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September 13, 2023 (Revised August 27, 2024)

Our File Ref.: 220487

Entrepreneur Holding Corporation
363 Entrepreneur Crescent
Ottawa (Navan), Ontario K4B 1T8

Attention: Dustin Wilson

Subject: Hydrogeological Assessment & Terrain Analysis –
Proposed Warehouse Development
363 Entrepreneur Crescent, Ottawa, Ontario

Dear Mr. Wilson,

LRL Engineering (LRL) was retained by Entrepreneur Holding Corporation (the 'Client') to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 363 Entrepreneur Crescent in Ottawa (Navan), Ontario in support of the proposed site development. It is anticipated that one (1) approximately 592 m² warehouse will be developed on the subject property, in addition to corresponding gravel parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system.

The assessment was carried out to determine if the proposed development can be adequately and safely supplied with potable water according to the Ontario Drinking Water Standards (ODWS) and *Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996)*; and that the proposed development can be serviced with a private septic system. The assessment was also intended to confirm that the construction of the supply well, and proposed construction activities, will be such as to minimize impairment to the regional aquifer and that it meets the current Ontario Regulation 903 requirements.

The assessment was conducted according to Ontario Ministry of the Environment, Conservation and Parks (MECP) "Hydrogeological Technical Information Requirements for Land Development Applications" (April 1995), which include the following guidelines and procedures:

- Guideline D-5 Planning for Sewage and Water Services (August 1996);
- Procedure D-5-4 Technical Guideline for Individual On-site Sewage Systems: Water Quality Impact Risk Assessment (August 1996); and
- Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996).

The City of Ottawa Hydrogeological and Terrain Analysis Guidelines, March 2021, was also referenced to support the completion of this study.

The assessment involved a desktop review of available information on the geology and hydrogeology of the site and adjacent lands in addition to intrusive investigative work, supply aquifer demand evaluations and water quality sampling and analysis. Based on our review of available information, and results of our field investigations, it is determined that the proposed development can be supplied with a sufficient quantity and quality of reasonably treatable water, and that the site conditions are suitable for an on-site sewage disposal system.

1 SCOPE OF INVESTIGATION

LRL was retained by Entrepreneur Holding Corporation to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 363 Entrepreneur Crescent in Ottawa (Navan), Ontario (herein referred to as the 'Site'). This assessment was requested in support of the proposed development of the Site, and associated application submission to the City of Ottawa. It is understood that one (1) approximately 592 m² warehouse will be constructed on the Site. Further details pertaining to the anticipated development are included in Section 3.

LRLs scope for this investigation was in general accordance with current applicable provincial guidelines, in addition to the City of Ottawa Hydrogeological and Terrain Analysis Guideline, dated March 2021. Prior to the initiation of the scope of this investigation, a virtual pre-consultation meeting was held with the Hydrogeologist of the City of Ottawa on November 28, 2022. The meeting was requested by LRL to review the project with the technical review from the City of Ottawa, discuss the possible concerns related to the natural features of the area, and how this can be addressed through the pumping test of the supply well and neighbouring aquifer supply sampling. LRLs scope for this Hydrogeological Assessment & Terrain Analysis was generally as follows:

- Conduct a search of available well information for neighbouring properties through the MECP water well records database;
- Perform a desk top review of available geological maps and local well records to obtain information pertaining to the quantity supply aquifer of the subject Site;
- Collect a water sample, representative of pre- and post-treatment supply aquifer conditions, from the neighbouring property to the west (357 Entrepreneur Cres.) to obtain information of the respective aquifer characteristics;
- Provide support during the construction of the test well, including a grouting inspection to verify the installation corresponds to applicable requirements and regulations;
- Conduct one (1) – eight (8) hour pumping test on the newly constructed test well on the Site by using a submersible pump and powered by a portable generator.
    - Using industrial maximum daily demand and maximum hourly demand peaking factors of 1.5 and 1.8, respectively, as per Table 4.2 of the City of Ottawa Design Guidelines – Water Distribution 2010;
        - The maximum daily demand was calculated to be 1,910 L/day.
        - The maximum hourly demand was calculated to be 3,437 L/day.

      To account for the calculated maximum daily demand, the well would be required to support a pumping rate of 3.97 L/minute for a duration of eight (8) hours, and at a rate of 7.16 L/minute to meet the maximum hourly (peak) demand. The pumping rate will be set between 21 – 22 L/minute for a duration of eight (8) hours to exceed these requirements and to be in excess of the minimum D-5-5 pumping rate;

- Manual water levels were collected from the supply well during the pumping test to analyse the hydrogeological characteristics of the aquifer on-Site;
- Collect and submit water samples from the supply well periodically during the pumping test, four (4)-hours and eight (8)-hours of pumping, for laboratory analysis under the subdivision package, and volatile organic compounds; and
- Following the pumping test, record water levels for up to 24 hours or until 95% recovery has occurred.

- Collect and compile relevant sub-surface details related to the underlying subsurface conditions through collaboration with additional sub-surface investigation field work (i.e. Phase Two Environmental Site Assessment, and Geotechnical Investigation);
- Compare the laboratory analysis results, from the supply well, to the applicable Ontario Drinking Water Standard (ODWS) and MECP D-5-5 Maximum Concentration Considered Reasonably Treatable (MCCRT); and
- Prepare a summary regarding the quality and the quantity of the supply aquifer and comparison to D-5-5 compliance requirements set forth by the City of Ottawa Technical Authority. Summarize the findings to confirm that the property size and soil conditions are suitable to attenuate the impacts of the septic system effluent.

2 SITE AND AREA DESCRIPTION

The Site is generally undeveloped with exception to a granular base applied across the majority of the surface of the Site and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility. The Site is set within a rural, low-density commercial and light industrial area of Ottawa, Ontario, southeast of the City's urban extents. The Site is legally described as Part of Block 3 Plan 50M136 Part 3 ON Plan 50R6694; Subject to an Easement in Gross Over Part 9 ON Plan 4R-27830 As in OC1627867; City of Ottawa.

The Site is located approximately 310 m northeast of the Boundary Road and Entrepreneur Crescent intersection, as presented in **Figure 1**. The Site is a rectangular shape, with a total area of approximately 3,000 m² or 0.75 acre as shown in **Figure 2**. Historically, the Site was used as agricultural lands, since at least the mid-1960's (1965). Thereafter, the Site remained undeveloped and densely wooded until approximately 2017, when the vegetation was cleared. Neighbouring lands include commercial and light industrial developments since at least the early 1990's. The Site is zoned as Rural General Industrial Zone (RG2), according to the City of Ottawa interactive mapping system (geoOttawa).

Municipal water supply and sanitary services are not available for the Site. Select neighbouring lands are equipped with private water supply wells, and sewage disposal systems. The potable groundwater is found in the gravel/shale bedrock layer, at depths between 21.0 m and 30.3 m below ground surface (bgs).

2.1 Topography

The topography of the Site and vicinity are generally flat. The subject Site and the neighbouring lands have a common topographic elevation of 78 m above mean sea level (amsl) according to *The Atlas of Canada – Toporama*. More specifically, the Site has a slight slope to the southern and western perimeters with elevations ranging between 76.74 and 77.22 m amsl. A ditch boarders the northern extent of the Site with bank height of approximately 1.0 m. Elevations along the southern extent of the Site range between 103.7 and 102.5 m amsl.

These detailed elevations are presented in the Annis, O'Sullivan, Vollebekk Ltd. Topographic

Survey plan, dated December 14, 2022, and included in **Attachment A**.

Existing Development Features

The Site is generally undeveloped with exception to a granular base applied across the majority of the surface and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility.

2.2 Aerial Imagery

Aerial imagery was access through the City of Ottawa on-line interactive mapping portal, geoOttawa. The available historical imagery for the Site dates back to the mid 1960's (1965) when the Site and neighbouring lands appear to be used for agriculture purposes (fields or pastures). An agricultural related development is present approximately 170 m west of the Site. No significant changes were observed in the subsequent aerial imagery until the early 1990's (1991) when the Site appears to be un-developed and forested, with a clearing at the southern portion of the property, and the neighbouring lands were observed to include low-density commercial developments to the south, east and west of the Site.

In the available 2014 aerial imagery, the neighbouring lands to the east, north and south are developed. North of the Site appears to be operated as a mineral extraction facility. As of the 2021 aerial imagery, the Site appears to be occupied for it's current use as a storage yard for the adjacent land to the east.

2.3 Neighbouring Properties and Land Uses

According to the City of Ottawa's Zoning information, available through the City of Ottawa's on-line interactive mapping portal, geoOttawa, the neighbouring lands are zoned as follows:

- The neighbouring lands to the east and west are zoned as Rural General Industrial Zone (RG2); and
- The neighbouring lands to the north and the south are zoned as Rural Heavy Industrial (RH).

The neighbouring land uses generally include the following:

- North: Mineral-Aggregate extraction facility and seasonal snow dump;
- South: Entrepreneur Crescent followed by an un-known commercial/light industrial operation with various storage containers and vehicles;
- East: Industrial - YSB Hoisting Equipment & YSB Carpentry facility (carpentry company and hoist equipment rentals facility), followed by vacant; and
- West Construction company yard (Galaxy Construction) followed by vehicle storage yard.

2.4 Hydrology

The Site is generally flat with a gentle slope south and west. Using the available features of the interactive mapping tool, *The Atlas of Canada – Toporama*, it appears that the local groundwater flow direction varies on either side of the neighbouring Boundary Road. West of Boundary Road is inferred to flow in a northerly to northwesterly direction towards the Bear Brook, approximately 2.2 km to the northwest of the Site. Surface water features to the east of Boundary Road, where the Site is located, are shown to flow easterly towards the Shaws Creek, approximately 3.3 km east of the Site. Therefore, the groundwater flow direction across the Site in inferred to be towards the east.

A ditch is present along the northern perimeter of Site; however, the flow direction was not confirmed at the time of this assessment. According to an Environmental Impact Statement[1] dated June 23, 2023, and prepared by others, the ditch was also observed to have '*lack of any flows observed*' at the time of their June 12, 2023, Site visit.

The ditch was described in the Environmental Impact Statement as having high water chemistry measurements related to salt, likely associated with the adjacent snow dumping facility. The Environmental Impact Statement indicated that these conditions would likely result in fish, which could enter the ditch during high seasonal water level conditions from neighbouring sources, to perish. The Environmental Impact Statement concluded that the ditch has no natural heritage values. However, it was recommended that to prevent surface runoff from the Site into the ditch, a 'raised berm' would be constructed to the north of the proposed warehouse development, which would divert runoff into the Sites strategic stormwater management system. A formal stormwater management plan has been prepared to support the development of the Site. The plan will be submitted to the City under a separate cover.

A Phase Two Environmental Site Assessment was completed for the Site to address potential environmental concerns raised with respect to adjacent or neighbouring land uses, and on-Site activities. As part of this assessment, a total of four (4) groundwater monitoring wells were constructed on the property to facilitate groundwater sample collection, and to further address the hydrogeological characteristics of the upper / shallow overburden groundwater. Groundwater was measured in each monitoring well at depths of between 0.20 and 0.55 m below grade. Based on these measurements, in conjunction with ground surface elevations, the upper / shallow overburden groundwater flow direction is found to be towards the southeast.

The variance between locally inferred groundwater flow directions, and measured groundwater elevations may be attributed to infrastructure including utility trenches, structures, and ditches or swales. A municipal ditch is presented along the southern extent of the Site.

2.5 Natural Heritage Features

Based on available databases and records reviewed, the following with respect to Natural Heritage Features, are revealed for the Site:

- The Site is not part of a provincial park or conservation area;
- The Site is not within any Areas of Natural and Scientific Interest (ANSI) identified by the Ministry of Natural Resources (MNR) as having provincial significance;
- The Site does not include any area identified as Provincial Significance Wetland (PSW) by MNR,
- The Site does not include any area designated as environmental significant in municipal official plans;
- The Site does not include any area designated as an escarpment natural area by Niagara Escarpment Plan;
- The Site does not include any area which is a habitat of endangered species;
- The Site does not include any Oak Ridges Moraine Conservation area; and,
- The Site does not include any area designated as a wilderness area.

[1] Environmental Impact Statement – Zoning By-Law Amendment for 363 Entrepreneur Crescent, prepared by Kilgour & Associates Ltd., June 23, 2023.

As discussed above in Section 2.4, a ditch is present along the northern perimeter of Site, however according to Kilgour & Associates Ltd., at the time of their June 12, 2023 Site visit, the flow direction was not confirmed. The report states that the watercourse identified acts more so like a trough which is supported by the lack of any flow encountered, even during the spring freshet (June 12, 2023).

According to an Environmental Impact Statement prepared by others, the ditch was also observed to have '*lack of any flows observed*' at the time of their Site visit. The Environmental Impact Statement concluded that the ditch has no natural heritage values. It is understood that the findings of this Environmental Impact Statement report were confirmed by the Ontario Ministry of the Environment, Parks and Conservations as being accurate and reliable.

2.6 Geology & Hydrogeology

2.6.1 Geological Mapping

Surficial soil deposit mapping[2] indicates that the surficial geology is Offshore Marine Deposits: clay, silty clay, and silt, commonly calcareous and fossiliferous; locally overlain by thin sand. Bedrock mapping[3] indicates that the bedrock is described as the Carlsbad Formation: grey shale, sandy shale, and some dolomitic layers.

According to the Brunton, F.R. and Dodge, J.E.P. Karst map of Southern Ontario, including Manitoulin Island; Ontario Geological Survey, Groundwater Resource Study 5, 2008, known areas to potential areas of karst geology is present in the vicinity of the Site, namely to the south. The Site and adjacent land to the east and west are identified as "Unknown or no observed evidence of karstification due to the character of bedrock, lack of outcrop and/or relative thickness of overburden."

2.6.2 Hydrogeologically Sensitive Areas

The Site is not considered Hydrogeologically Sensitive in regard to shallow soils or bedrock outcrops. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 1.5 m in thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application, and outlined below in Sections 2.6.3 and 2.6.4, respectively. These additional investigations included a Geotechnical Investigation and a Phase Two Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase Two Environmental Site Assessment and Geotechnical Investigation are included in **Attachment B**, and further detail pertaining to each summary, including chemical analysis and conclusions are provided in Section 4.1.

The ditch however, located along the northern perimeter of the Site, has been identified by the City of Ottawa as a watercourse. As discussed in Section 2.5, the ditch acts more as a trough which is supported by the lack of any flow encountered and is not considered to have natural

[2] St-Onge, D.A., Surficial Geology, Lower Ottawa Valley, Ontario, Map 2140A, Geological Survey of Canada, 2009.
[3] Harrison, J.E., 1976, Generalized Bedrock Geology, Ottawa-Hull, Ontario and Quebec, Geological Survey of Canada, Map 1508A, Scale 1:125,000.

heritage value. Although, a property within 30 m of a water feature is considered hydrogeologically sensitive, therefore, based on the presence of the watercourse, the Site will be considered hydrogeologically sensitive.

2.6.3 Geotechnical Investigation (February 2023):

Fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT "N" values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%. Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT "N" values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%.

Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT "N" values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%.

Refusal using the DCP test was encountered on the Site at a depth of 24.50 m bgs. This was encountered over a large boulder within till material or over possible bedrock.

As part of the investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized in the following **Table A**.

Table A: Gradation Analysis Summary

Sample Location	Depth (m)	Percent for Each Soil Gradation					Estimated Hydraulic Conductivity K (m/s)
		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Medium (%)	Fine (%)			
BH1	1.52 – 2.13	0.4	0.8	4.1	59.3	35.4	5×10^{-8}
BH2	6.10 – 6.71	0.0	0.0	0.6	31.0	68.4	5×10^{-8}

Atterberg limits and moisture contents were conducted on two (2) split spoon soil samples. A summary of these values is provided below in **Table B**.

Table B: Summary of Atterberg Limits and Water Contents

Sample Location	Parameter					
	Depth (m)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Water Content (%)	USCS Group Symbol
BH3	4.57 – 5.18	61	23	38	90	CH
BH4	1.52 – 2.13	67	25	42	77	CH

The laboratory reports can be found in **Attachment C** of this report.

A piezometer was installed in one (1) borehole location to measure the static groundwater level. The piezometer consisted of a 19 mm diameter PVC pipe with a slotted bottom to allow for

groundwater infiltration, backfilled with silica sand, and sealed with bentonite. The water was measured on December 6, 2022, and found to be at 0.5 m bgs.

The locations of the boreholes are presented in **Figure 3**.

2.6.4 Phase Two Environmental Site Assessment (January 2023)

Subsurface conditions across the Site generally included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.

The locations of the borehole are presented in **Figure 3**.

2.6.5 Potential Sources of Contamination

To support the proposed development application, a Phase One Environmental Site Assessment was completed for the Site. This assessment was conducted to identify potential environmental concerns or liabilities related to the past and present operations conducted on the property and the adjacent lands. A historical records review of the Site was conducted, as well as contact with relevant regulatory agencies, a walk-through Site inspection of the property and interviews with those knowledgeable of the Site.

This review was completed with general reference to Ontario Regulation 153/04, which is the provincial regulation which is most often referenced when considering the environmental conditions of a Site. The regulation outlines possible Potential Contaminating Activities (PCA) which can be associated with impairment or impacts to the quality of the subject property conditions. The review revealed the following potential sources of contamination, and the corresponding PCA as set out by Ontario Regulation 153/04.

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
PCA 32: Iron and Steel Manufacturing and Processing	On-Site	The adjacent property hoist equipment manufacturing and rental company (YSB Hoisting equipment facility), is identified as an industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Associated material and equipment are stored on the Site. This was observed through aerial photography and Site visit.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-Site APEC.
PCA 30: Importation of Fill Materials of Unknown Quality	On-Site	Identified through aerial imagery and confirmed by the interview with the Site owner.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.
PCA 32: Iron and Steel Manufacturing and Processing	357 Entrepreneur Crescent, immediately east of the Site.	Adjacent property immediately east of the Site occupied by a hoist equipment rental company (YSB Hoisting Equipment & YSB Carpentry facility). Industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Observed through aerial photography and Site visit.	Due to the type of the activity and location being along the eastern perimeter of the Site, this record is considered to represent an APEC to the eastern portion of the Site.
PCA Other: Construction company workshop and storage yard	371 Entrepreneur Crescent, immediately west of the Site.	Construction company workshop and storage yard. Observed through aerial photography and Site visit	Due to the type of the activity and location being along the western perimeter of the Site, this record is considered to represent an APEC to the western portion of the Site.
PCA 28: Gasoline and Associated Products Storage in Fixed Tanks.	Identified at 5495 Boundary Road, approximately 170 m west of the Site (up-gradient).	Reported to be an abandoned service station, with records of underground liquid fuel storage tanks.	Due to the type of the activity and location being up-gradient of the Site, this record is considered to represent an APEC to the western portion of the Site.
PCA 34: Metal Fabrication.	5507 Boundary Road, approximately 170 m west (up-gradient) of the Site.	Listed as Renes Welding Inc., a fabricated metal products facility established in 1982.	Due to the type of the activity and location being up-gradient of the Site, this record is considered to represent an APEC to the western portion of the Site.

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
PCA 52: Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems.	381 Entrepreneur Crescent approximately 40 m to the west of Site used as vehicle storage yard.	Observed through the site visit and Aerial photos	The yard is located generally up-gradient of the Site and therefore presents a potential risk for environmental concern to the Site.
PCA 58: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners.	Immediately north of the Site (trans-gradient).	Based on observations at the time of the site reconnaissance, the adjacent land to the north operates as a snow dumping facility.	Due to the trans-gradient location from the Site, this record does not represent an APEC to the Site.

Based on the findings of the Phase One ESA, it is recommended that a Phase Two ESA be conducted on the Site to confirm the presence/absence of impacts in the areas of potential environmental concern identified. The findings of the Phase Two Environmental Site Assessment are discussed below in Section 4.1.

2.7 Ontario Water Well Records

A search was conducted of the well records from the MECP Water Well Record (WWR) department. The search by UTM coordinates covered a 750 m radius from the Site. The search returned 30 WWRs, however, several of which did not have any details available related to the construction or subsurface conditions encountered. Nine (9) of the WWR retrieved was for a test well. A copy of those WWRs which included relevant details related to the hydrogeological and subsurface features are included in **Attachment D** and their approximately locations are presented in **Figure 4**.

The records of the wells within 750 m of the Site, where details were available, revealed that the wells include both drilled and shallow overburden wells. The drilled wells, seven (7) of which, were reported to extend to depths of between 28.9 and 61.0 m. Only one (1) shallow overburden/dug supply well was reported, which extended to a depth of between 7.0 m. The remaining overburden well reported were test holes/monitoring wells.

The well records show that that the geological conditions within 750 m are generally similar and consist of clay to depths between 21.0 and 44.8 m followed by a thin layer of gravel, over shale or limestone bedrock. A thin layer of sand was reported in select wells over the clay, and glacial till was reported over bedrock in the supply well located approximately 640 m northwest of the Site. The water type was reported as sulphur in two (2) of the test well locations.

On August 23, 2023, the proposed supply well for the anticipated development was constructed at the northeastern portion of the Site. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.

Inferred subsurface profiles cross sections are presented in **Figure 5A** through **Figure 5B** and include select wells in the vicinity of the cross-section segments as shown in **Figure 4**. The general overburden conditions encountered in the wells, where details were available, within 750 m of the Site are as follows:

MECP Well Number	Distance and Direction from Site (m)	Depth (m)	Overburden Details			Bedrock Details	Groundwater Encountered (m)	Static Water Level (m)	Type of water
			Sand/Till (m)	Clay (m)	Gravel (m)	Bedrock (m)			
A379014 (Tag)	On-Site	48.7	--	0 – 26.2	26.2 – 28.0	28.0 - 48.7	46.9	2.8	Not Tested
7320860	Directly east	28.9	--	0 – 21.3	21.3 – 22.6	22.6 – 28.9 (Shale)	27	9.6	--
7043396	225 SW	32.4	--	0 – 30.3	30.3 – 31.5	31.5 – 32.4 (Shale)	31.5	2.9	Sulphur
7266180	368 SW	7.0	0 – 0.2 (Topsoil)	0.2 – 7.0	--	--	--	--	Fresh
7201225	*440 E*	*31.4*	--	*0 – 31.4*	--	--	--	--	--
7201224	*500 S*	*44.8*	--	*0 – 44.8*	--	--	--	--	--
7201724	*553 NE*	*1.5*	*0 – 1.5 (Sand)*	--	--	--	--	--	--
7201737	*555 NE*	*6.4*	*0 – 1.5 (Sand)*	*1.5 – 6.4*	--	--	--	--	--
1525164	640 NW	30.5	0 – 0.6 (Sand) 21.3 – 23.5 (Till)	0.6 – 21.3	--	23.5 – 30.5 (Limestone)	29.0	1.8	Sulphur
7212030	*650 SW*	*6.4*	*0.3 – 2.4 (Sand)*	*2.4 – 6.4*	*0 – 0.3*	--	--	--	--
7212029	*652 SW*	*6.4*	*0.3 – 2.4 (Sand)*	*2.4 – 6.4*	*0 – 0.3*	--	--	--	--
7322574	670 NE	42.4	0 – 2.1 (Sand)	2.1 – 24.2	24.2 – 26.1	26.1 – 42.4 (Limestone)	7.9	2.1	Salty
1534876	670 W	33.5	0 – 1.5 (Sand)	1.5 – 29.0	29.0 – 33.2	33.2 – 33.5	33.5	2.6	Salty
7310678	695 NW	61.0	--	0 – 1.8 (Clay Fill with gravel) 1.8 – 21.0	21.0 – 22.3	22.3 – 61.0 (Shale)	27.0 52.0	3.8	--
7200942	*705 S*	*1.5*	*0 – 0.9 (Sand)*	*0.9 – 1.5*	--	--	--	--	--
7201226	*745 SE*	*43.6*	--	*0 – 43.6*	--	--	--	--	--
7200943	*745 SE*	*6.4*	*0 -0.9 (Sand)*	*0.9 – 6.4*	--	--	--	--	--

Notes:

Italics Test Hole/ Monitoring Well Record

-- Not Data/Not Tested

2.7.1 Water Well Record Summary

The anticipated maximum daily demand was calculated to be 1,910 L/day. This value was derived from using the City of Ottawa Design Guidelines – Water Distribution, 2010. Using industrial maximum daily demand and maximum hourly demand peaking factors of 1.5 and 1.8, respectively, as per Table 4.2 of the City of Ottawa Design Guidelines – Water Distribution 2010;

- The maximum daily demand was calculated to be 1,910 L/day.
- The maximum hourly demand was calculated to be 3,437 L/day.

Based on the details of the well records obtained in the area (within 750 m of the Site) it is anticipated that the aquifer can yield a sufficient amount to supply the proposed development on the Site in the long term. For example, one (1) hour pumping test results from select neighbouring wells within 750 m of the Site, provide results indicative that the bedrock - Limestone aquifer is able achieve a rate of 54 L/min over 60 minutes utilizing approximately 0.3% of the available drawdown. The duration of the 60-minute pumping test, with a 0.3% available drawdown, accounted for a volume of 3,240 L being removed. Therefore, assuming a comparable drawdown rate, in less one (1) hour, the maximum daily demand of 1,910 L/day will be achieved. The neighbouring property, located immediately east of the Site, was reported to be advanced into the bedrock – shale stratum, which was able to achieve a rate of 13 L/min over 60 minutes utilizing 41.4% of the available drawdown. This accounts for approximately half the proposed development maximum daily demand in the duration of the pumping test.

Based on the proposed development and anticipated maximum daily demand of 1,910 L/day, or 3.9 L/min over an eight (8) hour period, as described in greater detail in Section 3, these conditions are considered suitable to sustain the anticipated Site development and corresponding activities. A summary of the quantity of water of select neighboring wells within a 750 m radius of the Site is as follows:

MECP Well Number	Distance and Direction from Site	Depth (m)	Pump Test Details					
			Pump Rate (L/min)	Duration (min)	Drawdown (m)	Specific Capacity (L/Sec/m)	Recovery (%)	Recommended Pump Rate (L/min)
7320860	**Directly east**	**28.9**	**13**	**60**	**11.99**	**0.0180**	**100**	**15**
7043396	**225 SW**	**32.4**	**58.5**	**60**	**0.15**	**6.5**	**100**	**45.5**
7266180	*368 SW*	*7.0*	--	--	--	--	--	--
1525164	*640 NW*	*30.5*	*113*	*60*	*11.12*	*0.1693*	--	*113*
7322574	*670 NE*	*42.4*	*54*	*60*	*0.13*	*6.9230*	*100*	*56*
1534876	670 W	33.5	42	60	0.17	4.1176	100	50
7310678	**695 NW**	**61.0**	**42**	**60**	**1.92**	**0.3645**	**100**	**66**

Notes:

-- No Data is Available/Not Reported

BOLD Supply well advanced into Shale Bedrock

Italics Supply well advanced into the Limestone Bedrock

xxx Dug/Shallow Supply Well

2.8 Shallow Overburden Groundwater Monitoring Wells

Entrepreneur Holding Corporation retained LRL to complete a Phase Two Environmental Site

Assessment on the Site in the context of property redevelopment. The assessment was completed to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. The potential environmental concerns identified that requires investigation includes:

- **PCA 32**: Iron and Steel Manufacturing and Processing. The adjacent property hoist equipment manufacturing and rental company (YSB Hoisting equipment facility) is identified as an industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Associated material and equipment are stored on the Site since at least mid of 2022;
- **PCA 30**: Importation of Fill Material of Unknown Quality. Based on available information obtained, a layer of granular crushed stone was applied across the surface of the subject property in 2022 (est.). The source and quality of the material is unknown, therefore its conditions, in addition to the underlying materials, should be investigated;
- **PCA 32**: Iron and Steel Manufacturing and Processing. 357 Entrepreneur Crescent, immediately east of the Site, occupied by a hoist equipment rental company (YSB Hoisting Equipment & YSB Carpentry facility), industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment;
- **PCA Other**: Construction company workshop and storage yard. 371 Entrepreneur Crescent, immediately west of the Site, occupied by Galaxy Construction - workshop and storage yard;
- **PCA 56**: Treatment of Sewage equal to or greater than 10,000 litres per day. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, issued an environmental compliance approval for industrial sewage works and treatment of Sewage equal to or greater than 10,000 litres per day;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, listed as waste disposal site with approval of ECA-Waste Disposal Sites issued in March 2012, November 2012, October 2016, and March 2020;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Cumberland Con. 10 Dump, approximately 150 m east of the Site listed as a landfill in 1991;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Unnamed Waste Disposal Site, approximately 110 m south of the Site listed as a landfill in 1991.
- **PCA Other**: Spill. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, reported a spill incident to the MECP in March 2019. The incident was summarized as non-compliance with FA re-evaluation required.
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. The adjacent land to the north of the Site operates as a snow dumping facility.

To address these concerns, an intrusive investigation was carried out between March 13 and March 16, 2023, by LRL. Further details pertaining to the findings of the Phase Two Environmental Site Assessment, namely concentrations of contaminates encountered, contamination plumes, and recommendations are described below in Section 4.1. This section pertains solely to the geological and hydrogeological characteristics across the Site.

A total of ten (10) boreholes were advanced across the Site. The subsurface soil conditions in the area investigated on the Site generally consist of included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.

Four (4) boreholes were completed as monitoring wells: BH23-2, BH23-3, BH23-4 and BH23-5 (herein referred to as MW23-2, MW22-3, MW23-4, and MW23-5). Monitoring wells were constructed within the 203 mm diameter boreholes with a 51 mm slotted PVC piezometer. The top of the screen was extended to the ground surface using a solid riser pipe. Annular space around the slotted portion of the piezometer was backfilled with pre-washed and graded silica sand up to 300 mm above the top of the screen. A bentonite seal was placed above the sand pack and bentonite was used to fill the remainder of the hole to the surface. Monitoring wells were finished at the surface with a flush-mount aluminum casing.

The locations of the monitoring wells are described as follows:

Monitoring Well Identification	Location
MW23-2	West-central portion of the Site.
MW23-3	South-central portion of the Site.
MW23-4	Southeastern portion of the Site.
MW23-5	North-central portion of the Site.

The borehole and monitoring well locations are presented in **Figure 3**, and a copy of the borehole logs are included in **Attachment B**. Static groundwater elevations were measured at each monitoring well prior to the respective sampling activities and are summarized as follows.

Monitoring Well	Ground Surface Elevation (m)	Reference Elevation (m)	Depth to Water Table (m)		Groundwater Elevation (m)
			Reference Point	Ground Surface	
MW23-2	99.90	99.83	0.20	0.27	99.63
MW23-3	99.88	99.80	0.39	0.47	99.41
MW23-4	99.87	99.79	0.47	0.55	99.32
MW23-5	99.89	99.78	0.09	0.20	99.69

Groundwater depth measurements were between 0.20 and 0.55 m below grade, which corresponded to elevations between 99.32 and 99.69 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m.

The groundwater elevations and interpreted flow contours are shown in **Figure 6**. Based on these elevations the groundwater flow direction on the Site is towards the southeast. However,

based on local surface water features, the overall groundwater flow direction is inferred to be towards the east.

3 PROPOSED DEVELOPMENT

It is anticipated that one (1) approximately 592 m² warehouse will be developed on the subject property, in addition to corresponding gravel (permeable) parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system. The location and dimensions of the proposed features are presented in **Figure 7**.

The warehouse is anticipated to include a slab-on grade level (ground floor), with a partial second-floor mezzanine. The ground floor portion of the building is anticipated to include open warehouse space, meeting and collaboration space, a lunchroom area, washroom facilities and one (1) set of laundry units (washer and dryer). The mezzanine is anticipated to be used for general storage as well as to house mechanical components and equipment related to overall serviceability of the development (i.e. heating components and water treatment system).

To facilitate the development of the Site, excavation of the overburden materials to accommodate the foundation structural components (footings) are anticipated to extend to between 1.5 and 1.8 m below grade. The excavated areas, and underside of footings will be backfilled with non-frost susceptible backfill material, as outlined in the corresponding Geotechnical Investigation report prepared by LRL, dated February 2023.

The septic system will be designed by a competent individual and submitted for approval with the Ottawa Septic System Office (OSSO). A formal submission was made to the OSSO, however it is understood that based on subsequent alterations to the proposed Site layout, a revised application will need to be submitted which depicts the updated proposed location. Once the revised application is approved by the OSSO, a copy of the permit will be submitted to the City for their records. The actual proposed location for the installation of the system will be at the southwestern extent of the Site, between the warehouse and the southern property boundary as presented in **Figure 7**. The proposed septic details are as follows:

- The septic system will be a new construction, encompassing an approximate area of 68 m²;
- The sewage design flow for the Site will be 1,273 L/day;
- The proposed system will be a Class IV ‘Eljen’ partially raised system with the ability to reduce concentrations of total nitrogen by more than 50%;
- The tank will have a capacity of 5,509 L and will be equipped with a Polytek effluent filter; and
- The total capacity of the system will be 6,903 L.

In support of this hydrogeological assessment, a test well has been constructed on the Site in the location presented in **Figure 7**. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth of 46.9 m, with a static water level measured at 2.80 m. For the purposes of this report, the test well installed will be referred to as the ‘Proposed Supply Well’ as it is intended to use the well to supply the proposed warehouse development.

4 PREVIOUSLY PREPARED REPORTS

4.1 Phase Two Environmental Site Assessment, 363 Entrepreneur Crescent, Ottawa, Ontario, September 5, 2023

Entrepreneur Holding Corporation has retained LRL Engineering to complete a Phase Two Environmental Site Assessment on the properties located at 363 Entrepreneur Crescent, Ottawa, Ontario. A Phase Two ESA was completed to address the presence or absence of one or more contaminants at the Site as determined in the Phase One ESA and to assess the quality of the soil and ground water. The findings of the corresponding Phase One ESA should be read in conjunction with the Phase Two ESA presented herein. The Phase One ESA identified eight (8) individual potential contaminating activities (PCA). The PCAs that affect the Phase Two ESA are detailed above in Section 2.8, and are generally summarized as follows:

- **PCA 32**: Iron and Steel Manufacturing and Processing;
- **PCA 30**: Importation of Fill Material of Unknown Quality;
- **PCA Other**: Construction company workshop and storage yard;
- **PCA 56**: Treatment of Sewage equal to or greater than 10,000 litres per day;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners; and
- **PCA Other**: Spill.

The contaminants of potential concern (CPCs) in soil and groundwater for the Site were based on the APECs identified at the Site during Phase One Environmental Site Assessment and observations at the time of the drilling program. The following CPCs for the Site were suspected to be associated with the identified APECs:

- Petroleum Hydrocarbons ranges F1-F4 (PHCs);
- Volatile Organic Compounds (VOCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Polychlorinated Biphenyls (PCBs); and
- Metals, Metal hydrides, and General Inorganics.

An assessment of the CPCs for the Site was completed as part of the Phase Two ESA analytical submission program. Soil and groundwater samples were submitted for a combination of the CPCs dependant on borehole and monitoring well locations with respect to the APECs. Based on the analytical results for the CPCs at the Site, generally the soils were found to meet the applicable provincial site condition standards (SCS) with two (2) exceptions, which included the following:

- Lead was reported above the SCS of 120 µg/g, with a value of 284 µg/g in the borehole advanced at the southwestern extent of the Site (BH23-7), from depths extended between 0.0 and 1.05 m below grade. A secondary soil sample collected from this borehole was submitted for metals analysis, which revealed that lead concentrations at depths between 1.20 and 1.95 m below grade were significantly below the SCS wit ha value of 7.5 µg/g; and
- Conductivity was marginally above the SCS of 1400 µg/g with a value of 1460 µg/g in a sample collected from the north-central portion of the property (BH23-5) at depths between 0 – 1.0 m. A duplicate sample representative of this parent sample was found to

have lower concentrations of conductivity with a value of 1250 µg/g. Therefore, it is possible that the elevated conductivity encountered may be limited or an anomaly.

Groundwater samples collected at the Site on March 16, 2023, revealed that only one (1) of the four (4) sample locations was found to have elevated concentrations of select parameters of concern. Based on the concentration reported, and in comparison, to the applicable SCS, exceedances to select PAH parameters were encountered in monitoring well MW23-3, located at the southeastern portion of the Site (down-gradient location on the Site). More specifically for the following parameters:

- Benzo [a] pyrene;
- Benzo [b] fluoranthene;
- Benzo [k] fluoranthene;
- Chrysene; and
- Fluoranthene.

Vanadium, commonly elevated in clay deposits across the region, was also detected above the appliable SCS in MW23-3.

LRL returned to the Site to confirm if the concentrations of PAH and metals encountered, as since these parameters were found to be notably lower in the soil samples collected from the Site, and no further exceedances were detected on the Site in the groundwater. A re-sample was collected on April 17, 2023, by LRL. The results of the additional sampling returned lower concentrations of all parameters previously reported above the SCS. Of which, Benzo [a] pyrene remained above the appliable SCS with concentrations of 0.07 µg/L.

4.1.1 Additional Consideration

Benzo (a) pyrene is a byproduct of combustion including vehicle exhaust, burning of wood or other petroleum burning activities. Based on the history of the Site, and the location of the exceedances, in addition to the southeasterly shallow groundwater flow direction, the source of this exceedance is un-identified and is unlikely the result of current or previous on-Site activities.

It was recommended in the Phase Two ESA report that remediation work to address the elevated lead concentrations in the soil be completed during the construction efforts. Remediation efforts, when performed using conventional ‘dig-and-dump’ methodology requires confirmatory sampling of excavation limits. This methodology, including additional confirmatory sampling for lead parameters, will be completed to address the impacted soil encountered, and confirm that the conditions of the Site are in accordance with applicable provincial SCS. Impacted soils with contaminates require special attention and handling requirements for disposal.

The impacted groundwater is also anticipated to be addressed at the time of development. As the PAH impacts appear to be limited to the southeastern portion of the Site, it may be attributed by localised impacted soil. The removal of soil in the vicinity of the monitoring well of concern will be completed during construction, and subsequent groundwater sampling will take place (either from the salvaged monitoring well, or a newly constructed monitoring well). If elevated concentrations of parameters of concern, namely PAH, continue to be elevated, numerous effective treatment technologies are available.

The impacted overburden is limited to the upper extents of the Site (upper approximate 1.2 m), and the impacted groundwater encountered was measured at a depth of 0.47 m below grade. The risk to the supply aquifer on the Site, with respect to these exceedances encountered, is considered negligible based on the thick, underlying confining soil conditions. The clay layer

encountered is considered to act as a physical boundary between the encountered impacted shallow groundwater, and the supply aquifer for the identified wells in the area. The overburden conditions (clay) are not considered a suitable potential aquifer for possible future development in the vicinity of the Site.

4.2 Geotechnical Investigation, Proposed Warehouse, 363 Entrepreneur Crescent, Ottawa, Ontario, February 2023

LRL was retained by Entrepreneur Holding Corporation to perform a Geotechnical Investigation for a proposed warehouse development on the Site. The purpose of the investigation was to identify the subsurface conditions across the Site by the completion of a limited borehole drilling program. The fieldwork for this investigation was carried out on November 17, 2022, by LRL. A total of four (4) boreholes, labelled BH1 through BH4, as presented in **Figure 3**, were drilled across the Site to get a general understanding of the underlying soil conditions.

Sampling of the overburden materials encountered in the boreholes was carried out at regular depth intervals using a 50.8 mm diameter drive open conventional spoon sampler in conjunction with standard penetration testing (SPT) “N” values. In-situ field vane shear testing using a tapered vane was carried out in the soft to very soft cohesive soils. The boreholes were augered and sampled to a depth of 7.00 m below ground surface (bgs). A Dynamic Cone Penetration (DCP) test was carried out in BH2 until refusal (24.50 m bgs) to determine the overburden thickness. Upon completion, the boreholes were backfilled using the overburden cuttings.

The underlying soil conditions encountered across the Site generally included the following:

- Fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations, and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT “N” values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%;
- Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT “N” values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%;
- Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT “N” values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%;
- Underlying the clayey silt in all boring locations, a layer of silty clay was encountered and extended to the end of sampling at a depth of 7.00 m bgs. This was found to be grey, and wet. The SPT “N” values of this layer were WH, indicating the material is very soft. The natural moisture contents were determined to be 76 and 90%; and
- Inferred glacial till was encountered in BH2 by way of the DCP test. This was found to be in a compact to very dense state of packing.

Two (2) soil samples were collected for laboratory gradation analyses. The gradation analyses comprised of sieve and hydrometer. Based on the analytical results collected, the estimated hydraulic conductivity was 5×10^{-8} with a plasticity index range between 38 and 42%, and a liquid limit range of between 61 and 67%.

A piezometer was installed in BH3 to measure the static groundwater level. The piezometer

consisted of a 19 mm diameter PVC pipe with a slotted bottom to allow for groundwater infiltration, backfilled with silica sand, and sealed with bentonite. The water was measured on December 6, 2022, and found to be at 0.5 m bgs.

5 WATER QUALITY AND QUANTITY ASSESSMENT

5.1 Initial Water Quality Evaluation – 357 Entrepreneur Cresent

During our initial technical pre-consultation with the City of Ottawa Hydrogeologist, it was indicated that elevated concentrations of various parameters may be encountered in the bedrock aquifer in the area. Therefore, it was anticipated that by verifying the conditions of a neighbouring supply well, pre- ad post- treatment, and interviewing occupants of the building may provide insight on future recommendations for the anticipated development on Site and viable treatment system options for the water supply. LRL was granted permission to collect a representative sample of the neighbouring supply well of 357 Entrepreneur Crescent. A copy of the well record for this property (Well No. 7320860) is included in **Attachment D**.

LRL visited the property immediately east of the Site, on April 7, 2023, to collect two (2) samples of the supply water distribution system. One (1) sample was collected directly from the pressure tank, prior to treatment (pre-), and the second sample was collected from a washroom tap post-treatment (post-). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard “subdivision” package. Each location was dis-infected prior to sampling with a distilled water/bleach solution and the fixture was allowed to run for a duration of at least 10-minutes prior to sampling. The aerator on the washroom tap was removed prior to disinfection and sampling. The sample containers were labelled with exclusive identification details and stored in a cooler with pre-chilled ice packs during transportation to the laboratory.

Our interview with the property owner at the time of the sampling revealed the following pertinent information related to the water supply and distribution system:

- The property is serviced by a drilled well located on the west side of the building. The well was installed in 2018 and was initially extended to 115 m. However, the water quality was not considered suitable and well was modified to intercept a shallower aquifer being approximately 28 m in depth;
- The distribution system which supplies the building with water includes a water treatment system. The system includes:
    - A smaller pressure tank is used in conjunction with a submersible pump to direct water into the building. The water is then emptied into a larger pressure tank;
    - From the larger capacity pressure tank, the water is passed through the following sequence of treatment systems:
        - a water softener that uses salt;
        - a series of three (3) carbon filters;
        - Iodine dosage; and
        - Reverse osmosis.
    - The water is then stored in a 1,000 L capacity container available for supply.
- The system is maintained twice annually by a plumbing and treatment specialist which includes sampling to confirm the components are in superior working order;

- At the time of the installation (2018), the system start-up cost was approximately $25,000. For commercial/light industrial purposes, this is considered feasible to initiate and operate.

The analytical results from the pre- and post- treatment samples are presented in the included **Table 1**. Exceedances to the Ontario Drinking Water Standards (ODWS), and MECP D-5-5 guideline – maximum concentration considered reasonably treatable, were encountered in the pre- treatment sample for the following parameters:

- Alkalinity with a value of 605 mg/L, above the ODWS operation guideline (OG) of between 30 – 500 mg/L;
- Hardness with a value of 1,050 mg/L, above the ODWS OG of between 80 – 100 mg/L;
- Total Dissolved Solids (TDS) aesthetic objective (AO) of 500 mg/L, with a value of 7,640 mg/L;
- Turbidity was elevated with a value of 12 NTU, above the ODWS AO of 5 NTU, and the maximum allowable concentration (MAC) if treatment is required of 1 NTU;
- Chloride was reported with a value of 4,350 mg/L, above the AO of 250 mg/L;
- Iron was above the AO of 0.3 mg/L with a value of 1.3 mg/L; and
- Sodium was reported with a concentration of 2,010 mg/L, above the AO of 200 mg/L.

Post- treatment, the samples were found to improve significantly, however select parameters remain above the ODWS. These parameters include the following:

- Alkalinity with a value of 16 mg/L, below the ODWS OG acceptable range of between 30 and 500 mg/L;
- Hardness with a value of 0.00 mg/L, below the ODWS OG acceptable range of between 80 – 100 mg/L;
- Marginally above the TDS AO of 500 mg/L, with a value of 508 mg/L; and
- Chloride was reported with a value of 302 mg/L, above the AO of 250 mg/L.

Sodium, although was reported below the ODWS AO of 200 mg/L, was above the 20 mg/L limit which the local medical officer should be notified, with a value of 152 mg/L. It is our opinion that these remaining exceedances to the ODWS can be accounted for through adjustments to the existing system including possible media replacement, or dosing adjustments. The water is considered to be reasonably treatable with respect to the proposed use and development plan of the Site.

A copy of the laboratory certificate of analysis is included in **Attachment E**.

5.2 Proposed Supply Well – 363 Entrepreneur Cresent

The proposed supply well to facilitate the anticipated warehouse development on the Site was constructed on August 23, 2023, by Air Rock Well Drilling (Richmond, Ontario). The well was advanced at the northeastern portion of the Site, being a minimum of 3.0 m from all property lines, and beyond 15 m from potential sources of contamination, such as septic disposal systems (existing and proposed). The well extended to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m. A copy of the well record (Well Tag#A379014) is included in **Attachment D**.

The previously prepared EIS, as mentioned above in Section 2.5, has identified the ditch which traverses along the northern perimeter, as being likely impacted by the adjacent snow dump, and is likely impaired by elevated concentrations of sodium/chloride.

"Development within the site is unlikely to alter the hydrology, riparian functions, or terrestrial or aquatic habitat functions of the ditch adjacent to the site. The HDFA (Appendix C) determined that the Ditch, has extremely high salinity and is acting as a trough instead of water flowing through it. While the Ditch may have marginal connection to downstream features during the spring freshet, which could provide a limited and temporary entry point for fish, any fish entering the feature would certainly perish from the extreme environment. As such, the Ditch does not hold natural heritage value. A setback to protect feature is not required."

It is understood that Regulation 903 indicates that a supply well should not be placed within 15 m of a potential contamination source, and that the ditch is considered a possible contamination source by the City of Ottawa resulting from the neighbouring snow dump. The proposed supply well location is positioned approximately 7 m from the extents of the ditch, and is considered acceptable due to the proposed development details, and general site conditions as rationalized as follows:

- The proposed supply well has been constructed as a drilled well, extending to a depth of approximately 48.7 m below grade, comparable to that of the neighbouring supply well at 357 Entrepreneur Crescent. The clay deposit encountered during well construction was reported to be 26.2 m thick, which a confining layer between potential ditch infiltration and the supply aquifer. In addition to the clay layer, the well was also include a cement grout and bentonite slurry seal of at least 29.8 m, to further prevent surficial infiltration into the supply aquifer;
- The proposed supply well has constructed as per O. Reg. 903 with a minimum casing stickup of 40 cm, waterproof cap. The immediate area will be graded such that will divert surface water from the installation. These actions would prevent possible impairment to the groundwater through infiltration into the water well;
- As a conservative approach to further mitigate possible impacts to the Site from the neighbouring land, a 5 m naturalized berm is to be constructed along the norther extent of the site. The berm is intended to prevent surface runoff from the adjacent property on the site, and towards the proposed well;
- After completing an initial water quality analysis of the neighbouring supply well, it was found that chloride and sodium are elevated in the groundwater, likely naturally. Samples were collected from pre- and post- treatment, and it was found that through the use of various treatment units, including RO, carbon filtration, water softening and iodine dosing, the quality of the supply aquifer can be improved significantly; and

- The client will be utilizing a comparable treatment system for the development, therefore, the should the bedrock aquifer be impaired (although unlikely) by the neighbouring facility and ditch, adequate treatment will be in place to address the contaminates of concern.

Although the well is constructed so that the casing extends above ground surface, it is further recommended that the casing be extended/confirmed to be at least 400 mm above ground surface following final grading and surfacing.

5.3 Quantity

The proposed development of the Site is anticipated to include an approximate 592 m² warehouse with office space. The required aquifer yield has been derived from the City of Ottawa Design Guidelines – Water Distribution, 2010, as amended, including the August 18, 2021, Technical Bulletin specified alterations, and the MECP's Design Guidelines for Drinking-Water Systems, 2008. Based on the calculations derived from this guideline, the anticipated maximum daily demand for the proposed development is assumed as 1,910 L/day.

