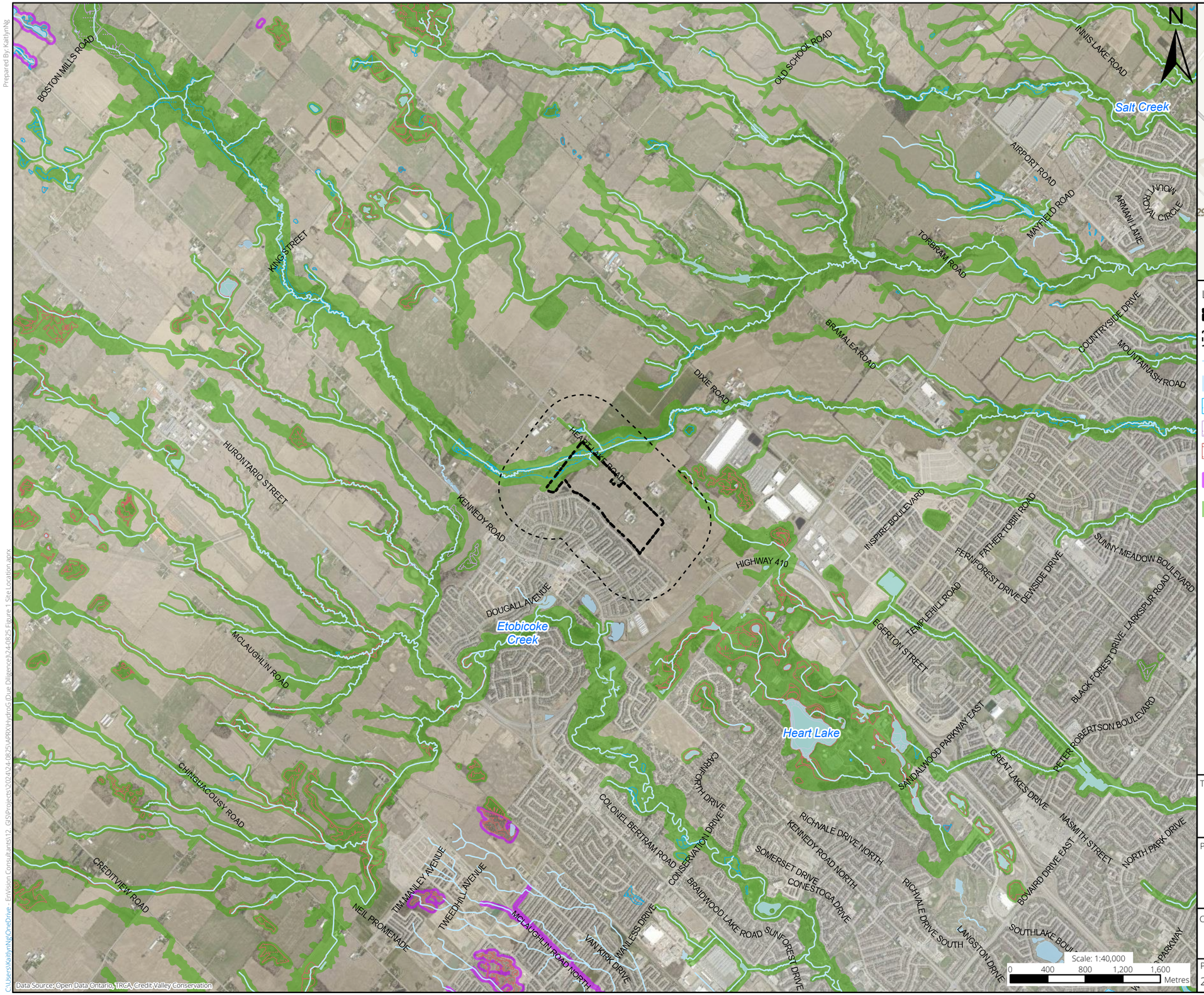
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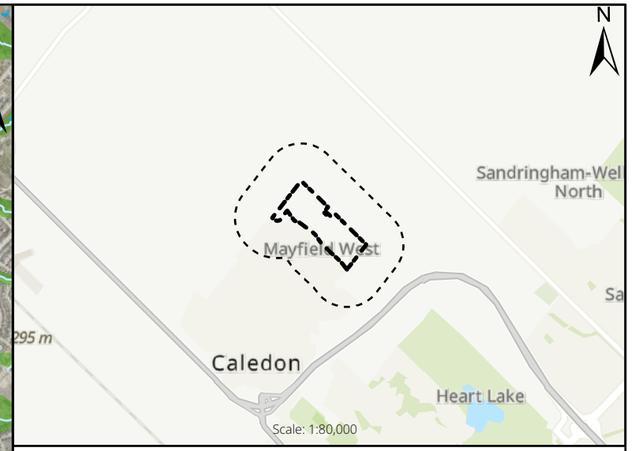
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FIGURES

Prepared By: KaitlynNg





LEGEND

- SITE BOUNDARY
- 500 m STUDY AREA
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- EVALUATED WETLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- CREDIT VALLEY CONSERVATION REGULATION LIMIT
- TRCA REGULATION LIMIT

TITLE

SITE LOCATION PLAN AND NATURAL HERITAGE FEATURES

PROJECT

HYDROGEOLOGICAL INVESTIGATION
12506 HEART LAKE ROAD
CALEDON, ONTARIO

CLIENT

TRIBAL PARTNERS (CANADA) INC. AND
TPI ACQUISITIONS II INC.

PROJECT NO.	DATE	PREPARED BY	APPROVED BY	FIGURE
24-0825	JANUARY 2025	KN	RB	1

C:\Users\KaitlynNg\OneDrive - EnVision Consultants\12. GIS\Projects\2024\24-0825\ARPX\HydroG (Due Diligence)\24-0825 Figure 1 Site Location.aprx

Prepared By: KaitlynNg

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N

LEGEND

- SITE BOUNDARY
- 500 m STUDY AREA
- WATERCOURSE
- WATERBODY
- 5D: GLACIOLACUSTRINE-DERIVED SILTY TO CLAYEY TILL
- 8B: INTERBEDDED FLOW TILL, RAINOUT DEPOSITS AND SILT AND CLAY
- 9C: FORESHORE-BASINAL DEPOSITS
- 19: MODERN ALLUVIAL DEPOSITS
- 20: ORGANIC DEPOSITS

Data Source:
1. Ontario Open Data
2. Ontario Geological Survey 2010. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 128-REV

Scale: 1:15,000
0 150 300 450 600 Metres

TITLE
SURFICIAL GEOLOGY OF THE STUDY AREA

PROJECT
HYDROGEOLOGICAL INVESTIGATION
12506 HEART LAKE ROAD
CALEDON, ONTARIO

CLIENT
TRIBAL PARTNERS (CANADA) INC. AND
TPI ACQUISITIONS II INC.

PROJECT NO.	DATE	PREPARED BY	APPROVED BY	FIGURE
24-0825	DECEMBER 2024	KN	RB	2

Prepared By: KaitlynNg

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LEGEND

- SITE BOUNDARY
- 500 m BUFFER
- WATERBODY
- WATERCOURSE

MECP WATER WELL RECORD

- UNKNOWN
- ABANDONED
- OBSERVATION WELL
- TEST HOLE
- WATER SUPPLY

TITLE

MECP WATER WELL LOCATIONS

PROJECT

HYDROGEOLOGICAL INVESTIGATION
12506 HEART LAKE ROAD
CALEDON, ONTARIO

CLIENT

TRIBAL PARTNERS (CANADA) INC. AND
TPI ACQUISITIONS II INC.

PROJECT NO.	DATE	PREPARED BY	APPROVED BY	FIGURE
24-0825	DECEMBER 2024	KN	RB	3



LEGEND

- SITE BOUNDARY
- UNEVALUATED WETLAND
- WATERBODY
- WATERCOURSE
- BOREHOLE LOCATION
- MONITORING WELL LOCATION

TITLE

BOREHOLE LOCATION PLAN

PROJECT

HYDROGEOLOGICAL INVESTIGATION
12506 HEART LAKE ROAD
CALEDON, ONTARIO

CLIENT

TRIBAL PARTNERS (CANADA) INC. AND
TPI ACQUISITIONS II INC.

PROJECT NO.	DATE	PREPARED BY	APPROVED BY	FIGURE
24-0825	JANUARY 2025	KN	RB	4

Prepared By: TanyaPeterson

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LEGEND

- SITE BOUNDARY
- UNEVALUATED WETLAND
- WATERBODY
- WATERCOURSE
- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- 266.78 GROUNDWATER ELEVATION (DECEMBER 13, 2024)
- GROUNDWATER CONTOURS (mASL)
- INFERRED GROUNDWATER FLOW DIRECTION

TITLE

GROUNDWATER CONTOURS -
DECEMBER 13, 2024

PROJECT

HYDROGEOLOGICAL INVESTIGATION
12506 HEART LAKE ROAD
CALEDON, ONTARIO

CLIENT

TRIBAL PARTNERS (CANADA) INC. AND
TPI ACQUISITIONS II INC.

PROJECT NO.	DATE	PREPARED BY	APPROVED BY	FIGURE
24-0825	JANUARY 2025	TP	RB	5

Prepared By: TanyaPeterson

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APPENDIX A:

MECP Well Records

Well ID	Final Status	Water Use	Easting	Northing	Completion Date	Well Depth (m)
7227271	Abandoned-Other	Unknown	594916	4846722	2014-08-28	Unknown
7227272	Abandoned-Other	Unknown	594940	4846730	2014-08-28	Unknown
7255007	Abandoned-Other	Unknown	595532	4845655	2015-11-26	Unknown
7363648	Abandoned-Other	Unknown	594998	4846375	2020-07-17	Unknown
7209471	Observation Wells	Monitoring	594642	4846801	2013-09-26	6.1
7212523	Observation Wells	Monitoring	594657	4846757	2013-11-19	31.1
7212524	Observation Wells	Monitoring	594826	4846613	2013-11-28	27.4
7212527	Observation Wells	Monitoring	594738	4846669	2013-11-13	20.4
7436581	Observation Wells	Monitoring	593870	4846291	2022-10-28	8.2
7436582	Observation Wells	Monitoring	594065	4846306	2022-10-28	7.6
7175428	Observation Wells	Monitoring and Test Hole	595275	4846187	2011-12-22	7.6
7044576	Observation Wells	Not Used	595757	4845889	2007-05-15	6.1
7133198	Test Hole	Monitoring and Test Hole	593973	4846629	2009-08-17	9.1
4908055	Test Hole	Unknown	594263	4846240	1995-08-26	50.6
4908056	Test Hole	Unknown	594257	4847125	1995-08-28	49.4
7205656	Unknown	Unknown	595192	4845576	2013-07-02	Unknown
7264134	Unknown	Unknown	595285	4845538	2016-05-04	Unknown
7264135	Unknown	Unknown	595167	4845586	2016-05-04	Unknown
7264136	Unknown	Unknown	595340	4845198	2016-05-04	Unknown
7264137	Unknown	Unknown	595290	4845403	2016-05-04	Unknown
7264138	Unknown	Unknown	595173	4845511	2016-05-04	Unknown
7355077	Unknown	Unknown	594762	4846538	Unknown	Unknown
4901246	Water Supply	Domestic	595037	4846374	1966-03-02	17.1
4901347	Water Supply	Domestic	595576	4845952	1965-03-27	54.9
4904112	Water Supply	Domestic	595598	4845747	1973-07-16	53.6
4904365	Water Supply	Domestic	595489	4846085	1974-06-14	27.4
4905018	Water Supply	Domestic	594744	4846796	1976-04-12	9.8
4905019	Water Supply	Domestic	594698	4846851	1976-04-10	10.7
4905884	Water Supply	Domestic	594915	4846623	1981-05-27	20.7
4906627	Water Supply	Domestic	595315	4846371	1987-03-31	50.6
4907458	Water Supply	Domestic	595352	4846326	1990-06-27	61.3
4907461	Water Supply	Domestic	594855	4846597	1990-08-08	52.4
4908728	Water Supply	Domestic	594371	4846107	2000-05-26	53.3
4908885	Water Supply	Domestic	594371	4846107	2001-11-02	44.2
4909538	Water Supply	Domestic	594539	4846869	2004-09-07	56.4
7255653	Water Supply	Domestic	594911	4846421	2015-12-08	53.6
4901239	Water Supply	Livestock	595558	4845671	1965-07-24	39.0
4901243	Water Supply	Livestock	595184	4846190	1961-12-19	16.2
4901245	Water Supply	Livestock	595164	4846070	1966-08-18	39.0
4901346	Water Supply	Livestock	595742	4845878	1962-12-07	54.9
4901351	Water Supply	Livestock	594960	4846780	1967-08-22	12.2
4903503	Water Supply	Livestock	594315	4846773	1970-11-05	15.2
4905881	Water Supply	Livestock	595315	4846373	1981-11-20	55.2

APPENDIX B:

Borehole Logs

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-1

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-21-2024 to Nov-21-2024
COMPILED BY FL
BH LOCATION: N 4846386 E 594469
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	CGD (ppm) 40 80 120 160	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
271.9	Ground Surface												
0.0 / 271.6	**TOPSOIL:** 300mm		1A	SS	8								
0.3 / 271.1	**SILTY SAND:** trace clay, trace rootlets, brown, moist, loose. (weathered/disturbed)		1B	SS									
0.8 / 270.9	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace rootlets, brown, moist, stiff. (disturbed)		2	SS	14		271						
1.0	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, stiff to very stiff.		3	SS	11		270						
							Bentonite						
			4	SS	27					CL			4 27 45 24
	grey below 3.1m		5	SS	26		269						
							268						
							Sand						
	occasional oxidized		6	SS	20		267						Auger grinding
							266						
	sand seams below 6.1m						Screen						
			7	SS	19		W. L. 265.4 m Dec 17, 2024						
							265						
264.7													
7.2	**SANDY SILT TILL:** trace to some clay, trace gravel, with silt seams, grey, wet, compact.												
			8	SS	26		Bentonite						3 21 66 10
263.7													
8.2	**END OF BOREHOLE**												

Notes:
1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 4.57m to 7.62m.

Ground Water Measurement in Well:

Date	W.L. Depth (mbgs)
Dec. 13, 2024	6.25
Dec. 17, 2024	6.46

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon_f=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-2

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-21-2024 to Nov-21-2024
COMPILED BY FL
BH LOCATION: N 4846500 E 594617
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	PID (ppm) 40 80 120 160	CGD (ppm) 40 80 120 160	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
271.5	Ground Surface												
0.0 / 271.2	**TOPSOIL:** 275mm		1A	SS	3								
0.3 / 270.9	**SANDY SILT:** trace clay, trace topsoil/rootlets, dark brown, moist, very loose. (weathered/disturbed)		1B	SS			271						
0.6 / 270.5	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, brown, moist, stiff. (disturbed)		2	SS	14								
1.0	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, stiff to hard.		3	SS	23		270						
			4	SS	25		269						
			5	SS	20		268			CL			Auger grinding 4 36 42 18
	occasional oxidized ---------- grey		6	SS	39		267						
			7	SS	24		266						
			8	SS	26		265						
263.3							264						
8.2	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-3

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-21-2024 to Nov-21-2024
COMPILED BY FL
BH LOCATION: N 4846553 E 594811
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm)	Soil Head Space Vapors CGD (ppm)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT; WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
270.7	Ground Surface							40 80 120 160	40 80 120 160	10 20 30			
0.0 / 270.4	**TOPSOIL:** 275mm		1	SS	7		270						
0.3	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, firm to stiff. (disturbed)												
1 / 269.5	brown below 0.9m		2	SS	13								
1.2	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, stiff to hard.						Bentonite						
2			3	SS	20	▽	269			CL			5 30 44 21
							W. L. 268.8 m Dec 17, 2024						
			4	SS	23		268						
3							Sand						
			5	SS	25								Auger grinding
							267						
4	occasional oxidized ---------- grey		6	SS	19								
							Screen						
			7	SS	34		266						
5													
							265						
6													
			8	SS	30		Bentonite						
264.0							264						
6.7	**END OF BOREHOLE**												

Notes:
1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 3.05m to 6.09m.

Ground Water Measurement in Well:

Date	W.L. Depth (mbgs)
Dec. 04, 2024	3.24
Dec. 13, 2024	2.92
Dec. 17, 2024	1.91

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

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-4

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846311 E 594651
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	Soil Head Space Vapors CGD (ppm) 40 80 120 160	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
271.1	Ground Surface												
270.9 0.0	**TOPSOIL:** 200mm						271						
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, firm to very stiff. (disturbed)		1	SS	5								
1 269.9	silty sand lenses at 1.0m		2A	SS	18								
1.2	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, occasional oxidized, moist, very stiff to hard.		2B	SS			270						
2			3	SS	25								
	sand seams at 2.3m		4	SS	23		269						
3			5	SS	32		268			CL/ML			9 39 37 15
4 267.0													Auger grinding
4.1	**SANDY SILT TILL:** trace gravel, trace to some clay, greyish brown, moist, very dense.		6	SS	61		267						
5 265.5							266						
5.6	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard.												
6			7	SS	32		265						
264.4													
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-5

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846417 E 594783
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION
271.3	Ground Surface						
0.0 / 271.1	**TOPSOIL:** 250mm						
0.3 / 270.8	**SANDY SILT:** trace clay, trace topsoil/rootlets, dark brown, moist, loose. (weathered/disturbed)		1	SS	5		271
0.5 / 270.5	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, brown, moist, firm. (disturbed)		2	SS	24		270
0.8	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, very stiff to hard.		3	SS	23		269
			4	SS	26		268
			5	SS	63		267
	occasional oxidized ---------- grey		6	SS	22		266
265.7							
5.6	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, wet, compact.		7	SS	23		265
264.6							
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling. 1) Groundwater was at a depth of 6.1m during drilling.						

