



Hydrogeological Assessment Report – Matheson and Rosedale Subdivision, Part Lot 20 Concession 3, Montague, Ontario

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Prepared for:
Patrick Lambert
Smart Homes Ottawa Inc.

Cambium Reference: 19387-001

CAMBIUM INC.

866.217.7900

cambium-inc.com



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1.0 Introduction

Cambium Inc. (Cambium) was retained by Smart Homes Ottawa Inc. (the Client) to undertake a hydrogeological assessment for a proposed subdivision development located on Part Lot 20 Concession 3, Montague, at the southeast corner of Matheson Drive and Rosedale Road South in the Township of Montague, Ontario (the Site). The regional location of the Site is outlined on Figure 1 and a Site plan is outlined on Figure 2.

The total area of the Site is approximately 23.53 ha (58.15 acres) and is currently comprised of undeveloped agricultural land. It is proposed that the Site will be developed into 41 new residential lots with minimum areas of 0.4 ha (1 acre). A conceptual site plan of the proposed development is included in Appendix A. There are no municipal water or wastewater services available near the property and therefore, the Site has to be privately serviced.

As such, a hydrogeological assessment was undertaken for the required on-site wastewater services and water supply, in accordance with the Ministry of the Environment Guidelines D-5-4 and D-5-5 (Ministry of the Environment, 1996a; 1996b).

The suitability of the development area for on-site disposal of wastewater was determined by identifying and characterizing the native soils and bedrock, the location of the shallow water table, and surficial slopes across the Site. Additionally, a predictive assessment of the attenuation capacity of Site for the potential nitrate contamination from on-site wastewater systems was conducted.

The water supply assessment included the installation and hydraulic testing of test wells and water quality testing of the aquifer to determine the sustainability of on-site groundwater resources. As per D-5-5 guidelines, for a property with a developable area of more than 15 ha and up to 25 ha, a total of four test wells are required to characterize the water supply aquifer at the Site.

Cambium used the results of the wastewater and water supply assessments to calculate the maximum number of residential lots for the Site considering its specific conditions (i.e., soil type, bedrock depth, terrain, and groundwater characteristics).



2.0 Environmental Features

To assess environmental features, databases maintained by the MECP, Rideau Valley Conservation Authority (RVCA), and Ministry of Natural Resources and Forestry (MNR) were reviewed.

Based on this information, the Site is situated within the Rideau River tertiary watershed within the Rideau Valley Source Protection Area, under the jurisdiction of the RVCA (Ministry of the Environment, Conservation and Parks, 2023a).

According to the Regulation Map published by the RVCA (2023), the Site does not contain a regulated area per O.Reg. 41/24 (Prohibited Activities, Exemptions and Permits).

The Site is also not located within any Areas of Environmental Significance or Areas of Natural and Scientific Interests identified by the Natural Heritage System database published by the MNR (2023a). A woodland area is identified in the northeastern portion of the Site (Appendix A).

As per the Source Water Protection Information Atlas published by the MECP (2023a), the Site is situated within a Well Head Protection Area D (WHPA-D) with a vulnerability score of 2, and a Highly Vulnerable Aquifer (HVA) with a vulnerability score of 6 (Appendix A).

Wellhead protection areas are the areas of land surrounding a municipal well which are categorized based on the time it takes for groundwater to travel to the well. Within WHPA-D, contaminated groundwater would take between 5 years and 25 years to reach the protected well (SGBLS, 2015). A vulnerability score of 2 (the second lowest risk category) indicates the area does not pose a significant risk of source water contamination.

HVAs are aquifers that are more sensitive to contamination. In general, a HVA consists of granular materials (e.g., sand and/or gravel) or fractured rock that has a high permeability and is near the surface of the ground. By default, all HVA's have a vulnerability score of 6. Based on test pit results (Section 4.1), soil thickness is less than 1 m across most of the Site, which indicates that the default vulnerability score is appropriate for the property.



3.0 Physical Setting

3.1 Topography and Drainage

Topography at the Site gently slopes from the eastern corner to the western corner of the property (Appendix A). Elevations range from 127 meters above sea level (masl) to 118 masl. Rosedale Creek is located approximately 200 m west of the Site.

Surface runoff at the Site is assumed to follow Site topography and flow west into Rosedale Creek, ultimately discharging into the Rideau River approximately 4 km from Site.

3.2 Physiography

The Site is located in the physiographic region known as the Smiths Falls Limestone Plain. The Plain is described as the largest and most continuous tract of shallow soil over limestone in Southern Ontario and covers an area of approximately 3,626 km². Notable features of the region include old marine beach deposits in areas of higher relief, low drumlins and scattered till, and deep clay deposits (Chapman & Putnam, 1984).

3.3 Overburden Geology

According to Miscellaneous Release – Data 128 from the Ontario Geological Survey (2010), a portion of the western border of the Site consists of silt and clay, minor sand and gravel, and fine-textured glaciomarine deposits. The remainder of the Site consists of a minimal surficial veneer comprised of topsoil overlaying Paleozoic bedrock.

3.4 Bedrock Geology

According to Miscellaneous Release – Data 219 from the Ontario Geological Survey (2007), the Site is underlain by bedrock of the March Formation, part of the Beekmantown Group. The bedrock of the March Formation is described as sandstone, dolomitic sandstone and dolostone.



4.0 Test Pit Investigation

Cambium staff completed a test pit investigation at the Site on January 4th, 2024, to assess subsurface conditions at the Site. A total of 18 test pits, designated as TP01-24 and TP18-24, were advanced on the Site to a predetermined depth of 2 meters below ground surface (mbgs) or when refusal was encountered (Table 1). Test pit locations are shown in Figure 3 and test pit logs are included in Appendix B.

Table 1 Test Pit Termination Depths

| Test Pit | Termination Depth (mbgs) | Termination Material |
|----------|--------------------------|----------------------|
| TP01-24 | 0.42 | Bedrock |
| TP02-24 | 2.00 | Clay |
| TP03-24 | 0.93 | Bedrock |
| TP04-24 | 0.32 | Bedrock |
| TP05-24 | 0.14 | Bedrock |
| TP06-24 | 0.48 | Bedrock |
| TP07-24 | 0.22 | Bedrock |
| TP08-24 | 0.34 | Bedrock |
| TP09-24 | 0.84 | Bedrock |
| TP10-24 | 0.48 | Bedrock |
| TP11-24 | 0.64 | Bedrock |
| TP12-24 | 0.18 | Bedrock |
| TP13-24 | 1.74 | Bedrock |
| TP14-24 | 1.08 | Bedrock |
| TP15-24 | 0.20 | Bedrock |
| TP16-24 | 0.30 | Bedrock |
| TP17-24 | 0.27 | Bedrock |
| TP18-24 | 0.41 | Bedrock |



4.1 Test Pit Logs

Eight test pits consisted of topsoil underlain by bedrock, nine test pits encountered subsurface soils prior to terminating on bedrock, and one test pit was terminated at the predetermined depth of 2 mbgs.

A summary of general lithological details obtained from the investigation is presented below.

Topsoil

Topsoil material was encountered in all test pits, ranging in thickness of 0.12 to 0.48 m, with an average of 0.23 m. The material was described as a dark brown, silty sand with frequent rootlets.

Subsurface Soils

In ten test pits, subsurface soils were encountered below the topsoil which consisted of brown, moist, sand and silt to silty sand with some clay and gravel and trace boulders, ranging in thickness of 0.02 to 0.81 m with an average thickness of 0.24 m. In TP02-24, TP09-24, TP11-24, TP13-24, and TP14-24, the previous subsurface soil was underlain by grey, wet, silty sand with some clay and trace gravel and boulders, ranging in thickness of 0.10 to 1.24 m with an average thickness of 0.28 m. In the remaining eight test pits, subsurface soils were absent beneath the topsoil.

Bedrock

Bedrock was encountered in all test pits except TP02-24 that was ended at the predetermined termination depth. The bedrock at TP10-24 was fractured and large slabs were removed during excavation before refusal at 0.48 mbgs.

Groundwater

The groundwater conditions at the Site generally consisted of dry to moist soils throughout the entire depth, except for TP02-24, TP06-24, and TP14-24, where wet soils were encountered at depths ranging from 0.45 mbgs to 1.90 mbgs. Water seeping into the pits and pooling at the base was observed during the investigation at TP06-24, TP13-24, and TP14-24.



Cambium notes that groundwater levels at the Site may fluctuate seasonally and in response to climatic events.

4.2 Physical Laboratory Testing

Physical laboratory testing, including grain size distribution analysis, was completed on three soil samples to confirm textural classification identified during field logging and obtain percolation rate estimates. Analysis results are based on the Unified Soil Classification System scale. A summary of results is provided in Table 2. Complete laboratory analysis reports are provided in Appendix C.

Table 2 Grain Size Distribution Analysis Results

| Test Pit | Depth (mbgs) | Description | Gravel (%) | Sand (%) | Silt (%) | Clay (%) | T-time (min/cm) |
|--------------|--------------|--------------------------------------|------------|----------|----------|----------|-----------------|
| TP02-24 GS1 | 0.25 – 1.0 | Silt and Sand some Clay trace Gravel | 2 | 38 | 46 | 14 | 35 |
| TP09-24 GS 1 | 0.22 – 0.65 | Sand and Silt some Clay trace Gravel | 3 | 43 | 39 | 15 | 35 |
| TP13-24 GS2 | 0.5 – 1.74 | Silty Sand some Clay some Gravel | 13 | 44 | 32 | 11 | 30 |



5.0 On-Site Sewage Assessment – Subdivision

As per Guideline D-5-4 (Technical Guideline for Individual On-Site Sewage Systems: Water Quality Risk Assessment) an assessment was completed to determine the feasibility of utilizing on-site sewage disposal for the development.

Guideline D-5-4 indicates that the concentration of nitrate in the effluent plume at the Site boundary must be less the Ontario Drinking Water Quality Standard (ODWQS) of 10 mg/L to prevent contamination of adjacent properties (Ministry of the Environment, 2006). Although natural processes and soil interaction can result in nitrate being attenuated in the receiving aquifer system, the procedure within Guideline D-5-4 states that only dilution can be used as the attenuation mechanism to predict future nitrate concentrations. As such, a mass balance calculation was used to determine the impact of the proposed development at the Site.

The results obtained for the wastewater assessment are discussed in the following subsections.

5.1 Available Dilution

The total available dilution for the Site is estimated by the following equation:

$$Q_i = A \times S \times I$$

Where:

Q_i – Volume of Available dilution water

A – Area of the Site

S – Water surplus

I – Infiltration factor

To calculate the water surplus the thirty-year climate normal data collected between 1981 and 2010 at the Drummond Center weather station was used. The data was accessed through the Environment Canada website (Environment Canada, 2023). The total yearly precipitation, on average, was 876 mm.



The Thornthwaite method was used to determine the amount of evapotranspiration that will occur at the Site (Dingman, 2008). The calculated depth of evapotranspiration was 520 mm/yr. The water balance calculations are attached in Appendix D. Given these calculations, the water surplus for the Site was determined to be 356 mm/yr.

To determine the fraction of surplus water that infiltrates into the soils on-site, the volume of surplus water is multiplied by an infiltration factor. The infiltration factor varies between 0 and 1 and is estimated based on topography, soils and cover (as per the Stormwater Management Planning and Design Manual (Ministry of the Environment, 2006)). Site specific values are summarized in Table 3.

In addition to calculating the infiltration factor, the area of the proposed development was identified (based on the proposed development plan provided in Appendix A), to determine the total volume of available dilution water generated on the Site. From the development plan, the total area is 235,300 m².

For road areas, water was assumed to run-off towards the permeable areas of the Site. The proposed roofed area was included in the permeable area as it is assumed that roof leaders will direct any roof runoff to landscaped areas as is typical in rural subdivisions and therefore will not contribute to a post-development recharge deficit. The calculations used to determine the available dilution water are summarized in Table 3.

Table 3 Available Dilution Calculations – All Lots

| Infiltration Factor | |
|---|---|
| Topography | Hilly to rolling land = 0.15 |
| Soil | Silty Sand = 0.3 |
| Cover | Cultivated land = 0.1 |
| Infiltration Factor (I) | 0.55 |
| Volume of Precipitation Water | |
| Land Area (A) (m ²) | 235,300 |
| Surplus (S) (m/day) | 9.94 x 10 ⁻⁴ |
| Volume of Surplus Water Per Day (AxS) | 233.81 m³/day (233,806 L/day) |
| Volume of Available Dilution Water Per Day ((AxS)xI) | 128.59 m³/day (128,593 L/day) |
| Volume of Runoff Water Per Day ((AxS)x(1-I)) | 105.21 m³/day (105,213 L/day) |



5.2 Predictive Assessment

Based on Procedure D-5-4, a proposed lot is anticipated to generate an average discharge of 1,000 L/day of sewage effluent. Total nitrogen (all species) ultimately converts to nitrate through the wastewater treatment process. Nitrate is considered to be the critical contaminant in sewage effluent. A nitrate loading of 40 grams/lot/day is required to be used to determine the effluent loading from conventional septic systems on the receiving groundwater system.

To determine if the lot size is adequate for the Site, a mass balance calculation is used to determine the sewage loading for nitrate on the property boundary. The mass balance calculations employed is:

$$Q_t C_t = Q_e C_e + Q_i C_i$$

Where:

- Q_t = Total volume ($Q_e + Q_i$)
- C_t = Total concentration of nitrate at the property boundary
- Q_e = Volume of septic effluent
- C_e = Concentration of nitrate in effluent (40 mg/L)
- Q_i = Volume of available dilution water
- C_i = Concentration of nitrate in infiltration water (0.1 mg/L)

To determine the concentration of nitrate at the property boundary (C_t), the above mass balance equation is rearranged as:

$$C_t = \frac{Q_e C_e + Q_i C_i}{Q_t}$$

This equation was used to calculate the predicted nitrate concentration at the lot boundary. Calculation results are detailed in Appendix D and summarized in Table 4.

Surplus water which infiltrates into the soils on-site will also provide groundwater recharge. Although nitrate is not present in atmospheric precipitation, a value of 0.4 mg/L was used in the calculation for the concentration of nitrate in the infiltration water. This value simulates the



long-term contributions of residual agricultural nitrate from historical activities on the Site, and was based on the average groundwater nitrate concentrations measured in the test wells on the undeveloped portions of the Site (Q_i , Section 6.4).

Table 4 Predictive Assessment of Nitrate Concentration – All Lots

| Variable | Value |
|----------------|---------|
| Number of Lots | 41 |
| Q_e (L/day) | 41000 |
| C_e (mg/L) | 40 |
| Q_i (L/day) | 128,593 |
| C_i (mg/L) | 0.4 |
| Q_t (L/day) | 169593 |
| C_t (mg/L) | 9.97 |

Based on the predictive assessment detailed above, the proposed 41 lots would result in a nitrate concentration of 9.97 mg/L, which is less than the ODWQS nitrate concentration limit of 10 mg/L at the property boundary, as required by guideline D-5-4. The proposed development is therefore expected to maintain acceptable nitrate concentration thresholds at property boundaries.

5.3 Conceptual Wastewater System Design

Section 8 of the *Ontario Building Code* (OBC) details the design, construction, operation, and maintenance of sewage systems. No proposed lot specific development information is available at this time. As such, the following assumptions were used in the conceptual on-site sewage system design:

- Four-bedroom dwelling.
- Percolation rate of >50 min/cm (accounts for worst-case soils)
- Minimum lot area of 4,048 m²



According to Table 8.2.1.3.A of the OBC, a four-bedroom dwelling has a daily sewage design flow volume of 2,000 L/day. Based on the design flow for residential occupancy, the proposed septic tank capacity was calculated as follows in accordance with section 8.2.2.3. of the OBC:

$$\text{Volume (V): } V = 2 * Q$$

$$V = 2 * 2,000 \text{ L}$$

$$V = 4,000 \text{ L}$$

A single two compartment septic tank with capacity of 4,500 L would be suitable to achieve the minimal capacity requirements.

The estimated percolation times from the soil samples for the proposed lots across the Site were between 30 and 35. However, bedrock was observed in 17 of 18 test pits, several directly under the topsoil layer, ranging from depths of 0.14 to 1.74 mbgs. As such, a percolation rate of 50 min/cm was considered as a worst case. A conventional leaching bed will require a minimum vertical separation of 0.9 m between the bedrock contact as per the OBC; as such, the proposed leaching beds may be required to be either partly or fully raised.

Considering worst-case conditions ($T > 50$ min/cm, bedrock at the surface, and the smallest proposed lot of 4,048 m²), a conceptual sewage system design using a raised filter bed was explored. The total required footprint is determined by the allowable sewage loading rate based on Table 8.7.4.1. of the OBC. Using a soil percolation time of 50 min/cm, the maximum loading rate is 4 L/m²/day, the following calculations described the required footprint of the conceptual filter bed components:

$$\text{Effective Filter Area: } A = Q / 75$$

$$A = (2,000 \text{ L/d}) / 75$$

$$A = 26.7 \text{ m}^2$$

$$\text{Loading Area: } A = Q / \text{LR}$$

$$A = (2,000 \text{ L/d}) / (4)$$

$$A = 500 \text{ m}^2$$



Based on a daily sewage design flow of 2,000 L/day, the loading area (total footprint) of the proposed raised leaching bed needs to be a minimum of 500 m². Considering worst-case percolation rates for soils and the lot with the smallest area, 3,548 m² would remain for the development of a residential dwelling.

The large area of the Site will provide adequate space for the installation of on-site wastewater treatment systems and should be able meet the required setback distances (i.e., structures, property lines, wells etc.) outlined in OBC Tables 8.2.1.6.A and 8.2.1.6.B. However, each lot should be considered and evaluated independently for each Site-specific sewage system design. The Site conditions appear feasible to install on-site wastewater systems.



6.0 Water Supply Assessment

The results obtained for the water supply assessment are discussed in the following subsections.

6.1 Well Inventory Survey

6.1.1 MECP Well Records Assessment

Cambium accessed the MECP Water Well Information System to review water well records within 500 m of the Site (Ministry of the Environment, Conservation and Parks, 2023b). A total of 58 records were identified, all of which describe wells installed into bedrock. The records identified one abandoned water supply well, one recharge well, and the remaining wells were all water supply wells. The bedrock lithology for all records were described as limestone or sandstone overlain by clay or sand. The locations of wells records identified within 500 m of the Site are illustrated in Figure 4. A summary of water well information, including total depth, static water level, and recommended pumping rate, is presented in Table 5. Further details are provided Appendix E.

Table 5 MECP Water Well Information Summary

| | | Depth (mbgs) | Depth Water Found (mbgs) | Static Water Level (mbgs) | Recommended Pumping Rate (L/min) |
|-----------------------------|---------|--------------|--------------------------|---------------------------|----------------------------------|
| Bedrock Wells Count = 58 | Minimum | 12.80 | 7.62 | 1.00 | 12.00 |
| | Maximum | 29.87 | 28.96 | 14.00 | 482.00 |
| | Average | 21.71 | 18.57 | 6.30 | 63.16 |

6.1.2 Door-to-Door Well Survey

A door-to-door survey of all accessible properties within 500 m of the property was conducted by Cambium staff on February 9th, 2024, to confirm details in the public record and to identify any wells not included in the MECP records assessment. Thirty properties were visited, and in-person interviews were conducted with available homeowners regarding the condition and



details of their water supply well(s), including the method of construction, water level, pump intake, well, and water level depths, water use, and general water quality and well yield.

If a homeowner was unavailable, a letter was left either with an additional resident of the home, or in the mailbox with a pre-paid return envelope. The letter explained the nature of the proposed project and the survey and provided direct contact information for Cambium's project manager.

Details and responses from the well use survey are provided in Appendix E. Generally, survey results indicate that the water supply for the surrounding residences is of good quality, except for hardness. No water quantity issues were noted. No homeowners expressed willingness to have their wells monitored during the pumping test for the proposed development. One residential well completed on a lot previously severed from the Site was included in the water supply investigation, however, which is detailed in the following section.

6.2 Water Supply Well Installation

Three test wells, denoted as TW1, TW2, and TW3, were installed at the Site by AirRock Drilling in January 2024. Pumping tests were completed at all three wells, as well as a residential well (RW1) which was installed at the residential property severed from the northwestern edge of the Site (987 Matheson Drive), to characterize the aquifer as per Guideline D-5-5 .

Well records for the test wells and residential well indicate sandstone bedrock was encountered during drilling, with little to no overburden noted. This is consistent with available geological mapping (Section 3.4), as well as the shallow depth to bedrock encountered during the subsurface investigation at the Site (Section 4.1). Well construction details for the four wells are summarized in Table 6 and well records are included in Appendix E.



Table 6 Test Well Construction Details

| Well ID | Well Tag Number | Well Diameter (m) | Depth (mbgs) | Casing Stick-up (mags*) | Water Level (mbgs) |
|---------|-----------------|-------------------|--------------|-------------------------|--------------------|
| TW1 | A395660 | 0.152 | 24.58 | 0.52 | 8.82 |
| TW2 | A395658 | 0.152 | 25.17 | 0.60 | 9.70 |
| TW3 | A395659 | 0.152 | 31.80 | 0.55 | 11.93 |
| RW1 | A378942 | 0.152 | 22.47 | 0.68 | 7.14 |

*mags = meters above ground surface

6.3 Hydraulic Pumping Tests

Hydraulic pumping tests were completed by Cambium staff at the four identified wells between February 26th and March 8th, 2024. Prior to the first test, Solinst Levelloggers (loggers) were installed in all wells for the duration of the pumping tests to monitor water levels before, during, and after all tests. Manual measurements were also recorded during the pumping tests to mitigate the possibility of equipment failure.

The test wells were chlorinated on February 9th, 2023, to ensure adequate disinfection within each well. A disinfected submersible pump was then installed in each well prior to testing. Following pump installation, the water level in the test well was allowed to recover to static conditions before pumping began. The pumping rate for each test was controlled by a valve connected to a digital flow meter and water was discharged in a downslope direction approximately 15 m from each test well.

The pumping test at RW1 was completed with the pump previously existing in the well. Pumping was achieved by opening an outside garden tap, with water discharging through a garden hose directed away from the well head area.

Specific details pertaining to each pumping test are described in the following subsections.

6.3.1 TW1 Pumping Test

The pumping test for TW1 was completed by Cambium staff on February 28th, 2024. Well water levels measured during TW1 pumping test activities are provided in Appendix F.



The static water level in TW1 was 7.95 mbgs prior to commencing the pumping test. The pump was installed at a depth of approximately 19.5 mbgs. The available drawdown in the well was therefore approximately 11.6 m (height of static water level above pump).

Hydraulic testing began at 9:21 am and ran for a duration of six hours. A pumping rate of 14 L/min was maintained for the majority of the test. The total volume of water discharged from TW1 during the pumping test was approximately 5,000 L.

Water levels in TW1 initially decreased 9 cm during the first 11 minutes of the test, however after this time water levels rose, and were 6 cm higher than static water level at 3:31 pm, the time of pumping cessation. Similar trends of increasing water levels were measured in the other wells monitored during the test (TW2, TW3, RW1), which indicates the presence of background water levels trends that are of greater influence than potential effects from TW1 pumping.

The approximate 5,000 L that was discharged from TW1 during the pumping test is greater than daily demand of 2,000 L/day for a typical four-bedroom residence estimated by Part 8 of the Ontario Building Code (O Reg. 332/12). Additionally, the pumping rate of 14 L/min is greater than the typical peak demand rate for a 4-bedroom residence at 13.7 L/min as per MECP Procedure D-5-5 (Ministry of the Environment, 1996b). These results, along with the absence of observable water level responses due to TW1 pumping in the other wells monitored during testing activities, indicate that TW1 is anticipated to provide sufficient yield for a residential dwelling without detrimental effect to surrounding water users.

6.3.2 TW2 Pumping Test

The pumping test for TW2 was completed by Cambium staff on February 27th, 2024. Well water levels measured during TW2 pumping test activities are provided in Appendix F.

The static water level in TW2 was 9.26 mbgs prior to commencing the pumping test. The pump was installed at a depth of approximately 19.5 mbgs. The available drawdown in the well was therefore approximately 10.2 m (height of static water level above pump).



Hydraulic testing began at 9:20 am, at a pumping rate of 14 L/min. At 56 minutes into the test, a rupture in the discharge line occurred down the well and pumping activities ceased. The issue was resolved, and testing resumed at 11:40 am. Pumping continued for 5 hours at a continuous rate of 14 L/m, and then ceased at 4:40 pm. The total volume of water discharged from TW2 during the pumping test was approximately 5,000 L.

Water levels in TW2 initially decreased to a maximum drawdown of 3 cm at 1:07 pm, however after this time water levels rose, achieving pre-test water level conditions by the time of pumping cessation. Similar trends of increasing water levels were measured in the other wells monitored during the test (TW1, TW3, RW1), which indicates the presence of background water levels trends that are of greater influence than potential effects from TW2 pumping.

The approximate 5,000 L that was discharged from TW2 during the pumping test is greater than daily demand of 2,000 L/day for a typical four-bedroom residence estimated by Part 8 of the Ontario Building Code (O Reg. 332/12). Additionally, the pumping rate of 14 L/min is greater than the typical peak demand rate for a 4-bedroom residence at 13.7 L/min as per MECP Procedure D-5-5 (Ministry of the Environment, 1996b). These results, along with the absence of observable water level responses due to TW2 pumping in the other wells monitored during testing activities, indicate that TW2 is anticipated to provide sufficient yield for a residential dwelling without detrimental effect to surrounding water users.

6.3.3 TW3 Pumping Test

The pumping test for TW3 was completed by Cambium staff on February 26th, 2024. Well water levels measured during TW3 pumping test activities are provided in Appendix F.

The static water level in TW3 was 11.46 mbgs prior to commencing the pumping test. The pump was installed at a depth of approximately 24.5 mbgs. The available drawdown in the well was therefore approximately 13.0 m (height of static water level above pump).

Hydraulic testing began at 1:52 pm and ran for a duration of six hours at a continuous pumping rate of 14 L/min. Pumping ceased at 8 pm. The total volume of water discharged from TW3 during the pumping test was approximately 5,000 L.



Water levels in TW3 decreased to a maximum drawdown of 2 cm at the time of pumping cessation. A similar trend of 2 cm drawdown was measured in the other wells monitored during the test (TW1, TW2, RW1). Following pumping cessation, water levels rose to 1 cm above pre-test water levels conditions within 8 minutes. No water level changes were noted in the monitoring wells. These results, in combination with the background trends noted during the TW1 and TW2 pumping tests, indicate the presence of background water levels trends that are of greater influence than potential effects from TW3 pumping.

The approximate 5,000 L that was discharged from TW3 during the pumping test is greater than daily demand of 2,000 L/day for a typical four-bedroom residence estimated by Part 8 of the Ontario Building Code (O Reg. 332/12). Additionally, the pumping rate of 14 L/min is greater than the typical peak demand rate for a 4-bedroom residence at 13.7 L/min as per MECP Procedure D-5-5 (Ministry of the Environment, 1996b). These results, along with the absence of observable water level responses due to TW3 pumping in the other wells monitored during testing activities, indicate that TW3 is anticipated to provide sufficient yield for a residential dwelling without detrimental effect to surrounding water users.

6.3.4 RW1 Pumping Test

The pumping test for RW1 was completed by Cambium staff on March 8th, 2024. Well water levels measured during RW1 pumping test activities are provided in Appendix F.

The static water level in RW1 was 5.81 mbgs prior to commencing the pumping test. The depth of the pump previously installed in the well is unknown but presumed to be approximately 19.5 mbgs. Given this depth, the available drawdown in the well would be approximately 13.7 m (height of static water level above pump).

Hydraulic testing began at 10:14 pm and ran for a duration of six hours. Pumping rates during the test were variable, ranging from approximately 10 to 14 L/min for the first hour, and 18 to 20 L/min for the remaining 5 hours. The total volume of water discharged from RW1 during the pumping test was approximately 6,000 L.



Water levels in RW1 decreased to a maximum drawdown of 10 cm at the time of pumping cessation (4:14 pm), which represents approximately less than 1% of the total drawdown available in the well. Following pumping cessation, water levels in RW1 recovered to pre-test conditions within 23 minutes. A maximum drawdown of 4 cm was also measured in TW1 which was monitored during the test. TW1 water levels regained pre-test conditions within 1 hour following pumping cessation.

The approximate 6,000 L that was discharged from RW1 during the pumping test is greater than daily demand of 2,000 L/day for a typical four-bedroom residence estimated by Part 8 of the Ontario Building Code (O Reg. 332/12). Additionally, the dominant pumping rate of 18 L/min is greater than the typical peak demand rate for a 4-bedroom residence at 13.7 L/min as per MECP Procedure D-5-5 (Ministry of the Environment, 1996b). These results, along with the absence of observable water level responses due to RW1 pumping in the other wells monitored during testing activities, indicate that RW1 is anticipated to provide sufficient yield for a residential dwelling without detrimental effect to surrounding water users.

6.4 Groundwater Quality Analysis

Unfiltered groundwater samples were collected from TW1, TW2, TW3, and RW1 during the last 30 minutes of the pumping test conducted on each well. Residual chlorine concentrations in the wells were measured to be less than 0.01 mg/L prior to sampling. All samples were submitted for analysis of general organic and inorganic chemistry to Bureau Veritas in Mississauga, Ontario, which is accredited by the Canadian Association for Laboratory Accreditation Inc. Samples were stored at a temperature between 0 and 10 °C prior to and during transport.

Water quality results were compared against the ODWQS criteria for parameters outlined in Guideline D-5-5 Tables 1, 2, and 3 (Ministry of the Environment, 1996b). A complete summary of water quality results and certificates of lab analyses are provided in Appendix G. Parameters reported at concentrations exceeding ODWQS criteria are outlined in Table 7.



Table 7 Summary of ODWQS Exceedances

| Parameter | Units | ODWQS Criteria | TW1 | TW2 | TW3 | RW1 |
|----------------------------------|------------|---|-----|-----|-----|-----|
| Hardness (as CaCO ₃) | mg/L | 80-100 (aesthetic/operation guideline) | 190 | 210 | 300 | 260 |
| Total Coliforms | CFU/100 ml | 0 | 27 | 0 | 0 | 0 |

Hardness was the only parameter with measured concentrations exceeding ODWQS criteria in all wells. Hardness is an aesthetic/operational parameter which is typically elevated in limestone bedrock aquifers and is readily amenable with a conventional water softening unit.

Total Coliforms were also elevated above ODWQS guidelines in TW1. The reason for the exceedance is unknown at this time. It is possible that sampling error may have occurred (i.e. inadequate disinfection of the well after installation or contamination of sample during collection). Local aquifer contamination from septic system systems is ruled out as a cause for elevated total coliforms due the undeveloped nature of the property and lack of measurable E.coli in the sample. Lack of detectable Total Coliforms in the other tested wells also indicate that the issue is not systemic across the Site. Shock chlorination and resampling is recommended prior to use of the well. Should they persist, elevated total coliforms can be effectively treated with a residential water disinfection system (i.e. UV treatment or chlorination).

Nitrate concentrations in groundwater samples from test wells on the undeveloped portions of the Site were 0.26 mg/L (TW1), 0.30 mg/L (TW2), and 0.64 mg/L (TW3). The nitrate concentration in the groundwater sample from the well at 987 Matheson Drive was 1.79 mg/L. This is consistent with nitrate results obtained for other lots on the perimeter of the Site reported by Macintosh Perry (2022), which reported a nitrate concentration of <0.1 mg/L in the water supply well at 999 Matheson Drive, and 1.9 mg/L at 862 Rosedale Road.

All wells are completed at similar depths within the local bedrock aquifer. Detectable nitrate in most wells suggests that there is incomplete hydraulic separation between the surface and the water supply aquifer.



Low nitrate concentrations observed in the on-site test wells are inferred to be the result of historical agricultural land use at the Site. Change in land use at the Site will remove this agricultural nitrate source and groundwater concentrations are anticipated to decline to the rainwater/snow melt nitrate concentration of <0.1 mg/L. To simulate the long-term mobilization of residual agricultural nitrate by water infiltrating through the unsaturated zone, a background concentration equal to the average nitrate concentration of the on-site test wells (0.4 mg/L) was used in the nitrate attenuation predictive assessment (Section 5.2).