To account for the calculated maximum daily demand, the well would be required to support a pumping rate of 3.97 L/minute for a duration of eight (8) hours, and at a rate of 7.16 L/minute to meet the maximum hourly (peak) demand. The pumping rate will be set between 21 – 22 L/minute for a duration of eight (8) hours to exceed these requirements and to be in excess of the minimum D-5-5 pumping rate.

5.3.1 Pumping Test

To establish the hydraulic properties of the proposed supply aquifer, an eight (8)-hr pump test was conducted on the newly constructed supply well on August 30, 2023. The pumping rate exceeded the maximum hourly (peak) demand, over a common commercial operation period of eight (8)-hours. The well was pumped at a constant flow rate (±5%) of approximately 22 L/min over eight (8)-hr period using a temporary submersible pump lowered into the well. The rate of 22 L/min used for the test which is approximately triple that of the maximum hourly demand flow requirement (7.16 L/minute), and above the minimum pumping rate specified in MECP Guideline D-5-5 (11 L/minute). The increased rate used of this test was based on previous proposed building configurations, which have since been modified (i.e. decrease in proposed warehouse development area). It is considered conservative with respect to the now revised proposed daily and hourly demands.

Drawdown was measured manually during the pumping and recovery periods using an electronic water level tape. Following the pump's cessation, the supply well water level recovery was measured. Data collected in the field for the pumping test which includes the flow rate, water levels and measurement intervals, are presented in **Attachment F**.

The initial static water level was measured as 2.61 m below top of casing (btc), and test well depth was measured as approximately 49.1 m btc. The pump was set at approximately 45 m btc at the time of the test. The drawdown after eight (8)-hr of pumping was 3.64 m. This represents only approximately 8.1% of the available drawdown in the well, assuming the set pump depth of 45 m is the maximum drawdown which can be reached. The specific capacity of the well after eight (8)-hr of pumping was calculated to be 0.101 L/sec/m with a long-term availability of 82.4 m³ per day (82,400 L/day). This surpasses the calculated maximum daily demand, and the maximum hour demand of 1,910 L/day and 3,437 L/day, respectively. The long-term availability calculation is presented in **Table 2**.

The recovery was commenced at the end of the eight (8)-hr pumping duration. The submersible pump remained in the well throughout this time so not to alter the recovery test process and measurements. After one (1) hour of recovery, the well returned to 90.1% of the initial water level (2.97 m btc). LRL returned after approximately 16 hours and again after 24 hours of recovery to verify the water level. The well was recorded to have reached 92.8% and 91.7% recovery, respectively. Marginally below the D-5-5 guideline requirement of 95% within 24 hours. As indicated in the D-5-5 guidelines, "*where sufficient recovery does not occur, the issue of the long- term safe yield of the aquifer is especially significant and must be addressed."* As presented in the included **Table 2**, and discussed above, although the well marginally missed the 95% recovery requirement, based on the proposed demand pumping rate, in comparison to the maximum available pumping rate, the well can sufficiently supply the proposed light industrial / commercial establishment proposed on the Site. The City of Ottawa's respective Design Guidelines – Water Distribution, 2010, the maximum daily demand was calculated to be 1,910 L/day m², which is approximately half the volume removed during the eight (8) hour pumping test, which further support the likeliness that the supply aquifer can support the proposed development.

5.3.2 Aquifer Characteristics

Following the completion of the constant rate pumping test, the data was analysed using the Aquifer Test software package, by Waterloo Hydrogeologic. The data underwent Theis and Agarwal-Theis Recovery analysis, the results of which are shown in the table below. Graphical analyses of the drawdown are provided for reference purposes in **Attachment G**.

Established from the information gathered from the pump test, the wells' transmissivity and coefficient of storage were calculated using the average of the Theis logarithmic approximation for the drawdown and Agarwal/Theis for the recovery. The specific yield of the well was calculated using the information obtained from the pump test, the transmissivity and coefficient of storage. The yield takes into account a minimum safety factor of 3. The characteristics of the well are summarized in the table below. The yield was calculated using the safety factor; therefore, the theoretical yields can be higher.

Parameter	**Supply Well**
	8 Hour Test
	Theis
Transmissivity (m^2/sec)	7.59×10^{-5}
Coefficient of Storage	4.51×10^{-3}
Pumping Rate (L/min)	22
Available Drawdown (m) – assuming pump set at 45 m (as per pumping test)	42.4
Maximum Drawdown (m)	3.64
% Drawdown	8.1%
Specific Yield (L/sec/m)	0.101
Maximum Pumping Rate (L/min)	57.2
Long Term Availability (m^3/day)	82.4

Based on the observed drawdown/recovery relationship, it is concluded that the long-term yield of the test well is in excess of maximum daily demand of 1,910 L (1.9 m³/day) with a projected value of 82.4 m³/day and is found to be able to meet a maximum pumping rate of 57.2 L/minute. This is considered in excess and adequate to supply the inferred peak hourly flow demands of 7.16 L/min.

5.4 Quality

5.4.1 Field Measurements

Throughout the pumping tests the following field parameters were measured and recorded:

- Turbidity, chlorine and colour using a Lamotte TC-3000 Trimeter; and
- Conductivity, total dissolved solids (TDS) and pH using a portable meter (Hanna Instruments).

A summary of the field measurements collected throughout the duration of the pumping test are included in **Attachment F**.

The machine detection limits of the Lamotte TC-3000 Trimeter are as follows:

- Turbidity of 0.01 NTC, with an accuracy of +/- 0.05 (or 2%, whichever is greater);
- Colour of 0.1 CU, with an accuracy of +/- 0.5 (or 2%, whichever is greater); and
- Chlorine of 0.01 ppm, with an accuracy of +/-0.02 (or 2%, whichever is greater).

For the purposes of this report, values read as less than the corresponding limits will be reported as <0.01, or <0.1.

The following calibration, or zeroing techniques performed as part of this assessment, during the filed investigations is summarized as follows:

Parameter	Equipment Used	Calibration and Zeroing Techniques
Turbidity	Lamotte TC-3000 Trimeter	Prior to use, the equipment was calibrated using the 'two-point' method, following manufacturer instructions. Standard calibration solutions of 0.0 NTU and a 1.0 NTU were used to calibrate the machine. The solutions were pre-made by a supplier.
Colour	Lamotte TC-3000 Trimeter	Prior to the use of the equipment, and periodically during the pumping test, colour measurements were first zeroed by following the manufacturer's instructions and using Deionized Water (prepared and supplied by Hanna Instruments – HI7040-2).
Chlorine	Lamotte TC-3000 Trimeter	Prior to each chlorine reading, a blank sample, including Deionized Water (prepared and supplied by Hanna Instruments – HI7040-2) was screened to zero the machine.
Conductivity	HI98129 Hanna Instruments	Prior to each event, where the meter is used (typically daily), the instrument was calibrated using the Hanna Instrument prepared 1413 µs/cm conductivity solution (HI7031).
pH	HI98129 Hanna Instruments	Prior to each event, where the meter is used (typically daily), the instrument was calibrated using the 'two-point' method, following manufactures specifications. As the pH readings are anticipated to be within the neutral to slightly acid range based on our knowledge of the area and past experience, solutions of 7.01 pH Units (Hanna Instruments HI7007) and 4.01 pH Units (Hanna Instruments HI7004) were used.

5.4.2 Groundwater Sampling

Groundwater samples were collected for laboratory analysis during the pumping tests to assess the quality of the proposed supply aquifer. The water samples were collected after four (4) and eight (8)-hours of pumping. The water samples were collected directly into laboratory prepared bottles. The water samples were submitted to the laboratory for analysis of a "subdivision" package.

The groundwater analytical results are discussed in Section 5.4.3. The laboratory Certificate of Analysis from Paracel Laboratories Ltd. (Ottawa, Ontario) is included in **Attachment H**.

5.4.2.1 Chlorine Residual

Procedure D-5-5 specifies, "T*he chlorine residual must be zero before any bacteriological sample can be taken*." At the start of the eight (8)-hour pumping test, the chlorine residual was measured at 0.03 mg/L and fluctuated throughout the duration of the test with values of 0.02 mg/L at both the four (4) and eight (8) - hours pumping durations.

Chlorine residual at the time of the sample collection was thought to be a result of seasonal conditions influencing the field equipment and the sample matrix. It has been noted historically that during hot seasonal conditions, the glass vials used for the field measurement becoming cloudy from condensation, which is thought to disrupt the light exchange used for the measurement.

Further research into this matter ("chlorine residual without the well being chlorinated") has found the following which may be attributed to the residual levels detected:

- In-field measurements can be influenced by sunlight. Sunlight can react with the indicator tablets used for the collecting the measurements, resulting in false positives. It is found that the 3-minute reaction time for the tablets in the sample matrix is needed to be kept outside of sunlight. It is likely that during the sample collection, the vials were exposed to the sunlight which returned false positives; and
- It was also retrieved that most common interferent with chlorine residual reading is oxidized manganese. Manganese was detected in the samples collected therefore this is a possible explanation for the slight detection of chlorine.

According to the equipment manual for the Lamotte TC-3000e, chlorine measurement accuracy is 0.02 ppm (mg/L) or 2%, which ever is greater. Therefore, based on the accuracy of the equipment, the chlorine residual measurements can be in the range of 0.00 and 0.04 mg/L in the four (4) hour and eight (8) hour samples collected. According to this, it is possible that based simply on the machine accuracy range, the samples are likely free of chlorine residual.

5.4.3 Supply Aquifer Quality – Proposed Supply Well

The groundwater chemistry of the proposed supply aquifer for the development was obtained by collecting water samples from the newly constructed proposed supply well located at the northeastern portion of the Site. The well was installed within the upper bedrock shale formation common of the area.

To represent the long-term water quality of the well, samples were collected during different stages of the pump test and well development (after four (4) and eight (8)-hours of pumping). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard "subdivision" package, trace metals and volatile organic compounds (VOCs). The laboratory certificates of analysis are included in **Attachment H**.

Table 3A through **Table 3C** summarizes the water analysis and also includes the relative ODWS (O. Reg. 169/03) for the parameters tested. The water samples were found to be very comparable to that of the initial water sample collected from the neighbouring property as discussed in Section 5.1. The majority of the parameters analysed meet the ODWS parameters tested except for the following:

- Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L. Alkalinity can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply;
- Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however as mentioned above, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water;
    - The Langelier Saturation Index (LSI) is used to determine the calcium carbonate stability of water and the pH at which water is saturated with calcium carbonate (pHs). The LSI calculation is used to establish the level of saturation. The Ryznar Stability Index (RI) is used to determine the aggressiveness of water which can indicate the scale and corrosion potential. The calculations for RI and LSI are shown in **Table 4**. Using a water temperature of 10°C (typical of an interior distribution system circulating through a building), the LSI was calculated for the 8-hour sample of 1.78 which indicates the water is scale forming but non-corrosive. The RI was calculated to be 4.72 at the 8-hour sample which indicates heavy scaling.
- TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L. Where TDS levels exceed the ODWS AO, it is required that a professional comment regarding treatment include "*written rationale that corrosion, encrustation or taste problems will not occur*", according to the MECP D-5-5 Guideline. As indicated in the ODWS for TDS parameter "*The term total dissolved solids refer to inorganic substances dissolved in water. The principal constituents of TDS are chloride, sulphates, calcium, magnesium and bicarbonates. The effects of TDS on drinking water quality depend on the levels of the individual components. Excessive hardness, taste, mineral deposition or corrosion are common properties of highly mineralized water. The palatability of drinking water with a TDS level less than 500 mg/L is generally considered to be good*."

  In support of the required rationale with respect to TDS levels in excess of 500 mg/L, the Ryznar Stability Index (RSI) and Langelier Saturation Index (LSI) were calculated for the water sample to determine the corrosivity or scale formation potential of the water. The Langelier Saturation Index (LSI) is used to determine the calcium carbonate stability of water and the pH at which water is saturated with calcium carbonate (pHs). The Ryznar Stability Index (RI) is used to determine the aggressiveness of water which can indicate the scale and corrosion potential. Using a water temperature of 10°C (typical of an interior distribution system circulating through a building), the LSI was calculated for the 8-hour sample of 1.78 which

indicate the water is scale forming but non-corrosive. The RI was calculated to be 4.72 at the 8-hour sample which indicates heavy scaling. Corrosion resistant piping and pluming fixtures can be used throughout the proposed development.

According to the Government of Canada, Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Total Dissolved Solids (TDS), the palatability of a drinking water supply (with respect to TDS) has been rated by participants, and the findings are as follows:

- **Excellent,** less than 300 mg/L;
- **Good,** between 300 and 600 mg/L;
- **Fair,** between 600 and 900 mg/L;
- **Poor,** between 900 and 1200 mg/L; and
- **Unacceptable,** greater than 1200 mg/L.

The raw water results of the test well are in excess of limit deemed unacceptable.

TDS can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. Potassium chloride can be substituted for sodium in the ion exchange system to lower the TDS in the water supply. The effectiveness of the water softener treatment system is demonstrated in the samples collected from the neighbouring supply well, pre- and post- treatment, at 357 Entrepreneur. Pre-treatment results revealed a level of 7,640 mg/L, however post treatment, levels decreased significantly to 508 mg/L. Although still in excess of the ODWS AO, a level of less than 600 mg/L, is acceptable with respect to palatability. With treatment, the distribution within the building, and the palatability (although not advised for consumption as discussed in later sections) for the building supply well is anticipated to be acceptable.

- Turbidity was measured to have a level of 3.8 NTU in the 4-hour sample, and 3.5 NTU in the 8-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration, however, are below the AO of 5 NTU and the D-5-5 level considered reasonably treatable of 5 NTU. If the water is to be disinfected using an ultra-violet filter, it is recommended that the water be pre-treated with a 5 um filter;
- Dissolved Organic Carbon (DOC) with a level of 9.4 and 8.5 mg/L, at the 4- and 8-hour sample, respectively, above the AO of 5 mg/L but below the D-5-5 level considered reasonably treatable of 10 mg/L. DOC can cause taste, odour, and colour. DOC can be reduced through the use of an activated carbon (AC) filter;
- Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU. The colour can be attributed to the levels of organic materials (tannin and lignin) encountered, which imparts a yellow/brown tinge to the water. The color can be reduced by use of an activated carbon filter or a water softener;
- Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 level of 250 mg/L. Chloride is found in nature in various forms such as in sodium (NaCl), potassium (KCl) and calcium ($CaCl^2$) salts. The included **Table 1** presents the results of the supply aquifer samples collected from the neighbouring property. The chloride levels retrieved pre-treatment was 4530

mg/L, and post-treatment the value was 300 mg/L. A reverse osmosis treatment system, much like that used at the neighbouring property, can be used to lower level of chloride in supply lines, although it will not be for human consumption. It would be assumed that incremental modifications to the reverse osmosis treatment system can lower concentrations to 250 mg/L or less;

- Barium concentrations exceeded the ODWS MAC (2020) of 2 mg/L with values of 4.17 and 4.22 mg/L. Barium is a naturally occurring element that is found in various minerals. Barium in drinking water is often related to dissolved compounds which migrate through rocks and soil deposits and enter into the supply aquifer. As per the Guidelines for Canadian Drinking Water Quality, Guideline Technical Document, Barium, 2020, lime softening and ion exchange softening. Furthermore, reverse osmosis can aid in reducing barium from drinking water supplies. It should be noted that after treatment, the supply water from the well not be human consumption applied by the MECP and discussed further below in this report section; and
- Sodium with a level of 2,670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L. It is also above the 20 mg/L warning level notification limit for those on a sodium restricted diet. The local Medical Officer of Health should be notified of these levels so that this information may be communicated to local physicians with regards to homeowners who follow a sodium-restricted diet. The levels of sodium can be reduced through reverse osmosis system as demonstrated through the sample collection of the neighbouring property supply well, pre- and post-treatment. The pre-treatment value was 2,010 mg/L, and the post-treatment value was 152 mg/L. As both pre- / raw water samples collected have comparable values it is anticipated treatment is effective at reducing the concentrations. It should be noted that after treatment, the supply water from the well not be human consumption applied by the MECP and discussed further below in this report section.

VOC parameters were not detected in the samples submitted for analysis, and bacteria levels were either non-detected, or within the acceptable limit.

Total Coliforms were detected with counts of 2 and 1 CFU/100 mL in the four (4)- and eight (8)-hours samples. Although these counts are less than the ODWS MAC, they may be an indicator of possible or potential contamination. It is advisable to include an ultra-violet treatment system as a precautionary measure regardless of the non-potable water conditions to be applied to the supply well in addition to annual disinfection of the test well, and proper maintenance of all treatment components and sewage disposal system upkeep and emptying. The local health unit supports bacteriological analysis for supply wells. Annual testing can be a proactive measure to be taken to ensure conditions do not worsen, at which time determination of the source will need to be resolved and addressed. To the best of our knowledge, no septic systems or other potential sources of contaminates are located within 15 m up-gradient of the supply well on the Site.

As discussed in Section 2.6.4, a Phase Two Environmental Site Assessment was completed at the subject property in March 2023. The findings of this assessment revealed slight impact to the soil, including conductivity at the northwestern portion of the Site which could be attributed to seasonal snow clearing and de-icing operations. Lead concentrations were also above the appliable provincial site condition standard in the borehole advanced along the eastern limit of the Site, which could be a result of the storage of metal components from the neighbouring operations. Both exceedances were detected generally at ground surface, at depths between grade and 1.0 m below grade. The supply well record identifies a 26.2 m thick layer of clay,

which is considered a low-permeable layer isolating the potential surface impacts from the proposed supply aquifer. Metals and Inorganics parameters analysed during the pumping test revealed that Lead concentrations to the acquirer were below the laboratory detection limits. Conductivity however was elevated, although no available drinking water standard is available for this parameter. The elevated conductivity is likely associated with the chloride concentrations mentioned above.

Additionally, the Phase Two Environmental Site Assessment revealed that select polycyclic aromatic hydrocarbons (PAH) parameters were encountered above the appliable provincial site condition standards in the groundwater monitoring well at the southern limit of the Site. The remaining monitoring wells, including that located in the vicinity of the proposed supply well, did not have PAHs detected, with some exceptions. No additional exceedances were encountered. The source of the PAHs to the groundwater along the southern perimeter of the Site has not been confirmed, as the soils submitted for laboratory analysis were below the detection limits. As the exceedance was encountered in the upper groundwater, confined from the proposed supply aquifer by a 26.2 m thick clay stratum, appears isolated to the southeastern portion of the Site, and is down- to cross gradient from the proposed supply well on the Site, samples of PAH were not collected during the pumping test activities.

Select parameters were encountered in excess of the D-5-5 maximum concentration considered reasonably treatable (MCCRT) our findings from the initial water quality evaluation of the neighbouring well, the concentrations of alkalinity, hardness, TDS, chloride and sodium have been proven to be treatable through the use of generally considered conventional treatment units. A water quality treatment specialist should be consulted to recommend the proper units, specifications and maintenance frequency, it is considered acceptable to assume the following system can be applied to the proposed development to support suitable drinking water supply to occupants:

- a water softener that uses potassium chloride as sodium is found to be elevated;
- Carbon filtration;
- Iodine dosage;
- Reverse osmosis;
- Ultra-violet (UV) light unit with a 5 µm filtration membrane to do reduce turbidity of the water and ensure effectiveness of the UV unit.

As the property will be used for commercial/light industrial purposes, it is considered feasible for such a system series to be supplied and maintained on a regular basis.

Total dissolved solids and chloride concentrations, as mentioned above, are in excess of the defined limit for mineralized water as set out in O. Reg. 903 Wells Regulation, which specifies a concentration limit of 6000 mg/L for total dissolved solids and 500 mg/L for chloride. When mineralized water is encountered, the well owner shall immediately abandon the well or will require ministry approval. A formal request for consent to maintain the well constructed on the Site for future demand supply use was made to the Ontario Ministry of the Environment, Conservation and Parks Director on December 20, 2023. Additional clarification, and supporting information was requested by the Director thereafter. On August 13, 2024, the Ministry issued a formal **Consent Not to Abandon Water Supply Well (A379014), Located at 363 Entrepreneur Crecent, Ottawa, Ontario**. A copy of the consent notice is included in **Attachment I**. The conditions to maintain the supply well are included in this consent notice, which will be followed as part of this site development. The conditions are included in Section 10 of this report.

6 WATER SUPPLY ASSESSMENT

Based on the Site geology and hydrogeology the recommended potential supply aquifer for the Site, is the shale aquifer. The proposed supply well installed on the Site currently intercepts this aquifer, and it is our understanding that the proposed development of the Site will utilize this newly constructed well. The selection of this aquifer is supported by the following:

- The risk to impairment of the on-Site water supply, as well as the possible pathway for contaminates in the shallow soils is considered too great of a risk to explore this as a potential supply aquifer, in addition to clay overburden is not considered a reliable or suitable stratum to obtain an adequate water supply.
- Only one (1) record of neighbouring shallow supply well was returned which suggests it may not be a suitable source.
- The City of Ottawa, at the time of the technical pre-construction reiterated comments from an initial project overview consultation that indicated the thick marine clay deposit identified in local well records may not be a suitable aquifer material for a shallow well. Furthermore, it was indicated that as per Section 5.2.3 of the City of Ottawa Hydrogeological and Terrain Analysis guidelines "*Site Plans will normally not be approved based on dug wells, unless it can be demonstrated, to the satisfaction of the City, that a drilled well is likely to produce unacceptable water quality or quantity.*"
- The thick confining clay layer, above the bedrock, is considered a suitable barrier to prevent possible impartment to the supply aquifer and regional supply aquifer from the site proposed activities.
- Discussions with the neighbouring landowner indicated that the deeper bedrock aquifer was of poor quality, and not considered a suitable source to supply their establishment. They, much like other neighbouring lands, intercept the shale bedrock aquifer for supply.

6.1.1 Demand

Using the City of Ottawa Design Guidelines – Water Distribution, 2010, the maximum daily demand has been calculated as 1,910 L/day, which equates to 3.9 L/min over eight (8) hours. The assessment was completed at a rate of 22 L/min over eight (8) - hours. The results of the test have revealed that the proposed supply aquifer was only marginally impacted by the demand resulting in only 8.1% drawdown of the available water column, assuming a pump depth of 45 m. This demonstrates that the aquifer was not stressed during the duration of the pumping test and would likely have not influenced any neighbouring property supply wells. The well was found to reach drawdown stabilization after approximately 2 hours. Although the aquifer did not return to $\geq$95% after 24-hours, the overall drawdown was marginal of the potential availability (even with a greater demand utilized for the test), and the aquifer did not demonstrate stressed conditions, which supports that it is suitable for the anticipated development.

As presented in the included **Table 2**, although the well marginally missed the 95% recovery requirement, based on the proposed demand pumping rate, in comparison to the maximum available pumping rate, the well can sufficiently supply the proposed light industrial / commercial establishment proposed on the Site. The City of Ottawa's respective Design Guidelines – Water Distribution, 2010, proposed a maximum daily demand of 1,910 L/day. The pumping test drew approximately five (5) times this volume, which would further supports that the long-term safe yield of the supply well can support the proposed development.

7 TERRAIN ANALYSIS

The terrain analysis was conducted to demonstrate that the unconsolidated material on the Site is appropriate for the construction of an on-Site subsurface sewage disposal system on the Site. The subject property is currently developed with a sewage disposal system, however, to support the re-development and Site up-grades, a new structure and associated components will be constructed in accordance with the Ontario Building Code, 2012. The proposed location of the sewage disposal system is presented in **Figure 7**.

The septic system will be designed by a competent individual and submitted for approval with the Ottawa Septic System Office (OSSO). A formal submission was made to the OSSO, however it is understood that based on subsequent alterations to the proposed Site layout, a revised application will need to be submitted which depicts the updated proposed location. Once the revised application is approved by the OSSO, a copy of the permit will be submitted to the City for their records. The actual proposed location for the installation of the system will be at the southwestern extent of the Site, between the warehouse and the southern property boundary as presented in **Figure 7**. The proposed septic details are as follows:

- The septic system will be a new construction, encompassing an approximate area of 68 m²;
- The sewage design flow for the Site will be 1,273 L/day;
- The proposed system will be a Class IV ‘Eljen’ partially raised system with the ability to reduce concentrations of total nitrogen by more than 50%;
- The tank will have a capacity of 5,509 L and will be equipped with a Polytek effluent filter; and
- The total capacity of the system will be 6,903 L.

The Site is not considered Hydrogeologically Sensitive in regard to geological formations. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 20 m thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application. These additional investigations included a Geotechnical Investigation and a Phase Two Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase Two Environmental Site Assessment and Geotechnical Investigation are included in **Attachment B**.

As part of the Geotechnical Investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized as follows:

Sample Location	Depth (m)	Percent for Each Soil Gradation					Estimated Hydraulic Conductivity K (m/s)
		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Medium (%)	Fine (%)			
BH1	1.52 – 2.13	0.4	0.8	4.1	59.3	35.4	5×10^{-8}
BH2	6.10 – 6.71	0.0	0.0	0.6	31.0	68.4	5×10^{-8}

The subsurface conditions indicated for the Site are considered suitable for a Class IV septic sewage disposal system with a partially to fully raised leaching bed depending on the Site-specific soil and groundwater conditions at the actual location of the proposed septic system leaching bed. The leaching bed should be constructed to conform to the specifications set out in the Ontario Building Code (OBC).

According to the design submitted by others, the overall septic system would require an area of 68.04 m² for the dispersion bed, along with an additional approximate 30 m² for the pump station, tank, dosing chamber and secondary pump station. This equates to a total surface area of 98.04 m². Assuming a replacement area of 70 m², an area of approximately 168 m² would be required for the placement of the sewage disposal system.

The proposed grassed area assigned for the septic system at the southwestern extent of the Site has a surface area of 175 m², which is considered suitable for the placement of the septic. This location is more than 15 m from the location of the proposed supply well on the Site, and the existing supply wells on neighbouring lands.

The ditch located along the northern perimeter of the Site is identified as a watercourse by the City of Ottawa, although an Environmental Impact Study prepared by others has confirmed that the feature does not have Natural Heritage significance. For the purposes of this assessment, it will be assumed that the watercourse is an open water feature, therefore the Site will be considered hydrogeologically sensitive.

8 GROUNDWATER IMPACT ASSESSMENT

Section 5.2, Groundwater Impact Assessment in Non-Designated Areas, of the MECP's Procedure D-5-4 outlines the three (3) step assessment process for evaluating the potential risk for "every proposed development involving on-site sewage systems". The steps are intended to be followed in succession, where the conditions established in the previous step determine whether it is necessary to move on to the next step.

Step one of the assessment processes is ***Lot Size Consideration***. If it can be demonstrated that the area of the Site is not hydrogeologically sensitive, developments with lots that average 1 hectare (with no lot smaller than 0.8 ha) may not require a comprehensive hydrogeological assessment. It is expected that attenuative processes inside a one (1) hectare parcel of land will be adequate to decrease the nitrate-nitrogen to a satisfactory focus in groundwater underneath contiguous properties. The Site has a surface area of approximately 3,000 m² or 0.75 acre, which does not meet the Lot Size Consideration.

Step Two is ***System Isolation Considerations***, which evaluates the risk to groundwater from septic effluent, where geological setting and characteristics present suitable isolation conditions. Such conditions are most often supported by a lower hydraulic or physical boundary of the receiving groundwater. Such boundaries can include a thick layer of underlying soils with low permeability (i.e. clays).

Due to the soil conditions encountered, and discussed above in Section 7, "***System Isolation***" was considered as part of this terrain analysis. At the time of the City of Ottawa Technical Pre-consultation on April 11, 2023, the approach was discussed. However, there is one (1) record of a shallow / dug well in the vicinity of the Site, identified approximately 360 m southeast (downgradient) of the Site. This renders the shallow aquifer as a potential sensitive receptor; therefore the ***System Isolation*** approach is not considered acceptable for the Site. Rather, Step Three was considered, ***Contaminant Attenuation Consideration (Predictive Assessment)***.

The ***Contaminant Attenuation Consideration (Predictive Assessment)*** was used to determine the potential risk to groundwater resources on- and off-Site resulting from the proposed on-Site septic systems. More specifically, to confirm that the concentration of nitrates at the boundary of the Site are in accordance with the MECP's Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment. The potential risk to off-Site receptors from the proposed upgraded sewage disposal system has been considered using the inferred nitrate contamination loading for commercial / industrial property use. Section 5.6.3 of the D-5-4 Guideline pertains to Predictive Assessment - Industrial/Commercial Development. The procedure (MECP's Procedure D-5-4 (1996)) followed for this study specifies a maximum allowable concentration of nitrate in the groundwater of 10 mg/L at the property boundary.

To support the corresponding estimation of anticipated nitrate concentration at the property boundary, nitrate dilution calculations for commercial / industrial properties were considered. To support these considerations, the following details were included in the calculation used:

- Infiltration factors for the Site;
    - A total area of 3000 m²;
    - Flat topography;
    - Infiltration Factors (Post Development), and in accordance with Table 3.1 of the MECP Stormwater Management Planning and Design Manual (March 2003):
        i. Grain size analysis of the shallower soils more likely to intersect the septic effluent, as referenced above in Section **Error! Reference source not found.**, generally includes silty clay to clayey silt;
        ii. Approximately 3000 m² of the site is considered Cultivated Land;
    - Moisture Surplus (Post Development):
        i. The cultivated land (lawn and grassed area) is considered Shallow Rooted Crops;
        ii. Laboratory grain size analysis revealed the overburden material, anticipated to be impacted by the septic bed, is silty clay, to clayey silt;
    - Impervious areas (proposed development footprint) were calculated to be of 592 m^2 for the proposed warehouse. The parking and circulation area is proposed to be

gravel, therefore is not considered impervious. This equates to hard surface area, post re-development, of 19.7% of the subject property;

- Background nitrate concentrations in the receiving aquifer will be inferred negligible (0 mg/L used in the calculation) based on current site conditions and groundwater flow direction;
- Moisture surplus values from the Ottawa weather station (Environment Canada, 2011). The moisture surplus printouts for the City of Ottawa are included in **Attachment J**; and
- The use of an advanced tertiary treatment system, which is discussed in greater detail below, with a capability to treat nitrate concentrations of the effluent to at least 20 mg/L (50% nitrogen reduction).

The available infiltration, using the values and considerations identified above, has been calculated as 524 m³ for the Site, and the annual anticipated sewage volume is calculated as 465 m³. A summary of the calculation is presented in the included **Table 5**. As indicated in Section 5.6.3 (b) of the D-5-4 Guideline, "*The maximum allowable flow for each lot or block in the industrial/commercial development can be calculated by dividing the amount of available infiltration by a factor of three*". This calculation assumes a nitrogen concentration of the effluent being 40 mg/L.

The proposed septic disposal system for the Site is the Eljen System, approved by NSF Standard 245, and is able to reduce nitrates by at least 50% the initial concentrations. The specifications for the proposed unit are included in **Attachment K**.

As the septic system will be able to achieve a nitrate reduction of at least 50%, the factor included in the Predictive Assessment calculation has been adjusted from 3 (for conventional – non advanced treatment sewage disposal systems) to 1. The **Table C** below demonstrates Predictive Assessment calculation for establishing the maximum daily septic flow inferred for the Site assuming the advanced tertiary treatment system. Consideration to the use of a conventional treatment system (40 mg/L effluent nitrate concentration), as well as the alternative tertiary treatment system with a 50% nitrate reduction (20 mg/L effluent nitrate concentration) is included in the following table, for demonstration of the value to support the proposed Eljen System – NSF Standard 245 unit.

Table C: Contaminant Attenuation Consideration (Predictive Assessment)

Site Area (m²)	Impervious Area (m²)	Available Infiltration (m³/year)	Effluent Nitrate Concentration (mg/L)	Annual septic flow required for the Site (m³/year)	Predictive Assessment Calculation Factor	Maximum allowable septic flow (m³/year)	Maximum number of users* (m³/year)
3 000	2 197	524	40	465	3	175	180
3 000	2 197	524	20	465	1	524	180

Notes

* Using the allowable flow for the Site, as set out in Appendices 9.3.1 and 9.3.2 of the MECP's '*Manual of Policy, Procedures and Guidelines for On-Site Sewage Systems*', for Employees – Various Locations: Various buildings and places of employment, where the daily demand per person is between 50 and 75 L. The 50 L demand per person was used to confirm the maximum number of users based on the proposed use of the Site. Based on the available infiltration area, 10 users (180 m3/yr).

XXX Does not meet the annual septic flow required for the Site

XXX Meets the annual septic flow required for the Site

As presented above, the Contaminant Attenuation Consideration (Predictive Assessment) demonstrates that through the use of the advanced tertiary septic treatment system, with an effluent nitrate concentration of 20 mg/L, the risk for impairment to the groundwater is considered low. The annual septic flow for the Site of 465 m³ will be meet with a calculated maximum allowable septic flow of 524 m³, with nitrate reduction technologies of 50% or better.

Furthermore, the general complexity in the on-Site facility operations does not permit for a Maximum Number of Users value to be calculated. Rather, following the daily values set out in Appendices 9.3.1 and 9.3.2 of the MECP's '*Manual of Policy, Procedures and Guidelines for On-Site Sewage Systems*' for Employees – Various Locations: Various buildings and places of employment, a maximum annual volume of 180 m³/year is anticipated for the Site assuming 10 users at 50 L/day. The OBC sets out a more accurate anticipated flow for the Site, which the proposed sewage design flow is based on. The OBC calculation takes into consideration the number of water closets, and the number of fuel dispensing outlets which has been used for reporting purposes, and to determine the 1,273 m³/year annual septic flow required for the Site.

Based on these considerations, the current Site conditions are suitable to attenuate the nitrate impacts generated by the septic systems on the development in accordance with current D-5-4 guidelines, provided an appropriate tertiary treatment is used and maintained. The system must be able to treat the effluent to a nitrate level of 20 mg/L or better (at least a 50% nitrate reduction). The potential impacts related to the use of the sewage disposal system on the Site, with respect to natural features, and shallow groundwater conditions is low risk. Furthermore, supply wells in the area retain their water supply from deeper bedrock aquifer, which is confined by a thick overburden layer, therefore the on-Site septic system will have little to negligible impacts to the neighbouring water supply.

9 SUMMARY AND CONCLUSIONS

Based on the results of this investigation the following summary and conclusions are provided.

- The Site set within a low-density commercial and light industrial area of Ottawa, Ontario, southeast of the City's urban extents. The Site is legally described as Part of block 3 Plan 50M136 Part 3 ON Plan 50R6694; Subject to an Easement in Gross Over Part 9 ON Plan 4R-27830 As in OC1627867; City of Ottawa.
- The Site is generally undeveloped with exception to a granular base applied across the majority of the surface of the Site and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility.
- The Site is a rectangular shape, with a total area of approximately 3,000 m² or 0.75 acre. The topography of the Site and vicinity are generally flat with a slight slope to the southern and western perimeters with elevations across the Site.
- Historically, the Site was used agricultural lands, since at least the mid-1960's (1965). Thereafter, the Site remained undeveloped and densely wooded until approximately 2017, when the vegetation was cleared. Neighbouring lands include commercial and light industrial developments since at least the early 1990's.
- The Hydrogeological Assessment & Terrain Analysis was completed in support of the proposed Site development which is anticipated to include one (1) approximately 592 m² warehouse, in addition to corresponding gravel parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system.
- Using the available features of the interactive mapping tool, *The Atlas of Canada* –

Toporama, it appears that the local groundwater flow direction varies on either side of the neighbouring Boundary Road. West of Boundary Road is inferred to flow in a northerly to northwesterly direction towards the Bear Brook, approximately 2.2 km to the northwest of the Site. Surface water features to the east of Boundary Road, where the Site is located, are shown to flow easterly towards the Shaws Creek, approximately 3.3 km east of the Site. Therefore, the groundwater flow direction across the Site in inferred to be towards the east.

- A ditch is present along the northern perimeter of Site. According to an Environmental Impact Statement dated June 23, 2023, and prepared by others, the ditch was described as having high water chemistry measurements related to salt, likely associated with the adjacent snow dumping facility. The Environmental Impact Statement indicated that these conditions would likely result in fish, which could enter the ditch during high seasonal water level conditions from neighbouring sources, to perish. The Environmental Impact Statement concluded that the ditch has no natural heritage values. However, it was recommended that to prevent surface runoff from the Site into the ditch, a 'raised berm' would be constructed to the north of the proposed warehouse development, which would divert runoff into the Sites strategic stormwater management system.
- Surficial soil deposit mapping indicates that the surficial geology is Offshore Marine Deposits: clay, silty clay, and silt, commonly calcareous and fossiliferous; locally overlain by thin sand. Bedrock mapping indicates that the bedrock is described as the Carlsbad Formation: grey shale, sandy shale, and some dolomitic layers.
- The Site is not considered Hydrogeologically Sensitive in regard to shallow soils or bedrock outcrops. Although, for the purposes of this report, the ditch along the north of the Site, which is considered a watercourse by the City of Ottawa, will be assumed as a water feature. The presence of the water feature renders the Site hydraulically sensitive.
- A search was conducted of the well records from the MECP WWR department. The search by UTM coordinates covered a 750 m radius from the Site. The search returned 30 WWRs, however, several of which did not have any details available related to the construction or subsurface conditions encountered. Nine (9) of the WWR retrieved was for a test well. The records of the wells within 750 m of the Site, where details were available, revealed that the wells include both drilled and shallow overburden wells. The drilled wells, seven (7) of which, were reported to extend to depths of between 28.9 and 61.0 m. Only one (1) shallow overburden/dug supply well was reported, which extended to a depth of between 7.0 m. The well records show that that the geological conditions within 750 m are generally similar and consist of clay to depths between 21.0 and 44.8 m followed by a thin layer of gravel, over shale or limestone bedrock. A thin layer of sand was reported in select wells over the clay, and glacial till was reported over bedrock in the supply well located approximately 640 m northwest of the Site. The water type was reported as sulphur in two (2) of the test well locations.
- On August 23, 2023, the proposed supply well for the anticipated development was constructed at the northeastern portion of the Site. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.
- Entrepreneur Holding Corporation retained LRL to complete a Phase Two Environmental Site Assessment on the Site in the context of property redevelopment. The assessment was completed to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. A total of ten (10)

boreholes were advanced across the Site to address the potential environmental concerns identified. The subsurface soil conditions in the area investigated on the Site generally consist of included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.

- Four (4) groundwater monitoring wells were constructed on the Site as part of a Phase Two Environmental Site Assessment. Groundwater depth measurements in the monitoring wells were between 0.20 and 0.55 m below grade, which corresponded to elevations between 99.32 and 99.69 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m. Based on these elevations the groundwater flow direction on the Site is towards the southeast. Although, regionally, it is likely that groundwater flows east towards Shaws Creek.
- Based on the findings of the Phase Two Environmental Site Assessment, remediation work to address the elevated lead concentrations encountered in the soil be completed during the construction efforts associated with the Site development. The impacted groundwater is also anticipated to be addressed at the time of development.
- To establish the hydraulic properties of the proposed supply aquifer, an eight (8)-hr pump test was conducted on the newly constructed supply well on August 30, 2023. To account for the calculated maximum daily demand, the well would be required to support a pumping rate of 3.97 L/minute for a duration of eight (8) hours, and at a rate of 7.16 L/minute to meet the maximum hourly (peak) demand. The pumping rate will be set between 21 – 22 L/minute (±5%) for a duration of eight (8) hours to exceed these requirements and to be in excess of the minimum D-5-5 pumping rate.
- The initial static water level was measured as 2.61 m below top of casing (btc), and test well depth was measured as approximately 49.1 m btc. The pump was set at approximately 45 m btc at the time of the test. The drawdown after eight (8)-hr of pumping was 3.64 m. This represents only approximately 8.1% of the available drawdown in the well, assuming the set pump depth of 45 m is the maximum drawdown which can be reached. The specific capacity of the well after eight (8)-hr of pumping was calculated to be 0.101 L/sec/m with a long-term availability of 82.4 m^3 per day (82,400 L/day). This surpasses the calculated maximum daily demand, and the maximum hour demand of 1,910 L/day and 3,437 L/day, respectively.
- The recovery was commenced at the end of the eight (8)-hr pumping duration. The submersible pump remained in the well throughout this time so not to alter the recovery test process and measurements. After one (1) hour of recovery, the well returned to 90.1% of the initial water level (2.97 m btc). LRL returned after approximately 16 hours and again after 24 hours of recovery to verify the water level. The well was recorded to have reached 92.8% and 91.7% recovery, respectively. Marginally below the D-5-5 guideline requirement of 95% within 24 hours. As indicated in the D-5-5 guidelines, "*where sufficient recovery does not occur, the issue of the long- term safe yield of the aquifer is especially significant and must be addressed*." Although the well marginally missed the 95% recovery requirement, based on the proposed demand pumping rate, in comparison to the maximum available pumping rate, the well can sufficiently supply the proposed light industrial / commercial establishment proposed on the Site. The City of Ottawa's respective Design Guidelines – Water Distribution, 2010, the maximum daily demand was calculated to be 1,910 L/day m^2, which is approximately half the volume

removed during the eight (8) hour pumping test, which further support the likeliness that the supply aquifer can support the proposed development.

- To represent the long-term water quality of the well, samples were collected during different stages of the pump test (after four (4) and eight (8)-hours of pumping), and shortly thereafter. The majority of the parameters analysed meet the ODWS parameters tested except for the following:
  - Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L;
  - Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L;
  - TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L
  - Turbidity was measured to have a level of 3.8 NTU in the 4-hour sample, and 3.5 NTU in the 8-hour sample;
  - DOC with a level of 9.4 and 8.5 mg/L, at the 4- and 8-hour sample, respectively, above the AO of 5 mg/L but below the D-5-5 level considered reasonably treatable of 10 mg/L;
  - Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU;.
  - Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 level of 250 mg/L;
  - Barium concentrations exceeded the ODWS of 1 mg/L with values of 4.17 and 4.22 mg/L; and
  - Sodium with a level of 2670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L.
- Although select parameters were encountered in excess of the regulation D-5-5 maximum concentration considered reasonably treatable (MCCRT), our findings of an initial water quality evaluation of the neighbouring well revealed that the concentrations of alkalinity, hardness, TDS, chloride and sodium have been proven to be treatable through the use of generally considered conventional treatment units.
- Total dissolved solids and chloride concentrations are in excess of the defined limit for mineralized water as set out in O. Reg. 903 Wells Regulation, which specifies a concentration limit of 6000 mg/L for total dissolved solids and 500 mg/L for chloride. When mineralized water is encountered, the well owner shall immediately abandon the well or will require ministry approval. A formal request for consent to maintain the well constructed on the Site for future demand supply use was made to the Ontario Ministry of the Environment, Conservation and Parks Director on December 20, 2023. Additional clarification, and supporting information was requested by the Director thereafter. On August 13, 2024, the Ministry issued a formal Consent Not to Abandon Water Supply Well (A379014), Located at 363 Entrepreneur Crecent, Ottawa, Ontario. The conditions to maintain the supply well are included in this consent notice, which will be followed as part of this site development. The conditions are included in the Recommendations, Section 10, of this report

- According to the design submitted by others, the overall septic system would require an area of 68.04 m² for the dispersion bed, along with an additional approximate 30 m² for the pump station, tank, dosing chamber and secondary pump station. This equates to a total surface area of 98.04 m². Assuming a replacement area of 70 m², an area of approximately 168 m² would be required for the placement of the sewage disposal system. The proposed grassed area assigned for the septic system at the southwestern extent of the Site has a surface area of 175 m², which is considered suitable for the placement of the septic. This location is more than 15 m from the location of the proposed supply well on the Site, and the existing supply wells on neighbouring lands.
- Due to the identification of one (1) record of a shallow / dug well in the vicinity of the Site, 360 m southeast (downgradient) of the Site, the ***Contaminant Attenuation Consideration (Predictive Assessment)*** approach was used to establish if the Site conditions are suitable for the on-Site disposal of sewage through a private sewage disposal system.
- The **Contaminant Attenuation Consideration (Predictive Assessment)** demonstrates that through the use of the advanced tertiary septic treatment system, with an effluent nitrate concentration of 20 mg/L, the risk for impairment to the groundwater is considered low. The annual septic flow for the Site of 465 m³ will be meet with a calculated maximum allowable septic flow of 524 m³, with nitrate reduction technologies of 50% or better.

10 RECOMMENDATIONS

Based on the results of this investigation the following recommendations are provided:

1. It is recommended that the recently constructed test well - Proposed Supply Well at the Site be utilized as a water supply for the proposed development features of the Site. The well is found to generally have acceptable groundwater supply for the proposed Site activities and with conventional treatment applied. Furthermore, the well will be able to meet the daily supply demands, as determined through the eight (8)-hour pumping test initiated.
2. The casing of the well must maintain or be extended to 400 mm above final grade after construction.
3. No new potential contamination sources to the proposed supply well shall be introduced within 15 m of the structure.
4. Additional consideration with respect to maintaining the condition of the supply well, and the corresponding supply aquifer include the following:
    a. Snow should not be piled in the area of the well so as not to potentially damage the supply well; and
    b. The Site, post- development, should be graded such that surface run-off and drainage be diverted away from the supply well.
5. The water quality of the proposed supply well is found to be in general accordance with the ODWS. The following exceptions were encountered:

- Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L. A water softener must be introduced to reduce the alkalinity values; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. Based on the quality of the supply aquifer, potassium chloride should be substituted for sodium in the ion exchange system (softener) to lower the alkalinity in the water supply;
- Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however as mentioned above, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water, therefore based on known elevated sodium concentration in the supply aquifer, potassium chloride should be substituted for sodium in the ion exchange system (softener) to lower the hardness in the water supply
- TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L. TDS can be reduced through the use of a water softener. Potassium chloride should be substituted for sodium in the ion exchange system (softener) to lower the hardness in the water supply;
- Turbidity was measured to have a levels are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration, however, are below the AO of 5 NTU and the MCCRT of 5 NTU. If the water is to be disinfected using an ultra-violet filter, it is recommended that the water be pre-treated with a 5 um filter;

- DOC concentrations in the supply aquifer were elevated, which can cause taste, odour, and colour. DOC can be reduced through the use of an activated carbon (AC) filter;
- Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU. The colour can be attributed to the levels of organic materials (tannin and lignin) encountered, which imparts a yellow/brown tinge to the water. The color can be reduced by use of an activated carbon filter.
- Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 MCCRT level of 250 mg/L. Chloride is found in nature in various forms such as in sodium (NaCl), potassium (KCl) and calcium ($CaCl^2$) salts. A reverse osmosis treatment system can be used to lower level of chloride in the supply water;
- Barium concentrations exceeded the ODWS of 1 mg/L with values of 4.17 and 4.22 mg/L. Barium is a naturally occurring element that is found in various minerals. Barium in drinking water is often related to dissolved compounds which migrate through rocks and soil deposits and enter into the supply aquifer. Barium can be treated through the use of an ion exchange system (softener), however caution related to excess soil should be exercised as discussed above; and
- Sodium with a level of 2670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L. It is also above the 20 mg/L warning level notification limit for those on a sodium restricted diet. The local Medical Officer of Health should be notified of these levels so that this information may be communicated to local physicians with regards to homeowners who follow a sodium-restricted diet. The levels of sodium can be reduced through reverse osmosis system.

6. A water quality treatment specialist should be consulted to recommend the proper units, specifications and maintenance frequency, it is considered acceptable to assume the following system can be applied to the proposed development to support suitable drinking water supply to occupants:
    - a water softener that uses potassium chloride as sodium is found to be elevated;
    - Carbon filtration;
    - Iodine dosage;
    - Reverse osmosis;
    - Ultra-violet (UV) light unit with a 5 µm filtration membrane to do reduce turbidity of the water and ensure effectiveness of the UV unit.

    As the property will be used for commercial/light industrial purposes, it is considered feasible for such a system series to be supplied and maintained on a regular basis.
7. Water Treatment options should be considered on an individual basis. Any water treatment system should be maintained on a regular basis in accordance with the manufacturer's recommendations to ensure that it is properly functioning and providing a safe drinking water.
8. The owner should maintain their well as outlined in the Ontario Ministry of Agricultural

and Rural Affairs Best Management Series – Water Wells.