Soil Head Space Vapors: PID (ppm) 40 80 120 160; CGD (ppm) 40 80 120 160

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: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-6

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-19-2024 to Nov-19-2024
COMPILED BY FL
BH LOCATION: N 4846097 E 594835
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	Soil Head Space Vapors CGD (ppm) 40 80 120 160	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
271.0	Ground Surface												
0.0 / 270.8	**TOPSOIL:** 230mm												
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, sandy silt lenses, brown, moist, firm to stiff. (disturbed)		1	SS	6								
1	sandy silt seams /lenses at 1.0m		2	SS	8		270						
269.5													
1.5	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, occasional oxidized, greyish brown, moist, very stiff to hard.		3	SS	20					CL			5 31 46 18
2			4	SS	28		269						
3			5	SS	33		268						
4							267						
5			6	SS	38		266						Auger grinding
6							265						
264.3			7	SS	46								
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon_3}$ ε_3=3% Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-R01 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-7

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846277 E 594864
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
271.1	Ground Surface						
0.0 / 270.9	**TOPSOIL:** 250mm						271
0.3	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff. (disturbed)		1	SS	8		
1 / 270.0			2	SS	12		270
1.1	**CLAYEY SILT TILL/SILTY CLAY TILL:** sandy, trace gravel, greyish brown, moist, stiff to very stiff.					Bentonite	
			3	SS	20		269
			4	SS	23		
						Sand	268
			5	SS	22		
							267
	occasional oxidized					Screen	
	----------						
	contains sand seams, grey		6	SS	14		266
						W. L. 266.0 m Dec 17, 2024	
							265
			7	SS	19	Bentonite	
264.4							
6.7	**END OF BOREHOLE**						

Notes:
1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 3.05m to 6.09m.

Ground Water Measurement in Well:

Date	W.L. Depth (mbgs)
Dec. 13, 2024	4.33
Dec. 17, 2024	5.11

Soil Head Space Vapors: PID (ppm) 40 80 120 160; CGD (ppm) 40 80 120 160

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: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-R01 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-8

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846356 E 595021
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	Soil Head Space Vapors CGD (ppm) 40 80 120 160	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
271.0	Ground Surface												
270.8 0.0	**TOPSOIL:** 180mm												
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff to very stiff. (disturbed)		1	SS	10								
1			2	SS	18		270						
269.5													
1.5	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, occasional oxidized, greyish brown, moist, very stiff to hard.		3	SS	20								Auger grinding
2							269						
			4	SS	24								
3							268						
			5	SS	32								
266.9							267						
4.1	**SANDY SILT TILL:** some gravel, trace to some clay, greyish brown, moist, very dense.												Auger grinding
5			6	SS	80		266			ML			13 33 44 10
265.4													
5.6	**CLAYEY SILT TILL:** sandy, trace gravel, brownish grey to grey, moist, very stiff.												
6							265						
	grey below 6.3m		7	SS	29								
264.3													
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-9

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4845965 E 594956
CHECKED BY MB

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
271.1	Ground Surface				
0.0 / 270.9	**TOPSOIL:** 225mm				271
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff to very stiff. (disturbed)	1	SS	11	
		2	SS	26	270
270.0 / 1.1	**CLAYEY SILT TILL:** sandy, trace gravel, occasional oxidized, brown, moist, very stiff to hard.				Bentonite
		3	SS	27	269
		4	SS	40	Sand
		5	SS	35	268
	sandy silt till lenses at 4.6m				267
		6	SS	53	Screen
					266
		7	SS	29	265
264.4					Bentonite
6.7	**END OF BOREHOLE**				

Notes:
1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 3.05m to 6.09m.

Ground Water Measurement in Well:

Date	W.L. Depth (mbgs)
Dec. 13, 2024	Dry
Dec. 17, 2024	Dry

Soil Head Space Vapors: PID (ppm) 40 80 120 160; CGD (ppm) 40 80 120 160

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
6	44	38	12

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-10

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846225 E 595034
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	Soil Head Space Vapors CGD (ppm) 40 80 120 160	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
271.2	Ground Surface												
0.0 / 271.0	**TOPSOIL:** 250mm												
0.3	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff to very stiff. (disturbed)		1	SS	8		271						
270.2			2	SS	17		270						
1.0	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, occasional oxidized, moist, very stiff.		3	SS	19		269						
			4	SS	25					CL			4 37 40 19
			5	SS	24		268						Auger grinding
267.1													
4.1	**SANDY SILT TILL:** some clay, trace gravel, occasional oxidized, greyish brown, moist, dense.		6	SS	31		267						
							266						
	grey below 6.1m		7	SS	43		265						
264.5													
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon_3}$ ε_3=3% Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-11

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-19-2024 to Nov-19-2024
COMPILED BY FL
BH LOCATION: N 4846166 E 595213
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	PID (ppm) 40 80 120 160	CGD (ppm) 40 80 120 160	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
271.8	Ground Surface												
0.0 / 271.8	**TOPSOIL:** 200mm												
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, firm to very stiff. (disturbed)		1	SS	7								
1 / 270.6	lenses of disturbed sandy silt at 0.5m		2	SS	18		271						
1.2	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, occasional oxidized, moist, hard.		3	SS	32		270						
2	inferred cobble at 2.4m		4	SS	50/ 130mm								Auger grinding
3			5	SS	47		269			CL-ML			Auger grinding 5 41 40 14
4							268						
5 / 266.2			6	SS	35		267						Auger grinding
5.6	**SANDY SILT TILL:** trace clay, trace gravel, greyish brown, moist, very dense.												
6 / 265.5			7	SS	50/ 50mm		266						
6.3	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ .25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-12

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-19-2024 to Nov-19-2024
COMPILED BY FL
BH LOCATION: N 4845866 E 595118
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION
270.5	Ground Surface						
0.0 / 270.2	**TOPSOIL:** 300mm						
0.3	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff to very stiff. (disturbed)		1	SS	8		
	contains sandy silt lenses at 1.2m		2	SS	10		
268.8							
1.7	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, very stiff to hard.		3	SS	20		
			4	SS	22		
			5	SS	32		
	occasional oxidized						
	grey		6	SS	32		
264.9							
5.6	**SILTY CLAY:** trace sand, grey, moist, hard.		7A	SS	32		
264.0							
6.5 / 263.8	**SILTY SAND:** trace clay, grey, wet, dense.		7B	SS			
6.7	**END OF BOREHOLE**						

Notes:
1) Borehole was open upon completion of drilling.
1) Groundwater was at a depth of 6.5m during drilling.

Soil Head Space Vapors: PID (ppm) 40 80 120 160; CGD (ppm) 40 80 120 160

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: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-13

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-20-2024 to Nov-20-2024
COMPILED BY FL
BH LOCATION: N 4846045 E 595336
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors: PID (ppm)	Soil Head Space Vapors: CGD (ppm)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
271.5	Ground Surface												
0.0 / 271.2	**FILL:** sand and gravel, trace silt, greyish brown, moist, compact		1A	SS	25								
0.3	**FILL:** silty clay, trace sand, trace organics, stone pieces, dark grey, moist, stiff to very stiff.		1B	SS SS									
270.5			2	SS	11								
1.0	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, stiff to very stiff.		3	SS	17								
			4	SS	24								
			5	SS	21								
	occasional oxidized		6	SS	29					CL			6 34 44 16
	grey		7	SS	18								
			8	SS	27								
264.8													
6.7	**END OF BOREHOLE**												

Notes:
1) Borehole was open upon completion of drilling.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-R01 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-14

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-18-2024 to Nov-18-2024
COMPILED BY FL
BH LOCATION: N 4846049 E 595336
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	PID (ppm)	CGD (ppm)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
272.8	Ground Surface							40 80 120 160	40 80 120 160	10 20 30			
0.0 / 272.6	**TOPSOIL:** 200mm												
0.2	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown to brown, moist, stiff to very stiff. (disturbed)		1	SS	8								
1 / 271.7			2	SS	18		272						
1.1	**SILTY CLAY TILL/CLAYEY SILT TILL:** sandy, trace gravel, trace oxidation, greyish brown, moist, very stiff to hard.		3	SS	22		271						
2			4	SS	28	Bentonite W. L. 270.6 m Dec 17, 2024	270						
3	occasional oxidized --- grey		5	SS	33		269						Wet spoon
4			6	SS	35	Sand	268						
5	contains sandy silt seams at 5.3m		7	SS	31		267						
6 / 266.7			8	SS	53	Screen			270	NP			
6.1 / 265.8	**SILTY SAND:** trace clay, trace gravel, contains clayey silt seams, inferred cobbles, grey, moist to wet, very dense.		9	SS	50/75mm		266						2 50 44 4
7.0	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard.												
8 / 264.6			10	SS	33	Bentonite	265						
8.2	**END OF BOREHOLE** Notes: 1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 4.57m to 7.62m. Ground Water Measurement in Well: Date W.L. Depth (mbgs) Dec. 04, 2024 1.86 Dec. 13, 2024 2.40 Dec. 17, 2024 2.16												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-R01 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-15

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-18-2024 to Nov-18-2024
COMPILED BY FL
BH LOCATION: N 4845761 E 595223
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	PID (ppm)	CGD (ppm)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT (WATER CONTENT %)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
271.3	Ground Surface												
0.0 / 271.1	**TOPSOIL:** 200mm												
0.2 / 270.5	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown, moist, stiff. (disturbed)		1	SS	11		271						
0.8 / 269.8	**SANDY SILT:** trace gravel, trace clay, trace rootlets, clayey silt lenses, brown, moist, compact. (weathered/disturbed)		2	SS	25		270 Bentonite						
1.5 / 268.9	**SANDY SILT TILL:** some clay, trace gravel, brown, moist, compact.		3	SS	20	▽							
			4A	SS			W. L. 269.0 m Dec 17, 2024						
2.4 / 268.1	**SAND AND GRAVEL:** trace silt, inferred cobbles/boulders, brown, wet, dense.		4B	SS	37		Sand						SS4B+SS5A 45 46 (9)
			5A	SS									Wet spoon
3.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional oxidized, greyish brown, moist, hard.		5B	SS	33		268						Auger grinding
			6	SS	51					CL-ML			Auger grinding 7 41 38 14
			7	SS	51		267 Screen						
	brownish grey below 6.1m						266						
			8	SS	42		265 Bentonite						
6.7 / 264.6	**END OF BOREHOLE**												

Notes:
1) 50mm diameter monitoring well was installed upon completion of drilling, screened from 3.05m to 6.09m.

Ground Water Measurement in Well:

Date	W.L. Depth (mbgs)
Dec. 13, 2024	2.29
Dec. 17, 2024	2.27

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

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LOG OF BOREHOLE BH24-16

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-19-2024 to Nov-19-2024
COMPILED BY FL
BH LOCATION: N 4845904 E 595291
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	Soil Head Space Vapors CGD (ppm) 40 80 120 160	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
272.6	Ground Surface												
0.0 / 272.3	**TOPSOIL:** 300mm												
0.3 / 271.6	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, dark brown, moist, firm to very stiff. (disturbed)		1	SS	7		272						
1.0 / 270.3	**CLAYEY SILT TILL/SILTY CLAY TILL:** sandy, trace gravel, greyish brown, moist, very stiff.		2	SS	21								
			3	SS	27		271						
2.3 / 269.6	**SANDY SILT TILL:** some clay, trace gravel, greyish brown, moist, compact.		4	SS	27		270			NP			8 39 43 10
3.1	**CLAYEY SILT TILL/SILTY CLAY TILL:** sandy, trace gravel, greyish brown, moist, very stiff to hard.		5	SS	28		269						
			6	SS	35		268						
	occasional oxidized						267						
	grey		7	SS	47								
265.9							266						
6.7	**END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling.												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

ENVISION CONSULTANTS LTD

LOG OF BOREHOLE BH24-17

PROJECT: Preliminary Geotechnical (Due Diligence) Investigation
REF. NO.: 24-0825
CLIENT: Tribal Partners, (Canada) Inc.
Method: Solid Stem Augers
ENCL NO.:
PROJECT LOCATION: 12506 Heart Lake Road, Caledon, ON.
Diameter: 152mm
ORIGINATED BY AH
DATUM: Geodetic
Date: Nov-18-2024 to Nov-18-2024
COMPILED BY FL
BH LOCATION: N 4845960 E 595422
CHECKED BY MB

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	Soil Head Space Vapors PID (ppm) 40 80 120 160	CGD (ppm) 40 80 120 160	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
272.9	Ground Surface												
0.0 / 272.6	**TOPSOIL:** 300mm		1	SS	6								
0.3 / 271.4	**CLAYEY SILT/SILTY CLAY:** sandy, trace gravel, trace topsoil/rootlets, sandy silt lenses, dark brown to brown, moist, firm to stiff. (disturbed)		2	SS	10		272						
1.5	**CLAYEY SILT TILL/SILTY CLAY TILL:** sandy, trace gravel, trace oxidation, greyish brown, moist, very stiff to hard.		3	SS	19		271						
			4	SS	30		270						
			5	SS	36		269						Auger grinding
	occasional oxidized ---------- grey		6	SS	22		268						Auger grinding
			7A	SS	56		267						
266.4 / 6.5 / 266.2 / 6.7	**SAND:** trace to some gravel, trace clay, grey, wet, very dense. **END OF BOREHOLE** Notes: 1) Borehole was open upon completion of drilling. 1) Groundwater was at a depth of 6.5m during drilling.		7B	SS									

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; $\circ^{\varepsilon=3\%}$ Strain at Failure

ENVISION-SOIL-ROCK-OCTOBER-12-2021.GLB
ENVIRO PID(PPM) AND CGD(PPM)-2016-REV 24-0825 - JAN-07-2025.GPJ 25-1-7

APPENDIX C:

Groundwater Level Monitoring

Table C - 1: Groundwater Level Monitoring

Monitoring Well ID			BH24-1	BH24-3	BH24-7	BH24-9	BH24-14	BH24-15
Installed By			EnVision	EnVision	EnVision	EnVision	EnVision	EnVision
Installation Date			21-Nov-24	21-Nov-24	20-Nov-24	20-Nov-24	18-Nov-24	18-Nov-24
Well Status			Active	Active	Active	Active	Active	Active
Well Inner Diameter		(mm)	50.8	50.8	50.8	50.8	50.8	50.8
Casing Type			Monument	Monument	Monument	Monument	Monument	Monument
Top of Pipe Elevation		(masl)	272.70	271.52	271.97	272.00	273.62	272.05
Ground Surface Elevation		(masl)	271.85	270.68	271.11	271.15	272.75	271.32
		(mbgs)	4.57	3.05	3.05	3.05	4.57	3.05
		(masl)	267.28	267.63	268.06	268.10	268.18	268.27
Screen Length		(m)	3.05	3.05	3.05	3.05	3.05	3.05
Bottom of Screen		(mbgs)	7.62	6.10	6.10	6.10	7.62	6.10
		(masl)	264.23	264.58	265.01	265.05	265.13	265.22
Soil Formation Screened			Silty Clay Till/ Clayey Silt Till Sandy Silt Till	Silty Clay Till/ Clayey Silt Till	Silty Clay Till/ Clayey Silt Till	Silty Clay Till/ Clayey Silt Till Sandy Silt Till	Silty Clay Till/ Clayey Silt Till Sandy Silt Till	Silty Clay Till/ Sandy Silt Till
4-Dec-24	Depth of GW	(mbtoc)		4.08			2.73	
		(mbgs)	-	3.24	-	-	1.86	-
	GW Elevation	(masl)	-	267.44	-	-	270.89	-
13-Dec-24	Depth of GW	(mbtoc)	7.10	3.76	5.19	DRY	3.27	3.02
		(mbgs)	6.25	2.92	4.33	DRY	2.40	2.29
	GW Elevation	(masl)	265.60	267.76	266.78	DRY	270.35	269.03
17-Dec-24	Depth of GW	(mbtoc)	7.31	2.75	5.97	DRY	3.03	3.00
		(mbgs)	6.46	1.91	5.11	DRY	2.16	2.27
	GW Elevation	(masl)	265.39	268.77	266.00	DRY	270.59	269.05