Elevated concentrations in the groundwater samples from water supply wells tested at the existing residential properties along the perimeter of the Site suggest that nitrate will increase in the water supply aquifer following installation of septic systems. Results suggest the long-term concentration under lots with on-site septic beds is <2 mg/L.



7.0 Conclusions and Recommendations

Cambium was retained by the Client to complete a hydrogeological assessment for a proposed rural subdivision in the Township of Montague, Ontario, to demonstrate whether water and wastewater services for the facility can be provided in accordance with the D-5-4 and D-5-5 Guidelines without adversely impacting existing development in the surrounding area.

7.1 Wastewater Assessment

A soils investigation completed at the Site indicates the subsurface consists of a thin layer of sand and silt to silty sand which is underlain by shallow bedrock. Soil sample analysis indicates the sand and silt/silty sand has estimated percolation times (T times) ranging from 30 to 35 min/cm, which reflects moderate capacity for water to infiltrate into the shallow subsurface environment.

A nitrate impact assessment given an average daily septic flow of 1,000 L/day for each lot predicts that 41 lots within the 23.53 ha developable area will result in nitrate concentrations of 9.97 mg/L at property boundaries, which is less than the required ODWQS limit of 10 mg/L.

The conceptual wastewater design indicates that shallow soils at the Site may require raised filter beds as part of the private wastewater systems. The required footprint for a raised filter bed was calculated to be 500 m², leaving at minimum 3,548 m² of available area for development (estimated using the smallest proposed lot). Each lot should be considered and evaluated independently for each site-specific sewage system design. The Site conditions appear feasible to install on-site wastewater systems.

7.2 Water Supply Assessment

Hydraulic testing of the three on-site wells (TW1, TW2, and TW3) and one residential well (RW1) located on the adjacent severed parcel was completed between February 26th and March 8th, 2024. A minimum discharge rate of approximately 14 L/min was maintained for 6 hours, during all tests, which resulted in a minimum of approximately 5,000 L being pumped



from each well. Water level drawdown was negligible (i.e. < 0.1 m) in all test and observation wells.

Water quality samples collected from all four wells indicate water from the supply aquifer is of good quality, with only hardness exceeding ODWQS guidelines in all wells. This parameter is readily amendable with standard water treatment systems.

Total Coliforms were measured to be elevated above ODWQS guidelines in TW1. The reason for the exceedance is unknown at this time, however local aquifer contamination from septic system systems is ruled out as a cause for elevated total coliforms due the undeveloped nature of the property and lack of measurable E. coli in the sample. Shock chlorination and resampling is recommended prior to use of the well. Should they persist, elevated total coliforms can be effectively treated with a residential water disinfection system (i.e. UV treatment or chlorination).

Based on the pumping test and water quality results, it is anticipated that all test wells can sustainably provide a sufficient quantity of potable water to meet the daily demand for a residential dwelling without detrimental effect to surrounding water users.




8.0 Closing


We trust that the information in this submission meets your current requirements. If you have any questions regarding the contents of this report, please contact the undersigned.

Respectfully submitted,

Cambium Inc.

DocuSigned by:

CC6796E7624B485...

Maren Catt
Technician – Junior Hydrogeologist

DocuSigned by:

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Natasha Augustine, M.Sc.
Coordinator – Environmental Scientist

Signed by:

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Kyle Horner, Ph.D., P.Geo.
Senior Project Manager – Senior Hydrogeologist

Signed by:

2024-12-02

\\cambiumincstorage.file.core.windows.net\projects\19300 to 19399\19387-001 Smart Homes - W&WW - Matheson & Rosedale Subdiv\Deliverables\REPORT - HydroG\Final\2024-12-02 RPT HydroG SHOI Matheson Subdivision r4.docx



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10.0 Standard Limitations

Limited Warranty

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The findings and results presented in reports prepared by Cambium are based on the materials and information provided by the client to Cambium and on the facts, conditions and circumstances encountered by Cambium during the performance of the work requested by the client. In formulating its findings and results into a report, Cambium assumes that the information and materials provided by the client or obtained by Cambium from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. Cambium relies on its client to inform Cambium if there are changes to any such information and materials. Cambium does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. Cambium will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from Cambium during the provision of services, work or reports.

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Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

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The client expressly agrees that Cambium employees shall have no personal liability to the client with respect to a claim, whether in contract, tort and/or other cause of action in law. Furthermore, the client agrees that it will bring no proceedings nor take any action in any court of law against Cambium employees in their personal capacity.



Appended Figures

**HYDROGEOLOGICAL
ASSESSMENT REPORT**
SMART HOMES OTTAWA INC.
Part Lot 20 Concession 3
Montague, Ontario

LEGEND

-  Highway
-  Major Road
-  Minor Road
-  Railway
-  Watercourse
-  Water Area
-  First Nations Reserve
-  Provincial Park
-  Wooded Area
-  Built Up Area

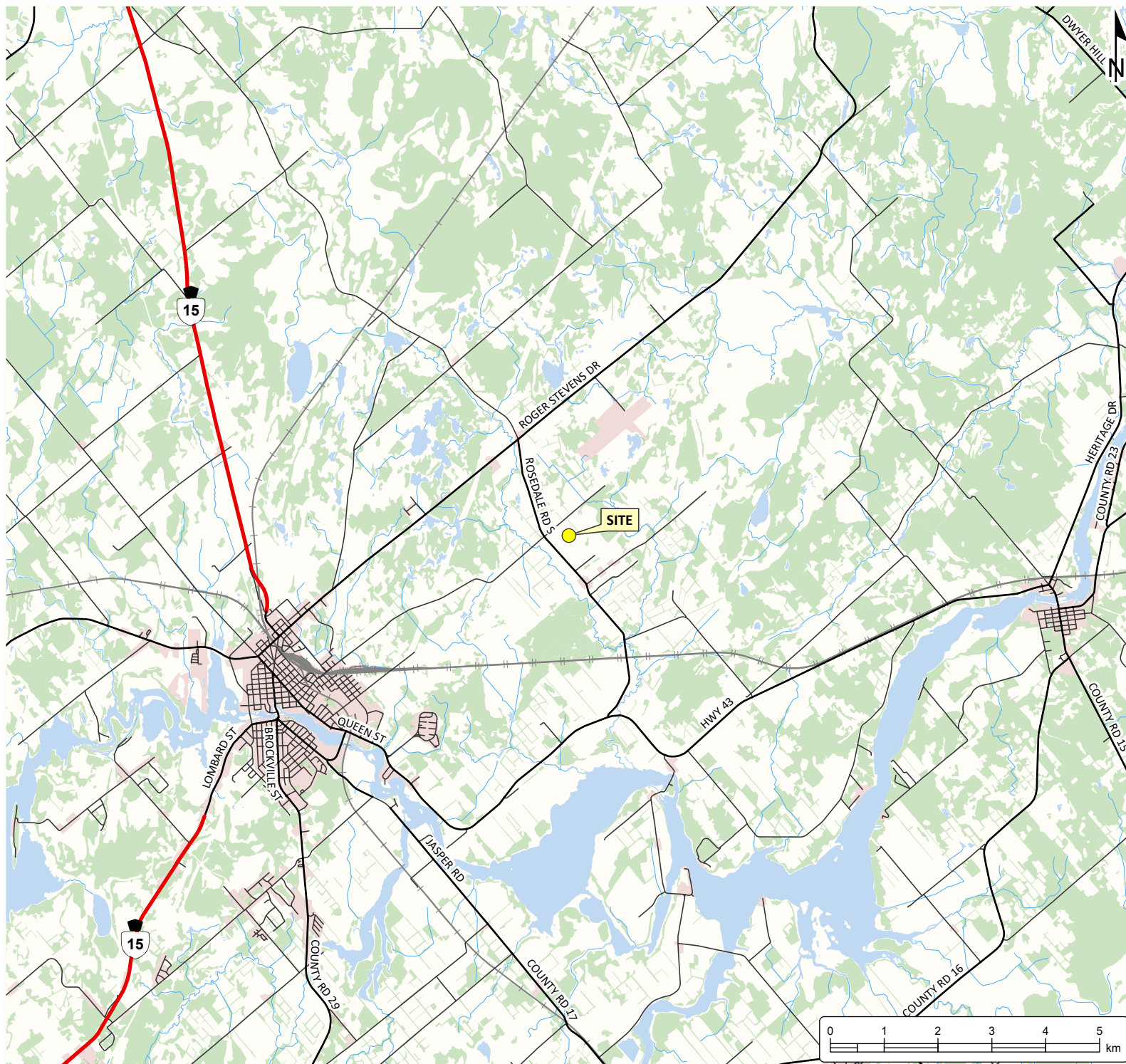
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 Peterborough, Ontario, K9H 1E5
 Tel: (705) 742.7900 Fax: (705) 742.7907
 www.cambium-inc.com

SITE LOCATION PLAN

| | |
|---------------------------|--------------------------------------|
| Project No.: 19387-001 | Date: July 2024 |
| Scale: 1:100,000 | Projection: NAD 1983 UTM Zone 18N |
| Created by: DBB | Checked by: KH |
| Figure: 1 | |





**HYDROGEOLOGICAL
ASSESSMENT REPORT**
SMART HOMES OTTAWA INC.
Part Lot 20 Concession 3
Montague, Ontario

LEGEND

Site (approximate)

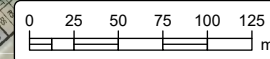
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SITE PLAN

| | |
|---------------------------|--------------------------------------|
| Project No.: 19387-001 | Date: December 2024 |
| Scale: 1:4,250 | Projection: NAD 1983 UTM Zone 18N |
| Created by: DBB | Checked by: KH |
| Figure: 2 | |





HYDROGEOLOGICAL ASSESSMENT REPORT

SMART HOMES OTTAWA INC.
Part Lot 20 Concession 3
Montague, Ontario

LEGEND

-  Test Well
-  Residential Well
-  Test Pit
-  Site (approximate)

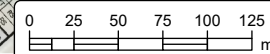
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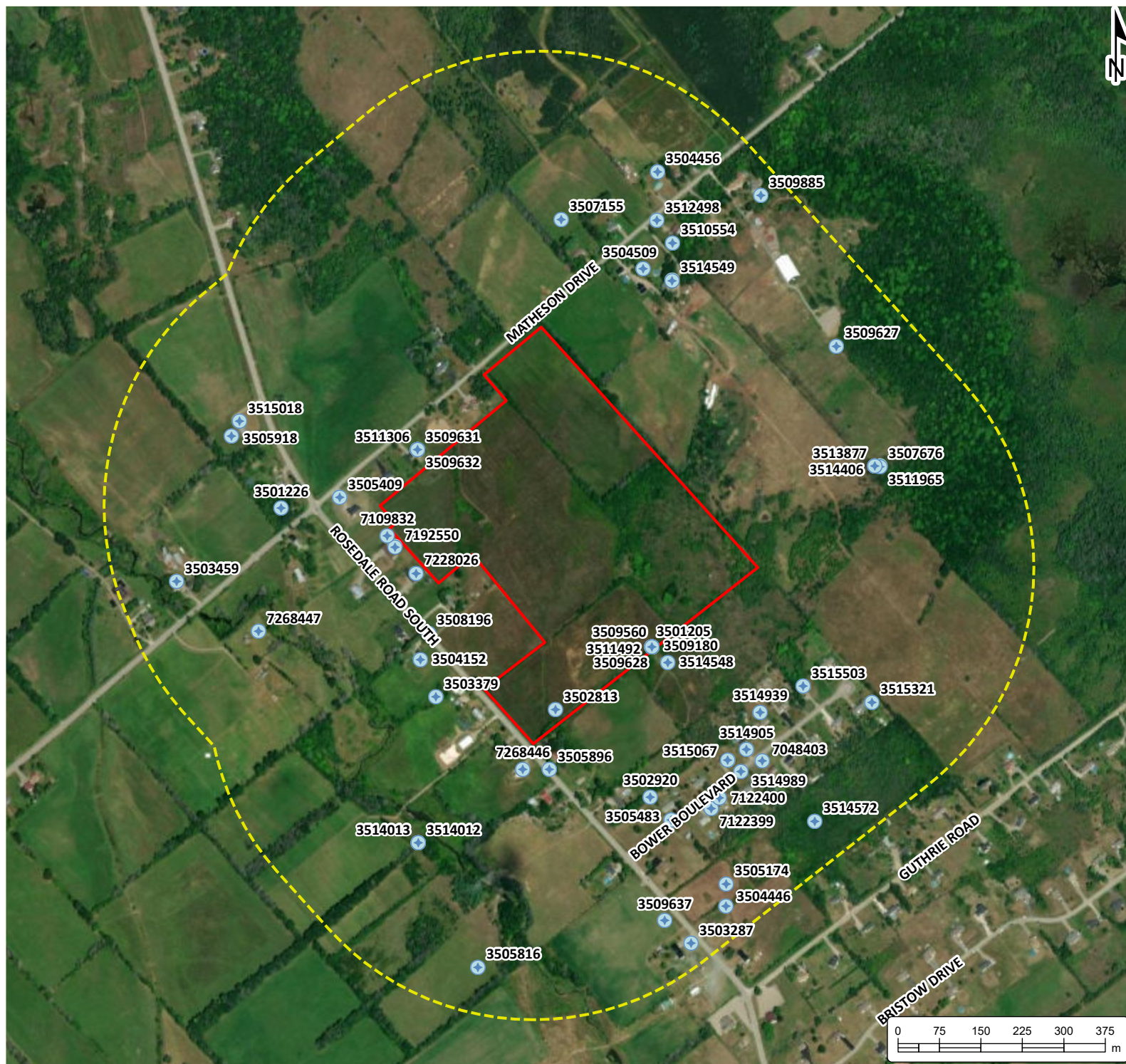


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TEST PIT AND TEST WELL LOCATION PLAN




| | |
|---------------------------|------------------------|
| Project No.: 19387-001 | Date: December 2024 |
| Scale: 1:4,250 | Rev.: Rev. |
| Created by: DBB | Checked by: KH |
| Figure: 3 | |





**HYDROGEOLOGICAL
ASSESSMENT REPORT**
SMART HOMES OTTAWA INC.
Part Lot 20 Concession 3
Montague, Ontario

LEGEND

-  Water Well Record
-  Study Area (500m)
-  Site (approximate)

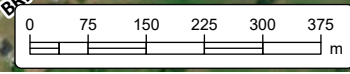
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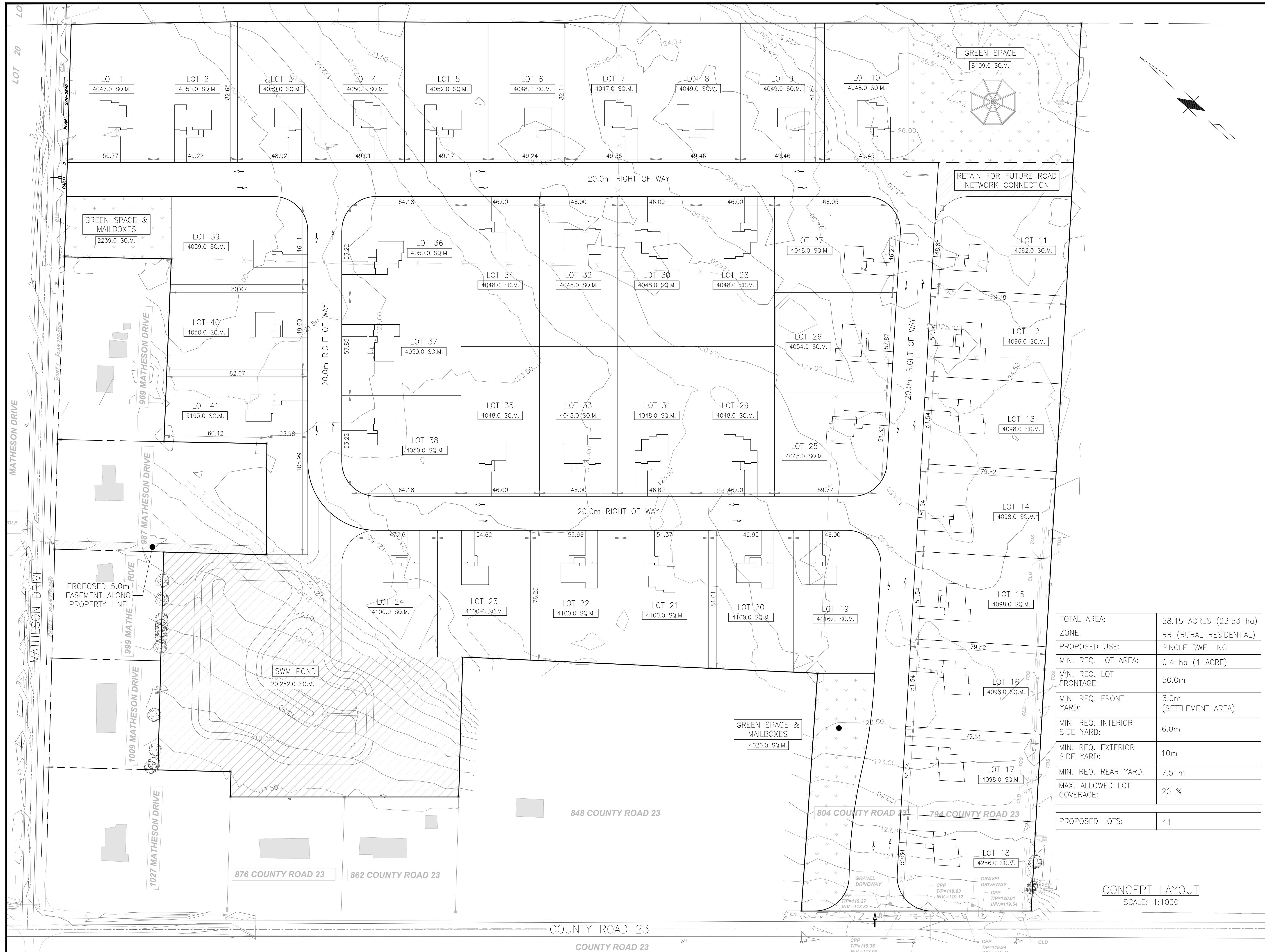
**MECP WELL RECORDS
WITHIN 500m**

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| Scale: 1:9,750 | Rev.: KH |
| Created by: DBB | Checked by: KH |
| Projection: NAD 1983 UTM Zone 18N | Figure: 4 |





Appendix A
Property and Land Information



| | |
|-------------------------------|------------------------|
| TOTAL AREA: | 58.15 ACRES (23.53 ha) |
| ZONE: | RR (RURAL RESIDENTIAL) |
| PROPOSED USE: | SINGLE DWELLING |
| MIN. REQ. LOT AREA: | 0.4 ha (1 ACRE) |
| MIN. REQ. LOT FRONTAGE: | 50.0m |
| MIN. REQ. FRONT YARD: | 3.0m (SETTLEMENT AREA) |
| MIN. REQ. INTERIOR SIDE YARD: | 6.0m |
| MIN. REQ. EXTERIOR SIDE YARD: | 10m |
| MIN. REQ. REAR YARD: | 7.5 m |
| MAX. ALLOWED LOT COVERAGE: | 20 % |
| PROPOSED LOTS: | 41 |

CONCEPT LAYOUT
SCALE: 1:1000

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BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER REPRESENTS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR REPRESENTS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
THIS DRAWING ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THIS DRAWING EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK.
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IN THE EVENT THE CLIENT, THE CLIENTS CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE, MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY EFI WITHOUT OBTAINING EFI'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST EFI AND TO RELEASE EFI FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH CHANGES.
IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS EFI FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.
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| REFERENCES | | | | |
|------------|----------|-----------------------|----|-------|
| NO. REF. | NO. DWG. | TITLE | BY | |
| 1 | | | | |
| 2024-11-18 | G | ISSUED FOR DRAFT PLAN | KT | |
| 2024-09-27 | F | REDUCED LOTS | KT | RS |
| 2024-08-30 | E | MISC. REVISION | KT | RS |
| 2024-06-10 | D | REVISED LAYOUT | KT | RS |
| 2024-05-23 | C | REVISED W/ 20m ROW | KT | RS |
| 2024-02-05 | B | REVISED FOR REVIEW | KT | RS |
| 2023-12-15 | A | ISSUED FOR REVIEW | KT | RS |
| DATE | REV. | REVISIONS | BY | APP'D |

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DATE: 2024 NOVEMBER 18
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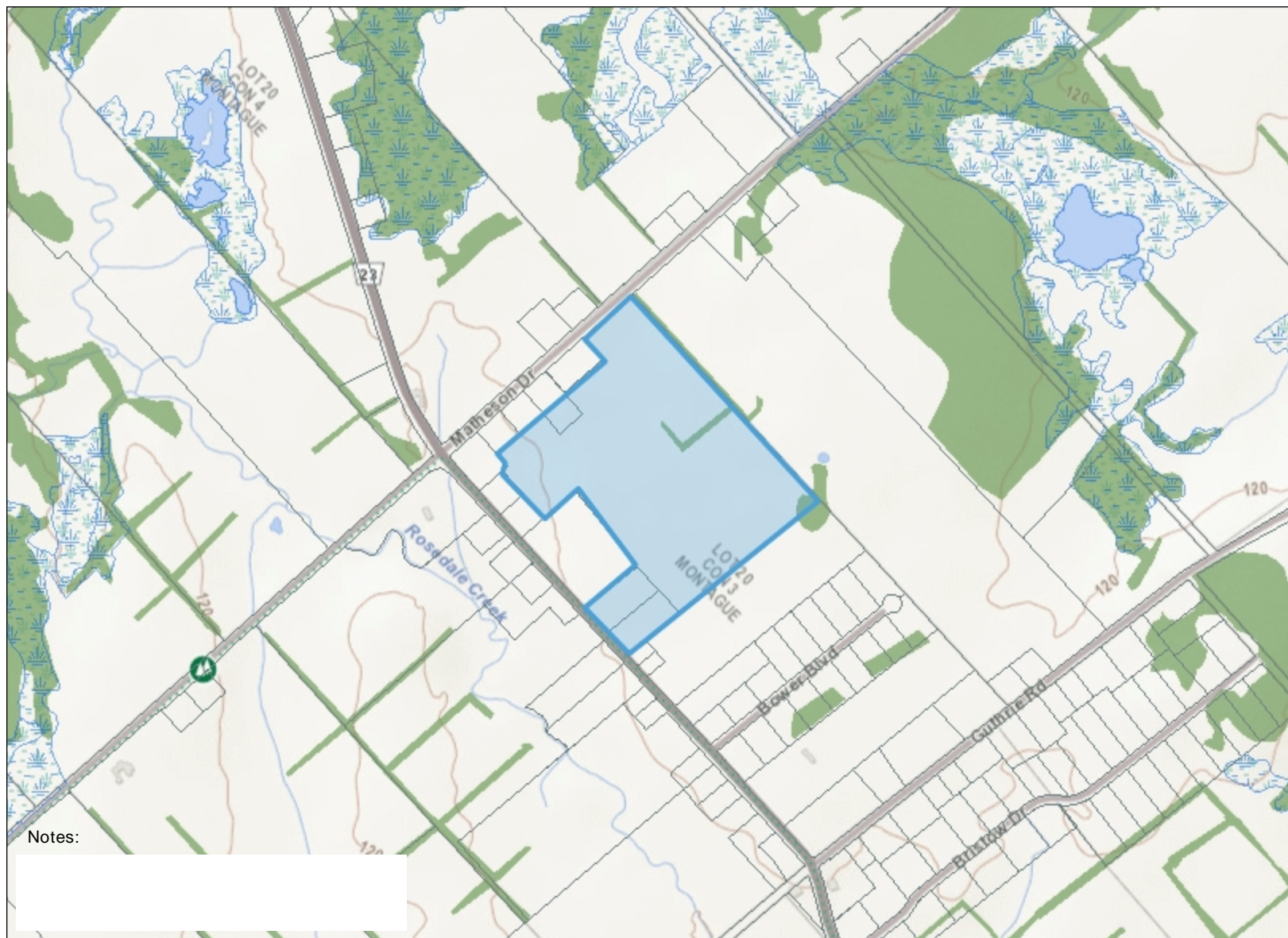
CLIENT: SMART HOMES OTTAWA
6610 FOURTH LINE RD,
NORTH GOWER, ON
K0A 0B5

SITE: ROSEDALE DR SOUTH/ MATHESON DR












TITLE: SUBDIVISION
CONCEPT LAYOUT PLAN

| | | | |
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| AS SHOWN | 2023/12/08 | KT | RS |

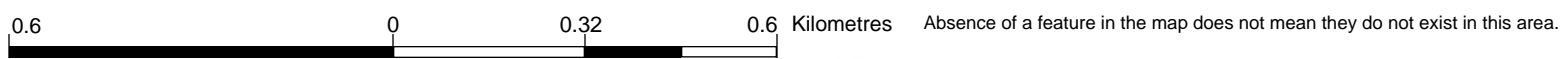
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|-------------|-------------|-----------|
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| 23-7213 | 1 | G |




Legend

-  Assessment Parcel
- ANSI**
-  Earth Science Provincially Significant/sciences de la terre d'importance provinciale
-  Earth Science Regionally Significant/sciences de la terre d'importance régionale
-  Life Science Provincially Significant/sciences de la vie d'importance provinciale
-  Life Science Regionally Significant/sciences de la vie d'importance régionale
-  Evaluated Wetland
-  Provincially Significant/considérée d'importance provinciale
-  Non-Provincially Significant/non considérée d'importance provinciale
-  Unevaluated Wetland
-  Woodland
-  Natural Heritage System

Notes:

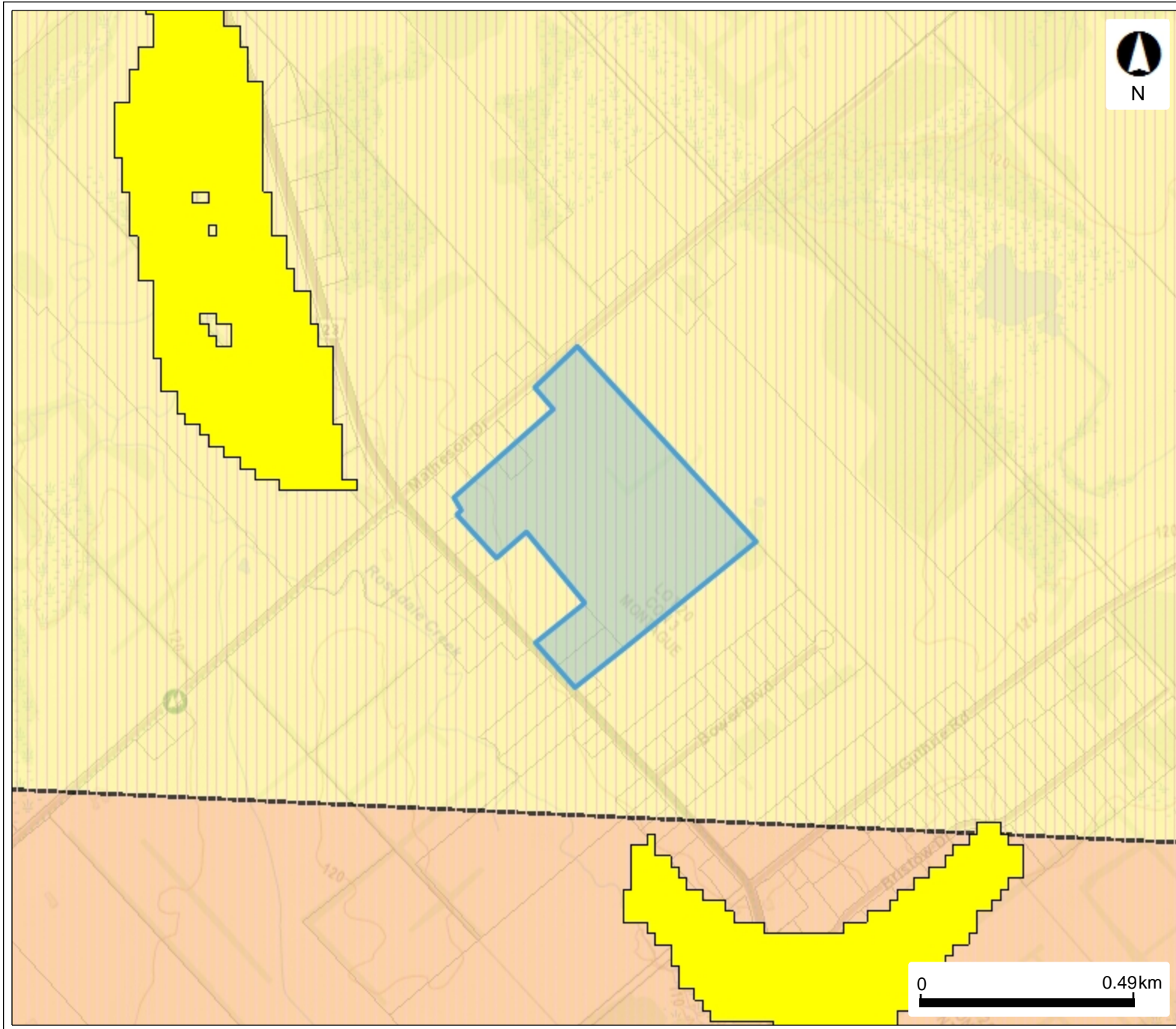


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Source Protection Information Atlas Map



Legend

- Significant Groundwater Recharge Area
 - N/A
 - 0
 - 2
 - 4
 - 6
- Highly Vulnerable Aquifers
- Wellhead Protection Area
 - A
 - B
 - C
 - C1
 - D
 - F
- Assessment Parcel

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.