9. Total dissolved solids and chloride concentrations, as mentioned above, are in excess of the defined limit for mineralized water as set out in O. Reg. 903 Wells Regulation. When mineralized water is encountered, the well owner shall immediately abandon the well or will require ministry approval. A formal request for consent to maintain the well was received on August 13, 2024, by the MECP. The conditions specified by the MECP must be followed to maintain the proposed supply well on the Site. The conditions included:
    - Ensure that the well is property vented to the outside atmosphere in a manner that will safely disperse all gases, as per section 15.1 of Regulation 903;
    - The service of a water treatment specialist shall be retained and shall install, operate and maintain a water treatment system in the distribution system, in accordance with recommendations of the water treatment specialist, to address the total dissolved solids and chloride present in the well water prior to the water being used in the building;
    - The water treatment system shall be properly maintained and operational at all times in accordance with the recommendations of the water treatment specialist;
    - All faucets within the building shall be labelled to indicate that the water is not intended for human consumption;
    - The well water shall not be used as a drinking water source under any circumstances by any person and bottled water shall be supplied for consumption by employees;
    - Due to elevated chloride, steps shall be taken to mitigate the impact of corrosion on plumbing including: use of approved PEX pipe and fittings, installations of stainless steel fixtures; and not installing water treatment systems that may increase corrosivity of the water;
    - The well identified by well record number A379014 shall be maintained as per Ontario Regulation 903 until such time as the water supply is no longer required. At that point, the water supply well shall be decommissioned in accordance with Ontario Regulation 903;
    - Once the water treatment system becomes operations, the Owner shall immediately notify, in writing, the Ontario Ministry of the Environment, Conservation and Parks Director appointed for the purpose of subsection 21 (10) of the Well Regulation of the date when the water treatment system is operations. The Director can be contacted through email correspondence to wellshelpdesk@ontario.ca;
    - Failure to comply with the above noted conditions will result in the automatic revocation of the consent without notice;
    - The included consent notice must be reviewed by the Owner and should the property change ownership, the conditions must be presented to the new parties and Owners.
10. The subsurface conditions indicated for the Site are considered suitable for a Class IV septic sewage disposal system with a partially to fully raised leaching bed depending on the specific soil and groundwater conditions at the actual leaching bed locations. Sewage system designs shall be based on specific investigations to evaluate the suitability of local conditions on each lot. The system should be designed using the

percolation time of the native and imported sand and according to the Ontario Building Code (OBC). The leaching beds should be constructed to conform to the specifications set out in the OBC. The septic systems shall be constructed above the groundwater table over the native soil once all organic soils have been stripped from is footprint.

11. Prior to installation of the septic disposal system, an updated application must be filed and approved by the Ontario Septic System Office (OSSO).
12. The septic system should be placed at least 15 m from any drilled supply wells, 30 m from any shallow/dug wells, and at least 3 m from the property boundary limits.
13. It is recommended that the water table be surveyed prior to installation of the sewage disposal systems.

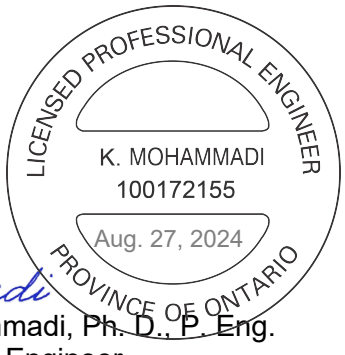
11 LIMITATIONS

The findings contained in this report are based on data and information collected during the Hydrogeological Assessment & Terrain Analysis of the subject property conducted by LRL Engineering. The conclusions and recommendations are based solely on-Site conditions encountered at the time of our fieldwork between April 17 and August 31, 2023, and November 24, 2023, supplemented by historical information and data obtained as described in this report. The information presented in this report represents the groundwater conditions at the locations sampled. Due to natural variations in geological conditions, no inference is made to the soil or groundwater conditions between sampling points. No assurance is made regarding changes in conditions subsequent to the time of this investigation. If additional information is discovered or obtained, LRL Engineering should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

In evaluating the subject property, LRL Engineering has relied in good faith on information provided by individuals as noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretation or fraudulent acts of the persons contacted.

Yours truly,

LRL Engineering



Jessica Arthurs
Environmental Engineering Manager

Kourosh Mohammadi, Ph. D., P. Eng.
Hydrogeological Engineer

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FIGURES

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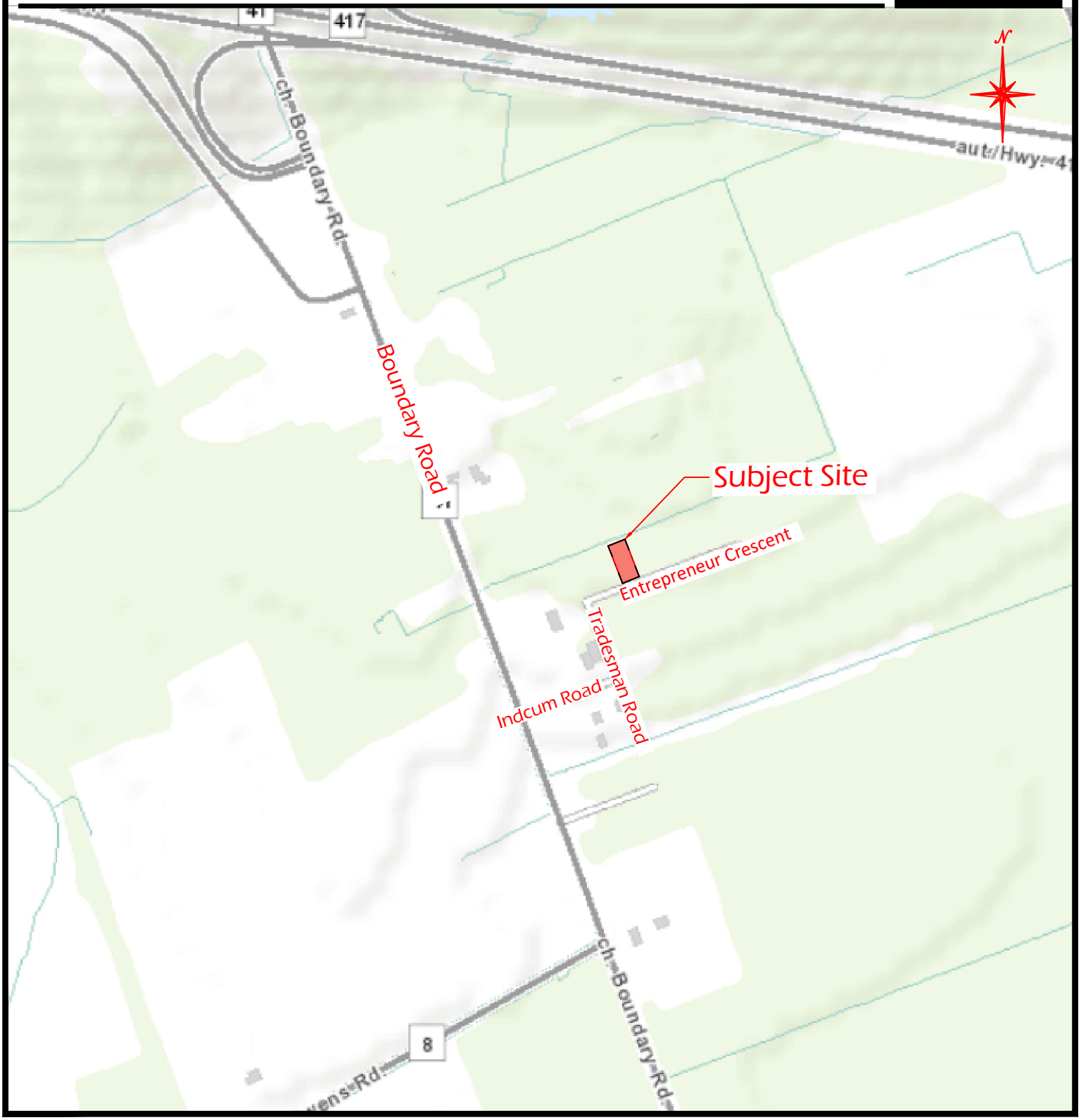
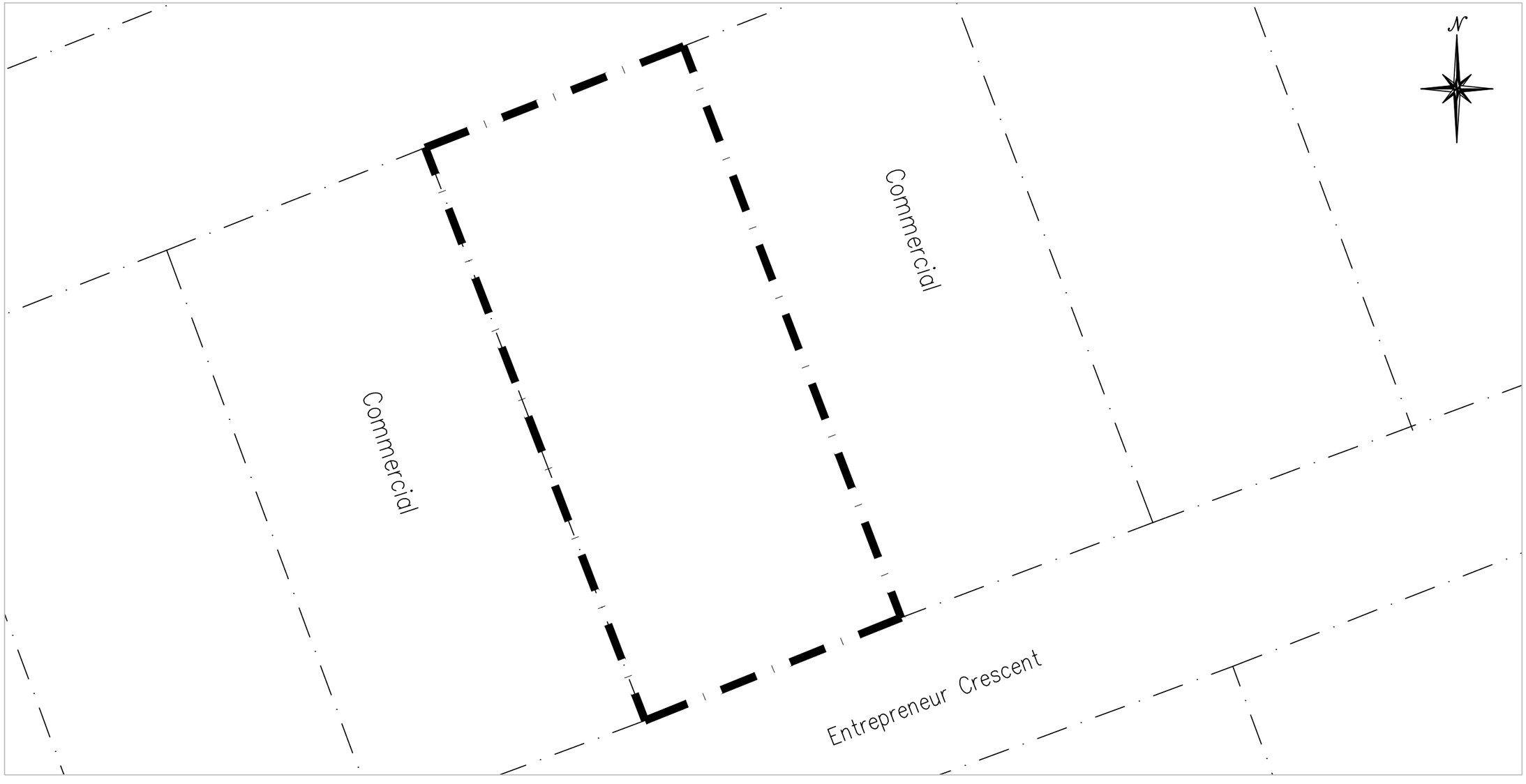
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
SITE LOCATION
(NOT TO SCALE)
SOURCE: GEOOTTAWA

CLIENT	DATE	PROJECT
ENTREPRENEUR HOLDING CORPORATION	SEPTEMBER 2023	220487

FIGURE1





LEGEND

Property Line – Subject Site (363 Entrepreneur Crescent)

Neighbouring Property Boundaries

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	04/09/2023

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CLIENT
ENTREPRENEUR HOLDING CORPORATION

DESIGNED BY:	DRAWN BY:	APPROVED BY:
C.C.	C.C.	J.A.

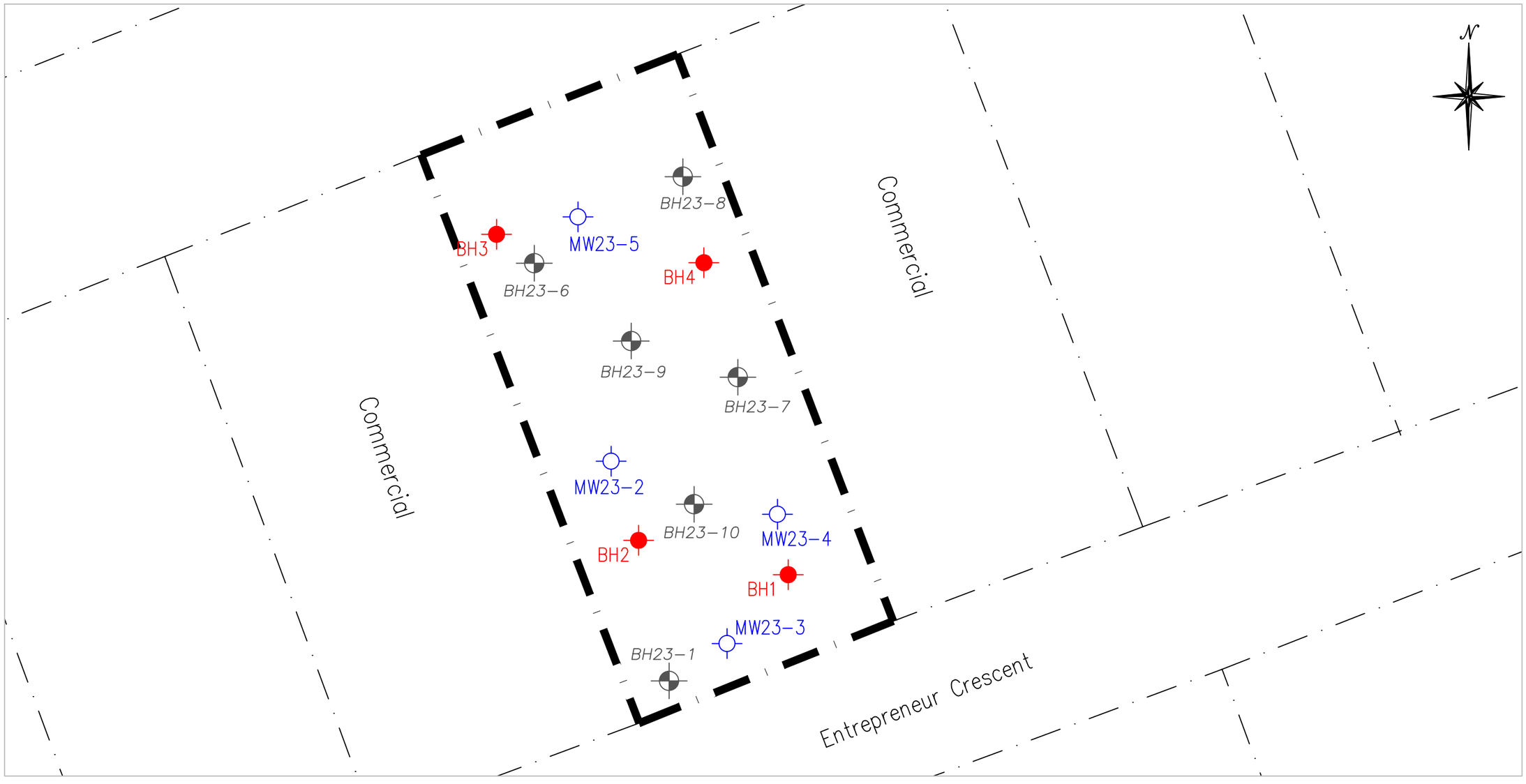
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
SITE PLAN

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE2



LEGEND

- Property Line – Subject Site (363 Entrepreneur Crescent)
- Neighbouring Property Boundaries
- BH–X — Borehole (Phase Two ESA)
- MW23–X — Monitoring Well (Phase Two ESA)
- BHX — Borehole (Geotechnical Investigation)

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	04/09/2023

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CLIENT
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
C.C.	C.C.	J.A.

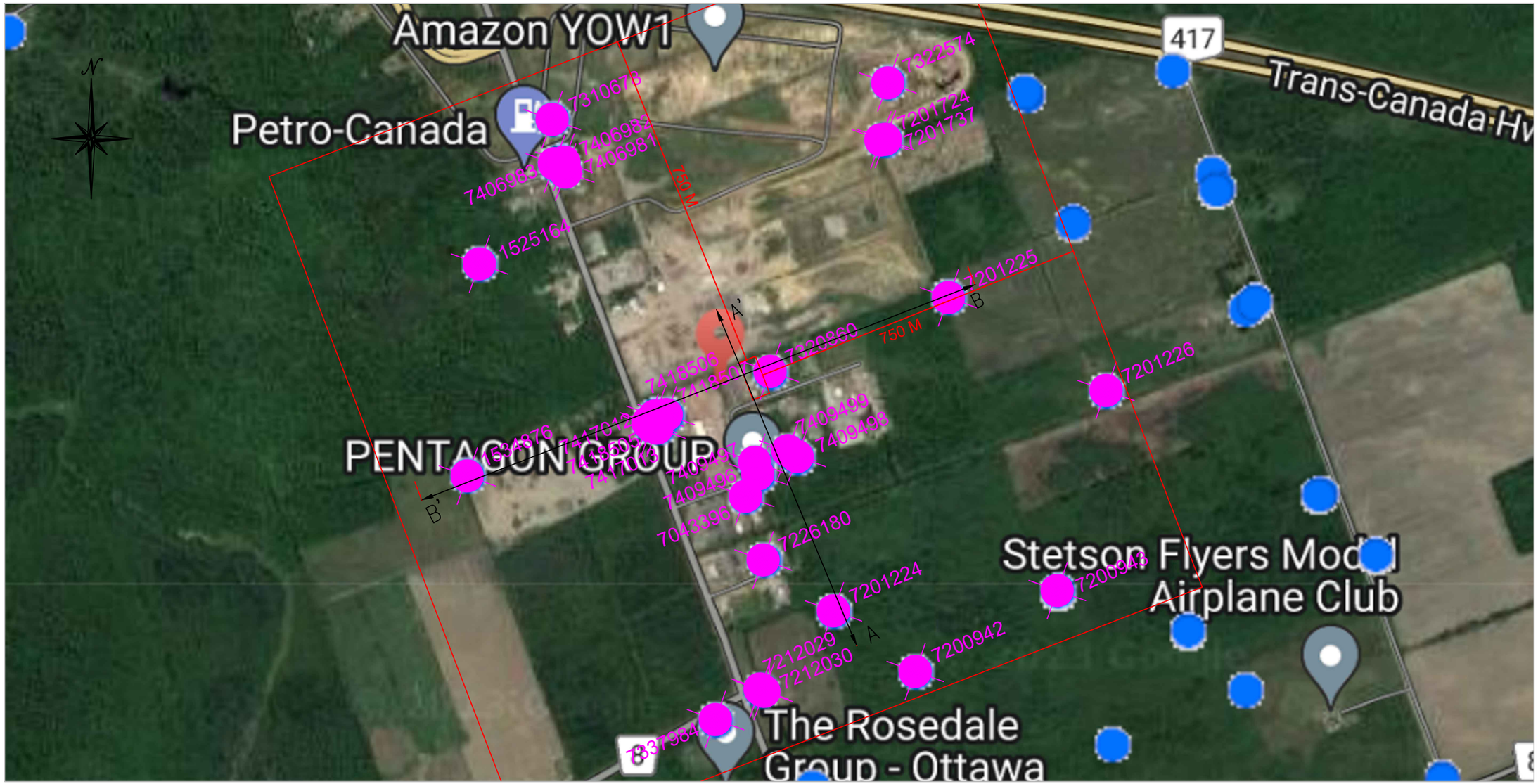
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
PREVIOUS INVESTIGATION - BOREHOLE AND MONITORING WELL LOCATIONS

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE3



Legend

- Property Line – Subject Site (363 Entrepreneur Crescent)
- xxxx — Wells within 500 m of the Site
- BH–X — Borehole
- MW23–X — Monitoring Well

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	12/09/2023

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CLIENT
ENTREPRENEUR HOLDING CORPORATION

DESIGNED BY:	DRAWN BY:	APPROVED BY:
C.C.	C.C.	J.A.

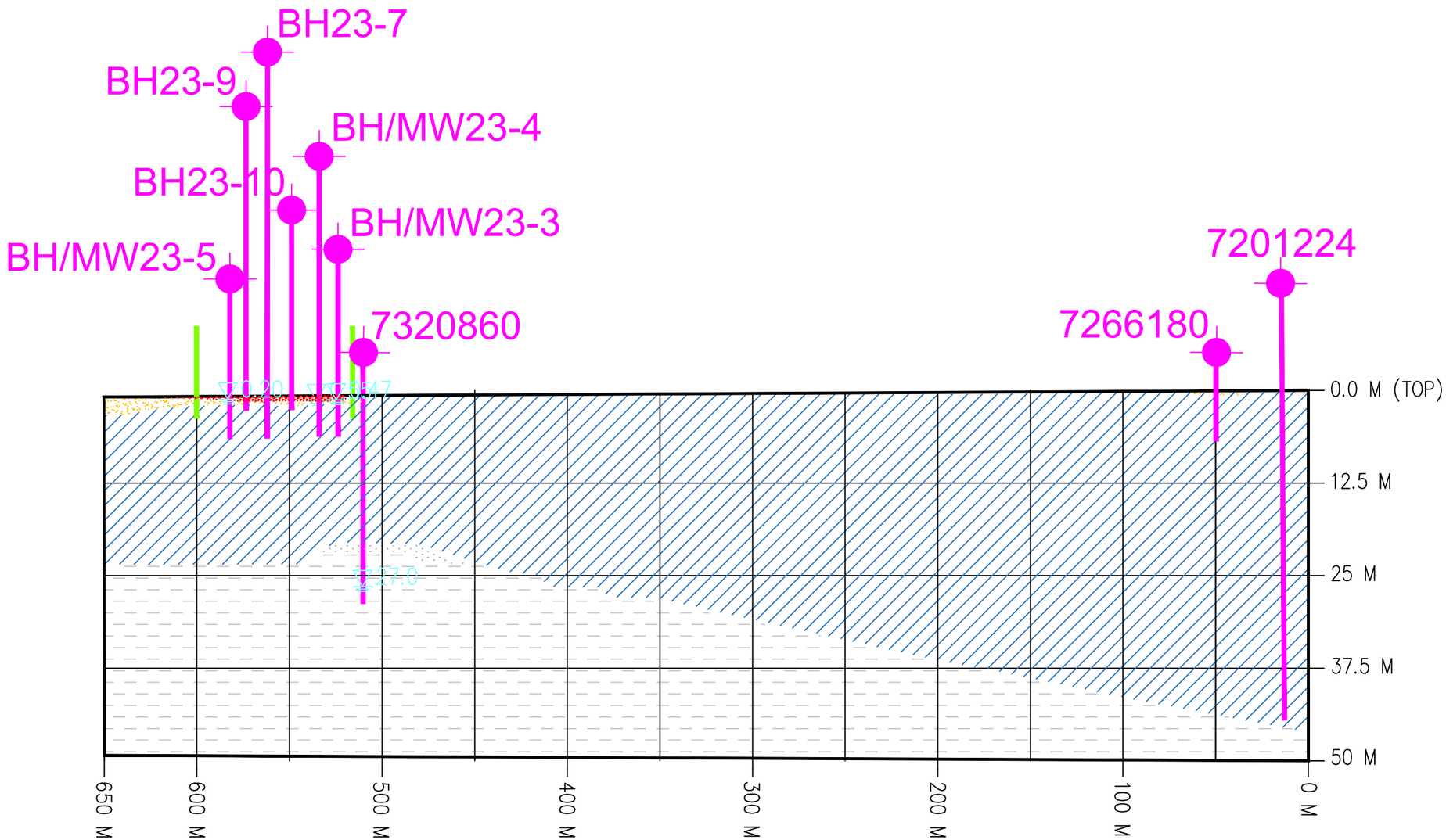
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
WELLS WITHIN 750 m OF THE SITE (SOURCE & BASE LAYER: MECP WELL RECORD DATABASE)

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE4



NORTH A' CROSS SECTION A' – A A SOUTH

LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Gravel
- Bedrock
- Fill

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	05/09/2023

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

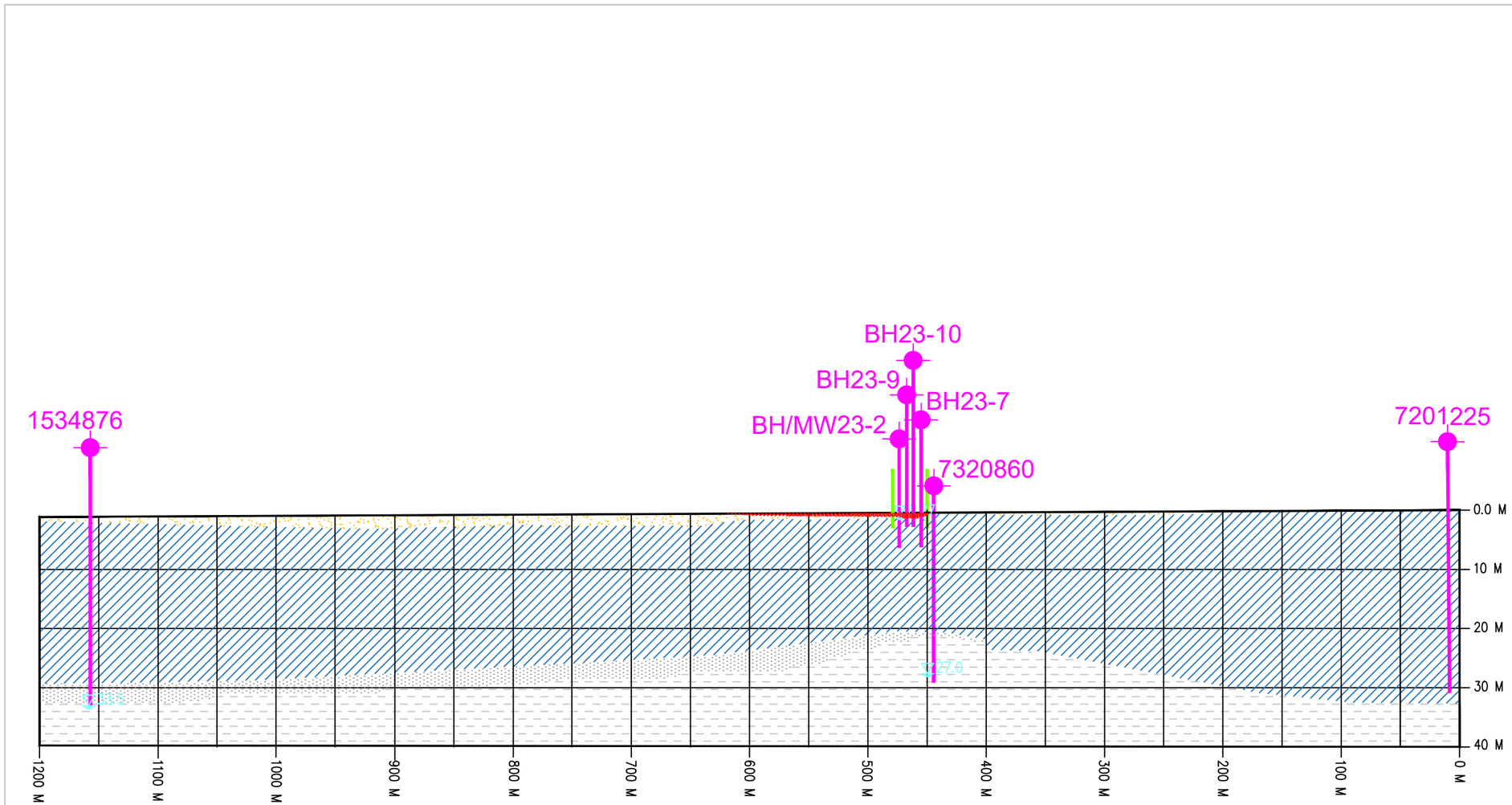
CLIENT
ENTREPRENEUR HOLDING CORPORATION

DESIGNED BY:	DRAWN BY:	APPROVED BY:
C.C.	C.C.	J.A.

PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED COMMERCIAL DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
CROSS SECTION A' - A

FIGURE5A



CROSS SECTION B' – B

LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Gravel
- Bedrock
- Fill

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	05/09/2023

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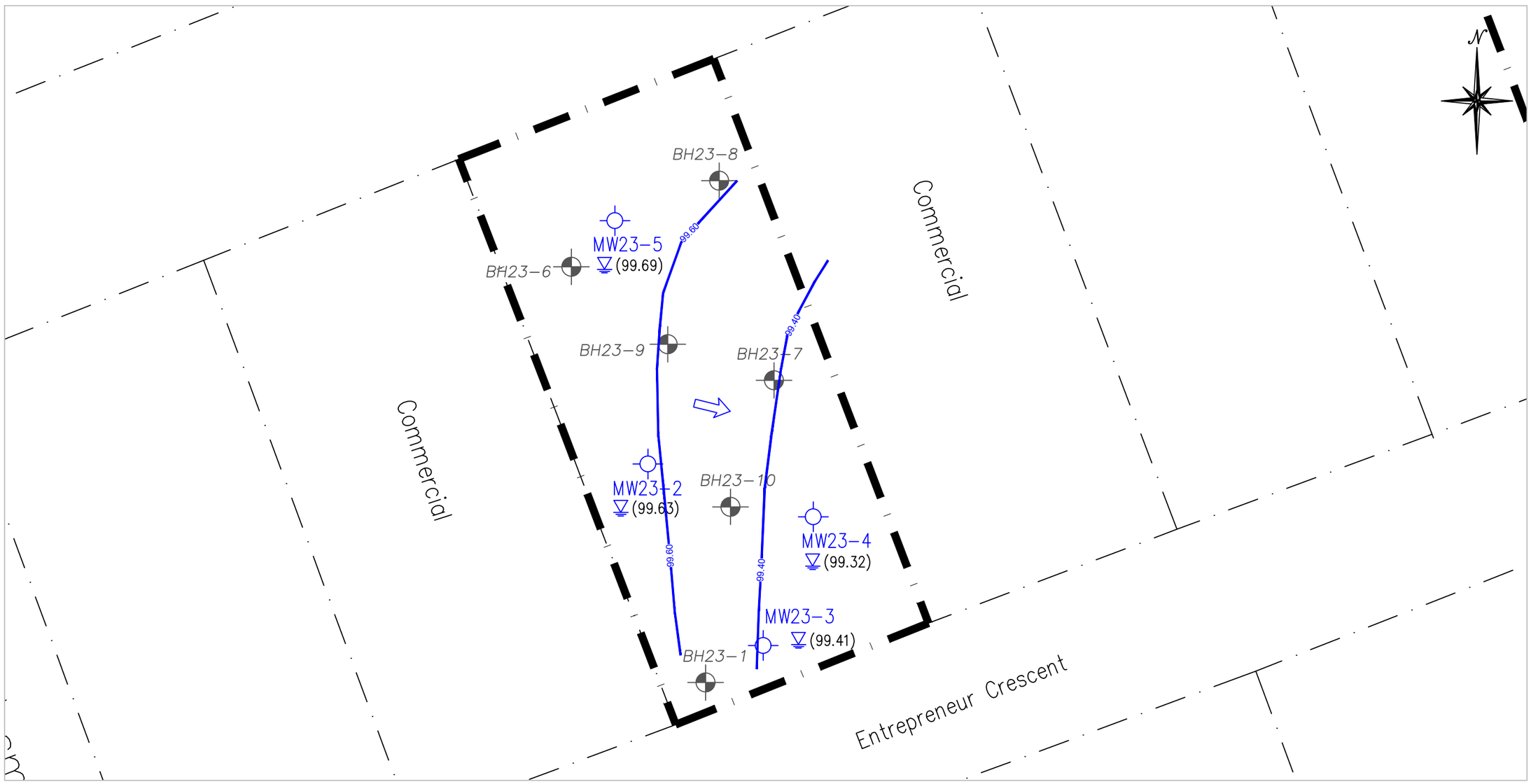
C.C.	C.C.	J.A.

PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED COMMERCIAL DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
CROSS SECTION B' - B

FIGURE5B



LEGEND

- Property Line – Subject Site (363 Entrepreneur Crescent)
- Neighbouring Property Boundaries
- BH–X — Borehole
- MW23–X — Monitoring Well
- Inferred Groundwater Flow Direction
- 99.99 — Groundwater Elevation
- Groundwater Elevation Contour

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	04/09/2023

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CLIENT
ENTREPRENEUR HOLDING CORPORATION

DESIGNED BY:	DRAWN BY:	APPROVED BY:
C.C.	C.C.	J.A.

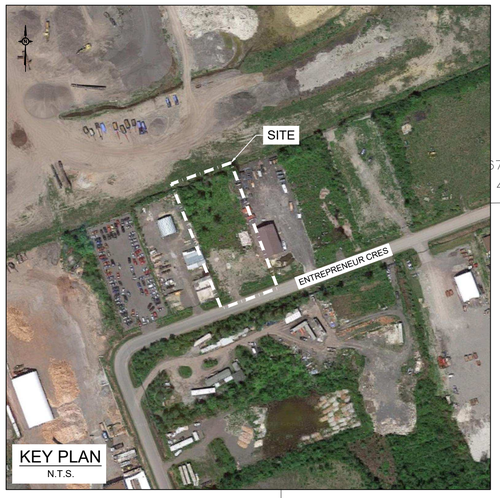
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
GROUNDWATER ELEVATIONS AND CONTOURS (MARCH 16, 2023)

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE 6



part 1 plan 4r-27827
pin 14558 - 0408

PROPOSED NATURALIZED 5m SETBACK AS PER EIS RECOMMENDATIONS & LANDSCAPE ARCHITECT PLAN X

WATERCOURSE TOP OF SLOPE

5m WATERCOURSE TOS SETBACK

PROPOSED WELL (DESIGN BY OTHERS)

TEMPORARY SNOW STORAGE AREA

REAR YARD GRAVEL LOADING / UNLOADING AND VEHICLE MANEUVERABILITY AREA

PROPOSED 85.0m FIRE ROUTE

PROPOSED 1.5m GRASS BUFFER

PROPOSED WAREHOUSE
F.F.E = 77.50
(G.F.A. = ±592m²)

Drilled Well
(Top Elev=77.90)

GRAVEL DRIVEWAY

PROP. 1.0m GRASS BUFFER

PROPOSED CONCRETE SIDEWALK W/ BARRIER CURB

PROPOSED LOCATION FOR SEPTIC TREATMENT SYSTEM (DESIGN BY OTHERS)

PROPOSED LOCATION FOR SEPTIC LEACHING BED (DESIGN BY OTHERS). LEACHING BED TO BE PROTECTED BY BOLLARDS.

SITE E
Nail in Hydro Pole
Elev=77.79

GRAVEL PASSENGER VEHICLE PARKING LOT

PROPOSED UNDERGROUND STORMWATER STORAGE CHAMBERS

PROPOSED STORMWATER PUMP AND CHAMBER

LANDSCAPING AS PER LANDSCAPE ARCHITECT PLAN X

PROPOSED CULVERT REMOVAL & DITCH RE-GRADING

PROPOSED 600mmØ ENTRANCE CULVERT

PROP. TOP OF SLOPE

PROP. BOT. OF DITCH

PROP. TOP OF SLOPE

EDGE OF GRAVEL

CSP 0.5ø Inv.=76.43

CSP 0.5ø Inv.=76.39

Drain (Inv.=76.69)

Centreline of Road

Edge of Asphalt

Edge of Gravel

Metal Building

Metal Container

C/L of Ditch

TOS

CLF 0.19 West

CLF 0.08 West

CLF 0.13 East

SSIB (A0G)

SSIB

Fd. SIB(AOG) Disturbed & Reset

Edge of Gravel

Gravel

BLOCK 3

PLAN 50R-6694

PLAN 4R-27830

pin 14558 - 0356
part 2

pin 14558 - 0401
part 3

pin 14558 - 04
part 4

part 8 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627866

part 9 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627867

part 10 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627868

pin 14558 - 0066

ENTREPRENEUR CRESCENT

REGISTERED

81.38 (P1,P3)&Meas.

81.93 (P1,P3)&Meas.

59.47 (P1,P3)&Meas.

36.76 (P1,P2,P3)&Meas.

36.75 (P1,P3)&Meas.

174.45 (P1,P3)&Meas.

211.20 (P1,P3)&Meas.

N21°20'40"W

N68°39'20"E

22.86m

25.91m

37.3m

12.40m

9.3m

6.7m

2.6m

3.0m

5.0m

4.0m

R9.0m

R12.0m

R15.0m

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED AREA / RUNOFF: WATERSHED NAME, RUNOFF COEFFICIENT, AREA IN HECTARES

DETAILS OF DEVELOPMENT

DATA		REQUIRED	PROVIDED
ZONING		RG2 (RURAL GENERAL INDUSTRIAL ZONE)	
SETBACKS	FY	15.0m	21.6m
	RY	15.0m	34.2m
	INT.SY	3.0m / 1.5m (MV)	1.5m
	EXT.SY	3.0m	12.4m
NET LOT AREA (sqm)		3000 sqm	
BUILDING COVERAGE		50 % (MAX)	19.7 %
BUILDING HEIGHT		15.0 m (MAX)	10.8 m
GROSS FLOOR AREA		592 sqm	
No. of UNITS		1	
LOADING SPACES		N/A	N/A
PARKING:		5	8
No. OF STOREYS			1
OTHER:			

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS 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.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS 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 THESE DRAWINGS 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. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S 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 LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'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 LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m
SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR SITE PLAN CONTROL	K.H.	XX JUL 2024
01	ISSUED FOR SITE PLAN CONTROL	K.H.	10 OCT 2023

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
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www.lrl.ca | (613) 842-3434

CLIENT
DUSTIN WILSON

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT, OTTAWA

DRAWING TITLE
SITE PLAN

PROJECT NO.
220487

DATE
OCT 2022

Figure7

TABLES

Table 1
Summary of Analysis of Water Sample Collected from the Neighbouring Supply Wells - 357 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		357 Entrepreneur - Pre	357 Entrepreneur - Post
Sample Date (d/m/y)						**17-Apr-23**	**17-Apr-23**
Microbiological Parameters							
E. Coli	CFU/100 mL	1	0	MAC		<1	<1
Fecal Coliforms	CFU/100 mL	1	0 [1]	MAC		<1	<1
Heterotrophic Plate Count	CFU/ml	10	--			<10	150
Total Coliforms	CFU/100 mL	1	0/5[1]	MAC		<1	<1
General Inorganics							
Alkalinity, total	mg/L	5	30 - 500	OG		**605**	**16**
Ammonia as N	mg/L	0.01	--			3.28	0.46
Dissolved Organic Carbon	mg/L	0.5	5	AO	10	7.8	<0.5
Colour	TCU	2	5	AO	7	5	<2
Conductivity	uS/cm	5	--			13100	1050
Hardness	mg/L	1	80 - 100	OG		**1050**	**0.00**
pH	pH Units	0.05	6.5 - 8.5	OG		8.2	7.0
Phenolics	mg/L	0.001	--			<0.001	<0.001
Total Dissolved Solids	mg/L	10	500	AO		**7640**	**508**
Sulphide	mg/L	0.02	0.05	AO		0.24	<0.02
Tannin & Lignin	mg/L	0.1	--			0.7	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	--			3.4	0.5
Organic Nitrogen	mg/L		0.15	OG		0.12	0.04
Turbidity	NTU	0.1	1/5[2]	MAC/AO	5	***12.0***	<0.1
Anions							
Chloride	mg/L	1	250	AO	250	***4350***	**302**
Fluoride	mg/L	0.1	1.5[3]/2.4	MAC		0.7	<0.1
Nitrate as N	mg/L	0.1	10	MAC		<0.1	<0.1
Nitrite as N	mg/L	0.05	1	MAC		<0.50	<0.05
Sulphate	mg/L	1	500	AO	500	13	<1
Metals							
Calcium	mg/L	0.1	--			97.8	<0.1
Iron	mg/L	0.1	0.3	AO	5	**1.3**	<0.1
Magnesium	mg/L	0.2	--			196	<0.2
Manganese	mg/L	0.005	0.05	AO	1	0.03	<0.005
Potassium	mg/L	0.1	--			91.4	1.9
Sodium	mg/L	0.2	20[4]/200	AO	200	***2010***	*152*

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 2
Specific Capacity and Longterm Availability
Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File: 220487

Well	Cs - Static mTOC	EOH mTOC	Cp - Pump* mTOC	Cp - Cs	Drawdown (m)	Pumping Rate L/min	*Sc* - Specific Capacity L/sec/m	Qsc -Maximum Pumping Rate L/min	Long Term Availability m^3/day	Qsc GPM (US)	Qsc GPM (IMP)
Proposed Supply Well	2.61	6.25	45.00	42.4	3.64	22.0	0.101	57.2	82.4	15.1	12.6

Notes:

$$Qsc = 0.67\frac{(C_p - C_s)S_c}{SF}$$

Qsc	Pumping rate with safety factor (SF) of 3 (L/min);
$C_p - C_s$	Difference between pump level and static water level (m);
S_c	Specific capacity (L/min/m); and
0.67	Is a factor that compensates for the variation of the static water level due to seasonal variations as well as to drawdown from nearby wells
SF	3
Minimum Demand	1.35 m^3
*	Depth of pump at the time of the pumping test - measured in field
	Greater than Minimum Demand
	Less than Minimum Demand

Table 3A
Summary of Analysis of Water Sample Collected - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		363 Entrepreneur Crescent Supply - 4 Hour	363 Entrepreneur Crescent Supply - 8 Hour
Sample Date (d/m/y)						**30-Aug-23**	**30-Aug-23**
Microbiological Parameters							
E. Coli	CFU/100 mL	1	0	MAC		<1	<1
Fecal Coliforms	CFU/100 mL	1	0 [1]	MAC		<1	<1
Heterotrophic Plate Count	CFU/ml	10	--			90	40
Total Coliforms	CFU/100 mL	1	0/5[1]	MAC		2	1
General Inorganics							
Alkalinity, total	mg/L	5	30 - 500	OG		**703**	**705**
Ammonia as N	mg/L	0.01	--			4.72	4.71
Dissolved Organic Carbon	mg/L	0.5	5	AO	10	**9.4**	**8.5**
Colour	TCU	2	5	AO	7	**8**	**8**
Conductivity	uS/cm	5	--			14300	14200
Hardness	mg/L	1	80 - 100	OG		**1020**	**1030**
pH	pH Units	0.05	6.5 - 8.5	OG		8.2	8.3
Phenolics	mg/L	0.001	--			<0.001	<0.001
Total Dissolved Solids	mg/L	10	500	AO		**7950**	**7880**
Sulphide	mg/L	0.02	0.05	AO		0.23	0.23
Tannin & Lignin	mg/L	0.1	--			0.7	0.7
Total Kjeldahl Nitrogen	mg/L	0.1	--			4.7	4.7
Organic Nitrogen	mg/L		0.15	OG		-0.02	-0.01
Turbidity	NTU	0.1	1/5[2]	OG/AO	5	**3.8**	**3.5**
Anions							
Chloride	mg/L	1	250	AO	250	***4560***	***4460***
Fluoride	mg/L	0.1	1.5[3]/2.4	MAC		0.2	0.2
Nitrate as N	mg/L	0.1	10	MAC		<0.1	<0.1
Nitrite as N	mg/L	0.05	1	MAC		<0.25	<0.25
Sulphate	mg/L	1	500	AO	500	3	4

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 3B
Summary of Analysis of Water Sample Collected (Metals) - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		363 Entrepreneur Crescent Supply - 4 Hour	363 Entrepreneur Crescent Supply - 8 Hour
Sample Date (d/m/y)						**30-Aug-23**	**30-Aug-23**
Metals							
Aluminum	mg/L	0.001	0.1	AO		0.025	0.018
Antimony	mg/L	0.0005	0.006	MAC		<0.0005	<0.0005
Arsenic	mg/L	0.001	0.01	MAC		<0.001	<0.001
Barium	mg/L	0.001	1	MAC		**4.17**	**4.22**
Beryllium	mg/L	0.0005				<0.0005	<0.0005
Boron	mg/L	0.01	5	MAC		0.79	0.76
Cadmium	mg/L	0.0001	0.005	MAC		<0.0001	<0.0001
Calcium	mg/L	0.1				48.3	49.0
Chromium	mg/L	0.001	0.05			<0.001	<0.001
Cobalt	mg/L	0.0005				<0.0005	ND (0.0005)
Copper	mg/L	0.0005	1	AO		<0.0005	ND (0.0005)
Iron	mg/L	0.1	0.3	AO	5	0.3	0.3
Lead	mg/L	0.0001	0.01	MAC		<0.0001	ND (0.0001)
Magnesium	mg/L	0.2				218	220
Manganese	mg/L	0.005	0.05	AO	1	0.009	0.007
Molybdenum	mg/L	0.0005				<0.0005	ND (0.0005)
Nickel	mg/L	0.001				<0.001	ND (0.001)
Potassium	mg/L	0.1				61.3	63.3
Selenium	mg/L	0.001	0.05	MAC		<0.001	ND (0.001)
Silver	mg/L	0.0001				<0.0001	ND (0.0001)
Sodium	mg/L	0.2	20/200	MAC/AO	200	***2670***	***2620***
Strontium	mg/L	0.01				5.71	5.71
Thallium	mg/L	0.001				ND (0.001)	ND (0.001)
Tin	mg/L	0.01				ND (0.01)	ND (0.01)
Titanium	mg/L	0.005				ND (0.005)	ND (0.005)
Tungsten	mg/L	0.01				ND (0.01)	ND (0.01)
Uranium	mg/L	0.0001	0.02	MAC		ND (0.0001)	ND (0.0001)
Vanadium	mg/L	0.0005				ND (0.0005)	ND (0.0005)
Zinc	mg/L	0.005	5	AO		ND (0.005)	ND (0.005)

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MOECC D-5-5 guideline, maximum concentration considered reasonably treatable

Table 3C
Summary of Analysis of Water Sample Collected (VOC) - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

			Sample	
Parameter	**Units**	**MRL**	**363 Entrepreneur Crescent Supply - 4 Hour**	**363 Entrepreneur Crescent Supply - 8 Hour**
Sample Date (d/m/y)			**30-Aug-23**	**30-Aug-23**
Volatile Organic Compounds (VOCs)				
Acetone	mg/L	0.0050	<0.0050	<0.0050
Benzene	mg/L	0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/L	0.0005	<0.0005	<0.0005
Bromoform	mg/L	0.0005	<0.0005	<0.0005
Bromomethane	mg/L	0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/L	0.0002	<0.0002	<0.0002
Chlorobenzene	mg/L	0.0005	<0.0005	<0.0005
Chloroethane	mg/L	0.0010	<0.0010	<0.0010
Chloroform	mg/L	0.0005	<0.0005	<0.0005
Dibromochloromethane	mg/L	0.0005	<0.0005	<0.0005
Dichlorodifluoromethane	mg/L	0.0010	<0.0010	<0.0010
Ethylene dibromide (dibromoethane, 1,2-)	mg/L	0.0002	<0.0002	<0.0002
1,2-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,4-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,1-Dichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, total	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloropropane	mg/L	0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropylene	mg/L	0.0005	<0.0005	<0.0005
trans-1,3-Dichloropropylene	mg/L	0.0005	<0.0005	<0.0005
1,3-Dichloropropene, total	mg/L	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005
Hexane	mg/L	0.0010	<0.0010	<0.0010
Methyl Ethyl Ketone (2-Butanone)	mg/L	0.0050	<0.0050	<0.0050
Methyl Isobutyl Ketone	mg/L	0.0050	<0.0050	<0.0050
Methyl tert-butyl ether	mg/L	0.0020	<0.0020	<0.0020
Methylene Chloride	mg/L	0.0050	<0.0050	<0.0050
Styrene	mg/L	0.0005	<0.0005	<0.0005
1,1,1,2-Tetrachloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/L	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0005	<0.0005	<0.0005
1,1,1-Trichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	mg/L	0.0005	<0.0005	<0.0005
Trichloroethylene	mg/L	0.0005	<0.0005	<0.0005
Trichlorofluoromethane	mg/L	0.0010	<0.0010	<0.0010
Vinyl Chloride	mg/L	0.0002	<0.0002	<0.0002
m/p-Xylene	mg/L	0.0005	<0.0005	<0.0005
o-Xylene	mg/L	0.0005	<0.0005	<0.0005
Xylenes, total	mg/L	0.0005	<0.0005	<0.0005

Table 4
Langelier and Ryznar Calculations

Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Analyzed Parameters

TDS (mg/L)	7880
Hardness(mg/L)	1030
alkalinity(mg/L)	705
pH (pH units)	8.3
Temperature °C	10

Langelier

LSI = pH - pHs

pHs = (9.3 +A+B) - (C+D) Where

A= (Log10(TDS)-1)/10	=	0.2896526
B= (-13.12*Log10(T°C+273)+34.55	=	2.382562
C= Log10(Hardness)-0.4	=	2.6128372
D= Log10(Alkalinity)	=	2.8481891

Ryznar

RI=2pHs-pH

pHs=	6.511188
LSI=	1.788812
RI=	4.722376

Table 5
Nitrate Attenuation Calculations
Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File: 220487

1. Potential Infiltration

Weather Station Ottawa

No.	Section Area (m^2)	Infiltration Factor (IF)[1]							Moisture Surplus (MS)				Potential Infiltration (PI) (IF*MS) (mm)	
		Topography	Value	Soil	Value	Cover	Value	Total	Ground Cover	Soil Type	Moisture Retention[2] (mm)	Moisture Surplus[3] (mm)	Section	Weighted
1	3,000	Flat	0.3	Clay Loam	0.2	Cultivated Land	0.1	0.6	Shallow Rooted Crops	4 Clay Loam	100	363	217.8	217.8
Total	3,000												**Total**	217.8

2. Area Available for Infiltration

Number of Lots		n	1	
Approximate footprint of house/garage		H	1382	m^2
Approximate area of paved driveways		d[4]	970	m^2
Approximate Length of Road		L	0	m
Approximate Width of Road		w	0	m
Total Area of Property			3000	m^2
Impervious Area			2352.0	m^2
	Roads	l x w	0 m^2	
	Driveway	n x d	970 m^2	
	Houses	n x H	1382 m^2	
Area available Infiltration		A	648	m^2

3. Nitrate Diluation Calculations

Nitrate Concentration of Infiltration	C_i	0	mg/L
Site Infiltration	$Q_i = A*PI$	141	m^3
Daily Sewage Volume per Lot [5]	Q_d	1.31	m^3
Maximum Yearly Sewage Volume (water)	$Q_e=365*n*Q_d$	478	m^3
Nitrate Concentration in Sewage[6]	C_e	12	mg/L
Maximum Allowable Nitrate Concentration at Boundary	C_m	10.0	mg/L
Increase in Nitrate Concentration at Boundaries	$C = (Q_eC_e+Q_iC_i)/(Q_e+Q_i)$	9.27	mg/L

NOTES

1 Table 2: Infiltration Factors, *Hydrogical Technical Information Requirements for Land Development Applications*, Ministry of the Energy and Environment, April 1995.