APPENDIX D: *Grain Size Analysis*

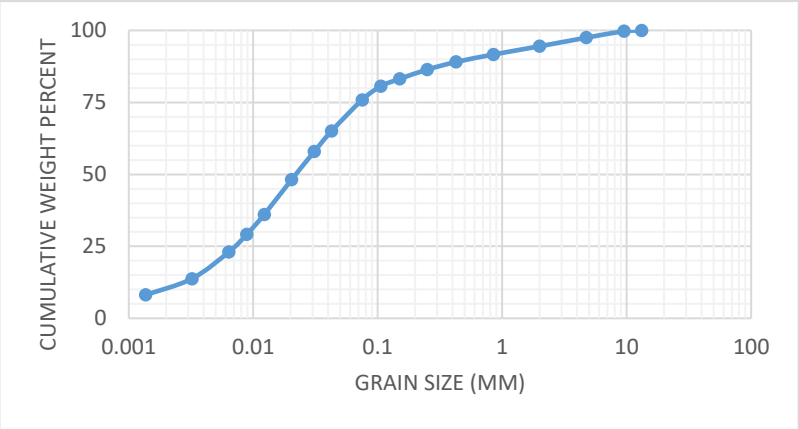
ENVISION CONSULTANTS LTD

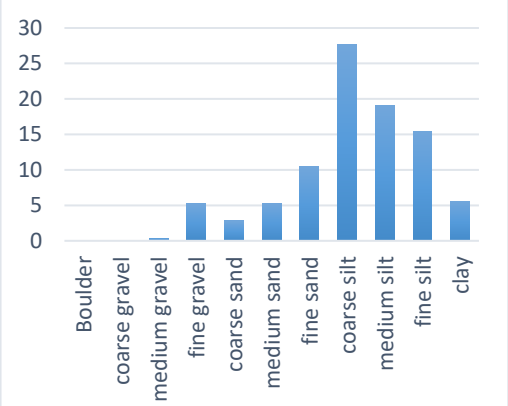
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-1 SS8 Depth: 7.6 to 8.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
13.2	0	0	100
9.5	0.298547	0.002985	99.70145
4.75	2.221282	0.022213	97.48017
2	2.996613	0.029966	94.48356
0.85	2.853403	0.028534	91.63015
0.425	2.607746	0.026077	89.02241
0.25	2.626643	0.026266	86.39577
0.15	3.250234	0.032502	83.14553
0.106	2.532159	0.025322	80.61337
0.075	4.743075	0.047431	75.8703
0.042521	10.84043	0.108404	65.02987
0.030964	7.100579	0.071006	57.92929
0.020334	9.716582	0.097166	48.21271
0.01226	12.14573	0.121457	36.06698
0.008872	6.913722	0.069137	29.15326
0.006383	6.050964	0.06051	23.1023
0.003217	9.342868	0.093429	13.75943
0.001363	5.605721	0.056057	8.153707

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.002	Uniformity Coef.	17.40
d17	0.004	n computed	0.26
d20	0.005	g (cm/s^2)	980.00
d50	0.022	ρ (g/cm^3)	0.9981
d60	0.034	μ (g/cm s)	0.0098
de (Kruger)	0.013	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.008	tau (Sauerbrei)	1.053
de (Zunker)	0.008	$d_{geometric\ mean}$	0.048
de (Zamarin)	0.008	σ_ϕ	3.115
lo (Alyameni)	-0.003		

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	
8 - 16	medium gravel	0.298547367
2 - 8	fine gravel	5.217895018
0.5 - 2	coarse sand	2.85340344
0.25 - 0.5	medium sand	5.234389092
0.063 - 0.25	fine sand	10.52546832
0.016 - 0.063	coarse silt	27.65758678
0.008 - 0.016	medium silt	19.05945
0.002 - 0.008	fine silt	15.39383194
<0.002	clay	5.605720589

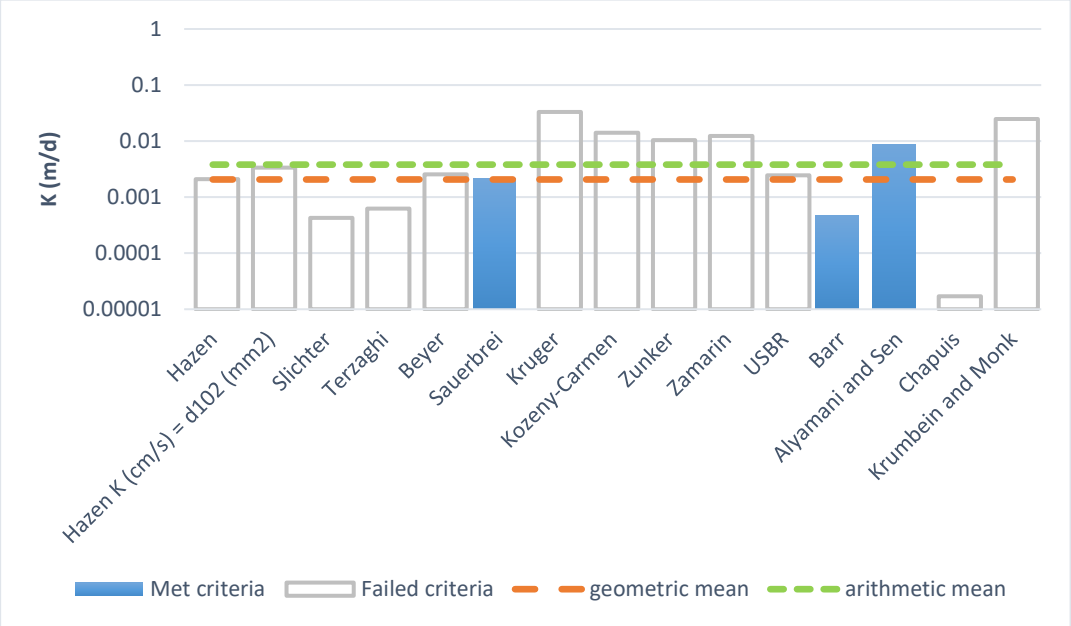
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-1 SS8 Depth: 7.6 to 8.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	2.44E-06	2.44E-08	2.11E-03
Hazen K (cm/s) = d_{10} (mm)	3.89E-06	3.89E-08	3.37E-03
Slichter	4.92E-07	4.92E-09	4.25E-04
Terzaghi	7.27E-07	7.27E-09	6.28E-04
Beyer	2.93E-06	2.93E-08	2.54E-03
Sauerbrei	2.52E-06	2.52E-08	2.17E-03
Kruger	3.82E-05	3.82E-07	3.30E-02
Kozeny-Carmen	1.63E-05	1.63E-07	1.41E-02
Zunker	1.20E-05	1.20E-07	1.04E-02
Zamarin	1.43E-05	1.43E-07	1.24E-02
USBR	2.82E-06	2.82E-08	2.44E-03
Barr	5.36E-07	5.36E-09	4.63E-04
Alyamani and Sen	1.02E-05	1.02E-07	8.77E-03
Chapuis	1.97E-08	1.97E-10	1.70E-05
Krumbein and Monk	2.87E-05	2.87E-07	2.48E-02
geometric mean	2.39E-06	2.39E-08	2.07E-03
arithmetic mean	4.40E-06	4.40E-08	3.80E-03

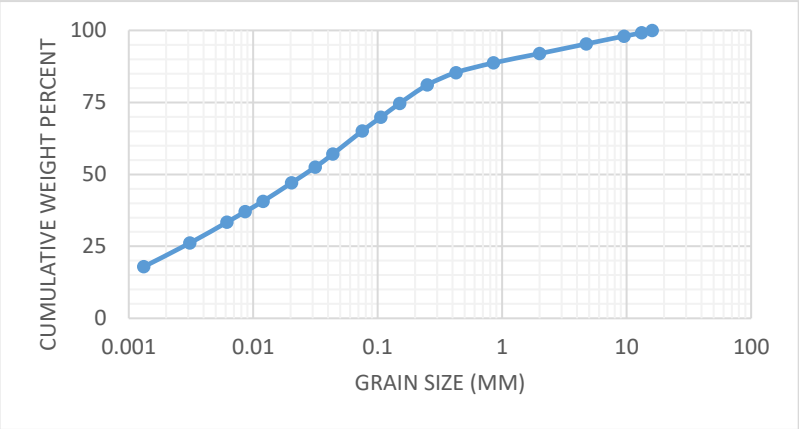
ENVISION CONSULTANTS LTD

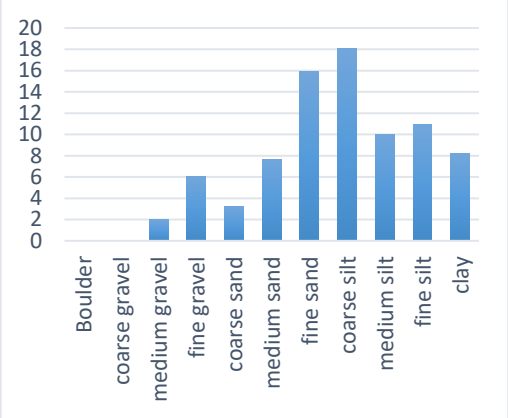
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-3 SS3 Depth: 1.6 to 2.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
16	0	0	100
13.2	0.866743	0.008667	99.13326
9.5	1.148939	0.011489	97.98432
4.75	2.6607	0.026607	95.32362
2	3.374252	0.033743	91.94937
0.85	3.236618	0.032366	88.71275
0.425	3.365347	0.033653	85.3474
0.25	4.32162	0.043216	81.02578
0.15	6.362896	0.063629	74.66289
0.106	4.854927	0.048549	69.80796
0.075	4.726197	0.047262	65.08176
0.043585	8.048448	0.080484	57.03331
0.031396	4.546139	0.045461	52.48717
0.020285	5.455367	0.054554	47.03181
0.011994	6.364594	0.063646	40.66721
0.008593	3.636911	0.036369	37.0303
0.006154	3.636911	0.036369	33.39339
0.00309	7.273822	0.072738	26.11957
0.001322	8.18305	0.081831	17.93652

Effective Grain Diameters (mm)	
d10	0.001
d17	0.001
d20	0.002
d50	0.026
d60	0.055
de (Kruger)	0.014
de (Kozeny)	0.005
de (Zunker)	0.005
de (Zamarin)	0.005
Io (Alyameni)	-0.006

Other Useful Parameters	
Uniformity Coef.	74.85
n computed	0.26
g (cm/s^2)	980.00
ρ (g/cm^3)	0.9981
μ (g/cm s)	0.0098
ρg/μ (1/cm s)	9.9327E+04
tau (Sauerbrei)	1.053
$d_{geometric\ mean}$	0.097
σ_ϕ	4.130

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	0
8 - 16	medium gravel	2.015682006
2 - 8	fine gravel	6.034951926
0.5 - 2	coarse sand	3.236617686
0.25 - 0.5	medium sand	7.686967003
0.063 - 0.25	fine sand	15.94402008
0.016 - 0.063	coarse silt	18.04995385
0.008 - 0.016	medium silt	10.00150563
0.002 - 0.008	fine silt	10.91073341
<0.002	clay	8.18305006

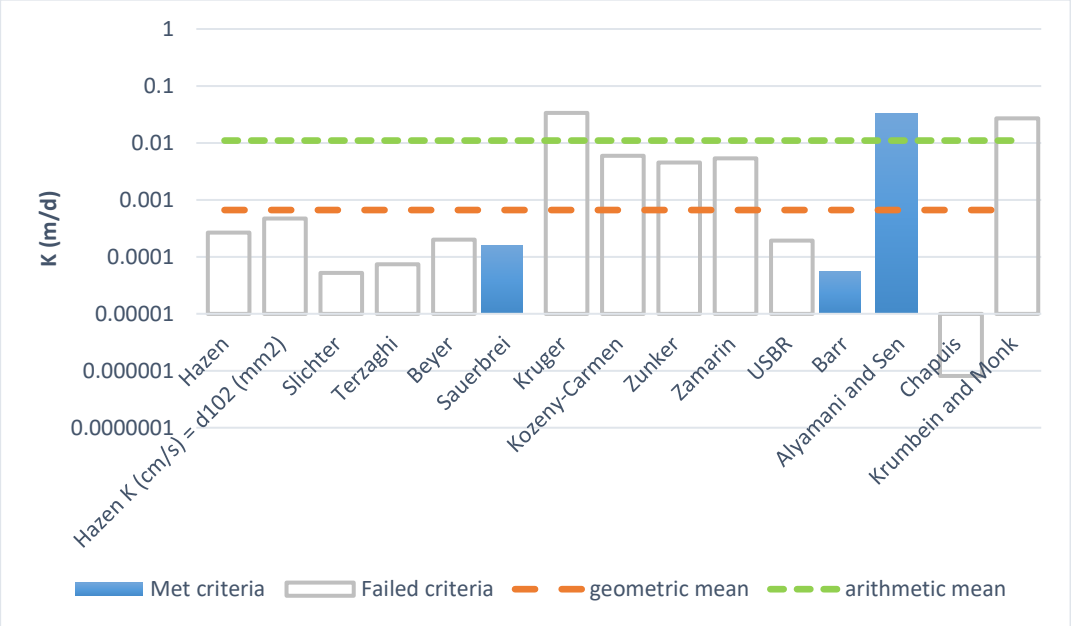
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-3 SS3 Depth: 1.6 to 2.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	3.08E-07	3.08E-09	2.66E-04
Hazen K (cm/s) = d_{10} (mm)	5.43E-07	5.43E-09	4.69E-04
Slichter	6.04E-08	6.04E-10	5.22E-05
Terzaghi	8.62E-08	8.62E-10	7.44E-05
Beyer	2.31E-07	2.31E-09	2.00E-04
Sauerbrei	1.84E-07	1.84E-09	1.59E-04
Kruger	3.90E-05	3.90E-07	3.37E-02
Kozeny-Carmen	6.91E-06	6.91E-08	5.97E-03
Zunker	5.25E-06	5.25E-08	4.53E-03
Zamarin	6.17E-06	6.17E-08	5.33E-03
USBR	2.23E-07	2.23E-09	1.92E-04
Barr	6.48E-08	6.48E-10	5.60E-05
Alyamani and Sen	3.79E-05	3.79E-07	3.28E-02
Chapuis	9.38E-10	9.38E-12	8.11E-07
Krumbein and Monk	3.14E-05	3.14E-07	2.72E-02
geometric mean	7.68E-07	7.68E-09	6.63E-04
arithmetic mean	1.27E-05	1.27E-07	1.10E-02

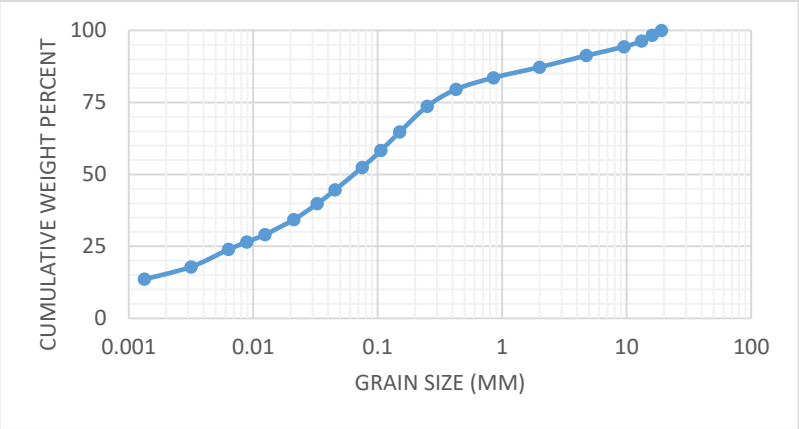
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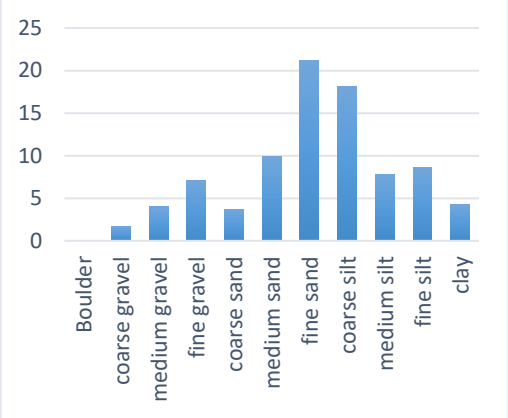
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-4 SS5 Depth: 3.0 to 3.6m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted gravelly sand with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
19	0	0	100
16	1.72202	0.01722	98.27798
13.2	1.96547	0.019655	96.31251
9.5	2.014607	0.020146	94.2979
4.75	3.033078	0.030331	91.26482
2	4.033681	0.040337	87.23114
0.85	3.663708	0.036637	83.56744
0.425	4.064971	0.04065	79.50246
0.25	5.879379	0.058794	73.62309
0.15	8.915023	0.08915	64.70806
0.106	6.455105	0.064551	58.25296
0.075	5.861933	0.058619	52.39102
0.045359	7.772573	0.077726	44.61845
0.032693	4.830405	0.048304	39.78805
0.021116	5.520463	0.055205	34.26758
0.012424	5.175434	0.051754	29.09215
0.008867	2.587717	0.025877	26.50443
0.006327	2.587717	0.025877	23.91672
0.003163	6.038006	0.06038	17.87871
0.001337	4.312862	0.043129	13.56585

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.001	Uniformity Coef.	119.65
d17	0.003	n computed	0.26
d20	0.004	g (cm/s^2)	980.00
d50	0.066	ρ (g/cm^3)	0.9981
d60	0.118	μ (g/cm s)	0.0098
de (Kruger)	0.021	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.007	tau (Sauerbrei)	1.053
de (Zunker)	0.008	$d_{geometric\ mean}$	0.153
de (Zamarin)	0.008	σ_ϕ	4.360
lo (Alyameni)	-0.015		