Appendix B
Test Pit Logs



Cambium Reference # 19387-001

Date: Jan. 04. 2024

Weather: Sunny, windy, -10 °C

Logged by: MC

| Test Pit ID | Depth (mbgs ¹) | Material | Sample |
|-------------|----------------------------|--|--------|
| TP01-24 | 0.00-0.15 | Topsoil | |
| | 0.15-0.42 | Brown silty sand, some gravel, trace boulders, moist, rootlets, loose | GS1 |
| 18T | | | |
| 424661 | | Ended on bedrock at 0.42mbgs | |
| 4975427 | | | |
| TP02-24 | 0.00-0.25 | Topsoil | |
| | 0.25-1.00 | Brown silt and sand, some clay, trace gravel, moist, rootlets, loose | GS1 |
| 18T | 1.00-1.90 | Brown silty sand mixed with grey clay, moist, compact | |
| 424569 | 1.90-2.00 | Grey silty sand, some clay, trace gravel, trace boulders, compact, wet | GS2 |
| 4975343 | | Ended at target depth of 2mbgs | |
| TP03-24 | 0.00-0.12 | Topsoil | |
| | 0.12-0.93 | Brown silty sand, medium to coarse sand, some gravel, trace boulders, rootlets, dry, loose | GS1 |
| 18T | | | |
| 424626 | | Ended on bedrock at 0.93mbgs | |
| 4975211 | | | |
| TP04-24 | 0.00-0.32 | Topsoil | |
| 18T | | Ended on bedrock at 0.32mbgs | |
| 424771 | | | |
| 4975122 | | | |
| TP05-24 | 0.00-0.14 | Topsoil | |
| 18T | | Ended on bedrock at 0.14mbgs | |
| 424511 | | | |
| 4975116 | | | |
| TP06-24 | 0.00-0.26 | Topsoil | |
| | 0.26-0.45 | Brown sand and silt, trace gravel, wet, dense | GS1 |
| 18T | | | |
| 424950 | | Water trickling in around bottom of TP, pooling in bottom of TP | |
| 4975029 | | Ended on bedrock at 0.45mbgs | |
| TP07-24 | 0.00-0.22 | Topsoil | |
| 18T | | Ended on bedrock at 0.22 | |
| 425049 | | | |
| 4975108 | | | |
| TP08-24 | 0.00-0.32 | Topsoil | |
| | 0.32-0.34 | Brown silty sand, moist, loose | * |
| 18T | | | |
| 425121 | | Ended on bedrock at 0.34mbgs | |
| 4975246 | | | |
| | | * Did not sample due to hard to isolate | |
| Notes: | | | |

¹meters below ground surface



Cambium Reference # 19287-001

Date: Jan. 04. 2024

Weather: Sunny, windy, -10 °C

Logged by: MC

| Test Pit ID | Depth (mbgs ¹) | Material | Sample |
|-------------|----------------------------|--|--------|
| TP09-24 | 0.00-0.22 | Topsoil | |
| | 0.22-0.65 | Brown sand and silt, some clay, trace gravel, moist, dense | GS1 |
| 18T | 0.65-0.84 | Grey clay, trace gravel, moist, dense | GS2 |
| 424924 | | | |
| 4975187 | | Ended on bedrock at 0.84mbgs | |
| TP10-24 | 0.00-0.48 | Topsoil | |
| | 0.23-0.48 | Large slabs of fractured bedrock | |
| 18T | | | |
| 424810 | | | |
| 4975329 | | Ended on bedrock at 0.48mbgs | |
| TP11-24 | 0.00-0.22 | Topsoil | |
| | 0.22-0.53 | Brown silts and sand, moist, loose | GS1 |
| 18T | 0.53-0.64 | Grey silty sand, some clay, moist, dense | GS2 |
| 424857 | | | |
| 4975378 | | Ended on bedrock at 0.64mbgs | |
| TP12-24 | 0.00-0.18 | Topsoil | |
| | | Ended on bedrock at 0.18mbgs | |
| 18T | | | |
| 424999 | | | |
| 4975411 | | | |
| TP13-24 | 0.00-0.25 | Topsoil | |
| | 0.28-0.50 | Brown silt and sand, trace gravel, moist, dense | GS1 |
| 18T | 0.50-1.74 | Grey silty sand, some clay, some gravel, trace boulder, moist, dense | GS2 |
| 424915 | | | |
| 4975489 | | Water trickling in at approximately 0.05m above bottom | |
| | | Ended on bedrock at 1.74mbgs | |
| TP14-24 | 0.00-0.30 | Topsoil | |
| | 0.30-0.46 | Orangy brown silty sand, dense, wet, slumping into hole | GS1 |
| 18T | 0.46-1.08 | Grey silty sand, some clay, trace gravel, wet, slumping into hole | GS2 |
| 424803 | | | |
| 4975628 | 0.5 | Water trickling in and pooling around in the bottom | |
| | | Ended on bedrock at 1.08mbgs | |
| TP15-24 | 0.00-0.20 | Topsoil | |
| | | Ended on bedrock at 0.2mbgs | |
| 18T | | | |
| 424778 | | | |
| 4975460 | | | |
| TP16-24 | 0.00-0.30 | Topsoil | |
| | | Ended on bedrock at 0.3mbgs | |
| 18T | | | |
| 424702 | | | |
| 4975292 | | | |
| Notes: | | | |

¹meters below ground surface



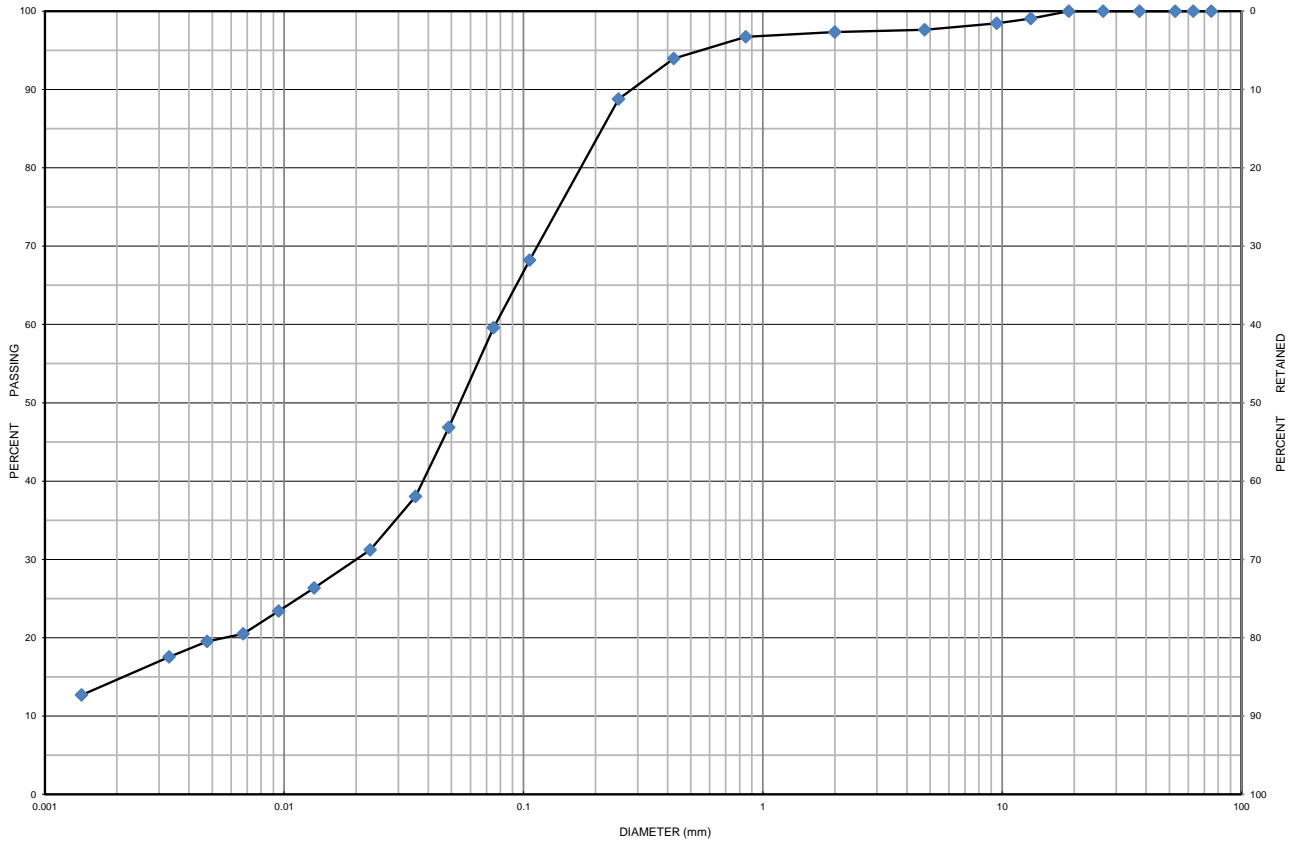
Appendix C
Grainsize Analysis Results



Grain Size Distribution Chart

Project Number: 19387-001 **Client:** EFI Engineering
Project Name: Matheson and Rosedale Subdivision
Sample Date: January 4, 2024 **Sampled By:** Maren Catt - Cambium Inc.
Location: TP 02-24 GS 1 **Depth:** 0.25 m to 1.0 m **Lab Sample No:** S-24-0118

| UNIFIED SOIL CLASSIFICATION SYSTEM | | | | | |
|------------------------------------|-----------------------------|--------|--------|-------------------|--------|
| CLAY & SILT (<0.075 mm) | SAND (<4.75 mm to 0.075 mm) | | | GRAVEL (>4.75 mm) | |
| | FINE | MEDIUM | COARSE | FINE | COARSE |



| MIT SOIL CLASSIFICATION SYSTEM | | | | | | | | | |
|--------------------------------|------|------|--------|--------|--------|--------|--------|----------|--|
| CLAY | SILT | FINE | MEDIUM | COARSE | FINE | MEDIUM | COARSE | BOULDERS | |
| | | SAND | | | GRAVEL | | | | |

| Borehole No. | Sample No. | Depth | Gravel | Sand | Silt | Clay | Moisture |
|--------------------------------------|------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| TP 02-24 | GS 1 | 0.25 m to 1.0 m | 2 | 38 | 46 | 14 | 19.4 |
| Description | | Classification | D ₆₀ | D ₃₀ | D ₁₀ | C _u | C _c |
| Silt and Sand some Clay trace Gravel | | ML | 0.077 | 0.020 | - | - | - |

Additional information available upon request

Issued By: *John Baird*
 (Senior Project Manager)

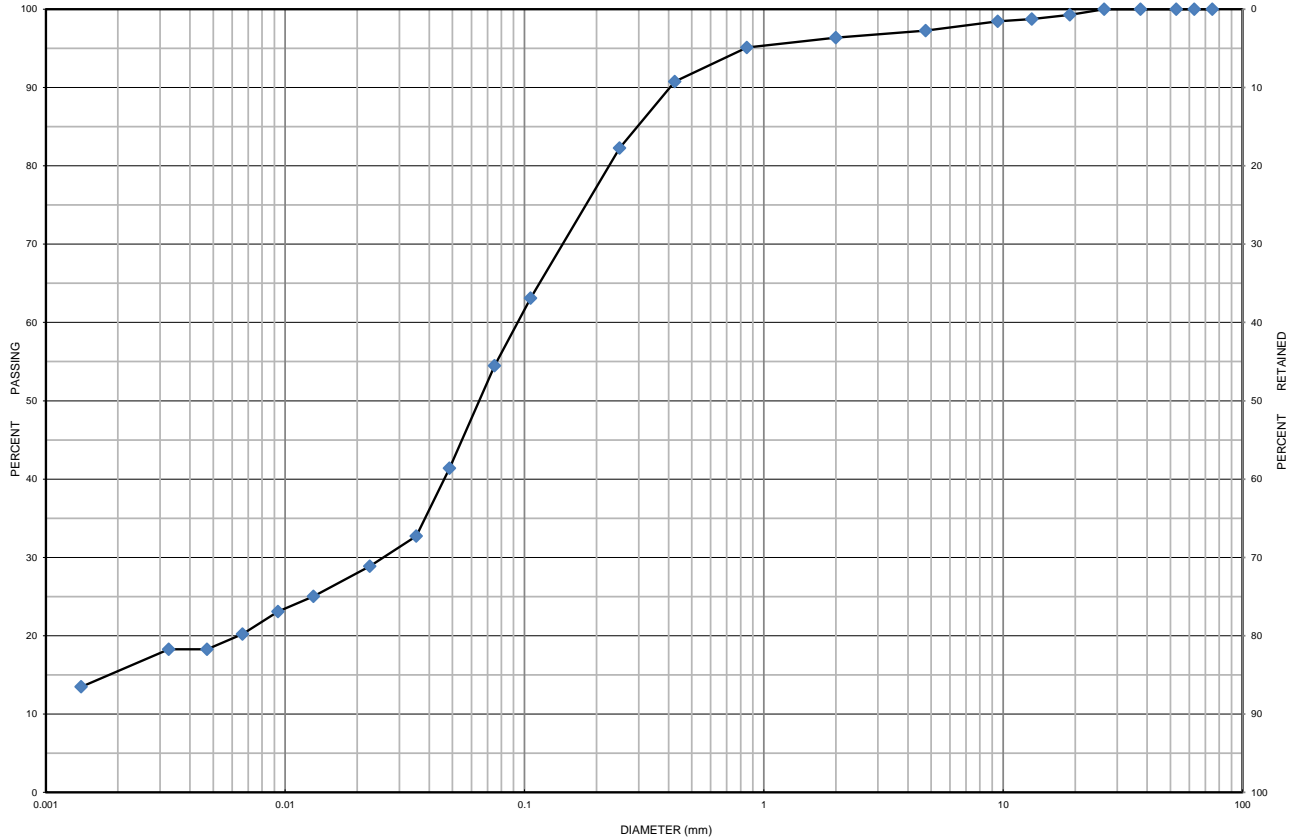
Date Issued: January 24, 2024



Grain Size Distribution Chart

Project Number: 19387-001 **Client:** EFI Engineering
Project Name: Matheson and Rosedale Subdivision
Sample Date: January 4, 2024 **Sampled By:** Maren Catt - Cambium Inc.
Location: TP 09-24 GS 1 **Depth:** 0.22 m to 0.65 m **Lab Sample No:** S-24-0119

| UNIFIED SOIL CLASSIFICATION SYSTEM | | | | | |
|------------------------------------|-----------------------------|--------|--------|-------------------|--------|
| CLAY & SILT (<0.075 mm) | SAND (<4.75 mm to 0.075 mm) | | | GRAVEL (>4.75 mm) | |
| | FINE | MEDIUM | COARSE | FINE | COARSE |



| MIT SOIL CLASSIFICATION SYSTEM | | | | | | | | |
|--------------------------------|------|------|--------|--------|--------|--------|--------|----------|
| CLAY | SILT | FINE | MEDIUM | COARSE | FINE | MEDIUM | COARSE | BOULDERS |
| | | SAND | | | GRAVEL | | | |

| Borehole No. | Sample No. | Depth | Gravel | Sand | Silt | Clay | Moisture |
|--------------------------------------|------------|------------------|-----------------|-----------------|-----------------|----------------|----------------|
| TP 09-24 | GS 1 | 0.22 m to 0.65 m | 3 | 43 | 39 | 15 | 17.1 |
| Description | | Classification | D ₆₀ | D ₃₀ | D ₁₀ | C _u | C _c |
| Sand and Silt some Clay trace Gravel | | ML | 0.093 | 0.026 | - | - | - |

Additional information available upon request

Issued By: *[Signature]*
 (Senior Project Manager)

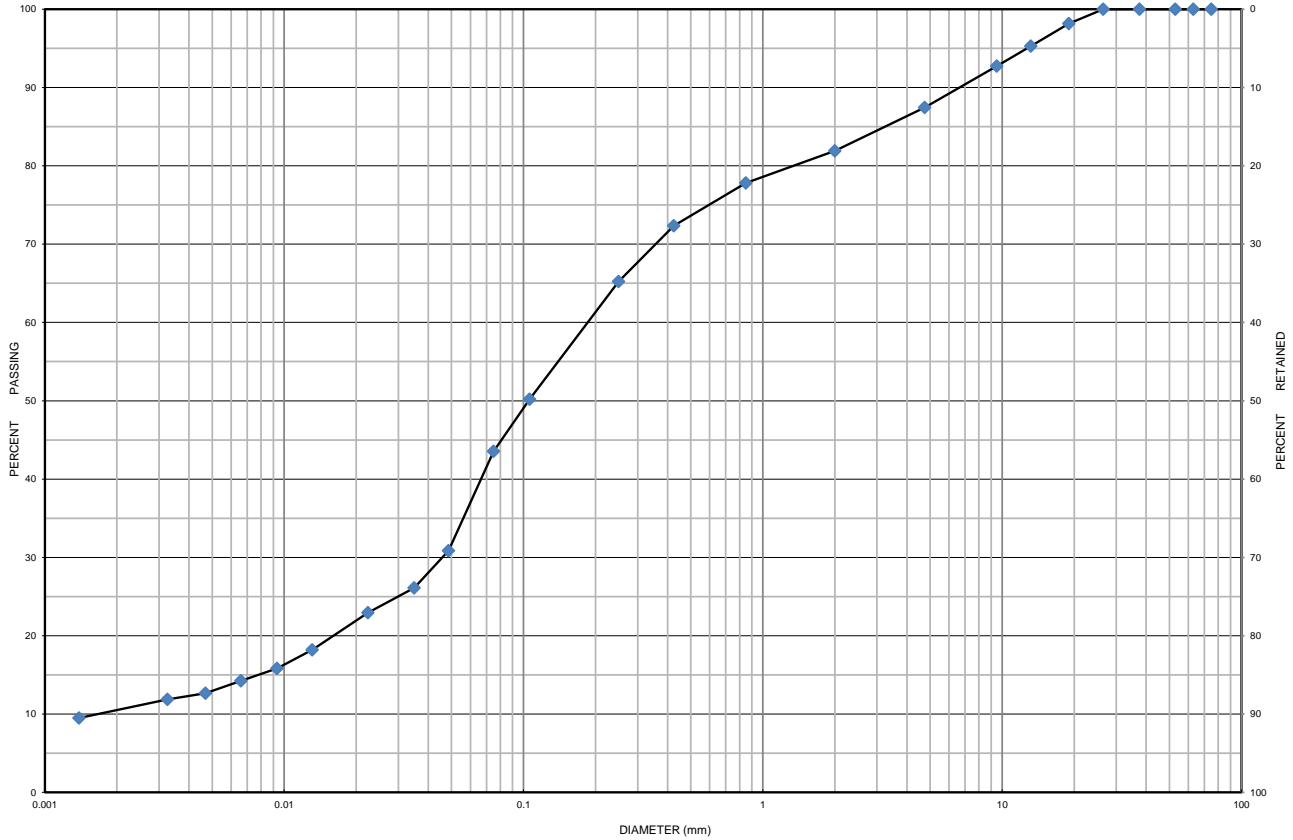
Date Issued: January 24, 2024



Grain Size Distribution Chart

Project Number: 19387-001 **Client:** EFI Engineering
Project Name: Matheson and Rosedale Subdivision
Sample Date: January 4, 2024 **Sampled By:** Maren Catt - Cambium Inc.
Location: TP 13-24 GS 2 **Depth:** 0.5 m to 1.74 m **Lab Sample No:** S-24-0120

| UNIFIED SOIL CLASSIFICATION SYSTEM | | | | | |
|------------------------------------|-----------------------------|--------|--------|-------------------|--------|
| CLAY & SILT (<0.075 mm) | SAND (<4.75 mm to 0.075 mm) | | | GRAVEL (>4.75 mm) | |
| | FINE | MEDIUM | COARSE | FINE | COARSE |



| MIT SOIL CLASSIFICATION SYSTEM | | | | | | | | |
|--------------------------------|------|------|--------|--------|--------|--------|--------|----------|
| CLAY | SILT | FINE | MEDIUM | COARSE | FINE | MEDIUM | COARSE | BOULDERS |
| | | SAND | | | GRAVEL | | | |

| Borehole No. | Sample No. | Depth | Gravel | Sand | Silt | Clay | Moisture |
|----------------------------------|------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| TP 13-24 | GS 2 | 0.5 m to 1.74 m | 13 | 44 | 32 | 11 | 9.4 |
| Description | | Classification | D ₆₀ | D ₃₀ | D ₁₀ | C _u | C _c |
| Silty Sand some Gravel some Clay | | SM | 0.1800 | 0.0400 | 0.0017 | 105.88 | 5.23 |

Additional information available upon request

Issued By: *John Baird*
 (Senior Project Manager)

Date Issued: January 24, 2024



Appendix D
Water Balance Calculations



Water Balance Calculations

| THORNTHWAITE-TYPE MONTHLY WATER-BALANCE MODEL | | | | | | | | | | | | | |
|---|--------------|-------|-------|-------|-------|-----------------|-------------|-------|-------|-------|---------|-----------|---------|
| <i>modified from Dingman 2015: Box 6-8 (pg 299) using ET model of Hamon (1963)</i> | | | | | | | | | | | | | |
| | Input Data | | | | | Computed Values | | | | | | | |
| | | | | | | | | | | | Surplus | 363 mm/yr | |
| Weather Station Location: | Drummond, ON | | | | | Latitude: | 45.0 degree | | | | | | |
| Solar Declination (degree) | -20.6 | -12.6 | -1.5 | 10.0 | 19.0 | 23.1 | 21.0 | 13.4 | 2.6 | -9.0 | -18.5 | -23.0 | |
| DayLength (hr)* | 9.1 | 10.3 | 11.8 | 13.4 | 14.7 | 15.4 | 15.0 | 13.8 | 12.3 | 10.8 | 9.4 | 8.7 | |
| Available Water Storage Capacity | 0.14 m/m | | | | | Root Depth | 460 mm | | | | | SOILmax | 64.4 mm |
| MONTHLY WATER BALANCE DATA | | | | | | | | | | | | | |
| Temperatures in C, water-balance terms in mm. | | | | | | | | | | | | | |
| Month: | J | F | M | A | M | J | J | A | S | O | N | D | Year |
| ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| TEMPERATURE (T) | -9.8 | -8.5 | -2.0 | 6.0 | 12.7 | 17.8 | 20.3 | 19.1 | 14.4 | 7.8 | 1.6 | -5.8 | |
| PRECIPITATION (P) | 67.7 | 51.3 | 55.1 | 64.2 | 77.0 | 82.4 | 83.5 | 75.3 | 91.8 | 78.5 | 83.6 | 65.9 | 876 |
| RAIN | 24.1 | 15.9 | 28.6 | 53.0 | 76.9 | 82.4 | 83.5 | 75.3 | 91.8 | 76.3 | 67.8 | 26.7 | 702 |
| SNOW | 44 | 35 | 27 | 11 | 0 | 0 | 0 | 0 | 0 | 2 | 16 | 39 | 174 |
| MELT FACTOR (F) | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.27 | 0.00 | |
| PACK | 94 | 130 | 156 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 51 | |
| MELT | 0 | 0 | 0 | 167 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 174 |
| INPUT (W) | 24 | 16 | 29 | 220 | 77 | 82 | 84 | 75 | 92 | 79 | 72 | 27 | 876 |
| POTENTIAL ET (PET) | 0 | 0 | 0 | 40 | 70 | 96 | 113 | 97 | 63 | 38 | 21 | 0 | 538 |
| NET INPUT (ΔW) | 24 | 16 | 29 | 180 | 7 | -14 | -29 | -22 | 29 | 41 | 51 | 27 | |
| SOIL MOISTURE (SOIL) | 64 | 64 | 64 | 64 | 64 | 52 | 33 | 23 | 52 | 64 | 64 | 64 | |
| ΔSOIL | 0 | 0 | 0 | 0 | 0 | -13 | -19 | -9 | 29 | 12 | 0 | 0 | |
| ET | 0 | 0 | 0 | 40 | 70 | 95 | 102 | 85 | 63 | 38 | 21 | 0 | 514 |
| SURPLUS=W-ET-DSOIL | 24 | 16 | 29 | 180 | 7 | 0 | 0 | 0 | 0 | 29 | 51 | 27 | 363 |
| Notes: | | | | | | | | | | | | | |
| Precipitation, Rain, Temperature, and Latitude are inputted parameters | | | | | | | | | | | | | |
| SOILmax = available water storage capacity * root depth | | | | | | | | | | | | | |
| m = month | | | | | | | | | | | | | |
| D = Day length (hrs) = 2*cos ⁻¹ (-tan(Latitude)*tan(Declination))/0.2618 [calculation is in radians] | | | | | | | | | | | | | |
| SNOW _m = P _m -RAIN _m | | | | | | | | | | | | | |
| F _m = 0 if T _m <= 0°C; F _m = 0.167*T _m if 0°C < T _m < 6°C; F _m = 1 if T _m >= 6°C | | | | | | | | | | | | | |
| PACK _m = (1-F _m)*(SNOW _m +PACK _{m-1}) | | | | | | | | | | | | | |
| MELT = F _m *(SNOW _m +PACK _{m-1}) | | | | | | | | | | | | | |
| W _m = RAIN _m +MELT _m | | | | | | | | | | | | | |
| PET = 0 if T _m < 0; otherwise PET = 2.98*0.611*exp(17.3*T _m /(T _m +237))/(T _m +237.2)*Number of days in month [Hamon ET model (1963)] | | | | | | | | | | | | | |
| ΔW _m = W _m -PET _m | | | | | | | | | | | | | |
| SOIL = min{[ΔW _m +SOIL _{m-1}], SOILmax}, if ΔW _m >0; otherwise SOIL = SOIL _{m-1} * exp(ΔW/SOILmax) | | | | | | | | | | | | | |
| ΔSOIL = SOIL _{m-1} -SOIL _m | | | | | | | | | | | | | |
| ET = PET if W _m > PET; otherwise, ET=W _m -ΔSOIL | | | | | | | | | | | | | |



Nitrate Attenuation

Calculations for Subdivision Development - 41 Lots

Input Data

Computed Values

Areas

Total

| | |
|---|--------|
| LOT AREA (m ²) | 235300 |
| BLDG FOOTPRINT (m ²) | 0 |
| ROAD AREA (m ²) | 0 |
| Available Infiltration Area (m ²) | 235300 |

Surplus water

| |
|------------------------------|
| 0.363 m/yr |
| 9.94E-04 m/day |
| 233.8056 m ³ /day |

Infiltration Factor

| | |
|-----------------------|------|
| Hilly to Rolling land | 0.15 |
| Silty Sand | 0.3 |
| Cultivated land | 0.1 |
| Total | 0.55 |

Infiltrated water

| |
|------------------------------|
| 0.000547 m/day |
| 128.5931 m ³ /day |

Runoff 105.2125 m³/day

PREDICTED NITRATE CONCENTRATIONS

41 lots

| | |
|----|----------|
| Qe | 41000 |
| Ce | 40 |
| Qi | 128593.1 |
| Ci | 0.4 |
| Qt | 169593.1 |

mg/L 9.97



Appendix E
Water Well Survey Results

We Tag#: **A395660** (nt Below)
A395660

Measurements recorded in: Metric Imperial

Page ___ of ___

Well Owner's Information

First Name _____ Last Name/Organization **Smart Homes Ottawa Inc** E-mail Address _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name) **6610 Fourth Line Road** Municipality **North Gower** Province **ON** Postal Code **K0A 2T0** Telephone No. (inc. area code) _____

Well Location

Address of Well Location (Street Number/Name) **Rosedale Road South (No civic)** Township **Montague** Lot **19** Concession **4**

County/District/Municipality **Lanark** City/Town/Village **Smith Falls** Province **Ontario** Postal Code _____

UTM Coordinates: Zone **18** Easting **424769** Northing **4975272** Municipal Plan and Sublot Number _____ Other **TW#1/3**

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

| General Colour | Most Common Material | Other Materials | General Description | Depth (m/ft) |
|----------------|----------------------|-----------------|---------------------|--------------|
| | Top Soil | | | 0' 2' |
| Brown | Sandstone | | | 2' 18' |
| Grey | Sandstone | | | 18' 68' |
| Grey | Sandstone | | | 68' 74' |
| Grey | Sandstone | | | 74' 80' |

* Test Well # 1 / 3 *

Annular Space

Depth Set at (m/ft) From **20'** To **0'** Type of Sealant Used (Material and Type) **Neat cement** Volume Placed (m³/ft³) **7.80**

Method of Construction

Cable Tool Diamond Public Commercial Not used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Driving Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air percussion Industrial Other, specify _____
 Other, specify _____

Construction Record - Casing

| Inside Diameter (cm/in) | Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) | Wall Thickness (cm/in) | Depth (m/ft) | Status of Well |
|-------------------------|--|------------------------|--------------|--|
| 6 1/4" | Steel | .188 | +2' 20' | <input checked="" type="checkbox"/> Water Supply |
| 6" | Open Hole | | 20' 80' | <input type="checkbox"/> Replacement Well |

Construction Record - Screen

| Outside Diameter (cm/in) | Material (Plastic, Galvanized, Steel) | Slot No. | Depth (m/ft) |
|--------------------------|---------------------------------------|----------|--------------|
| | | | |

Water Details

Water found at Depth **68 88** (m/ft) Kind of Water: Fresh Untested Gas Other, specify _____

Water found at Depth **74** (m/ft) Kind of Water: Fresh Untested Gas Other, specify _____

Water found at Depth **74** (m/ft) Kind of Water: Fresh Untested Gas Other, specify _____

Well Contractor and Well Technician Information

Business Name of Well Contractor **Air Rock Drilling Co. Ltd.** Well Contractor's Licence No. **C7881**

Business Address (Street Number/Name) **6609 Franktown Road** Municipality **Richmond**

Province **ON** Postal Code **K0A 2Z0** Business E-mail Address **air-rock@sympatico.ca**

Bus. Telephone No. (inc. area code) **6138882170** Name of Well Technician (Last Name, First Name) **Hanna, Jeremy**

Well Technician's Licence No. **T3632** Signature of Technician and/or Contractor _____ Date **2024 02 29**

Results of Well Yield Testing

After test of well yield, water was: Clear and sand free Other, specify **Not tested**

If pumping discontinued, give reason: _____

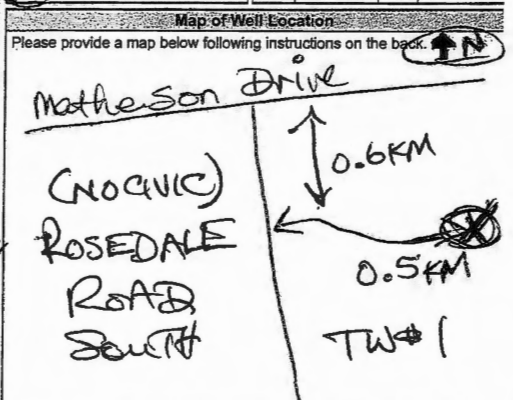
| Draw Down | Recovery | | |
|--------------|--------------------|------------|--------------------|
| Time (min) | Water Level (m/ft) | Time (min) | Water Level (m/ft) |
| Static Level | 31.8' | | 32.8' |
| 1 | 32.2 | 1 | 31.9 |
| 2 | 32.4 | 2 | 31.8 |
| 3 | 32.5 | 3 | 31.8 |
| 4 | 32.6 | 4 | 31.8 |
| 5 | 32.6 | 5 | 31.8 |
| 10 | 32.7 | 10 | 31.8 |
| 15 | 32.7 | 15 | 31.8 |
| 20 | 32.8 | 20 | 31.8 |
| 25 | 32.8 | 25 | 31.8 |
| 30 | 32.8 | 30 | 31.8 |
| 40 | 32.8 | 40 | 31.8 |
| 50 | 32.8 | 50 | 31.8 |
| 60 | 32.8 | 60 | 31.8 |

Recommended pump depth (m/ft) **70'**

Recommended pump rate (l/min/GPM) **10**

Well production (l/min/GPM) **20**

Disinfected? Yes No



Comments: **1/2HP 10GPM @ 70 FF**

Well owner's information package delivered Yes No

Date Package Delivered **2024 01 25**

Ministry Use Only: Audit No. **2408031**

Received **2024 01 23**



Ministry of the Environment, Conservation and Parks

W Tag#: A395659 (Print Below)
A395659

Well Record
Regulation 903 Ontario Water Resources Act

Measurements recorded in: Metric Imperial

Page ___ of ___

Well Owner's Information

First Name _____ Last Name/Organization **Smart Homes Ottawa Inc** E-mail Address _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name) **6610 Fourth Line Road** Municipality **North Gower** Province **ON** Postal Code **K0A1ZT0** Telephone No. (inc. area code) _____

Well Location

Address of Well Location (Street Number/Name) **Rosedale Road South (No civic)** Township **Montague** Lot **19** Concession **4**

County/District/Municipality **Lanark** City/Town/Village **Smith Falls** Province **Ontario** Postal Code _____

UTM Coordinates Zone Easting Northing Municipal Plan and Sublot Number Other

NAD 83 **18 425093 4975196** **TW#2/3**

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

| General Colour | Most Common Material | Other Materials | General Description | Depth (m/ft) |
|----------------|----------------------|-----------------|---------------------|--------------|
| | | | | From To |
| | Top Soil | | | 0' 1' |
| Grey | Sandstone | | | 1' 28' |
| Black | Limestone | | | 28' 94' |
| Black | Limestone | | | 94' 100' |

** Test well #2 / 3 **

Annular Space

| Depth Set at (m/ft) | Type of Sealant Used (Material and Type) | Volume Placed (m³/G) |
|---------------------|--|----------------------|
| From To | | |
| 20' 0' | Neat cement | 7.80 |

Method of Construction

Cable Tool Diamond Public Commercial Not used

Rotary (Conventional) Jetting Domestic Municipal Dewatering

Rotary (Reverse) Driving Livestock Test Hole Monitoring

Boring Digging Irrigation Cooling & Air Conditioning

Air percussion Industrial Other, specify _____

Construction Record - Casing

| Inside Diameter (cm/in) | Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) | Wall Thickness (cm/in) | Depth (m/ft) | Status of Well |
|-------------------------|--|------------------------|--------------|--|
| | | | From To | |
| 6 1/4" | Steel | .188 | +2' 20' | <input checked="" type="checkbox"/> Water Supply |
| 6 1/8" | Open Hole | | 20' 100' | <input type="checkbox"/> Replacement Well |

Construction Record - Screen

| Outside Diameter (cm/in) | Material (Plastic, Galvanized Steel) | Slot No. | Depth (m/ft) |
|--------------------------|--------------------------------------|----------|--------------|
| | | | From To |
| | | | |

Water Details

| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested | Depth (m/ft) | Diameter (cm/in) |
|-----------------------------|--|--------------|------------------|
| 94.04 (m/ft) | <input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify _____ | 0' 20' | 9 3/4" |
| | <input type="checkbox"/> Fresh <input type="checkbox"/> Untested | 20' 100' | 6 1/8" |

Well Contractor and Well Technician Information

Business Name of Well Contractor **Air Rock Drilling Co. Ltd.** Well Contractor's Licence No. **C7881**

Business Address (Street Number/Name) **8888 Franktown Road** Municipality **Richmond**

Province **ON** Postal Code **K0A 2Z0** Business E-mail Address **air-rock@sympatico.ca**

Bus. Telephone No. (inc. area code) **818882170** Name of Well Technician (Last Name, First Name) **Hanna, Jeremy**

Well Technician's Licence No. **13632** Signature of Technician and/or Contractor _____ Date Submitted **2024 02 29**

Results of Well Yield Testing

| After test of well yield, water was: | Draw Down | Recovery | | |
|--|--------------|--------------------|------------|--------------------|
| <input type="checkbox"/> Clear and sand free | Time (min) | Water Level (m/ft) | Time (min) | Water Level (m/ft) |
| <input type="checkbox"/> Other, specify Not tested | Static Level | 42.0' | | 42.9' |
| If pumping discontinued, give reason: | 1 | 42.3 | 1 | 42 |
| <input checked="" type="checkbox"/> Pump intake set at (m/ft) 80 | 2 | 42.5 | 2 | 42 |
| Pumping rate (l/min / GPM) 20 | 3 | 42.6 | 3 | 42 |
| Duration of pumping 1 hrs + 0 min | 4 | 42.6 | 4 | 42 |
| Final water level end of pumping (m/ft) 42.9' | 5 | 42.7 | 5 | 42 |
| If flowing give rate (l/min/GPM) | 10 | 42.8 | 10 | 42 |
| <input checked="" type="checkbox"/> Recommended pump depth (m/ft) 80 | 15 | 42.8 | 15 | 42 |
| Recommended pump rate (l/min/GPM) 10 | 20 | 42.9 | 20 | 42 |
| Well production (l/min/GPM) 20 | 25 | 42.9 | 25 | 42 |
| Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 30 | 42.9 | 30 | 42 |
| | 40 | 42.9 | 40 | 42 |
| | 50 | 42.9 | 50 | 42 |
| | 60 | 42.9 | 60 | 42.0' |

Map of Well Location

Please provide a map below following instructions on the back of this form.