2 Thornthwaite and Mather's (1957) Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance.

3 Moisture surplus for data for Ottawa ON (Environment Canada Meteorological Service of Canada, 2010).

4 As per the proposed site development plan

5 Although the *Technical Guideline for Individual On-Site Sewage Systems: Water Quality and Impact Risk Assessment*, Ministry of the Energy and Environment, August 1996 indicates 1 m^3 as the daily sewage volume per lot, the septic designer for this project has indicated that a more accuate value would be 1.31 m^3 per day.

ATTACHMENT A

Topographic Survey Plan

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF BLOCK 3
REGISTERED PLAN 50M-136
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 400

16 12 8 4 0 8 16 Metres

Metric

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

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the regulations made under them.
2. The survey was completed on December 8, 2022.

Dec 14/22
Date

Tyler J. Allison
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-33900

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR IN ACCORDANCE WITH Regulation 1026, Section 29 (3)

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(WIT)	"	Witness
Meas.	"	Measured
(P1)	"	Plan 4R-27830
(P2)	"	Plan 4R-32589
(P3)	"	Plan 50R-6694
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
—OH—	"	Overhead Wires
UP	"	Utility Pole
CSP	"	Corrugated Steel Pipe
Inv.	"	Invert
CLF	"	Chain Link Fence
TOS	"	Top of Slope
+65.00	"	Location of Elevations
C/L	"	Centreline

Bearings are grid, derived and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

LOT 22 CONCESSION II
PART 7 PLAN 4R-32589
PART 1 PLAN 4R-27827
PIN 14558 - 0408

SITE BENCHMARK
Nail in Hydro Pole
Elev=77.79

SUBJECT TO EASEMENT PER INST. OC1627867

SUBJECT TO EASEMENT PER INST. OC1627866

SUBJECT TO EASEMENT PER INST. OC1627868

BLOCK 9
0.5 Reserve

BLOCK 1 PLAN 4 PART 50R-6774

TRADESMAN ROAD

REGISTERED PLAN

BLOCK 3 50M-136

PART 1
PIN 14558 - 0356
PART 2

PIN 14558 - 0401
PART 3

PIN 14558 - 0402
PART 4

PART 5 PLAN 50R-6774

PART 8 PLAN 4R-27830

PART 9 PLAN 4R-27830

PART 10 PLAN 4R-27830

PART 14 PLAN 4R-27830

PART 15 PLAN 4R-27830

50R-6694

ENTREPRENEUR CRESCENT
PIN 14558 - 0066

(N 67° 48' 00" E Pl. P3)
N 67° 48' 50" E (P2)&Set

(N67°49'00"E P1,P3)
N67°49'50"E (P2)&Set

94.39 (P2)&Set

190.62 (P1,P2,P3)&Meas.

59.47 (P1,P3)&Meas.

120.76 (P1,P2,P3)&Set

36.76 (P1,P2,P3)&Set

36.75 (P1,P3)&Set

81.38 (P1,P3)&Meas.

81.93 (P1,P3)&Meas.

80.43

1.50

6.0

174.45 (P1,P3)&Meas.

211.20 (P1,P3)&Meas.

N21°20'40"W

N68°39'20"E

Fd. SIB(AOG) Disturbed & Reset

SIB (AOG)

SSIB (AOG)

IB (WIT)

C/L of Ditch

Edge of Gravel

TOS

CLF 0.19 West

CLF 0.13 East

Gravel

Metal Containers

Drilled Well (Top Elev=77.90)

Metal Building

Edge of Gravel

Drain (Inv.=76.69)

C/L of Ditch

Edge of Asphalt

CSP 0.5ø Inv.=76.43

CSP 0.5ø Inv.=76.39

Centreline of Road

OH

UP

SIB (AOG)

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
165 Bay Street
Embrun, Ont. K0A 1W1
Phone: (613) 443-3364
Email: Embrun@aovltd.com
Ontario Land Surveyors

Job No. E-2488-22 BIN

ATTACHMENT B

Borehole Logs – Previous Investigations

Symbols and Terms Used on Borehole and Test Pit Logs

The following explains the data presented in the borehole and test pit logs.

1. Soil Description

The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves some judgement and LRL Associates Ltd. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. Boundaries between zones on the logs are often not distinct but transitional and were interpreted.

a. Proportion

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

b. Compactness and Consistency

The state of compactness of granular soils is defined on the basis of the Standard Penetration Test. See Section 2c for more details. The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by field vane tests and by a visual and tactile assessment of the soil strength.

The state of compactness of granular soils is defined by the following terms:

State of Compactness Granular Soils	Standard Penetration Number "N"
Very loose	0 – 4
Loose	4 – 10
Compact or medium	10 - 30
Dense	30 - 50
Very dense	over - 50

The consistency of cohesive soils is defined by the following terms:

Consistency Cohesive Soils	Undrained Shear Strength (Cu) (kPa)
Very soft	under 10
Soft	10 - 25
Medium or firm	25 - 50
Stiff	50 - 100
Very stiff	100 - 200
Hard	over - 200

2. Sample Data

a. Elevation depth

This is a reference to the geodesic elevation of the soil or to a benchmark of an arbitrary elevation at the location of the borehole or test pit. The depth of geological boundaries is measured from ground surface.

b. Type

Symbol	Type	Letter Code
	Auger	AU
	Split spoon	SS
	Shelby tube	ST
	Rock Core	RC

c. Sample Number

Each sample taken from the borehole is numbered in the field as shown in this column.

LETTER CODE (as above) – Sample Number

d. Blows (N) or RQD

This column indicates the Standard Penetration Number (N) as per ASTM D-1586. This is used to determine the state of compactness of the soil sampled. It corresponds to the number of blows

required to drive 300 mm of the split spoon sampler using a 622 kg*m/s^2 hammer falling freely from a height of 760 mm. For a 600 mm long split spoon, the blow counts are recorded for every 150 mm. The "N" index is obtained by adding the number of blows from the 2nd and 3rd count. Technical refusal indicates a number of blows greater than 50.

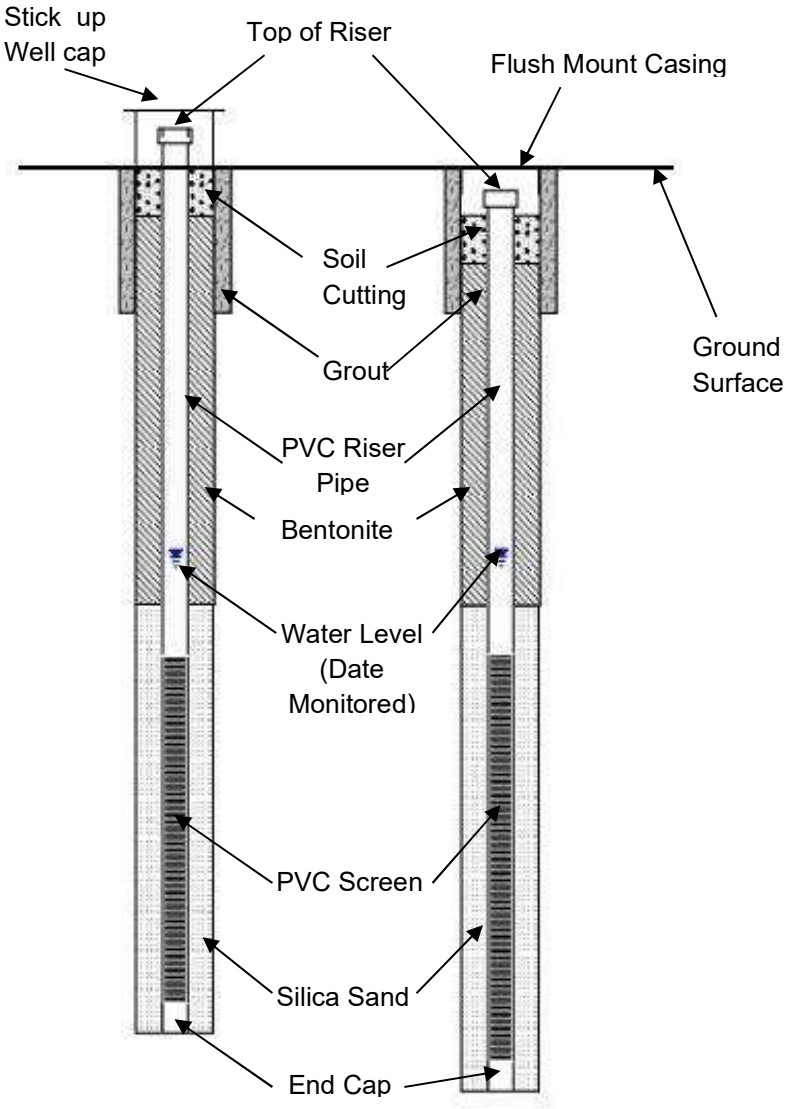
In the case of rock, this column presents the Rock Quality Designation (RQD). The RQD is calculated as the cumulative length of rock pieces recovered having lengths of 10 cm or more divided by the length of coring. The qualitative description of the bedrock based on RQD is given below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 –25	very poor
25 – 50	poor
50 – 75	fair
75 – 90	good
90 – 100	excellent

e. Recovery (%)

For soil samples this is the percentage of the recovered sample obtained versus the length sampled. In the case of rock, the percentage is the length of rock core recovered compared to the length of the drill run.

3. General Monitoring Well Data



Borehole Log: BH1

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)
0 / 0	Ground Surface	100.28				
0 – 3 / 0 – 1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00		SS1	34	42
				SS2	19	58
3 – 4 / 1	**SILTY SAND** brown, moist, compact.	99.22 1.07				
4 – 13 / 1 – 4	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	98.83 1.45		SS3	4	50
				SS4	WH	100
				SS5	WH	100
13 – 21 / 4 – 6	**SILTY CLAY** grey, very soft, wet.	96.16 4.12		SS6	WH	100
				SS7	WH	100
23 / 7	End of Borehole	93.28 7.00				

Shear Strength (kPa) 50 150

SPT N Value (Blows/0.3 m) 20 40 60 80

Water Content (%) 25 50 75

Liquid Limit (%) 25 50 75

Monitoring Well Details

SS1: SPT N Value 34; Water Content 9

SS2: SPT N Value 19

SS3: SPT N Value 4; Water Content 37

SS4: SPT N Value 0

SS5: SPT N Value 0; Water Content 87

SS6: SPT N Value 100+, 44, 0, 24, 24

SS7: SPT N Value 0, 24, 24; Water Content 76

Easting: 465773 m **Northing:** 5020883 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.285 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA								
Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface	100.17							
0 – 1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00		SS1	30	42	30		
		99.57							
2 – 3 / 1	**SILTY SAND** brown, moist, compact.	0.60		SS2	15	50	15	22	
		98.72							
4 – 6 / 1 – 2	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45		SS3	1	50	1		
7 – 8 / 2				SS4	WH	58	0	65	
9 – 11 / 3				SS5	WH	75	0		
12 – 13 / 4		96.05					20		
	SILTY CLAY grey, very soft, wet.	4.12					30		
14 – 16 / 5				SS6	WH	100	0		
17 – 18							24		
19							30		

Easting: 465762 m **Northing:** 5020885 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.165 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
20									
21				SS7	WH	100	0	85	
22							24		
23	7						24		
24							0		
25							0		
26	8						0		
27							0		
28							0		
29							0		
30	9						0		
31							0		
32							0		
33	10						0		
34							0		
35							0		
36	11						0		
37							0		
38							0		
39									

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
40							0		
41							0		
42							0		
43	13						5		
44							5		
45							6		
46	14						6		
47							7		
48							7		
49							6		
50	15						7		
51							9		
52							8		
53	16						9		
54							10		
55							11		
56	17						12		
57							13		
58							12		
59							13		

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
60							17		
61		81.56					21		
	INFERRED GLACIAL TILL	18.60					20		
62	19						14		
63							20		
64							15		
65							15		
66	20						15		
67							15		
68							13		
69	21						18		
70							15		
71							15		
72	22						16		
73							17		
74							17		
75							16		
	23						27		
76							35		
77							47		
78									

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
79							44		
80							50		
		75.67							
	End of Borehole	24.50							
81									
82	25								
83									
84									
85									
	26								
86									
87									
88									
	27								
89									
90									
91									
92	28								
93									
94									
95	29								
96									
97									
98									

NOTES

Borehole Log: BH3

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft)	Depth (m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	SPT N Value (Blows/0.3 m)	Liquid Limit (%)	Monitoring Well Details
		Ground Surface	100.18							
0	0	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00							
2			99.49		SS1	36	50	36	11	
3	1	**SILTY SAND** brown, moist, compact.	0.69							
4					SS2	14	50	14		
5			98.73							
5		**CLAYEY SILT** trace sand, grey, very soft, wet.	1.45							
6	2				SS3	1	100	1	83	
8								20		
9								32		
10	3				SS4	WH	100	0		
11		-Sand seam at about 3.65 m bgs								
13	4		96.06							
14		**SILTY CLAY** grey, very soft, wet.	4.12							
15					SS5	WH	100	0	61 90	
16	5									
17								32		
18								32		
19										
20	6									
21										
22								24		
23	7		93.18					24		
24		End of Borehole	7.00							

Shear Strength (kPa) 50 150

Water Content (%) 25 50 75

Liquid Limit (%) 25 50 75

Monitoring Well Details: ▼ 0.5 m bgs Dec 6, 2022

Easting: 465745 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.180 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** 19 mm

NOTES:

Borehole Log: BH4

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface	100.22							
0 – 1 / 0	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 – 99.63		SS1	35	33	35		
3 – 4 / 1	**SILTY SAND** brown, moist, compact.	0.60 – 98.77		SS2	14	50	14	24	
5 – 13 / 2 – 4	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45 – 96.10		SS3	2	100	2	67 / 77	
							24		
							24		
10 – 11 / 3				SS4	WH	100	0		
13 – 23 / 4 – 7	**SILTY CLAY** grey, very soft, wet.	4.12 – 93.22					24		
							22		
							26		
							24		
							28		
							24		
23 / 7	End of Borehole	7.00							

Easting: 465770 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.225 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

BOREHOLE LOG: BH23-1

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1 (SS50)		100	PHC, VOC, Metals & General Inorganics	0.1	
		99.03								
1.0 / 3.0	**SAND:** Silty, brown, moist becoming saturated with depth.	0.85			SS2				<0.1	
		98.68								
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.65 - 4.50 m bgs), grey, brown at (1.20 - 1.95 m bgs), saturated.	1.20			SS3			PHC & VOC	<0.1	
2.0 / 6.0							100			
					SS4			PAH & PCB	<0.1	
					SS5				<0.1	
3.0 / 10.0							100			
					SS6				<0.1	
4.0 / 13.0					SS7				<0.1	
							100			
					SS8				<0.1	
5.0 / 16.0					SS9				<0.1	
							100			
					SS10				<0.1	
6.0 / 20.0	End of Borehole	93.88 / 6.0								

EASTING: 18T 0465761 **NORTHING:** 5020902

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-2

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

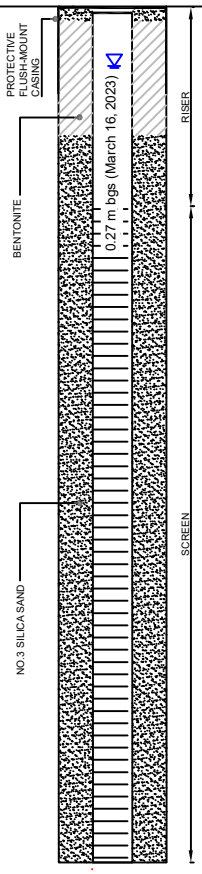
CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.90							
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1 (SS40)		100	PHC, VOC, Metals & General Inorganics	0.2
1.0 / 1.0	**SAND:** Silty, brown, moist.	99.05 / 0.85			SS2				<0.1
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.60 - 4.80 m bgs), brown becoming grey at (1.95 m bgs), saturated.	98.70 / 1.20			SS3		100		<0.1
2.0 / 2.0					SS4				<0.1
					SS5				<0.1
3.0 / 3.0					SS6		100		<0.1
4.0 / 4.0					SS7				<0.1
					SS8		100		<0.1
5.0 / 5.0					SS9				<0.1
6.0 / 6.0	End of Borehole	93.90 / 6.0			SS10		100		<0.1

MONITORING WELL DETAILS



Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

EASTING: 18T 0465753 **NORTHING:** 5020904

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.90 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-3

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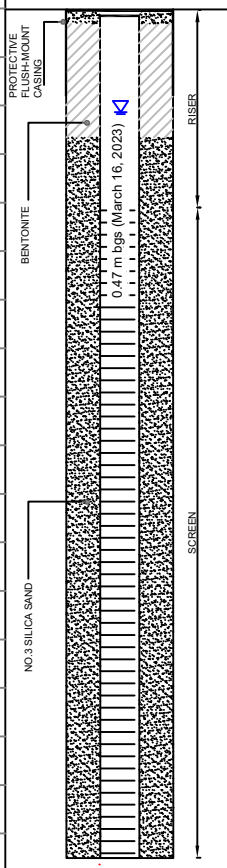
PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV/DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1		69	PHC, VOC, Metals & General Inorganics	0.1	
		99.03								
1.0 / 3.0	**SAND:** Silty, green, moist.	0.85			SS2			PHC & VOC	<0.1	
		98.68								
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.60 - 4.25 m bgs), brown becoming grey at (1.95 m bgs), some red at (1.95 - 2.4 m bgs) and at (4.25 - 4.8 m bgs), saturated.	1.20			SS3		100	Metals & General Inorganics	<0.1	
2.0 / 7.0					SS4			PAH & PCB	<0.1	
					SS5		100		<0.1	
3.0 / 10.0					SS6				<0.1	
					SS7		100		<0.1	
4.0 / 13.0					SS8				<0.1	
5.0 / 16.0					SS9		100		<0.1	
6.0 / 18.0					SS10				<0.1	
		93.88								
20.0	End of Borehole	6.0								



Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

EASTING: 18T 0465763 **NORTHING:** 5020877

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-4

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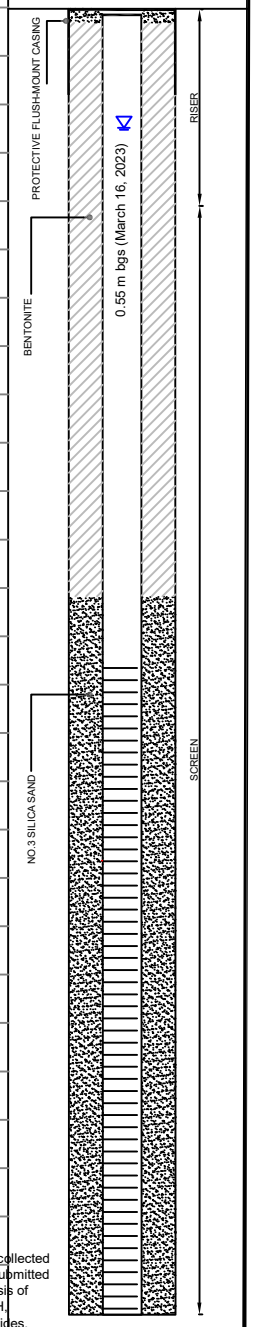
PROJECT NO.: 220487
PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT
CLIENT: ENTREPRENEUR HOLDING CORPORATION
LOCATION: 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO
DATE: MARCH 13, 2023
FIELD PERSONNEL: ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.87							
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1		65	Metals & General Inorganics	0.1
1.0 / 1.0	**SAND:** Silty, brown, moist.	1.0 / 98.87			SS2			PHC & Metals	<0.1
	CLAY: Silty sandy at (1.20 - 2.0 m bgs), silty at (3.60 - 4.25 m bgs), brown becoming grey at (2.0 m bgs), saturated.	1.20			SS3		100	Metals & General Inorganics	<0.1
2.0 / 2.0					SS4			PAH & PCB	<0.1
3.0 / 3.0					SS5		100		<0.1
					SS6				<0.1
4.0 / 4.0					SS7		100		<0.1
					SS8				<0.1
5.0 / 5.0					SS9		100		<0.1
6.0 / 6.0					SS10				<0.1
	End of Borehole	93.87 / 6.0							

Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

MONITORING WELL DETAILS



EASTING: 18T 0465769 **NORTHING:** 5020895

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.87 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-5

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

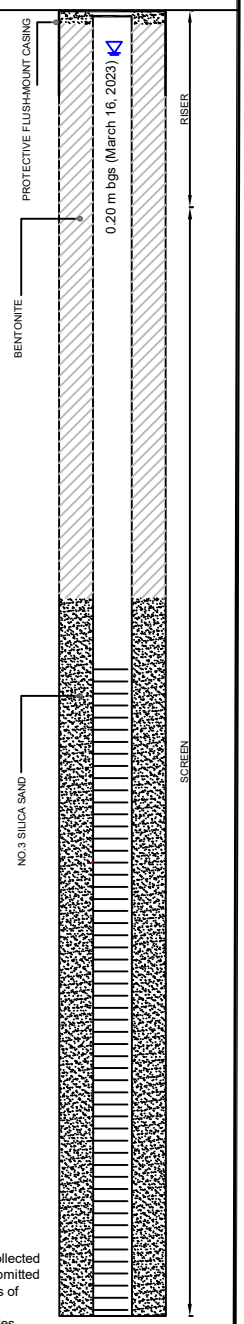
DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.89							
	FILL: Sand and gravel, brown at (0.0 - 0.2 m bgs) followed by grey to (0.9 m bgs) followed by red stone to (1.0 m bgs), moist.	0.00			SS2 (SS20)		75	PHC, VOC, Metals & General Inorganics	0.3
1.0		98.89							
	SAND: Silty, brown, moist.	1.0			SS2				0.2
		98.69							
	CLAY: Silty at (1.20 - 1.75 m bgs), brown becoming grey at (1.75 m bgs), some red, saturated.	1.20			SS3			PHC, VOC, & Metals	0.1
2.0					SS4		100		<0.1
					SS5				<0.1
3.0					SS6		100		<0.1
4.0					SS7				<0.1
					SS8		100		<0.1
5.0					SS9				<0.1
					SS10		100		<0.1
6.0	End of Borehole	93.89 / 6.0							

Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

MONITORING WELL DETAILS



EASTING: 18T 0465749 **NORTHING:** 5020933

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-6

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.90								
	FILL: Sand and gravel, brown at (0.0 - 0.35 m bgs) followed by grey to (0.85 m bgs), dry, loose.	0.00			SS1		100		0.1	
		99.05								
1.0 /	**SAND:** Silty, brown, moist.	0.85			SS2			PHC, VOC, Metals & General Inorganics	0.1	
		98.70								
	CLAY: Silty sandy at (1.20 - 1.9 m bgs), silty at (4.8 - 6.0 m bgs), brown becoming grey with depth, saturated, the sampling tube was empty at (3.6 - 4.8 m bgs) due to high water content.	1.20			SS3				<0.1	
2.0 /					SS4		100		<0.1	
					SS5				<0.1	
3.0 /					SS6		100		<0.1	
4.0 /										
5.0 /					SS7				<0.1	
					SS8		100		<0.1	
6.0 /	End of Borehole	93.90 6.0								

Combustible Soil Vapours (ppm): 10 30 50 70 90
ISOBUTYLENE (ppm): 200 600 1000 1400 1800

EASTING: 18T 0465743 **NORTHING:** 5020927

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.90 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-7

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) 10 30 50 70 90 / ISOBUTYLENE (ppm) 200 600 1000 1400 1800	MONITORING WELL DETAILS
0.0 / 0.0		99.89								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00			SS1		71	PHC, VOC, Metals & General Inorganics	0.3	
3.0 / 1.0	**SAND:** Silty, brown, moist.	1.0 / 98.89			SS2				<0.1	
4.0	**CLAY:** Silty at (1.20 - 1.95 m bgs) and at (3.6 - 4.20 m bgs), grey, brown at (1.20 - 1.95 m bgs), some red at (1.20 - 2.4 m bgs) and at (4.8 - 6.0 m bgs), saturated.	1.20			SS3		100	Metals	<0.1	
7.0 / 2.0					SS4				<0.1	
9.0					SS5		100		<0.1	
10.0 / 3.0					SS6				<0.1	
13.0 / 4.0					SS7		100		<0.1	
14.0					SS8				<0.1	
16.0 / 5.0					SS9		100		<0.1	
18.0					SS10				<0.1	
20.0 / 6.0	End of Borehole	93.89 / 6.0								

EASTING: 18T 0465765 **NORTHING:** 5020919

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-8

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.87								
	FILL: Sand and gravel, grey, moist.	0.00			SS1		92		0.1	
		98.07								
3.0 / 1.0	**SAND:** Silty to (1.10 m bgs). followed by silty clayey, brown with some red spots, wet.	0.80			SS2			PHC, VOC, Metals & General Inorganics	<0.1	
		98.67								
4.0	**CLAY:** Silty at (1.20 - 1.95 m bgs), grey, grey-brown at (1.20 - 1.95 m bgs), some red at (1.95 - 2.4 m bgs), saturated.	1.20			SS3			Metals	<0.1	
6.0 / 2.0							100			
7.0					SS4				<0.1	
8.0					SS5				<0.1	
10.0 / 3.0							100			
11.0					SS6				<0.1	
12.0					SS7				<0.1	
13.0 / 4.0										
14.0					SS8		100		<0.1	
15.0										
16.0 / 5.0					SS9				<0.1	
17.0										
18.0					SS10		100		<0.1	
19.0										
20.0 / 6.0		93.87								
	End of Borehole	6.0								

EASTING: 18T 0465756 **NORTHING:** 5020940

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.87 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-9

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road| Ottawa, ON, K1J 9G2
www.lrl.ca| (613) 842-3434

PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.89								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00			SS1		92	PHC, VOC, Metals & General Inorganics	<0.1	
		98.89								
1.0 /	**SAND:** Silty, brown, moist.	1.0			SS2				<0.1	
		98.69								
	CLAY: Silty at (1.20 - 1.85 m bgs), grey-brown with some red at (1.20 - 1.85 m bgs) followed by grey at (1.85 - 2.4 m bgs), saturated.	1.20			SS3		100		<0.1	
2.0 /					SS4				<0.1	
		97.49								
	End of Borehole	2.4								
3.0 /										
4.0 /										
5.0 /										
6.0 /										

EASTING: 18T 0465765 **NORTHING:** 5020921

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-10

LRJ ENGINEERING | INGÉNIERIE
5430 Canotek Road| Ottawa, ON, K1J 9G2
www.lrl.ca| (613) 842-3434

PROJECT NO.: 220487
PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT
CLIENT: ENTREPRENEUR HOLDING CORPORATION
LOCATION: 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO
DATE: MARCH 14, 2023
FIELD PERSONNEL: ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) 10 30 50 70 90 / ISOBUTYLENE (ppm) 200 600 1000 1400 1800	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00 / 99.03			SS1		90	PHC, VOC, Metals & General Inorganics	<0.1	
1.0 / 3.0	**SAND:** Silty, brown, moist.	0.85 / 98.68			SS2			Metals	<0.1	
4.0	**CLAY:** Silty at (1.20 - 1.9 m bgs), grey-brown with some red at (1.20 - 1.9 m bgs), followed by grey with red at (1.9 - 2.4 m bgs), saturated.	1.20			SS3		100		<0.1	
2.0 / 7.0					SS4				<0.1	
8.0	End of Borehole	97.48 / 2.4								
3.0 / 10.0										
4.0 / 13.0										
5.0 / 16.0										
6.0 / 20.0										

EASTING: 18T 0465761 **NORTHING:** 5020893

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

ATTACHMENT C

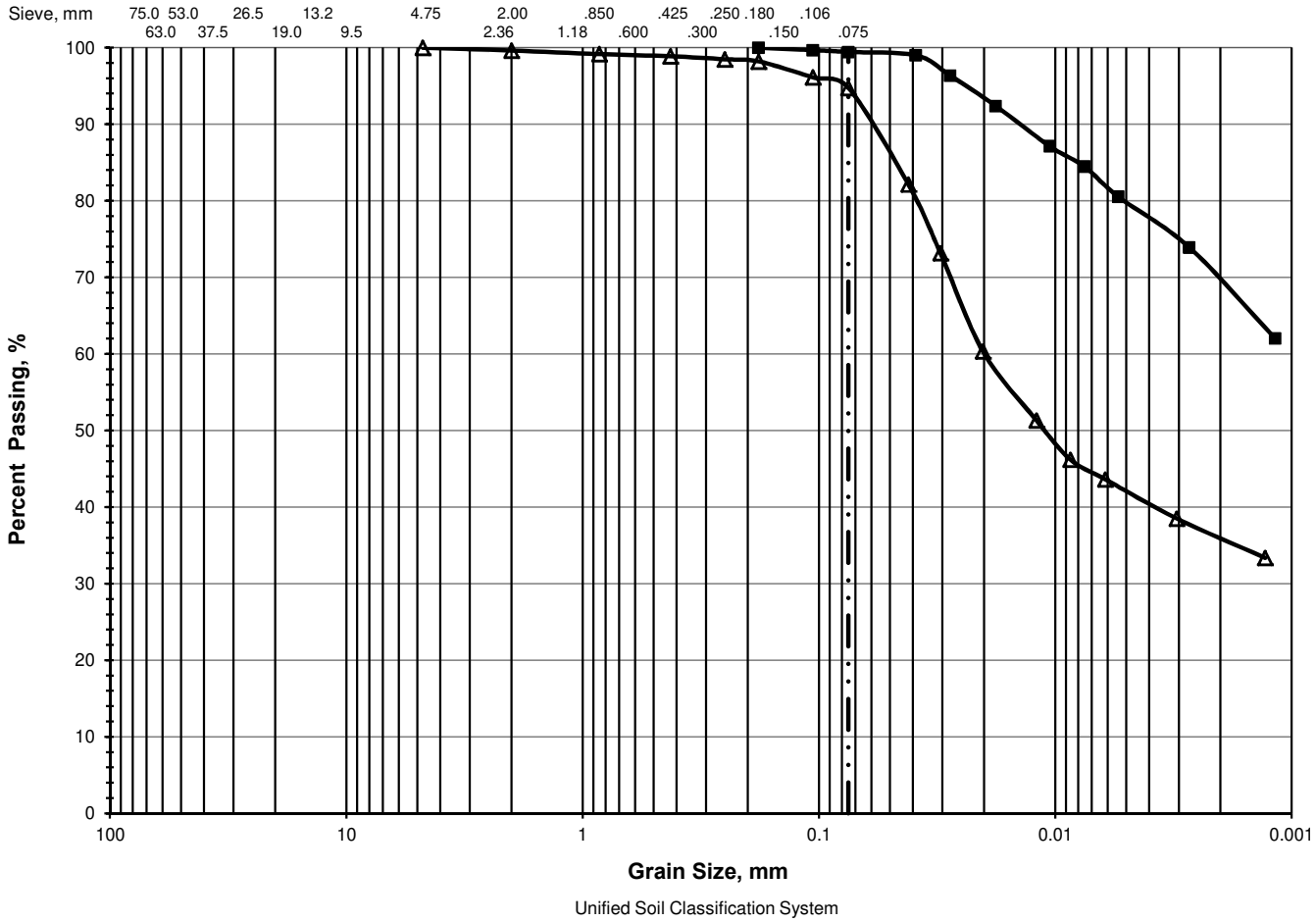
Gradation Analytical Report

LRL Associates Ltd.

PARTICLE SIZE ANALYSIS

ASTM D 422 / LS-702

Client:	Entrepreneur Holding Corporation	**File No.:**	220487
Project:	Geotechnical Investigation	**Report No.:**	2
Location:	363 Entrepreneur Crescent, Navan, ON.	**Date:**	November 17, 2022



Unified Soil Classification System

	> 75 mm	% GRAVEL		% SAND			% FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
△	0.0	0.0	0.0	0.4	0.8	4.1	59.3	35.4
■	0.0	0.0	0.0	0.0	0.0	0.6	31.0	68.4

	Location	Sample	Depth, m	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
△	BH 1	SS-3	1.52 - 2.13	0.0199	0.0111					
■	BH 2	SS-7	6.10 - 6.71							

ATTACHMENT D

MECP Water Well Records

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☒ Imperial

W Tag#:A379014 (Print Below)

A379014

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Dustin Wilson		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
310 Sanctuary Private	Ottawa	ON	K1S 5W1	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
363 Entrepreneur Crescent	Cumberland	23	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Navan	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465760	5020936	50R-6694	

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	Depth (m/ft) To
	Clay			0'	86'
	Gravel			86'	92'
Black	~~Sandstone~~ Shale			92'	154'
Black	~~Sandstone~~ Shale			154'	160'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
98'	88'	Neat cement	12.48
88'	0'	Bentonite slurry	21.00

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion SURGED
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	98'
6"	Open Hole		98'	160'

Construction Record - Screen

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

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth From	Depth To	Diameter (cm/in)
154 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☒ Other, specify	0'	98'	9 3/4"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	98'	160'	6"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

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

Pump intake set at (m/ft): 150

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 103.2"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 150'

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

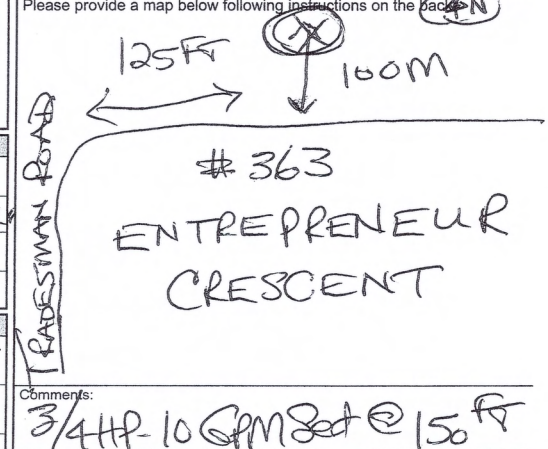
Well production (l/min/GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	92"		103.2"
1	22.4	1	87
2	31.9	2	78.6
3	37.5	3	71.1
4	42.2	4	63.8
5	46.4	5	57.4
10	61.7	10	32.8
15	71.9	15	19.7
20	79.4	20	11.3
25	85.1	25	9.5
30	89.9	30	9.2
40	97	40	9.2
50	100.9	50	9.2
60	103.2"	60	9.2"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4HP-10GPM Set @ 150 ft

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7681

Business Address (Street Number/Name)	Municipality
6859 Franktown Road	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3632		2023 09 29

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2023 08 28	Audit No. Z408138
	Date Work Completed: 20230823	Received

Ministry of the Environment
Ontario
OTTAWA - CARLETON

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 1525164 MUNICIP 15002 CON. CON 09

COUNTY OR DISTRICT [redacted] | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Gloucester | CON. BLOCK, TRACT, SURVEY, ETC 9 | LOT 1

[redacted] Carlsbad Springs | DATE COMPLETED DAY 3 MO 5 YR 90

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Yellow	Sand	Loam	Loose	0	2
Blue	Clay		Dense	2	70
Grey	Till		Packed	70	77
Grey	Limestone		Layered	77	100

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
95	1 ☐ FRESH 2 ☐ SALTY 3 ☒ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	77
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		77	100
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
2	77	Clay

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	25 GPM	1 HOURS 0 MINS

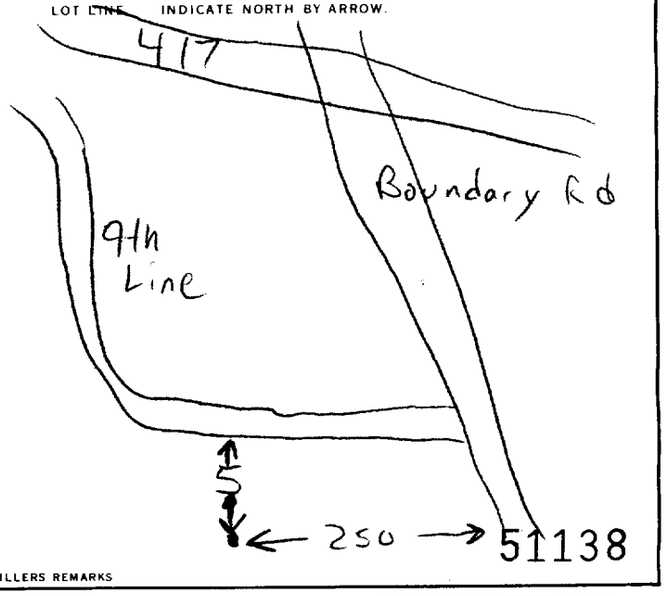
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	40 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	16 FEET	26 FEET	36 FEET	40 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	40 FEET	1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	40 FEET	25 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☒ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Roy's LBR Ltd | WELL CONTRACTOR'S LICENCE NUMBER: 4609

ADDRESS: Cornwall

NAME OF WELL TECHNICIAN: Roger Rox | WELL TECHNICIAN'S LICENCE NUMBER: T-0330

SIGNATURE OF TECHNICIAN/CONTRACTOR | SUBMISSION DATE DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 4609 | DATE RECEIVED DEC 04 1990

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A012415

A012415

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN 1K 00 2 CON OF LOT 02

Well Owner's Information and Location of Well Information

[redacted]

Plan 50M-136 Pt BLK1 | Cumberland (Ottawa) | RR2-3 | RPS 0176 Y 20

RR#/Street Number/Name: 145 Orleans Rd. Carlsbad Springs

City/Town/Village: Carlsbad Spring

Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone 18 | Easting 465747 | Northing 5020692

Unit Make/Model: Magellan

Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (feet)	Depth To (feet)
Brown	Sandy soil	clay		0	5
grey	clay			5	15
blue	clay			15	95
grey	hard pan	gravel		95	109
grey	rock			109	110

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	110	6"

Water Record

Water found at Metres	Kind of Water		
110' m	☐ Fresh	☐ Sulphur	☑ Salty
☐ Gas	☐ Other:	☐ Minerals	
___ m	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Other:	☐ Salty	☐ Minerals
___ m	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Other:	☐ Salty	☐ Minerals

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
6 1/4	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	188"	0	109'
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Sub.

Pump intake set at - (metres) 52'

Pumping rate - (litres/min) 40

Duration of pumping ___ hrs + ___ min

Final water level end of pumping ___ metres

Recommended pump type. ☐ Shallow ☑ Deep

Recommended pump depth. 50' metres

Recommended pump rate. 50 (litres/min)

If flowing give rate - (litres/min) C

If pumping discontinued, give reason. C

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		2.60		2.77
1	1	2.70	1	2.65
2	2	2.70	2	2.64
3	3	2.70	3	2.63
4	4	2.72	4	2.62
5	5	2.72	5	2.61
10	10	2.72	10	2.60
15	15	2.74	15	2.60
20	20	2.74	20	2.60
25	25	2.75	25	2.60
30	30	2.75	30	2.60
40	40	2.75	40	2.60
50	50	2.76	50	2.60
60	60	2.77	60	2.60

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - Metres From	Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	30'	grout.	3 bag.

Method of Construction

☑ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

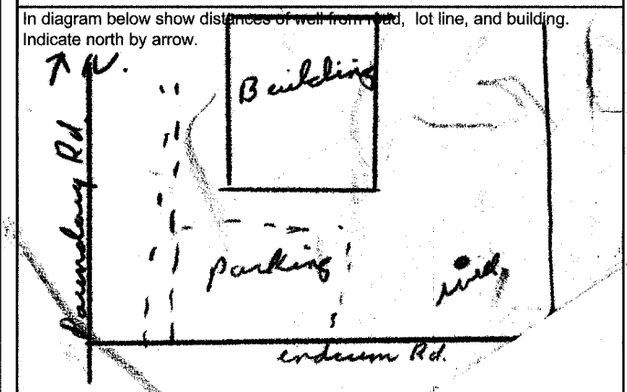
☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 12477

Date Well Completed: 2004 / 05 / 27

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: 2004 / 05 / 27

Well Contractor/Technician Information

Name of Well Contractor: Maurice Cayer ltd

Well Contractor's Licence No.: 1517

Business Address (street name, number, city etc.): Cassleman ont

Name of Well Technician (last name, first name)

Well Technician's Licence No.

Signature of Technician/Contractor: X Maurice Cayer

Date Submitted: 2004 / ___ / ___

Ministry Use Only

Data Source

Contractor: 1517

Date Received: AUG 18 2004

Date of Inspection

Remarks

Well Record Number: 1534876

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A053936 / A053936

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 3

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality): OTTAWA - City

Township: Cumberland

Lot: 2

Concession: 11

RR#/Street Number/Name: 120 Indcum

City/Town/Village: CARLSBAD-ON

Site/Compartment/Block/Tract etc.: 50R-6420

GPS Reading: NAD 83 | Zone 18 | Easting 457123 | Northing 5020642

Unit Make/Model: Magellan

Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify: UTM

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	Clay		Soft	0	0.90
Red	Clay		Soft	0.90	3.63
Grey	Clay		Soft	3.63	30.30
Grey	Gravel		Soft	30.30	31.51
Grey	SHALE		Porous	31.51	32.42

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	7.57	20.32

Water Record

Water found at Metres / Kind of Water

- 31.51 m: ☐ Fresh ☑ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ____ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ____ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☑ Clear and sediment free ☐ Other, specify

Chlorinated: ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.55	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.48	0	31.51
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
15.55	☑ Open hole		31.51	32.42

Test of Well Yield

Pumping test method: Submercible

Pump intake set at - (metres): 9.09

Pumping rate - (litres/min): 58.50

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping: 3.04 metres

Recommended pump type: ☑ Shallow ☐ Deep

Recommended pump depth: 9.09 metres

Recommended pump rate: 45.50 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		2.89		3.04
1	3.20		1	2.89
2	3.17		2	
3	3.12		3	
4	3.10		4	
5	3.10		5	
10	3.08		10	
15	3.04		15	
20	3.04		20	
25	3.04		25	
30	3.04		30	
40	3.04		40	
50	3.04		50	
60	3.04		60	

Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	7.57	Cement Grout	120 Kgs.

Method of Construction

☐ Cable Tool ☑ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

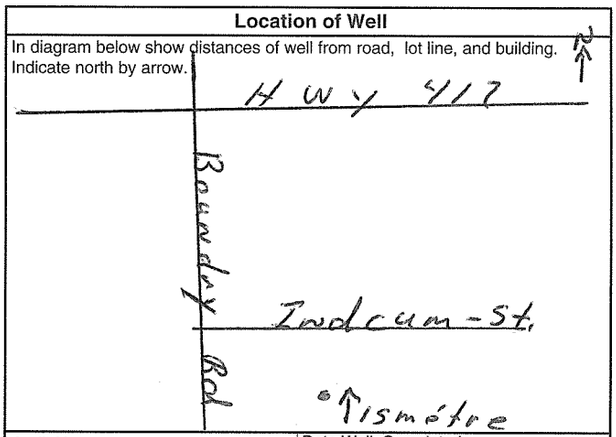
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☑ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 71657

Date Well Completed: YYYY 2007 MM 04 DD 26

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: YYYY 2007 MM 04 DD 26

Well Contractor/Technician Information

Name of Well Contractor: DXR-WATER-well-Drilling

Well Contractor's Licence No.: 6006

Business Address (street name, number, city etc.): CP 98 - St-Albert - ON

Name of Well Technician (last name, first name): Louis Desnoyers

Well Technician's Licence No.: T-625

Signature of Technician/Contractor: X [signature]

Date Submitted: YYYY 2007 MM 04 DD 26

Ministry Use Only

Data Source

Contractor: 6006

Date Received: YYYY MAY 09 2007 MM DD

Date of Inspection: YYYY MM DD

Remarks

Well Record Number

0506E (08/2006)

Ministry's Copy

Cette formule est disponible en français

Ontario Ministry of the Environment

Measurements recorded in: ~~Metric~~ ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*

Tag#: A145269 A145269

5-13834

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Regis Resources	Recovery Centre Ltd.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
705 - 225 Metcalfe St.	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Frontier Rd.			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OTTAWA	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	460975	5020251		

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	Depth (m/ft) To
Brown	Sand.	organics	Soft, Loose.	0	.91
Grey	Clay		Loose, Soft	.91	1.5

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	.31	Bensel.	
.31	1.5	Sand.	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* Direct push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☒ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	plastic	.356	0	.5

Status of Well

☐ Water Supply
☐ Replacement Well
☒ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Construction Record - Screen

Outside Diameter *(cm/in)*	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.27	plastic	10	.5	1.5

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter *(cm/in)*
0	1.5	11.43

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time *(min)*	Draw Down Water Level *(m/ft)*	Recovery Time *(min)*	Recovery Water Level *(m/ft)*
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

Labelled
13-14-3
S on Map

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Soil Sampling	7241

Business Address (Street Number/Name)	Municipality
2-147 West Beaver Creek Rd.	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9057649304	Parsons Robert

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3122		2013/03/28

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2013/03/26

Ministry Use Only

Audit No. Z152745

Received APR 30 2013

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C-724/
215245

APR 30 2013

Ontario — Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)* **Tag#: A145268** A145268

5-13834

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery centre Ltd		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
205 - 225 Metcalfe st.	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Rochester Rd.			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OTTAWA	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466412	5020426		

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	Depth (m/ft) To
Brown	Sand	organics	soft, loose.	0	.91
Grey	Clay		wet.	.91	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	3.96	Bonseal	
3.96	6.4	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, specify Direct push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☒ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	plastic	.356	0	4.88

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	plastic	10	4.88	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☒ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	11.43

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping _____ hrs + _____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

Labelled 13-15-3 P on Map

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Soil Sampling	7241

Business Address (Street Number/Name)	Municipality
2-147 west Beaver creek Rd.	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9052649304	Parsons Robert

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3122	Robert	20130328

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		20130326

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C-7241
2152746

APR 30 2013

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* **A111206** ✓

13-6-3

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Golder	Capital Region Resource	–	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P 1P9	6133454456

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5800 Frontier Rd	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A 3H0.