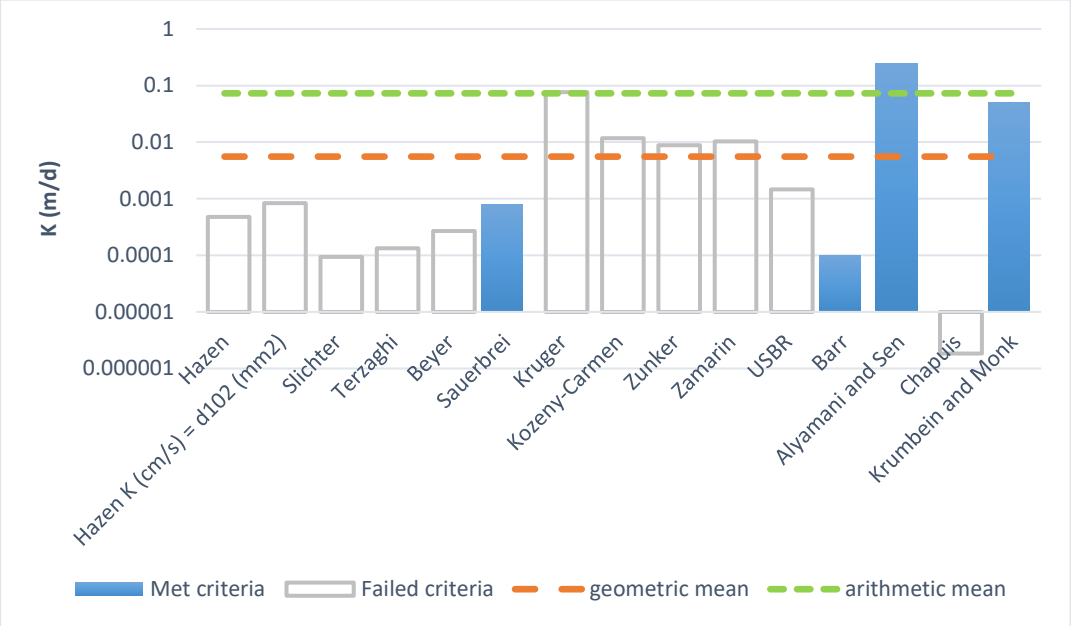
mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	1.722019967
8 - 16	medium gravel	3.980077279
2 - 8	fine gravel	7.066758984
0.5 - 2	coarse sand	3.663708038
0.25 - 0.5	medium sand	9.94435039
0.063 - 0.25	fine sand	21.23206039
0.016 - 0.063	coarse silt	18.1234412
0.008 - 0.016	medium silt	7.763151034
0.002 - 0.008	fine silt	8.625723371
<0.002	clay	4.312861685

K from Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-4 SS5 Depth: 3.0 to 3.6m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted gravelly sand with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	5.50E-07	5.50E-09	4.75E-04
Hazen K (cm/s) = d_{10} (mm)	9.71E-07	9.71E-09	8.39E-04
Slichter	1.08E-07	1.08E-09	9.34E-05
Terzaghi	1.54E-07	1.54E-09	1.33E-04
Beyer	3.12E-07	3.12E-09	2.69E-04
Sauerbrei	9.13E-07	9.13E-09	7.89E-04
Kruger	8.88E-05	8.88E-07	7.67E-02
Kozeny-Carmen	1.36E-05	1.36E-07	1.17E-02
Zunker	1.03E-05	1.03E-07	8.86E-03
Zamarin	1.20E-05	1.20E-07	1.04E-02
USBR	1.70E-06	1.70E-08	1.47E-03
Barr	1.16E-07	1.16E-09	1.00E-04
Alyamani and Sen	2.79E-04	2.79E-06	2.41E-01
Chapuis	2.13E-09	2.13E-11	1.84E-06
Krumbein and Monk	5.79E-05	5.79E-07	5.00E-02
geometric mean	6.43E-06	6.43E-08	5.55E-03
arithmetic mean	8.45E-05	8.45E-07	7.30E-02

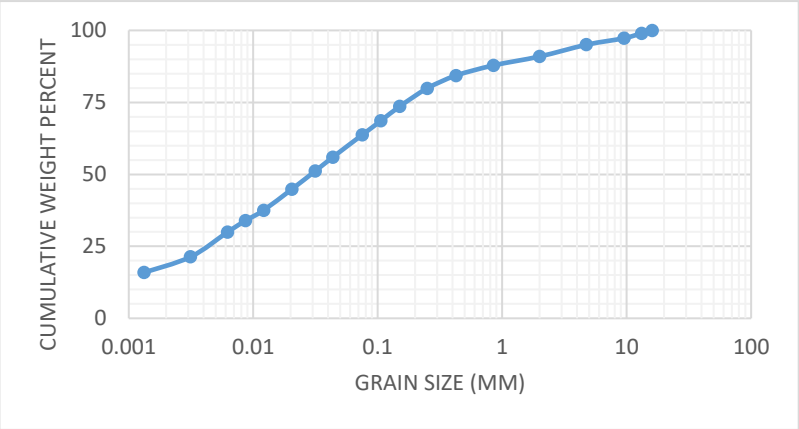
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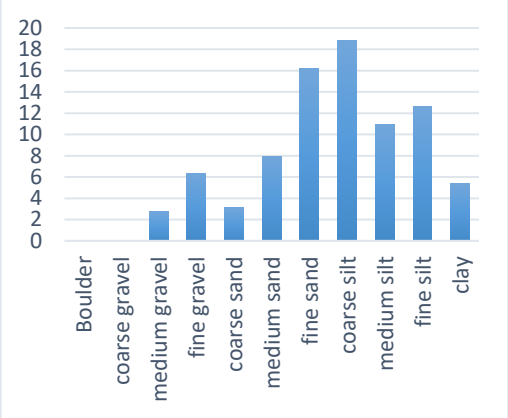
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-6 SS3 Depth: 1.5 to 2.1m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
16	0	0	100
13.2	1.00455	0.010046	98.99545
9.5	1.714549	0.017145	97.2809
4.75	2.259688	0.022597	95.02121
2	4.073154	0.040732	90.94806
0.85	3.110424	0.031104	87.83763
0.425	3.528785	0.035288	84.30885
0.25	4.438265	0.044383	79.87058
0.15	6.275416	0.062754	73.59517
0.106	5.002143	0.050021	68.59303
0.075	4.893006	0.04893	63.70002
0.043579	7.71637	0.077164	55.98365
0.031434	4.856363	0.048564	51.12729
0.020377	6.295285	0.062953	44.832
0.012113	7.305625	0.073056	37.52638
0.008676	3.597306	0.035973	33.92907
0.00622	3.957037	0.03957	29.97203
0.003136	8.633534	0.086335	21.3385
0.001329	5.395959	0.05396	15.94254

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.001	Uniformity Coef.	71.87
d17	0.002	n computed	0.26
d20	0.003	g (cm/s^2)	980.00
d50	0.029	ρ (g/cm^3)	0.9981
d60	0.060	μ (g/cm s)	0.0098
de (Kruger)	0.016	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.006	tau (Sauerbrei)	1.053
de (Zunker)	0.006	$d_{geometric\ mean}$	0.100
de (Zamarin)	0.006	σ_ϕ	4.106
lo (Alyameni)	-0.006		

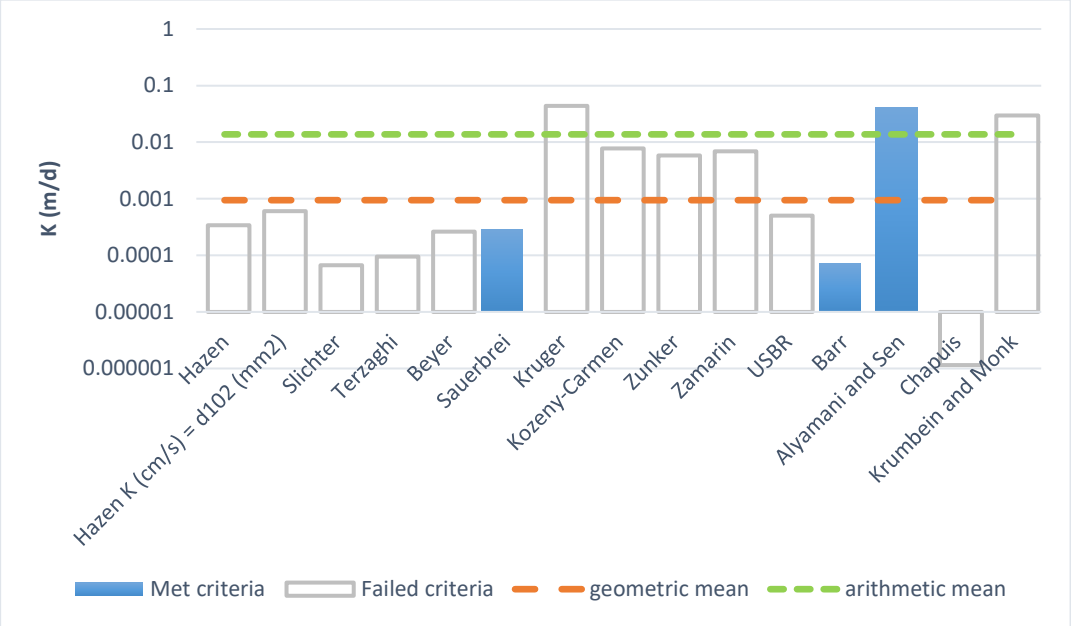
mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	0
8 - 16	medium gravel	2.719099642
2 - 8	fine gravel	6.332842415
0.5 - 2	coarse sand	3.110423582
0.25 - 0.5	medium sand	7.967049876
0.063 - 0.25	fine sand	16.1705647
0.016 - 0.063	coarse silt	18.86801838
0.008 - 0.016	medium silt	10.90293082
0.002 - 0.008	fine silt	12.59057095
<0.002	clay	5.395958978

K from Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-6 SS3 Depth: 1.5 to 2.1m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	3.94E-07	3.94E-09	3.40E-04
Hazen K (cm/s) = d_{10} (mm)	6.95E-07	6.95E-09	6.01E-04
Slichter	7.74E-08	7.74E-10	6.68E-05
Terzaghi	1.10E-07	1.10E-09	9.53E-05
Beyer	3.03E-07	3.03E-09	2.61E-04
Sauerbrei	3.32E-07	3.32E-09	2.87E-04
Kruger	5.10E-05	5.10E-07	4.41E-02
Kozeny-Carmen	8.95E-06	8.95E-08	7.73E-03
Zunker	6.77E-06	6.77E-08	5.85E-03
Zamarin	7.94E-06	7.94E-08	6.86E-03
USBR	5.83E-07	5.83E-09	5.04E-04
Barr	8.29E-08	8.29E-10	7.17E-05
Alyamani and Sen	4.73E-05	4.73E-07	4.08E-02
Chapuis	1.33E-09	1.33E-11	1.15E-06
Krumbein and Monk	3.43E-05	3.43E-07	2.96E-02
geometric mean	1.09E-06	1.09E-08	9.44E-04
arithmetic mean	1.59E-05	1.59E-07	1.37E-02

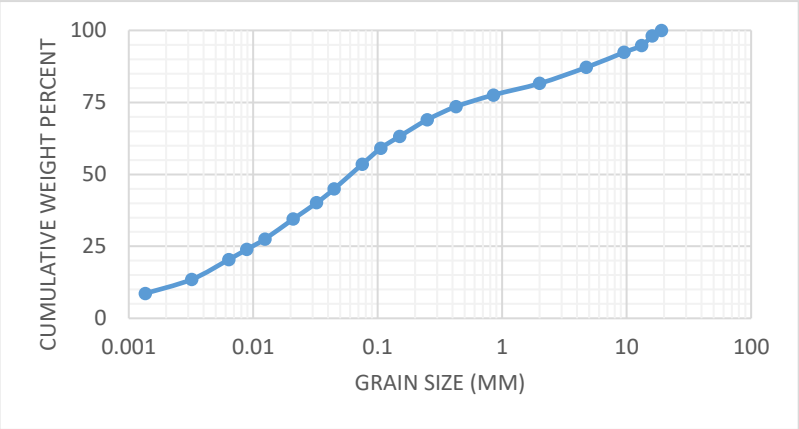
ENVISION CONSULTANTS LTD

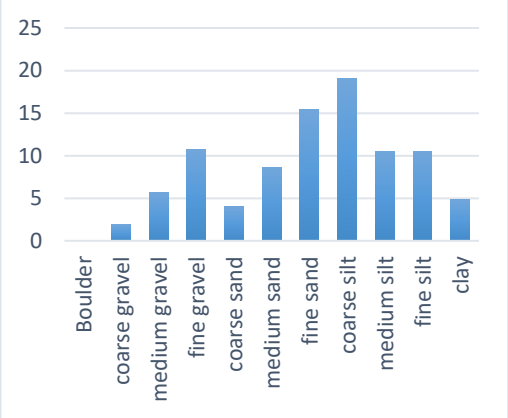
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-8 SS6 Depth: 4.6 to 5.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy gravelly silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
19	0	0	100
16	1.953937	0.019539	98.04606
13.2	3.316351	0.033164	94.72971
9.5	2.366096	0.023661	92.36362
4.75	5.190146	0.051901	87.17347
2	5.592764	0.055928	81.5807
0.85	4.013771	0.040138	77.56693
0.425	4.046403	0.040464	73.52053
0.25	4.568519	0.045685	68.95201
0.15	5.743282	0.057433	63.20873
0.106	4.111668	0.041117	59.09706
0.075	5.58012	0.055801	53.51694
0.044722	8.561877	0.085619	44.95507
0.032296	4.840193	0.048402	40.11487
0.020911	5.646892	0.056469	34.46798
0.012409	6.93761	0.069376	27.53037
0.008894	3.549475	0.035495	23.9809
0.006372	3.549475	0.035495	20.43142
0.0032	6.93761	0.069376	13.49381
0.001355	4.840193	0.048402	8.653619

Effective Grain Diameters (mm)	
d10	0.002
d17	0.005
d20	0.006
d50	0.063
d60	0.116
de (Kruger)	0.018
de (Kozeny)	0.009
de (Zunker)	0.009
de (Zamarin)	0.009
Io (Alyameni)	-0.013

Other Useful Parameters	
Uniformity Coef.	61.91
n computed	0.26
g (cm/s^2)	980.00
ρ (g/cm^3)	0.9981
μ (g/cm s)	0.0098
ρg/μ (1/cm s)	9.9327E+04
tau (Sauerbrei)	1.053
$d_{geometric\ mean}$	0.147
σ_ϕ	4.511

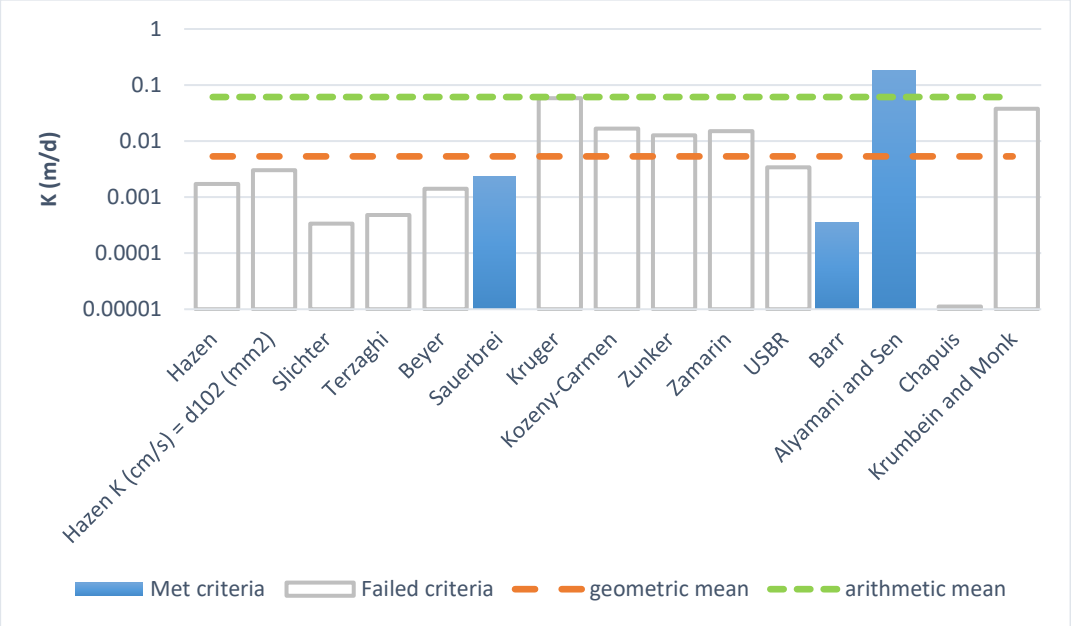
mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	1.953937451
8 - 16	medium gravel	5.682447001
2 - 8	fine gravel	10.78291068
0.5 - 2	coarse sand	4.013770679
0.25 - 0.5	medium sand	8.614922434
0.063 - 0.25	fine sand	15.43506936
0.016 - 0.063	coarse silt	19.0489613
0.008 - 0.016	medium silt	10.48708444
0.002 - 0.008	fine silt	10.48708444
<0.002	clay	4.840192818

K from Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-8 SS6 Depth: 4.6 to 5.2m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy gravelly silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	1.98E-06	1.98E-08	1.71E-03
Hazen K (cm/s) = d_{10} (mm)	3.49E-06	3.49E-08	3.02E-03
Slichter	3.88E-07	3.88E-09	3.36E-04
Terzaghi	5.54E-07	5.54E-09	4.78E-04
Beyer	1.64E-06	1.64E-08	1.41E-03
Sauerbrei	2.70E-06	2.70E-08	2.34E-03
Kruger	6.76E-05	6.76E-07	5.84E-02
Kozeny-Carmen	1.93E-05	1.93E-07	1.67E-02
Zunker	1.48E-05	1.48E-07	1.28E-02
Zamarin	1.75E-05	1.75E-07	1.51E-02
USBR	3.95E-06	3.95E-08	3.41E-03
Barr	4.16E-07	4.16E-09	3.60E-04
Alyamani and Sen	2.09E-04	2.09E-06	1.81E-01
Chapuis	1.29E-08	1.29E-10	1.11E-05
Krumbein and Monk	4.39E-05	4.39E-07	3.79E-02
geometric mean	6.17E-06	6.17E-08	5.33E-03
arithmetic mean	7.07E-05	7.07E-07	6.11E-02