Madison Drive

ROSEDALE ROAD SOUTH

0.6KM

0.7KM

TW#2

Comments: **1/2 HP - 10 GPM @ 80 FT**

Well owner's information package delivered Yes No

Date Package Delivered **2024 01 20**

Ministry Use Only
Audit No. **2408032**

Received _____



Ministry of the Environment, Conservation and Parks

W Tag#: A395658 (Print Below)

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: Metric Imperial

A395658

Page ___ of ___

Well Owner's Information

First Name, Last Name/Organization (Smart Homes Ottawa Inc), E-mail Address, Mailing Address (6610 Fourth Line Road), Municipality (North Gower), Province (ON), Postal Code (K0A 2T0), Telephone No.

Well Location

Address of Well Location (Rosedale Road South), Township (Montague), Lot (19), Concession (4), County/District (Lanark), City/Town/Village (Smith Falls), Province (Ontario), UTM Coordinates, Municipal Plan and Sublot Number, Other (TW#3/3)

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth From, Depth To. Includes handwritten notes like 'w/ Black Limestone mix' and 'Test well # 3 / 3'.

Annular Space section: Depth Set at (20' to 0'), Type of Sealant Used (Neat cement), Volume Placed (7.80).

Method of Construction and Well-Use section: Includes checkboxes for Cable Tool, Rotary, Boring, etc., and Public, Commercial, Domestic, etc.

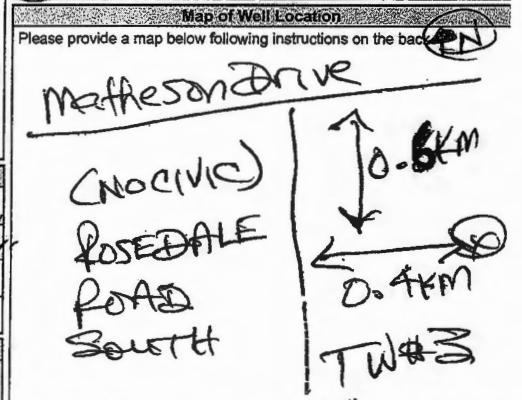
Construction Record - Casing section: Inside Diameter (6 1/4"), Open Hole OR Material (Steel), Wall Thickness (.188), Depth (20' to 82').

Construction Record - Screen section: Outside Diameter, Material, Slot No., Depth (From/To).

Water Details and Hole Diameter section: Water found at Depth (76.78 m), Kind of Water, Hole Diameter (20' to 82').

Well Contractor and Well Technician Information section: Business Name (Air Rock Drilling Co. Ltd.), Well Contractor's Licence No. (C7881), Business Address (8859 Franktown Road), Province (ON), Postal Code (K0A 2Z0), Business E-mail Address (air-rock@sympatico.ca), Bus. Telephone No. (613-882-1170), Name of Well Technician (Hanna, Jeremy), Well Technician's Licence No. (T3632), Signature, Date Submitted (2024/02/29).

Results of Well Yield Testing table: After test of well yield, water was: Clear and sand free, Other, specify Not tested. Draw Down and Recovery data table with columns: Time (min), Water Level (m/ft), Time (min), Water Level (m/ft).



Comments: 1/2 HP - 10 GPM @ 70 FT. Well owner's information package delivered: Yes (2024/02/29/24). Ministry Use Only: Audit No. 2408033.

Measurements recorded in: Metric Imperial

Page ____ of ____

Well Owner's Information

First Name: _____ Last Name/Organization: **Smart Homes Ottawa Inc** E-mail Address: _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name): **6610 Fourth Line Road** Municipality: **North Gower** Province: **ON** Postal Code: **K0A 2T0** Telephone No. (inc. area code): _____

Well Location

Address of Well Location (Street Number/Name): **987 Matheson Drive** Township: **Montague** Lot: **20** Concession: **3**

County/District/Municipality: **Lanark** City/Town/Village: **Smiths Falls** Province: **Ontario** Postal Code: _____

UTM Coordinates: Zone: _____ Easting: **18 424512** Northing: **4975213** Municipal Plan and Sublot Number: _____ Other: _____

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

| General Colour | Most Common Material | Other Materials | General Description | Depth (m/ft) |
|----------------|----------------------|--------------------|---------------------|--------------|
| | | | | From To |
| | | Broken Rock | | 0' 2' |
| Grey & Brown | Sandstone | | | 2' 74' |
| Grey & Brown | Sandstone | | | 74' 80' |

Annular Space

| Depth Set at (m/ft) | Type of Sealant Used (Material and Type) | Volume Placed (m ³ /ft ³) |
|---------------------|--|--|
| 20' 0' | Neat cement | 4.88 |

Method of Construction

Cable Tool Diamond Public Commercial Not used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Driving Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air percussion Industrial Other, specify _____

Construction Record - Casing

| Inside Diameter (cm/ft) | Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) | Wall Thickness (cm/ft) | Depth (m/ft) | Status of Well |
|-------------------------|--|------------------------|--------------|--|
| | | | From To | |
| 6 1/4" | Steel | .188" | +2' 20' | <input checked="" type="checkbox"/> Water Supply |
| 6" | Open Hole | | 20' 80' | <input type="checkbox"/> Replacement Well |

Construction Record - Screen

| Outside Diameter (cm/in) | Material (Plastic, Galvanized, Steel) | Slot No. | Depth (m/ft) | Status of Well |
|--------------------------|---------------------------------------|----------|--------------|---|
| | | | From To | |
| | | | | <input type="checkbox"/> Abandoned, Insufficient Supply |

Water Details

| Water found at Depth (m/ft) | Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Tested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____ | Hole Diameter |
|-----------------------------|---|----------------------------------|
| | | Depth (m/ft) To Diameter (cm/in) |
| 74 (m/ft) | Gas | 0' 20' 1 3/4" |
| | | 20' 80' 6" |

Well Contractor and Well Technician Information

Business Name of Well Contractor: **Air Rock Drilling Co. Ltd.** Well Contractor's Licence No.: **C7681**

Business Address (Street Number/Name): **6669 Parktown Road** Municipality: **Richmond**

Province: **ON** Postal Code: **K0A 2Z0** Business E-mail Address: **air-rock@sympatico.ca**

Bus. Telephone No. (inc. area code): **6138382170** Name of Well Technician (Last Name, First Name): **Hanna, Jeremy**

Well Technician's Licence No.: **13632** Signature of Technician and/or Contractor: _____ Date Spooled: **10 31 2023**

Results of Well Yield Testing

After test of well yield, water was: Clear and sand free Other, specify **Not tested**

If pumping discontinued, give reason: **X**

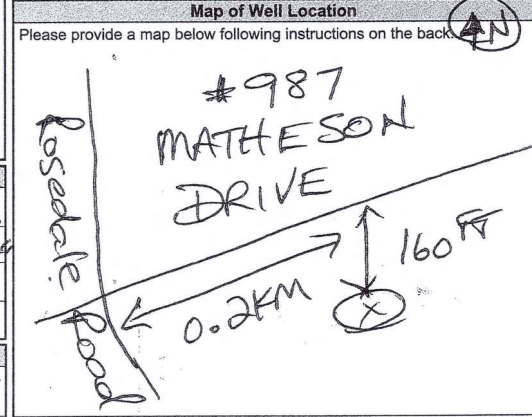
| Time (min) | Draw Down | | Recovery | |
|------------|--------------------|------------|--------------------|------------|
| | Water Level (m/ft) | Time (min) | Water Level (m/ft) | Time (min) |
| 1 | 33.1 | 1 | 32.2 | |
| 2 | 33.5 | 2 | 32.2 | |
| 3 | 33.7 | 3 | 32.2 | |
| 4 | 33.9 | 4 | 32.2 | |
| 5 | 34 | 5 | 32.2 | |
| 10 | 34.2 | 10 | 32.2 | |
| 15 | 34.3 | 15 | 32.2 | |
| 20 | 34.4 | 20 | 32.2 | |
| 25 | 34.4 | 25 | 32.2 | |
| 30 | 34.5 | 30 | 32.2 | |
| 40 | 34.5 | 40 | 32.2 | |
| 50 | 34.5 | 50 | 32.2 | |
| 60 | 34.5 | 60 | 32.2 | |

Recommended pump depth (m/ft): **70'**

Recommended pump rate (l/min/GPM): **10**

Well production (l/min/GPM): **20**

Disinfected? Yes No



Comments: **1/2HP-10GPM set @ 70 FT**

Well owner's information package delivered: Yes No

Date Package Delivered: **2023/10/26**

Ministry Use Only: Audit No. **2407946**

Received: _____

Water Well Records Summary Report

Produced by Cambium Inc. using MOECP Water Well Information System (WWIS)

All units in meters unless otherwise specified



| | | | | |
|--------------------------------------|-------------------------------------|---|----------------|--|
| Well ID: 3501204 | Easting: 425346 | UTM Zone 18 | | |
| Construction Date: 1952-06-20 | Northing: 4974622 | Positional Accuracy: unknown UTM | | |
| Well Depth: 18.3 | Water Kind FRESH | Pump Rate (LPM): 59 | | |
| Well Diameter (cm): 15.2 | Final Status Water Supply | Recommended Pump Rate: | | |
| Water First Found: 18.3 | Primary Water Use: Livestock | Pumping Duration (h:m): 2 : 0 | | |
| Static Level: 6 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | LIMESTONE | 0 | 18.3 | |

| | | | | |
|--------------------------------------|------------------------------------|---|----------------|--|
| Well ID: 3501205 | Easting: 424991 | UTM Zone 18 | | |
| Construction Date: 1967-09-20 | Northing: 4975034 | Positional Accuracy: unknown UTM | | |
| Well Depth: 15.2 | Water Kind FRESH | Pump Rate (LPM): 32 | | |
| Well Diameter (cm): 15.2 | Final Status Water Supply | Recommended Pump Rate: 23 | | |
| Water First Found: 14.3 | Primary Water Use: Domestic | Pumping Duration (h:m): 1 : 0 | | |
| Static Level: 6 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | CLAY | 0 | 1.22 | |
| 2 | LIMESTONE | 1.22 | 15.2 | |

| | | | | |
|--------------------------------------|-------------------------------------|---|----------------|--|
| Well ID: 3501206 | Easting: 425370 | UTM Zone 18 | | |
| Construction Date: 1953-02-03 | Northing: 4974622 | Positional Accuracy: unknown UTM | | |
| Well Depth: 14.3 | Water Kind FRESH | Pump Rate (LPM): 36 | | |
| Well Diameter (cm): 15.2 | Final Status Water Supply | Recommended Pump Rate: | | |
| Water First Found: 12.2 | Primary Water Use: Livestock | Pumping Duration (h:m): 1 : 0 | | |
| Static Level: 7 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | TOPSOIL | 0 | 1.83 | |
| 2 | SANDSTONE | 1.83 | 14.3 | |

| | | | | |
|--------------------------------------|-------------------------------------|---|----------------|--|
| Well ID: 3501226 | Easting: 424326 | UTM Zone 18 | | |
| Construction Date: 1962-01-22 | Northing: 4975302 | Positional Accuracy: margin of error : 100 m - 300 m | | |
| Well Depth: 19.8 | Water Kind FRESH | Pump Rate (LPM): 23 | | |
| Well Diameter (cm): 10.2 | Final Status Water Supply | Recommended Pump Rate: 23 | | |
| Water First Found: 16.8 | Primary Water Use: Livestock | Pumping Duration (h:m): 1 : 0 | | |
| Static Level: 6 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | TOPSOIL | 0 | 6.1 | |
| 2 | LIMESTONE | 6.1 | 19.8 | |

Well ID: 3502813 **Easting:** 424821 **UTM Zone** 18
Construction Date: 1971-08-06 **Northing:** 4974942 **Positional Accuracy:** margin of error : 30 m - 100 m

Well Depth: 19.8 **Water Kind** FRESH **Pump Rate (LPM):** 36
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 36
Water First Found: 18.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.30 |
| 2 | CLAY | 0.30 | 1.22 |
| 3 | SANDSTONE | 1.22 | 19.8 |

Well ID: 3502920 **Easting:** 424991 **UTM Zone** 18
Construction Date: 1972-01-20 **Northing:** 4974762 **Positional Accuracy:** margin of error : 30 m - 100 m

Well Depth: 23.2 **Water Kind** FRESH **Pump Rate (LPM):** 55
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 55
Water First Found: 18.3 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 0 : 30
Static Level: 13

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.30 |
| 2 | SANDSTONE | 0.30 | 23.2 |

Well ID: 3503379 **Easting:** 424609 **UTM Zone** 18
Construction Date: 1973-09-13 **Northing:** 4974956 **Positional Accuracy:** margin of error : 30 m - 100 m

Well Depth: 25 **Water Kind** Not stated **Pump Rate (LPM):** 91
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 91
Water First Found: 23.8 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 0 : 30
Static Level: 11

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 10.4 |
| 3 | SANDSTONE | 10.4 | 23.5 |
| 4 | SANDSTONE | 23.5 | 24.1 |
| 5 | SANDSTONE | 24.1 | 25 |

Well ID: 3504152 **Easting:** 424581 **UTM Zone** 18
Construction Date: 1975-12-11 **Northing:** 4975022 **Positional Accuracy:** margin of error : 100 m - 300 m

Well Depth: 20.4 **Water Kind** FRESH **Pump Rate (LPM):** 73
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 73
Water First Found: 18.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 0 : 30
Static Level: 9

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.13 |
| 2 | LIMESTONE | 2.13 | 9.14 |
| 3 | SANDSTONE | 9.14 | 20.4 |

| | | | | |
|--------------------------------------|------------------------------------|---|----------------|--|
| Well ID: 3504446 | Easting: 425131 | UTM Zone 18 | | |
| Construction Date: 1976-09-28 | Northing: 4974572 | Positional Accuracy: margin of error : 100 m - 300 m | | |
| Well Depth: 23.2 | Water Kind: FRESH | Pump Rate (LPM): 50 | | |
| Well Diameter (cm): 15.2 | Final Status: Water Supply | Recommended Pump Rate: 50 | | |
| Water First Found: 21.6 | Primary Water Use: Domestic | Pumping Duration (h:m): 0 : 30 | | |
| Static Level: 12 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | TOPSOIL | 0 | 0.30 | |
| 2 | SANDSTONE | 0.30 | 23.2 | |

| | | | | |
|--------------------------------------|------------------------------------|---|----------------|--|
| Well ID: 3504456 | Easting: 425006 | UTM Zone 18 | | |
| Construction Date: 1976-10-01 | Northing: 4975897 | Positional Accuracy: margin of error : 100 m - 300 m | | |
| Well Depth: 24.4 | Water Kind: FRESH | Pump Rate (LPM): 273 | | |
| Well Diameter (cm): 15.2 | Final Status: Water Supply | Recommended Pump Rate: 227 | | |
| Water First Found: 22.3 | Primary Water Use: Domestic | Pumping Duration (h:m): 1 : 0 | | |
| Static Level: 4 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | SANDSTONE | 0 | 24.4 | |

| | | | | |
|--------------------------------------|-------------------------------------|---|----------------|--|
| Well ID: 3504509 | Easting: 424981 | UTM Zone 18 | | |
| Construction Date: 1976-12-09 | Northing: 4975722 | Positional Accuracy: margin of error : 100 m - 300 m | | |
| Well Depth: 25.3 | Water Kind: Not stated | Pump Rate (LPM): 64 | | |
| Well Diameter (cm): 15.2 | Final Status: Water Supply | Recommended Pump Rate: 45 | | |
| Water First Found: 25.3 | Primary Water Use: Livestock | Pumping Duration (h:m): 1 : 20 | | |
| Static Level: 11 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | CLAY | 0 | 0.30 | |
| 1 | CLAY | 0 | 0.30 | |
| 1 | CLAY | 0 | 0.30 | |
| 1 | CLAY | 0 | 0.30 | |
| 2 | LIMESTONE | 0.30 | 25.3 | |
| 2 | LIMESTONE | 0.30 | 25.3 | |
| 2 | LIMESTONE | 0.30 | 25.3 | |
| 2 | LIMESTONE | 0.30 | 25.3 | |

| | | | | |
|--------------------------------------|------------------------------------|---|----------------|--|
| Well ID: 3505174 | Easting: 425131 | UTM Zone 18 | | |
| Construction Date: 1978-09-16 | Northing: 4974622 | Positional Accuracy: margin of error : 100 m - 300 m | | |
| Well Depth: 19.5 | Water Kind: FRESH | Pump Rate (LPM): 55 | | |
| Well Diameter (cm): 15.2 | Final Status: Water Supply | Recommended Pump Rate: 55 | | |
| Water First Found: 18.3 | Primary Water Use: Domestic | Pumping Duration (h:m): 0 : 30 | | |
| Static Level: 14 | | | | |
| Layer: | Driller's Description: | Top: | Bottom: | |
| 1 | SANDSTONE | 0 | 19.5 | |

Well ID: 3505409
Construction Date: 1979-05-25

Eastings: 424430
Northings: 4975321

UTM Zone 18
Positional Accuracy: margin of error : 100 m - 300 m

Well Depth: 19.8
Well Diameter (cm): 15.2
Water First Found: 16.8
Static Level: 5

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 136
Recommended Pump Rate: 136
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | FILL | 0 | 0.91 |
| 1 | FILL | 0 | 0.91 |
| 1 | FILL | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 19.8 |
| 2 | SANDSTONE | 0.91 | 19.8 |
| 2 | SANDSTONE | 0.91 | 19.8 |

Well ID: 3505483
Construction Date: 1979-08-27

Eastings: 425030
Northings: 4974721

UTM Zone 18
Positional Accuracy: margin of error : 100 m - 300 m

Well Depth: 23.5
Well Diameter (cm): 15.2
Water First Found: 22.3
Static Level: 6

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 45
Recommended Pump Rate: 45
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 12.2 |
| 2 | LIMESTONE | 0.61 | 12.2 |
| 3 | SANDSTONE | 12.2 | 23.5 |
| 3 | SANDSTONE | 12.2 | 23.5 |

Well ID: 3505713
Construction Date: 1980-03-03

Eastings: 425430
Northings: 4974721

UTM Zone 18
Positional Accuracy: margin of error : 100 m - 300 m

Well Depth: 23.5
Well Diameter (cm): 15.2
Water First Found: 16.8
Static Level: 9

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 91
Recommended Pump Rate: 91
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |
| 2 | LIMESTONE | 0.30 | 16.8 |
| 2 | LIMESTONE | 0.30 | 16.8 |
| 3 | SANDSTONE | 16.8 | 23.5 |
| 3 | SANDSTONE | 16.8 | 23.5 |

Well ID: 3505896 **Easting:** 424806 **UTM Zone** 18
Construction Date: 1980-10-16 **Northing:** 4974812 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 21.3 **Water Kind** FRESH **Pump Rate (LPM):** 91
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 91
Water First Found: 19.8 **Primary Water Use:** Domestic **Pumping Duration (h:m):** :30
Static Level: 11

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.13 |
| 2 | LIMESTONE | 2.13 | 7.62 |
| 3 | SANDSTONE | 7.62 | 21.3 |

Well ID: 3505918 **Easting:** 424230 **UTM Zone** 18
Construction Date: 1980-11-25 **Northing:** 4975421 **Positional Accuracy:** margin of error : 100 m - 300 m

Well Depth: 18.9 **Water Kind** FRESH **Pump Rate (LPM):** 36
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 36
Water First Found: 17.7 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 2

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SANDSTONE | 0 | 18.9 |

Well ID: 3507155 **Easting:** 424830 **UTM Zone** 18
Construction Date: 1976-08-09 **Northing:** 4975821 **Positional Accuracy:** margin of error : 100 m - 300 m

Well Depth: 19.5 **Water Kind** Not stated **Pump Rate (LPM):** 45
Well Diameter (cm): 12.7 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 18.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 10
Static Level: 6

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 2 | SANDSTONE | 1.22 | 19.5 |
| 2 | SANDSTONE | 1.22 | 19.5 |
| 2 | SANDSTONE | 1.22 | 19.5 |
| 2 | SANDSTONE | 1.22 | 19.5 |

Well ID: 3507676 **Easting:** 425405 **UTM Zone** 18
Construction Date: 1987-01-06 **Northing:** 4975374 **Positional Accuracy:** unknown UTM

Well Depth: 19.5 **Water Kind** FRESH **Pump Rate (LPM):** 91
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 91
Water First Found: 18.3 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 5

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 1.83 |
| 1 | SAND | 0 | 1.83 |
| 2 | SANDSTONE | 1.83 | 19.5 |
| 2 | SANDSTONE | 1.83 | 19.5 |

Well ID: 3508196 **Eastings:** 424595 **UTM Zone** 18
Construction Date: 1988-01-08 **Northing:** 4975062 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 12.8 **Water Kind** FRESH **Pump Rate (LPM):** 68
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 68
Water First Found: 11.6 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 2

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.13 |
| 2 | SANDSTONE | 2.13 | 12.8 |

Well ID: 3509180 **Eastings:** 424991 **UTM Zone** 18
Construction Date: 1990-02-22 **Northing:** 4975034 **Positional Accuracy:** unknown UTM

Well Depth: 19.8 **Water Kind** FRESH **Pump Rate (LPM):** 182
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 182
Water First Found: 18.3 **Primary Water Use:** Livestock **Pumping Duration (h:m):** 1 : 0
Static Level: 6

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 7.62 |
| 2 | LIMESTONE | 0.61 | 7.62 |
| 3 | SANDSTONE | 7.62 | 19.8 |
| 3 | SANDSTONE | 7.62 | 19.8 |

Well ID: 3509560 **Eastings:** 424991 **UTM Zone** 18
Construction Date: 1990-12-11 **Northing:** 4975034 **Positional Accuracy:** unknown UTM

Well Depth: 22 **Water Kind** FRESH **Pump Rate (LPM):** 159
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 17.7 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 6

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 2 | CLAY | 0.61 | 2.13 |
| 2 | CLAY | 0.61 | 2.13 |
| 3 | LIMESTONE | 2.13 | 6.1 |
| 3 | LIMESTONE | 2.13 | 6.1 |
| 4 | SANDSTONE | 6.1 | 22 |
| 4 | SANDSTONE | 6.1 | 22 |

Well ID: 3509627 **Eastings:** 425333 **UTM Zone** 18
Construction Date: 1991-01-18 **Northing:** 4975590 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 27.4 **Water Kind** FRESH **Pump Rate (LPM):** 55
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 55
Water First Found: 25 **Primary Water Use:** Cooling And A **Pumping Duration (h:m):** 1 : 0
Static Level: 13

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 9.14 |

Well ID: 3509628 **Easting:** 424991 **UTM Zone** 18
Construction Date: 1991-01-18 **Northing:** 4975034 **Positional Accuracy:** unknown UTM

Well Depth: 24.7 **Water Kind** FRESH **Pump Rate (LPM):** 68
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 68
Water First Found: 17.1 **Primary Water Use:** Cooling And A **Pumping Duration (h:m):** 1 : 0
Static Level: 12

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.91 |
| 1 | TOPSOIL | 0 | 0.91 |
| 1 | TOPSOIL | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 24.7 |
| 2 | SANDSTONE | 0.91 | 24.7 |
| 2 | SANDSTONE | 0.91 | 24.7 |

Well ID: 3509631 **Easting:** 424565 **UTM Zone** 18
Construction Date: 1991-01-18 **Northing:** 4975403 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind** FRESH **Pump Rate (LPM):** 227
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 227
Water First Found: 16.5 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 :
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 2 | SANDSTONE | 2.44 | 24.4 |
| 2 | SANDSTONE | 2.44 | 24.4 |

Well ID: 3509632 **Easting:** 424564 **UTM Zone** 18
Construction Date: 1991-01-18 **Northing:** 4975404 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind** FRESH **Pump Rate (LPM):** 227
Well Diameter (cm): 15.2 **Final Status** Recharge Well **Recommended Pump Rate:** 227
Water First Found: 18 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 9

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 1.83 |
| 1 | CLAY | 0 | 1.83 |
| 2 | SANDSTONE | 1.83 | 24.4 |
| 2 | SANDSTONE | 1.83 | 24.4 |

Well ID: 3509885 **Easting:** 425191 **UTM Zone** 18
Construction Date: 1991-07-05 **Northing:** 4975865 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind** FRESH **Pump Rate (LPM):** 45
Well Diameter (cm): 12.7 **Final Status** Water Supply **Recommended Pump Rate:** 23
Water First Found: 22.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 5

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TILL | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 24.4 |

Well ID: 3510554 **Eastings:** 425036 **UTM Zone** 18
Construction Date: 1992-12-03 **Northing:** 4975782 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 21.3 **Water Kind** FRESH **Pump Rate (LPM):** 136
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 91
Water First Found: 9.75 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 1.52 |
| 1 | TOPSOIL | 0 | 1.52 |
| 1 | TOPSOIL | 0 | 1.52 |
| 2 | LIMESTONE | 1.52 | 21.3 |
| 2 | LIMESTONE | 1.52 | 21.3 |
| 2 | LIMESTONE | 1.52 | 21.3 |

Well ID: 3511174 **Eastings:** 424991 **UTM Zone** 18
Construction Date: 1994-08-12 **Northing:** 4975034 **Positional Accuracy:** unknown UTM

Well Depth: 29.6 **Water Kind** FRESH **Pump Rate (LPM):** 91
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 29 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 11

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | SANDSTONE | 0.61 | 29.6 |

Well ID: 3511306 **Eastings:** 424571 **UTM Zone** 18
Construction Date: 1994-11-14 **Northing:** 4975400 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 18.9 **Water Kind** Not stated **Pump Rate (LPM):** 68
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 68
Water First Found: 15.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.74 |
| 1 | CLAY | 0 | 2.74 |
| 1 | CLAY | 0 | 2.74 |
| 1 | CLAY | 0 | 2.74 |
| 2 | LIMESTONE | 2.74 | 8.84 |
| 2 | LIMESTONE | 2.74 | 8.84 |
| 2 | LIMESTONE | 2.74 | 8.84 |
| 2 | LIMESTONE | 2.74 | 8.84 |
| 3 | SANDSTONE | 8.84 | 18.9 |
| 3 | SANDSTONE | 8.84 | 18.9 |
| 3 | SANDSTONE | 8.84 | 18.9 |
| 3 | SANDSTONE | 8.84 | 18.9 |

Well ID: 3511492
Construction Date: 1995-07-25

Eastings: 424991
Northings: 4975034

UTM Zone 18
Positional Accuracy: unknown UTM

Well Depth: 18.3
Well Diameter (cm): 15.2
Water First Found: 16.1
Static Level: 5

Water Kind Not stated
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 68
Recommended Pump Rate: 68
Pumping Duration (h:m): 11 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 2 | LIMESTONE | 0.91 | 11.6 |
| 2 | LIMESTONE | 0.91 | 11.6 |
| 2 | LIMESTONE | 0.91 | 11.6 |
| 2 | LIMESTONE | 0.91 | 11.6 |
| 3 | SANDSTONE | 11.6 | 18.3 |
| 3 | SANDSTONE | 11.6 | 18.3 |
| 3 | SANDSTONE | 11.6 | 18.3 |
| 3 | SANDSTONE | 11.6 | 18.3 |

Well ID: 3511965
Construction Date: 1997-02-21

Eastings: 425405
Northings: 4975374

UTM Zone 18
Positional Accuracy: unknown UTM

Well Depth: 28.7
Well Diameter (cm): 15.2
Water First Found: 27.7
Static Level: 1

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Livestock

Pump Rate (LPM): 91
Recommended Pump Rate: 45
Pumping Duration (h:m): 1 : 15

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | GRAVEL | 0 | 1.22 |
| 1 | GRAVEL | 0 | 1.22 |
| 1 | GRAVEL | 0 | 1.22 |
| 2 | LIMESTONE | 1.22 | 28.6 |
| 2 | LIMESTONE | 1.22 | 28.6 |
| 2 | LIMESTONE | 1.22 | 28.6 |

Well ID: 3512062
Construction Date: 1997-06-17

Eastings: 424991
Northings: 4975034

UTM Zone 18
Positional Accuracy: unknown UTM

Well Depth: 22.6
Well Diameter (cm): 15.2
Water First Found: 12.8
Static Level: 9

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 91
Recommended Pump Rate: 45
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 4.57 |
| 2 | LIMESTONE | 0.61 | 4.57 |
| 3 | LIMESTONE | 4.57 | 22.6 |

Well ID: 3512116 **Easting:** 424991 **UTM Zone** 18
Construction Date: 1997-08-28 **Northing:** 4975034 **Positional Accuracy:** unknown UTM

Well Depth: 22.6 **Water Kind** FRESH **Pump Rate (LPM):** 86
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 86
Water First Found: 20.7 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 9

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 0.61 |
| 1 | CLAY | 0 | 0.61 |
| 1 | CLAY | 0 | 0.61 |
| 1 | CLAY | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 22.6 |
| 2 | LIMESTONE | 0.61 | 22.6 |
| 2 | LIMESTONE | 0.61 | 22.6 |
| 2 | LIMESTONE | 0.61 | 22.6 |

Well ID: 3512498 **Easting:** 425009 **UTM Zone** 18
Construction Date: 1998-11-24 **Northing:** 4975828 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 28.0 **Water Kind** FRESH **Pump Rate (LPM):** 45
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 26.8 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 20.1 |
| 2 | LIMESTONE | 0.61 | 20.1 |
| 2 | LIMESTONE | 0.61 | 20.1 |
| 2 | LIMESTONE | 0.61 | 20.1 |
| 3 | SANDSTONE | 20.1 | 28.0 |
| 3 | SANDSTONE | 20.1 | 28.0 |
| 3 | SANDSTONE | 20.1 | 28.0 |
| 3 | SANDSTONE | 20.1 | 28.0 |

Well ID: 3512846 **Easting:** 424181 **UTM Zone** 18
Construction Date: 1999-12-17 **Northing:** 4975942 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind** FRESH **Pump Rate (LPM):** 114
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 114
Water First Found: 18 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 :
Static Level: 11