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	459142	5020386		

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	Depth (m/ft) To
GRAY	CLAY	SAND TILL ROCK		0	147 10'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		bentonite Tablets	
		bentonite-grout with portland	
		bentonite chips	

Method of Construction

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, *specify* ____

☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

☐ Public ☐ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, *specify* ____

☐ Commercial ☑ Municipal ☑ Test Hole ☐ Cooling & Air Conditioning

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2 1/4	PLASTIC	1/8	0	147 10'

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* ____

If pumping discontinued, give reason: ____

Pump intake set at *(m/ft)* ____

Pumping rate *(l/min / GPM)* ____

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)* ____

If flowing give rate *(l/min / GPM)* ____

Recommended pump depth *(m/ft)* ____

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

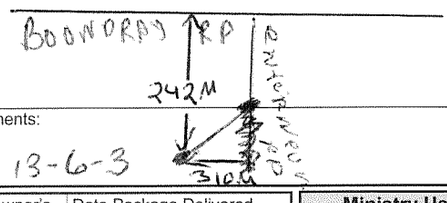
Well production *(l/min / GPM)* ____

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 13-6-3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co ltd	6594

Business Address (Street Number/Name)	Municipality
6847 Hiram Dr	Greely

Province	Postal Code	Business E-mail Address
ON	K4P 1A2	mwebb@marathondrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138722057	Webb, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013/09/25

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	Y Y Y Y M M D D	Y Y Y Y M M D D

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Ontario — Ministry of the Environment

13-05-40

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A111204 N

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Gordon	Capital Region Resource	—	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5506 Frontier Rd	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A3H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466179	5021081		

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	Depth (m/ft) To
GRAY	CLAY	SAND & Till Rock		0	103 ft

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		Bentonite Tablets	
		Bentonite grout & Portland	
		Bentonite Chips	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
1"		1/8	0	103 ft

Construction Record - Screen

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

Status of Well

☐ Water Supply
☑ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

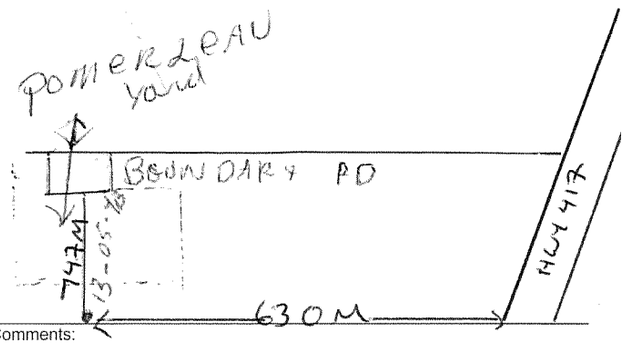
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co Ltd.	6894

Business Address (Street Number/Name)	Municipality
6847 Hiram Dr.	Greely

Province	Postal Code	Business E-mail Address
ON	K4P 1A2	mwebb@marathondrilling.ca

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
4136220571	Webb, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013 04 25

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed Y Y Y Y M M D D

Ministry Use Only

Audit No. Z 82643

MAY 03 2013

Received

0506E (12/2007) **Ministry's Copy**

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Tag#: A145308 (A145308)

S-13894

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☑ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery Centre		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
708-225 Metcalfe	Ottawa	ON	K2P1P9	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Boundry Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	460302	5021430		

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	Depth (m/ft) To
Brn	fine Sand		soft, wet	0	1.5

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	.61	Bensea1	
.61	1.5	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☑ Other, specify D.P.

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☑ Test Hole ☑ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To
3.45	PVC	.356	0	.61

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	.61	1.5

Status of Well

☐ Water Supply ☐ Replacement Well ☑ Test Hole ☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

See Map "M"

Comments:

Water Details

Water found at Depth (m/ft)	Kind of Water	
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	1.5	11.43

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7214

Business Address (Street Number/Name)	Municipality
47-2 W. Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	WRECORDS@STRATASOIL.COM

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9057649304	BEATTY BRIAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3616		2013/04/12

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: YYYY MM DD

Date Work Completed: 2013/04/12

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Audit No. Z152773

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S-138944

12-1125-0045-1000

Boundary Road Site

location A tuesday

C-7241

2152773

MAY 15 2013

Ontario — Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below): Tag#: A145307 A145307

5-13894

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☑ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery Centre		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
708 - 225 Metcalfe	Ottawa	ON	K2P1P9	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Boundy Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466037	5021430		

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	Depth (m/ft) To
Brn	Sand		soft wet	0	1.5
Grey	Clay		soft, wet	1.5	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	3.96	Holeplug	
3.96	6.4	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☑ Other, specify D. P

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	PVC	.56	0	4.88

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	4.88	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

See Map

11 M

Comments:

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	11.43

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147-2 W. Beaver Creek	Ottawa

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9057649304	Beath, Brian

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3616		2013/04/12

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2013/04/10

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S-13894

12-1125-0045-1000

Boundary Road Site

location I tuesday

C-7241

2152772

MAY 15 2013

7212029

S-147148

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A154128 **Tag#: A154128**

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5775 Boundary Road			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ohama	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	457547	5020210		

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	Depth (m/ft) To
BLK	gravel	sand	loose	0	.31
BRN	sand	silt, clay	soft	.31	2.44
GRY	clay	silt	soft	2.44	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	5.88	bentonite	
5.88	6.4	filter sand	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☑ Other, *specify* Direct Push

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☑ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To
3.25	PVC	.156	0	5.49

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	5.49	6.4

Status of Well

☐ Water Supply ☐ Replacement Well ☑ Test Hole ☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	Depth To	Diameter (cm/in)
☐ Gas ☐ Other, *specify*	☐ Fresh ☐ Untested	0	6.4	8.25
☐ Gas ☐ Other, *specify*	☐ Fresh ☐ Untested			
☐ Gas ☐ Other, *specify*	☐ Fresh ☐ Untested			

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

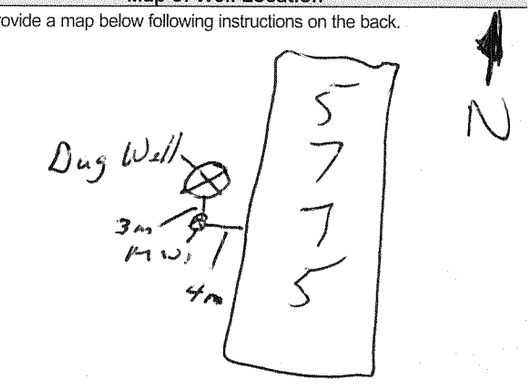
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147 West Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1G6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
905 764-9304	McCoy, James

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3656		2013/11/22

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2013/10/28

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7212030

S-14448

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A154131 **Tag#: A154131**

TAGGART MILLER ENVIRONMENTAL SERVICES

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5775 Boundary Rd			CX25

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465752	5020214		

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	Depth (m/ft) To
BLK	gravel	sand	loose	0	.31
BRN	sand	silt, clay	soft	.31	2.44
GRY	clay	silt	soft	2.44	6.4

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	5.18	bentonite	
5.18	6.4	filter sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☑ Other, *specify* Direct Push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	PVC	.356	0	5.49

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	5.49	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Other, specify
	☐ Fresh ☐ Untested	☐ Gas ☐ Other
	☐ Fresh ☐ Untested	☐ Gas ☐ Other
	☐ Fresh ☐ Untested	☐ Gas ☐ Other

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	6.4	8.25

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

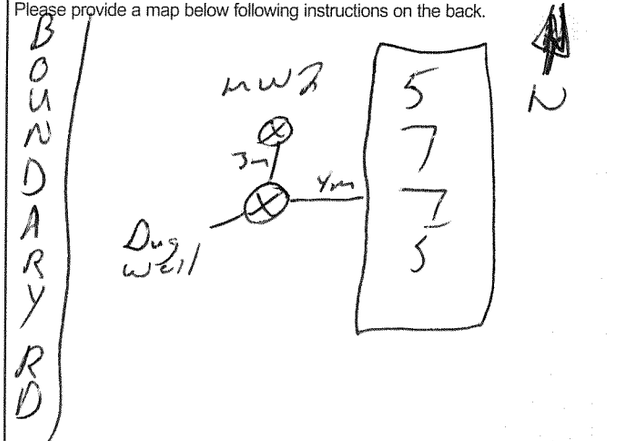
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147 West Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1G6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
905 764 9300	McCoy, James

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3165		2013/11/22

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2013/10/28

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Measurements recorded in: [x] Metric [ ] Imperial

Well Tag (ow) **Tag#: A131930**

A-131930

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
100 Entrepreneur Crescent	Ottawa		
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Ottawa	Ottawa	Ontario	
UTM Coordinates Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83 18	465599	5020270		

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
Brown	topsoil		compacted	0	~20m
Grey	Fissured clay		" "	~20m	2.75m
Grey/Blue	elastic clay.		" "	2.75m	4.0m
Blue	VERY elastic clay.		" "	4.0m	7.0m

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	2.5m	elastic clay	15.0m³

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [x] Digging
[ ] Air percussion
[ ] Other, *specify*

Well Use

[ ] Public [x] Commercial [ ] Not used
[x] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] 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) From	To
	1-2" SCH Rubber	~2cm	0	7.5m

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
	geotextile synthetic		0	3.0m

Status of Well

[x] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, *specify*
[ ] Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	3.0m	60m
3.0m	5.0m	40m
5.0m	7.0m	40m

Results of Well Yield Testing

After test of well yield, water was:
[x] Clear and sand free
[ ] Other, *specify*

If pumping discontinued, give reason: see report attach.

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

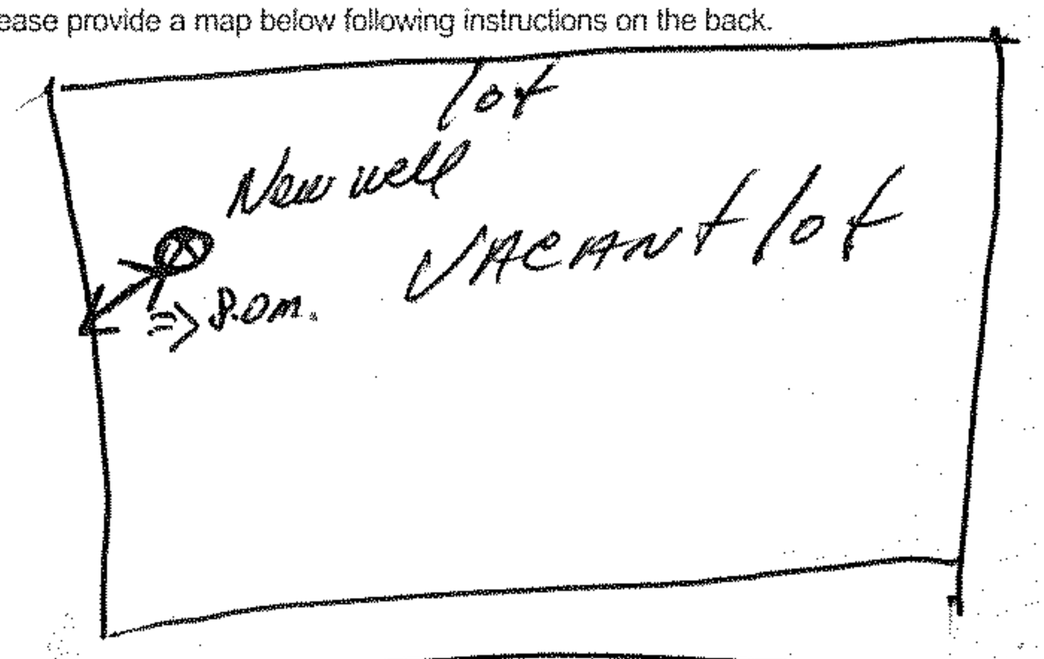
Well production (l/min / GPM)

Disinfected? [ ] Yes [x] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level			
1/		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Leo Sarault & Fils Inc	T6667
Business Address (Street Number/Name)	**Municipality**
4882 County Rd 10 Fournier	Nation
Province	**Postal Code**	**Business E-mail Address**
Ontario	K0B1G0	leosarault@yahoo.com
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
6135245449	Gilles Sarault
Well Technician's Licence No.	**Signature of Technician and/or Contractor**	**Date Submitted**
T2124	Gilles Sarault	2015 03 23

Well owner's information package delivered [ ] Yes [ ] No — Date Package Delivered 2015 03 23

Date Work Completed 2015 03 23

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Well Tag No. (A 236242) Tag#: A 236242

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Boundry Road Development Inc.	N/A	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
16766 Transcanadienne Suite 500	Kirland	Qc.	H9H4M7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5371 Boundry Road	Cumberland	21	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Cumberland Spring	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465300	5021483		

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	Depth (m/ft) To
Brown	Fill	clay, Stone	Hard	0	1.8
Brown	clay	Silt	Hard	1.8	3.9
Grey	clay		Soft	3.9	21.0
Grey	gravel	Silt, Sand	packed	21.0	60.96 ~~60.96~~ 22.25
Grey	shale		layered	22.25	60.96

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	24.99	cinent grout	1.5 m^3

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	To
15.55	Steel	.48	4.6	24.99
15.32	Open Hole		24.99	60.96

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	
27 (m/ft) ☐ Gas	☐ Fresh ☑ Untested ☐ Other, *specify*	
52 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	24.99	24.9
24.99	60.9	

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☒ Other, *specify* cloud

If pumping discontinued, give reason:

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 42

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 5.75

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 58

Recommended pump rate (l/min / GPM): 66

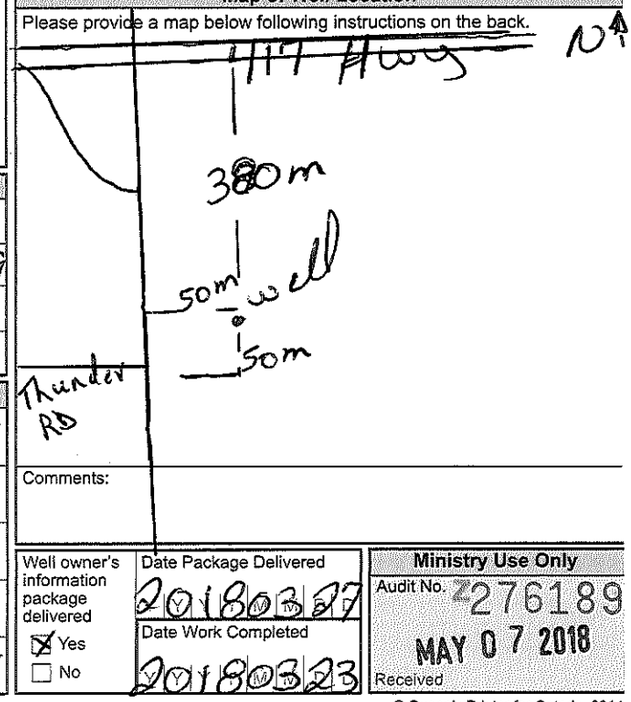
Well production (l/min / GPM): 75

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	3.83		5.75
1	4.42	1	4.64
2	4.61	2	4.36
3	4.75	3	4.26
4	4.78	4	4.23
5	4.79	5	4.18
10	4.96	10	4.10
15	5.16	15	4.03
20	5.24	20	3.95
25	5.31	25	3.89
30	5.32	30	3.85
40	5.62	40	3.83
50	5.70	50	3.83
60	5.75	60	3.83

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Bourgeois Well Drilling Ltd.	7417

Business Address (Street Number/Name)	Municipality
14245 Conc. 10-11	Guyler

Province	Postal Code	Business E-mail Address
On	K0A1R0	N/A

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139875291	GENIER, MICHAEL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3493		2018 03 26

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2018 03 27	Audit No. Z276189
	Date Work Completed: 2018 03 23	MAY 07 2018 Received

0506E (2014/11) Ministry's Copy

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. Tag#: A249297 — A249297

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	
	VSB Carpentry Inc.	N/A	[ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
357 Entrepreneur Crescent	Navan	On.	K4B1T8	6132291925

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
357 Entrepreneur Crescent	City of Ottawa	23	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Cumberland		Ontario	K4B1T8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	457750	5020916	50R-6694 Part 4	

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	Depth (m/ft) To
Brown	clay	Silt, Stone	Hard	0	3.7
Grey	clay	silt	Soft	3.7	21.3
Grey	gravel	Medium Sand	packed	21.3	22.6
Grey	Shale		layered	22.6	28.9

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	12.1	cement grout	.3 m³

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify ____

Well Use

[ ] Public [X] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] 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) From	Depth (m/ft) To
15.55	Steel	.48	1.6	23.1
15.32	Open Hole		23.1	28.9

Construction Record - Screen

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

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify ____
[ ] Other, specify ____

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
27 (m/ft)	[ ]	[ ] Fresh [X] Untested	
(m/ft)	[ ]	[ ] Fresh [ ] Untested	
(m/ft)	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	12.1	24.9
12.1	28.9	15.32

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Bourgeois Well Drilling Ltd	7417

Business Address (Street Number/Name)	Municipality
14245 Conc. 10-11	Clysdale

Province	Postal Code	Business E-mail Address
On.	K0A1R0	N/A

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139875291	GENIER, MICHAEL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
34913		2018/10/10

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, specify ____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 22

Pumping rate (l/min / GPM): 13

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 21.61

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 22

Recommended pump rate (l/min / GPM): 15

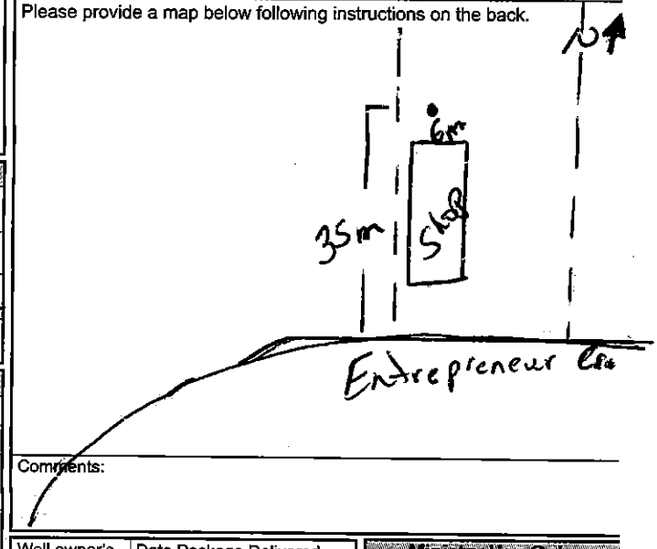
Well production (l/min / GPM): 20

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	9.62		21.61
1	10.49	1	20.79
2	10.73	2	19.58
3	11.15	3	19.27
4	11.53	4	19.07
5	11.71	5	18.50
10	13.38	10	16.91
15	14.71	15	14.99
20	15.88	20	13.21
25	16.87	25	12.83
30	17.77	30	10.99
40	19.40	40	9.74
50	20.65	50	9.69
60	21.61	60	9.62

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 2018/10/10

Date Work Completed: 2018/10/05

Ministry Use Only

Audit No. Z300222

Received OCT 25 2018

0506E (2014/11)

Ministry's Copy

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag N: A244754 — Tag#: A244754

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Amazon	OTTAWA		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
5371 Boundary, Rd	Cumberland.	ON	K4B1P6	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5371 Boundary, Road	Cumberland.	21	11

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA City	NAVAN	Ontario	K4B1P6

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466045	5021560		

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	Depth (m/ft) To
Brown	Sand.		Soft	0	2.12
Blue	Clay		Soft	2.12	24.24
Grey	Gravel		Soft	24.24	26.06
Grey	Limestone		Hard.	26.06	42.42

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	6.06	Quik Crete	4 Bag.

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☑ Rotary (Reverse) Air ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☑ 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) From	Depth (m/ft) To
15.55	Steel	0.48	0.90	26.06

Construction Record - Screen

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

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth (m/ft) From	To	Diameter (cm/in)
7.87 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify Salty	0	6.06	25.40
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☑ Untested ☐ Other, specify	0	42.42	15.55
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 24.24

Pumping rate (l/min / GPM): 54:00

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 2.25

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 24.24

Recommended pump rate (l/min / GPM): 56:00

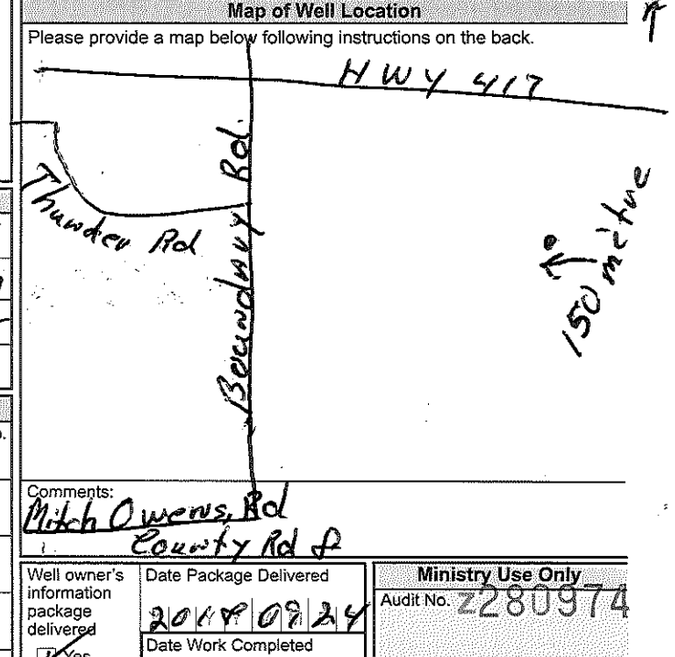
Well production (l/min / GPM): 90:00

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		2.12		2.25
1	1	2.14	1	2.18
2	2	2.16	2	2.16
3	3	2.18	3	2.12
4	4	2.20	4	2.12
5	5	2.21	5	2.12
10	10	2.23	10	2.12
15	15	2.24	15	2.12
20	20	2.25	20	2.12
25	25	2.25	25	2.12
30	30	2.25	30	2.12
40	40	2.25	40	2.12
50	50	2.25	50	2.12
60	60	2.25	60	2.12

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Mitch Owens Rd
County Rd 2

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
DXR-WATER-well-Drilling	7526

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
1763 - Route 200 west	Nation	ON	K0A3G0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
6139827558	Monette Raul	3773	Raul Monette	2018/09/24

Well owner's information package delivered: ☑ Yes ☐ No

Date Package Delivered: 2018/09/24

Date Work Completed: 2018/09/11

Ministry Use Only

Audit No. Z280974

Received NOV 22 2018

0506E (2014/11) — Ministry's Copy

Ontario

Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: N/A

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
2030470	ONTARIO LIMITED	c/o Rosedale	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
TransportGroup, 6845 Invader Cres,	Mississauga,	Ont	L5T 2B7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#9460 MITCH OWENS ROAD	OSGOODE	Pt Lt 1	11

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA-CARLETON	EDWARDS	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465655	5020146	RP-5R-13558 Part 2	

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	Depth (m/ft) To
	6" Drilled Well Abandonment			0'	85'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
85'	5'	3/8 Hole Plug	24 Bags
5'	0'	Back fill	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To

Construction Record - Screen

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

New Construction

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☒ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter *(cm/in)*

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

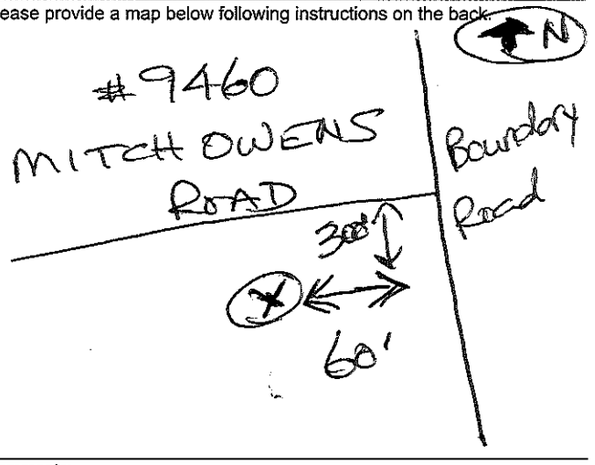
Well production *(l/min / GPM)*

Disinfected? ☒ Yes ☐ No

	Draw Down Time *(min)*	Draw Down Water Level *(m/ft)*	Recovery Time *(min)*	Recovery Water Level *(m/ft)*
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING Co LTD	C-7681

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

Province	Postal Code	Business E-mail Address
Ont	K0A 2Z0	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138382170	HANNA JEREMY

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T36322		2019/06/28

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No	2019/06/26	2019/06/26

Ministry Use Only

Audit No. Z302260

Received JUL 25 2019

0506E (2014/11)

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A111208

12-04-3

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Colder	Capital Region Resource	—	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P1P7	6134554551

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
370 FRONTIER RD	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A3H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18T	466522	5020872		

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	Depth (m/ft) To
GRAY	CLAY	SAND - Till-Rock	SAND TO CLAY (to) Till then ROCK	0	143
				VSP	

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		COATED BENTONITES	
		BENTONITE CHIPS	
		BENTONITE GROUT	

Method of Construction

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, *specify* ____

☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

☐ Public ☐ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, *specify* ____

☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling & Air Conditioning

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2"	PLASTIC	1/4		

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* ____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min-/ GPM)*

Recommended pump depth *(m/ft)*

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

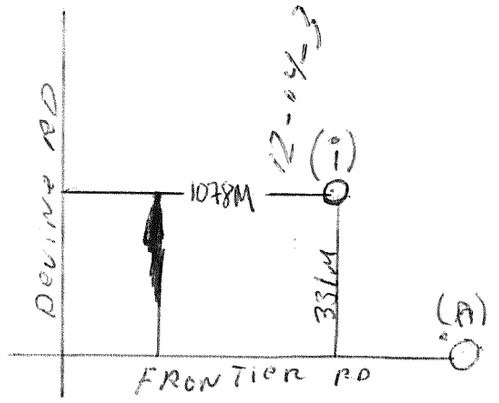
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co. Ltd	6894

Business Address (Street Number/Name)	Municipality
6847 Hiram DR	Greely

Province	Postal Code	Business E-mail Address
ON	K4P1A2	mwells@marathondrilling.ca

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138220571	Wells, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013/04/25

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed Y Y Y Y M M D D

Ministry Use Only

Audit No. Z 82629

MAY 0 6 2013

Received

0506E (12/2007)

Ministry's Copy

ATTACHMENT E

Shallow Groundwater Quality – Laboratory Certificates of Analysis

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Abdul Kader Alhaj

Client PO:
Project: 220487
Custody: 139922

Report Date: 22-Mar-2023
Order Date: 16-Mar-2023

Order #: 2311446

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2311446-01	MW23-2
2311446-02	MW23-3
2311446-03	MW23-4
2311446-04	MW23-5

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 22-Mar-2023

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Project Description: 220487

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - water	MOE E3056 - colourimetric	21-Mar-23	21-Mar-23
Conductivity	EPA 9050A- probe @25 °C	17-Mar-23	17-Mar-23
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	20-Mar-23	20-Mar-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Mar-23	17-Mar-23
pH	EPA 150.1 - pH probe @25 °C	17-Mar-23	17-Mar-23
PHC F1	CWS Tier 1 - P&T GC-FID	17-Mar-23	17-Mar-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	21-Mar-23	22-Mar-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	20-Mar-23	20-Mar-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	20-Mar-23	20-Mar-23
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	17-Mar-23	17-Mar-23
SAR	Calculated	21-Mar-23	21-Mar-23

PARACEL LABORATORIES LTD.

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Client: LRL Associates Ltd.

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Client PO:

Project Description: 220487

	Client ID:	MW23-2	MW23-3	MW23-4	MW23-5
	Sample Date:	16-Mar-23 15:50	16-Mar-23 15:40	16-Mar-23 15:30	16-Mar-23 15:20
	Sample ID:	2311446-01	2311446-02	2311446-03	2311446-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
General Inorganics					
SAR	0.01	4.79	3.26	9.00	7.78
Conductivity	5 uS/cm	1710	1030	2910	2430
pH	0.1 pH Units	7.6	10.9	7.9	7.9
Phenolics	0.001 mg/L	-	0.068	0.001	-
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Arsenic	1 ug/L	2	2	2	2
Barium	1 ug/L	84	28	124	99
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	56	23	167	157
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	1 ug/L	<1	1	<1	2
Chromium (VI)	10 ug/L	<10	<10	<10	<10
Cobalt	0.5 ug/L	2.1	<0.5	0.7	1.1
Copper	0.5 ug/L	0.9	3.0	3.3	3.6
Lead	0.1 ug/L	<0.1	<0.1	<0.1	0.3
Molybdenum	0.5 ug/L	2.5	16.7	1.4	0.6
Nickel	1 ug/L	5	12	2	3
Selenium	1 ug/L	<1	<1	<1	<1
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Sodium	200 ug/L	161000	106000	381000	306000
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Uranium	0.1 ug/L	1.8	0.8	0.6	0.4
Vanadium	0.5 ug/L	1.7	20.9	1.6	2.8
Zinc	5 ug/L	<5	<5	<5	<5
Volatiles					
Acetone	5.0 ug/L	5.3	33.6	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

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	Client ID:	MW23-2	MW23-3	MW23-4	MW23-5
	Sample Date:	16-Mar-23 15:50	16-Mar-23 15:40	16-Mar-23 15:30	16-Mar-23 15:20
	Sample ID:	2311446-01	2311446-02	2311446-03	2311446-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	102%	102%	102%	102%
Dibromofluoromethane	Surrogate	74.2%	75.5%	90.9%	89.0%

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	Sample Date:	16-Mar-23 15:50	16-Mar-23 15:40	16-Mar-23 15:30	16-Mar-23 15:20
	Sample ID:	2311446-01	2311446-02	2311446-03	2311446-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
Toluene-d8	Surrogate	110%	110%	111%	110%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	0.59	<0.05	<0.05
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05
Anthracene	0.01 ug/L	<0.01	0.26	<0.01	<0.01
Benzo [a] anthracene	0.01 ug/L	<0.01	0.48	<0.01	<0.01
Benzo [a] pyrene	0.01 ug/L	<0.01	0.33	<0.01	<0.01
Benzo [b] fluoranthene	0.05 ug/L	<0.05	0.52	<0.05	<0.05
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	0.19	<0.05	<0.05
Benzo [k] fluoranthene	0.05 ug/L	<0.05	0.24	<0.05	<0.05
Chrysene	0.05 ug/L	<0.05	0.56	<0.05	<0.05
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05
Fluoranthene	0.01 ug/L	0.06	0.91	0.02	<0.01
Fluorene	0.05 ug/L	<0.05	0.41	<0.05	<0.05
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	0.18	<0.05	<0.05
1-Methylnaphthalene	0.05 ug/L	<0.05	0.44	<0.05	<0.05
2-Methylnaphthalene	0.05 ug/L	<0.05	0.49	<0.05	<0.05
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	0.93	<0.10	<0.10
Naphthalene	0.05 ug/L	<0.05	4.98	<0.05	<0.05
Phenanthrene	0.05 ug/L	0.11	0.96	0.07	<0.05
Pyrene	0.01 ug/L	0.05	0.68	<0.01	<0.01
2-Fluorobiphenyl	Surrogate	57.0%	60.7%	64.4%	74.1%
Terphenyl-d14	Surrogate	60.0%	55.5%	52.9%	56.5%

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*15.0*		*ug/L*		*75.1*	*50-140*			
Surrogate: Terphenyl-d14	*19.2*		*ug/L*		*96.0*	*50-140*			
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						

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Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*81.7*		*ug/L*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*64.7*		*ug/L*		*80.9*	*50-140*			
Surrogate: Toluene-d8	*90.6*		*ug/L*		*113*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	330	5	uS/cm	324			1.7	5	
pH	7.9	0.1	pH Units	7.9			0.3	3.3	
Phenolics	0.001	0.001	mg/L	0.001			NC	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Mercury	ND	0.1	ug/L	ND			NC	20	
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	15	10	ug/L	14			9.9	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium (VI)	ND	10	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	8.0			NC	20	
Cobalt	0.51	0.5	ug/L	2.95			NC	20	
Copper	2.26	0.5	ug/L	8.98			NC	20	
Lead	0.24	0.1	ug/L	9.29			NC	20	
Molybdenum	3.32	0.5	ug/L	4.12			NC	20	
Nickel	1.6	1	ug/L	5.8			NC	20	
Selenium	ND	1	ug/L	1.6			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	559000	2000	ug/L	609000			8.5	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	0.7	0.1	ug/L	0.8			13.9	20	
Vanadium	1.49	0.5	ug/L	13.1			NC	20	
Zinc	ND	5	ug/L	14			NC	20	
Volatiles									
Acetone	8.22	5.0	ug/L	9.52			14.7	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	3.85	0.5	ug/L	2.92			27.5	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	7.60	0.5	ug/L	5.91			25.0	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	14.6	0.5	ug/L	11.1			27.6	30	
o-Xylene	7.09	0.5	ug/L	5.40			27.1	30	
Surrogate: 4-Bromofluorobenzene	*80.6*		*ug/L*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*60.9*		*ug/L*		*76.1*	*50-140*			
Surrogate: Toluene-d8	*88.4*		*ug/L*		*110*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Phenolics	0.026	0.001	mg/L	0.001	101	67-133			
Hydrocarbons									
F1 PHCs (C6-C10)	1910	25	ug/L	ND	95.6	68-117			
F2 PHCs (C10-C16)	1770	100	ug/L	ND	111	60-140			
F3 PHCs (C16-C34)	4520	100	ug/L	ND	115	60-140			
F4 PHCs (C34-C50)	2360	100	ug/L	ND	95.3	60-140			
Metals									
Mercury	2.60	0.1	ug/L	ND	86.8	70-130			
Arsenic	51.7	1	ug/L	ND	102	80-120			
Beryllium	44.7	0.5	ug/L	ND	89.1	80-120			
Boron	54	10	ug/L	14	81.5	80-120			
Cadmium	43.2	0.1	ug/L	ND	86.2	80-120			
Chromium (VI)	199	10	ug/L	ND	99.5	70-130			
Chromium	61.5	1	ug/L	8.0	107	80-120			
Cobalt	57.3	0.5	ug/L	2.95	109	80-120			
Copper	52.0	0.5	ug/L	8.98	86.1	80-120			
Lead	56.8	0.1	ug/L	ND	114	80-120			
Molybdenum	60.4	0.5	ug/L	4.12	113	80-120			
Nickel	54.9	1	ug/L	5.8	98.3	80-120			
Selenium	41.1	1	ug/L	1.6	79.1	80-120			QM-07
Silver	42.7	0.1	ug/L	ND	85.3	80-120			
Sodium	11700	200	ug/L	ND	117	80-120			
Thallium	43.5	0.1	ug/L	ND	86.9	80-120			
Uranium	49.3	0.1	ug/L	0.8	97.1	80-120			
Vanadium	64.5	0.5	ug/L	13.1	103	80-120			
Semi-Volatiles									
Acenaphthene	4.61	0.05	ug/L	ND	92.2	50-140			
Acenaphthylene	4.14	0.05	ug/L	ND	82.9	50-140			
Anthracene	4.23	0.01	ug/L	ND	84.6	50-140			
Benzo [a] anthracene	4.98	0.01	ug/L	ND	99.6	50-140			
Benzo [a] pyrene	5.51	0.01	ug/L	ND	110	50-140			
Benzo [b] fluoranthene	5.88	0.05	ug/L	ND	118	50-140			
Benzo [g,h,i] perylene	3.97	0.05	ug/L	ND	79.5	50-140			
Benzo [k] fluoranthene	5.56	0.05	ug/L	ND	111	50-140			
Chrysene	5.33	0.05	ug/L	ND	107	50-140			
Dibenzo [a,h] anthracene	4.34	0.05	ug/L	ND	86.8	50-140			
Fluoranthene	4.36	0.01	ug/L	ND	87.1	50-140			
Fluorene	4.35	0.05	ug/L	ND	87.0	50-140			
Indeno [1,2,3-cd] pyrene	4.55	0.05	ug/L	ND	91.0	50-140			
1-Methylnaphthalene	4.93	0.05	ug/L	ND	98.6	50-140			
2-Methylnaphthalene	5.31	0.05	ug/L	ND	106	50-140			
Naphthalene	4.88	0.05	ug/L	ND	97.5	50-140			
Phenanthrene	4.19	0.05	ug/L	ND	83.8	50-140			
Pyrene	4.42	0.01	ug/L	ND	88.4	50-140			
Surrogate: 2-Fluorobiphenyl	*19.5*		*ug/L*		*97.4*	*50-140*			
Surrogate: Terphenyl-d14	*22.4*		*ug/L*		*112*	*50-140*			
Volatiles									
Acetone	110	5.0	ug/L	ND	110	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	42.2	0.5	ug/L	ND	105	60-130			
Bromodichloromethane	45.5	0.5	ug/L	ND	114	60-130			
Bromoform	35.9	0.5	ug/L	ND	89.7	60-130			
Bromomethane	48.7	0.5	ug/L	ND	122	50-140			
Carbon Tetrachloride	36.0	0.2	ug/L	ND	90.0	60-130			
Chlorobenzene	44.4	0.5	ug/L	ND	111	60-130			
Chloroform	44.7	0.5	ug/L	ND	112	60-130			
Dibromochloromethane	35.5	0.5	ug/L	ND	88.8	60-130			
Dichlorodifluoromethane	42.8	1.0	ug/L	ND	107	50-140			
1,2-Dichlorobenzene	39.8	0.5	ug/L	ND	99.4	60-130			
1,3-Dichlorobenzene	37.5	0.5	ug/L	ND	93.7	60-130			
1,4-Dichlorobenzene	37.0	0.5	ug/L	ND	92.4	60-130			
1,1-Dichloroethane	42.3	0.5	ug/L	ND	106	60-130			
1,2-Dichloroethane	46.2	0.5	ug/L	ND	116	60-130			
1,1-Dichloroethylene	45.4	0.5	ug/L	ND	113	60-130			
cis-1,2-Dichloroethylene	41.0	0.5	ug/L	ND	103	60-130			
trans-1,2-Dichloroethylene	37.9	0.5	ug/L	ND	94.7	60-130			
1,2-Dichloropropane	46.3	0.5	ug/L	ND	116	60-130			
cis-1,3-Dichloropropylene	43.5	0.5	ug/L	ND	109	60-130			
trans-1,3-Dichloropropylene	42.1	0.5	ug/L	ND	105	60-130			
Ethylbenzene	46.0	0.5	ug/L	ND	115	60-130			
Ethylene dibromide (dibromoethane, 1,2	38.4	0.2	ug/L	ND	96.0	60-130			
Hexane	45.9	1.0	ug/L	ND	115	60-130			
Methyl Ethyl Ketone (2-Butanone)	129	5.0	ug/L	ND	129	50-140			
Methyl Isobutyl Ketone	125	5.0	ug/L	ND	125	50-140			
Methyl tert-butyl ether	111	2.0	ug/L	ND	111	50-140			
Methylene Chloride	44.2	5.0	ug/L	ND	111	60-130			
Styrene	34.2	0.5	ug/L	ND	85.6	60-130			
1,1,1,2-Tetrachloroethane	35.7	0.5	ug/L	ND	89.4	60-130			
1,1,2,2-Tetrachloroethane	37.4	0.5	ug/L	ND	93.6	60-130			
Tetrachloroethylene	39.2	0.5	ug/L	ND	98.1	60-130			
Toluene	48.1	0.5	ug/L	ND	120	60-130			
1,1,1-Trichloroethane	44.2	0.5	ug/L	ND	111	60-130			
1,1,2-Trichloroethane	47.5	0.5	ug/L	ND	119	60-130			
Trichloroethylene	42.9	0.5	ug/L	ND	107	60-130			
Trichlorofluoromethane	49.7	1.0	ug/L	ND	124	60-130			
Vinyl chloride	39.6	0.5	ug/L	ND	99.0	50-140			
m,p-Xylenes	90.2	0.5	ug/L	ND	113	60-130			
o-Xylene	45.8	0.5	ug/L	ND	115	60-130			
Surrogate: 4-Bromofluorobenzene	*79.8*		*ug/L*		*99.8*	*50-140*			
Surrogate: Dibromofluoromethane	*82.2*		*ug/L*		*103*	*50-140*			
Surrogate: Toluene-d8	*85.8*		*ug/L*		*107*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container(s) - Labeled improperly/insufficient information - (VOC x2) Sample labelled as MW23-5 chain of custody reads MW23-4

Applies to samples: MW23-4

QC Qualifiers :

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

PARACEL LABORATORIES LTD.

Paracel ID: 2311446

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2311446	№ 139922

Client Name: LRL Associates	Project Ref: 220487	Page 1 of 1
Contact Name: Abdul Kader	Quote #:	Turnaround Time
Address: 5430 canotek Rd Ottawa, ON	PO #:	☐ 1 day ☐ 3 day
	E-mail: akader@lrl.ca	☐ 2 day ☒ Regular
Telephone: 613 315 6602		Date Required:

☐ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table

For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Metal Hydrids	EC	SAR	pH	Phenols
1	MW23-2	GW		8	2023.03.16	3:50	X	X	X	X				X	X	X	X	
2	MW23-3	↓		9	↓	3:40	↓	↓	↓	↓				↓	↓	↓	↓	X
3	MW23-4	↓		9	↓	3:30	↓	↓	↓	↓				↓	↓	↓	↓	X
4	MW23-5	↓		8	↓	3:20	↓	↓	↓	↓				↓	↓	↓	↓	
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Walk In

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: DAYS 1627	Verified By: Scotia Demcrios
Relinquished By (Print): Abdul Kader	Date/Time:	Date/Time: March 16, 2023	Date/Time: Mar 17, 8:50
Date/Time: 2023.03.16 / 4:26	Temperature: °C	Temperature: 4.3 °C	pH Verified: ☐ By: Scotia Demcrios

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 220487
Custody: 69848

Report Date: 20-Apr-2023
Order Date: 17-Apr-2023

Order #: 2316082

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2316082-01	MW23-3

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 20-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 200.8 - ICP-MS	19-Apr-23	19-Apr-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	19-Apr-23	20-Apr-23

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 20-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

	Client ID:	MW23-3	-	-	-
	Sample Date:	17-Apr-23 12:00	-	-	-
	Sample ID:	2316082-01	-	-	-
	MDL/Units	Ground Water	-	-	-
Metals					
Antimony	0.5 ug/L	<0.5	-	-	-
Arsenic	1 ug/L	4	-	-	-
Barium	1 ug/L	26	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	23	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Cobalt	0.5 ug/L	<0.5	-	-	-
Copper	0.5 ug/L	<0.5	-	-	-
Lead	0.1 ug/L	<0.1	-	-	-
Molybdenum	0.5 ug/L	6.6	-	-	-
Nickel	1 ug/L	6	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	115000	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	2.9	-	-	-
Vanadium	0.5 ug/L	5.4	-	-	-
Zinc	5 ug/L	<5	-	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	0.98	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-
Anthracene	0.01 ug/L	0.15	-	-	-
Benzo [a] anthracene	0.01 ug/L	0.09	-	-	-
Benzo [a] pyrene	0.01 ug/L	0.07	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	0.09	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	0.06	-	-	-
Chrysene	0.05 ug/L	0.06	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-
Fluoranthene	0.01 ug/L	0.24	-	-	-
Fluorene	0.05 ug/L	0.40	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	0.38	-	-	-
2-Methylnaphthalene	0.05 ug/L	0.48	-	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 20-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

	Client ID:	MW23-3	-	-	-
	Sample Date:	17-Apr-23 12:00	-	-	-
	Sample ID:	2316082-01	-	-	-
	MDL/Units	Ground Water	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	0.85	-	-	-
Naphthalene	0.05 ug/L	4.36	-	-	-
Phenanthrene	0.05 ug/L	0.64	-	-	-
Pyrene	0.01 ug/L	0.18	-	-	-
2-Fluorobiphenyl	Surrogate	84.4%	-	-	-
Terphenyl-d14	Surrogate	130%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*22.7*		*ug/L*		*114*	*50-140*			
Surrogate: Terphenyl-d14	*22.7*		*ug/L*		*114*	*50-140*			

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 20-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	0.51	0.5	ug/L	0.52			2.5	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Barium	49.0	1	ug/L	51.0			3.9	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	29	10	ug/L	30			1.3	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	ND	0.5	ug/L	ND			NC	20	
Copper	1.84	0.5	ug/L	1.86			1.2	20	
Lead	ND	0.1	ug/L	ND			NC	20	
Molybdenum	0.80	0.5	ug/L	0.85			5.5	20	
Nickel	ND	1	ug/L	ND			NC	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	70000	200	ug/L	75800			7.9	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	0.4	0.1	ug/L	0.4			5.2	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	ND	5	ug/L	ND			NC	20	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Arsenic	52.1	1	ug/L	ND	103	80-120			
Barium	91.0	1	ug/L	51.0	80.2	80-120			
Beryllium	43.5	0.5	ug/L	ND	87.0	80-120			
Boron	68	10	ug/L	30	76.7	80-120			QM-07
Cadmium	44.9	0.1	ug/L	ND	89.8	80-120			
Chromium	51.4	1	ug/L	ND	102	80-120			
Cobalt	48.0	0.5	ug/L	ND	95.9	80-120			
Copper	45.1	0.5	ug/L	1.86	86.4	80-120			
Lead	41.6	0.1	ug/L	ND	83.2	80-120			
Molybdenum	43.5	0.5	ug/L	0.85	85.4	80-120			
Nickel	49.9	1	ug/L	ND	98.2	80-120			
Selenium	45.5	1	ug/L	ND	90.0	80-120			
Silver	44.2	0.1	ug/L	ND	88.5	80-120			
Sodium	9980	200	ug/L	ND	99.8	80-120			
Thallium	42.6	0.1	ug/L	ND	85.2	80-120			
Uranium	44.9	0.1	ug/L	0.4	89.0	80-120			
Vanadium	53.7	0.5	ug/L	ND	107	80-120			
Zinc	44	5	ug/L	ND	83.2	80-120			
Semi-Volatiles									
Acenaphthene	4.08	0.05	ug/L	ND	81.7	50-140			
Acenaphthylene	3.62	0.05	ug/L	ND	72.4	50-140			
Anthracene	3.88	0.01	ug/L	ND	77.6	50-140			
Benzo [a] anthracene	4.39	0.01	ug/L	ND	87.9	50-140			
Benzo [a] pyrene	4.89	0.01	ug/L	ND	97.7	50-140			
Benzo [b] fluoranthene	4.72	0.05	ug/L	ND	94.4	50-140			
Benzo [g,h,i] perylene	3.41	0.05	ug/L	ND	68.2	50-140			
Benzo [k] fluoranthene	5.20	0.05	ug/L	ND	104	50-140			
Chrysene	5.22	0.05	ug/L	ND	104	50-140			
Dibenzo [a,h] anthracene	3.63	0.05	ug/L	ND	72.7	50-140			
Fluoranthene	3.76	0.01	ug/L	ND	75.2	50-140			
Fluorene	4.10	0.05	ug/L	ND	82.0	50-140			
Indeno [1,2,3-cd] pyrene	3.55	0.05	ug/L	ND	71.0	50-140			
1-Methylnaphthalene	5.39	0.05	ug/L	ND	108	50-140			
2-Methylnaphthalene	5.57	0.05	ug/L	ND	111	50-140			
Naphthalene	4.68	0.05	ug/L	ND	93.5	50-140			
Phenanthrene	3.95	0.05	ug/L	ND	79.1	50-140			
Pyrene	3.87	0.01	ug/L	ND	77.5	50-140			
Surrogate: 2-Fluorobiphenyl	*21.0*		*ug/L*		*105*	*50-140*			
Surrogate: Terphenyl-d14	*22.3*		*ug/L*		*111*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Filtered and preserved by Paracel upon receipt at the laboratory - metals

Applies to samples: MW23-3

Sample - ICP-MS Metals not submitted according to Reg. 153/04, Amended 2011 - not field filtered and preserved

Applies to samples: MW23-3

QC Qualifiers :

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

PARACEL LABORATORIES LTD

Paracel ID: 2316082

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only) № 69848

Client Name: LRL	Project Ref: 220487	Page 1 of 1
Contact Name: Jessica Arthurs	Quote #:	Turnaround Time
Address: 5430 Canotek Road Ottawa, ON K1J 9G2	PO #:	☐ 1 day ☐ 3 day ☐ 2 day ☑ Regular
Telephone: 613 842 3434	E-mail: jarthurs@lrlca	Date Required:

☐ REG 153/04 ☐ REG 406/19	Other Regulation	Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)	Required Analysis
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ REG 558 ☐ PWQO		
☒ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA		
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm		
☐ Table	Mun:		
For RSC: ☐ Yes ☒ No	☐ Other:		

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PAH	ICP Metals									
1	MW23-3	GW		2	April 17/23	12:00 pm	X	X									✓
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Metals not filtered - Rinsed in field

Method of Delivery: Walk in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jessica Arthurs	Date/Time:	Date/Time: Apr 17/23 1pm	Date/Time: Apr 17/23 1326
Date/Time: 2023.04.17 12:58 pm	Temperature: °C	Temperature: 8.6 °C	pH Verified: ☐ By:

ATTACHMENT F

Pumping Test – Field Data

Pump Test Data
Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File No. 220487

Date:	**30/07/2023**	**Technician:**	E. Lavergne
Well Number:	**Tag A37901**	**Pump Depth (m BTC):**	45.7
Depth of Well (m BTC):	49.10	**Start Time:**	8:15 AM
Ground Surface Elev. (m):	--	**End Time:**	4:30 PM
Top of Casing Elev. (m):	--	**Average Pump Rate (L/min):**	22.0
Water Level before Pump In (m BTC)	2.75		
Water Level after Pump In (m BTC)	2.61		