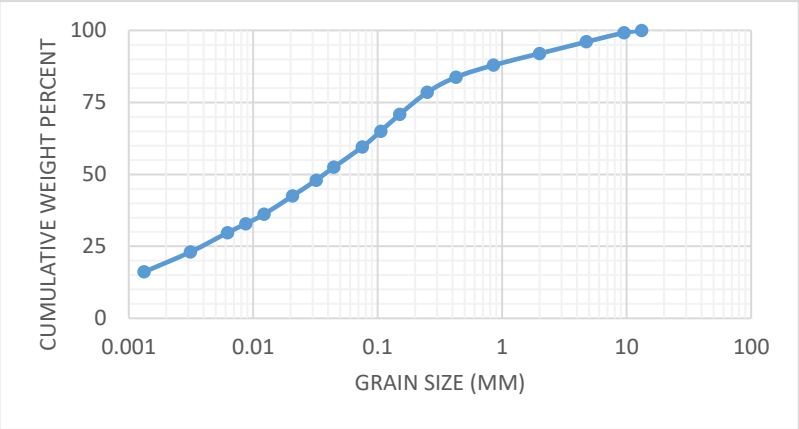
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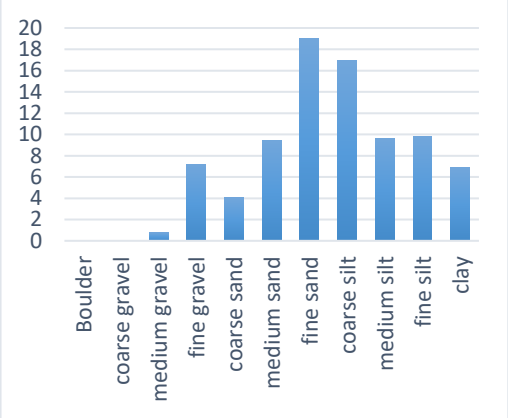
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-10 SS4 Depth: 2.3 to 2.9m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
13.2	0	0	100
9.5	0.816536	0.008165	99.18346
4.75	3.165449	0.031654	96.01802
2	4.046063	0.040461	91.97195
0.85	4.06516	0.040652	87.90679
0.425	4.157132	0.041571	83.74966
0.25	5.27919	0.052792	78.47047
0.15	7.652066	0.076521	70.8184
0.106	5.812627	0.058126	65.00578
0.075	5.536712	0.055367	59.46906
0.0444	6.968997	0.06969	52.50007
0.031961	4.547256	0.045473	47.95281
0.020635	5.456707	0.054567	42.4961
0.012191	6.366158	0.063662	36.12995
0.00872	3.274024	0.03274	32.85592
0.006231	3.092134	0.030921	29.76379
0.003122	6.729938	0.067299	23.03385
0.001329	6.911829	0.069118	16.12202

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.001	Uniformity Coef.	94.56
d17	0.002	n computed	0.26
d20	0.002	g (cm/s^2)	980.00
d50	0.038	ρ (g/cm^3)	0.9981
d60	0.078	μ (g/cm s)	0.0098
de (Kruger)	0.016	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.006	tau (Sauerbrei)	1.053
de (Zunker)	0.006	$d_{geometric\ mean}$	0.108
de (Zamarin)	0.006	σ_ϕ	4.114
lo (Alyameni)	-0.008		

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	
8 - 16	medium gravel	0.816535765
2 - 8	fine gravel	7.211512056
0.5 - 2	coarse sand	4.065160286
0.25 - 0.5	medium sand	9.436322294
0.063 - 0.25	fine sand	19.00140532
0.016 - 0.063	coarse silt	16.97295973
0.008 - 0.016	medium silt	9.640181913
0.002 - 0.008	fine silt	9.822072137
<0.002	clay	6.911828541

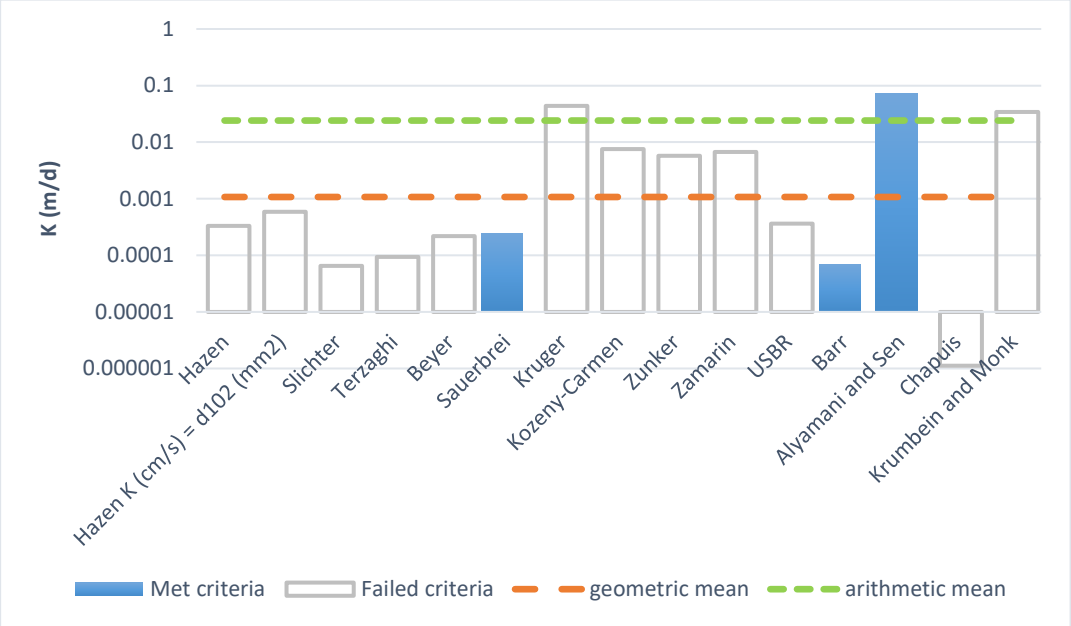
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-10 SS4 Depth: 2.3 to 2.9m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	3.85E-07	3.85E-09	3.33E-04
Hazen K (cm/s) = d_{10} (mm)	6.80E-07	6.80E-09	5.87E-04
Slichter	7.57E-08	7.57E-10	6.54E-05
Terzaghi	1.08E-07	1.08E-09	9.32E-05
Beyer	2.54E-07	2.54E-09	2.19E-04
Sauerbrei	2.84E-07	2.84E-09	2.45E-04
Kruger	5.04E-05	5.04E-07	4.36E-02
Kozeny-Carmen	8.72E-06	8.72E-08	7.53E-03
Zunker	6.62E-06	6.62E-08	5.72E-03
Zamarin	7.77E-06	7.77E-08	6.72E-03
USBR	4.22E-07	4.22E-09	3.65E-04
Barr	8.11E-08	8.11E-10	7.01E-05
Alyamani and Sen	8.33E-05	8.33E-07	7.20E-02
Chapuis	1.29E-09	1.29E-11	1.11E-06
Krumbein and Monk	3.93E-05	3.93E-07	3.40E-02
geometric mean	1.24E-06	1.24E-08	1.07E-03
arithmetic mean	2.79E-05	2.79E-07	2.41E-02

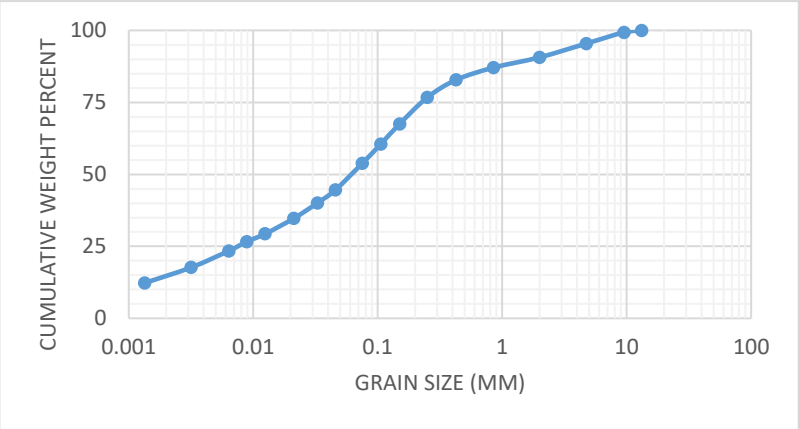
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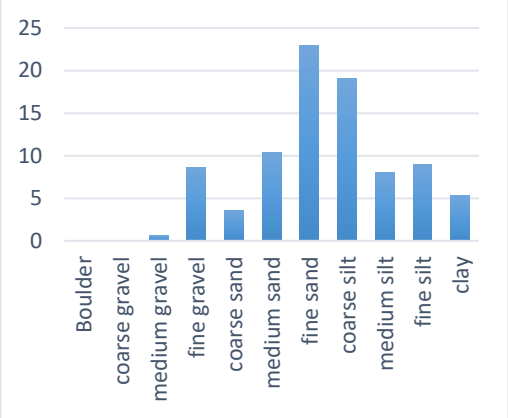
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-11 SS5 Depth: 3.0 to 3.6m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
13.2	0	0	100
9.5	0.679076	0.006791	99.32092
4.75	3.870545	0.038705	95.45038
2	4.800299	0.048003	90.65008
0.85	3.589743	0.035897	87.06034
0.425	4.260554	0.042606	82.79978
0.25	6.109815	0.061098	76.68997
0.15	9.155658	0.091557	67.53431
0.106	6.998186	0.069982	60.53612
0.075	6.744366	0.067444	53.79176
0.045674	9.217291	0.092173	44.57447
0.032846	4.4819	0.044819	40.09257
0.021184	5.37828	0.053783	34.71429
0.012463	5.37828	0.053783	29.33601
0.008894	2.68914	0.026891	26.64687
0.006357	3.226968	0.03227	23.4199
0.003173	5.736832	0.057368	17.68307
0.001344	5.37828	0.053783	12.30479

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.001	Uniformity Coef.	94.77
d17	0.003	n computed	0.26
d20	0.004	g (cm/s^2)	980.00
d50	0.063	ρ (g/cm^3)	0.9981
d60	0.104	μ (g/cm s)	0.0098
de (Kruger)	0.019	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.008	tau (Sauerbrei)	1.053
de (Zunker)	0.008	$d_{geometric\ mean}$	0.117
de (Zamarin)	0.008	σ_ϕ	3.898
lo (Alyameni)	-0.014		

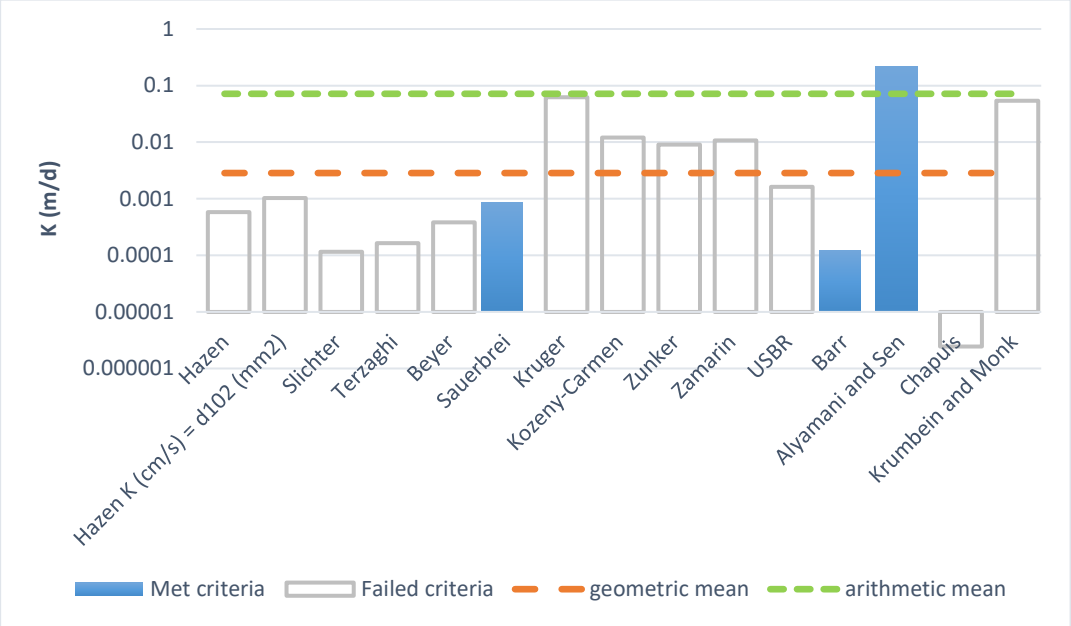
mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	
8 - 16	medium gravel	0.679075858
2 - 8	fine gravel	8.670844636
0.5 - 2	coarse sand	3.589743148
0.25 - 0.5	medium sand	10.3703691
0.063 - 0.25	fine sand	22.89821008
0.016 - 0.063	coarse silt	19.07747041
0.008 - 0.016	medium silt	8.067419823
0.002 - 0.008	fine silt	8.963799803
<0.002	clay	5.378279882

K from Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-11 SS5 Depth: 3.0 to 3.6m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	6.76E-07	6.76E-09	5.84E-04
Hazen K (cm/s) = d_{10} (mm)	1.19E-06	1.19E-08	1.03E-03
Slichter	1.33E-07	1.33E-09	1.15E-04
Terzaghi	1.89E-07	1.89E-09	1.64E-04
Beyer	4.45E-07	4.45E-09	3.85E-04
Sauerbrei	1.01E-06	1.01E-08	8.75E-04
Kruger	7.20E-05	7.20E-07	6.22E-02
Kozeny-Carmen	1.39E-05	1.39E-07	1.20E-02
Zunker	1.05E-05	1.05E-07	9.10E-03
Zamarin	1.24E-05	1.24E-07	1.07E-02
USBR	1.87E-06	1.87E-08	1.61E-03
Barr	1.42E-07	1.42E-09	1.23E-04
Alyamani and Sen	2.47E-04	2.47E-06	2.14E-01
Chapuis	2.84E-09	2.84E-11	2.46E-06
Krumbein and Monk	6.22E-05	6.22E-07	5.37E-02
geometric mean	3.29E-06	3.29E-08	2.84E-03
arithmetic mean	8.28E-05	8.28E-07	7.16E-02

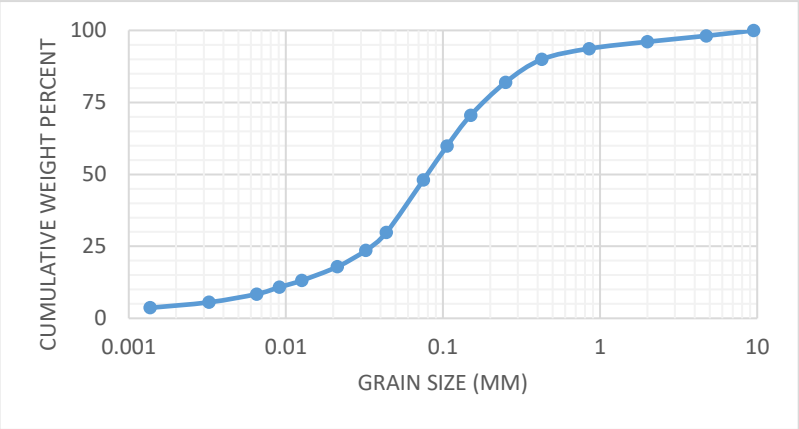
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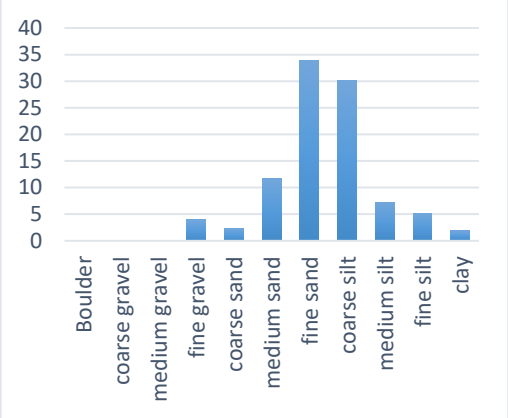
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-14 SS9 Depth: 6.1 to 6.3m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sand low in fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
9.5	0	0	100
4.75	1.891208	0.018912	98.10879
2	2.053584	0.020536	96.05521
0.85	2.391775	0.023918	93.66343
0.425	3.736548	0.037365	89.92689
0.25	7.962977	0.07963	81.96391
0.15	11.44978	0.114498	70.51413
0.106	10.68134	0.106813	59.83279
0.075	11.78597	0.11786	48.04682
0.043585	18.2568	0.182568	29.79002
0.032296	6.173881	0.061739	23.61614
0.021252	5.698967	0.05699	17.91717
0.012653	4.749139	0.047491	13.16803
0.00908	2.374569	0.023746	10.79346
0.006513	2.374569	0.023746	8.418894
0.003244	2.849483	0.028495	5.56941
0.001366	1.899656	0.018997	3.669755