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 1.83 |
| 1 | SAND | 0 | 1.83 |

| | | | |
|---|-----------|------|------|
| 1 | SAND | 0 | 1.83 |
| 1 | SAND | 0 | 1.83 |
| 2 | SANDSTONE | 1.83 | 24.4 |
| 2 | SANDSTONE | 1.83 | 24.4 |
| 2 | SANDSTONE | 1.83 | 24.4 |
| 2 | SANDSTONE | 1.83 | 24.4 |

Well ID: 3513877
Construction Date: 2002-10-10

Easting: 425401
Northing: 4975374

UTM Zone 18
Positional Accuracy: unknown UTM

Well Depth: 24.4 **Water Kind** Not stated **Pump Rate (LPM):** 136
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 136
Water First Found: 23.2 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 5

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | LIMESTONE | 0.61 | 24.4 |
| 2 | LIMESTONE | 0.61 | 24.4 |

Well ID: 3514012
Construction Date: 2003-01-07

Easting: 424571
Northing: 4974688

UTM Zone 18
Positional Accuracy: margin of error : 1 km - 3 km

Well Depth: 15.9 **Water Kind** FRESH **Pump Rate (LPM):** 136
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 12.8 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 4

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.61 |
| 1 | TOPSOIL | 0 | 0.61 |
| 2 | SAND | 0.61 | 1.52 |
| 2 | SAND | 0.61 | 1.52 |
| 3 | CLAY | 1.52 | 3.05 |
| 3 | CLAY | 1.52 | 3.05 |
| 4 | GRAVEL | 3.05 | 3.96 |
| 4 | GRAVEL | 3.05 | 3.96 |
| 5 | SANDSTONE | 3.96 | 15.9 |
| 5 | SANDSTONE | 3.96 | 15.9 |

Well ID: 3514013
Construction Date: 2003-01-07

Easting: 424571
Northing: 4974688

UTM Zone 18
Positional Accuracy: margin of error : 1 km - 3 km

Well Depth: 15.2 **Water Kind** FRESH **Pump Rate (LPM):** 227
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 7.92 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 2

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 2.44 |
| 1 | TOPSOIL | 0 | 2.44 |
| 2 | HARDPAN | 2.44 | 3.66 |

| | | | |
|---|-----------|------|------|
| 2 | HARDPAN | 2.44 | 3.66 |
| 3 | LIMESTONE | 3.66 | 15.2 |
| 3 | LIMESTONE | 3.66 | 15.2 |

Well ID: 3514406 **Easting:** 425401 **UTM Zone** 18
Construction Date: 2004-01-29 **Northing:** 4975375 **Positional Accuracy:** unknown UTM

Well Depth: 22.6 **Water Kind** FRESH **Pump Rate (LPM):** 45
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 45
Water First Found: 21.3 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level: 8

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 1.83 |
| 2 | LIMESTONE | 1.83 | 22.6 |

Well ID: 3514548 **Easting:** 425025 **UTM Zone** 18
Construction Date: 2004-06-24 **Northing:** 4975008 **Positional Accuracy:** margin of error : 100 m - 300 m

Well Depth: **Water Kind** **Pump Rate (LPM):**
Well Diameter (cm): **Final Status** Abandoned-Qu **Recommended Pump Rate:**
Water First Found: **Primary Water Use:** Domestic **Pumping Duration (h:m):**
Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
|--------|------------------------|------|---------|

Well ID: 3514549 **Easting:** 425031 **UTM Zone** 18
Construction Date: 2004-06-24 **Northing:** 4975706 **Positional Accuracy:** margin of error : 100 m - 300 m

Well Depth: 23.2 **Water Kind** FRESH **Pump Rate (LPM):** 482
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 482
Water First Found: 20.7 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 2 :
Static Level: 5

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |
| 2 | LIMESTONE | 0.30 | 23.2 |
| 2 | LIMESTONE | 0.30 | 23.2 |
| 2 | LIMESTONE | 0.30 | 23.2 |
| 2 | LIMESTONE | 0.30 | 23.2 |

Well ID: 3514572 **Easting:** 425295 **UTM Zone** 18
Construction Date: 2004-07-09 **Northing:** 4974720 **Positional Accuracy:** margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind** **Pump Rate (LPM):** 57
Well Diameter (cm): 15.2 **Final Status** Water Supply **Recommended Pump Rate:** 32
Water First Found: 23.5 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 :
Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |

| | | | |
|---|-----------|------|------|
| 1 | CLAY | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 21.6 |
| 2 | SANDSTONE | 0.91 | 21.6 |
| 2 | SANDSTONE | 0.91 | 21.6 |
| 2 | SANDSTONE | 0.91 | 21.6 |
| 3 | SANDSTONE | 21.6 | 23.5 |
| 3 | SANDSTONE | 21.6 | 23.5 |
| 3 | SANDSTONE | 21.6 | 23.5 |
| 3 | SANDSTONE | 21.6 | 23.5 |
| 4 | SANDSTONE | 23.5 | 24.4 |
| 4 | SANDSTONE | 23.5 | 24.4 |
| 4 | SANDSTONE | 23.5 | 24.4 |
| 4 | SANDSTONE | 23.5 | 24.4 |

Well ID: 3514905

Easting: 425167

UTM Zone 18

Construction Date: 2005-05-18

Northing: 4974871

Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4

Water Kind

Pump Rate (LPM): 50

Well Diameter (cm): 15.2

Final Status

Water Supply

Recommended Pump Rate: 30

Water First Found: 16.5

Primary Water Use: Domestic

Pumping Duration (h:m): 1 :

Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 2 | SANDSTONE | 0.91 | 16.5 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 3 | SANDSTONE | 16.5 | 16.8 |
| 4 | SANDSTONE | 16.8 | 21.3 |
| 4 | SANDSTONE | 16.8 | 21.3 |
| 4 | SANDSTONE | 16.8 | 21.3 |
| 4 | SANDSTONE | 16.8 | 21.3 |

| | | | |
|---|-----------|------|------|
| 4 | SANDSTONE | 16.8 | 21.3 |
| 4 | SANDSTONE | 16.8 | 21.3 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 5 | SANDSTONE | 21.3 | 22.9 |
| 6 | SANDSTONE | 22.9 | 24.4 |
| 6 | SANDSTONE | 22.9 | 24.4 |
| 6 | SANDSTONE | 22.9 | 24.4 |
| 6 | SANDSTONE | 22.9 | 24.4 |
| 6 | SANDSTONE | 22.9 | 24.4 |
| 6 | SANDSTONE | 22.9 | 24.4 |

Well ID: 3514939
Construction Date: 2005-06-14

Easting: 425194
Northing: 4974918

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 25.9
Well Diameter (cm):
Water First Found: 24.4
Static Level:

Water Kind
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 45
Recommended Pump Rate: 30
Pumping Duration (h:m): 1 :

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.79 |
| 1 | TOPSOIL | 0 | 0.79 |
| 2 | SANDSTONE | 0.79 | 16.8 |
| 2 | SANDSTONE | 0.79 | 16.8 |
| 3 | SANDSTONE | 16.8 | 17.1 |
| 3 | SANDSTONE | 16.8 | 17.1 |
| 4 | SANDSTONE | 17.1 | 24.1 |
| 4 | SANDSTONE | 17.1 | 24.1 |
| 5 | SANDSTONE | 24.1 | 24.7 |
| 5 | SANDSTONE | 24.1 | 24.7 |
| 6 | SANDSTONE | 24.7 | 25.9 |
| 6 | SANDSTONE | 24.7 | 25.9 |

Well ID: 3514989
Construction Date: 2005-07-11

Easting: 425160
Northing: 4974808

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4
Well Diameter (cm): 15.2
Water First Found: 22.6
Static Level:

Water Kind
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 52
Recommended Pump Rate: 30
Pumping Duration (h:m): 1 :

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |
| 1 | TOPSOIL | 0 | 0.30 |

| | | | |
|---|-----------|------|------|
| 1 | TOPSOIL | 0 | 0.30 |
| 2 | SANDSTONE | 0.30 | 21.3 |
| 2 | SANDSTONE | 0.30 | 21.3 |
| 2 | SANDSTONE | 0.30 | 21.3 |
| 2 | SANDSTONE | 0.30 | 21.3 |
| 3 | SANDSTONE | 21.3 | 22.6 |
| 3 | SANDSTONE | 21.3 | 22.6 |
| 3 | SANDSTONE | 21.3 | 22.6 |
| 3 | SANDSTONE | 21.3 | 22.6 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |

Well ID: 3515018
Construction Date: 2005-07-28

Easting: 424248
Northing: 4975444

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 13.7
Well Diameter (cm):
Water First Found: 8.23
Static Level: 2

Water Kind FRESH
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 159
Recommended Pump Rate: 45
Pumping Duration (h:m): 2 :

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 3.05 |
| 1 | TOPSOIL | 0 | 3.05 |
| 1 | TOPSOIL | 0 | 3.05 |
| 1 | TOPSOIL | 0 | 3.05 |
| 2 | LIMESTONE | 3.05 | 13.7 |
| 2 | LIMESTONE | 3.05 | 13.7 |
| 2 | LIMESTONE | 3.05 | 13.7 |
| 2 | LIMESTONE | 3.05 | 13.7 |

Well ID: 3515067
Construction Date: 2005-09-07

Easting: 425136
Northing: 4974837

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4
Well Diameter (cm):
Water First Found: 22
Static Level:

Water Kind
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 45
Recommended Pump Rate: 30
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 1 | CLAY | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 21.3 |
| 2 | SANDSTONE | 0.91 | 21.3 |

| | | | |
|---|-----------|------|------|
| 2 | SANDSTONE | 0.91 | 21.3 |
| 2 | SANDSTONE | 0.91 | 21.3 |
| 2 | SANDSTONE | 0.91 | 21.3 |
| 2 | SANDSTONE | 0.91 | 21.3 |
| 3 | SANDSTONE | 21.3 | 24.4 |
| 3 | SANDSTONE | 21.3 | 24.4 |
| 3 | SANDSTONE | 21.3 | 24.4 |
| 3 | SANDSTONE | 21.3 | 24.4 |
| 3 | SANDSTONE | 21.3 | 24.4 |
| 3 | SANDSTONE | 21.3 | 24.4 |

Well ID: 3515321
Construction Date: 2006-05-12

Easting: 425391
Northing: 4974943

UTM Zone 18
Positional Accuracy: margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind:** FRESH **Pump Rate (LPM):** 45
Well Diameter (cm): **Final Status:** Water Supply **Recommended Pump Rate:** 45
Water First Found: 12.2 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 2 :
Static Level: 12

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | TOPSOIL | 0 | 0.91 |
| 1 | TOPSOIL | 0 | 0.91 |
| 1 | TOPSOIL | 0 | 0.91 |
| 1 | TOPSOIL | 0 | 0.91 |
| 2 | LIMESTONE | 0.91 | 24.4 |
| 2 | LIMESTONE | 0.91 | 24.4 |
| 2 | LIMESTONE | 0.91 | 24.4 |
| 2 | LIMESTONE | 0.91 | 24.4 |

Well ID: 3515503
Construction Date: 2006-11-17

Easting: 425268
Northing: 4974973

UTM Zone 18
Positional Accuracy: margin of error : 10 - 30 m

Well Depth: 24.4 **Water Kind:** **Pump Rate (LPM):** 87
Well Diameter (cm): 15.2 **Final Status:** Water Supply **Recommended Pump Rate:** 12
Water First Found: 16.5 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 1 | SAND | 0 | 0.91 |
| 2 | SANDSTONE | 0.91 | 15.2 |
| 2 | SANDSTONE | 0.91 | 15.2 |
| 2 | SANDSTONE | 0.91 | 15.2 |
| 2 | SANDSTONE | 0.91 | 15.2 |
| 3 | SANDSTONE | 15.2 | 16.8 |
| 3 | SANDSTONE | 15.2 | 16.8 |
| 3 | SANDSTONE | 15.2 | 16.8 |

| | | | |
|---|-----------|------|------|
| 3 | SANDSTONE | 15.2 | 16.8 |
| 4 | SANDSTONE | 16.8 | 23.8 |
| 4 | SANDSTONE | 16.8 | 23.8 |
| 4 | SANDSTONE | 16.8 | 23.8 |
| 4 | SANDSTONE | 16.8 | 23.8 |
| 5 | SANDSTONE | 23.8 | 24.4 |
| 5 | SANDSTONE | 23.8 | 24.4 |
| 5 | SANDSTONE | 23.8 | 24.4 |
| 5 | SANDSTONE | 23.8 | 24.4 |

Well ID: 7048403

Easting: 425200

UTM Zone 18

Construction Date: 2007-08-17

Northing: 4974843

Positional Accuracy: margin of error : 10 - 30 m

Well Depth: 24.4

Water Kind

Pump Rate (LPM): 80

Well Diameter (cm):

Final Status

Water Supply

Recommended Pump Rate: 35

Water First Found: 22.9

Primary Water Use: Domestic

Pumping Duration (h:m): 1 : 0

Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | |
| 1 | CLAY | 0 | |
| 2 | SANDSTONE | | 0.61 |
| 2 | SANDSTONE | | 0.61 |
| 3 | SANDSTONE | 0.61 | 2.43 |
| 3 | SANDSTONE | 0.61 | 2.43 |
| 4 | SANDSTONE | 2.43 | 22.9 |
| 4 | SANDSTONE | 2.43 | 22.9 |
| 5 | SANDSTONE | 22.9 | 23.2 |
| 5 | SANDSTONE | 22.9 | 23.2 |
| 6 | | 23.2 | 24.4 |
| 6 | | 23.2 | 24.4 |

Well ID: 7109832

Easting: 424516

UTM Zone 18

Construction Date: 2008-08-14

Northing: 4975241

Positional Accuracy: margin of error : 10 - 30 m

Well Depth: 18.3

Water Kind

Untested

Pump Rate (LPM): 414

Well Diameter (cm): 15.2

Final Status

Water Supply

Recommended Pump Rate: 414

Water First Found: 15.9

Primary Water Use: Domestic

Pumping Duration (h:m): 1 :

Static Level: 4

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 1 | CLAY | 0 | 2.44 |
| 2 | SANDSTONE | 2.44 | 18.3 |
| 2 | SANDSTONE | 2.44 | 18.3 |

| | | | |
|---|-----------|------|------|
| 2 | SANDSTONE | 2.44 | 18.3 |
| 2 | SANDSTONE | 2.44 | 18.3 |
| 2 | SANDSTONE | 2.44 | 18.3 |
| 2 | SANDSTONE | 2.44 | 18.3 |

Well ID: 7122399
Construction Date: 2009-04-28

Easting: 425098
Northing: 4974747

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4 **Water Kind** Untested **Pump Rate (LPM):** 68
Well Diameter (cm): 38.1 **Final Status** Water Supply **Recommended Pump Rate:** 68
Water First Found: 22.9 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 1.22 |
| 2 | SANDSTONE | 1.22 | 22.3 |
| 3 | SANDSTONE | 22.3 | 22.9 |
| 4 | SANDSTONE | 22.9 | 24.4 |

Well ID: 7122400
Construction Date: 2009-04-28

Easting: 425117
Northing: 4974777

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4 **Water Kind** Untested **Pump Rate (LPM):** 68
Well Diameter (cm): 15 **Final Status** Water Supply **Recommended Pump Rate:** 68
Water First Found: 22.3 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 : 0
Static Level:

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 0.76 |
| 1 | CLAY | 0 | 0.76 |
| 2 | SANDSTONE | 0.76 | 22.3 |
| 2 | SANDSTONE | 0.76 | 22.3 |
| 3 | SANDSTONE | 22.3 | 22.9 |
| 3 | SANDSTONE | 22.3 | 22.9 |
| 4 | SANDSTONE | 22.9 | 24.4 |
| 4 | SANDSTONE | 22.9 | 24.4 |

Well ID: 7192550
Construction Date: 2012-12-04

Easting: 424533
Northing: 4975223

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 18.3 **Water Kind** Untested **Pump Rate (LPM):** 91
Well Diameter (cm): 15.9 **Final Status** Water Supply **Recommended Pump Rate:** 91
Water First Found: 14.6 **Primary Water Use:** Domestic **Pumping Duration (h:m):** 1 :
Static Level: 6

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 1 | CLAY | 0 | 1.22 |
| 2 | SAND | 1.22 | 12.2 |

| | | | |
|---|-----------|------|------|
| 2 | SAND | 1.22 | 12.2 |
| 2 | SAND | 1.22 | 12.2 |
| 2 | SAND | 1.22 | 12.2 |
| 2 | SAND | 1.22 | 12.2 |
| 2 | SAND | 1.22 | 12.2 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 3 | SANDSTONE | 12.2 | 14.6 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 4 | SANDSTONE | 14.6 | 16.5 |
| 5 | SANDSTONE | 16.5 | 18.3 |
| 5 | SANDSTONE | 16.5 | 18.3 |
| 5 | SANDSTONE | 16.5 | 18.3 |
| 5 | SANDSTONE | 16.5 | 18.3 |
| 5 | SANDSTONE | 16.5 | 18.3 |
| 5 | SANDSTONE | 16.5 | 18.3 |

Well ID: 7228026
Construction Date: 2014-09-22

Easting: 424567
Northing: 4975187

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 18.6
Well Diameter (cm): 14.9
Water First Found: 16.1
Static Level: 3

Water Kind Untested
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 91
Recommended Pump Rate: 91
Pumping Duration (h:m): 1 :

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 1 | SAND | 0 | 0.61 |
| 2 | SAND | 0.61 | 13.7 |
| 2 | SAND | 0.61 | 13.7 |
| 2 | SAND | 0.61 | 13.7 |
| 2 | SAND | 0.61 | 13.7 |
| 2 | SAND | 0.61 | 13.7 |
| 2 | SAND | 0.61 | 13.7 |

| | | | |
|---|-----------|------|------|
| 3 | SANDSTONE | 13.7 | 16.1 |
| 3 | SANDSTONE | 13.7 | 16.1 |
| 3 | SANDSTONE | 13.7 | 16.1 |
| 3 | SANDSTONE | 13.7 | 16.1 |
| 3 | SANDSTONE | 13.7 | 16.1 |
| 3 | SANDSTONE | 13.7 | 16.1 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 4 | SANDSTONE | 16.1 | 16.5 |
| 5 | SANDSTONE | 16.5 | 18.6 |
| 5 | SANDSTONE | 16.5 | 18.6 |
| 5 | SANDSTONE | 16.5 | 18.6 |
| 5 | SANDSTONE | 16.5 | 18.6 |
| 5 | SANDSTONE | 16.5 | 18.6 |
| 5 | SANDSTONE | 16.5 | 18.6 |

Well ID: 7268446
Construction Date: 2016-08-10

Easting: 424760
Northing: 4974829

UTM Zone 18
Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 24.4
Well Diameter (cm): 15.9
Water First Found: 17.7
Static Level: 7

Water Kind Untested
Final Status Water Supply
Primary Water Use: Domestic

Pump Rate (LPM): 91
Recommended Pump Rate: 91
Pumping Duration (h:m): 1 : 0

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SAND | 0 | 1.22 |
| 1 | SAND | 0 | 1.22 |
| 1 | SAND | 0 | 1.22 |
| 1 | SAND | 0 | 1.22 |
| 2 | SANDSTONE | 1.22 | 17.7 |
| 2 | SANDSTONE | 1.22 | 17.7 |
| 2 | SANDSTONE | 1.22 | 17.7 |
| 2 | SANDSTONE | 1.22 | 17.7 |
| 3 | SANDSTONE | 17.7 | 22.6 |
| 3 | SANDSTONE | 17.7 | 22.6 |
| 3 | SANDSTONE | 17.7 | 22.6 |
| 3 | SANDSTONE | 17.7 | 22.6 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |
| 4 | SANDSTONE | 22.6 | 24.4 |

Well ID: 7268447

Easting: 424277

UTM Zone 18

Construction Date: 2016-08-10

Northing: 4975064

Positional Accuracy: margin of error : 30 m - 100 m

Well Depth: 29.9

Water Kind Untested

Pump Rate (LPM): 91

Well Diameter (cm): 15.6

Final Status Water Supply

Recommended Pump Rate: 91

Water First Found: 27.4

Primary Water Use: Domestic

Pumping Duration (h:m): 1 : 0

Static Level: 6

| Layer: | Driller's Description: | Top: | Bottom: |
|--------|------------------------|------|---------|
| 1 | SANDSTONE | 0 | 18.9 |
| 1 | SANDSTONE | 0 | 18.9 |
| 1 | SANDSTONE | 0 | 18.9 |
| 1 | SANDSTONE | 0 | 18.9 |
| 2 | SAND | 18.9 | 27.4 |
| 2 | SAND | 18.9 | 27.4 |
| 2 | SAND | 18.9 | 27.4 |
| 2 | SAND | 18.9 | 27.4 |
| 3 | SANDSTONE | 27.4 | 28.0 |
| 3 | SANDSTONE | 27.4 | 28.0 |
| 3 | SANDSTONE | 27.4 | 28.0 |
| 3 | SANDSTONE | 27.4 | 28.0 |
| 4 | SANDSTONE | 28.0 | 29.9 |
| 4 | SANDSTONE | 28.0 | 29.9 |
| 4 | SANDSTONE | 28.0 | 29.9 |
| 4 | SANDSTONE | 28.0 | 29.9 |



Environmental

Geotechnical

Building Sciences

Construction Quality
Verification

Telephone

(866) 217.7900
(705) 742.7900

Website

cambium-inc.com

Mailing Address

P.O. Box 325,
Peterborough, Ontario
Canada, K9J 6Z3

Locations

Peterborough
Kingston
Barrie
Oshawa

Laboratory

Peterborough



February 9, 2024

Dear property owner,

Cambium is conducting a groundwater study for the proposed subdivision located southeast of the intersection of Matheson Drive and Rosedale Road South. As part of the assessment, we are taking inventory of private groundwater users located adjacent to the work area. The purpose of the inventory is to identify nearby water supply wells that may be sensitive to the development and to catalogue the existing groundwater conditions, water levels, yields, water quality, etc.

If a supply well is located on your property, we are requesting that you please review and complete the attached questionnaire. Complete as much information as possible and scan the document (or take a photograph) and email to kyle.horner@cambium-inc.com. Please note, Cambium Inc. may contact you at a later date to request permission to monitor the water level in your well in the future.

You are not obligated to complete this form, your participation is voluntary, and all results regarding your well will be confidential. If you choose to provide a response to this letter, please do so before Friday, February 23, 2024.

If you have any questions regarding this project, please contact Kyle Horner at 613 876 4516.

Best regards,

Kyle Horner, Ph.D., P. Geo.
Senior Hydrogeologist / Senior Project
Manager, Cambium Inc.

KH/kh

Attached: Water Well Survey Questionnaire

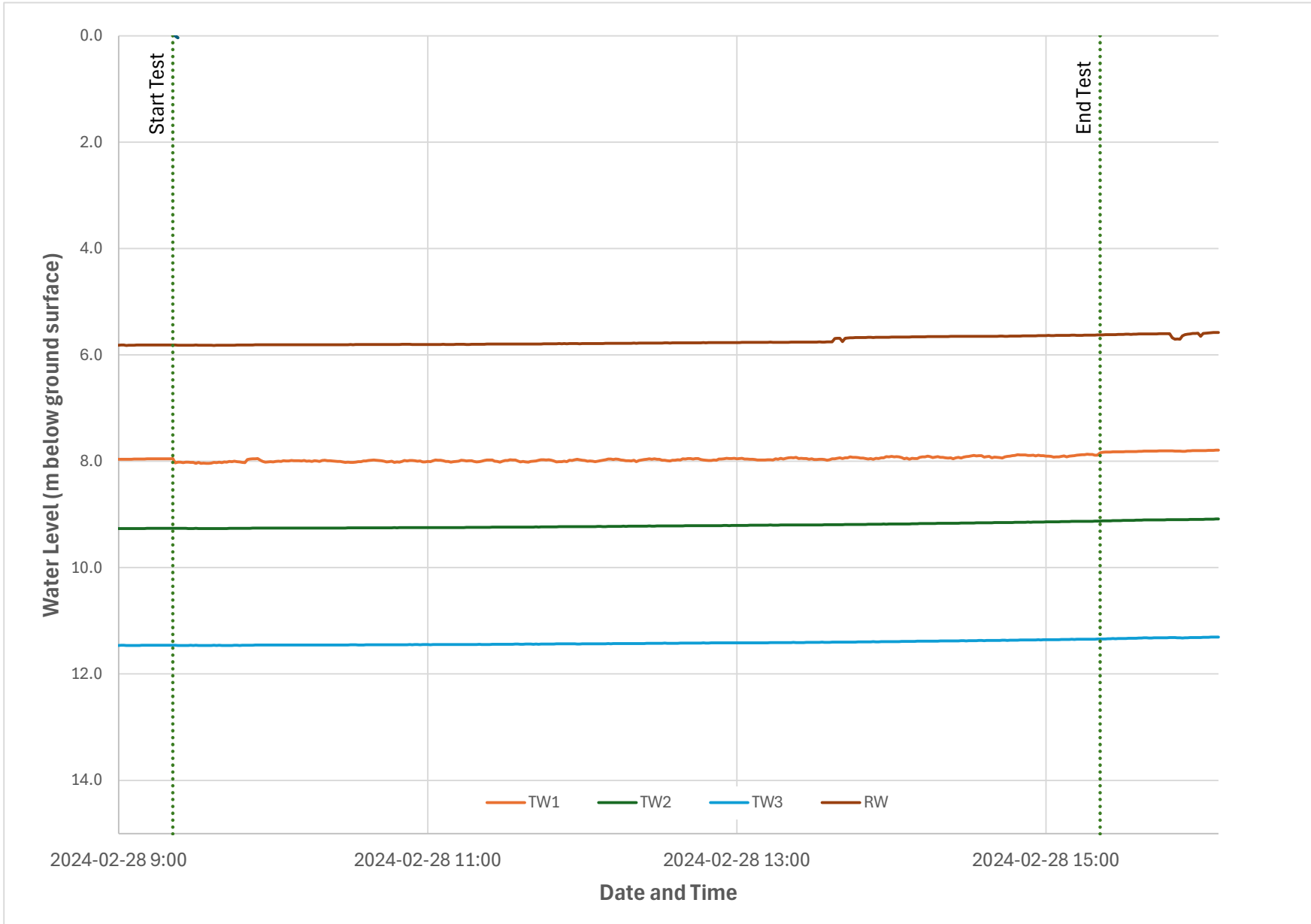


Well Use Survey Summary Report

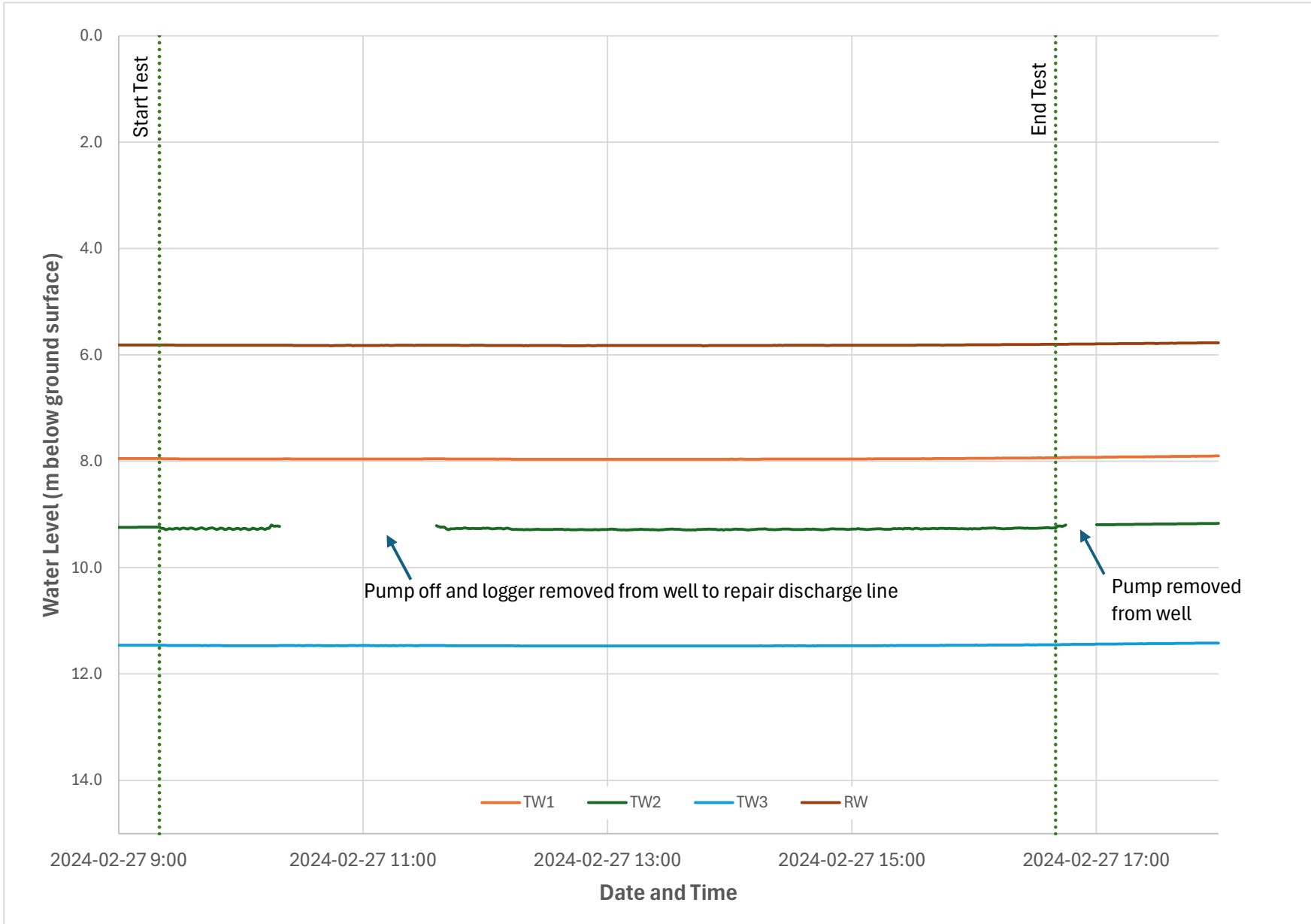
| Number | Street | Spoke to owner | Participated in program | Comments | Water Level (mtop) | Depth (mtop) | Well Record # | UTM | |
|--------|------------------|----------------|-------------------------|---|--------------------|--------------|---------------|--------|---------|
| | | | | | | | | mE | mN |
| 100 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 105 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 115 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 116 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 125 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 126 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 135 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 136 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 146 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 147 | Bower Boulevard | Yes | No | Gave letter to homeowner - emailed in response - indicated water was hard | - | 24.38 | A051443 | 425200 | 4974843 |
| 151 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 156 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 166 | Bower Boulevard | Yes | No | Gave letter to homeowner | | | | | |
| 167 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 173 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 182 | Bower Boulevard | No | - | Left letter in mailbox | | | | | |
| 746 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 760 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 765 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 771 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 780 | Rosedal Rd South | Yes | No | Gave letter to homeowner | | | | | |
| 782 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 785 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 795 | Rosedal Rd South | Yes | No | Gave letter to homeowner - emailed in response - indicated water was hard | - | ~30 | - | - | - |
| 805 | Rosedal Rd South | Yes | No | Gave letter to homeowner - emailed in response - indicated water was hard | - | 24.4 | A360999 | 424701 | 4974928 |
| 815 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 843 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 845 | Rosedal Rd South | No | - | Left letter in mailbox | | | | | |
| 862 | Rosedal Rd South | Yes | No | Gave letter to homeowner | | | | | |