				Field Parameters					
Time[1] (min)	**Water Level (Pump In) (m BTC)**	**Drawdown (m)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Residual Chlorine (mg/L)**	**Colour (TCU)**	**pH**	**Conductivity (µs)**	**Total Dissolved (mg/L)**
0.0	2.61	0.00							
0.5	3.01	0.40	22.0						
1.0	3.75	1.14	22.0						
1.5	4.01	1.40	22.0						
2.0	4.26	1.65	22.0						
2.5	4.50	1.89	22.0						
3.0	4.71	2.10	22.0						
3.5	4.95	2.34	22.0						
4.0	5.13	2.52	22.0						
4.5	5.23	2.62	22.0						
5.0	5.30	2.69	22.0						
6.0	5.38	2.77	22.0						
7.0	5.52	2.91	22.0						
8.0	5.59	2.98	22.0						
9.0	5.67	3.06	22.0						
10.0	5.73	3.12	22.0						
15.0	5.88	3.27	22.0						
20.0	5.97	3.36	22.0						
25.0	6.03	3.42	22.0						
30.0	6.06	3.45	22.0						
40.0	6.11	3.50	22.0						
50.0	6.13	3.52	22.0						
60.0	6.18	3.57	22.0	3.58	0.03	92	7.90	3999+	2000+
90.0	6.19	3.58	22.0						
120.0	6.20	3.59	22.0	2.31	0.05	52	7.92	3999+	2000+
150.0	6.21	3.60	22.0						
180.0	6.20	3.59	22.0	2.04	0.06	13	8.05	3999+	2000+
240.0	6.22	3.61	22.0	2.54	0.02	66	8.40	3999+	2000+
300.0	6.23	3.62	22.0	2.12	0.02	33	8.05	3999+	2000+
360.0	6.21	3.60	22.0	2.23	0.06	12	8.10	3999+	2000+
420.0	6.24	3.63	22.0	2.16	0.02	21	8.12	3999+	2000+
480.0	6.25	3.64	22.0	2.54	0.02	34	8.10	3999+	2000+
495.0	6.23	3.62	22.0						

Recovery			**% Recovery**
0 (2.95)	6.23	3.62	0.0
0.5	4.30	1.69	53.3
1.0	4.19	1.58	56.4
1.5	4.11	1.50	58.6
2.0	4.05	1.44	60.2
2.5	3.94	1.33	63.3
3.0	3.81	1.20	66.9
3.5	3.68	1.07	70.4
4.0	3.56	0.95	73.8
4.5	3.51	0.90	75.1
5.0	3.45	0.84	76.8
6.0	3.38	0.77	78.7
7.0	3.32	0.71	80.4
8.0	3.28	0.67	81.5
9.0	3.26	0.65	82.0
10.0	3.22	0.61	83.1
15.0	3.14	0.53	85.4
20.0	3.09	0.48	86.7
25.0	3.05	0.44	87.8
30.0	3.03	0.42	88.4
40.0	2.99	0.38	89.5
50.0	2.98	0.37	89.8
60.0	2.97	0.36	90.1
960.0	2.87	0.26	92.8
1440.0	2.93	0.32	91.2

[1] Time elapse from pump turning on or off.
BTC: Below Top of Casing

ATTACHMENT G

Aquifer Test – Theis Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario

LRL

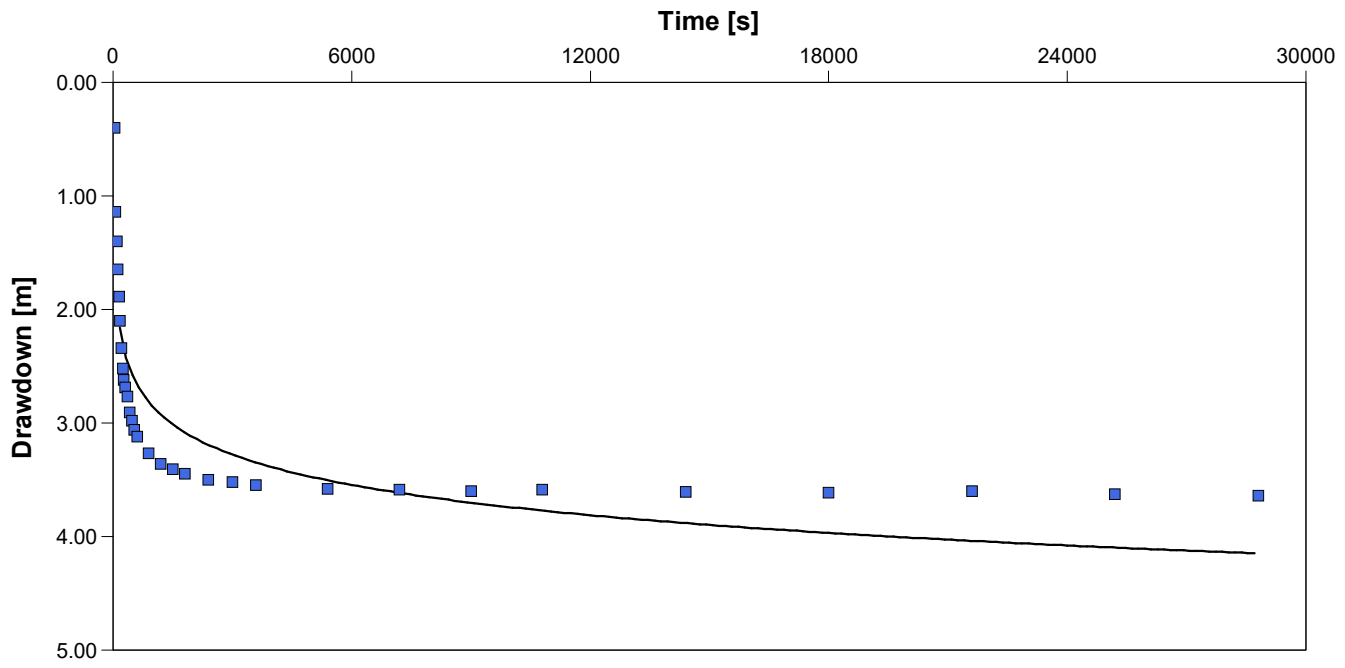
Pumping Test Analysis Report

Project: 363 Entrepreneur Cresent

Number: 220487

Client: Entrepreneur Holding

Location: 363 Entrepreneur Cresent	Pumping Test: Pumping Test 1	Pumping Well: Well 1
Test Conducted by: LRL Engineering		Test Date: 2023-08-30
Analysis Performed by: LRL Engineering	Draw Down - August 30 2023	Analysis Date: 2023-09-07
Aquifer Thickness:	Discharge Rate: 0.022 [m³/min]	



Calculation using Theis

Observation Well	Transmissivity [m²/s]	Storage coefficient	Radial Distance to PW [m]	
Well 1	7.59×10^{-5}	4.51×10^{-3}	0.15	

ATTACHMENT H

Supply Aquifer –
Laboratory Certificate of Analysis

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Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 220487
Custody: 18167

Report Date: 25-Apr-2023
Order Date: 17-Apr-2023

Order #: 2316079

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2316079-01	357 Entrepreneur-Pre
2316079-02	357 Entrepreneur-Post

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	18-Apr-23	18-Apr-23
Ammonia, as N	EPA 351.2 - Auto Colour	19-Apr-23	19-Apr-23
Anions	EPA 300.1 - IC	18-Apr-23	18-Apr-23
Colour	SM2120 - Spectrophotometric	18-Apr-23	18-Apr-23
Conductivity	EPA 9050A- probe @25 °C	18-Apr-23	18-Apr-23
Dissolved Organic Carbon	MOE 3247B - Combustion IR	20-Apr-23	20-Apr-23
E. coli	MOE E3407	18-Apr-23	18-Apr-23
Fecal Coliform	SM 9222D	18-Apr-23	18-Apr-23
Heterotrophic Plate Count	SM 9215C	18-Apr-23	18-Apr-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	18-Apr-23	18-Apr-23
pH	EPA 150.1 - pH probe @25 °C	18-Apr-23	18-Apr-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	19-Apr-23	19-Apr-23
Hardness	Hardness as CaCO3	18-Apr-23	18-Apr-23
Sulphide	SM 4500SE - Colourimetric	21-Apr-23	21-Apr-23
Tannin/Lignin	SM 5550B - Colourimetric	20-Apr-23	20-Apr-23
Total Coliform	MOE E3407	18-Apr-23	18-Apr-23
Total Dissolved Solids	SM 2540C - gravimetric, filtration	18-Apr-23	19-Apr-23
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	18-Apr-23	18-Apr-23
Turbidity	SM 2130B - Turbidity meter	19-Apr-23	19-Apr-23

PARACEL LABORATORIES LTD.

Order #: 2316079

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

	Client ID:	357 Entrepreneur-Pre	357 Entrepreneur-Post	-	-
	Sample Date:	17-Apr-23 11:15	17-Apr-23 11:35	-	-
	Sample ID:	2316079-01	2316079-02	-	-
	MDL/Units	Drinking Water	Drinking Water	-	-
Microbiological Parameters					
E. coli	1 CFU/100mL	ND	ND [1]	-	-
Fecal Coliforms	1 CFU/100mL	ND	ND	-	-
Total Coliforms	1 CFU/100mL	ND	ND [1]	-	-
Heterotrophic Plate Count	10 CFU/mL	<10	150	-	-
General Inorganics					
Alkalinity, total	5 mg/L	605	16	-	-
Ammonia as N	0.01 mg/L	3.28	0.46	-	-
Dissolved Organic Carbon	0.5 mg/L	7.8	<0.5	-	-
Colour	2 TCU	5	<2	-	-
Conductivity	5 uS/cm	13100	1050	-	-
Hardness	mg/L	1050	0.00	-	-
pH	0.1 pH Units	8.2	7.0	-	-
Phenolics	0.001 mg/L	<0.001	<0.001	-	-
Total Dissolved Solids	10 mg/L	7640	508	-	-
Sulphide	0.02 mg/L	0.24	<0.02	-	-
Tannin & Lignin	0.1 mg/L	0.7	<0.1	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	3.4	0.5	-	-
Turbidity	0.1 NTU	12.0	<0.1	-	-
Anions					
Chloride	1 mg/L	4350	302	-	-
Fluoride	0.1 mg/L	0.7	<0.1	-	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	-	-
Nitrite as N	0.05 mg/L	<0.50 [2]	<0.05	-	-
Sulphate	1 mg/L	13	<1	-	-
Metals					
Calcium	0.1 mg/L	97.8	<0.1	-	-
Iron	0.1 mg/L	1.3	<0.1	-	-
Magnesium	0.2 mg/L	196	<0.2	-	-
Manganese	0.005 mg/L	0.030	<0.005	-	-
Potassium	0.1 mg/L	91.4	1.9	-	-
Sodium	0.2 mg/L	2010	152	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Fluoride	ND	0.1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Colour	ND	2	TCU						
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Total Dissolved Solids	ND	10	mg/L						
Sulphide	ND	0.02	mg/L						
Tannin & Lignin	ND	0.1	mg/L						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Turbidity	ND	0.1	NTU						
Metals									
Calcium	ND	0.1	mg/L						
Iron	ND	0.1	mg/L						
Magnesium	ND	0.2	mg/L						
Manganese	ND	0.005	mg/L						
Potassium	ND	0.1	mg/L						
Sodium	ND	0.2	mg/L						
Microbiological Parameters									
E. coli	ND	1	CFU/100mL						
Fecal Coliforms	ND	1	CFU/100mL						
Total Coliforms	ND	1	CFU/100mL						
Heterotrophic Plate Count	ND	10	CFU/mL						

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	157	1	mg/L	158			0.1	20	
Fluoride	ND	0.1	mg/L	ND			NC	20	
Nitrate as N	ND	0.1	mg/L	ND			NC	20	
Nitrite as N	ND	0.05	mg/L	ND			NC	20	
Sulphate	32.4	1	mg/L	32.6			0.7	20	
General Inorganics									
Alkalinity, total	15.2	5	mg/L	16.2			6.2	14	
Ammonia as N	0.150	0.01	mg/L	0.151			1.0	17.7	
Dissolved Organic Carbon	ND	0.5	mg/L	ND			NC	37	
Colour	5	2	TCU	5			0.0	12	
Conductivity	1000	5	uS/cm	1050			4.0	5	
pH	7.0	0.1	pH Units	7.0			0.6	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	7550	10	mg/L	7640			1.2	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	0.2	0.1	mg/L	0.2			4.5	11	
Total Kjeldahl Nitrogen	3.34	0.2	mg/L	3.42			2.2	16	
Turbidity	ND	0.1	NTU	12.0			NC	10	
Metals									
Calcium	110	0.1	mg/L	97.8			11.9	20	
Iron	1.5	0.1	mg/L	1.3			12.4	20	
Magnesium	219	0.2	mg/L	196			11.3	20	
Manganese	0.035	0.005	mg/L	0.030			13.8	20	
Potassium	102	0.1	mg/L	91.4			10.5	20	
Sodium	2140	0.2	mg/L	2010			6.3	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	ND			NC	30	
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Total Coliforms	ND	1	CFU/100mL	ND			NC	30	
Heterotrophic Plate Count	ND	10	CFU/mL	ND			NC	30	

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	167	1	mg/L	158	90.3	70-124			
Fluoride	1.00	0.1	mg/L	ND	100	70-130			
Nitrate as N	1.09	0.1	mg/L	ND	109	77-126			
Nitrite as N	0.940	0.05	mg/L	ND	94.0	82-115			
Sulphate	41.5	1	mg/L	32.6	88.4	70-130			
General Inorganics									
Ammonia as N	1.21	0.01	mg/L	0.151	106	81-124			
Dissolved Organic Carbon	17.2	0.5	mg/L	7.8	93.5	60-133			
Phenolics	0.027	0.001	mg/L	ND	107	67-133			
Total Dissolved Solids	100	10	mg/L	ND	100	75-125			
Sulphide	0.48	0.02	mg/L	ND	96.0	79-115			
Tannin & Lignin	1.2	0.1	mg/L	0.2	92.9	71-113			
Total Kjeldahl Nitrogen	4.31	0.1	mg/L	3.42	88.9	81-126			
Metals									
Calcium	8370	0.1	mg/L	ND	83.7	80-120			
Magnesium	8180	0.2	mg/L	ND	81.8	80-120			
Manganese	42.2	0.005	mg/L	ND	84.3	80-120			
Potassium	10400	0.1	mg/L	1820	85.6	80-120			
Sodium	8460	0.2	mg/L	ND	84.6	80-120			

Qualifier Notes:

Sample Qualifiers :

1 : Confluent background colonies on filter: may interfere with target reactions and the analysts' ability to count E. coli & Total Coliform. The target colonies may be under-represented.

2 : Elevated reporting limit due to dilution required because of high target analyte concentration.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

PARACE LABORATORIES LT

Paracel ID: 2316079

Paracel Order Number	Chain Of Custody Ontario Drinking Water Samples № 18167

Client Name:	LRL	Project Ref:	220487	Waterworks Name:	Samples Taken By:
Contact Name:	Jessica Arthurs	Quote #:		Waterworks Number:	Name: Jessica Arthurs
Address:	5430 Canotek Rd. Ottawa, on K1J9G2	PO #:		Address: 357 Entrepreneur	Signature:
After Hours Contact:	Jessica Arthurs	E-mail:	jarthurs@lrl.ca	Ottawa, Ontario	Page 1 of 1
Telephone:	6138423434	Fax:		Public Health Unit:	Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day

Samples Submitted Under: (Indicate **ONLY one**)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☒ No ☐ N/A

Are these samples for human consumption?: ☒ Yes ☐ No

All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Subdivision Package			
1	Pressure Tank	357 Entrepreneur - Pre	R	G	N	–	April 17/23	11:15	8	–	F					X			
2	Washroom Tap	357 Entrepreneur - Post	T	G	N	–	April 17/23	11:35	8	–	F					X			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jessica Arthurs	Date/Time:	Date/Time: Apr 17/23 1pm	Date/Time: Apr 17/23 1:19pm
Date/Time: April 17, 2023 12:58 pm	Temperature: °C	Temperature: 11.6 °C	pH Verified: ☐ By:

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Certificate of Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Eric Lavergne

Client PO:
Project: 220487
Custody: 18335

Report Date: 5-Sep-2023
Order Date: 31-Aug-2023

Order #: 2335315

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2335315-01	363 Entrepreneur Crescent Supply Well - 4 Hour
2335315-02	363 Entrepreneur Crescent Supply Well - 8 Hour

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	1-Sep-23	1-Sep-23
Ammonia, as N	EPA 351.2 - Auto Colour	1-Sep-23	1-Sep-23
Anions	EPA 300.1 - IC	31-Aug-23	31-Aug-23
Colour	SM2120 - Spectrophotometric	31-Aug-23	31-Aug-23
Conductivity	EPA 9050A- probe @25 °C	1-Sep-23	1-Sep-23
Dissolved Organic Carbon	MOE 3247B - Combustion IR	31-Aug-23	31-Aug-23
E. coli	MOE E3407	31-Aug-23	31-Aug-23
Fecal Coliform	SM 9222D	31-Aug-23	31-Aug-23
Heterotrophic Plate Count	SM 9215C	31-Aug-23	31-Aug-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	31-Aug-23	1-Sep-23
pH	EPA 150.1 - pH probe @25 °C	1-Sep-23	1-Sep-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	31-Aug-23	31-Aug-23
Hardness	Hardness as CaCO3	31-Aug-23	1-Sep-23
Sulphide	SM 4500SE - Colourimetric	1-Sep-23	1-Sep-23
Tannin/Lignin	SM 5550B - Colourimetric	31-Aug-23	1-Sep-23
Total Coliform	MOE E3407	31-Aug-23	31-Aug-23
Total Dissolved Solids	SM 2540C - gravimetric, filtration	31-Aug-23	1-Sep-23
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	1-Sep-23	1-Sep-23
Turbidity	SM 2130B - Turbidity meter	31-Aug-23	31-Aug-23
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	1-Sep-23	1-Sep-23

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Microbiological Parameters							
E. coli	1 CFU/100mL	ND [1]	1 [1]	-	-	-	-
Total Coliforms	1 CFU/100mL	2 [1]	1 [1]	-	-	-	-
Fecal Coliforms	1 CFU/100mL	ND	ND	-	-	-	-
Heterotrophic Plate Count	10 CFU/mL	90	70 [4]	-	-	-	-
General Inorganics							
Alkalinity, total	5 mg/L	703	705	-	-	-	-
Ammonia as N	0.01 mg/L	4.72	4.71	-	-	-	-
Dissolved Organic Carbon	0.5 mg/L	9.4	8.5	-	-	-	-
Colour	2 TCU	8	8	-	-	-	-
Conductivity	5 uS/cm	14300	14200	-	-	-	-
Hardness	mg/L	1020	1030	-	-	-	-
pH	0.1 pH Units	8.2	8.3	-	-	-	-
Phenolics	0.001 mg/L	<0.001	<0.001	-	-	-	-
Total Dissolved Solids	10 mg/L	7950	7880	-	-	-	-
Sulphide	0.02 mg/L	0.23	0.23	-	-	-	-
Tannin & Lignin	0.1 mg/L	0.7	0.7	-	-	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	4.7	4.7	-	-	-	-
Turbidity	0.1 NTU	3.8	3.5	-	-	-	-
Anions							
Chloride	1 mg/L	4560	4460	-	-	-	-
Fluoride	0.1 mg/L	0.2	0.2	-	-	-	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	-	-	-	-
Nitrite as N	0.05 mg/L	<0.25 [2]	<0.25 [2]	-	-	-	-
Sulphate	1 mg/L	3	4	-	-	-	-

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Metals							
Aluminum	0.001 mg/L	0.025	0.018	-	-	-	-
Antimony	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Arsenic	0.001 mg/L	<0.001	<0.001	-	-	-	-
Barium	0.001 mg/L	4.17	4.22	-	-	-	-
Beryllium	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Boron	0.01 mg/L	0.79	0.76	-	-	-	-
Cadmium	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Calcium	0.1 mg/L	48.3	49.0	-	-	-	-
Chromium	0.001 mg/L	<0.001	<0.001	-	-	-	-
Cobalt	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Copper	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Iron	0.1 mg/L	0.3	0.3	-	-	-	-
Lead	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Magnesium	0.2 mg/L	218	220	-	-	-	-
Manganese	0.005 mg/L	0.009	0.007	-	-	-	-
Molybdenum	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Nickel	0.001 mg/L	<0.001	<0.001	-	-	-	-
Potassium	0.1 mg/L	61.3	63.3	-	-	-	-
Selenium	0.001 mg/L	<0.001	<0.001	-	-	-	-
Silver	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Sodium	0.2 mg/L	2670	2620	-	-	-	-
Strontium	0.01 mg/L	5.71	5.71	-	-	-	-
Thallium	0.001 mg/L	<0.001	<0.001	-	-	-	-

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Metals							
Tin	0.01 mg/L	<0.01	<0.01	-	-	-	-
Titanium	0.005 mg/L	<0.005	<0.005	-	-	-	-
Tungsten	0.01 mg/L	<0.01	<0.01	-	-	-	-
Uranium	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Vanadium	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Zinc	0.005 mg/L	<0.005	<0.005	-	-	-	-
Volatiles							
Acetone	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Benzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromodichloromethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromoform	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromomethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Carbon Tetrachloride	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
Chlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Chloroethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Chloroform	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Dibromochloromethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Dichlorodifluoromethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
1,2-Dibromoethane	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
1,2-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,3-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,4-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1-Dichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Volatiles							
1,2-Dichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
cis-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
trans-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,2-Dichloroethylene, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,2-Dichloropropane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
cis-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
trans-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,3-Dichloropropene, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Ethylbenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Hexane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Methyl Isobutyl Ketone	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Methyl tert-butyl ether	0.002 mg/L	<0.0020	<0.0020	-	-	-	-
Methylene Chloride	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Styrene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,1,2-Tetrachloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,2,2-Tetrachloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Tetrachloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Toluene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,1-Trichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,2-Trichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Trichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-		
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-	-	-
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Volatiles							
Trichlorofluoromethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Vinyl chloride	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
m,p-Xylenes	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
o-Xylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Xylenes, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Toluene-d8	Surrogate	102%	103%	-	-	-	-
4-Bromofluorobenzene	Surrogate	100%	105%	-	-	-	-
Dibromofluoromethane	Surrogate	103%	92.7%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Chloride	ND	1	mg/L					
Fluoride	ND	0.1	mg/L					
Nitrate as N	ND	0.1	mg/L					
Nitrite as N	ND	0.05	mg/L					
Sulphate	ND	1	mg/L					
General Inorganics								
Alkalinity, total	ND	5	mg/L					
Ammonia as N	ND	0.01	mg/L					
Dissolved Organic Carbon	ND	0.5	mg/L					
Colour	ND	2	TCU					
Conductivity	ND	5	uS/cm					
Phenolics	ND	0.001	mg/L					
Total Dissolved Solids	ND	10	mg/L					
Sulphide	ND	0.02	mg/L					
Tannin & Lignin	ND	0.1	mg/L					
Total Kjeldahl Nitrogen	ND	0.1	mg/L					
Turbidity	ND	0.1	NTU					
Metals								
Aluminum	ND	0.001	mg/L					
Antimony	ND	0.0005	mg/L					
Arsenic	ND	0.001	mg/L					
Barium	ND	0.001	mg/L					
Beryllium	ND	0.0005	mg/L					
Boron	ND	0.01	mg/L					
Cadmium	ND	0.0001	mg/L					
Calcium	ND	0.1	mg/L					
Chromium	ND	0.001	mg/L					
Cobalt	ND	0.0005	mg/L					
Copper	ND	0.0005	mg/L					
Iron	ND	0.1	mg/L					
Lead	ND	0.0001	mg/L					
Magnesium	ND	0.2	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Manganese	ND	0.005	mg/L					
Molybdenum	ND	0.0005	mg/L					
Nickel	ND	0.001	mg/L					
Potassium	ND	0.1	mg/L					
Selenium	ND	0.001	mg/L					
Silver	ND	0.0001	mg/L					
Sodium	ND	0.2	mg/L					
Strontium	ND	0.01	mg/L					
Thallium	ND	0.001	mg/L					
Tin	ND	0.01	mg/L					
Titanium	ND	0.005	mg/L					
Tungsten	ND	0.01	mg/L					
Uranium	ND	0.0001	mg/L					
Vanadium	ND	0.0005	mg/L					
Zinc	ND	0.005	mg/L					
Microbiological Parameters								
E. coli	ND	1	CFU/100mL					
Total Coliforms	ND	1	CFU/100mL					
Fecal Coliforms	ND	1	CFU/100mL					
Heterotrophic Plate Count	ND	10	CFU/mL					
Volatiles								
Acetone	ND	0.0050	mg/L					
Benzene	ND	0.0005	mg/L					
Bromodichloromethane	ND	0.0005	mg/L					
Bromoform	ND	0.0005	mg/L					
Bromomethane	ND	0.0005	mg/L					
Carbon Tetrachloride	ND	0.0002	mg/L					
Chlorobenzene	ND	0.0005	mg/L					
Chloroethane	ND	0.0010	mg/L					
Chloroform	ND	0.0005	mg/L					
Dibromochloromethane	ND	0.0005	mg/L					
Dichlorodifluoromethane	ND	0.0010	mg/L					
1,2-Dibromoethane	ND	0.0002	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2-Dichlorobenzene	ND	0.0005	mg/L					
1,3-Dichlorobenzene	ND	0.0005	mg/L					
1,4-Dichlorobenzene	ND	0.0005	mg/L					
1,1-Dichloroethane	ND	0.0005	mg/L					
1,2-Dichloroethane	ND	0.0005	mg/L					
1,1-Dichloroethylene	ND	0.0005	mg/L					
cis-1,2-Dichloroethylene	ND	0.0005	mg/L					
trans-1,2-Dichloroethylene	ND	0.0005	mg/L					
1,2-Dichloroethylene, total	ND	0.0005	mg/L					
1,2-Dichloropropane	ND	0.0005	mg/L					
cis-1,3-Dichloropropylene	ND	0.0005	mg/L					
trans-1,3-Dichloropropylene	ND	0.0005	mg/L					
1,3-Dichloropropene, total	ND	0.0005	mg/L					
Ethylbenzene	ND	0.0005	mg/L					
Hexane	ND	0.0010	mg/L					
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L					
Methyl Isobutyl Ketone	ND	0.0050	mg/L					
Methyl tert-butyl ether	ND	0.0020	mg/L					
Methylene Chloride	ND	0.0050	mg/L					
Styrene	ND	0.0005	mg/L					
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L					
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L					
Tetrachloroethylene	ND	0.0005	mg/L					
Toluene	ND	0.0005	mg/L					
1,1,1-Trichloroethane	ND	0.0005	mg/L					
1,1,2-Trichloroethane	ND	0.0005	mg/L					
Trichloroethylene	ND	0.0005	mg/L					
Trichlorofluoromethane	ND	0.0010	mg/L					
Vinyl chloride	ND	0.0002	mg/L					
m,p-Xylenes	ND	0.0005	mg/L					
o-Xylene	ND	0.0005	mg/L					
Xylenes, total	ND	0.0005	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	*0.0808*		*%*	*101*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0781*		*%*	*97.6*	*50-140*			
Surrogate: Toluene-d8	*0.0793*		*%*	*99.1*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	4460	20	mg/L	4460			0.0	20	
Fluoride	0.20	0.1	mg/L	0.19			3.0	20	
Nitrate as N	ND	0.1	mg/L	ND			NC	20	
Nitrite as N	ND	0.25	mg/L	ND			NC	20	GEN07
Sulphate	4.24	1	mg/L	4.47			5.4	20	
General Inorganics									
Alkalinity, total	698	5	mg/L	703			0.7	14	
Ammonia as N	4.66	0.04	mg/L	4.71			0.9	18	
Dissolved Organic Carbon	8.4	0.5	mg/L	9.4			11.2	37	
Colour	4	2	TCU	4			0.0	12	
Conductivity	14000	5	uS/cm	14300			1.7	5	
pH	8.2	0.1	pH Units	8.2			0.1	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	92.0	10	mg/L	84.0			9.1	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	0.7	0.1	mg/L	0.7			1.4	11	
Total Kjeldahl Nitrogen	4.82	0.2	mg/L	4.70			2.6	16	
Turbidity	ND	0.1	NTU	ND			NC	10	
Metals									
Aluminum	0.022	0.001	mg/L	0.025			15.3	20	
Antimony	ND	0.0005	mg/L	ND			NC	20	
Arsenic	ND	0.001	mg/L	ND			NC	20	
Barium	4.52	0.010	mg/L	4.17			7.9	20	
Beryllium	ND	0.0005	mg/L	ND			NC	20	
Boron	0.82	0.01	mg/L	0.79			2.8	20	
Cadmium	ND	0.0001	mg/L	ND			NC	20	
Calcium	45.8	0.1	mg/L	48.3			5.4	20	
Chromium	ND	0.001	mg/L	ND			NC	20	
Cobalt	ND	0.0005	mg/L	ND			NC	20	
Copper	ND	0.0005	mg/L	ND			NC	20	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Iron	0.3	0.1	mg/L	0.3			12.2	20	
Lead	0.0001	0.0001	mg/L	ND			NC	20	
Magnesium	203	0.2	mg/L	218			7.1	20	
Manganese	0.008	0.005	mg/L	0.009			11.6	20	
Molybdenum	ND	0.0005	mg/L	ND			NC	20	
Nickel	ND	0.001	mg/L	ND			NC	20	
Potassium	59.1	0.1	mg/L	61.3			3.7	20	
Selenium	ND	0.001	mg/L	ND			NC	20	
Silver	0.0002	0.0001	mg/L	ND			NC	20	
Sodium	2650	2.0	mg/L	2670			1.0	20	
Thallium	ND	0.001	mg/L	ND			NC	20	
Tin	ND	0.01	mg/L	ND			NC	20	
Titanium	ND	0.005	mg/L	ND			NC	50	
Tungsten	ND	0.01	mg/L	ND			NC	20	
Uranium	ND	0.0001	mg/L	ND			NC	20	
Vanadium	ND	0.0005	mg/L	ND			NC	20	
Zinc	ND	0.005	mg/L	ND			NC	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	1			NC	30	BAC01
Total Coliforms	ND	1	CFU/100mL	1			NC	30	BAC01
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Heterotrophic Plate Count	60	10	CFU/mL	70			15.0	30	
Volatiles									
Acetone	ND	0.0050	mg/L	ND			NC	30	
Benzene	ND	0.0005	mg/L	ND			NC	30	
Bromodichloromethane	ND	0.0005	mg/L	ND			NC	30	
Bromoform	ND	0.0005	mg/L	ND			NC	30	
Bromomethane	ND	0.0005	mg/L	ND			NC	30	
Carbon Tetrachloride	ND	0.0002	mg/L	ND			NC	30	
Chlorobenzene	ND	0.0005	mg/L	ND			NC	30	
Chloroethane	ND	0.0010	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloroform	ND	0.0005	mg/L	ND			NC	30	
Dibromochloromethane	ND	0.0005	mg/L	ND			NC	30	
Dichlorodifluoromethane	ND	0.0010	mg/L	ND			NC	30	
1,2-Dibromoethane	ND	0.0002	mg/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloropropane	ND	0.0005	mg/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
Ethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Hexane	ND	0.0010	mg/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	0.0050	mg/L	ND			NC	30	
Methyl tert-butyl ether	ND	0.0020	mg/L	ND			NC	30	
Methylene Chloride	ND	0.0050	mg/L	ND			NC	30	
Styrene	ND	0.0005	mg/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
Tetrachloroethylene	ND	0.0005	mg/L	ND			NC	30	
Toluene	ND	0.0005	mg/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
Trichloroethylene	ND	0.0005	mg/L	ND			NC	30	
Trichlorofluoromethane	ND	0.0010	mg/L	ND			NC	30	
Vinyl chloride	ND	0.0002	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	ND	0.0005	mg/L	ND			NC	30	
o-Xylene	ND	0.0005	mg/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*0.0886*		*%*		*111*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0765*		*%*		*95.7*	*50-140*			
Surrogate: Toluene-d8	*0.0798*		*%*		*99.8*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.86	1	mg/L	ND	98.6	78-114			
Fluoride	1.17	0.1	mg/L	0.19	97.8	70-130			
Nitrate as N	1.00	0.1	mg/L	ND	99.6	77-126			
Nitrite as N	1.08	0.05	mg/L	ND	108	82-110			
Sulphate	14.8	1	mg/L	4.47	103	70-130			
General Inorganics									
Ammonia as N	1.02	0.01	mg/L	ND	102	81-124			
Dissolved Organic Carbon	12.8	0.5	mg/L	3.1	97.1	60-133			
Phenolics	0.026	0.001	mg/L	ND	103	67-133			
Total Dissolved Solids	96.0	10	mg/L	ND	96.0	75-125			
Sulphide	0.50	0.02	mg/L	ND	100	79-115			
Tannin & Lignin	1.8	0.1	mg/L	0.7	110	71-113			
Total Kjeldahl Nitrogen	0.99	0.1	mg/L	ND	98.7	81-126			
Metals									
Aluminum	82.2	0.001	mg/L	25.1	114	80-120			
Arsenic	49.1	0.001	mg/L	0.246	97.8	80-120			
Barium	48.6	0.001	mg/L	ND	97.3	80-120			
Beryllium	37.3	0.0005	mg/L	0.0182	74.5	80-120			QM-07
Boron	50.0	0.01	mg/L	ND	100	80-120			
Cadmium	50.6	0.0001	mg/L	ND	101	80-120			
Calcium	10600	0.1	mg/L	ND	106	80-120			
Chromium	50.5	0.001	mg/L	0.330	100	80-120			
Cobalt	49.6	0.0005	mg/L	0.287	98.7	80-120			
Copper	44.3	0.0005	mg/L	0.0834	88.5	80-120			
Iron	2510	0.1	mg/L	344	86.5	80-120			
Lead	40.8	0.0001	mg/L	0.0346	81.6	80-120			
Magnesium	10200	0.2	mg/L	ND	102	80-120			
Manganese	55.0	0.005	mg/L	9.04	92.0	80-120			
Molybdenum	53.7	0.0005	mg/L	0.137	107	80-120			
Nickel	46.5	0.001	mg/L	0.196	92.6	80-120			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Potassium	69700	0.1	mg/L	61300	83.6	80-120			
Selenium	48.9	0.001	mg/L	ND	97.8	80-120			
Silver	51.0	0.0001	mg/L	ND	102	80-120			
Sodium	10100	0.2	mg/L	ND	101	80-120			
Thallium	45.7	0.001	mg/L	0.014	91.4	80-120			
Tin	39.5	0.01	mg/L	0.05	78.8	80-120			QM-07
Titanium	57.8	0.005	mg/L	ND	116	70-130			
Tungsten	55.5	0.01	mg/L	0.17	111	80-120			
Uranium	51.3	0.0001	mg/L	0.0266	103	80-120			
Vanadium	51.7	0.0005	mg/L	0.221	103	80-120			
Zinc	35.2	0.005	mg/L	2.19	66.0	80-120			QM-07
Volatiles									
Acetone	0.0934	0.0050	mg/L	ND	93.4	50-140			
Benzene	0.0447	0.0005	mg/L	ND	112	60-130			
Bromodichloromethane	0.0478	0.0005	mg/L	ND	120	60-130			
Bromoform	0.0338	0.0005	mg/L	ND	84.5	60-130			
Bromomethane	0.0422	0.0005	mg/L	ND	105	50-140			
Carbon Tetrachloride	0.0417	0.0002	mg/L	ND	104	60-130			
Chlorobenzene	0.0377	0.0005	mg/L	ND	94.3	60-130			
Chloroethane	0.0504	0.0010	mg/L	ND	126	50-140			
Chloroform	0.0410	0.0005	mg/L	ND	102	60-130			
Dibromochloromethane	0.0421	0.0005	mg/L	ND	105	60-130			
Dichlorodifluoromethane	0.0446	0.0010	mg/L	ND	112	50-140			
1,2-Dibromoethane	0.0442	0.0002	mg/L	ND	110	60-130			
1,2-Dichlorobenzene	0.0395	0.0005	mg/L	ND	98.7	60-130			
1,3-Dichlorobenzene	0.0419	0.0005	mg/L	ND	105	60-130			
1,4-Dichlorobenzene	0.0396	0.0005	mg/L	ND	99.0	60-130			
1,1-Dichloroethane	0.0473	0.0005	mg/L	ND	118	60-130			
1,2-Dichloroethane	0.0407	0.0005	mg/L	ND	102	60-130			
1,1-Dichloroethylene	0.0451	0.0005	mg/L	ND	113	60-130			
cis-1,2-Dichloroethylene	0.0502	0.0005	mg/L	ND	125	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,2-Dichloroethylene	0.0486	0.0005	mg/L	ND	122	60-130			
1,2-Dichloropropane	0.0460	0.0005	mg/L	ND	115	60-130			
cis-1,3-Dichloropropylene	0.0453	0.0005	mg/L	ND	113	60-130			
trans-1,3-Dichloropropylene	0.0446	0.0005	mg/L	ND	111	60-130			
Ethylbenzene	0.0371	0.0005	mg/L	ND	92.8	60-130			
Hexane	0.0490	0.0010	mg/L	ND	122	60-130			
Methyl Ethyl Ketone (2-Butanone)	0.0958	0.0050	mg/L	ND	95.8	50-140			
Methyl Isobutyl Ketone	0.0931	0.0050	mg/L	ND	93.1	50-140			
Methyl tert-butyl ether	0.127	0.0020	mg/L	ND	127	50-140			
Methylene Chloride	0.0406	0.0050	mg/L	ND	101	60-130			
Styrene	0.0440	0.0005	mg/L	ND	110	60-130			
1,1,1,2-Tetrachloroethane	0.0432	0.0005	mg/L	ND	108	60-130			
1,1,2,2-Tetrachloroethane	0.0454	0.0005	mg/L	ND	114	60-130			
Tetrachloroethylene	0.0404	0.0005	mg/L	ND	101	60-130			
Toluene	0.0374	0.0005	mg/L	ND	93.6	60-130			
1,1,1-Trichloroethane	0.0418	0.0005	mg/L	ND	105	60-130			
1,1,2-Trichloroethane	0.0430	0.0005	mg/L	ND	107	60-130			
Trichloroethylene	0.0496	0.0005	mg/L	ND	124	60-130			
Trichlorofluoromethane	0.0445	0.0010	mg/L	ND	111	60-130			
Vinyl chloride	0.0476	0.0002	mg/L	ND	119	50-140			
m,p-Xylenes	0.0744	0.0005	mg/L	ND	93.0	60-130			
o-Xylene	0.0359	0.0005	mg/L	ND	89.8	60-130			
Surrogate: 4-Bromofluorobenzene	*0.0701*		*%*		*87.6*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0841*		*%*		*105*	*50-140*			
Surrogate: Toluene-d8	*0.0729*		*%*		*91.2*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container(s) - Labeled improperly/insufficient information - 1x VOC vial received unlabelled.

Applies to Samples: 363 Entrepreneur Crescent Supply Well - 8 Hour

Sample Qualifiers :

1: Greater than 200 CFU of background colonies present. This may interfere with target growth and ability of the analyst to count E. coli & Total Coliform. The target colonies may be under-represented.

2: Elevated reporting limit due to dilution required because of high target analyte concentration.

4: This isolate was present as a spreading colony, potentially caused as a consequence of condensation within the strip/plate. Typically, this type of colony is a result of a few colonies or less. The proportions may differ and other isolates may be masked.

QC Qualifiers:

BAC01 Greater than 200 CFU of background colonies present. This may interfere with target growth and ability of the analyst to count E. coli & Total Coliform. The target colonies may be under-represented.

GEN07 Elevated reporting limit due to dilution required because of high target analyte concentration.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

PARACE LABORATORIES L

Paracel ID: 2335315

Paracel Order Number	Chain Of Custody
2335315	Ontario Drinking Water Samples № 18335

Client Name:	LRL Associates Ltd.	Project Ref:	220487	Waterworks Name:	Samples Taken By:
Contact Name:	Eric Lavergne	Quote #:		Waterworks Number:	Name: Eric Lavergne
Address:	5430 Canotek Rd	PO #:		Address:	Signature:
After Hours Contact:		E-mail:	elavergne@lrlca		Page ____ of ____
Telephone:	613 842 3434	Fax:		Public Health Unit:	Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day

Samples Submitted Under: (indicate ONLY one)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☒ No ☐ N/A
Are these samples for human consumption?: ☐ Yes ☒ No
All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Sodium, Nitrate/Nitrite	VOC	Trace Metals
1	363 Entrepreneur crescent	363 Entrepreneur crescent Supply Well - 4 Hour	R	G			Aug 30/2023	12:15 pm	12							X	X	X
2																		
3	363 Entrepreneur crescent	363 Entrepreneur Crescent Supply Well - 8 Hour	R	G				4:15 PM	12							X	X	X
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: KB 904	Verified By: SD
Relinquished By (Print): Eric Lavergne	Date/Time:	Date/Time: Aug 31/23	Date/Time: Aug 31, 2023 9:31 am
Date/Time:	Temperature: °C	Temperature: 16.1 °C	pH Verified: ☑ By: SD

ATTACHMENT I

Consent Not to Abandon Water Supply Well (A379014)

Ministry of the Environment, Conservation and Parks

Environmental Monitoring and Reporting Branch
125 Resources Road
Toronto ON M9P 3V6

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction de la surveillance environnementale
125, chemin Resources
Toronto ON M9P 3V6

Ontario

August 13, 2024

Entrepreneur Holding Corporation
c/o Dustin Wilson
310 Sanctuary Private
Ottawa, ON K1S 5W1

Dear:

Re: **Consent Not to Abandon Water Supply Well (A379014), Located at 363 Entrepreneur Crescent, Ottawa, Ontario**

You have submitted a request under subsection 21(10) of R.R.O 1990, Regulation 903: Wells, as amended (**"Wells Regulation"**), made under the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 (**"OWRA"**) for a written consent permitting you to not abandon one (1) well identified by well record number A379014. The well produces mineralized water[1] and accordingly would otherwise be required to be abandoned per section 21 (4) of the Wells Regulation.

You retained the services of LRL Engineering ("LRL") to provide the Ministry of the Environment, Conservation and Parks (the "Ministry") with a hydrogeological report regarding the potential impact of not abandoning the well located at 363 Entrepreneur Crescent, Ottawa, ON ("Subject Site").

The location of the well is described in Schedule A – PH4650-1 MECP Water Well Location Plan hereto, and forms part of this letter.

[1] "Mineralized water" means means water containing in excess of 6,000 milligrams per litre total dissolved solids or 500 milligrams per litre chlorides or 500 milligrams per litre sulphates, subsection 1(1) of R.R.O. 1990, Regulation 903 (Wells) as amended made under the Ontario Water Resources Act, R.S.O. 1990, c. O. 40, E-laws - https://www.ontario.ca/laws/regulation/900903

LRL produced a report titled "2023.12.20.LRL220487.LETTER.MineralizedWaterMECPNotification&Written Consent Request"; with File number 220487; and dated December 20, 2023 (the "LRL Report"). A copy of the LRL Report has been provided to me and is attached as part of Schedule B to this letter.

Based on the results provided in the LRL Report, I understand that a water quality sample collected from the well on August 30, 2023 during an 8-hour pumping test at the midpoint (4 hours) and end (8 hours) showed total dissolved solids (TDS) concentrations to be 7,950 and 7,880 milligrams per litre and chloride concentrations of 4,560 and 4,460 milligrams per litre, respectively. The water in the well is therefore "mineralized water" as defined in subsection 1(1) of the Wells Regulation.

The LRL Report proposed that the well be used as a non-potable water supply at the Subject Site and recommended that the following water treatment systems be considered, with modifications recommended by a water treatment system specialist:

- Water softener that uses salt;
- Series of three (3) carbon filters;
- Iodine dosage; and
- Reverse osmosis

The LRL Report also proposes that corrosion resistant plumbing be incorporated into the construction of the warehouse as a precautionary measure. The LRL Report recognizes the need to maintain all water treatment units and that the 'mineralized water within the well, supply line, and pressure tank prior to treatment may have a reduced operational duration or "life-span", and may need more frequent replacement.'

In coming to a decision on your request for consent not to abandon this well, I have reviewed the following reports and documents (attached as part of Schedule B):

- December 20, 2023, File: 220487, 2023.12.20.LRL220487.LETTER.MineralizedWaterMECPNotification&Written Consent Request.

Based on a review of the materials, the Ministry has determined that the well is unlikely to act as a pathway to allow mineralized water to intermingle with fresh groundwater resources and thus is unlikely to impair the quality of local groundwater resources.

In respect of the well, you have agreed to the following requirements (attached as part of Schedule C – Letter to Wells Director Accepting Conditions for Director Consent) as conditions of the Director granting consent permitting you not to abandon this well:

1. Ensure that the well is properly vented to the outside atmosphere in a manner that will safely disperse all gases, as per section 15.1 of Regulation 903;

2. The services of a water treatment specialist shall be retained and you shall install, operate and maintain a water treatment system in the distribution system, in accordance with recommendations of the water treatment specialist, to address the total dissolved solids and chloride present in the well water prior to the water being used in the building;

3. The water treatment system shall be properly maintained and operational at all times in accordance with the recommendations of the water treatment specialist;

4. All faucets within the building shall be labelled to indicate that the water is not intended for human consumption;

5. The well water shall not be used as a drinking water source under any circumstances by any person and botted water shall be supplied for consumption by employees; and

6. Due to elevated chloride, steps shall be taken to mitigate the impact of corrosion on plumbing including: use of approved PEX pipe and fittings, installation of stainless steel fixtures, and not installing water treatment systems that may increase corrosivity of the water; and

7. The well identified by well record number A379014 shall be maintained as per Reg. 903 until such time as the water supply is no longer required. At that point, the water supply well shall be decommissioned in accordance with Reg. 903.

Once the water treatment system becomes operational, you shall immediately notify, in writing, the Director appointed for the purposes of subsection 21 (10) of the Wells Regulation of the date when the water treatment system is operational.
To contact the Director, please send email correspondence to the wellshelpdesk@ontario.ca.

Failure to comply with the conditions specified above shall result in the automatic revocation of this consent without notice.

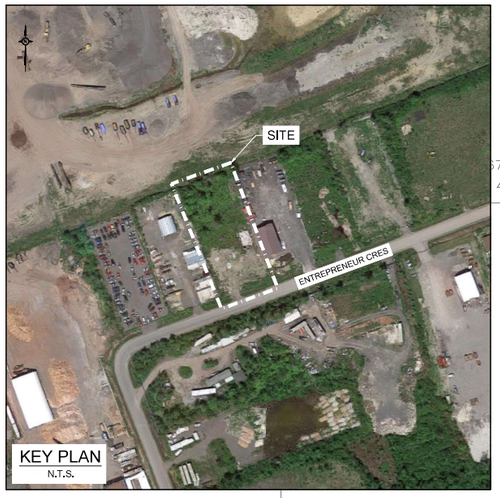
This consent is not assignable to a successor or assign without the express written authorization of the Director.

The issuance of and compliance with the conditions of this consent does not relieve any person of any obligation to comply with any provision of any other applicable statute, regulation or other legal requirement, including, but not limited to, any requirement to obtain and comply with any other approvals required by the Ministry of the Environment, Conservation and Parks or the City of Ottawa.

Shelley Kilby, M.Sc., P.Geo
Director
Appointed for the purposes of subsection 21(10) of the Wells Regulation

c: Tracy Hart, District Manager, Ottawa District Office
Alija Bos, Hydrogeologist, Eastern Region
Richard Bonner, Environmental Monitoring and Reporting Branch
Jessica Arthurs, Environmental Engineering Manager, LRL Associates Ltd.
Stephane Leclerc, P. Eng, LRL Associates Ltd.
Sean Harrigan, City of Ottawa
Tessa Di Iorio, City of Ottawa

SCHEDULE A



part 1 plan 4r-27827
pin 14558 - 0408

PROPOSED NATURALIZED 5m SETBACK
AS PER EIS RECOMMENDATIONS &
LANDSCAPE ARCHITECT PLAN X

WATERCOURSE TOP OF SLOPE

5m WATERCOURSE TOS SETBACK

PROPOSED WELL (DESIGN BY OTHERS)

Fd. SIB(AOG) Disturbed & Reset

C/L of Ditch

Edge of Gravel

CLF 0.19 West

TEMPORARY SNOW STORAGE AREA

REAR YARD GRAVEL LOADING / UNLOADING AND VEHICLE MANEUVERABILITY AREA

PROPOSED 85.0m FIRE ROUTE

R9.0m
R12.0m
R15.0m

BLOCK 3

81.38 (P1,P3)&Meas.