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.008	Uniformity Coef.	12.98
d17	0.020	n computed	0.28
d20	0.025	g (cm/s^2)	980.00
d50	0.080	ρ (g/cm^3)	0.9981
d60	0.107	μ (g/cm s)	0.0098
de (Kruger)	0.031	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.017	tau (Sauerbrei)	1.053
de (Zunker)	0.018	$d_{geometric\ mean}$	0.095
de (Zamarin)	0.018	σ_ϕ	2.395
lo (Alyameni)	-0.010		

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	
8 - 16	medium gravel	0
2 - 8	fine gravel	3.944792015
0.5 - 2	coarse sand	2.391774679
0.25 - 0.5	medium sand	11.69952433
0.063 - 0.25	fine sand	33.91709394
0.016 - 0.063	coarse silt	30.12964338
0.008 - 0.016	medium silt	7.123708488
0.002 - 0.008	fine silt	5.224052891
<0.002	clay	1.899655597

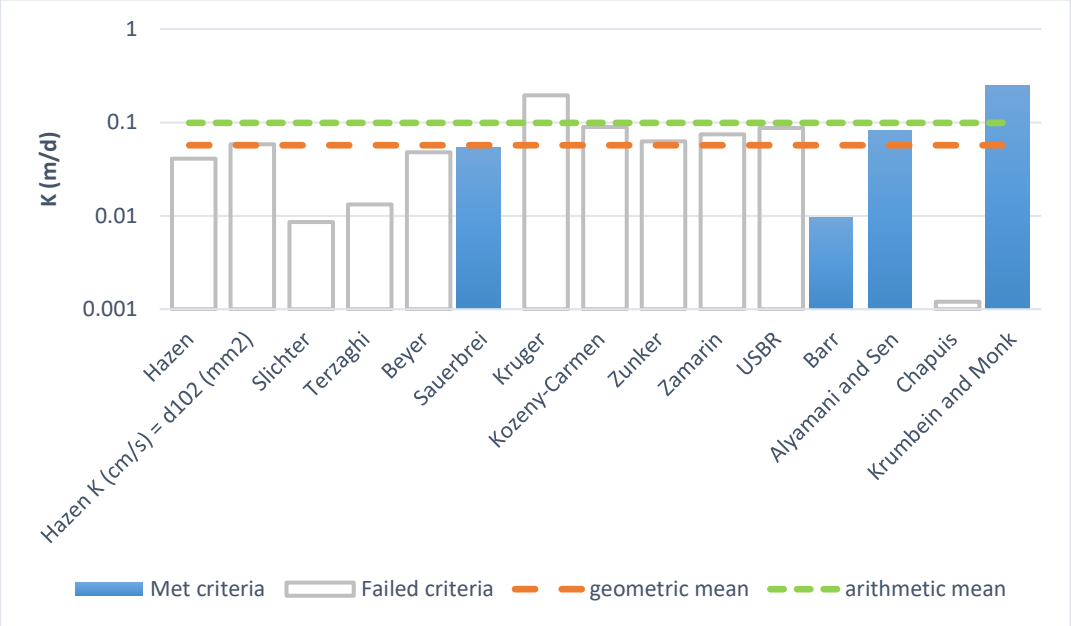
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-14 SS9 Depth: 6.1 to 6.3m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	4.74E-05	4.74E-07	4.10E-02
Hazen K (cm/s) = d_{10} (mm)	6.76E-05	6.76E-07	5.84E-02
Slichter	9.96E-06	9.96E-08	8.60E-03
Terzaghi	1.53E-05	1.53E-07	1.32E-02
Beyer	5.54E-05	5.54E-07	4.78E-02
Sauerbrei	6.18E-05	6.18E-07	5.34E-02
Kruger	2.25E-04	2.25E-06	1.94E-01
Kozeny-Carmen	1.03E-04	1.03E-06	8.94E-02
Zunker	7.23E-05	7.23E-07	6.25E-02
Zamarin	8.59E-05	8.59E-07	7.42E-02
USBR	1.01E-04	1.01E-06	8.74E-02
Barr	1.11E-05	1.11E-07	9.58E-03
Alyamani and Sen	9.53E-05	9.53E-07	8.24E-02
Chapuis	1.39E-06	1.39E-08	1.20E-03
Krumbein and Monk	2.89E-04	2.89E-06	2.50E-01
geometric mean	6.59E-05	6.59E-07	5.70E-02
arithmetic mean	1.14E-04	1.14E-06	9.88E-02

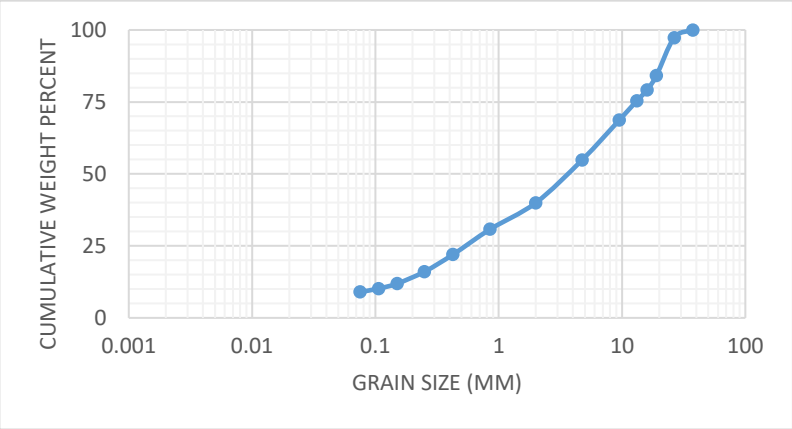
ENVISION CONSULTANTS LTD

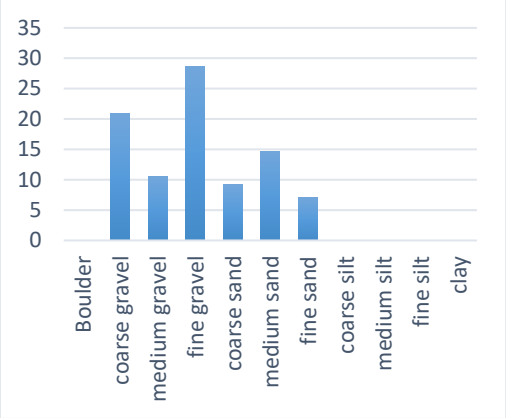
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-15 SS4B+5A Depth: 2.4 to 3.3m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy gravel low in fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
37.5	0	0	100
26.5	2.673127	0.026731	97.32687
19	13.17684	0.131768	84.15003
16	4.981205	0.049812	79.16882
13.2	3.740707	0.037407	75.42812
9.5	6.728761	0.067288	68.69936
4.75	13.83092	0.138309	54.86843
2	14.88765	0.148876	39.98079
0.85	9.215571	0.092156	30.76522
0.425	8.775783	0.087758	21.98943
0.25	5.937147	0.059371	16.05229
0.15	4.146008	0.04146	11.90628
0.106	1.735166	0.017352	10.17111
0.075	1.183431	0.011834	8.987681

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0.102	Uniformity Coef.	64.15
d17	0.278	n computed	0.26
d20	0.366	g (cm/s^2)	980.00
d50	3.851	ρ (g/cm^3)	0.9981
d60	6.512	μ (g/cm s)	0.0098
de (Kruger)	1.071	ρg/μ (1/cm s)	9.9327E+04
de (Kozeny)	0.991	tau (Sauerbrei)	1.053
de (Zunker)	1.017	$d_{geometric\ mean}$	3.061
de (Zamarin)	1.044	σ_ϕ	2.962
Io (Alyameni)	-0.836		

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	20.83117534
8 - 16	medium gravel	10.46946788
2 - 8	fine gravel	28.71856988
0.5 - 2	coarse sand	9.215571381
0.25 - 0.5	medium sand	14.71292958
0.063 - 0.25	fine sand	7.064605046
0.016 - 0.063	coarse silt	
0.008 - 0.016	medium silt	
0.002 - 0.008	fine silt	
<0.002	clay	

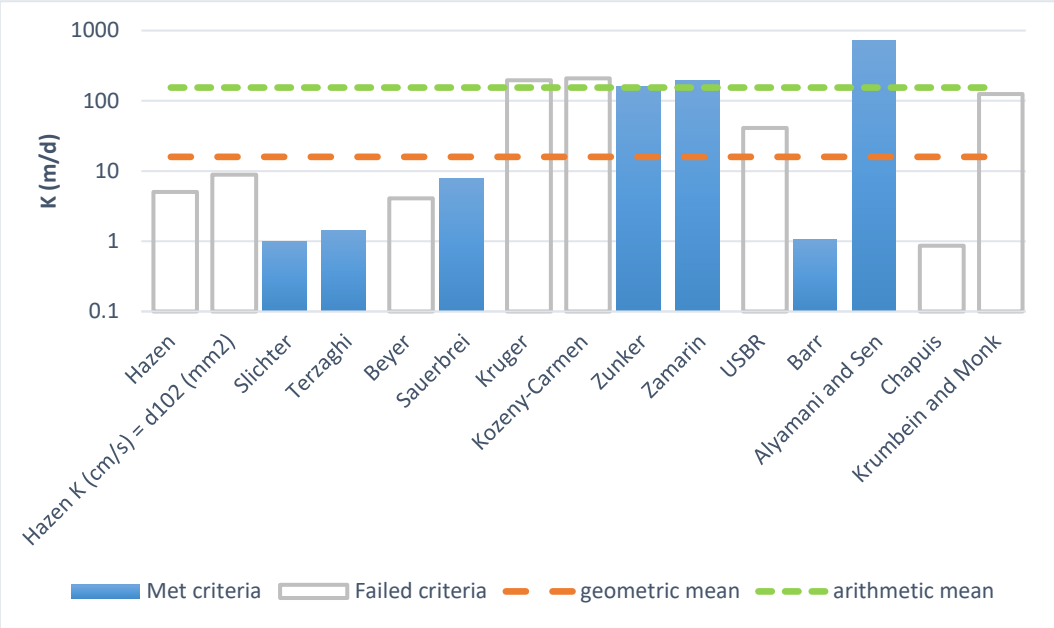
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-15 SS4B+5A Depth: 2.4 to 3.3m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted sandy gravel low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	5.83E-03	5.83E-05	5.04E+00
Hazen K (cm/s) = d_{10} (mm)	1.03E-02	1.03E-04	8.90E+00
Slichter	1.15E-03	1.15E-05	9.91E-01
Terzaghi	1.63E-03	1.63E-05	1.41E+00
Beyer	4.75E-03	4.75E-05	4.10E+00
Sauerbrei	9.05E-03	9.05E-05	7.82E+00
Kruger	2.28E-01	2.28E-03	1.97E+02
Kozeny-Carmen	2.42E-01	2.42E-03	2.09E+02
Zunker	1.87E-01	1.87E-03	1.61E+02
Zamarin	2.23E-01	2.23E-03	1.93E+02
USBR	4.73E-02	4.73E-04	4.09E+01
Barr	1.23E-03	1.23E-05	1.06E+00
Alyamani and Sen	8.29E-01	8.29E-03	7.16E+02
Chapuis	9.98E-04	9.98E-06	8.63E-01
Krumbein and Monk	1.44E-01	1.44E-03	1.25E+02
geometric mean	1.84E-02	1.84E-04	1.59E+01
arithmetic mean	1.79E-01	1.79E-03	1.54E+02

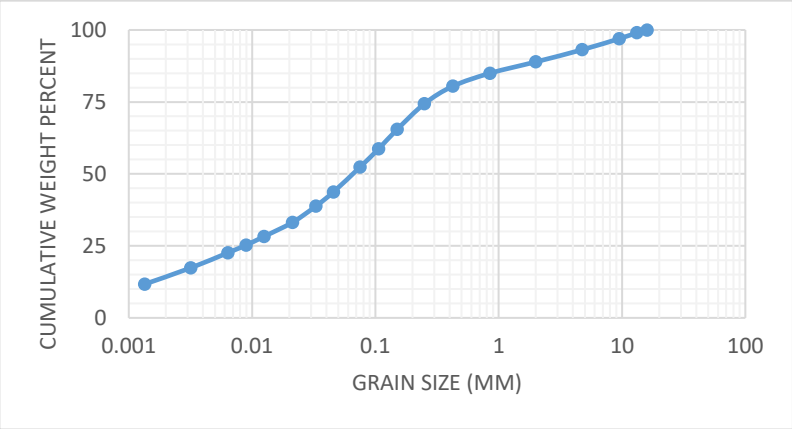
ENVISION CONSULTANTS LTD

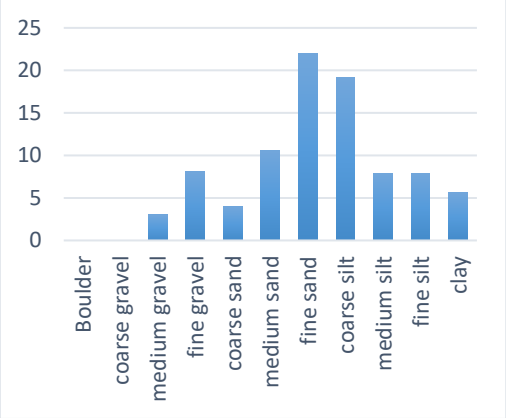
Grain Size Analysis Report Date: 2024-12-29

Sample Name: BH24-15 SS6 Depth: 3.8 to 4.4m

Mass Sample (g): 50 T (oC) 21.5

Poorly sorted gravelly sand with fines





Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
16	0	0	100
13.2	0.989047	0.00989	99.01095
9.5	2.027547	0.020275	96.98341
4.75	3.846295	0.038463	93.13711
2	4.208945	0.042089	88.92817
0.85	3.948411	0.039484	84.97976
0.425	4.499765	0.044998	80.47999
0.25	6.082687	0.060827	74.3973
0.15	8.946173	0.089462	65.45113
0.106	6.776326	0.067763	58.6748
0.075	6.3139	0.063139	52.3609
0.045674	8.633137	0.086331	43.72777
0.032912	4.924377	0.049244	38.80339
0.021252	5.62786	0.056279	33.17553
0.012486	4.924377	0.049244	28.25115
0.00892	2.989801	0.029898	25.26135
0.006364	2.638059	0.026381	22.62329
0.003173	5.276119	0.052761	17.34717
0.001346	5.62786	0.056279	11.71931

Effective Grain Diameters (mm)	
d10	0.001
d17	0.003
d20	0.005
d50	0.067
d60	0.115
de (Kruger)	0.019
de (Kozeny)	0.008
de (Zunker)	0.008
de (Zamarin)	0.008
Io (Alyameni)	-0.015

Other Useful Parameters	
Uniformity Coef.	99.80
n computed	0.26
g (cm/s^2)	980.00
ρ (g/cm^3)	0.9981
μ (g/cm s)	0.0098
ρg/μ (1/cm s)	9.9327E+04
tau (Sauerbrei)	1.053
$d_{geometric\ mean}$	0.131
σ_ϕ	4.087

mm	0	% in sample
>64	Boulder	
16 - 64	coarse gravel	0
8 - 16	medium gravel	3.016594014
2 - 8	fine gravel	8.055240119
0.5 - 2	coarse sand	3.948410564
0.25 - 0.5	medium sand	10.58245174
0.063 - 0.25	fine sand	22.0363995
0.016 - 0.063	coarse silt	19.18537415
0.008 - 0.016	medium silt	7.914177815
0.002 - 0.008	fine silt	7.914177815
<0.002	clay	5.627859779

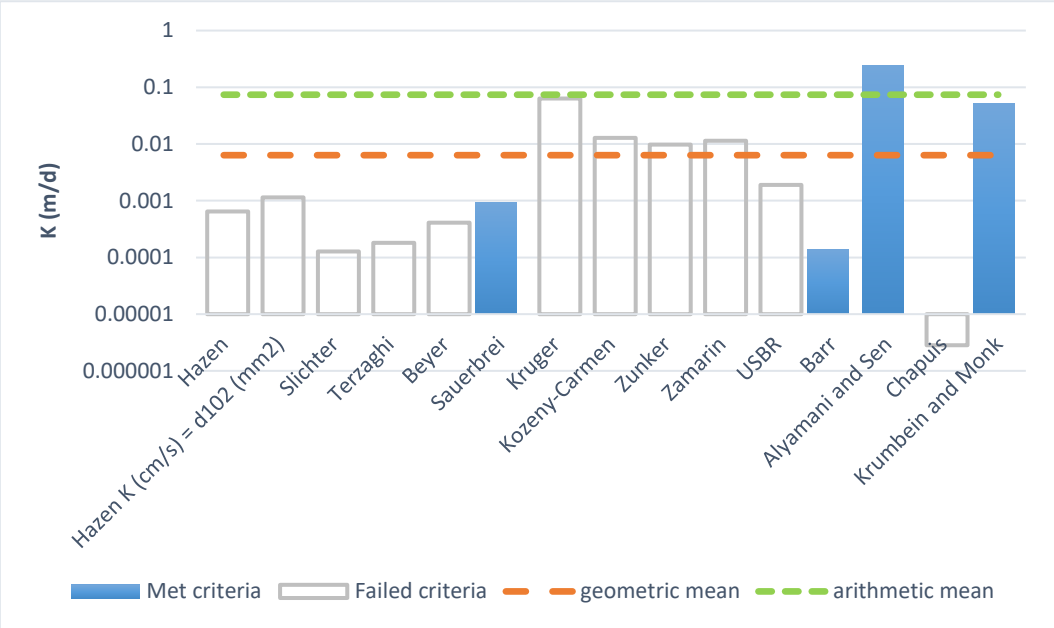
K from Grain Size Analysis Report Date: 2024-12-29