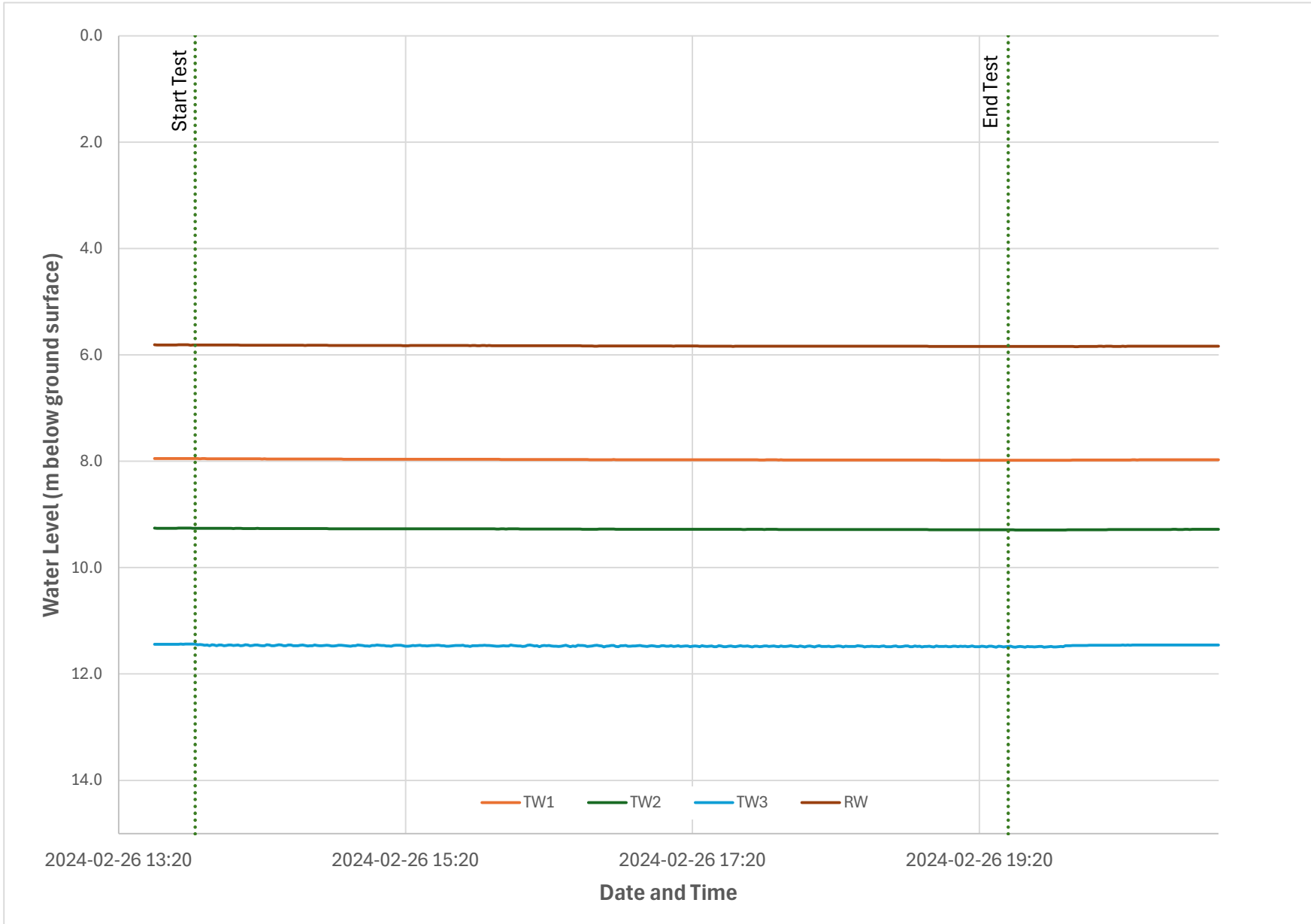
Appendix F
Hydraulic Pumping Test Results



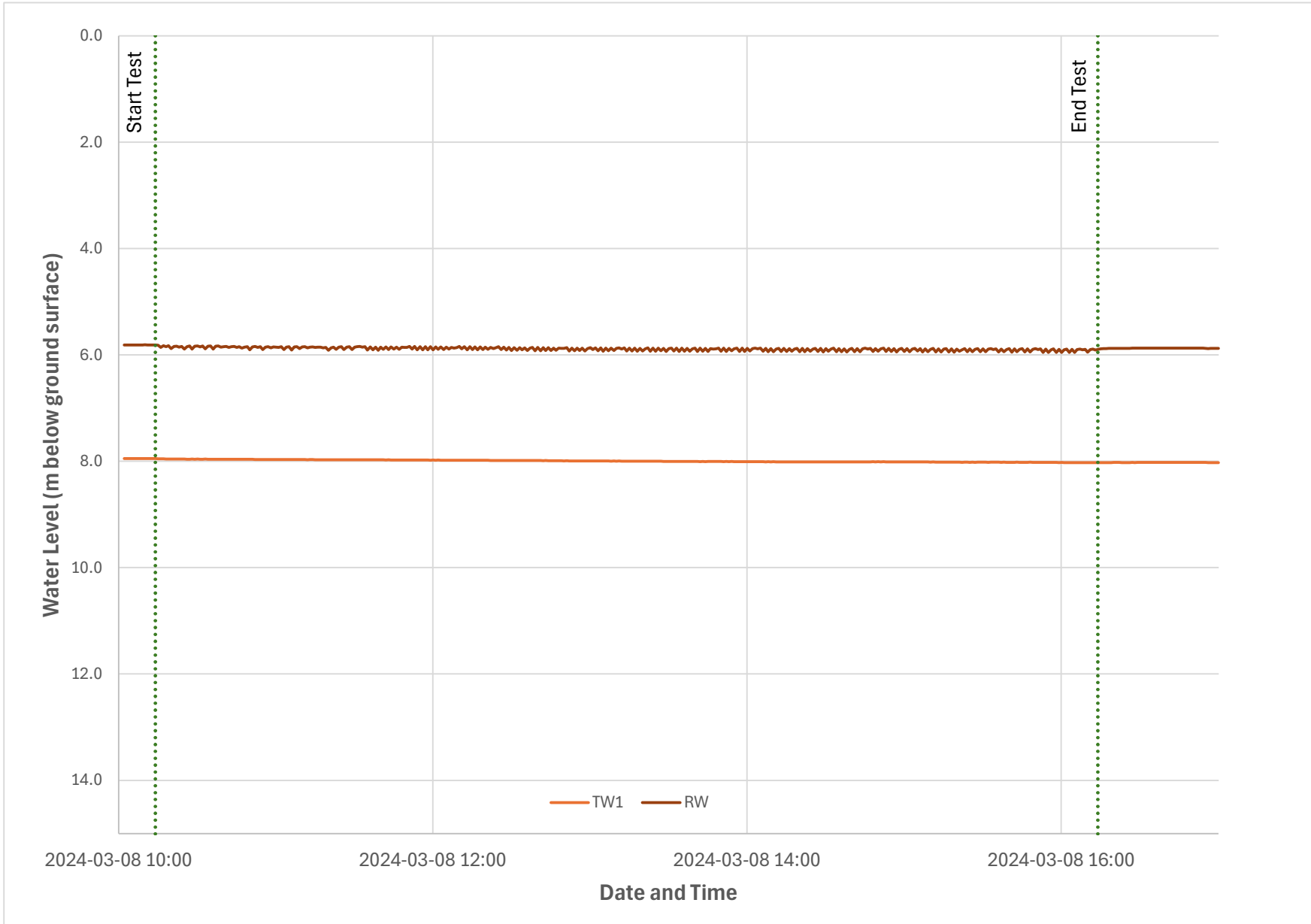
Measured Water Levels for TW1 Pumping Test



Measured Water Levels for TW2 Pumping Test



Measured Water Levels for TW3 Pumping Test



Measured Water Levels for RW1 Pumping Test



Appendix G
Water Quality Results



Your Project #: 19387-001
 Your C.O.C. #: 977413-03-01

Attention: Kyle Horner

Cambium Environmental Inc
 31 Hyperion Court, Suite 102
 Kingston, ON
 Canada K7P 7G3

Report Date: 2024/03/06
 Report #: R8055255
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C462310

Received: 2024/03/01, 08:51

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Analytical Method |
|--|----------|------------|------------|------------------------------|----------------------|
| | | Extracted | Analyzed | | |
| Alkalinity | 1 | N/A | 2024/03/05 | CAM SOP-00448 | SM 24 2320 B m |
| Carbonate, Bicarbonate and Hydroxide | 1 | N/A | 2024/03/04 | CAM SOP-00102 | APHA 4500-CO2 D |
| Chloride by Automated Colourimetry | 1 | N/A | 2024/03/04 | CAM SOP-00463 | SM 24 4500-Cl E m |
| Conductivity | 1 | N/A | 2024/03/02 | CAM SOP-00414 | SM 24 2510 m |
| Dissolved Organic Carbon (DOC) (1) | 1 | N/A | 2024/03/01 | CAM SOP-00446 | SM 24 5310 B m |
| Hardness (calculated as CaCO3) | 1 | N/A | 2024/03/05 | CAM SOP 00102/00408/00447 | SM 2340 B |
| Metals Analysis by ICPMS (as received) (2) | 1 | N/A | 2024/03/04 | CAM SOP-00447 | EPA 6020B m |
| Ion Balance (% Difference) | 1 | N/A | 2024/03/05 | | |
| Anion and Cation Sum | 1 | N/A | 2024/03/05 | | |
| Total Coliforms/ E. coli, CFU/100mL | 1 | N/A | 2024/03/01 | CAM SOP-00551 | MECP-E3407 |
| Fecal coliform, (CFU/100mL) | 1 | N/A | 2024/03/01 | CAM SOP-00552 | |
| Total Ammonia-N | 1 | N/A | 2024/03/05 | CAM SOP-00441 | USGS I-2522-90 m |
| Nitrate & Nitrite as Nitrogen in Water (3) | 1 | N/A | 2024/03/04 | CAM SOP-00440 | SM 24 4500-NO3I/NO2B |
| pH | 1 | 2024/03/02 | 2024/03/02 | CAM SOP-00413 | SM 24th - 4500H+ B |
| Orthophosphate | 1 | N/A | 2024/03/04 | CAM SOP-00461 | SM 24 4500-P E |
| Sat. pH and Langelier Index (@ 20C) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sat. pH and Langelier Index (@ 4C) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sulphate by Automated Turbidimetry | 1 | N/A | 2024/03/04 | CAM SOP-00464 | SM 24 4500-SO42- E m |
| Total Dissolved Solids (TDS calc) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Turbidity | 1 | N/A | 2024/03/01 | CAM SOP-00417 | SM 24 2130 B |

Remarks:

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

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



Your Project #: 19387-001
Your C.O.C. #: 977413-03-01

Attention: Kyle Horner

Cambium Environmental Inc
31 Hyperion Court, Suite 102
Kingston, ON
Canada K7P 7G3

Report Date: 2024/03/06
Report #: R8055255
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C462310

Received: 2024/03/01, 08:51

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 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:

Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

=====
This report has been generated and distributed using a secure automated process.

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

Bureau Veritas Job #: C462310
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| | | | | | | | |
|--|--------------|---------------------|------------|-----------------|------------------------|------------|-----------------|
| Bureau Veritas ID | | YNA332 | | | YNA332 | | |
| Sampling Date | | 2024/02/28 14:50 | | | 2024/02/28 14:50 | | |
| COC Number | | 977413-03-01 | | | 977413-03-01 | | |
| | UNITS | TW1 | RDL | QC Batch | TW1 Lab-Dup | RDL | QC Batch |
| Calculated Parameters | | | | | | | |
| Anion Sum | me/L | 3.75 | N/A | 9250424 | | | |
| Bicarb. Alkalinity (calc. as CaCO3) | mg/L | 180 | 1.0 | 9250087 | | | |
| Calculated TDS | mg/L | 180 | 1.0 | 9250422 | | | |
| Carb. Alkalinity (calc. as CaCO3) | mg/L | 1.5 | 1.0 | 9250087 | | | |
| Cation Sum | me/L | 3.92 | N/A | 9250424 | | | |
| Hardness (CaCO3) | mg/L | 190 | 1.0 | 9250421 | | | |
| Ion Balance (% Difference) | % | 2.21 | N/A | 9250423 | | | |
| Langelier Index (@ 20C) | N/A | 0.482 | | 9250426 | | | |
| Langelier Index (@ 4C) | N/A | 0.232 | | 9250427 | | | |
| Saturation pH (@ 20C) | N/A | 7.46 | | 9250426 | | | |
| Saturation pH (@ 4C) | N/A | 7.71 | | 9250427 | | | |
| Inorganics | | | | | | | |
| Total Ammonia-N | mg/L | <0.050 | 0.050 | 9253581 | | | |
| Conductivity | umho/cm | 360 | 1.0 | 9252632 | | | |
| Dissolved Organic Carbon | mg/L | 1.6 | 0.40 | 9248281 | | | |
| Orthophosphate (P) | mg/L | <0.010 | 0.010 | 9251735 | <0.010 | 0.010 | 9251735 |
| pH | pH | 7.94 | | 9252633 | | | |
| Dissolved Sulphate (SO4) | mg/L | 3.5 | 1.0 | 9251733 | 3.4 | 1.0 | 9251733 |
| Alkalinity (Total as CaCO3) | mg/L | 180 | 1.0 | 9252631 | | | |
| Dissolved Chloride (Cl-) | mg/L | <1.0 | 1.0 | 9251730 | <1.0 | 1.0 | 9251730 |
| Nitrite (N) | mg/L | <0.010 | 0.010 | 9250717 | | | |
| Nitrate (N) | mg/L | 0.26 | 0.10 | 9250717 | | | |
| Metals | | | | | | | |
| Aluminum (Al) | ug/L | <4.9 | 4.9 | 9247907 | | | |
| Antimony (Sb) | ug/L | <0.50 | 0.50 | 9247907 | | | |
| Arsenic (As) | ug/L | <1.0 | 1.0 | 9247907 | | | |
| Barium (Ba) | ug/L | 27 | 2.0 | 9247907 | | | |
| Beryllium (Be) | ug/L | <0.40 | 0.40 | 9247907 | | | |
| Boron (B) | ug/L | <10 | 10 | 9247907 | | | |
| Cadmium (Cd) | ug/L | <0.090 | 0.090 | 9247907 | | | |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| | | | | | | | |
|--|--------------|---------------------|------------|-----------------|------------------------|------------|-----------------|
| Bureau Veritas ID | | YNA332 | | | YNA332 | | |
| Sampling Date | | 2024/02/28 14:50 | | | 2024/02/28 14:50 | | |
| COC Number | | 977413-03-01 | | | 977413-03-01 | | |
| | UNITS | TW1 | RDL | QC Batch | TW1 Lab-Dup | RDL | QC Batch |
| Calcium (Ca) | ug/L | 46000 | 200 | 9247907 | | | |
| Chromium (Cr) | ug/L | <5.0 | 5.0 | 9247907 | | | |
| Cobalt (Co) | ug/L | <0.50 | 0.50 | 9247907 | | | |
| Copper (Cu) | ug/L | <0.90 | 0.90 | 9247907 | | | |
| Iron (Fe) | ug/L | <100 | 100 | 9247907 | | | |
| Lead (Pb) | ug/L | <0.50 | 0.50 | 9247907 | | | |
| Lithium (Li) | ug/L | <5.0 | 5.0 | 9247907 | | | |
| Magnesium (Mg) | ug/L | 19000 | 50 | 9247907 | | | |
| Manganese (Mn) | ug/L | <2.0 | 2.0 | 9247907 | | | |
| Molybdenum (Mo) | ug/L | <0.50 | 0.50 | 9247907 | | | |
| Nickel (Ni) | ug/L | <1.0 | 1.0 | 9247907 | | | |
| Phosphorus (P) | ug/L | <100 | 100 | 9247907 | | | |
| Potassium (K) | ug/L | 650 | 200 | 9247907 | | | |
| Selenium (Se) | ug/L | <2.0 | 2.0 | 9247907 | | | |
| Silicon (Si) | ug/L | 1600 | 50 | 9247907 | | | |
| Silver (Ag) | ug/L | <0.090 | 0.090 | 9247907 | | | |
| Sodium (Na) | ug/L | 750 | 100 | 9247907 | | | |
| Strontium (Sr) | ug/L | 31 | 1.0 | 9247907 | | | |
| Thallium (Tl) | ug/L | <0.050 | 0.050 | 9247907 | | | |
| Titanium (Ti) | ug/L | <5.0 | 5.0 | 9247907 | | | |
| Uranium (U) | ug/L | 0.41 | 0.10 | 9247907 | | | |
| Vanadium (V) | ug/L | <0.50 | 0.50 | 9247907 | | | |
| Zinc (Zn) | ug/L | 17 | 5.0 | 9247907 | | | |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

RESULTS OF ANALYSES OF WATER

| | | | | |
|----------------------------------|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YNA332 | | |
| Sampling Date | | 2024/02/28 14:50 | | |
| COC Number | | 977413-03-01 | | |
| | UNITS | TW1 | RDL | QC Batch |
| Inorganics | | | | |
| Turbidity | NTU | <0.1 | 0.1 | 9251388 |
| RDL = Reportable Detection Limit | | | | |
| QC Batch = Quality Control Batch | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

MICROBIOLOGY (WATER)

| | | | |
|----------------------------------|--------------|---------------------|-----------------|
| Bureau Veritas ID | | YNA332 | |
| Sampling Date | | 2024/02/28 14:50 | |
| COC Number | | 977413-03-01 | |
| | UNITS | TW1 | QC Batch |
| Microbiological | | | |
| Fecal coliform | CFU/100mL | 0 | 9250958 |
| Background | CFU/100mL | 220 | 9250895 |
| Total Coliforms | CFU/100mL | 27 | 9250895 |
| Escherichia coli | CFU/100mL | 0 | 9250895 |
| QC Batch = Quality Control Batch | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

TEST SUMMARY

Bureau Veritas ID: YNA332
Sample ID: TW1
Matrix: Water

Collected: 2024/02/28
Shipped:
Received: 2024/03/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|-----------------|---------|------------|---------------|-------------------|
| Alkalinity | AT | 9252631 | N/A | 2024/03/05 | Nachiketa Gohil |
| Carbonate, Bicarbonate and Hydroxide | CALC | 9250087 | N/A | 2024/03/04 | Automated Statchk |
| Chloride by Automated Colourimetry | SKAL | 9251730 | N/A | 2024/03/04 | Alina Dobreanu |
| Conductivity | AT | 9252632 | N/A | 2024/03/02 | Nachiketa Gohil |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 9248281 | N/A | 2024/03/01 | Gyulshen Idriz |
| Hardness (calculated as CaCO3) | | 9250421 | N/A | 2024/03/05 | Automated Statchk |
| Metals Analysis by ICPMS (as received) | ICP/MS | 9247907 | N/A | 2024/03/04 | Prempal Bhatti |
| Ion Balance (% Difference) | CALC | 9250423 | N/A | 2024/03/05 | Automated Statchk |
| Anion and Cation Sum | CALC | 9250424 | N/A | 2024/03/05 | Automated Statchk |
| Total Coliforms/ E. coli, CFU/100mL | PL | 9250895 | N/A | 2024/03/01 | Aayushi Patel |
| Fecal coliform, (CFU/100mL) | PL | 9250958 | N/A | 2024/03/01 | Aayushi Patel |
| Total Ammonia-N | LACH/NH4 | 9253581 | N/A | 2024/03/05 | Prabhjot Kaur |
| Nitrate & Nitrite as Nitrogen in Water | LACH | 9250717 | N/A | 2024/03/04 | Chandra Nandlal |
| pH | AT | 9252633 | 2024/03/02 | 2024/03/02 | Nachiketa Gohil |
| Orthophosphate | KONE | 9251735 | N/A | 2024/03/04 | Alina Dobreanu |
| Sat. pH and Langelier Index (@ 20C) | CALC | 9250426 | N/A | 2024/03/05 | Automated Statchk |
| Sat. pH and Langelier Index (@ 4C) | CALC | 9250427 | N/A | 2024/03/05 | Automated Statchk |
| Sulphate by Automated Turbidimetry | SKAL | 9251733 | N/A | 2024/03/04 | Alina Dobreanu |
| Total Dissolved Solids (TDS calc) | CALC | 9250422 | N/A | 2024/03/05 | Automated Statchk |
| Turbidity | AT | 9251388 | N/A | 2024/03/01 | Leily Karimi |

Bureau Veritas ID: YNA332 Dup
Sample ID: TW1
Matrix: Water

Collected: 2024/02/28
Shipped:
Received: 2024/03/01

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|------------------------------------|-----------------|---------|-----------|---------------|----------------|
| Chloride by Automated Colourimetry | SKAL | 9251730 | N/A | 2024/03/04 | Alina Dobreanu |
| Orthophosphate | KONE | 9251735 | N/A | 2024/03/04 | Alina Dobreanu |
| Sulphate by Automated Turbidimetry | SKAL | 9251733 | N/A | 2024/03/04 | Alina Dobreanu |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 5.7°C |
|-----------|-------|

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

QUALITY ASSURANCE REPORT

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|--------------------------|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9247907 | Aluminum (Al) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <4.9 | ug/L | NC | 20 |
| 9247907 | Antimony (Sb) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Arsenic (As) | 2024/03/04 | 101 | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Barium (Ba) | 2024/03/04 | 97 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | 1.1 | 20 |
| 9247907 | Beryllium (Be) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.40 | ug/L | NC | 20 |
| 9247907 | Boron (B) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <10 | ug/L | 7.0 | 20 |
| 9247907 | Cadmium (Cd) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Calcium (Ca) | 2024/03/04 | NC | 80 - 120 | 103 | 80 - 120 | <200 | ug/L | 0.89 | 20 |
| 9247907 | Chromium (Cr) | 2024/03/04 | 99 | 80 - 120 | 98 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Cobalt (Co) | 2024/03/04 | 99 | 80 - 120 | 99 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Copper (Cu) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.90 | ug/L | 3.5 | 20 |
| 9247907 | Iron (Fe) | 2024/03/04 | 102 | 80 - 120 | 102 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Lead (Pb) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Lithium (Li) | 2024/03/04 | 105 | 80 - 120 | 105 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Magnesium (Mg) | 2024/03/04 | NC | 80 - 120 | 100 | 80 - 120 | <50 | ug/L | 0.53 | 20 |
| 9247907 | Manganese (Mn) | 2024/03/04 | 98 | 80 - 120 | 98 | 80 - 120 | <2.0 | ug/L | 4.7 | 20 |
| 9247907 | Molybdenum (Mo) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | 2.4 | 20 |
| 9247907 | Nickel (Ni) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Phosphorus (P) | 2024/03/04 | 107 | 80 - 120 | 103 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Potassium (K) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <200 | ug/L | 0.23 | 20 |
| 9247907 | Selenium (Se) | 2024/03/04 | 102 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | NC | 20 |
| 9247907 | Silicon (Si) | 2024/03/04 | 105 | 80 - 120 | 103 | 80 - 120 | <50 | ug/L | 2.5 | 20 |
| 9247907 | Silver (Ag) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Sodium (Na) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <100 | ug/L | 0.73 | 20 |
| 9247907 | Strontium (Sr) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <1.0 | ug/L | 0.82 | 20 |
| 9247907 | Thallium (Tl) | 2024/03/04 | 102 | 80 - 120 | 103 | 80 - 120 | <0.050 | ug/L | NC | 20 |
| 9247907 | Titanium (Ti) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Uranium (U) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.10 | ug/L | 0.22 | 20 |
| 9247907 | Vanadium (V) | 2024/03/04 | 101 | 80 - 120 | 100 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Zinc (Zn) | 2024/03/04 | 100 | 80 - 120 | 100 | 80 - 120 | <5.0 | ug/L | 1.3 | 20 |
| 9248281 | Dissolved Organic Carbon | 2024/03/01 | NC | 80 - 120 | 97 | 80 - 120 | <0.40 | mg/L | 0.81 | 20 |



**BUREAU
VERITAS**

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

QUALITY ASSURANCE REPORT(CONT'D)

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|-----------------------------|------------|--------------|-----------|--------------|-----------|--------------|---------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9250717 | Nitrate (N) | 2024/03/04 | 97 | 80 - 120 | 98 | 80 - 120 | <0.10 | mg/L | 1.2 | 20 |
| 9250717 | Nitrite (N) | 2024/03/04 | 101 | 80 - 120 | 104 | 80 - 120 | <0.010 | mg/L | 2.1 | 20 |
| 9251388 | Turbidity | 2024/03/01 | | | 100 | 80 - 120 | <0.1 | NTU | NC | 20 |
| 9251730 | Dissolved Chloride (Cl-) | 2024/03/04 | 94 | 80 - 120 | 94 | 80 - 120 | <1.0 | mg/L | NC | 20 |
| 9251733 | Dissolved Sulphate (SO4) | 2024/03/04 | 92 | 75 - 125 | 93 | 80 - 120 | <1.0 | mg/L | 0.86 | 20 |
| 9251735 | Orthophosphate (P) | 2024/03/04 | 94 | 75 - 125 | 92 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 9252631 | Alkalinity (Total as CaCO3) | 2024/03/05 | | | 94 | 85 - 115 | <1.0 | mg/L | 0.96 | 20 |
| 9252632 | Conductivity | 2024/03/02 | | | 103 | 85 - 115 | <1.0 | umho/cm | 0.33 | 10 |
| 9252633 | pH | 2024/03/02 | | | 102 | 98 - 103 | | | 0.71 | N/A |
| 9253581 | Total Ammonia-N | 2024/03/05 | NC | 75 - 125 | 103 | 80 - 120 | <0.050 | mg/L | 0.54 | 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).



BUREAU
VERITAS

Bureau Veritas Job #: C462310

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Anastassia Hamanov".

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "Aayushi Patel".

Aayushi Patel, B.sc in Biotechnology, Lab Technician

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

CHAIN (



NONT-2024-03-008

Page of

| | | | | | |
|--|--|-------------------------------|-----------------------------|-----------------------------|--|
| INVOICE TO: | | REPORT TO: | | PROJECT INFORMATION: | |
| Company Name: #17950 Cambium Environmental Inc | Company Name: #26906 Cambium Environmental Inc | Quotation #: C26318 | Order #: _____ | | |
| Attention: ACCOUNTS PAYABLE | Attention: Kyle Horner | P.O. #: | Barcode: | | |
| Address: 194 Sophia Street PO Box 325 Peterborough ON K9H 1E5 | Address: 31 Hyperion Court, Suite 102 Kingston ON K7P 7G3 | Project: 19387-001. | 13 | | |
| Tel: (705) 742-7900 Fax: (705) 742-7907 | Tel: (613) 389-2323 Fax: _____ | Project Name: | COC #: _____ Manager: _____ | | |
| Email: accounting@cambium-inc.com | Email: kyle.horner@cambium-inc.com, maren.catt@cambium-i | Site #: | Barcode: C#977413-03-01 | | |
| | | Sampled By: <i>Maren Catt</i> | Christine Gripton | | |

| MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY | | | | | | ANALYSIS REQUESTED (PLEASE BE SPECIFIC) | | | | | | | | | | Turnaround Time (TAT) Required: Please provide advance notice for rush projects | | | | | | | |
|--|--------------------------------------|--------------------------------------|----------------------------------|---|--|--|--|-------------------------------------|-----------------------------|-----------|---------------------------------------|--|--|--|--|--|--|--|--|--|---|--|-------------------------------------|
| Regulation 153 (2011) | | | Other Regulations | | | Special Instructions | Field Filtered (please circle): Metals / Hg / Cr VI | Total Coliforms/ E. coli, CFU/100mL | Fecal coliform, (CFU/100mL) | Turbidity | RCAP - Comprehensive (Drinking Water) | | | | | | | | | | | 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. | <input checked="" type="checkbox"/> |
| Table 1 <input type="checkbox"/> | Res/Park <input type="checkbox"/> | Medium/Fine <input type="checkbox"/> | CCME <input type="checkbox"/> | Sanitary Sewer Bylaw <input type="checkbox"/> | | # of Bottles | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Table 2 <input type="checkbox"/> | Ind/Comm <input type="checkbox"/> | Coarse <input type="checkbox"/> | <input type="checkbox"/> | Reg 558. <input type="checkbox"/> | Storm Sewer Bylaw <input type="checkbox"/> | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Table 3 <input type="checkbox"/> | Agri/Other <input type="checkbox"/> | For RSC <input type="checkbox"/> | <input type="checkbox"/> | MISA Municipality _____ <input type="checkbox"/> | Reg 406 Table _____ <input type="checkbox"/> | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Table _____ <input type="checkbox"/> | Other _____ <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | |
| Include Criteria on Certificate of Analysis (Y/N)? _____ | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | | | | | | | | | | | | | | | | | | | |
| 1 | TW1 | Feb. 28, 2024 | 2:50pm | GW | | | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | 5 | pH: 7.07 Temp: 11.7°C | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | Laboratory Use Only | | | |
| <i>Maren Catt</i> | | 24/02/28 | 7:30pm | <i>Guan Sawani</i> | | 2024/03/01 | 08:51 | | Time Sensitive | Temperature (°C) on Recept | Custody Seal Present | Yes/No |
| | | | | | | | | | | 5/5/17 | Intact | ✓/ |

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COO-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
166
pacu



Your Project #: 19387-001.
Your C.O.C. #: 977413-02-01

Attention: Kyle Horner

Cambium Environmental Inc
31 Hyperion Court, Suite 102
Kingston, ON
Canada K7P 7G3

Report Date: 2024/03/06
Report #: R8055485
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C460880

Received: 2024/02/29, 10:34

Sample Matrix: Ground Water
Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Analytical Method |
|---|----------|------------|------------|------------------------------|----------------------|
| | | Extracted | Analyzed | | |
| Alkalinity (1) | 1 | N/A | 2024/03/05 | CAM SOP-00448 | SM 24 2320 B m |
| Carbonate, Bicarbonate and Hydroxide (1) | 1 | N/A | 2024/03/04 | CAM SOP-00102 | APHA 4500-CO2 D |
| Chloride by Automated Colourimetry (1) | 1 | N/A | 2024/03/01 | CAM SOP-00463 | SM 24 4500-Cl E m |
| Conductivity (1) | 1 | N/A | 2024/03/02 | CAM SOP-00414 | SM 24 2510 m |
| Dissolved Organic Carbon (DOC) (1, 2) | 1 | N/A | 2024/03/01 | CAM SOP-00446 | SM 24 5310 B m |
| Hardness (calculated as CaCO3) (1) | 1 | N/A | 2024/03/05 | CAM SOP 00102/00408/00447 | SM 2340 B |
| Metals Analysis by ICPMS (as received) (1, 3) | 1 | N/A | 2024/03/04 | CAM SOP-00447 | EPA 6020B m |
| Ion Balance (% Difference) (1) | 1 | N/A | 2024/03/05 | | |
| Anion and Cation Sum (1) | 1 | N/A | 2024/03/05 | | |
| Total Coliforms/ E. coli, CFU/100mL (1) | 1 | N/A | 2024/02/29 | CAM SOP-00551 | MECP-E3407 |
| Fecal coliform, (CFU/100mL) (1) | 1 | N/A | 2024/02/29 | CAM SOP-00552 | |
| Total Ammonia-N (1) | 1 | N/A | 2024/03/01 | CAM SOP-00441 | USGS I-2522-90 m |
| Nitrate & Nitrite as Nitrogen in Water (1, 4) | 1 | N/A | 2024/03/01 | CAM SOP-00440 | SM 24 4500-NO3I/NO2B |
| pH (1) | 1 | 2024/03/02 | 2024/03/02 | CAM SOP-00413 | SM 24th - 4500H+ B |
| Orthophosphate (1) | 1 | N/A | 2024/02/29 | CAM SOP-00461 | SM 24 4500-P E |
| Sat. pH and Langelier Index (@ 20C) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sat. pH and Langelier Index (@ 4C) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sulphate by Automated Turbidimetry (1) | 1 | N/A | 2024/03/01 | CAM SOP-00464 | SM 24 4500-SO42- E m |
| Total Dissolved Solids (TDS calc) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Turbidity (1) | 1 | N/A | 2024/02/29 | CAM SOP-00417 | SM 24 2130 B |

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



Your Project #: 19387-001.
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Attention: Kyle Horner

Cambium Environmental Inc
31 Hyperion Court, Suite 102
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Canada K7P 7G3

Report Date: 2024/03/06
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C460880

Received: 2024/02/29, 10:34

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
- (2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
- (3) Metals analysis was performed on the sample 'as received'.
- (4) 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:
Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

=====
This report has been generated and distributed using a secure automated process. 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