81.93 (P1,P3)&Meas.

50M-1366

50M-6694

Metal Containers

Drilled Well (Top Elev=77.90)

PLAN

pin 14558 - 0356
part 2

pin 14558 - 0401
part 3

pin 14558 - 04
part 4

PROPOSED 1.5m GRASS BUFFER

PROPOSED WAREHOUSE
F.F.E = 77.50
(G.F.A. = ±592m²)

22.86m

GRAVEL DRIVEWAY

PROP. 1.0m GRASS BUFFER

PROPOSED CONCRETE SIDEWALK W/ BARRIER CURB

25.91m

Metal Building

PROPOSED UNDERGROUND STORMWATER STORAGE CHAMBERS

CLF 0.13 East

N21°20'40"W

SUBJECT TO EASEMENT PER INSTS. OC1627866

PROPOSED LOCATION FOR SEPTIC TREATMENT SYSTEM (DESIGN BY OTHERS)

PROPOSED LOCATION FOR SEPTIC LEACHING BED (DESIGN BY OTHERS). LEACHING BED TO BE PROTECTED BY BOLLARDS.

SITE E
Nail in Hydro Pole
Elev=77.79

GRAVEL PASSENGER VEHICLE PARKING LOT

PROPOSED STORMWATER PUMP AND CHAMBER

LANDSCAPING AS PER LANDSCAPE ARCHITECT PLAN X

part 8 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627866

part 9 PLAN 4R-27830

part 10 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627868

CLF 0.08 West

SSIB

Drain (Inv.=76.69)

N68°39'20"E

PROP. TOP OF SLOPE
PROP. BOT. OF DITCH
PROP. TOP OF SLOPE
EDGE OF GRAVEL

CSP 0.5ø Inv.=76.43

CSP 0.5ø Inv.=76.39

Edge of Asphalt

PROPOSED NEW TOP OF SLOPE

PROPOSED CULVERT REMOVAL & DITCH RE-GRADING

Centreline of Road

PROPOSED 600mmØ ENTRANCE CULVERT

ENTREPRENEUR CRESCENT

pin 14558 - 0066

174.45 (P1,P3)&Meas.

211.20 (P1,P3)&Meas.

REGISTERED

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED AREA, RUNOFF: WATERSHED NAME, RUNOFF COEFFICIENT, AREA IN HECTARES

DETAILS OF DEVELOPMENT

DATA		REQUIRED	PROVIDED
ZONING		RG2 (RURAL GENERAL INDUSTRIAL ZONE)	
SETBACKS	FY	15.0m	21.6m
	RY	15.0m	34.2m
	INT.SY	3.0m / 1.5m (MV)	1.5m
	EXT.SY	3.0m	12.4m
NET LOT AREA (sqm)		3000 sqm	
BUILDING COVERAGE		50 % (MAX)	19.7 %
BUILDING HEIGHT		15.0 m (MAX)	10.8 m
GROSS FLOOR AREA		592 sqm	
No. of UNITS		1	
LOADING SPACES		N/A	N/A
PARKING:		5	8
No. OF STOREYS			1
OTHER:			

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS 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.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THEREOF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS 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 THESE DRAWINGS 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. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S 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 LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'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 LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m
SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR SITE PLAN CONTROL	K.H.	XX JUL 2024
01	ISSUED FOR SITE PLAN CONTROL	K.H.	10 OCT 2023

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
DUSTIN WILSON

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT, OTTAWA

DRAWING TITLE
SITE PLAN

PROJECT NO. 220487
DATE OCT 2022

C201

SCHEDULE B

Via Email: wellshelpdesk@ontario.ca

December 20, 2023

Our File Ref.: 220487

Well Help Desk,
Environmental Monitoring and Reporting Branch of the
Ministry of the Environment and Climate Change
125 Resources Road
Toronto, Ontario M9P 3V6

Subject: Written Consent Request for Director's Exemptions –
Well Producing Mineralized Water
363 Entrepreneur Crescent, Ottawa, Ontario

Dear Respective Respondent of Well Help Desk,

On behalf Entrepreneur Holding Corporation (the 'Client'), LRL Engineering (LRL) has prepared the following formal request for written consent by the Ontario Ministry of the Environmental, Conservation and Parks (MECP) Director for the exemption related to the decommissioning of a recently constructed supply well based on the mineralized water conditions encountered on the property located at 363 Entrepreneur Cresent, in Ottawa, Ontario (herein referred to as the 'Site').

This letter is intended to provide relevant information related to the supply well and mineralized aquifer conditions, the anticipated use of the Site, and rational for the requested decommissioning exemption.

1 SITE DESCRIPTION

The Site is generally undeveloped with exception to a granular base applied across the surface of the Site and is used as a storage yard for the adjacent facility. The Site is set within a rural, low-density commercial and light industrial area of Ottawa, Ontario, southeast of the City's urban extents. The Site is legally described as Part of Block 3 Plan 50M136 Part 3 ON Plan 50R6694; Subject to an Easement in Gross Over Part 9 ON Plan 4R-27830 As in OC1627867; City of Ottawa.

Municipal water supply and sanitary services are not available for the Site. Select neighbouring lands are equipped with private water supply wells, and sewage disposal systems. The potable groundwater supply for the surround area is found in the gravel/shale bedrock layer, at depths between 21.0 m and 30.3 m below ground surface (bgs).

The Client (Entrepreneur Holding Corporation) is the current owner of the Site, and the current owner of the recently constructed supply well on the subject property. The supply well was installed to support a proposed warehouse development, and to facilitate the demands of a hydrogeological assessment requested by the City of Ottawa to support the application of the proposed development.

It is anticipated that one (1) approximately 1,380 m² warehouse will be developed on the subject property, in addition to corresponding parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system, however, it is important to note that the supply well will not be used for human consumption, as discussed in further detail below in Section 3.

2 SUPPLY WELL INSTALLATION

The proposed supply well to facilitate the anticipated development, and requested studies, was constructed on August 23, 2023, by Air Rock Well Drilling (Richmond, Ontario). The well was advanced at the northeastern portion of the Site, being a minimum of 3.0 m from all property lines, and beyond 15 m from potential sources of contamination, such as septic disposal systems (existing and proposed). The well extended to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.

A copy of the well record (Well Tag#A379014) is included in **Attachment A** at the end of this letter.

2.1 Quality

The proposed development of the Site is anticipated to include a warehouse with office space. To support the anticipated development application with the City, a hydrogeological assessment was completed on the Site. The assessment included a supply aquifer evaluation with a focus on demand and quality. To establish the hydraulic properties of the proposed supply aquifer, an eight (8)-hr pump test was conducted on the newly constructed supply well on August 30, 2023, by LRL. The pumping rate throughout the test was set to account for the anticipated demand volumes of the proposed facility, over a common commercial operation period of eight (8)-hours.

Periodic samples collected during the water demand evaluation revealed that the proposed supply aquifer is considered to be mineralized, in accordance with Subsection 1(1) of Wells Regulation 903, that indicates "*water containing in excess of 6,000 mg/L total dissolved solids or 500 mg/L chlorides or 500 mg/L sulphates*" is considered mineralized. The values obtained at the time of the periodic sampling for these parameters indicative of mineralization are as follows:

- Total Dissloved Soilds (TDS) values ranged between 7,880 and 7,950 mg/L; and
- Chloride concentrations ranged between 4,460 and 4,560 mg/L.

Under subsection 21(4) of Ontario Regulation 903, if a well produces mineralized water, the well owner shall immediately abandon the well. However, "*(10) Subsections (4) to (8) do not apply if the well owner has the written consent of the Director (O. Reg. 372/07, s. 20)"* to allow for the continued use of a well which produces mineralized water.

The water quality, and sampling procedures are further discussed in the included Hydrogeological Assessment & Terrian Analysis report (September 2023) included in **Attachment B**.

3 DIRECTOR'S EXEMPTIONS REQUEST – WELL PRODUCING MINERALIZED WATER

As mentioned, the Site is set in a rural industrial setting, with the anticipated use as a warehouse facility with office space. Municipal water supply services are not available for the Site. Future, and existing neighbouring developments are required to obtain their water supply source through natural aquifers. Review of available water well records obtained through MECP water well database, revealed that alternative aquifers are not readily available in the area of the Site. Limitations for alternative water supply sources include the following:

- Overburden soils across the Site consist of clay. Wells which are installed in clayey or silty overburden are often poor yielding due to the hydraulic conductivity characteristics of these materials. A poor yielding well is not acceptable for development according to the local regulatory official and would most likely not be considered acceptable for the proposed development on the Site based on these assumptions. Furthermore, overburden wells are also more susceptible to potential impairment or contamination from on-Site and off-Site operations and features, including septic beds. Although the clay deposits across the Site would act as a confining layer for potential runoff or infiltration of contaminates, due to the light industrial operations in the area of the property, including a snow-dump immediately north, a shallow well is not considered a suitable option for the Site;
- The water well record for the supply well advanced on the Site, included in **Attachment A**, does not indicate an alternative bedrock aquifer, at shallower intervals; and
- According to the O. Reg. 903 licenced well driller retained for the installation services, as well as conversations with neighbouring landowners, deeper conditions are generally considered unacceptable with respect to additional provincial drinking water quality standards and low yields.

As there are no potential alternative water supply sources available for the Site, the client is respectfully requested permission by the Director to maintain the recently installed supply well at 363 Entrepreneur Crescent, Ottawa, Ontario to support the proposed warehouse development.

3.1 Request Rationale

The Client is aware of the potential concerns with respect to plumbing fixture integrity, and potential risks to sensitive populations or persons with health concerns associated with mineralized water. However, there are no alternative aquifers available for the proposed warehouse development, as discussed above.

As a mitigative solution to prevent consumption of the water supply from the well at the proposed facility, the Client will install signage, in accordance with the Ontario Building Code, of the non-potable conditions throughout. Notices of non-potable conditions will be fitted at all fixtures to provide visual awareness that consumption of the supply water emitted from the fixtures is not for consumption. The signage will contain the words "**Non-potable water, Do Not Drink**. The Client will include an alternative source for drinking water through a conventional drinking water dispenser/water cooler, with potable water re-fill containers available through a supplier or retailer.

Although the consumption and use of the supply aquifer at the Site will be restricted, as included in the Hydrogeological Assessment and Terrain Analysis (September 2023), an evaluation of the adjacent properties supply well (357 Entrepreneur Crescent), and existing distribution system was conducted. The intent of the evaluation was to demonstrate through laboratory analysis that the proposed supply aquifer can be treated to concentrations considered generally acceptable in accordance with provincial guidelines, pertaining more so to maintaining the integrity of the distribution system and plumbing fixtures. Based on the information collected with respect to this neighbouring supply well, it is noted that the conditions of the installation are considered similar to those at the Site. The adjacent supply well is advanced to a depth of 28.9 m into the shale stratum, generally where groundwater was encountered. The distribution system which supplies the neighbouring property development includes a water treatment system as follows:

- A water softener that uses salt;
- A series of three (3) carbon filters;
- Iodine dosage; and
- Reverse osmosis.

The pre-treatment system sample (raw water) revealed that the adjacent properties (357 Entrepreneur Crescent) water supply is in fact mineralized, with concentrations of TDS and Chloride of 7,640 and 4,350 mg/L, respectively. Post-treatment concentrations for these parameters were reported as 508 and 302 mg/L, respectively, marginally above the limits considered acceptable for consumption, however, are considered acceptable for general non-consumption use such as hand washing or facility cleaning. The treatment systems are proven to be affective with respect to the parameters of concern. And although the values are marginally above the drinking water quality guidelines, a treatment system specialist could provide modifications, or improvements to the system to further improve quality.

The Site will use a similar water treatment system as that currently in use at the adjacent property (357 Entrepreneur Crescent). The treated water is considered to have a low impact to plumbing fixtures and the distribution system piping system. However, corrosion resistance pluming will be incorporated into the construction of the warehouse as an additional precautionary measure. Furthermore, water treatment units will be maintained at the Site, to support improvements in the water quality. The client is aware that the mineralized water within the well, supply line, and pressure tank prior to treatment may have a reduced operational duration or “life-span”, and may need more frequent replacement.

It is understood that maintaining a mineralized well has risk for further groundwater impairment. Like all wells, a poorly constructed or neglected installation can be a pathway for contaminates entering and impairing aquifers. Proper and regular maintenance is required by the well owner to ensure that its integrity and quality is maintained. The supply well for the Site has been constructed so to limit the potential risk to alternative aquifers and neighbouring wells. The current depth and over-all condition of the well will not be altered, as deepening the well may interfere with deeper aquifers or groundwater supply sources. Furthermore, the seal must be maintained to prevent potential infiltration of the mineralized water into shallow water supply sources. The well was grouted from ground surface to 29.8 m below grade, which corresponds to the depth of the adjacent lands supply well. Groundwater on Site was found at greater depths, reported at 46.9 m below grade. The 29.8 m of seal, including of bentonite slurry and cement grout, is considered adequate to prevent impairment of the mineralized water to alternate aquifers in the area.

With respect to the supporting rational presented above, including:

- The limited alternative water supply sources available for the Site;
- Supporting evidence that the mineralized water can be treated to provide a suitable supply to the building fixtures and distribution system;
- The water will not be used for human consumption, and alternative drinking water sources will be made available by the client; and
- That the construction of the well is acceptable with respect to limiting potential risk or impairment to neighbouring supply aquifers and wells,

It is anticipated that sufficient supporting information has been presented herein to allow the MECP to make an informed decision to which they can agree that the supply well on the Site may be allowed to stay in contravention of Ontario Regulation 903 if the measures mentioned above are in place to eliminate physical hazards to Site occupants.

A copy of the previously prepared Hydrogeological Assessment & Terrain Analysis (September 2023) is included in **Attachment B** to provide the Well Help Desk, Environmental Monitoring and Reporting Branch of the MECP with further technical information related to the Site, proposed supply aquifer, and other pertinent supporting information.

Yours truly,
LRL Associates Ltd.

Jessica Arthurs
Environmental Engineering Manager

Stephane Leclerc, P. Eng.
Vice President

Encl.
Cc. Dustin Wilson, Entrepreneur Holding Corporation

ATTACHMENT A

On-Site Supply Well Record

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☒ Imperial

W Tag#:A379014 (Print Below)

A379014

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Dustin Wilson		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
310 Sanctuary Private	Ottawa	ON	K1S 5W1	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
363 Entrepreneur Crescent	Cumberland	23	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Navan	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465760	5020936	50R-6694	

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	Depth (m/ft) To
	Clay			0'	86'
	Gravel			86'	92'
Black	~~Sandstone~~ Shale			92'	154'
Black	~~Sandstone~~ Shale			154'	180'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
98'	88'	Neat cement	12.48
88'	0'	Bentonite slurry	21.00

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion SURGED
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	To
6 1/4"	Steel	.188	+2'	98'
6"	Open Hole		98'	160'

Construction Record - Screen

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

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas
154	☐ Fresh ☐ Untested ☒ Other, specify	☐
(m/ft)	☐ Fresh ☐ Untested ☐ Other, specify	☐
(m/ft)	☐ Fresh ☐ Untested ☐ Other, specify	☐

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	98'	9 3/4"
98'	160'	6"

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

Pump intake set at (m/ft): 150

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 103.2"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 150'

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

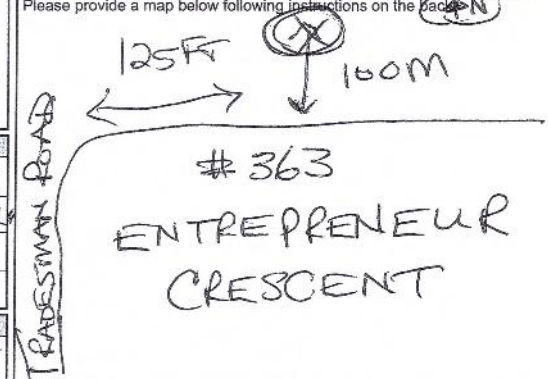
Well production (l/min/GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	92"		103.2"
1	22.4	1	87
2	31.9	2	78.6
3	37.5	3	71.1
4	42.2	4	63.8
5	46.4	5	57.4
10	61.7	10	32.8
15	71.9	15	19.7
20	79.4	20	11.3
25	85.1	25	9.5
30	89.9	30	9.2
40	97	40	9.2
50	100.9	50	9.2
60	103.2"	60	9'2"

Map of Well Location

Please provide a map below following instructions on the back. N



Comments: 3/4HP-10GPM Set @ 150 FT

Well Contractor and Well Technician Information

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

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3632		2023 09 29

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	20230823	Audit No. Z108138

Received

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Ministry's Copy

ATTACHMENT B

Hydrogeological Assessment & Terrain Analysis

September 13, 2023

Our File Ref.: 220487

Entrepreneur Holding Corporation
363 Entrepreneur Crescent
Ottawa (Navan), Ontario K4B 1T8

Attention: Dustin Wilson

Subject: Hydrogeological Assessment & Terrain Analysis –
Proposed Warehouse Development
363 Entrepreneur Crescent, Ottawa, Ontario

Dear Mr. Wilson,

LRL Engineering (LRL) was retained by Entrepreneur Holding Corporation (the 'Client') to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 363 Entrepreneur Crescent in Ottawa (Navan), Ontario in support of the proposed site development. It is anticipated that one (1) approximately 1,382 m² warehouse will be developed on the subject property, in addition to corresponding parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system.

The assessment was carried out to determine if the proposed development can be adequately and safely supplied with potable water according to the Ontario Drinking Water Standards (ODWS) and *Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996)*; and that the proposed development can be serviced with a private septic system. The assessment was also intended to confirm that the construction of the supply well, and proposed construction activities, will be such as to minimize impairment to the regional aquifer and that it meets the current Ontario Regulation 903 requirements.

The assessment was conducted according to Ontario Ministry of the Environment, Conservation and Parks (MECP) "Hydrogeological Technical Information Requirements for Land Development Applications" (April 1995), which include the following guidelines and procedures:

- Guideline D-5 Planning for Sewage and Water Services (August 1996);
- Procedure D-5-4 Technical Guideline for Individual On-site Sewage Systems: Water Quality Impact Risk Assessment (August 1996); and
- Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996).

The City of Ottawa Hydrogeological and Terrain Analysis Guidelines, March 2021, was also referenced to support the completion of this study.

The assessment involved a desktop review of available information on the geology and hydrogeology of the site and adjacent lands in addition to intrusive investigative work, supply aquifer demand evaluations and water quality sampling and analysis. Based on our review of available information, and results of our field investigations, it is determined that the proposed development can be supplied with a sufficient quantity and quality of readily treatable water, and that the site conditions are suitable for an on-site sewage disposal system.

1 SCOPE OF INVESTIGATION

LRL was retained by Entrepreneur Holding Corporation to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 363 Entrepreneur Crescent in Ottawa (Navan), Ontario (herein referred to as the 'Site'). This assessment was requested in support of the proposed development of the Site, and associated application submission to the City of Ottawa. It is understood that one (1) approximately 1,382 m² warehouse will be constructed on the Site. Further details pertaining to the anticipated development are included in Section 3.

LRLs scope for this investigation was in general accordance with current applicable provincial guidelines, in addition to the City of Ottawa Hydrogeological and Terrain Analysis Guideline, dated March 2021. Prior to the initiation of the scope of this investigation, a virtual meeting was held with the Hydrogeologist of the City of Ottawa to review the project, discuss the possible concerns related to the natural features of the area, and how this can be addressed through the pumping test of the supply well and neighbouring aquifer supply sampling. LRLs scope for this Hydrogeological Assessment & Terrain Analysis was generally as follows:

- Conduct a search of available well information for neighbouring properties through the MECP water well records database;
- Perform a desk top review of available geological maps and local well records to obtain information pertaining to the quantity supply aquifer of the subject Site;
- Collect a water sample, representative of pre- and post-treatment supply aquifer conditions, from the neighbouring property to the west (357 Entrepreneur Cres.) to obtain information of the respective aquifer characteristics;
- Provide support during the construction of the test well, including a grouting inspection to verify the installation corresponds to applicable requirements and regulations;
- Conduct one (1) – eight (8) hour pumping test on the newly constructed test well on the Site by using a submersible pump and powered by a portable generator.
    - Based on the proposed Site use and development footprint, and as per the Ontario Building Code, an estimated daily demand of 7,600 L/day is anticipated for the Site. To account for this daily volume, the well would be pumped at a rate of between 16 – 20 L/minute to represent peak demand over eight (8) hours;
    - Manual water levels were collected from the supply well during the pumping test to analyse the hydrogeological characteristics of the aquifer on-Site;
    - Collect and submit water samples from the supply well periodically during the pumping test, four (4)-hours and eight (8)-hours of pumping, for laboratory analysis under the subdivision package, and volatile organic compounds; and
    - Following the pumping test, record water levels for up to 24 hours or until 95% recovery has occurred.
- Collect and compile relevant sub-surface details related to the underlying subsurface

conditions through collaboration with additional sub-surface investigation field work (i.e. Phase Two Environmental Site Assessment, and Geotechnical Investigation);

- Compare the laboratory analysis results, from the supply well, to the applicable Ontario Drinking Water Standard (ODWS) and MECP D-5-5 Treatability Limits; and
- Prepare a summary regarding the quality and the quantity of the supply aquifer and comparison to D-5-5 compliance requirements set forth by the City of Ottawa Technical Authority. Summarize the findings to confirm that the property size and soil conditions are suitable to attenuate the impacts of the septic system effluent.

2 SITE AND AREA DESCRIPTION

The Site is generally undeveloped with exception to a granular base applied across the majority of the surface of the Site and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility. The Site is set within a rural, low-density commercial and light industrial area of Ottawa, Ontario, southeast of the City's urban extents. The Site is legally described as Part of Block 3 Plan 50M136 Part 3 ON Plan 50R6694; Subject to an Easement in Gross Over Part 9 ON Plan 4R-27830 As in OC1627867; City of Ottawa.

The Site is located approximately 310 m northeast of the Boundary Road and Entrepreneur Crescent intersection, as presented in **Figure 1**. The Site is a rectangular shape, with a total area of approximately 3,000 m² or 0.75 acre as shown in **Figure 2**. Historically, the Site was used as agricultural lands, since at least the mid-1960's (1965). Thereafter, the Site remained undeveloped and densely wooded until approximately 2017, when the vegetation was cleared. Neighbouring lands include commercial and light industrial developments since at least the early 1990's. The Site is zoned as Rural General Industrial Zone (RG2), according to the City of Ottawa interactive mapping system (geoOttawa).

Municipal water supply and sanitary services are not available for the Site. Select neighbouring lands are equipped with private water supply wells, and sewage disposal systems. The potable groundwater is found in the gravel/shale bedrock layer, at depths between 21.0 m and 30.3 m below ground surface (bgs).

2.1 Topography

The topography of the Site and vicinity are generally flat. The subject Site and the neighbouring lands have a common topographic elevation of 78 m above mean sea level (amsl) according to *The Atlas of Canada – Toporama*. More specifically, the Site has a slight slope to the southern and western perimeters with elevations ranging between 76.74 and 77.22 m amsl. A ditch boarders the northern extent of the Site with bank height of approximately 1.0 m. Elevations along the southern extent of the Site range between 103.7 and 102.5 m amsl.

These detailed elevations are presented in the Annis, O'Sullivan, Vollebekk Ltd. Topographic Survey plan, dated December 14, 2022, and included in **Attachment A**.

2.2 Existing Development Features

The Site is generally undeveloped with exception to a granular base applied across the majority of the surface and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility.

2.3 Aerial Imagery

Aerial imagery was access through the City of Ottawa on-line interactive mapping portal, geoOttawa. The available historical imagery for the Site dates back to the mid 1960's (1965) when the Site and neighbouring lands appear to be used for agriculture purposes (fields or pastures). An agricultural related development is present approximately 170 m west of the Site. No significant changes were observed in the subsequent aerial imagery until the early 1990's (1991) when the Site appears to be un-developed and forested, with a clearing at the southern portion of the property, and the neighbouring lands were observed to include low-density commercial developments to the south, east and west of the Site.

In the available 2014 aerial imagery, the neighbouring lands to the east, north and south are developed. North of the Site appears to be operated as a mineral extraction facility. As of the 2021 aerial imagery, the Site appears to be occupied for it's current use as a storage yard for the adjacent land to the east.

2.4 Neighbouring Properties and Land Uses

According to the City of Ottawa's Zoning information, available through the City of Ottawa's on-line interactive mapping portal, geoOttawa, the neighbouring lands are zoned as follows:

- The neighbouring lands to the east and west are zoned as Rural General Industrial Zone (RG2); and
- The neighbouring lands to the north and the south are zoned as Rural Heavy Industrial (RH).

The neighbouring land uses generally include the following:

- North: Mineral-Aggregate extraction facility and seasonal snow dump;
- South: Entrepreneur Crescent followed by an un-known commercial/light industrial operation with various storage containers and vehicles;
- East: Industrial - YSB Hoisting Equipment & YSB Carpentry facility (carpentry company and hoist equipment rentals facility), followed by vacant; and
- West Construction company yard (Galaxy Construction) followed by vehicle storage yard.

2.5 Hydrology

The Site is generally flat with a gentle slope south and west. Locally, the inferred groundwater flow direction is north-west towards the Bear Brook, located approximately 2.2 km to the northwest of the Site, however neighbouring ditches are identified to flow easterly according to *The Atlas of Canada – Toporama* interactive mapping system. A ditch is present along the northern perimeter of Site, however the flow direction was not confirmed at the time of this assessment. According to an Environmental Impact Statement[1] dated June 23, 2023, and prepared by others, the ditch was also observed to have '*lack of any flows observed*' at the time of their June 12, 2023, Site visit.

[1] Environmental Impact Statement – Zoning By-Law Amendment for 363 Entrepreneur Crescent, prepared by Kilgour & Associates Ltd., June 23, 2023.

The ditch was described in the Environmental Impact Statement as having high water chemistry measurements related to salt, likely associated with the adjacent snow dumping facility. The Environmental Impact Statement indicated that these conditions would likely result in fish, which could enter the ditch during high seasonal water level conditions from neighbouring sources, to perish. The Environmental Impact Statement concluded that the ditch has no natural heritage values. However, it was recommended that to prevent surface runoff from the Site into the ditch, a 'raised berm' would be constructed to the north of the proposed warehouse development, which would divert runoff into the Sites strategic stormwater management system. A formal stormwater management plan has been prepared to support the development of the Site. The plan will be submitted to the City under a separate cover.

A Phase Two Environmental Site Assessment was completed for the Site to address potential environmental concerns raised with respect to adjacent or neighbouring land uses, and on-Site activities. As part of this assessment, a total of four (4) groundwater monitoring wells were constructed on the property to facilitate groundwater sample collection, and to further address the hydrogeological characteristics of the upper / shallow overburden groundwater. Groundwater was measured in each monitoring well at depths of between 0.20 and 0.55 m below grade. Based on these measurements, in conjunction with groundsurface elevations, the upper / shallow overburden groundwater flow direction is found to be towards the southeast.

The variance between locally inferred groundwater flow directions, and measured groundwater elevations may be attributed to infrastructure including utility trenches, structures, and ditches or swales. A municipal ditch is presented along the southern extent of the Site.

2.6 Natural Heritage Features

Based on available databases and records reviewed, the following with respect to Natural Heritage Features, are revealed for the Site:

- The Site is not part of a provincial park or conservation area;
- The Site is not within any Areas of Natural and Scientific Interest (ANSI) identified by the Ministry of Natural Resources (MNR) as having provincial significance;
- The Site does not include any area identified as Provincial Significance Wetland (PSW) by MNR,
- The Site does not include any area designated as environmental significant in municipal official plans;
- The Site does not include any area designated as an escarpment natural area by Niagara Escarpment Plan;
- The Site does not include any area which is a habitat of endangered species;
- The Site does not include any Oak Ridges Moraine Conservation area; and,
- The Site does not include any area designated as a wilderness area.

As discussed above in Section 2.5, a ditch is present along the northern perimeter of Site, however the flow direction was not confirmed at the time of this assessment. According to an Environmental Impact Statement prepared by others, the ditch was also observed to have '*lack of any flows observed*' at the time of their Site visit. The Environmental Impact Statement concluded that the ditch has no natural heritage values. It is understood that the findings of this Environmental Impact Statement report were confirmed by the Ontario Ministry of the Environment, Parks and Conservations as being accurate and reliable.

2.7 Geology & Hydrogeology

2.7.1 Geological Mapping

Surficial soil deposit mapping[2] indicates that the surficial geology is Offshore Marine Deposits: clay, silty clay, and silt, commonly calcareous and fossiliferous; locally overlain by thin sand. Bedrock mapping[3] indicates that the bedrock is described as the Carlsbad Formation: grey shale, sandy shale, and some dolomitic layers.

According to the Brunton, F.R. and Dodge, J.E.P. Karst map of Southern Ontario, including Manitoulin Island; Ontario Geological Survey, Groundwater Resource Study 5, 2008, known areas to potential areas of karst geology is present in the vicinity of the Site, namely to the south. The Site and adjacent land to the east and west are identified as "Unknown or no observed evidence of karstification due to the character of bedrock, lack of outcrop and/or relative thickness of overburden."

2.7.2 Hydrogeologically Sensitive Areas

The Site is not considered Hydrogeologically Sensitive in regard to shallow soils or bedrock outcrops. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 1.5 m in thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application. These additional investigations included a Geotechnical Investigation and a Phase Two Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase Two Environmental Site Assessment and Geotechnical Investigation are included in **Attachment B**, and further detail pertaining to each summary, including chemical analysis and conclusions are provided in Section 4.1.

2.7.3 Geotechnical Investigation (February 2023):

Fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT "N" values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%. Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT "N" values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%.

Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT "N" values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%.

Refusal using the DCP test was encountered on the Site at a depth of 24.50 m bgs. This was encountered over a large boulder within till material or over possible bedrock.

[2] St-Onge, D.A., Surficial Geology, Lower Ottawa Valley, Ontario, Map 2140A, Geological Survey of Canada, 2009.
[3] Harrison, J.E., 1976, Generalized Bedrock Geology, Ottawa-Hull, Ontario and Quebec, Geological Survey of Canada, Map 1508A, Scale 1:125,000.

As part of the investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized in the following **Table A**.

Table A: Gradation Analysis Summary

Sample Location	Depth (m)	Percent for Each Soil Gradation					Estimated Hydraulic Conductivity K (m/s)
		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Medium (%)	Fine (%)			
BH1	1.52 – 2.13	0.4	0.8	4.1	59.3	35.4	5×10^{-8}
BH2	6.10 – 6.71	0.0	0.0	0.6	31.0	68.4	5×10^{-8}

Atterberg limits and moisture contents were conducted on two (2) split spoon soil samples. A summary of these values is provided below in **Table B**.

Table B: Summary of Atterberg Limits and Water Contents

Sample Location	Parameter					
	Depth (m)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Water Content (%)	USCS Group Symbol
BH3	4.57 – 5.18	61	23	38	90	CH
BH4	1.52 – 2.13	67	25	42	77	CH

The laboratory reports can be found in **Attachment C** of this report.

A piezometer was installed in one (1) borehole location to measure the static groundwater level. The piezometer consisted of a 19 mm diameter PVC pipe with a slotted bottom to allow for groundwater infiltration, backfilled with silica sand, and sealed with bentonite. The water was measured on December 6, 2022, and found to be at 0.5 m bgs.

The locations of the boreholes are presented in **Figure 4**.

2.7.4 Phase Two Environmental Site Assessment (January 2023)

Subsurface conditions across the Site generally included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.

The locations of the borehole are presented in **Figure 4**.

2.7.5 Potential Sources of Contamination

To support the proposed development application, a Phase One Environmental Site Assessment was completed for the Site. This assessment was conducted to identify potential environmental concerns or liabilities related to the past and present operations conducted on the property and the adjacent lands. A historical records review of the Site was conducted, as well as contact with relevant regulatory agencies, a walk-through Site inspection of the property and interviews with those knowledgeable of the Site.

This review was completed with general reference to Ontario Regulation 153/04, which is the provincial regulation which is most often referenced when considering the environmental conditions of a Site. The regulation outlines possible Potential Contaminating Activities (PCA) which can be associated with impairment or impacts to the quality of the subject property conditions. The review revealed the following potential sources of contamination, and the corresponding PCA as set out by Ontario Regulation 153/04.

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
PCA 32: Iron and Steel Manufacturing and Processing	On-Site	The adjacent property hoist equipment manufacturing and rental company (YSB Hoisting equipment facility), is identified as an industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Associated material and equipment are stored on the Site. This was observed through aerial photography and Site visit.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-Site APEC.
PCA 30: Importation of Fill Materials of Unknown Quality	On-Site	Identified through aerial imagery and confirmed by the interview with the Site owner.	The PCA is located on the Site and is therefore automatically considered to contribute to an on-site APEC.
PCA 32: Iron and Steel Manufacturing and Processing	357 Entrepreneur Crescent, immediately east of the Site.	Adjacent property immediately east of the Site occupied by a hoist equipment rental company (YSB Hoisting Equipment & YSB Carpentry facility). Industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Observed through aerial photography and Site visit.	Due to the type of the activity and location being along the eastern perimeter of the Site, this record is considered to represent an APEC to the eastern portion of the Site.
PCA Other: Construction company workshop and storage yard	371 Entrepreneur Crescent, immediately west of the Site.	Construction company workshop and storage yard. Observed through aerial photography and Site visit	Due to the type of the activity and location being along the western perimeter of the Site, this record is considered to represent an APEC to the western portion of the Site.
PCA 56: Treatment of Sewage equal to or greater than 10,000 litres per day	336 Entrepreneur Crescent, approximately 100 m south-east of the Site (up-gradient)	Identified as having an ECA for industrial sewage disposal.	Due to the type of the activity and location being to the south-east of the Site, this record is considered to represent an APEC to the southern and eastern portion of the Site.

O. Reg 153/04 Schedule D PCA	Location of PCA	Description and Source Information	Contribution to an APEC
PCA 58: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	336 Entrepreneur Crescent, approximately 100 m south-east of the Site (up-gradient)	Listed as waste disposal site with approval of ECA-Waste Disposal Sites issued in March 2012, November 2012, October 2016, and March 2020.	Due to the type of the activity and location being to the south-east of the Site, this record is considered to represent an APEC to the southern and eastern portion of the Site.
PCA 58: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	Cumberland Con. 10 Dump, approximately 150 m east of the Site (up-gradient).	Identified through HLUI as a landfill.	Due to the type of the activity and location being to the east of the Site, this record is considered to represent an APEC to the eastern portion of the Site.
PCA 58: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	Unnamed Waste Disposal Site, approximately 110 m south of the Site (up-gradient)	Identified through HLUI as a landfill.	Due to the type of the activity and location being to the south of the Site, this record is considered to represent an APEC to the eastern portion of the Site.
PCA Other: Spill	336 Entrepreneur Crescent, approximately 100 m south-east of the Site (up-gradient)	In March 2019, an incident was reported to the MECP for the property. The incident was summarized as non-compliance with FA re-evaluation required.	Due to the type of the activity and location being to the south-east of the Site, this record is considered to represent an APEC to the southern and eastern portion of the Site.

Based on the findings of the Phase One ESA, it is recommended that a Phase Two ESA be conducted on the Site to confirm the presence/absence of impacts in the areas of potential environmental concern identified. The findings of the Phase Two Environmental Site Assessment are discussed below in Section 4.1.

2.8 Ontario Water Well Records

A search was conducted of the well records from the MECP Water Well Record (WWR) department. The search by UTM coordinates covered a 750 m radius from the Site. The search returned 30 WWRs, however, several of which did not have any details available related to the construction or subsurface conditions encountered. Nine (9) of the WWR retrieved was for a test well. A copy of those WWRs which included relevant details related to the hydrogeological and subsurface features are included in **Attachment D** and their approximately locations are presented in **Figure 4**.

The records of the wells within 750 m of the Site, where details were available, revealed that the wells include both drilled and shallow overburden wells. The drilled wells, seven (7) of which, were reported to extend to depths of between 28.9 and 61.0 m. Only one (1) shallow overburden/dug supply well was reported, which extended to a depth of between 7.0 m. The remaining overburden well reported were test holes/monitoring wells.

The well records show that that the geological conditions within 750 m are generally similar and consist of clay to depths between 21.0 and 44.8 m followed by a thin layer of gravel, over shale or limestone bedrock. A thin layer of sand was reported in select wells over the clay, and glacial till was reported over bedrock in the supply well located approximately 640 m northwest of the Site. The water type was reported as sulphur in two (2) of the test well locations.

On August 23, 2023, the proposed supply well for the anticipated development was constructed at the northeastern portion of the Site. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.

Inferred subsurface profiles cross sections are presented in **Figure 5A** through **Figure 5B** and include select wells in the vicinity of the cross-section segments as shown in **Figure 4**. The general overburden conditions encountered in the wells, where details were available, within 750 m of the Site are as follows:

MECP Well Number	Distance and Direction from Site (m)	Depth (m)	Overburden Details			Bedrock Details	Groundwater Encountered (m)	Static Water Level (m)	Type of water
			Sand/Till (m)	Clay (m)	Gravel (m)	Bedrock (m)			
A379014 (Tag)	On-Site	48.7	--	0 – 26.2	26.2 – 28.0	28.0 - 48.7	46.9	2.8	Not Tested
7320860	Directly east	28.9	--	0 – 21.3	21.3 – 22.6	22.6 – 28.9 (Shale)	27	9.6	--
7043396	225 SW	32.4	--	0 – 30.3	30.3 – 31.5	31.5 – 32.4 (Shale)	31.5	2.9	Sulphur
7266180	368 SW	7.0	0 – 0.2 (Topsoil)	0.2 – 7.0	--	--	--	--	Fresh
7201225	*440 E*	*31.4*	--	*0 – 31.4*	--	--	--	--	--
7201224	*500 S*	*44.8*	--	*0 – 44.8*	--	--	--	--	--
7201724	*553 NE*	*1.5*	*0 – 1.5 (Sand)*	--	--	--	--	--	--
7201737	*555 NE*	*6.4*	*0 – 1.5 (Sand)*	*1.5 – 6.4*	--	--	--	--	--
1525164	640 NW	30.5	0 – 0.6 (Sand) 21.3 – 23.5 (Till)	0.6 – 21.3	--	23.5 – 30.5 (Limestone)	29.0	1.8	Sulphur
7212030	*650 SW*	*6.4*	*0.3 – 2.4 (Sand)*	*2.4 – 6.4*	*0 – 0.3*	--	--	--	--
7212029	*652 SW*	*6.4*	*0.3 – 2.4 (Sand)*	*2.4 – 6.4*	*0 – 0.3*	--	--	--	--
7322574	670 NE	42.4	0 – 2.1 (Sand)	2.1 – 24.2	24.2 – 26.1	26.1 – 42.4 (Limestone)	7.9	2.1	Salty
1534876	670 W	33.5	0 – 1.5 (Sand)	1.5 – 29.0	29.0 – 33.2	33.2 – 33.5	33.5	2.6	Salty
7310678	695 NW	61.0	--	0 – 1.8 (Clay Fill with gravel) 1.8 – 21.0	21.0 – 22.3	22.3 – 61.0 (Shale)	27.0 52.0	3.8	--
7200942	*705 S*	*1.5*	*0 – 0.9 (Sand)*	*0.9 – 1.5*	--	--	--	--	--
7201226	*745 SE*	*43.6*	--	*0 – 43.6*	--	--	--	--	--
7200943	*745 SE*	*6.4*	*0 -0.9 (Sand)*	*0.9 – 6.4*	--	--	--	--	--

Notes:

Italics Test Hole/ Monitoring Well Record

-- Not Data/Not Tested

2.8.1 Water Well Record Summary

Based on the details of the well records obtained in the area (within 750 m of the Site) the aquifer can yield a sufficient amount to supply the proposed development on the Site in the long term. For example, pumping test results from select neighbouring wells within 750 m of the Site, indicate the bedrock - Limestone aquifer being able achieve a rate of 54 L/min over 60 minutes utilizing approximately 0.3% of the available drawdown. The neighbouring property, located immediately east of the Site, was reported to be advanced into the bedrock – shale stratum, which was able to achieve a rate of 13 L/min over 60 minutes utilizing 41.4% of the available drawdown.

Based on the proposed development and anticipated daily demand of 7,600 L/day, or 15.8 L/min over an eight (8) hour period, as described in greater detail in Section 3, these conditions are considered suitable to sustain the anticipated Site development and corresponding activities. A summary of the quantity of water of select neighboring wells within a 750 m radius of the Site is as follows:

MECP Well Number	Distance and Direction from Site	Depth (m)	Pump Test Details					
			Pump Rate (L/min)	Duration (min)	Drawdown (m)	Specific Capacity (L/Sec/m)	Recovery (%)	Recommended Pump Rate (L/min)
7320860	**Directly east**	**28.9**	**13**	**60**	**11.99**	**0.0180**	**100**	**15**
7043396	**225 SW**	**32.4**	**58.5**	**60**	**0.15**	**6.5**	**100**	**45.5**
7266180	*368 SW*	*7.0*	--	--	--	--	--	--
1525164	*640 NW*	*30.5*	*113*	*60*	*11.12*	*0.1693*	--	*113*
7322574	*670 NE*	*42.4*	*54*	*60*	*0.13*	*6.9230*	*100*	*56*
1534876	670 W	33.5	42	60	0.17	4.1176	100	50
7310678	**695 NW**	**61.0**	**42**	**60**	**1.92**	**0.3645**	**100**	**66**

Notes:

-- No Data is Available/Not Reported

BOLD Supply well advanced into Shale Bedrock

Italics Supply well advanced into the Limestone Bedrock

xxx Dug/Shallow Supply Well

2.9 Shallow Overburden Groundwater Monitoring Wells

Entrepreneur Holding Corporation retained LRL to complete a Phase Two Environmental Site Assessment on the Site in the context of property redevelopment. The assessment was completed to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. The potential environmental concerns identified that requires investigation includes:

- **PCA 32**: Iron and Steel Manufacturing and Processing. The adjacent property hoist equipment manufacturing and rental company (YSB Hoisting equipment facility), is identified as an industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment. Associated material and equipment are stored on the Site since at least mid of 2022;
- **PCA 30**: Importation of Fill Material of Unknown Quality. Based on available information obtained, a layer of granular crushed stone was applied across the surface of the subject property in 2022 (est.). The source and quality of the material is unknown, therefore its conditions, in addition to the underlying materials, should be investigated;

- **PCA 32**: Iron and Steel Manufacturing and Processing. 357 Entrepreneur Crescent, immediately east of the Site, occupied by a hoist equipment rental company (YSB Hoisting Equipment & YSB Carpentry facility), industrial use which involves assembling, processing, storing, warehousing, or distributing hoisting equipment;
- **PCA Other**: Construction company workshop and storage yard. 371 Entrepreneur Crescent, immediately west of the Site, occupied by Galaxy Construction - workshop and storage yard;
- **PCA 56**: Treatment of Sewage equal to or greater than 10,000 litres per day. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, issued an environmental compliance approval for industrial sewage works and treatment of Sewage equal to or greater than 10,000 litres per day;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, listed as waste disposal site with approval of ECA-Waste Disposal Sites issued in March 2012, November 2012, October 2016, and March 2020;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Cumberland Con. 10 Dump, approximately 150 m east of the Site listed as a landfill in 1991;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Unnamed Waste Disposal Site, approximately 110 m south of the Site listed as a landfill in 1991.
- **PCA Other**: Spill. 954192 Ontario Ltd at 336 Entrepreneur Crescent, approximately 100 m south-east of the Site, reported a spill incident to the MECP in March 2019. The incident was summarized as non-compliance with FA re-evaluation required.

To address these concerns, an intrusive investigation was carried out between March 13 and March 16, 2023, by LRL. Further details pertaining to the findings of the Phase Two Environmental Site Assessment, namely concentrations of contaminates encountered, contamination plumes, and recommendations are described below in Section 4.1. This section pertains solely to the geological and hydrogeological characteristics across the Site.

A total of ten (10) boreholes were advanced across the Site. The subsurface soil conditions in the area investigated on the Site generally consist of included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.

Four (4) boreholes were completed as monitoring wells: BH23-2, BH23-3, BH23-4 and BH23-5 (herein referred to as MW23-2, MW22-3, MW23-4, and MW23-5). Monitoring wells were constructed within the 203 mm diameter boreholes with a 51 mm slotted PVC piezometer. The top of the screen was extended to the ground surface using a solid riser pipe. Annular space around the slotted portion of the piezometer was backfilled with pre-washed and graded silica sand up to 300 mm above the top of the screen. A bentonite seal was placed above the sand pack and bentonite was used to fill the remainder of the hole to the surface. Monitoring wells were finished at the surface with a flush-mount aluminum casing.

The locations of the monitoring wells are described as follows:

Monitoring Well Identification	Location
MW23-2	West-central portion of the Site.
MW23-3	South-central portion of the Site.
MW23-4	Southeastern portion of the Site.
MW23-5	North-central portion of the Site.

The borehole and monitoring well locations are presented in **Figure 3**, and a copy of the borehole logs are included in **Attachment B**. Static groundwater elevations were measured at each monitoring well prior to the respective sampling activities and are summarized as follows.

Monitoring Well	Ground Surface Elevation (m)	Reference Elevation (m)	Depth to Water Table (m)		Groundwater Elevation (m)
			Reference Point	Ground Surface	
MW23-2	99.90	99.83	0.20	0.27	99.63
MW23-3	99.88	99.80	0.39	0.47	99.41
MW23-4	99.87	99.79	0.47	0.55	99.32
MW23-5	99.89	99.78	0.09	0.20	99.69

Groundwater depth measurements were between 0.20 and 0.55 m below grade, which corresponded to elevations between 99.32 and 99.69 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m.

The groundwater elevations and interpreted flow contours are shown in **Figure 6**. Based on these elevations the groundwater flow direction on the Site is towards the southeast.

3 PROPOSED DEVELOPMENT

It is anticipated that one (1) approximately 1,382 m² warehouse will be developed on the subject property, in addition to corresponding parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system. The location and dimensions of the proposed features are presented in **Figure 7**.

The warehouse is anticipated to include a slab-on grade level (ground floor), with a partial second-floor mezzanine. The ground floor portion of the building is anticipated to include open warehouse space, meeting and collaboration space, a lunchroom/kitchen area, washroom and shower facilities and one (1) set of laundry units (washer and dryer). The mezzanine is anticipated to be used for general storage as well as to house mechanical components and equipment related to overall serviceability of the development (i.e. heating components and water treatment system).

To facilitate the development of the Site, excavation of the overburden materials to accommodate the foundation structural components (footings) are anticipated to extend to between 1.5 and 1.8 m below grade. The excavated areas, and underside of footings will be backfilled with non-frost susceptible backfill material, as outlined in the corresponding Geotechnical Investigation report prepared by LRL, dated February 2023.

The septic system will be designed by a competent individual and submitted for approval with the Ottawa Septic System Office (OSSO). On April 20, 2023, a formal submission was made to the OSSO, however it is understood that based on subsequent alterations to the proposed Site layout, a revised application will need to be submitted which depicts the updated proposed location. For the purposes of this report, the April 20, 2023, OSSO submission details are considered warranted as the overall proposed design, daily flow rates and treatment will not be altered. The actual proposed location for the installation of the system will be at the southwestern extent of the Site, between the warehouse and the southern property boundary as presented in **Figure 7** and the initial OSSO submission package is included in **Attachment E**. The proposed septic details are as follows:

- The septic system will be a new construction, encompassing an approximate area of 68 m²;
- The sewage design flow for the Site will be 1,310 L/day;
- The proposed system will be a Class IV ‘Eljen’ partially raised system;
- The tank will have a capacity of 5,509 L and will be equipped with a Polytek effluent filter; and
- The total capacity of the system will be 6,903 L.

In support of this hydrogeological assessment, a supply well has been constructed on the Site in the location presented in **Figure 7**. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.

4 PREVIOUSLY PREPARED REPORTS

4.1 Phase Two Environmental Site Assessment, 363 Entrepreneur Crescent, Ottawa, Ontario, September 5, 2023

Entrepreneur Holding Corporation has retained LRL Engineering to complete a Phase Two Environmental Site Assessment on the properties located at 363 Entrepreneur Crescent, Ottawa, Ontario. A Phase Two ESA was completed to address the presence or absence of one or more contaminants at the Site as determined in the Phase One ESA and to assess the quality of the soil and ground water. The findings of the corresponding Phase One ESA should be read in conjunction with the Phase Two ESA presented herein. The Phase One ESA identified nine (9) individual potential contaminating activities (PCA). The PCAs that affect the Phase Two ESA are detailed above in Section 2.9, and are generally summarized as follows:

- **PCA 32**: Iron and Steel Manufacturing and Processing;
- **PCA 30**: Importation of Fill Material of Unknown Quality;
- **PCA 32**: Iron and Steel Manufacturing and Processing;
- **PCA Other**: Construction company workshop and storage yard;
- **PCA 56**: Treatment of Sewage equal to or greater than 10,000 litres per day;
- **PCA 58**: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners; and
- **PCA Other**: Spill.