ENVISION CONSULTANTS LTD

Sample Name: BH24-15 SS6 Depth: 3.8 to 4.4m

Mass Sample (g): 50 T (oC) 21.5

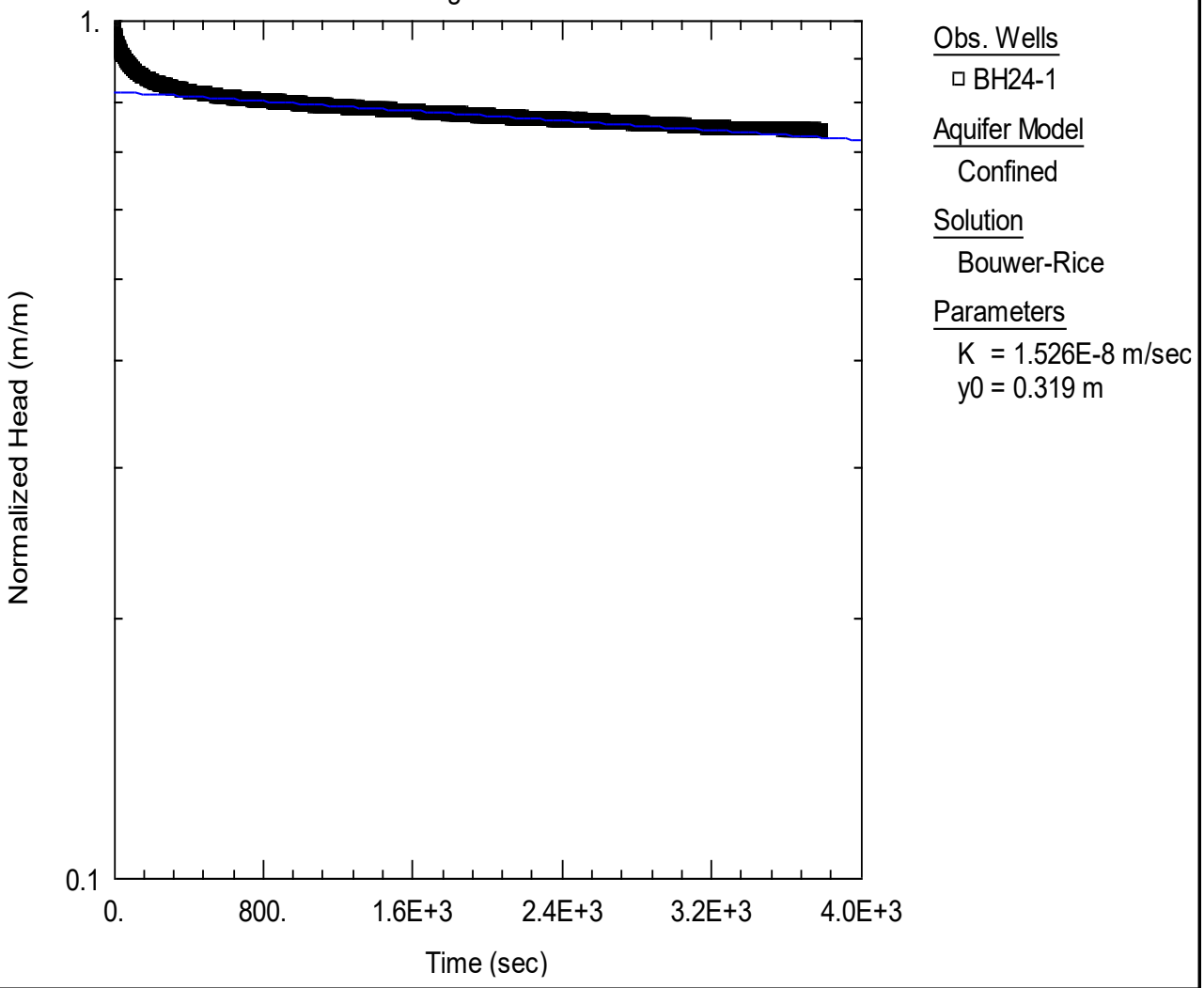
Poorly sorted gravelly sand with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	7.47E-07	7.47E-09	6.45E-04
Hazen K (cm/s) = d_{10} (mm)	1.32E-06	1.32E-08	1.14E-03
Slichter	1.47E-07	1.47E-09	1.27E-04
Terzaghi	2.09E-07	2.09E-09	1.81E-04
Beyer	4.77E-07	4.77E-09	4.12E-04
Sauerbrei	1.10E-06	1.10E-08	9.48E-04
Kruger	7.38E-05	7.38E-07	6.37E-02
Kozeny-Carmen	1.48E-05	1.48E-07	1.28E-02
Zunker	1.12E-05	1.12E-07	9.70E-03
Zamarin	1.32E-05	1.32E-07	1.14E-02
USBR	2.19E-06	2.19E-08	1.89E-03
Barr	1.57E-07	1.57E-09	1.36E-04
Alyamani and Sen	2.81E-04	2.81E-06	2.43E-01
Chapuis	3.27E-09	3.27E-11	2.83E-06
Krumbein and Monk	6.02E-05	6.02E-07	5.20E-02
geometric mean	7.35E-06	7.35E-08	6.35E-03
arithmetic mean	8.56E-05	8.56E-07	7.40E-02

APPENDIX E: *In-Situ SWRT Results*

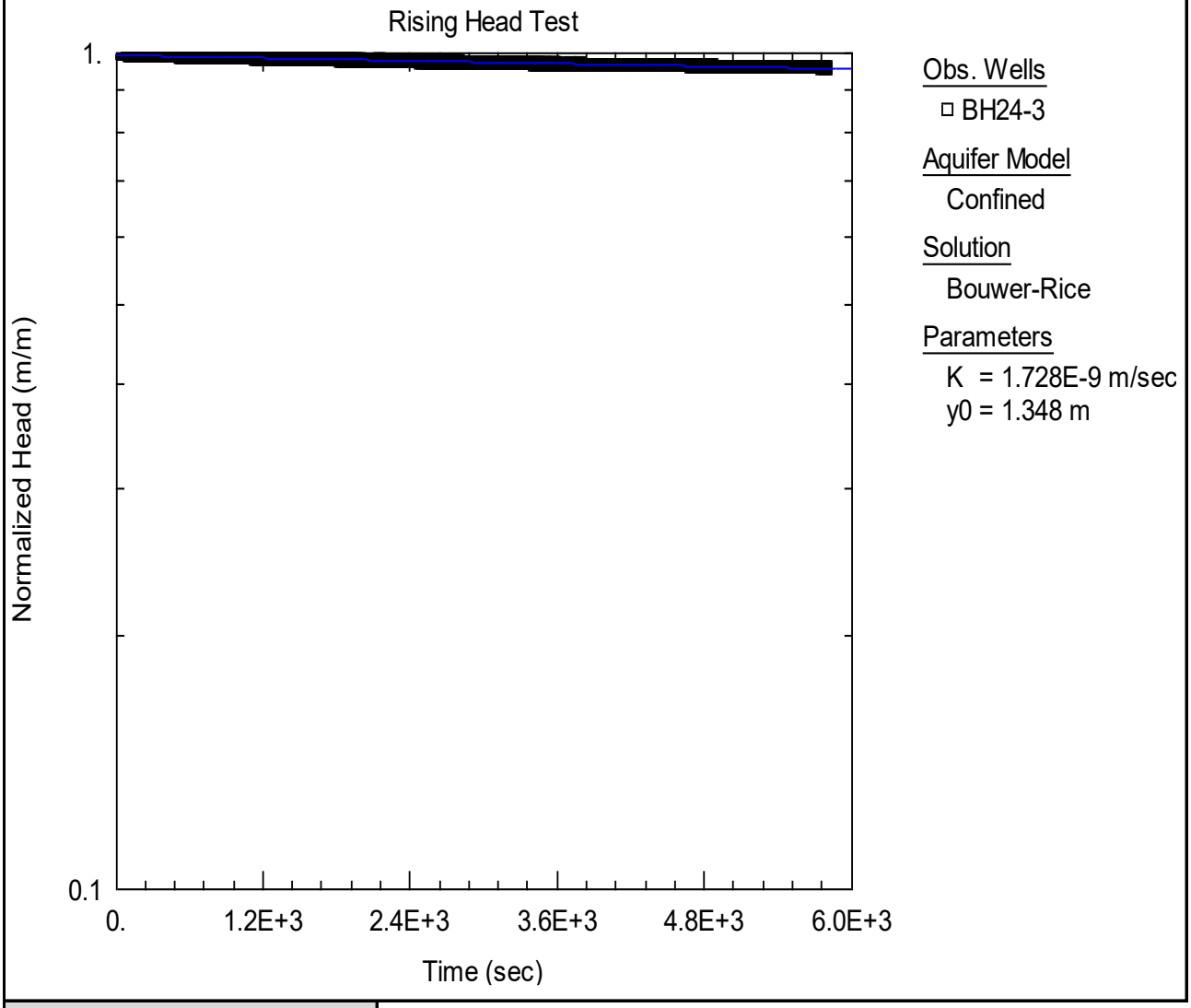
Single Well Response Test Analysis Report	
Project #:	24-0825
Project Location:	12506 Heart Lake Rd, Caledon, ON
Analysis Date:	22-Dec-24



Testing Details	
Well ID:	BH24-1
Field Technician:	SH
Analysis By:	RB
Date of Analysis:	22-Dec-24

Well Details		
Top of Screen	4.6	m
Bottom of Screen	7.6	m
Diam. of well	51	mm
Static Water Level	6.46	m bgs
Formation Screened	Silty Clay Till/ Clayey Silt Till Sandy Silt Till	

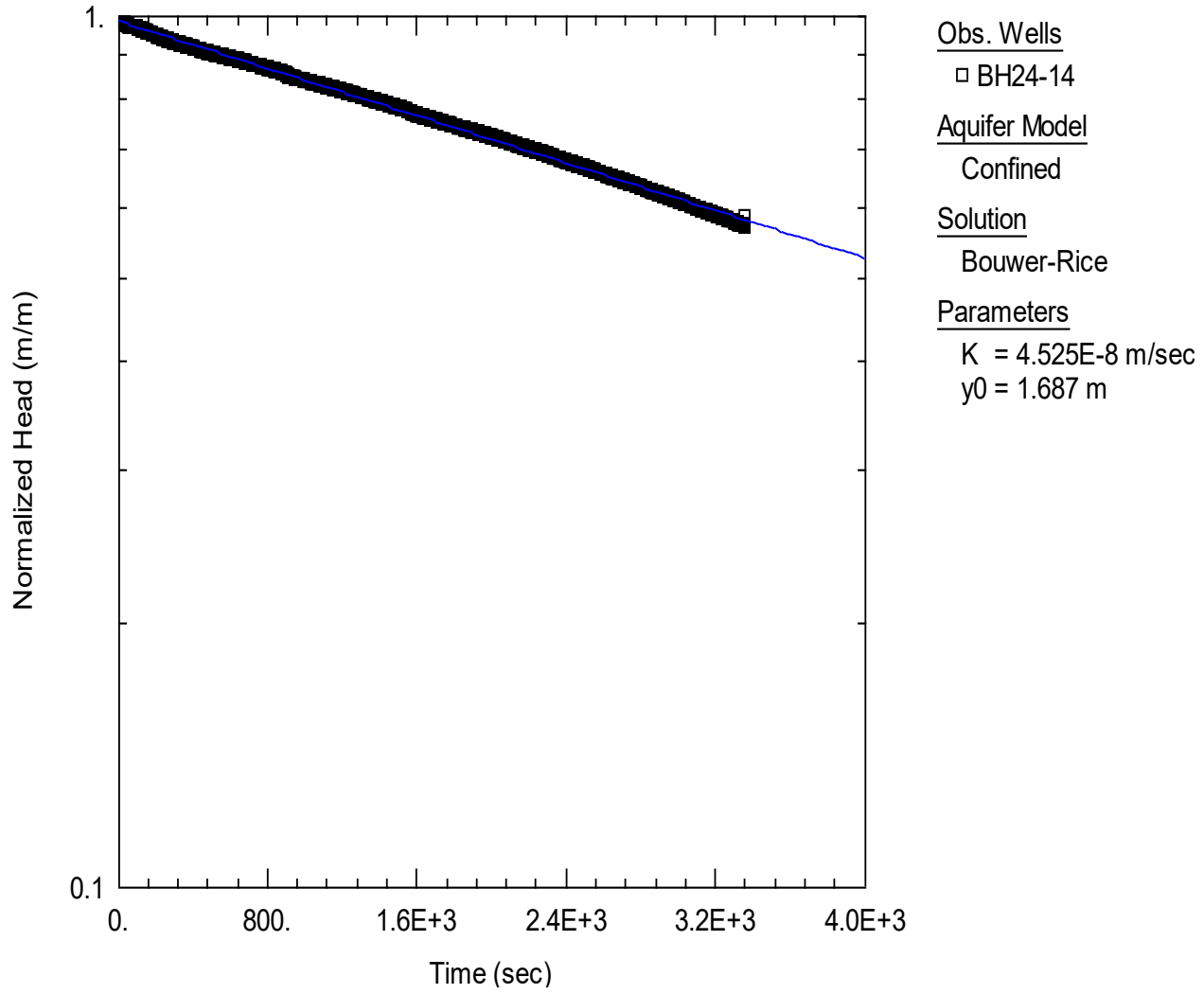
Single Well Response Test Analysis Report	
Project #:	24-0825
Project Location:	12506 Heart Lake Rd, Caledon, ON
Analysis Date:	22-Dec-24



Testing Details	
Well ID:	BH24-3
Field Technician:	SH
Analysis By:	RB
Date of Analysis:	22-Dec-24

Well Details		
Top of Screen	3.1	m
Bottom of Screen	6.1	m
Diam. of well	51	mm
Static Water Level	1.91	m bgs
Formation Screened	Silty Clay Till/ Clayey Silt Till	

Single Well Response Test Analysis Report	
Project #:	24-0825
Project Location:	12506 Heart Lake Rd, Caledon, ON
Analysis Date:	22-Dec-24



Testing Details	
Well ID:	BH24-14
Field Technician:	SH
Analysis By:	RB
Date of Analysis:	22-Dec-24

Well Details		
Top of Screen	4.6	m
Bottom of Screen	7.6	m
Diam. of well	51	mm
Static Water Level	2.16	m bgs
Formation Screened	Silty Clay Till/ Clayey Silt Till Sandy Silt Till	

APPENDIX F: *Laboratory Certificate of Analysis*

Your Project #: 24-0825
Your C.O.C. #: 1028408-01-01

Attention: Sam Harding

EnVision Consultants Ltd.
40-6415 Northwest Drive
Mississauga, ON
CANADA L4V 1X1

Report Date: 2025/01/02
Report #: R8464876
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C4BJ938
Received: 2024/12/17, 14:57

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	2	N/A	2024/12/19	CAM SOP-00448	SM 24 2320 B m
Carbonate, Bicarbonate and Hydroxide	2	N/A	2024/12/19	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	2	N/A	2024/12/19	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	2	N/A	2024/12/19	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	2	N/A	2024/12/18	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	2	N/A	2024/12/19	CAM SOP 00102/00408/00447	SM 2340 B
Metals Analysis by ICPMS (as received) (2)	2	N/A	2024/12/19	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	2	N/A	2024/12/19		
Anion and Cation Sum	2	N/A	2024/12/19		
Total Ammonia-N	2	N/A	2024/12/19	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (3)	2	N/A	2024/12/19	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH	2	2024/12/19	2024/12/19	CAM SOP-00413	SM 24th - 4500H+ B
Orthophosphate	2	N/A	2024/12/19	CAM SOP-00461	SM 24 4500-P E
Sat. pH and Langelier Index (@ 20C)	2	N/A	2024/12/19		Auto Calc
Sat. pH and Langelier Index (@ 4C)	2	N/A	2024/12/19		Auto Calc
Sulphate by Automated Turbidimetry	2	N/A	2024/12/19	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids (TDS calc)	2	N/A	2024/12/19		Auto Calc

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 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

Your Project #: 24-0825
Your C.O.C. #: 1028408-01-01

Attention: Sam Harding

EnVision Consultants Ltd.
40-6415 Northwest Drive
Mississauga, ON
CANADA L4V 1X1

Report Date: 2025/01/02
Report #: R8464876
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C4BJ938
Received: 2024/12/17, 14:57

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.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Metals analysis was performed on the sample 'as received'.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

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

==========

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

Bureau Veritas Job #: C4BJ938
Report Date: 2025/01/02

EnVision Consultants Ltd.
Client Project #: 24-0825
Sampler Initials: SH

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			ALYP79			ALYP79		
Sampling Date			2024/12/17 11:30			2024/12/17 11:30		
COC Number			1028408-01-01			1028408-01-01		
	UNITS	Criteria	BH24-03	RDL	QC Batch	BH24-03 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	8.65	N/A	9835975			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	250	1.0	9835018			
Calculated TDS	mg/L	-	500	1.0	9834552			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.8	1.0	9835018			
Cation Sum	me/L	-	9.11	N/A	9835975			
Hardness (CaCO3)	mg/L	-	390	1.0	9835010			
Ion Balance (% Difference)	%	-	2.61	N/A	9835974			
Langelier Index (@ 20C)	N/A	-	0.761		9835011			
Langelier Index (@ 4C)	N/A	-	0.513		9835016			
Saturation pH (@ 20C)	N/A	-	7.13		9835011			
Saturation pH (@ 4C)	N/A	-	7.38		9835016			
Inorganics								
Total Ammonia-N	mg/L	-	<0.050	0.050	9837052	<0.050	0.050	9837052
Conductivity	umho/cm	-	840	1.0	9836801			
Dissolved Organic Carbon	mg/L	-	1.4	0.40	9834125			
Orthophosphate (P)	mg/L	-	<0.010	0.010	9836828			
pH	pH	6.5:8.5	7.90		9836789			
Dissolved Sulphate (SO4)	mg/L	-	87	1.0	9836834			
Alkalinity (Total as CaCO3)	mg/L	-	250	1.0	9836800			
Dissolved Chloride (Cl-)	mg/L	-	40	1.0	9836833			
Nitrite (N)	mg/L	-	0.090	0.010	9836811			
Nitrate (N)	mg/L	-	9.54	0.10	9836811			