Bureau Veritas Job #: C460880
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001.
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| | | | | |
|--|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YMT605 | | |
| Sampling Date | | 2024/02/27 16:10 | | |
| COC Number | | 977413-02-01 | | |
| | UNITS | TW2 | RDL | QC Batch |
| Calculated Parameters | | | | |
| Anion Sum | me/L | 4.38 | N/A | 9247937 |
| Bicarb. Alkalinity (calc. as CaCO3) | mg/L | 200 | 1.0 | 9247934 |
| Calculated TDS | mg/L | 230 | 1.0 | 9247933 |
| Carb. Alkalinity (calc. as CaCO3) | mg/L | 1.4 | 1.0 | 9247934 |
| Cation Sum | me/L | 4.63 | N/A | 9247937 |
| Hardness (CaCO3) | mg/L | 210 | 1.0 | 9247935 |
| Ion Balance (% Difference) | % | 2.82 | N/A | 9247936 |
| Langelier Index (@ 20C) | N/A | 0.506 | | 9247938 |
| Langelier Index (@ 4C) | N/A | 0.256 | | 9247939 |
| Saturation pH (@ 20C) | N/A | 7.36 | | 9247938 |
| Saturation pH (@ 4C) | N/A | 7.61 | | 9247939 |
| Inorganics | | | | |
| Total Ammonia-N | mg/L | <0.050 | 0.050 | 9248977 |
| Conductivity | umho/cm | 420 | 1.0 | 9252632 |
| Dissolved Organic Carbon | mg/L | 1.5 | 0.40 | 9248281 |
| Orthophosphate (P) | mg/L | <0.010 | 0.010 | 9248304 |
| pH | pH | 7.87 | | 9252633 |
| Dissolved Sulphate (SO4) | mg/L | 6.8 | 1.0 | 9248305 |
| Alkalinity (Total as CaCO3) | mg/L | 200 | 1.0 | 9252631 |
| Dissolved Chloride (Cl-) | mg/L | 8.2 | 1.0 | 9248307 |
| Nitrite (N) | mg/L | <0.010 | 0.010 | 9248650 |
| Nitrate (N) | mg/L | 0.30 | 0.10 | 9248650 |
| Metals | | | | |
| Aluminum (Al) | ug/L | 8.5 | 4.9 | 9247907 |
| Antimony (Sb) | ug/L | <0.50 | 0.50 | 9247907 |
| Arsenic (As) | ug/L | <1.0 | 1.0 | 9247907 |
| Barium (Ba) | ug/L | 240 | 2.0 | 9247907 |
| Beryllium (Be) | ug/L | <0.40 | 0.40 | 9247907 |
| Boron (B) | ug/L | <10 | 10 | 9247907 |
| Cadmium (Cd) | ug/L | <0.090 | 0.090 | 9247907 |
| Calcium (Ca) | ug/L | 54000 | 200 | 9247907 |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001.
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| | | | | |
|----------------------------------|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YMT605 | | |
| Sampling Date | | 2024/02/27 16:10 | | |
| COC Number | | 977413-02-01 | | |
| | UNITS | TW2 | RDL | QC Batch |
| Chromium (Cr) | ug/L | <5.0 | 5.0 | 9247907 |
| Cobalt (Co) | ug/L | <0.50 | 0.50 | 9247907 |
| Copper (Cu) | ug/L | 1.5 | 0.90 | 9247907 |
| Iron (Fe) | ug/L | <100 | 100 | 9247907 |
| Lead (Pb) | ug/L | <0.50 | 0.50 | 9247907 |
| Lithium (Li) | ug/L | <5.0 | 5.0 | 9247907 |
| Magnesium (Mg) | ug/L | 18000 | 50 | 9247907 |
| Manganese (Mn) | ug/L | 2.2 | 2.0 | 9247907 |
| Molybdenum (Mo) | ug/L | 0.59 | 0.50 | 9247907 |
| Nickel (Ni) | ug/L | <1.0 | 1.0 | 9247907 |
| Phosphorus (P) | ug/L | <100 | 100 | 9247907 |
| Potassium (K) | ug/L | 1400 | 200 | 9247907 |
| Selenium (Se) | ug/L | <2.0 | 2.0 | 9247907 |
| Silicon (Si) | ug/L | 2800 | 50 | 9247907 |
| Silver (Ag) | ug/L | <0.090 | 0.090 | 9247907 |
| Sodium (Na) | ug/L | 9800 | 100 | 9247907 |
| Strontium (Sr) | ug/L | 64 | 1.0 | 9247907 |
| Thallium (Tl) | ug/L | <0.050 | 0.050 | 9247907 |
| Titanium (Ti) | ug/L | <5.0 | 5.0 | 9247907 |
| Uranium (U) | ug/L | 1.1 | 0.10 | 9247907 |
| Vanadium (V) | ug/L | <0.50 | 0.50 | 9247907 |
| Zinc (Zn) | ug/L | 22 | 5.0 | 9247907 |
| RDL = Reportable Detection Limit | | | | |
| QC Batch = Quality Control Batch | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001.
Sampler Initials: MC

RESULTS OF ANALYSES OF GROUND WATER

| | | | | |
|--|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YMT605 | | |
| Sampling Date | | 2024/02/27 16:10 | | |
| COC Number | | 977413-02-01 | | |
| | UNITS | TW2 | RDL | QC Batch |
| Inorganics | | | | |
| Turbidity | NTU | 0.4 | 0.1 | 9248975 |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001.

Sampler Initials: MC

MICROBIOLOGY (GROUND WATER)

| | | | |
|----------------------------------|--------------|---------------------|-----------------|
| Bureau Veritas ID | | YMT605 | |
| Sampling Date | | 2024/02/27 16:10 | |
| COC Number | | 977413-02-01 | |
| | UNITS | TW2 | QC Batch |
| Microbiological | | | |
| Fecal coliform | CFU/100mL | 0 | 9248235 |
| Background | CFU/100mL | 610 | 9248199 |
| Total Coliforms | CFU/100mL | 0 | 9248199 |
| Escherichia coli | CFU/100mL | 0 | 9248199 |
| QC Batch = Quality Control Batch | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001.
Sampler Initials: MC

TEST SUMMARY

Bureau Veritas ID: YMT605
Sample ID: TW2
Matrix: Ground Water

Collected: 2024/02/27
Shipped:
Received: 2024/02/29

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|-----------------|---------|------------|---------------|-------------------|
| Alkalinity | AT | 9252631 | N/A | 2024/03/05 | Nachiketa Gohil |
| Carbonate, Bicarbonate and Hydroxide | CALC | 9247934 | N/A | 2024/03/04 | Automated Statchk |
| Chloride by Automated Colourimetry | SKAL | 9248307 | N/A | 2024/03/01 | Alina Dobreanu |
| Conductivity | AT | 9252632 | N/A | 2024/03/02 | Nachiketa Gohil |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 9248281 | N/A | 2024/03/01 | Gyulshen Idriz |
| Hardness (calculated as CaCO3) | | 9247935 | N/A | 2024/03/05 | Automated Statchk |
| Metals Analysis by ICPMS (as received) | ICP/MS | 9247907 | N/A | 2024/03/04 | Prempal Bhatti |
| Ion Balance (% Difference) | CALC | 9247936 | N/A | 2024/03/05 | Automated Statchk |
| Anion and Cation Sum | CALC | 9247937 | N/A | 2024/03/05 | Automated Statchk |
| Total Coliforms/ E. coli, CFU/100mL | PL | 9248199 | N/A | 2024/02/29 | Paramjit Paramjit |
| Fecal coliform, (CFU/100mL) | PL | 9248235 | N/A | 2024/02/29 | Paramjit Paramjit |
| Total Ammonia-N | LACH/NH4 | 9248977 | N/A | 2024/03/01 | Chandra Nandlal |
| Nitrate & Nitrite as Nitrogen in Water | LACH | 9248650 | N/A | 2024/03/01 | Jinal Chavda |
| pH | AT | 9252633 | 2024/03/02 | 2024/03/02 | Nachiketa Gohil |
| Orthophosphate | KONE | 9248304 | N/A | 2024/02/29 | Massarat Jan |
| Sat. pH and Langelier Index (@ 20C) | CALC | 9247938 | N/A | 2024/03/05 | Automated Statchk |
| Sat. pH and Langelier Index (@ 4C) | CALC | 9247939 | N/A | 2024/03/05 | Automated Statchk |
| Sulphate by Automated Turbidimetry | SKAL | 9248305 | N/A | 2024/03/01 | Alina Dobreanu |
| Total Dissolved Solids (TDS calc) | CALC | 9247933 | N/A | 2024/03/05 | Automated Statchk |
| Turbidity | AT | 9248975 | N/A | 2024/02/29 | Leily Karimi |



BUREAU
VERITAS

Bureau Veritas Job #: C460880

Report Date: 2024/03/06

Cambium Environmental Inc

Client Project #: 19387-001.

Sampler Initials: MC

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 2.7°C |
|-----------|-------|

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880

Report Date: 2024/03/06

QUALITY ASSURANCE REPORT

Cambium Environmental Inc

Client Project #: 19387-001.

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|--------------------------|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9247907 | Aluminum (Al) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <4.9 | ug/L | NC | 20 |
| 9247907 | Antimony (Sb) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Arsenic (As) | 2024/03/04 | 101 | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Barium (Ba) | 2024/03/04 | 97 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | 1.1 | 20 |
| 9247907 | Beryllium (Be) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.40 | ug/L | NC | 20 |
| 9247907 | Boron (B) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <10 | ug/L | 7.0 | 20 |
| 9247907 | Cadmium (Cd) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Calcium (Ca) | 2024/03/04 | NC | 80 - 120 | 103 | 80 - 120 | <200 | ug/L | 0.89 | 20 |
| 9247907 | Chromium (Cr) | 2024/03/04 | 99 | 80 - 120 | 98 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Cobalt (Co) | 2024/03/04 | 99 | 80 - 120 | 99 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Copper (Cu) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.90 | ug/L | 3.5 | 20 |
| 9247907 | Iron (Fe) | 2024/03/04 | 102 | 80 - 120 | 102 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Lead (Pb) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Lithium (Li) | 2024/03/04 | 105 | 80 - 120 | 105 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Magnesium (Mg) | 2024/03/04 | NC | 80 - 120 | 100 | 80 - 120 | <50 | ug/L | 0.53 | 20 |
| 9247907 | Manganese (Mn) | 2024/03/04 | 98 | 80 - 120 | 98 | 80 - 120 | <2.0 | ug/L | 4.7 | 20 |
| 9247907 | Molybdenum (Mo) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | 2.4 | 20 |
| 9247907 | Nickel (Ni) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Phosphorus (P) | 2024/03/04 | 107 | 80 - 120 | 103 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Potassium (K) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <200 | ug/L | 0.23 | 20 |
| 9247907 | Selenium (Se) | 2024/03/04 | 102 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | NC | 20 |
| 9247907 | Silicon (Si) | 2024/03/04 | 105 | 80 - 120 | 103 | 80 - 120 | <50 | ug/L | 2.5 | 20 |
| 9247907 | Silver (Ag) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Sodium (Na) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <100 | ug/L | 0.73 | 20 |
| 9247907 | Strontium (Sr) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <1.0 | ug/L | 0.82 | 20 |
| 9247907 | Thallium (Tl) | 2024/03/04 | 102 | 80 - 120 | 103 | 80 - 120 | <0.050 | ug/L | NC | 20 |
| 9247907 | Titanium (Ti) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Uranium (U) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.10 | ug/L | 0.22 | 20 |
| 9247907 | Vanadium (V) | 2024/03/04 | 101 | 80 - 120 | 100 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Zinc (Zn) | 2024/03/04 | 100 | 80 - 120 | 100 | 80 - 120 | <5.0 | ug/L | 1.3 | 20 |
| 9248281 | Dissolved Organic Carbon | 2024/03/01 | NC | 80 - 120 | 97 | 80 - 120 | <0.40 | mg/L | 0.81 | 20 |
| 9248304 | Orthophosphate (P) | 2024/02/29 | 95 | 75 - 125 | 91 | 80 - 120 | <0.010 | mg/L | NC | 20 |



**BUREAU
VERITAS**

Bureau Veritas Job #: C460880

Report Date: 2024/03/06

QUALITY ASSURANCE REPORT(CONT'D)

Cambium Environmental Inc

Client Project #: 19387-001.

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|-----------------------------|------------|--------------|-----------|--------------|-----------|--------------|---------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9248305 | Dissolved Sulphate (SO4) | 2024/03/01 | 94 | 75 - 125 | 97 | 80 - 120 | <1.0 | mg/L | 6.3 | 20 |
| 9248307 | Dissolved Chloride (Cl-) | 2024/03/01 | 98 | 80 - 120 | 95 | 80 - 120 | <1.0 | mg/L | NC | 20 |
| 9248650 | Nitrate (N) | 2024/03/01 | 105 | 80 - 120 | 100 | 80 - 120 | <0.10 | mg/L | NC | 20 |
| 9248650 | Nitrite (N) | 2024/03/01 | 106 | 80 - 120 | 103 | 80 - 120 | <0.010 | mg/L | 1.9 | 20 |
| 9248975 | Turbidity | 2024/02/29 | | | 100 | 80 - 120 | <0.1 | NTU | 1.7 | 20 |
| 9248977 | Total Ammonia-N | 2024/03/01 | 100 | 75 - 125 | 100 | 80 - 120 | <0.050 | mg/L | NC | 20 |
| 9252631 | Alkalinity (Total as CaCO3) | 2024/03/05 | | | 94 | 85 - 115 | <1.0 | mg/L | 0.96 | 20 |
| 9252632 | Conductivity | 2024/03/02 | | | 103 | 85 - 115 | <1.0 | umho/cm | 0.33 | 10 |
| 9252633 | pH | 2024/03/02 | | | 102 | 98 - 103 | | | 0.71 | N/A |

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).



BUREAU
VERITAS

Bureau Veritas Job #: C460880
Report Date: 2024/03/06

Cambium Environmental Inc
Client Project #: 19387-001.
Sampler Initials: MC

VALIDATION SIGNATURE PAGE

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


A handwritten signature in black ink, appearing to read "Anastassia Hamanov".

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "Paramjit".

Paramjit Paramjit, Analyst I

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

Received in Ottawa

CHAIN

29-Feb-24 10:34
Christine Gripton
C460880

AN4 ENV-1241

Order #: 413
Project Manager: Christine Gripton

INVOICE TO:

Company Name: #17950 Cambium Environmental Inc
Attention: ACCOUNTS PAYABLE
Address: 194 Sophia Street PO Box 325
Peterborough ON K9H 1E5
Tel: (705) 742-7900 Fax: (705) 742-7907
Email: accounting@cambium-inc.com

REPORT TO:

Company Name: #26906 Cambium Environmental Inc
Attention: Kyle Horner
Address: 31 Hyperion Court, Suite 102
Kingston ON K7P 7G3
Tel: (613) 389-2323 Fax:
Email: kyle.horner@cambium-inc.com, maren.catt@cambium-i

PROJECT INFORMATION:

Quotation #: C26318
P.O. #: 19387-001.
Project: 19387-001.
Project Name:
Site #: Maren Catt
Sampled By:

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

| Regulation 153 (2011) | Other Regulations | Special Instructions |
|--|---|----------------------|
| <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table _____ | <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA Municipality _____ <input checked="" type="checkbox"/> PWQO <input type="checkbox"/> Reg 406 Table _____ <input type="checkbox"/> Other _____ | |

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

| Field Filtered (please circle): Metals / Hg / Cr / V | Total Coliforms/ E. coli, CFU/100mL | Fecal coliform, (CFU/100mL) | Turbidity | RCAP - Comprehensive (Drinking Water) |
|---|-------------------------------------|-----------------------------|-----------|---------------------------------------|
| | ✓ | ✓ | ✓ | ✓ |

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

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

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

| Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | Field Filtered (please circle): Metals / Hg / Cr / V | Total Coliforms/ E. coli, CFU/100mL | Fecal coliform, (CFU/100mL) | Turbidity | RCAP - Comprehensive (Drinking Water) |
|----------------------|----------------------------------|--------------|--------------|--------|---|-------------------------------------|-----------------------------|-----------|---------------------------------------|
| 1 | TW2 | Feb 27, 2024 | | GW | | ✓ | ✓ | ✓ | ✓ |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |

| | | | | | | | | | | | |
|---|---------------------------------------|-----------------------|---|---------------------------------------|----------------------|---|---|--|--|--|--------------------------------|
| * RELINQUISHED BY: (Signature/Print) <u>Maren Catt</u> | Date: (YY/MM/DD) <u>2024/02/27</u> | Time <u>5:54pm</u> | RECEIVED BY: (Signature/Print) <u>Samuel Durand and Maren Catt</u> | Date: (YY/MM/DD) <u>2024/02/28</u> | Time <u>10:34</u> | # Jars used and not submitted <u>3</u> | Laboratory Use Only Time Sensitive <u>3,3,2</u> | Temperature (°C) on Recept <u>3,3,2</u> | Custody Seal Present Intact <input checked="" type="checkbox"/> | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
|---|---------------------------------------|-----------------------|---|---------------------------------------|----------------------|---|---|--|--|--|--------------------------------|

* 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/COG-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

0110
onice



Your Project #: 19387-001
 Your C.O.C. #: C#977413-01-01

Attention: Kyle Horner

Cambium Environmental Inc
 31 Hyperion Court, Suite 102
 Kingston, ON
 Canada K7P 7G3

Report Date: 2024/03/05
 Report #: R8054238
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C459276

Received: 2024/02/27, 09:19

Sample Matrix: Ground Water
 # Samples Received: 1

| Analyses | Quantity | Date | | Laboratory Method | Analytical Method |
|---|----------|------------|------------|------------------------------|----------------------|
| | | Extracted | Analyzed | | |
| Alkalinity (1) | 1 | N/A | 2024/03/05 | CAM SOP-00448 | SM 24 2320 B m |
| Carbonate, Bicarbonate and Hydroxide (1) | 1 | N/A | 2024/03/04 | CAM SOP-00102 | APHA 4500-CO2 D |
| Chloride by Automated Colourimetry (1) | 1 | N/A | 2024/02/29 | CAM SOP-00463 | SM 24 4500-Cl E m |
| Conductivity (1) | 1 | N/A | 2024/03/02 | CAM SOP-00414 | SM 24 2510 m |
| Dissolved Organic Carbon (DOC) (1, 2) | 1 | N/A | 2024/03/01 | CAM SOP-00446 | SM 24 5310 B m |
| Hardness (calculated as CaCO3) (1) | 1 | N/A | 2024/03/05 | CAM SOP 00102/00408/00447 | SM 2340 B |
| Metals Analysis by ICPMS (as received) (1, 3) | 1 | N/A | 2024/03/04 | CAM SOP-00447 | EPA 6020B m |
| Ion Balance (% Difference) (1) | 1 | N/A | 2024/03/05 | | |
| Anion and Cation Sum (1) | 1 | N/A | 2024/03/05 | | |
| Total Coliforms/ E. coli, CFU/100mL (1) | 1 | N/A | 2024/02/28 | CAM SOP-00551 | MECP-E3407 |
| Fecal coliform, (CFU/100mL) (1) | 1 | N/A | 2024/02/28 | CAM SOP-00552 | |
| Total Ammonia-N (1) | 1 | N/A | 2024/03/01 | CAM SOP-00441 | USGS I-2522-90 m |
| Nitrate & Nitrite as Nitrogen in Water (1, 4) | 1 | N/A | 2024/02/29 | CAM SOP-00440 | SM 24 4500-NO3I/NO2B |
| pH (1) | 1 | 2024/03/02 | 2024/03/02 | CAM SOP-00413 | SM 24th - 4500H+ B |
| Orthophosphate (1) | 1 | N/A | 2024/02/29 | CAM SOP-00461 | SM 24 4500-P E |
| Sat. pH and Langelier Index (@ 20C) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sat. pH and Langelier Index (@ 4C) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Sulphate by Automated Turbidimetry (1) | 1 | N/A | 2024/02/29 | CAM SOP-00464 | SM 24 4500-SO42- E m |
| Total Dissolved Solids (TDS calc) (1) | 1 | N/A | 2024/03/05 | | Auto Calc |
| Turbidity (1) | 1 | N/A | 2024/02/28 | CAM SOP-00417 | SM 24 2130 B |

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



Your Project #: 19387-001
Your C.O.C. #: C#977413-01-01

Attention: Kyle Horner

Cambium Environmental Inc
31 Hyperion Court, Suite 102
Kingston, ON
Canada K7P 7G3

Report Date: 2024/03/05
Report #: R8054238
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C459276

Received: 2024/02/27, 09:19

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
- (2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
- (3) Metals analysis was performed on the sample 'as received'.
- (4) 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:

Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

=====

This report has been generated and distributed using a secure automated process.

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**

Bureau Veritas Job #: C459276
Report Date: 2024/03/05

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| Bureau Veritas ID | | YMK942 | | | YMK942 | | |
|--|---------|---------------------|-------|----------|---------------------|-------|----------|
| Sampling Date | | 2024/02/26 19:30 | | | 2024/02/26 19:30 | | |
| COC Number | | C#977413-01-01 | | | C#977413-01-01 | | |
| | UNITS | TW3 | RDL | QC Batch | TW3 Lab-Dup | RDL | QC Batch |
| Calculated Parameters | | | | | | | |
| Anion Sum | me/L | 6.19 | N/A | 9245116 | | | |
| Bicarb. Alkalinity (calc. as CaCO3) | mg/L | 270 | 1.0 | 9245030 | | | |
| Calculated TDS | mg/L | 320 | 1.0 | 9245119 | | | |
| Carb. Alkalinity (calc. as CaCO3) | mg/L | 1.4 | 1.0 | 9245030 | | | |
| Cation Sum | me/L | 6.43 | N/A | 9245116 | | | |
| Hardness (CaCO3) | mg/L | 300 | 1.0 | 9245031 | | | |
| Ion Balance (% Difference) | % | 1.86 | N/A | 9245115 | | | |
| Langelier Index (@ 20C) | N/A | 0.608 | | 9245117 | | | |
| Langelier Index (@ 4C) | N/A | 0.359 | | 9245118 | | | |
| Saturation pH (@ 20C) | N/A | 7.14 | | 9245117 | | | |
| Saturation pH (@ 4C) | N/A | 7.39 | | 9245118 | | | |
| Inorganics | | | | | | | |
| Total Ammonia-N | mg/L | <0.050 | 0.050 | 9248977 | | | |
| Conductivity | umho/cm | 590 | 1.0 | 9252632 | 600 | 1.0 | 9252632 |
| Dissolved Organic Carbon | mg/L | 1.7 | 0.40 | 9248281 | | | |
| Orthophosphate (P) | mg/L | <0.010 | 0.010 | 9246263 | <0.010 | 0.010 | 9246263 |
| pH | pH | 7.75 | | 9252633 | 7.80 | | 9252633 |
| Dissolved Sulphate (SO4) | mg/L | 16 | 1.0 | 9246264 | 15 | 1.0 | 9246264 |
| Alkalinity (Total as CaCO3) | mg/L | 270 | 1.0 | 9252631 | 270 | 1.0 | 9252631 |
| Dissolved Chloride (Cl-) | mg/L | 15 | 1.0 | 9246265 | 15 | 1.0 | 9246265 |
| Nitrite (N) | mg/L | <0.010 | 0.010 | 9246466 | | | |
| Nitrate (N) | mg/L | 0.64 | 0.10 | 9246466 | | | |
| Metals | | | | | | | |
| Aluminum (Al) | ug/L | <4.9 | 4.9 | 9247907 | <4.9 | 4.9 | 9247907 |
| Antimony (Sb) | ug/L | <0.50 | 0.50 | 9247907 | <0.50 | 0.50 | 9247907 |
| Arsenic (As) | ug/L | <1.0 | 1.0 | 9247907 | <1.0 | 1.0 | 9247907 |
| Barium (Ba) | ug/L | 460 | 2.0 | 9247907 | 450 | 2.0 | 9247907 |
| Beryllium (Be) | ug/L | <0.40 | 0.40 | 9247907 | <0.40 | 0.40 | 9247907 |
| Boron (B) | ug/L | 11 | 10 | 9247907 | 10 | 10 | 9247907 |
| Cadmium (Cd) | ug/L | <0.090 | 0.090 | 9247907 | <0.090 | 0.090 | 9247907 |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276
Report Date: 2024/03/05

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| Bureau Veritas ID | | YMK942 | | | YMK942 | | |
|--|-------|---------------------|-------|----------|---------------------|-------|----------|
| Sampling Date | | 2024/02/26 19:30 | | | 2024/02/26 19:30 | | |
| COC Number | | C#977413-01-01 | | | C#977413-01-01 | | |
| | UNITS | TW3 | RDL | QC Batch | TW3 Lab-Dup | RDL | QC Batch |
| Calcium (Ca) | ug/L | 72000 | 200 | 9247907 | 72000 | 200 | 9247907 |
| Chromium (Cr) | ug/L | <5.0 | 5.0 | 9247907 | <5.0 | 5.0 | 9247907 |
| Cobalt (Co) | ug/L | <0.50 | 0.50 | 9247907 | <0.50 | 0.50 | 9247907 |
| Copper (Cu) | ug/L | 1.6 | 0.90 | 9247907 | 1.7 | 0.90 | 9247907 |
| Iron (Fe) | ug/L | <100 | 100 | 9247907 | <100 | 100 | 9247907 |
| Lead (Pb) | ug/L | <0.50 | 0.50 | 9247907 | <0.50 | 0.50 | 9247907 |
| Lithium (Li) | ug/L | <5.0 | 5.0 | 9247907 | <5.0 | 5.0 | 9247907 |
| Magnesium (Mg) | ug/L | 29000 | 50 | 9247907 | 29000 | 50 | 9247907 |
| Manganese (Mn) | ug/L | 4.1 | 2.0 | 9247907 | 4.3 | 2.0 | 9247907 |
| Molybdenum (Mo) | ug/L | 0.85 | 0.50 | 9247907 | 0.83 | 0.50 | 9247907 |
| Nickel (Ni) | ug/L | <1.0 | 1.0 | 9247907 | <1.0 | 1.0 | 9247907 |
| Phosphorus (P) | ug/L | <100 | 100 | 9247907 | <100 | 100 | 9247907 |
| Potassium (K) | ug/L | 6700 | 200 | 9247907 | 6700 | 200 | 9247907 |
| Selenium (Se) | ug/L | <2.0 | 2.0 | 9247907 | <2.0 | 2.0 | 9247907 |
| Silicon (Si) | ug/L | 2600 | 50 | 9247907 | 2700 | 50 | 9247907 |
| Silver (Ag) | ug/L | <0.090 | 0.090 | 9247907 | <0.090 | 0.090 | 9247907 |
| Sodium (Na) | ug/L | 7100 | 100 | 9247907 | 7100 | 100 | 9247907 |
| Strontium (Sr) | ug/L | 130 | 1.0 | 9247907 | 130 | 1.0 | 9247907 |
| Thallium (Tl) | ug/L | 0.15 | 0.050 | 9247907 | 0.11 | 0.050 | 9247907 |
| Titanium (Ti) | ug/L | <5.0 | 5.0 | 9247907 | <5.0 | 5.0 | 9247907 |
| Uranium (U) | ug/L | 1.8 | 0.10 | 9247907 | 1.8 | 0.10 | 9247907 |
| Vanadium (V) | ug/L | <0.50 | 0.50 | 9247907 | <0.50 | 0.50 | 9247907 |
| Zinc (Zn) | ug/L | 38 | 5.0 | 9247907 | 37 | 5.0 | 9247907 |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276

Report Date: 2024/03/05

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

RESULTS OF ANALYSES OF GROUND WATER

| | | | | |
|----------------------------------|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YMK942 | | |
| Sampling Date | | 2024/02/26 19:30 | | |
| COC Number | | C#977413-01-01 | | |
| | UNITS | TW3 | RDL | QC Batch |
| Inorganics | | | | |
| Turbidity | NTU | 0.3 | 0.1 | 9245519 |
| RDL = Reportable Detection Limit | | | | |
| QC Batch = Quality Control Batch | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276

Report Date: 2024/03/05

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

MICROBIOLOGY (GROUND WATER)

| | | | |
|----------------------------------|--------------|---------------------|-----------------|
| Bureau Veritas ID | | YMK942 | |
| Sampling Date | | 2024/02/26 19:30 | |
| COC Number | | C#977413-01-01 | |
| | UNITS | TW3 | QC Batch |
| Microbiological | | | |
| Fecal coliform | CFU/100mL | 0 | 9245734 |
| Background | CFU/100mL | 70 | 9245714 |
| Total Coliforms | CFU/100mL | 0 | 9245714 |
| Escherichia coli | CFU/100mL | 0 | 9245714 |
| QC Batch = Quality Control Batch | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276
Report Date: 2024/03/05

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

TEST SUMMARY

Bureau Veritas ID: YMK942
Sample ID: TW3
Matrix: Ground Water

Collected: 2024/02/26
Shipped:
Received: 2024/02/27

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|-----------------|---------|------------|---------------|-------------------|
| Alkalinity | AT | 9252631 | N/A | 2024/03/05 | Nachiketa Gohil |
| Carbonate, Bicarbonate and Hydroxide | CALC | 9245030 | N/A | 2024/03/04 | Automated Statchk |
| Chloride by Automated Colourimetry | SKAL | 9246265 | N/A | 2024/02/29 | Alina Dobreanu |
| Conductivity | AT | 9252632 | N/A | 2024/03/02 | Nachiketa Gohil |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 9248281 | N/A | 2024/03/01 | Gyulshen Idriz |
| Hardness (calculated as CaCO3) | | 9245031 | N/A | 2024/03/05 | Automated Statchk |
| Metals Analysis by ICPMS (as received) | ICP/MS | 9247907 | N/A | 2024/03/04 | Prempal Bhatti |
| Ion Balance (% Difference) | CALC | 9245115 | N/A | 2024/03/05 | Automated Statchk |
| Anion and Cation Sum | CALC | 9245116 | N/A | 2024/03/05 | Automated Statchk |
| Total Coliforms/ E. coli, CFU/100mL | PL | 9245714 | N/A | 2024/02/28 | Paramjit Paramjit |
| Fecal coliform, (CFU/100mL) | PL | 9245734 | N/A | 2024/02/28 | Paramjit Paramjit |
| Total Ammonia-N | LACH/NH4 | 9248977 | N/A | 2024/03/01 | Chandra Nandlal |
| Nitrate & Nitrite as Nitrogen in Water | LACH | 9246466 | N/A | 2024/02/29 | Jinal Chavda |
| pH | AT | 9252633 | 2024/03/02 | 2024/03/02 | Nachiketa Gohil |
| Orthophosphate | KONE | 9246263 | N/A | 2024/02/29 | Alina Dobreanu |
| Sat. pH and Langelier Index (@ 20C) | CALC | 9245117 | N/A | 2024/03/05 | Automated Statchk |
| Sat. pH and Langelier Index (@ 4C) | CALC | 9245118 | N/A | 2024/03/05 | Automated Statchk |
| Sulphate by Automated Turbidimetry | SKAL | 9246264 | N/A | 2024/02/29 | Alina Dobreanu |
| Total Dissolved Solids (TDS calc) | CALC | 9245119 | N/A | 2024/03/05 | Automated Statchk |
| Turbidity | AT | 9245519 | N/A | 2024/02/28 | Vidhi Khatri |

Bureau Veritas ID: YMK942 Dup
Sample ID: TW3
Matrix: Ground Water

Collected: 2024/02/26
Shipped:
Received: 2024/02/27

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|-----------------|---------|------------|---------------|-----------------|
| Alkalinity | AT | 9252631 | N/A | 2024/03/05 | Nachiketa Gohil |
| Chloride by Automated Colourimetry | SKAL | 9246265 | N/A | 2024/02/29 | Alina Dobreanu |
| Conductivity | AT | 9252632 | N/A | 2024/03/02 | Nachiketa Gohil |
| Metals Analysis by ICPMS (as received) | ICP/MS | 9247907 | N/A | 2024/03/04 | Prempal Bhatti |
| pH | AT | 9252633 | 2024/03/02 | 2024/03/02 | Nachiketa Gohil |
| Orthophosphate | KONE | 9246263 | N/A | 2024/02/29 | Alina Dobreanu |
| Sulphate by Automated Turbidimetry | SKAL | 9246264 | N/A | 2024/02/29 | Alina Dobreanu |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276

Report Date: 2024/03/05

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 2.0°C |
|-----------|-------|

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C459276

Report Date: 2024/03/05

QUALITY ASSURANCE REPORT

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|--------------------------|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9245519 | Turbidity | 2024/02/28 | | | 101 | 80 - 120 | <0.1 | NTU | 0.30 | 20 |
| 9246263 | Orthophosphate (P) | 2024/02/29 | 101 | 75 - 125 | 95 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 9246264 | Dissolved Sulphate (SO4) | 2024/02/29 | 94 | 75 - 125 | 97 | 80 - 120 | <1.0 | mg/L | 0.85 | 20 |
| 9246265 | Dissolved Chloride (Cl-) | 2024/02/29 | 89 | 80 - 120 | 97 | 80 - 120 | <1.0 | mg/L | 1.1 | 20 |
| 9246466 | Nitrate (N) | 2024/02/29 | 93 | 80 - 120 | 92 | 80 - 120 | <0.10 | mg/L | NC | 20 |
| 9246466 | Nitrite (N) | 2024/02/29 | 101 | 80 - 120 | 100 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 9247907 | Aluminum (Al) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <4.9 | ug/L | NC | 20 |
| 9247907 | Antimony (Sb) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Arsenic (As) | 2024/03/04 | 101 | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Barium (Ba) | 2024/03/04 | 97 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | 1.1 | 20 |
| 9247907 | Beryllium (Be) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.40 | ug/L | NC | 20 |
| 9247907 | Boron (B) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <10 | ug/L | 7.0 | 20 |
| 9247907 | Cadmium (Cd) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Calcium (Ca) | 2024/03/04 | NC | 80 - 120 | 103 | 80 - 120 | <200 | ug/L | 0.89 | 20 |
| 9247907 | Chromium (Cr) | 2024/03/04 | 99 | 80 - 120 | 98 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Cobalt (Co) | 2024/03/04 | 99 | 80 - 120 | 99 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Copper (Cu) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <0.90 | ug/L | 3.5 | 20 |
| 9247907 | Iron (Fe) | 2024/03/04 | 102 | 80 - 120 | 102 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Lead (Pb) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Lithium (Li) | 2024/03/04 | 105 | 80 - 120 | 105 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Magnesium (Mg) | 2024/03/04 | NC | 80 - 120 | 100 | 80 - 120 | <50 | ug/L | 0.53 | 20 |
| 9247907 | Manganese (Mn) | 2024/03/04 | 98 | 80 - 120 | 98 | 80 - 120 | <2.0 | ug/L | 4.7 | 20 |
| 9247907 | Molybdenum (Mo) | 2024/03/04 | 105 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | 2.4 | 20 |
| 9247907 | Nickel (Ni) | 2024/03/04 | 98 | 80 - 120 | 97 | 80 - 120 | <1.0 | ug/L | NC | 20 |
| 9247907 | Phosphorus (P) | 2024/03/04 | 107 | 80 - 120 | 103 | 80 - 120 | <100 | ug/L | NC | 20 |
| 9247907 | Potassium (K) | 2024/03/04 | 100 | 80 - 120 | 101 | 80 - 120 | <200 | ug/L | 0.23 | 20 |
| 9247907 | Selenium (Se) | 2024/03/04 | 102 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | NC | 20 |
| 9247907 | Silicon (Si) | 2024/03/04 | 105 | 80 - 120 | 103 | 80 - 120 | <50 | ug/L | 2.5 | 20 |
| 9247907 | Silver (Ag) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.090 | ug/L | NC | 20 |
| 9247907 | Sodium (Na) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <100 | ug/L | 0.73 | 20 |
| 9247907 | Strontium (Sr) | 2024/03/04 | 101 | 80 - 120 | 101 | 80 - 120 | <1.0 | ug/L | 0.82 | 20 |
| 9247907 | Thallium (Tl) | 2024/03/04 | 102 | 80 - 120 | 103 | 80 - 120 | <0.050 | ug/L | NC | 20 |



**BUREAU
VERITAS**

Bureau Veritas Job #: C459276

Report Date: 2024/03/05

QUALITY ASSURANCE REPORT(CONT'D)

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|-----------------------------|------------|--------------|-----------|--------------|-----------|--------------|---------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9247907 | Titanium (Ti) | 2024/03/04 | 101 | 80 - 120 | 102 | 80 - 120 | <5.0 | ug/L | NC | 20 |
| 9247907 | Uranium (U) | 2024/03/04 | 103 | 80 - 120 | 103 | 80 - 120 | <0.10 | ug/L | 0.22 | 20 |
| 9247907 | Vanadium (V) | 2024/03/04 | 101 | 80 - 120 | 100 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9247907 | Zinc (Zn) | 2024/03/04 | 100 | 80 - 120 | 100 | 80 - 120 | <5.0 | ug/L | 1.3 | 20 |
| 9248281 | Dissolved Organic Carbon | 2024/03/01 | NC | 80 - 120 | 97 | 80 - 120 | <0.40 | mg/L | 0.81 | 20 |
| 9248977 | Total Ammonia-N | 2024/03/01 | 100 | 75 - 125 | 100 | 80 - 120 | <0.050 | mg/L | NC | 20 |
| 9252631 | Alkalinity (Total as CaCO3) | 2024/03/05 | | | 94 | 85 - 115 | <1.0 | mg/L | 0.96 | 20 |
| 9252632 | Conductivity | 2024/03/02 | | | 103 | 85 - 115 | <1.0 | umho/cm | 0.33 | 10 |
| 9252633 | pH | 2024/03/02 | | | 102 | 98 - 103 | | | 0.71 | N/A |

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).



BUREAU
VERITAS

Bureau Veritas Job #: C459276
Report Date: 2024/03/05

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read "Anastassia Hamanov".

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "Paramjit".

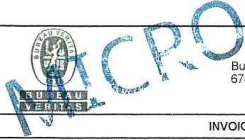
Paramjit Paramjit, Analyst I

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.

Received in Ottawa

MICRO

Page of



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



NONT-2024-02-2021

| | | | | | |
|--|--|------------------------|------------------------------------|-----------------------------|--|
| INVOICE TO: | | REPORT TO: | | PROJECT INFORMATION: | |
| Company Name: #17950 Cambium Environmental Inc | Company Name: #26906 Cambium Environmental Inc | Quotation #: C26318 | Bottle Order #: 977413 | | |
| Attention: ACCOUNTS PAYABLE | Attention: Kyle Horner | P.O. #: | Project Manager: Christine Gripton | | |
| Address: 194 Sophia Street PO Box 325 Peterborough ON K9H 1E5 | Address: 31 Hyperion Court, Suite 102 Kingston ON K7P 7G3 | Project: 19387-001. | COC #: [Barcode] | | |
| Tel: (705) 742-7900 Fax: (705) 742-7907 | Tel: (613) 389-2323 Fax: | Site #: | Project Manager: Christine Gripton | | |
| Email: accounting@cambium-inc.com | Email: kyle.horner@cambium-inc.com, maren.catt@cambium-i | Sampled By: Maren Catt | C#977413-01-01 | | |

| MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY | | | | | | ANALYSIS REQUESTED (PLEASE BE SPECIFIC) | | | | | | | | | | Turnaround Time (TAT) Required: Please provide advance notice for rush projects | | | | | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|----|---|-------------------------------------|-----------------------------|-----------|---------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Regulation 153 (2011) | | Other Regulations | | Special Instructions | | Field Filtered (please circle): (Metals/ Hg / Cr-VI) | Total Coliforms/ E. coli, CFU/100mL | Fecal coliform, (CFU/100mL) | Turbidity | RCAP - Comprehensive (Drinking Water) | Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. | | | | | | | | | | Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #) | | | | | |
| Include Criteria on Certificate of Analysis (Y/N)? | | | | | | | | | | | # of Bottles | | | | | | | | | | Comments | | | | | |
| Table 1 | Res/Park | Medium/Fine | CCME | Sanitary Sewer Bylaw | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | TW3 | 2024/02/26 | 7:30 | GW | | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|--|--------------------------------|----------------|---|--------------------------------|---------------|-------------------------------|-----------|---------------------|---------------------------------------|----------------------|--------|-----|----|
| * RELINQUISHED BY: (Signature/Print) Maren Catt | Date: (YY/MM/DD) 2024/02/26 | Time 9:00pm | RECEIVED BY: (Signature/Print) Samuel Durand | Date: (YY/MM/DD) 2024/02/27 | Time 09:19 | # jars used and not submitted | 100 marks | Laboratory Use Only | | | | | |
| | | | | | | | | Time Sensitive | Temperature (°C) on Recept 1, 2, 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
signature
initials

3/4/23

026 108



Your Project #: 19387-001
 Your C.O.C. #: C#977413-04-01

Attention: Kyle Horner

Cambium Environmental Inc
 31 Hyperion Court, Suite 102
 Kingston, ON
 Canada K7P 7G3

Report Date: 2024/03/18
 Report #: R8070487
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C471497

Received: 2024/03/09, 08:29

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | Date | Laboratory Method | Analytical Method |
|--|----------|------------|------------|------------------------------|----------------------|
| | | Extracted | Analyzed | | |
| Alkalinity | 1 | N/A | 2024/03/09 | CAM SOP-00448 | SM 24 2320 B m |
| Carbonate, Bicarbonate and Hydroxide | 1 | N/A | 2024/03/11 | CAM SOP-00102 | APHA 4500-CO2 D |
| Chloride by Automated Colourimetry | 1 | N/A | 2024/03/11 | CAM SOP-00463 | SM 24 4500-Cl E m |
| Conductivity | 1 | N/A | 2024/03/09 | CAM SOP-00414 | SM 24 2510 m |
| Dissolved Organic Carbon (DOC) (1) | 1 | N/A | 2024/03/12 | CAM SOP-00446 | SM 24 5310 B m |
| Hardness (calculated as CaCO3) | 1 | N/A | 2024/03/12 | CAM SOP 00102/00408/00447 | SM 2340 B |
| Metals Analysis by ICPMS (as received) (2) | 1 | N/A | 2024/03/12 | CAM SOP-00447 | EPA 6020B m |
| Ion Balance (% Difference) | 1 | N/A | 2024/03/12 | | |
| Anion and Cation Sum | 1 | N/A | 2024/03/12 | | |
| Total Coliforms/ E. coli, CFU/100mL | 1 | N/A | 2024/03/09 | CAM SOP-00551 | MECP-E3407 |
| Fecal coliform, (CFU/100mL) | 1 | N/A | 2024/03/09 | CAM SOP-00552 | |
| Total Ammonia-N | 1 | N/A | 2024/03/14 | CAM SOP-00441 | USGS I-2522-90 m |
| Nitrate & Nitrite as Nitrogen in Water (3) | 1 | N/A | 2024/03/11 | CAM SOP-00440 | SM 24 4500-NO3I/NO2B |
| pH | 1 | 2024/03/09 | 2024/03/09 | CAM SOP-00413 | SM 24th - 4500H+ B |
| Orthophosphate | 1 | N/A | 2024/03/11 | CAM SOP-00461 | SM 24 4500-P E |
| Sat. pH and Langelier Index (@ 20C) | 1 | N/A | 2024/03/12 | | Auto Calc |
| Sat. pH and Langelier Index (@ 4C) | 1 | N/A | 2024/03/12 | | Auto Calc |
| Sulphate by Automated Turbidimetry | 1 | N/A | 2024/03/11 | CAM SOP-00464 | SM 24 4500-SO42- E m |
| Total Dissolved Solids (TDS calc) | 1 | N/A | 2024/03/12 | | Auto Calc |
| Turbidity | 1 | N/A | 2024/03/09 | CAM SOP-00417 | SM 24 2130 B |

Remarks:

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

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



Your Project #: 19387-001
Your C.O.C. #: C#977413-04-01

Attention: Kyle Horner

Cambium Environmental Inc
31 Hyperion Court, Suite 102
Kingston, ON
Canada K7P 7G3

Report Date: 2024/03/18
Report #: R8070487
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C471497

Received: 2024/03/09, 08:29

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 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:

Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

=====

This report has been generated and distributed using a secure automated process.

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

Bureau Veritas Job #: C471497
Report Date: 2024/03/18

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| Bureau Veritas ID | | YOW510 | | | YOW510 | | |
|--|---------|---------------------|-------|----------|---------------------|-----|----------|
| Sampling Date | | 2024/03/08 03:45 | | | 2024/03/08 03:45 | | |
| COC Number | | C#977413-04-01 | | | C#977413-04-01 | | |
| | UNITS | RW1 | RDL | QC Batch | RW1 Lab-Dup | RDL | QC Batch |
| Calculated Parameters | | | | | | | |
| Anion Sum | me/L | 5.33 | N/A | 9265376 | | | |
| Bicarb. Alkalinity (calc. as CaCO3) | mg/L | 210 | 1.0 | 9265372 | | | |
| Calculated TDS | mg/L | 280 | 1.0 | 9265371 | | | |
| Carb. Alkalinity (calc. as CaCO3) | mg/L | <1.0 | 1.0 | 9265372 | | | |
| Cation Sum | me/L | 5.69 | N/A | 9265376 | | | |
| Hardness (CaCO3) | mg/L | 260 | 1.0 | 9265374 | | | |
| Ion Balance (% Difference) | % | 3.23 | N/A | 9265375 | | | |
| Langelier Index (@ 20C) | N/A | 0.387 | | 9265377 | | | |
| Langelier Index (@ 4C) | N/A | 0.137 | | 9265378 | | | |
| Saturation pH (@ 20C) | N/A | 7.28 | | 9265377 | | | |
| Saturation pH (@ 4C) | N/A | 7.53 | | 9265378 | | | |
| Inorganics | | | | | | | |
| Total Ammonia-N | mg/L | <0.050 | 0.050 | 9268916 | | | |
| Conductivity | umho/cm | 540 | 1.0 | 9265752 | 540 | 1.0 | 9265752 |
| Dissolved Organic Carbon | mg/L | 1.5 | 0.40 | 9265829 | | | |
| Orthophosphate (P) | mg/L | <0.010 | 0.010 | 9265797 | | | |
| pH | pH | 7.66 | | 9265753 | 7.72 | | 9265753 |
| Dissolved Sulphate (SO4) | mg/L | 14 | 1.0 | 9265796 | | | |
| Alkalinity (Total as CaCO3) | mg/L | 210 | 1.0 | 9265745 | 220 | 1.0 | 9265745 |
| Dissolved Chloride (Cl-) | mg/L | 22 | 1.0 | 9265795 | | | |
| Nitrite (N) | mg/L | <0.010 | 0.010 | 9265766 | | | |
| Nitrate (N) | mg/L | 1.79 | 0.10 | 9265766 | | | |
| Metals | | | | | | | |
| Aluminum (Al) | ug/L | <4.9 | 4.9 | 9267670 | | | |
| Antimony (Sb) | ug/L | <0.50 | 0.50 | 9267670 | | | |
| Arsenic (As) | ug/L | <1.0 | 1.0 | 9267670 | | | |
| Barium (Ba) | ug/L | 220 | 2.0 | 9267670 | | | |
| Beryllium (Be) | ug/L | <0.40 | 0.40 | 9267670 | | | |
| Boron (B) | ug/L | 16 | 10 | 9267670 | | | |
| Cadmium (Cd) | ug/L | <0.090 | 0.090 | 9267670 | | | |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497
Report Date: 2024/03/18

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

RCAP - COMPREHENSIVE (DRINKING WATER)

| Bureau Veritas ID | | YOW510 | | | YOW510 | | |
|--|-------|---------------------|-------|----------|---------------------|-----|----------|
| Sampling Date | | 2024/03/08 03:45 | | | 2024/03/08 03:45 | | |
| COC Number | | C#977413-04-01 | | | C#977413-04-01 | | |
| | UNITS | RW1 | RDL | QC Batch | RW1 Lab-Dup | RDL | QC Batch |
| Calcium (Ca) | ug/L | 64000 | 200 | 9267670 | | | |
| Chromium (Cr) | ug/L | <5.0 | 5.0 | 9267670 | | | |
| Cobalt (Co) | ug/L | <0.50 | 0.50 | 9267670 | | | |
| Copper (Cu) | ug/L | 2.8 | 0.90 | 9267670 | | | |
| Iron (Fe) | ug/L | <100 | 100 | 9267670 | | | |
| Lead (Pb) | ug/L | <0.50 | 0.50 | 9267670 | | | |
| Lithium (Li) | ug/L | <5.0 | 5.0 | 9267670 | | | |
| Magnesium (Mg) | ug/L | 23000 | 50 | 9267670 | | | |
| Manganese (Mn) | ug/L | 3.0 | 2.0 | 9267670 | | | |
| Molybdenum (Mo) | ug/L | 0.83 | 0.50 | 9267670 | | | |
| Nickel (Ni) | ug/L | <1.0 | 1.0 | 9267670 | | | |
| Phosphorus (P) | ug/L | <100 | 100 | 9267670 | | | |
| Potassium (K) | ug/L | 1400 | 200 | 9267670 | | | |
| Selenium (Se) | ug/L | <2.0 | 2.0 | 9267670 | | | |
| Silicon (Si) | ug/L | 2500 | 50 | 9267670 | | | |
| Silver (Ag) | ug/L | <0.090 | 0.090 | 9267670 | | | |
| Sodium (Na) | ug/L | 12000 | 100 | 9267670 | | | |
| Strontium (Sr) | ug/L | 72 | 1.0 | 9267670 | | | |
| Thallium (Tl) | ug/L | <0.050 | 0.050 | 9267670 | | | |
| Titanium (Ti) | ug/L | <5.0 | 5.0 | 9267670 | | | |
| Uranium (U) | ug/L | 1.6 | 0.10 | 9267670 | | | |
| Vanadium (V) | ug/L | <0.50 | 0.50 | 9267670 | | | |
| Zinc (Zn) | ug/L | 5.5 | 5.0 | 9267670 | | | |
| RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate | | | | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

RESULTS OF ANALYSES OF WATER

| | | | | |
|----------------------------------|--------------|---------------------|------------|-----------------|
| Bureau Veritas ID | | YOW510 | | |
| Sampling Date | | 2024/03/08 03:45 | | |
| COC Number | | C#977413-04-01 | | |
| | UNITS | RW1 | RDL | QC Batch |
| Inorganics | | | | |
| Turbidity | NTU | 0.2 | 0.1 | 9264888 |
| RDL = Reportable Detection Limit | | | | |
| QC Batch = Quality Control Batch | | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497
Report Date: 2024/03/18

Cambium Environmental Inc
Client Project #: 19387-001
Sampler Initials: MC

MICROBIOLOGY (WATER)

| | | | |
|----------------------------------|--------------|---------------------|-----------------|
| Bureau Veritas ID | | YOW510 | |
| Sampling Date | | 2024/03/08 03:45 | |
| COC Number | | C#977413-04-01 | |
| | UNITS | RW1 | QC Batch |
| Microbiological | | | |
| Fecal coliform | CFU/100mL | 0 | 9265968 |
| Background | CFU/100mL | 1300 | 9265967 |
| Total Coliforms | CFU/100mL | 0 | 9265967 |
| Escherichia coli | CFU/100mL | 0 | 9265967 |
| QC Batch = Quality Control Batch | | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

TEST SUMMARY

Bureau Veritas ID: YOW510
Sample ID: RW1
Matrix: Water

Collected: 2024/03/08
Shipped:
Received: 2024/03/09

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|--|-----------------|---------|------------|---------------|-------------------|
| Alkalinity | AT | 9265745 | N/A | 2024/03/09 | Nachiketa Gohil |
| Carbonate, Bicarbonate and Hydroxide | CALC | 9265372 | N/A | 2024/03/11 | Automated Statchk |
| Chloride by Automated Colourimetry | SKAL | 9265795 | N/A | 2024/03/11 | Alina Dobreanu |
| Conductivity | AT | 9265752 | N/A | 2024/03/09 | Nachiketa Gohil |
| Dissolved Organic Carbon (DOC) | TOCV/NDIR | 9265829 | N/A | 2024/03/12 | Gyulshen Idriz |
| Hardness (calculated as CaCO3) | | 9265374 | N/A | 2024/03/12 | Automated Statchk |
| Metals Analysis by ICPMS (as received) | ICP/MS | 9267670 | N/A | 2024/03/12 | Azita Fazaeli |
| Ion Balance (% Difference) | CALC | 9265375 | N/A | 2024/03/12 | Automated Statchk |
| Anion and Cation Sum | CALC | 9265376 | N/A | 2024/03/12 | Automated Statchk |
| Total Coliforms/ E. coli, CFU/100mL | PL | 9265967 | N/A | 2024/03/09 | Farhana Rahman |
| Fecal coliform, (CFU/100mL) | PL | 9265968 | N/A | 2024/03/09 | Farhana Rahman |
| Total Ammonia-N | LACH/NH4 | 9268916 | N/A | 2024/03/14 | Prabhjot Kaur |
| Nitrate & Nitrite as Nitrogen in Water | LACH | 9265766 | N/A | 2024/03/11 | Chandra Nandlal |
| pH | AT | 9265753 | 2024/03/09 | 2024/03/09 | Nachiketa Gohil |
| Orthophosphate | KONE | 9265797 | N/A | 2024/03/11 | Alina Dobreanu |
| Sat. pH and Langelier Index (@ 20C) | CALC | 9265377 | N/A | 2024/03/12 | Automated Statchk |
| Sat. pH and Langelier Index (@ 4C) | CALC | 9265378 | N/A | 2024/03/12 | Automated Statchk |
| Sulphate by Automated Turbidimetry | SKAL | 9265796 | N/A | 2024/03/11 | Alina Dobreanu |
| Total Dissolved Solids (TDS calc) | CALC | 9265371 | N/A | 2024/03/12 | Automated Statchk |
| Turbidity | AT | 9264888 | N/A | 2024/03/09 | Vidhi Khatri |

Bureau Veritas ID: YOW510 Dup
Sample ID: RW1
Matrix: Water

Collected: 2024/03/08
Shipped:
Received: 2024/03/09

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|------------------|-----------------|---------|------------|---------------|-----------------|
| Alkalinity | AT | 9265745 | N/A | 2024/03/09 | Nachiketa Gohil |
| Conductivity | AT | 9265752 | N/A | 2024/03/09 | Nachiketa Gohil |
| pH | AT | 9265753 | 2024/03/09 | 2024/03/09 | Nachiketa Gohil |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

GENERAL COMMENTS

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

| | |
|-----------|-------|
| Package 1 | 4.0°C |
|-----------|-------|

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

QUALITY ASSURANCE REPORT

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|-----------------------------|------------|--------------|-----------|--------------|-----------|--------------|---------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9264888 | Turbidity | 2024/03/09 | | | 101 | 80 - 120 | <0.1 | NTU | 0.64 | 20 |
| 9265745 | Alkalinity (Total as CaCO3) | 2024/03/09 | | | 94 | 85 - 115 | <1.0 | mg/L | 3.1 | 20 |
| 9265752 | Conductivity | 2024/03/09 | | | 103 | 85 - 115 | <1.0 | umho/cm | 0.55 | 10 |
| 9265753 | pH | 2024/03/09 | | | 102 | 98 - 103 | | | 0.77 | N/A |
| 9265766 | Nitrate (N) | 2024/03/11 | 100 | 80 - 120 | 96 | 80 - 120 | <0.10 | mg/L | NC | 20 |
| 9265766 | Nitrite (N) | 2024/03/11 | 73 (1) | 80 - 120 | 100 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 9265795 | Dissolved Chloride (Cl-) | 2024/03/11 | NC | 80 - 120 | 90 | 80 - 120 | <1.0 | mg/L | 1.6 | 20 |
| 9265796 | Dissolved Sulphate (SO4) | 2024/03/08 | NC | 75 - 125 | 93 | 80 - 120 | <1.0 | mg/L | 1.3 | 20 |
| 9265797 | Orthophosphate (P) | 2024/03/11 | 95 | 75 - 125 | 94 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 9265829 | Dissolved Organic Carbon | 2024/03/12 | 119 | 80 - 120 | 96 | 80 - 120 | <0.40 | mg/L | 1.3 | 20 |
| 9267670 | Aluminum (Al) | 2024/03/12 | 103 | 80 - 120 | 100 | 80 - 120 | <4.9 | ug/L | | |
| 9267670 | Antimony (Sb) | 2024/03/12 | 111 | 80 - 120 | 104 | 80 - 120 | <0.50 | ug/L | | |
| 9267670 | Arsenic (As) | 2024/03/12 | 103 | 80 - 120 | 100 | 80 - 120 | <1.0 | ug/L | | |
| 9267670 | Barium (Ba) | 2024/03/12 | 102 | 80 - 120 | 95 | 80 - 120 | <2.0 | ug/L | | |
| 9267670 | Beryllium (Be) | 2024/03/12 | 105 | 80 - 120 | 99 | 80 - 120 | <0.40 | ug/L | | |
| 9267670 | Boron (B) | 2024/03/12 | 106 | 80 - 120 | 100 | 80 - 120 | <10 | ug/L | | |
| 9267670 | Cadmium (Cd) | 2024/03/12 | 105 | 80 - 120 | 99 | 80 - 120 | <0.090 | ug/L | | |
| 9267670 | Calcium (Ca) | 2024/03/12 | NC | 80 - 120 | 101 | 80 - 120 | <200 | ug/L | | |
| 9267670 | Chromium (Cr) | 2024/03/12 | 101 | 80 - 120 | 97 | 80 - 120 | <5.0 | ug/L | | |
| 9267670 | Cobalt (Co) | 2024/03/12 | 100 | 80 - 120 | 97 | 80 - 120 | <0.50 | ug/L | | |
| 9267670 | Copper (Cu) | 2024/03/12 | 100 | 80 - 120 | 97 | 80 - 120 | <0.90 | ug/L | | |
| 9267670 | Iron (Fe) | 2024/03/12 | 104 | 80 - 120 | 99 | 80 - 120 | <100 | ug/L | | |
| 9267670 | Lead (Pb) | 2024/03/12 | 103 | 80 - 120 | 98 | 80 - 120 | <0.50 | ug/L | NC | 20 |
| 9267670 | Lithium (Li) | 2024/03/12 | 107 | 80 - 120 | 101 | 80 - 120 | <5.0 | ug/L | | |
| 9267670 | Magnesium (Mg) | 2024/03/12 | 102 | 80 - 120 | 99 | 80 - 120 | <50 | ug/L | | |
| 9267670 | Manganese (Mn) | 2024/03/12 | 101 | 80 - 120 | 98 | 80 - 120 | <2.0 | ug/L | | |
| 9267670 | Molybdenum (Mo) | 2024/03/12 | 107 | 80 - 120 | 100 | 80 - 120 | <0.50 | ug/L | | |
| 9267670 | Nickel (Ni) | 2024/03/12 | 100 | 80 - 120 | 97 | 80 - 120 | <1.0 | ug/L | | |
| 9267670 | Phosphorus (P) | 2024/03/12 | 104 | 80 - 120 | 100 | 80 - 120 | <100 | ug/L | | |
| 9267670 | Potassium (K) | 2024/03/12 | 102 | 80 - 120 | 99 | 80 - 120 | <200 | ug/L | | |
| 9267670 | Selenium (Se) | 2024/03/12 | 104 | 80 - 120 | 101 | 80 - 120 | <2.0 | ug/L | | |



**BUREAU
VERITAS**

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

QUALITY ASSURANCE REPORT(CONT'D)

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

| QC Batch | Parameter | Date | Matrix Spike | | SPIKED BLANK | | Method Blank | | RPD | |
|----------|-----------------|------------|--------------|-----------|--------------|-----------|--------------|-------|-----------|-----------|
| | | | % Recovery | QC Limits | % Recovery | QC Limits | Value | UNITS | Value (%) | QC Limits |
| 9267670 | Silicon (Si) | 2024/03/12 | 104 | 80 - 120 | 100 | 80 - 120 | <50 | ug/L | | |
| 9267670 | Silver (Ag) | 2024/03/12 | 104 | 80 - 120 | 99 | 80 - 120 | <0.090 | ug/L | | |
| 9267670 | Sodium (Na) | 2024/03/12 | 100 | 80 - 120 | 100 | 80 - 120 | <100 | ug/L | | |
| 9267670 | Strontium (Sr) | 2024/03/12 | 101 | 80 - 120 | 99 | 80 - 120 | <1.0 | ug/L | | |
| 9267670 | Thallium (Tl) | 2024/03/12 | 103 | 80 - 120 | 98 | 80 - 120 | <0.050 | ug/L | | |
| 9267670 | Titanium (Ti) | 2024/03/12 | 103 | 80 - 120 | 101 | 80 - 120 | <5.0 | ug/L | | |
| 9267670 | Uranium (U) | 2024/03/12 | 108 | 80 - 120 | 102 | 80 - 120 | <0.10 | ug/L | | |
| 9267670 | Vanadium (V) | 2024/03/12 | 103 | 80 - 120 | 98 | 80 - 120 | <0.50 | ug/L | | |
| 9267670 | Zinc (Zn) | 2024/03/12 | 103 | 80 - 120 | 100 | 80 - 120 | <5.0 | ug/L | | |
| 9268916 | Total Ammonia-N | 2024/03/14 | 97 | 75 - 125 | 101 | 80 - 120 | <0.050 | mg/L | 20 | 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.



BUREAU
VERITAS

Bureau Veritas Job #: C471497

Report Date: 2024/03/18

Cambium Environmental Inc

Client Project #: 19387-001

Sampler Initials: MC

VALIDATION SIGNATURE PAGE

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


A handwritten signature in black ink, appearing to read 'Anastassia Hamanov', written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read 'Farhana Rahman', written over a horizontal line.

Farhana Rahman, Senior Analyst

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



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

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:

Company Name: #17950 Cambium Environmental Inc
 Attention: ACCOUNTS PAYABLE
 Address: 194 Sophia Street PO Box 325
 Peterborough ON K9H 1E5
 Tel: (705) 742-7900 Fax: (705) 742-7907
 Email: accounting@cambium-inc.com

REPORT TO:

Company Name: #26906 Cambium Environmental Inc
 Attention: Kyle Horner
 Address: 31 Hyperion Court, Suite 102
 Kingston ON K7P 7G3
 Tel: (613) 389-2323 Fax: _____
 Email: kyle.horner@cambium-inc.com, maren.catt@cambium-i

PROJECT INFORMATION:

Quotation #: C26318
 P.O. #: _____
 Project: 19387-001
 Project Name: _____
 Site #: _____
 Sampled By: *Maren Catt*

Laboratory Use Only:

Bureau Veritas Job #: _____
 Bottle Order #: _____
 COC #: _____
 Project Manager: Christine Gripton

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

Field Filtered (please circle):
 Metals / Hg / Cr / V

Total Coliforms/ E. coli, CFU/100mL

Fecal coliform, (CFU/100mL)

Turbidity

RCAp - Comprehensive (Drinking Water)

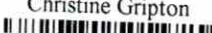
Regular (Standard) TAT:
 (will be applied if Rush TAT is not specified)
 Standard TAT = 5-7 Working days for most tests.
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: _____ Time Required:
 Rush Confirmation Number: _____ (call lab for #)

| Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | Field Filtered (please circle): Metals / Hg / Cr / V | Total Coliforms/ E. coli, CFU/100mL | Fecal coliform, (CFU/100mL) | Turbidity | RCAp - Comprehensive (Drinking Water) |
|----------------------|----------------------------------|---------------|--------------|--------|---|-------------------------------------|-----------------------------|-----------|---------------------------------------|
| 1 | RW1 | March 8, 2014 | 3:45 | GW | | ✓ | ✓ | ✓ | ✓ |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |

of Bottles: 5
 Comments: PH: 7.11
 Temp: 10 = 20C

09-Mar-24 08:29
 Christine Gripton

C471497
 VIY ENV-919

*** RELINQUISHED BY: (Signature/Print)** *Maren Catt* **Date: (YY/MM/DD)** 24/03/08 **Time** 7:20pm

RECEIVED BY: (Signature/Print) *VIY VIYUSHTE PATEL* **Date: (YY/MM/DD)** 2024/03/09 **Time** 09:29

jars used and not submitted

Laboratory Use Only

Time Sensitive: 4/4/4
 Temperature (°C) on Recei: _____
 Custody Seal Present:
 Intact:

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

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

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

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

White: Bureau Veritas Yellow: Client
ON FILE

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