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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C4BJ938
Report Date: 2025/01/02

EnVision Consultants Ltd.
Client Project #: 24-0825
Sampler Initials: SH

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			ALYP80			ALYP80		
Sampling Date			2024/12/17 14:00			2024/12/17 14:00		
COC Number			1028408-01-01			1028408-01-01		
	UNITS	Criteria	BH24-14	RDL	QC Batch	BH24-14 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	19.3	N/A	9835975			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	370	1.0	9835018			
Calculated TDS	mg/L	-	1100	1.0	9834552			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	2.1	1.0	9835018			
Cation Sum	me/L	-	19.5	N/A	9835975			
Hardness (CaCO3)	mg/L	-	490	1.0	9835010			
Ion Balance (% Difference)	%	-	0.580	N/A	9835974			
Langelier Index (@ 20C)	N/A	-	0.821		9835011			
Langelier Index (@ 4C)	N/A	-	0.576		9835016			
Saturation pH (@ 20C)	N/A	-	6.95		9835011			
Saturation pH (@ 4C)	N/A	-	7.20		9835016			
Inorganics								
Total Ammonia-N	mg/L	-	<0.050	0.050	9837052			
Conductivity	umho/cm	-	2000	1.0	9836801	2000	1.0	9836801
Dissolved Organic Carbon	mg/L	-	2.9	0.40	9834125			
Orthophosphate (P)	mg/L	-	<0.010	0.010	9836828			
pH	pH	6.5:8.5	7.77		9836789	7.77		9836789
Dissolved Sulphate (SO4)	mg/L	-	48	1.0	9836834			
Alkalinity (Total as CaCO3)	mg/L	-	370	1.0	9836800	370	1.0	9836800
Dissolved Chloride (Cl-)	mg/L	-	390	5.0	9836833			
Nitrite (N)	mg/L	-	<0.010	0.010	9836811	<0.010	0.010	9836811
Nitrate (N)	mg/L	-	<0.10	0.10	9836811	<0.10	0.10	9836811

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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			ALYP79	ALYP79	ALYP80		
Sampling Date			2024/12/17 11:30	2024/12/17 11:30	2024/12/17 14:00		
COC Number			1028408-01-01	1028408-01-01	1028408-01-01		
	UNITS	Criteria	BH24-03	BH24-03 Lab-Dup	BH24-14	RDL	QC Batch
Metals							
Aluminum (Al)	ug/L	-	1500	1100 (1)	230	4.9	9836783
Antimony (Sb)	ug/L	20	0.51	0.52	0.85	0.50	9836783
Arsenic (As)	ug/L	100	1.1	1.0	1.5	1.0	9836783
Barium (Ba)	ug/L	-	280	270	180	2.0	9836783
Beryllium (Be)	ug/L	11	<0.40	<0.40	<0.40	0.40	9836783
Boron (B)	ug/L	200	42	42	60	10	9836783
Cadmium (Cd)	ug/L	0.2	<0.090	<0.090	<0.090	0.090	9836783
Calcium (Ca)	ug/L	-	86000	87000	110000	200	9836783
Chromium (Cr)	ug/L	-	<5.0	<5.0	<5.0	5.0	9836783
Cobalt (Co)	ug/L	0.9	0.78	0.72	**2.1**	0.50	9836783
Copper (Cu)	ug/L	5	1.8	1.7	1.5	0.90	9836783
Iron (Fe)	ug/L	300	**620**	**460**	**320**	100	9836783
Lead (Pb)	ug/L	5	0.98	0.86	0.62	0.50	9836783
Magnesium (Mg)	ug/L	-	43000	42000	52000	50	9836783
Manganese (Mn)	ug/L	-	97	93	560	2.0	9836783
Molybdenum (Mo)	ug/L	40	6.9	6.7	1.2	0.50	9836783
Nickel (Ni)	ug/L	25	2.3	2.0	3.5	1.0	9836783
Phosphorus (P)	ug/L	-	<100	<100	<100	100	9836783
Potassium (K)	ug/L	-	6900	6600	4300	200	9836783
Selenium (Se)	ug/L	100	<2.0	<2.0	<2.0	2.0	9836783
Silicon (Si)	ug/L	-	8900	7700	8400	50	9836783
Silver (Ag)	ug/L	0.1	<0.090	<0.090	<0.090	0.090	9836783
Sodium (Na)	ug/L	-	21000	21000	220000	100	9836783
Strontium (Sr)	ug/L	-	370	360	430	1.0	9836783
Thallium (Tl)	ug/L	0.3	<0.050	<0.050	<0.050	0.050	9836783
Titanium (Ti)	ug/L	-	24	24	6.8	5.0	9836783
Uranium (U)	ug/L	5	**8.1**	**7.8**	2.4	0.10	9836783

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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			ALYP79	ALYP79	ALYP80		
Sampling Date			2024/12/17 11:30	2024/12/17 11:30	2024/12/17 14:00		
COC Number			1028408-01-01	1028408-01-01	1028408-01-01		
	UNITS	Criteria	BH24-03	BH24-03 Lab-Dup	BH24-14	RDL	QC Batch
Vanadium (V)	ug/L	6	2.3	1.6	0.72	0.50	9836783
Zinc (Zn)	ug/L	30	19	17	12	5.0	9836783

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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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TEST SUMMARY

Bureau Veritas ID: ALYP79
Sample ID: BH24-03
Matrix: Water

Collected: 2024/12/17
Shipped:
Received: 2024/12/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9836800	N/A	2024/12/19	Nachiketa Gohil
Carbonate, Bicarbonate and Hydroxide	CALC	9835018	N/A	2024/12/19	Automated Statchk
Chloride by Automated Colourimetry	SKAL	9836833	N/A	2024/12/19	Alina Dobreanu
Conductivity	AT	9836801	N/A	2024/12/19	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9834125	N/A	2024/12/18	Gyulshen Idriz
Hardness (calculated as CaCO3)		9835010	N/A	2024/12/19	Automated Statchk
Metals Analysis by ICPMS (as received)	ICP/MS	9836783	N/A	2024/12/19	Prempal Bhatti
Ion Balance (% Difference)	CALC	9835974	N/A	2024/12/19	Automated Statchk
Anion and Cation Sum	CALC	9835975	N/A	2024/12/19	Automated Statchk
Total Ammonia-N	SKAL/NH4	9837052	N/A	2024/12/19	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9836811	N/A	2024/12/19	Chandra Nandlal
pH	AT	9836789	2024/12/19	2024/12/19	Nachiketa Gohil
Orthophosphate	SKAL	9836828	N/A	2024/12/19	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	9835011	N/A	2024/12/19	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	9835016	N/A	2024/12/19	Automated Statchk
Sulphate by Automated Turbidimetry	SKAL	9836834	N/A	2024/12/19	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	9834552	N/A	2024/12/19	Automated Statchk

Bureau Veritas ID: ALYP79 Dup
Sample ID: BH24-03
Matrix: Water

Collected: 2024/12/17
Shipped:
Received: 2024/12/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Analysis by ICPMS (as received)	ICP/MS	9836783	N/A	2024/12/19	Prempal Bhatti
Total Ammonia-N	SKAL/NH4	9837052	N/A	2024/12/19	Jinal Chavda

Bureau Veritas ID: ALYP80
Sample ID: BH24-14
Matrix: Water

Collected: 2024/12/17
Shipped:
Received: 2024/12/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9836800	N/A	2024/12/19	Nachiketa Gohil
Carbonate, Bicarbonate and Hydroxide	CALC	9835018	N/A	2024/12/19	Automated Statchk
Chloride by Automated Colourimetry	SKAL	9836833	N/A	2024/12/19	Alina Dobreanu
Conductivity	AT	9836801	N/A	2024/12/19	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9834125	N/A	2024/12/18	Gyulshen Idriz
Hardness (calculated as CaCO3)		9835010	N/A	2024/12/19	Automated Statchk
Metals Analysis by ICPMS (as received)	ICP/MS	9836783	N/A	2024/12/19	Prempal Bhatti
Ion Balance (% Difference)	CALC	9835974	N/A	2024/12/19	Automated Statchk
Anion and Cation Sum	CALC	9835975	N/A	2024/12/19	Automated Statchk
Total Ammonia-N	SKAL/NH4	9837052	N/A	2024/12/19	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9836811	N/A	2024/12/19	Chandra Nandlal
pH	AT	9836789	2024/12/19	2024/12/19	Nachiketa Gohil
Orthophosphate	SKAL	9836828	N/A	2024/12/19	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	9835011	N/A	2024/12/19	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: ALYP80
Sample ID: BH24-14
Matrix: Water

Collected: 2024/12/17
Shipped:
Received: 2024/12/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sat. pH and Langelier Index (@ 4C)	CALC	9835016	N/A	2024/12/19	Automated Statchk
Sulphate by Automated Turbidimetry	SKAL	9836834	N/A	2024/12/19	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	9834552	N/A	2024/12/19	Automated Statchk

Bureau Veritas ID: ALYP80 Dup
Sample ID: BH24-14
Matrix: Water

Collected: 2024/12/17
Shipped:
Received: 2024/12/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9836800	N/A	2024/12/19	Nachiketa Gohil
Conductivity	AT	9836801	N/A	2024/12/19	Nachiketa Gohil
Nitrate & Nitrite as Nitrogen in Water	LACH	9836811	N/A	2024/12/19	Chandra Nandlal
pH	AT	9836789	2024/12/19	2024/12/19	Nachiketa Gohil

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GENERAL COMMENTS

Revised Report (2025/01/02): Requested regulatory criteria have been included on this report.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9834125	Dissolved Organic Carbon	2024/12/18	95	80 - 120	97	80 - 120	<0.40	mg/L	3.5	20
9836783	Aluminum (Al)	2024/12/19	NC	80 - 120	99	80 - 120	<4.9	ug/L	37 (1)	20
9836783	Antimony (Sb)	2024/12/19	106	80 - 120	99	80 - 120	<0.50	ug/L	2.3	20
9836783	Arsenic (As)	2024/12/19	101	80 - 120	98	80 - 120	<1.0	ug/L	4.7	20
9836783	Barium (Ba)	2024/12/19	99	80 - 120	97	80 - 120	<2.0	ug/L	1.6	20
9836783	Beryllium (Be)	2024/12/19	98	80 - 120	97	80 - 120	<0.40	ug/L	NC	20
9836783	Boron (B)	2024/12/19	94	80 - 120	94	80 - 120	<10	ug/L	0.25	20
9836783	Cadmium (Cd)	2024/12/19	103	80 - 120	98	80 - 120	<0.090	ug/L	NC	20
9836783	Calcium (Ca)	2024/12/19	NC	80 - 120	100	80 - 120	<200	ug/L	1.1	20
9836783	Chromium (Cr)	2024/12/19	99	80 - 120	96	80 - 120	<5.0	ug/L	NC	20
9836783	Cobalt (Co)	2024/12/19	97	80 - 120	95	80 - 120	<0.50	ug/L	8.2	20
9836783	Copper (Cu)	2024/12/19	99	80 - 120	97	80 - 120	<0.90	ug/L	5.3	20
9836783	Iron (Fe)	2024/12/19	99	80 - 120	98	80 - 120	<100	ug/L	NC	20
9836783	Lead (Pb)	2024/12/19	100	80 - 120	98	80 - 120	<0.50	ug/L	13	20
9836783	Magnesium (Mg)	2024/12/19	NC	80 - 120	96	80 - 120	<50	ug/L	2.8	20
9836783	Manganese (Mn)	2024/12/19	98	80 - 120	96	80 - 120	<2.0	ug/L	4.4	20
9836783	Molybdenum (Mo)	2024/12/19	104	80 - 120	99	80 - 120	<0.50	ug/L	4.0	20
9836783	Nickel (Ni)	2024/12/19	94	80 - 120	94	80 - 120	<1.0	ug/L	15	20
9836783	Phosphorus (P)	2024/12/19	99	80 - 120	103	80 - 120	<100	ug/L	NC	20
9836783	Potassium (K)	2024/12/19	97	80 - 120	97	80 - 120	<200	ug/L	3.7	20
9836783	Selenium (Se)	2024/12/19	100	80 - 120	99	80 - 120	<2.0	ug/L	NC	20
9836783	Silicon (Si)	2024/12/19	88	80 - 120	97	80 - 120	<50	ug/L	15	20
9836783	Silver (Ag)	2024/12/19	99	80 - 120	95	80 - 120	<0.090	ug/L	NC	20
9836783	Sodium (Na)	2024/12/19	97	80 - 120	98	80 - 120	<100	ug/L	2.6	20
9836783	Strontium (Sr)	2024/12/19	102	80 - 120	97	80 - 120	<1.0	ug/L	3.3	20
9836783	Thallium (Tl)	2024/12/19	100	80 - 120	99	80 - 120	<0.050	ug/L	NC	20
9836783	Titanium (Ti)	2024/12/19	92	80 - 120	98	80 - 120	<5.0	ug/L	0.16	20
9836783	Uranium (U)	2024/12/19	101	80 - 120	98	80 - 120	<0.10	ug/L	3.2	20
9836783	Vanadium (V)	2024/12/19	98	80 - 120	95	80 - 120	<0.50	ug/L	NC	20
9836783	Zinc (Zn)	2024/12/19	98	80 - 120	96	80 - 120	<5.0	ug/L	8.5	20
9836789	pH	2024/12/19			102	98 - 103			0.0013	N/A

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9836800	Alkalinity (Total as CaCO3)	2024/12/19			96	85 - 115	<1.0	mg/L	0.97	20
9836801	Conductivity	2024/12/19			103	85 - 115	<1.0	umho/cm	0.46	10
9836811	Nitrate (N)	2024/12/19	99	80 - 120	101	80 - 120	<0.10	mg/L	NC	20
9836811	Nitrite (N)	2024/12/19	103	80 - 120	101	80 - 120	<0.010	mg/L	NC	20
9836828	Orthophosphate (P)	2024/12/19	89	75 - 125	86	80 - 120	<0.010	mg/L	5.0	20
9836833	Dissolved Chloride (Cl-)	2024/12/19	NC	80 - 120	97	80 - 120	<1.0	mg/L	0.53	20
9836834	Dissolved Sulphate (SO4)	2024/12/19	NC	75 - 125	98	80 - 120	<1.0	mg/L	0.65	20
9837052	Total Ammonia-N	2024/12/19	99	75 - 125	103	80 - 120	<0.050	mg/L	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.

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.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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

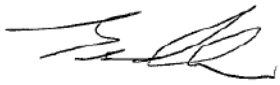
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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VALIDATION SIGNATURE PAGE

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



Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

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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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

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2024/12/17 14:57

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ROUSH!

NONT-2024-12-3504

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#37360 EnVision Consultants Ltd.	Company Name:	EnVision Consultants Ltd.	Quotation #:	C35435
Attention:	Accounts Payable	Attention:	Sam Harding	P.O. #:	
Address:	40-6415 Northwest Drive Mississauga ON L4V 1X1	Address:		Project:	24-0825
Tel:	(888) 597-6083 Fax:	Tel:	Fax:	Project Name:	
Email:	payables@envisionconsultants.ca	Email:	sharding@envisionconsultants.ca	Site #:	
				Sampled By:	Sam Harding

Bottle Order #: 1028408

COC #: C#1028408-01-01

Project Manager: Ashton Gibson

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)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☒ PWQO ☐ Reg 406 Table ___
- ☐ Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

Job Specific Rush TAT (if applies to entire submission)
Date Required: 2024/12/20 Time Required: 12:00 ☒
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	RCAp - Comprehensive	# of Bottles	Comments
1		BH24-03	24/12/17	11:30	GW	NO	X	4	
2		BH24-14	11	14:00	GW	NO	X	4	
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
Sam Harding	24/12/17	14:55		24/12/17	14:55	

Laboratory Use Only
Time Sensitive | Temperature (°C) on Recei: 7.1 5.3 | Custody Seal: Present ☐ Intact ☐ | Yes ☐ | No ☐

* 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

Bureau Veritas Canada (2019) Inc.

Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
BH24-03	ALYP79-02-Lab Dup	. Iron (Fe)	300	460	100	ug/L
BH24-03	ALYP79-02	. Iron (Fe)	300	620	100	ug/L
BH24-03	ALYP79-02-Lab Dup	. Uranium (U)	5	7.8	0.10	ug/L
BH24-03	ALYP79-02	. Uranium (U)	5	8.1	0.10	ug/L
BH24-14	ALYP80-02	. Cobalt (Co)	0.9	2.1	0.50	ug/L
BH24-14	ALYP80-02	. Iron (Fe)	300	320	100	ug/L

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

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