The contaminants of potential concern (CPCs) in soil and groundwater for the Site were based on the APECs identified at the Site during Phase One Environmental Site Assessment and observations at the time of the drilling program. The following CPCs for the Site were suspected to be associated with the identified APECs:

- Petroleum Hydrocarbons ranges F1-F4 (PHCs);
- Volatile Organic Compounds (VOCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Polychlorinated Biphenyls (PCBs); and
- Metals, Metal hydrides, and General Inorganics.

An assessment of the CPCs for the Site was completed as part of the Phase Two ESA analytical submission program. Soil and groundwater samples were submitted for a combination of the CPCs dependant on borehole and monitoring well locations with respect to the APECs. Based on the analytical results for the CPCs at the Site, generally the soils were found to meet the applicable provincial site condition standards (SCS) with two (2) exceptions, which included the following:

- Lead was reported above the SCS of 120 µg/g, with a value of 284 µg/g in the borehole advanced at the southwestern extent of the Site (BH23-7), from depths extended between 0.0 and 1.05 m below grade. A secondary soil sample collected from this borehole was submitted for metals analysis, which revealed that lead concentrations at depths between 1.20 and 1.95 m below grade were significantly below the SCS wit ha value of 7.5 µg/g; and
- Conductivity was marginally above the SCS of 1400 µg/g with a value of 1460 µg/g in a sample collected from the north-central portion of the property (BH23-5) at depths between 0 – 1.0 m. A duplicate sample representative of this parent sample was found to

have lower concentrations of conductivity with a value of 1250 µg/g. Therefore, it is possible that the elevated conductivity encountered may be limited or an anomaly.

Groundwater samples collected at the Site on March 16, 2023, revealed that only one (1) of the four (4) sample locations was found to have elevated concentrations of select parameters of concern. Based on the concentration reported, and in comparison, to the applicable SCS, exceedances to select PAH parameters were encountered in monitoring well MW23-3, located at the southeastern portion of the Site. More specifically for the following parameters:

- Benzo [a] pyrene;
- Benzo [b] fluoranthene;
- Benzo [k] fluoranthene;
- Chrysene; and
- Fluoranthene.

Vanadium, commonly elevated in clay deposits across the region, was also detected above the appliable SCS in MW23-3.

LRL returned to the Site to confirm if the concentrations of PAH and metals encountered, as since these parameters were found to be notably lower in the soil samples collected from the Site, and no further exceedances were detected on the Site in the groundwater. A re-sample was collected on April 17, 2023, by LRL. The results of the additional sampling returned lower concentrations of all parameters previously reported above the SCS. Of which, Benzo [a] pyrene remained above the appliable SCS with concentrations of 0.07 µg/L.

4.1.1 Additional Consideration

It was recommended in the Phase Two ESA report that remediation work to address the elevated lead concentrations in the soil be completed during the construction efforts. Remediation efforts, when performed using conventional ‘dig-and-dump’ methodology requires confirmatory sampling of excavation limits. This methodology, including additional confirmatory sampling for lead parameters, will be completed to address the impacted soil encountered, and confirm that the conditions of the Site are in accordance with applicable provincial SCS. Impacted soils with contaminates require special attention and handling requirements for disposal.

The impacted groundwater is also anticipated to be addressed at the time of development. As the PAH impacts appear to be limited to the southeastern portion of the Site, it may be attributed by localised impacted soil. The removal of soil in the vicinity of the monitoring well of concern will be completed during construction, and subsequent groundwater sampling will take place (either from the salvaged monitoring well, or a newly constructed monitoring well). If elevated concentrations of parameters of concern, namely PAH, continue to be elevated, numerous effective treatment technologies are available.

For the same rationale described in Section 8, the impacts resulting from this overburden groundwater impairment to the proposed supply aquifer is unlikely based on the limited travel time through the thick clay confining layer.

4.2 Geotechnical Investigation, Proposed Warehouse, 363 Entrepreneur Crescent, Ottawa, Ontario, February 2023

LRL was retained by Entrepreneur Holding Corporation to perform a Geotechnical Investigation for a proposed warehouse development on the Site. The purpose of the investigation was to identify the subsurface conditions across the Site by the completion of a limited borehole drilling program. The fieldwork for this investigation was carried out on November 17, 2022, by LRL. A total of four (4) boreholes, labelled BH1 through BH4, as presented in **Figure 3**, were drilled across the Site to get a general understanding of the underlying soil conditions.

Sampling of the overburden materials encountered in the boreholes was carried out at regular depth intervals using a 50.8 mm diameter drive open conventional spoon sampler in conjunction with standard penetration testing (SPT) "N" values. In-situ field vane shear testing using a tapered vane was carried out in the soft to very soft cohesive soils. The boreholes were augered and sampled to a depth of 7.00 m below ground surface (bgs). A Dynamic Cone Penetration (DCP) test was carried out in BH2 until refusal (24.50 m bgs) to determine the overburden thickness. Upon completion, the boreholes were backfilled using the overburden cuttings.

The underlying soil conditions encountered across the Site generally included the following:

- Fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations, and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT "N" values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%;
- Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT "N" values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%;
- Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT "N" values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%;
- Underlying the clayey silt in all boring locations, a layer of silty clay was encountered and extended to the end of sampling at a depth of 7.00 m bgs. This was found to be grey, and wet. The SPT "N" values of this layer were WH, indicating the material is very soft. The natural moisture contents were determined to be 76 and 90%; and
- Inferred glacial till was encountered in BH2 by way of the DCP test. This was found to be in a compact to very dense state of packing.

Two (2) soil samples were collected for laboratory gradation analyses. The gradation analyses comprised of sieve and hydrometer. Based on the analytical results collected, the estimated hydraulic conductivity was 5 x 10^{-8} with a plasticity index range between 38 and 42%, and a liquid limit range of between 61 and 67%.

A piezometer was installed in BH3 to measure the static groundwater level. The piezometer consisted of a 19 mm diameter PVC pipe with a slotted bottom to allow for groundwater infiltration, backfilled with silica sand, and sealed with bentonite. The water was measured on December 6, 2022, and found to be at 0.5 m bgs.

5 WATER QUALITY AND QUANTITY ASSESSMENT

5.1 Initial Water Quality Evaluation – 357 Entrepreneur Cresent

During our initial technical pre-consultation with the City of Ottawa Hydrogeologist, it was indicated that elevated concentrations of various parameters may be encountered in the bedrock aquifer in the area. Therefore, it was anticipated that by verifying the conditions of a neighbouring supply well, pre- ad post- treatment, and interviewing occupants of the building may provide insight on future recommendations for the anticipated development on Site and viable treatment system options for the water supply. LRL was granted permission to collect a representative sample of the neighbouring supply well of 357 Entrepreneur Crescent. A copy of the well record for this property (Well No. 7320860) is included in **Attachment D**.

LRL visited the property immediately east of the Site, on April 7, 2023, to collect two (2) samples of the supply water distribution system. One (1) sample was collected directly from the pressure tank, prior to treatment (pre-), and the second sample was collected from a washroom tap post-treatment (post-). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard “subdivision” package. Each location was dis-infected prior to sampling with a distilled water/bleach solution and the fixture was allowed to run for a duration of at least 10-minutes prior to sampling. The aerator on the washroom tap was removed prior to disinfection and sampling. The sample containers were labelled with exclusive identification details and stored in a cooler with pre-chilled ice packs during transportation to the laboratory.

Our interview with the property owner at the time of the sampling revealed the following pertinent information related to the water supply and distribution system:

- The property is serviced by a drilled well located on the west side of the building. The well was installed in 2018 and was initially extended to 115 m. However, the water quality was not considered suitable and well was modified to intercept a shallower aquifer being approximately 28 m in depth;
- The distribution system which supplies the building with water includes a water treatment system. The system includes:
    - A smaller pressure tank is used in conjunction with a submersible pump to direct water into the building. The water is then emptied into a larger pressure tank;
    - From the larger capacity pressure tank, the water is passed through the following sequence of treatment systems:
        - a water softener that uses salt;
        - a series of three (3) carbon filters;
        - Iodine dosage; and
        - Reverse osmosis.
    - The water is then stored in a 1,000 L capacity container available for supply.
- The system is maintained twice annually by a plumbing and treatment specialist which includes sampling to confirm the components are in superior working order;
- At the time of the installation (2018), the system start-up cost was approximately $25,000. For commercial/light industrial purposes, this is considered feasible to initiate and operate.

The analytical results from the pre- and post- treatment samples are presented in the included **Table 1**. Exceedances to the Ontario Drinking Water Standards (ODWS), and MECP D-5-5 guideline – maximum concentration considered reasonably treatable, were encountered in the pre- treatment sample for the following parameters:

- Alkalinity with a value of 605 mg/L, above the ODWS operation guideline (OG) of between 30 – 500 mg/L;
- Hardness with a value of 1,050 mg/L, above the ODWS OG of between 80 – 100 mg/L;
- Total Dissolved Solids (TDS) aesthetic objective (AO) of 500 mg/L, with a value of 7,640 mg/L;
- Turbidity was elevated with a value of 12 NTU, above the ODWS AO of 5 NTU, and the maximum allowable concentration (MAC) if treatment is required of 1 NTU;
- Chloride was reported with a value of 4,350 mg/L, above the AO of 250 mg/L;
- Iron was above the AO of 0.3 mg/L with a value of 1.3 mg/L; and
- Sodium was reported with a concentration of 2,010 mg/L, above the AO of 200 mg/L.

Post- treatment, the samples were found to improve significantly, however select parameters remain above the ODWS. These parameters include the following:

- Alkalinity with a value of 16 mg/L, below the ODWS OG acceptable range of between 30 and 500 mg/L;
- Hardness with a value of 0.00 mg/L, below the ODWS OG acceptable range of between 80 – 100 mg/L;
- Marginally above the TDS AO of 500 mg/L, with a value of 508 mg/L; and
- Chloride was reported with a value of 302 mg/L, above the AO of 250 mg/L.

Sodium, although was reported below the ODWS AO of 200 mg/L, was above the 20 mg/L limit which the local medical officer should be notified, with a value of 152 mg/L. It is our opinion that these remaining exceedances to the ODWS can be accounted for through adjustments to the existing system including possible media replacement, or dosing adjustments. The water is considered to be reasonably treatable with respect to the proposed use and development plan of the Site.

A copy of the laboratory certificate of analysis is included in **Attachment H**.

5.2 Proposed Supply Well – 363 Entrepreneur Cresent

The proposed supply well to facilitate the anticipated development was constructed on August 23, 2023, by Air Rock Well Drilling (Richmond, Ontario). The well was advanced at the northeastern portion of the Site, being a minimum of 3.0 m from all property lines, and beyond 15 m from potential sources of contamination, such as septic disposal systems (existing and proposed). The well extended to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.

A copy of the well record (Well Tag#A379014) is included in **Attachment D**.

The previously prepared EIS, as mentioned above in Section 2.6, has identified the ditch which traverses along the northern perimeter, as being likely impacted by the adjacent snow dump,

and is likely impaired by elevated concentrations of sodium/chloride.

"Development within the site is unlikely to alter the hydrology, riparian functions, or terrestrial or aquatic habitat functions of the ditch adjacent to the site. The HDFA (Appendix C) determined that the Ditch, has extremely high salinity and is acting as a trough instead of water flowing through it. While the Ditch may have marginal connection to downstream features during the spring freshet, which could provide a limited and temporary entry point for fish, any fish entering the feature would certainly perish from the extreme environment. As such, the Ditch does not hold natural heritage value. A setback to protect feature is not required."

It is understood that Regulation 903 indicates that a supply well should not be placed within 15 m of a potential contamination source, and that the ditch is considered a possible contamination source by the City of Ottawa resulting from the neighbouring snow dump. The proposed supply well location is positioned approximately 7 m from the extents of the ditch, and is considered acceptable due to the proposed development details, and general site conditions as rationalized as follows:

- The proposed supply well has been constructed as a drilled well, extending to a depth of approximately 48.7 m below grade, comparable to that of the neighbouring supply well at 357 Entrepreneur Crescent. The clay deposit encountered during well construction was reported to be 26.2 m thick, which a confining layer between potential ditch infiltration and the supply aquifer. In addition to the clay layer, the well was also include a cement grout and bentonite slurry seal of at least 29.8 m, to further prevent surficial infiltration into the supply aquifer;
- The proposed supply well has constructed as per O. Reg. 903 with a minimum casing stickup of 40 cm, water proof cap. The immediate area will be graded such that will divert surface water from the installation. These actions would prevent possible impairment to the groundwater through infiltration into the water well;
- As a conservative approach to further mitigate possible impacts to the Site from the neighbouring land, a 5 m naturalized berm is to be constructed along the norther extent of the site. The berm is intended to prevent surface runoff from the adjacent property on the site, and towards the proposed well;
- After completing an initial water quality analysis of the neighbouring supply well, it was found that chloride and sodium are elevated in the groundwater, likely naturally. Samples were collected from pre- and post- treatment and it was found that through the use of various treatment units, including RO, carbon filtration, water softening and iodine dosing, the quality of the supply aquifer can be improved significantly; and
- The client will be utilizing a comparable treatment system for the development, therefore, the should the bedrock aquifer be impaired (although unlikely) by the neighbouring facility and ditch, adequate treatment will be in place to address the contaminates of concern.

Although the well is constructed so that the casing extends above ground surface, it is further recommended that the casing be extended/confirmed to be at least 400 mm above ground surface following final grading and surfacing.

5.3 Quantity

The proposed development of the Site is anticipated to include a warehouse with office space. The required aquifer yield has been derived from the City of Ottawa Water Distribution Guidelines, July 2010, as amended, including the August 18, 2021 Technical Bulletin specified alterations, and the MECP's Design Guidelines for Drinking-Water Systems, 2008.

An application to construct a new sewage disposal system on the Site was submitted by a qualified designer on April 20, 2023, to the OSSO. The application submitted, although will required alterations and a re-submission based on new proposed placement and overall lot confirmation, is included in the **Attachment E**. The proposed daily sewage flow has been calculated to be 1,310 L/day with a fixture count of 42. The proposed septic tank size was identified to be much greater, to accommodate dosing, with a capacity of 5,509 L as discussed above in Section 3.

In support of the aquifer demand and supply evaluation (pumping test), as a conservative estimate, following as per Table 8.2.1.3.B of the Ontario Building Code, 2012, the total daily demand was calculated for this assessment is approximately 7,600 L/day. This is considered acceptable to account for the proposed Site development plans, as well as possible future occupants of the property although significantly greater than the actual daily consumption estimation. Therefore, based on the conservative value of 7,600 L/day, over an eight (8)-hour period as 15.8 L/min.

5.3.1 Pumping Test

To establish the hydraulic properties of the proposed supply aquifer, an eight (8)-hr pump test was conducted on the newly constructed supply well on August 30, 2023. The pumping rate was to account for the anticipated demand volumes, over a common commercial operation period of eight (8)-hours.

The well was pumped at a constant flow rate (±5%) of approximately 22 L/min over eight (8)-hr period using a temporary submersible pump lowered into the well. Drawdown was measured manually during the pumping and recovery periods using an electronic water level tape. Following the pump's cessation, the supply well water level recovery was measured. Data collected in the field for the pumping test which includes the flow rate, water levels and measurement intervals, are presented in **Attachment F.**

The initial static water level was measured as 2.61 m below top of casing (btc), and test well depth was measured as approximately 49.1 m btc. The pump was set at approximately 45 m btc at the time of the test. The drawdown after eight (8)-hr of pumping was 3.64 m. This represents only approximately 8.1% of the available drawdown in the well, assuming the set pump depth of 45 m is the maximum drawdown which can be reached. The specific capacity of the well after eight (8)-hr of pumping was calculated to be 0.101 L/sec/m with a long-term availability of 82.4 m^3 per day. The calculation is presented in **Table 2**.

The recovery was commenced at the end of the eight (8)-hr pumping duration. The submersible pump remained in the well throughout this time so not to alter the recovery test process and measurements. After one (1) hour of recovery, the well returned to 90.0% of the initial water level. LRL returned after approximately 16 hours and again after 24 hours of recovery to verify the water level. The well was recorded to have reached 92.8% and 91.7% recovery, respectively. Marginally below the D-5-5 guideline requirement of 95% within 24 hours. Further discussion is included below.

5.3.2 Aquifer Characteristics

Following the completion of the constant rate pumping test, the data was analysed using the Aquifer Test software package, by Waterloo Hydrogeologic. The data underwent Theis and Agarwal-Theis Recovery analysis, the results of which are shown in the table below. Graphical analyses of the drawdown are provided for reference purposes in **Attachment G**.

Based on the information gathered from the pump test, the wells' transmissivity and coefficient of storage were calculated using the average of the Theis logarithmic approximation for the drawdown and Agarwal/Theis for the recovery. The specific yield of the well was calculated using the information obtained from the pump test, the transmissivity and coefficient of storage. The yield takes into account a minimum safety factor of 3. The characteristics of the well are summarized in the table below. The yield was calculated using the safety factor; therefore, the theoretical yields can be higher.

Parameter	**Supply Well**
	8 Hour Test
	Theis
Transmissivity (m^2/sec)	7.59×10^{-5}
Coefficient of Storage	4.51×10^{-3}
Pumping Rate (L/min)	22
Available Drawdown (m) – assuming pump set at 45 m (as per pumping test)	42.4
Maximum Drawdown (m)	3.64
% Drawdown	8.1%
Specific Yield (L/sec/m)	0.101
Maximum Pumping Rate (L/min)	57.2
Long Term Availability (m^3/day)	82.4

Based on the observed drawdown/recovery relationship, it is concluded that the long-term yield of the test well is in excess of minimum daily demand of 7,600 L (7.6 m³/day) with a projected value of 82.4 m³/day and is found to be able to meet a maximum pumping rate of 57.2 L/minute. This is considered in excess and adequate to supply the inferred peak hourly flow demands of 15.8 L/min.

5.4 Quality

5.4.1 Field Measurements

Throughout the pumping tests the following field parameters were measured and recorded:

- Turbidity, chlorine and colour using a Lamotte TC-3000 Trimeter; and
- Conductivity, total dissolved solids (TDS) and pH using a portable meter (Hanna Instruments).

A summary of the field measurements collected throughout the duration of the pumping test are included in **Attachment F**.

The machine detection limits of the Lamotte TC-3000 Trimeter are as follows:

- Turbidity of 0.01 NTC, with an accuracy of +/- 0.05 (or 2%, whichever is greater);
- Colour of 0.1 CU, with an accuracy of +/- 0.5 (or 2%, whichever is greater); and
- Chlorine of 0.01 ppm, with an accuracy of +/-0.02 (or 2%, whichever is greater).

For the purposes of this report, values read as less than the corresponding limits will be reported as <0.01, or <0.1.

The following calibration, or zeroing techniques performed as part of this assessment, during the filed investigations is summarized as follows:

Parameter	Equipment Used	Calibration and Zeroing Techniques
Turbidity	Lamotte TC-3000 Trimeter	Prior to use, the equipment was calibrated using the 'two-point' method, following manufacturer instructions. Standard calibration solutions of 0.0 NTU and a 1.0 NTU were used to calibrate the machine. The solutions were pre-made by a supplier.
Colour	Lamotte TC-3000 Trimeter	Prior to the use of the equipment, and periodically during the pumping test, colour measurements were first zeroed by following the manufacturer's instructions and using Deionized Water (prepared and supplied by Hanna Instruments – HI7040-2).
Chlorine	Lamotte TC-3000 Trimeter	Prior to each chlorine reading, a blank sample, including Deionized Water (prepared and supplied by Hanna Instruments – HI7040-2) was screened to zero the machine.
Conductivity	HI98129 Hanna Instruments	Prior to each event, where the meter is used (typically daily), the instrument was calibrated using the Hanna Instrument prepared 1413 µs/cm conductivity solution (HI7031).
pH	HI98129 Hanna Instruments	Prior to each event, where the meter is used (typically daily), the instrument was calibrated using the 'two-point' method, following manufactures specifications. As the pH readings are anticipated to be within the neutral to slightly acid range based on our knowledge of the area and past experience, solutions of 7.01 pH Units (Hanna Instruments HI7007) and 4.01 pH Units (Hanna Instruments HI7004) were used.

5.4.2 Groundwater Sampling

Groundwater samples were collected for laboratory analysis during the pumping tests to assess the quality of the proposed supply aquifer. The water samples were collected after four (4) and eight (8)-hours of pumping. The water samples were collected directly into laboratory prepared bottles. The water samples were submitted to the laboratory for analysis of a "subdivision" package.

The groundwater analytical results are discussed in Section 5.4.3. The laboratory Certificate of Analysis from Paracel Laboratories Ltd. (Ottawa, Ontario) is included in **Attachment H**.

5.4.2.1 Chlorine Residual

Procedure D-5-5 specifies, "T*he chlorine residual must be zero before any bacteriological sample can be taken*." At the start of the eight (8)-hour pumping test, the chlorine residual was measured at 0.03 mg/L and fluctuated throughout the duration of the test with values of 0.02 mg/L at both the four (4) and eight (8) - hours pumping durations.

Chlorine residual at the time of the sample collection was thought to be a result of seasonal conditions influencing the field equipment and the sample matrix. It has been noted historically that during hot seasonal conditions, the glass vials used for the field measurement becoming cloudy from condensation, which is thought to disrupt the light exchange used for the measurement.

Further research into this matter ("chlorine residual without the well being chlorinated") has found the following which may be attributed to the residual levels detected:

- In-field measurements can be influenced by sunlight. Sunlight can react with the indicator tablets used for the collecting the measurements, resulting in false positives. It is found that the 3-minute reaction time for the tablets in the sample matrix is needed to be kept outside of sunlight. It is likely that during the sample collection, the vials were exposed to the sunlight which returned false positives; and
- It was also retrieved that most common interferent with chlorine residual reading is oxidized manganese. Manganese was detected in the samples collected therefore this is a possible explanation for the slight detection of chlorine.

According to the equipment manual for the Lamotte TC-3000e, chlorine measurement accuracy is 0.02 ppm (mg/L) or 2%, which ever is greater. Therefore, based on the accuracy of the equipment, the chlorine residual measurements can be in the range of 0.00 and 0.04 mg/L in the four (4) hour and eight (8) hour samples collected. According to this, it is possible that based simply on the machine accuracy range, the samples are likely free of chlorine residual.

5.4.3 Supply Aquifer Quality – Proposed Supply Well

The groundwater chemistry of the proposed supply aquifer for the development was obtained by collecting water samples from the newly constructed proposed supply well located at the northeastern portion of the Site. The well was installed within the upper bedrock shale formation common of the area.

To represent the long-term water quality of the well, samples were collected during different stages of the pump test and well development (after four (4) and eight (8)-hours of pumping). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard "subdivision" package, trace metals and volatile organic compounds (VOCs). The laboratory certificates of analysis are included in **Attachment H**.

Table 3A through **Table 3C** summarizes the water analysis and also includes the relative ODWS (O. Reg. 169/03) for the parameters tested. The water samples were found to be very comparable to that of the initial water sample collected from the neighbouring property as discussed in Section 5.1. The majority of the parameters analysed meet the ODWS parameters tested except for the following:

- Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L. Alkalinity can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should

be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply;

- Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however as mentioned above, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water;
    - The Langelier Saturation Index (LSI) is used to determine the calcium carbonate stability of water and the pH at which water is saturated with calcium carbonate (pHs). The LSI calculation is used to establish the level of saturation. The Ryznar Stability Index (RI) is used to determine the aggressiveness of water which can indicate the scale and corrosion potential. The calculations for RI and LSI are shown in **Table 4**. Using a water temperature of 10°C (typical of an interior distribution system circulating through a building), the LSI was calculated for the 8-hour sample of 1.78 which indicate the water is scale forming but non-corrosive. The RI was calculated to be 4.72 at the 8-hour sample which indicates heavy scaling.
- TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L. TDS can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. For individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the TDS in the water supply;
- Turbidity was measured to have a level of 3.8 NTU in the 4-hour sample, and 3.5 NTU in the 8-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration, however, are below the AO of 5 NTU and the D-5-5 level considered reasonably treatable of 5 NTU. If the water is to be disinfected using an ultra-violet filter, it is recommended that the water be pre-treated with a 5 um filter;
- Dissolved Organic Carbon (DOC) with a level of 9.4 and 8.5 mg/L, at the 4- and 8-hour sample, respectively, above the AO of 5 mg/L but below the D-5-5 level considered reasonably treatable of 10 mg/L. DOC can cause taste, odour, and colour. DOC can be reduced through the use of an activated carbon (AC) filter;
- Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU. The colour can be attributed to the levels of organic materials (tannin and lignin) encountered, which imparts a yellow/brown tinge to the water. The color can be reduced by use of an activated carbon filter or a water softener.
- Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 level of 250 mg/L. Chloride is found in nature in various forms such as in sodium (NaCl), potassium (KCl) and calcium ($CaCl^2$) salts. A reverse osmosis treatment system can be used to lower level of chloride in drinking water;
- Barium concentrations exceeded the ODWS of 1 mg/L with values of 4.17 and 4.22 mg/L. Barium is a naturally occurring element that is found in various minerals.

Barium in drinking water is often related to dissolved compounds which migrate through rocks and soil deposits and enter into the supply aquifer. Barium can be treated through the use of an ion exchange system, however caution related to excess soil should be exercised as discussed above; and

- Sodium with a level of 2670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L. It is also above the 20 mg/L warning level notification limit for those on a sodium restricted diet. The local Medical Officer of Health should be notified of these levels so that this information may be communicated to local physicians with regards to homeowners who follow a sodium-restricted diet. The levels of sodium can be reduced through reverse osmosis system.

VOC parameters were not detected in the samples submitted for analysis, and bacteria levels were either non-detected, or within the acceptable limit. Total Coliforms were detected with counts of 2 and 1 CFU/100 mL in the four (4)- and eight (8)-hours samples. Although these counts are less than the ODWS MAC, it is advisable to include an ultra-violet treatment system as a precautionary measure.

Select parameters were encountered in excess of the regulation D-5-5 levels which are considered reasonably treatable, our findings from the initial water quality evaluation of the neighbouring well, the concentrations of alkalinity, hardness, TDS, chloride and sodium have been proven to be treatable through the use of generally considered conventional treatment units. A water quality treatment specialist should be consulted to recommend the proper units, specifications and maintenance frequency, it is considered acceptable to assume the following system can be applied to the proposed development to support suitable drinking water supply to occupants:

- a water softener that uses potassium chloride as sodium is found to be elevated;
- Carbon filtration;
- Iodine dosage;
- Reverse osmosis;
- Ultra-violet (UV) light unit with a 5 µm filtration membrane to do reduce turbidity of the water and ensure effectiveness of the UV unit.

As the property will be used for commercial/light industrial purposes, it is considered feasible for such a system series to be supplied and maintained on a regular basis.

6 WATER SUPPLY ASSESSMENT

Based on the Site geology and hydrogeology the recommended potential supply aquifer for the Site, is the shale aquifer. The proposed supply well installed on the Site currently intercepts this aquifer, and it is our understanding that the proposed development of the Site will utilize this newly constructed well. The selection of this aquifer is supported by the following:

- The risk to impairment of the on-Site water supply, as well as the possible pathway for contaminates in the shallow soils is considered too great of a risk to explore this as a potential supply aquifer, in addition to clay overburden is not considered a reliable or suitable stratum to obtain an adequate water supply.
- Only one (1) record of neighbouring shallow supply well was returned which suggests it may not be a suitable source.
- The City of Ottawa, at the time of the technical pre-construction reiterated comments from an initial project overview consultation that indicated the thick marine clay deposit identified in local well records may not be a suitable aquifer material for a shallow well. Furthermore, it was indicated that as per Section 5.2.3 of the City of Ottawa Hydrogeological and Terrain Analysis guidelines "*Site Plans will normally not be approved based on dug wells, unless it can be demonstrated, to the satisfaction of the City, that a drilled well is likely to produce unacceptable water quality or quantity.*"
- The thick confining clay later, above the bedrock, is considered a suitable barrier to prevent possible impartment to the supply aquifer and regional supply aquifer from the site proposed activities.
- Discussions with the neighbouring landowner indicated that the deeper bedrock aquifer was of poor quality, and not considered a suitable source to supply their establishment. They, much like other neighbouring lands, intercept the shale bedrock aquifer for supply.

6.1.1 Demand

The average daily water demand for the proposed building is 15.8 L/min. The assessment was completed at a higher rate of 22 L/min over eight (8) - hours. The results of the test have revealed that the proposed supply aquifer was only marginally impacted by the demand resulting in only 8.1% drawdown of the available water column, assuming a pump depth of 45 m. This demonstrates that the aquifer was not stressed during the duration of the pumping test and would likely have not influenced any neighbouring property supply wells. The well was found to reach drawdown stabilization after approximately 2 hours. Although the aquifer did not return to $\geq$95% after 24-hours, the overall drawdown was marginal of the potential availability (even with a greater demand utilized for the test), and the aquifer did not demonstrate stressed conditions, which supports that it is suitable for the anticipated development.

As previously mentioned, the pumping test was highly conservative with an inferred demand of more than 5 times the actual proposed daily demand. Should the actual anticipated daily demand of 1,310 L/day would have been implemented during the test, a flow rate of slightly less than 3 L/minute. As the well stabilized rapidly at the higher rate (stabilization in 2 hours at a rate of 22 L/minute), and the over drawdown was marginal, it is inferred that a 3 L/minute demand would result in the recharge of the well exceeding the demand, resulting in little to no fluctuation in the water level of the well, or neighbouring lands.

7 TERRAIN ANALYSIS

The terrain analysis was conducted to demonstrate that the unconsolidated material on the Site is appropriate for the construction of an on-Site subsurface sewage disposal system on the Site. The subject property is currently developed with a sewage disposal system, however, to support the re-development and Site up-grades, a new structure and associated components will be constructed in accordance with the Ontario Building Code, 2012. The proposed location of the sewage disposal system is presented in **Figure 7**.

The septic system will be designed by a competent individual and submitted for approval with the Ottawa Septic System Office (OSSO). On April 20, 2023, a formal submission was made to the OSSO, however it is understood that based on subsequent alterations to the proposed Site layout, a revised application will need to be submitted which depicts the updated proposed location. For the purposes of this report, the April 20, 2023, OSSO submission details are considered warranted as the overall proposed design, daily flow rates and treatment will not be altered. The actual proposed location for the installation of the system will be at the southwestern extent of the Site, between the warehouse and the southern property boundary. The initial OSSO submission package is included in **Attachment E**. The proposed septic details are as follows:

- The septic system will be a new construction, encompassing an approximate area of 68 m²;
- The sewage design flow for the Site will be 1,310 L/day;
- The proposed system will be a Class IV 'Eljen' partially raised system;
- The tank will have a capacity of 5,509 L and will be equipped with a Polytek effluent filter; and
- The total capacity of the system will be 6,903 L.

The Site is not considered Hydrogeologically Sensitive in regard to geological formations. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 20 m thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application. These additional investigations included a Geotechnical Investigation and a Phase Two Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase Two Environmental Site Assessment and Geotechnical Investigation are included in **Attachment B**.

As part of the Geotechnical Investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized as follows:

Sample Location	Depth (m)	Percent for Each Soil Gradation					Estimated Hydraulic Conductivity K (m/s)
		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Medium (%)	Fine (%)			
BH1	1.52 – 2.13	0.4	0.8	4.1	59.3	35.4	5×10^{-8}
BH2	6.10 – 6.71	0.0	0.0	0.6	31.0	68.4	5×10^{-8}

The subsurface conditions indicated for the Site are considered suitable for a Class IV septic sewage disposal system with a partially to fully raised leaching bed depending on the Site-specific soil and groundwater conditions at the actual location of the proposed septic system leaching bed. The leaching bed should be constructed to conform to the specifications set out in the Ontario Building Code (OBC).

According to the design submitted by others, the overall septic system would require an area of 68.04 m² for the dispersion bed, along with an additional approximate 30 m² for the pump station, tank, dosing chamber and secondary pump station. This equates to a total surface area of 98.04 m². Assuming a replacement area of 70 m², an area of approximately 168 m² would be required for the placement of the sewage disposal system.

The proposed grassed area assigned for the septic system at the southwestern extent of the Site has a surface area of 175 m², which is considered suitable for the placement of the septic. This location is more than 15 m from the location of the proposed supply well on the Site, and the existing supply wells on neighbouring lands.

8 GROUNDWATER IMPACT ASSESSMENT

The groundwater impact assessment addresses the ability of the land to attenuate the sewage effluent created by the development. Three (3) methods for conducting the assessment are outlined in Procedure D-5-4:

- *Lot Size Consideration* for lot greater than 10 000 m^2;
- *System Isolation Consideration* for areas where the septic system is hydrogeologically isolated from the potable water source; and
- *Contaminate Attenuation Consideration* for sites that do not meet the above two points.

The System Isolation Consideration was used to determine the impact of the individual on-Site septic systems at the boundary of the lots.

Based on the review of the available information and observations collected at the time of our Site visit, the Site is not obviously hydrogeologically sensitive (i.e. karstic areas, areas of fractured bedrock at the surface, areas of thin soil over highly permeable soils). As mentioned above, the Site has a surface area 3,000 m², with approximately 175 m² available for the installation of the proposed septic system at the southwestern portion of the Site, including a 70 m² septic system replacement area. The proposed septic system layouts are shown in the proposed Site development plan in **Figure 7**, and the configuration of the individual septic components are included in **Attachment E**.

Due to the lot size and soil conditions, "***System Isolation***" was considered as part of this terrain analysis.

8.1 System Isolation Determination

"***System Isolation***" is the most appropriate consideration, as the area is confirmed to have a thick clay deposit, extending between approximately 20 and 30 m in depth in the area, and an estimated 17 - 26 m on the Site, based on the findings of a previously prepared Geotechnical Investigation, and the conditions encountered in the installation of the proposed supply well on the Site.

Although seven (7) supply wells have been identified within 750 m of the Site, of which three (3) are within 500 m of the Site. All but one (1) of the supply wells are advanced into the underlying bedrock (shale or limestone). The neighbouring supply well to the east extends 21.3 m into the clay overburden, which is then followed by gravel to 22.6 m where bedrock was encountered. The well was constructed into the shale bedrock to 28.9 m below grade. A secondary well, approximately 225 m southwest of the Site is reported to have a similar construction with 30.3 m of clay encountered, followed by gravel to 31.5 m where bedrock was encountered. The well was constructed into the shale bedrock to a depth of 32.4 m below grade. No details of the newly constructed supply well on the Site have been retrieved at this time, other than that the well extended to an overall depth of 48.7 m with 30.4 m of casing. Bedrock was encountered at 28.0 m below grade.

A shallow/dug supply well has been identified approximately 360 m southwest of the Site. The well is reported to extend into the clay to a maximum depth of 7.0 m.

The clay layer encountered is considered to act as a physical boundary between the groundwater anticipated to be the receiving groundwater of the sewage, and the supply aquifer for the identified wells in the area. The overburden conditions (clay) are not considered a suitable potential aquifer for possible future development in the vicinity of the Site.

On April 17, 2023, LRL performed a visually assessment of the neighbouring properties for the presence of dug/shallow wells, which may not have been registered with the MECP. LRL walked Entrepreneur Crescent, and from readily accessible locations and vantage points, observations were made for the presence of supply well evidence. Based on these efforts, no evidence of dug/shallow wells were encountered in within approximately 100 m of the Site, in each direction.

i. Vertical Contamination Travel Time

The vertical groundwater velocity is calculated using the following equation:

$$v = \frac{Kdh}{n_e dl}$$

Where:

K = hydraulic conductivity (m/s)

dh/dl = hydraulic gradient (m/m)

n_e = effective porosity

During the borehole advancement on the subject Site at the time of the Geotechnical Investigation in February 2023, fill material consisting of a crushed stone granular material was encountered at the surface of all boring locations and extended to depths ranging between 0.60 and 1.07 m bgs. The recorded SPT "N" values of this deposit varied from 30 to 36, indicating the deposit is dense. The natural moisture contents were found to be 9 and 11%. Underlying the fill material at all boring locations, a layer of brown silty sand was encountered and extended to a depth of 1.45 m bgs. The recorded SPT "N" values of this deposit varied from 14 to 19, indicating the deposit is compact. The natural moisture contents were found to be 22 and 24%.

Below the silty sand in all boring locations, a layer of clayey silty was encountered and extended to a depth of 4.12 m bgs. This material contained trace sand, grey and wet. The SPT "N" values were found to range between 0 (weight of hammer (WH)) and 4, indicating the material is soft to very soft. The natural moisture contents were determined to range between 37 and 87%.

Static water levels and observations during borehole drilling revealed that the shallow groundwater in generally located in the clay stratum and is the most probable groundwater receiver for sewage effluent, although, there is a thick confining layer of clay encountered from the surface to the water table.

As detailed above, select soil samples were submitted for gradation analysis as part of the previous Geotechnical Investigation. The results of this analysis has confirmed that overburden material, at depth of between 1.5 and 2.1 m, as well as between 6.1 and 6.7 m, has an estimated hydraulic conductivity of 5 x 10^{-8} m/s. A n_e value of 0.55 is considered representative of the clay soils identified across the Site. This is according to the Total and Effective Porosity values (*data from Enviro Wiki Contributors, 2019*) presented in Hydrogeological Properties of Earth Materials and Principles of Groundwater Flow reference document prepared by The Groundwater Project (*https://books.gw-project.org*).

The vertical gradient of 0.0045 m/m was calculated using the difference between the water elevations in the groundwater monitoring wells collected from the Phase Two ESA, as presented in **Figure 6**, and the distance between the groundwater monitoring wells. The distance between MW23-3 and MW23-5 is 60.9 m. This is the furthest distance from available monitoring wells on Site. The difference in groundwater elevations between these two (2) locations is 0.28 m.

The vertical groundwater velocity is as follows:

	dh/dl (m/m)	**K (m/s)**	**v (m/year)**
Vertical	0.0045	5.0 x 10^{-8}	0.013

Using these values, the vertical travel time through the overburden conditions on the Site, was calculated to be approximately 0.012 m/year. Assuming that the proposed supply aquifer of the Site and neighbouring lands within 100 m of the Site is that of the gravel and shallow bedrock (shale) aquifer, confined by between approximately 17 and 30 m of clay, it is estimated that the effluent impacts could take more than 500 years to travel the vertical distance through the confining clay later, to the groundwater table. This is considered suitable time for the dilution and natural attenuation of the nitrates.

Based on the findings, the proposed development, and the construction of a new sewage disposal system is considered as low risk to groundwater impairment. It has been demonstrated that the sewage effluent is hydrogeologically isolated from possible existing or potential supply aquifers. The likely risk to surface water bodies in the vicinity of the Site is considered low due to the approximately distance from the natural features and proposed development envelope.

9 SUMMARY AND CONCLUSIONS

Based on the results of this investigation the following summary and conclusions are provided.

- The Site set within a low-density commercial and light industrial area of Ottawa, Ontario, southeast of the City's urban extents. The Site is legally described as Part of block 3 Plan 50M136 Part 3 ON Plan 50R6694; Subject to an Easement in Gross Over Part 9 ON Plan 4R-27830 As in OC1627867; City of Ottawa.
- The Site is generally undeveloped with exception to a granular base applied across the majority of the surface of the Site and is used as a storage yard for the adjacent YSB Hoisting Equipment & YSB Carpentry facility.
- The Site is a rectangular shape, with a total area of approximately 3,000 m² or 0.75 acre. The topography of the Site and vicinity are generally flat with a slight slope to the southern and western perimeters with elevations across the Site.
- Historically, the Site was used agricultural lands, since at least the mid-1960's (1965). Thereafter, the Site remained undeveloped and densely wooded until approximately 2017, when the vegetation was cleared. Neighbouring lands include commercial and light industrial developments since at least the early 1990's.
- The Hydrogeological Assessment & Terrain Analysis was completed in support of the proposed Site development which is anticipated to include one (1) approximately 1,382 m² warehouse, in addition to corresponding parking and circulation area and related components. The proposed development will be serviced by a private water supply well and sewage disposal system.
- The inferred groundwater flow direction is north-west towards the Bear Brook, located approximately 2.2 km to the northwest of the Site, however neighbouring ditches are identified to flow easterly according to *The Atlas of Canada – Toporama* interactive mapping system.
- A ditch is present along the northern perimeter of Site. According to an Environmental Impact Statement dated June 23, 2023, and prepared by others, the ditch was described as having high water chemistry measurements related to salt, likely associated with the adjacent snow dumping facility. The Environmental Impact Statement indicated that these conditions would likely result in fish, which could enter the ditch during high seasonal water level conditions from neighbouring sources, to perish. The Environmental Impact Statement concluded that the ditch has no natural heritage values. However, it was recommended that to prevent surface runoff from the Site into the ditch, a 'raised berm' would be constructed to the north of the proposed warehouse development, which would divert runoff into the Sites strategic stormwater management system.
- Surficial soil deposit mapping indicates that the surficial geology is Offshore Marine Deposits: clay, silty clay, and silt, commonly calcareous and fossiliferous; locally overlain by thin sand. Bedrock mapping indicates that the bedrock is described as the Carlsbad Formation: grey shale, sandy shale, and some dolomitic layers.
- The Site is not considered Hydrogeologically Sensitive in regard to shallow soils or bedrock outcrops.
- A search was conducted of the well records from the MECP WWR department. The search by UTM coordinates covered a 750 m radius from the Site. The search returned 30 WWRs, however, several of which did not have any details available related to the construction or subsurface conditions encountered. Nine (9) of the WWR retrieved was

for a test well. The records of the wells within 750 m of the Site, where details were available, revealed that the wells include both drilled and shallow overburden wells. The drilled wells, seven (7) of which, were reported to extend to depths of between 28.9 and 61.0 m. Only one (1) shallow overburden/dug supply well was reported, which extended to a depth of between 7.0 m. The well records show that that the geological conditions within 750 m are generally similar and consist of clay to depths between 21.0 and 44.8 m followed by a thin layer of gravel, over shale or limestone bedrock. A thin layer of sand was reported in select wells over the clay, and glacial till was reported over bedrock in the supply well located approximately 640 m northwest of the Site. The water type was reported as sulphur in two (2) of the test well locations.

- On August 23, 2023, the proposed supply well for the anticipated development was constructed at the northeastern portion of the Site. The well was advanced to a depth of 48.7 m. Clay was reported to be encountered at ground surface to a depth 26.2 m followed by gravel to 28.0 m bgs. The well was extended into shale bedrock to 48.7 m bgs. Water was found at a depth 46.9 m, with a static water level measured at 2.80 m.
- Entrepreneur Holding Corporation retained LRL to complete a Phase Two Environmental Site Assessment on the Site in the context of property redevelopment. The assessment was completed to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. A total of ten (10) boreholes were advanced across the Site to address the potential environmental concerns identified. The subsurface soil conditions in the area investigated on the Site generally consist of included a layer of sand and gravel fill extending from surface to 0.85 m bgs. Underlying the fill material was a layer of brown silty sand which extended from the bottom of the fill layer to 1.2 m bgs followed by silty clay to a depth of 6.0 m bgs where the boreholes were terminated. Refusal over inferred bedrock was not encountered in any of the boreholes.
- Four (4) groundwater monitoring wells were constructed on the Site as part of a Phase Two Environmental Site Assessment. Groundwater depth measurements in the monitoring wells were between 0.20 and 0.55 m below grade, which corresponded to elevations between 99.32 and 99.69 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m. Based on these elevations the groundwater flow direction on the Site is towards the southeast.
- Based on the findings of the Phase Two Environmental Site Assessment, remediation work to address the elevated lead concentrations encountered in the soil be completed during the construction efforts associated with the Site development. The impacted groundwater is also anticipated to be addressed at the time of development.
- To establish the hydraulic properties of the proposed supply aquifer, an eight (8)-hr pump test was conducted on the newly constructed supply well on August 30, 2023. The pumping rate was to account for the anticipated demand volumes, over a common commercial operation period of eight (8)-hours. The well was pumped at a constant flow rate (±5%) of approximately 22 L/min over eight (8)-hr period using a temporary submersible pump lowered into the well.
- The initial static water level was measured as 2.61 m below top of casing (btc), and test well depth was measured as approximately 48.7 m btc. The pump was set at approximately 45 m btc at the time of the test. The drawdown after eight (8)-hr of pumping was 3.64 m. This represents only approximately 8.1% of the available drawdown in the well, assuming the set pump depth of 45 m is the maximum drawdown

which can be reached. The specific capacity of the well after eight (8)-hr of pumping was calculated to be 0.101 L/sec/m with a long-term availability of 82.4 m³ per day.

- The average daily water demand for the proposed building is 15.8 L/min. The assessment was completed at a higher rate of 22 L/min over eight (8) - hours. The results of the test have revealed that the proposed supply aquifer was only marginally impacted by the demand resulting in only 8.1% drawdown of the available water column, assuming a pump depth of 45 m. This demonstrates that the aquifer was not stressed during the duration of the pumping test and would likely have not influenced any neighbouring property supply wells. The well was found to reach drawdown stabilization after approximately 2 hours. Although the aquifer did not return to >95% after 24-hours, the overall drawdown was marginal of the potential availability (even with a greater demand utilized for the test), and the aquifer did not demonstrate stressed conditions, which supports that it is suitable for the anticipated development.
- As previously mentioned, the pumping test was highly conservative with an inferred demand of more than 5 times the actual proposed daily demand. Should the actual anticipated daily demand of 1,310 L/day would have been implemented during the test, a flow rate of slightly less than 3 L/minute. As the well stabilized rapidly at the higher rate (stabilization in 2 hours at a rate of 22 L/minute), and the over drawdown was marginal, it is inferred that a 3 L/minute demand would result in the recharge of the well exceeding the demand, resulting in little to no fluctuation in the water level of the well, or neighbouring lands.
- To represent the long-term water quality of the well, samples were collected during different stages of the pump test (after four (4) and eight (8)-hours of pumping), and shortly thereafter. The majority of the parameters analysed meet the ODWS parameters tested except for the following:
  - Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L;
  - Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L;
  - TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L
  - Turbidity was measured to have a level of 3.8 NTU in the 4-hour sample, and 3.5 NTU in the 8-hour sample;
  - DOC with a level of 9.4 and 8.5 mg/L, at the 4- and 8-hour sample, respectively, above the AO of 5 mg/L but below the D-5-5 level considered reasonably treatable of 10 mg/L;
  - Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU;.
  - Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 level of 250 mg/L;
  - Barium concentrations exceeded the ODWS of 1 mg/L with values of 4.17 and 4.22 mg/L; and
  - Sodium with a level of 2670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L.

- Although select parameters were encountered in excess of the regulation D-5-5 levels which are considered reasonably treatable, our findings of an initial water quality evaluation of the neighbouring well, the concentrations of alkalinity, hardness, TDS, chloride and sodium have been proven to be treatable through the use of generally considered conventional treatment units.
- The water samples meet the ODWS parameters tested except for the following:
    - Hardness was found to be 204 and 219 mg/L at 3- and 6-hours, respectively, above the ODWS OG limit of 100 mg/L;
    - Turbidity was measured to have a level of 4.2 NTU in the 3-hour sample, and 8.8 NTU in the 6-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration and, the 6-hour sample is above the AO of 5 NTU;
    - All trace metal parameters analysed were below the respective OWDS, with the exception to Manganese which was reported with a value of 0.07 mg/L, above the ODWS of 0.05 mg/L;
    - Sulphide concentrations were reported as 0.12 mg/L after 6-hours of pumping, above the 0.05 mg/L ODWS AO. Sulphide can be reduced through aeration, which oxidizes it to sulphate, or an activated carbon filter;
    - Total Coliforms were detected in the samples collected at 3-hours and 6-hours of pumping, with values of 4 and 2 CFU/100 mL, respectively. Microbial impacts can be treated through the use of an ultraviolet disinfection system; and
    - Iron levels were measured to be 0.4 and 0.9 mg/L, above the ODWS AO of 0.3 mg/L. This level is below the D-5-5 treatability limit of 10 mg/L. Iron can be reduced through the use of a water softener.
- According to the design submitted by others, the overall septic system would require an area of 68.04 m² for the dispersion bed, along with an additional approximate 30 m² for the pump station, tank, dosing chamber and secondary pump station. This equates to a total surface area of 98.04 m². Assuming a replacement area of 70 m², an area of approximately 168 m² would be required for the placement of the sewage disposal system. The proposed grassed area assigned for the septic system at the southwestern extent of the Site has a surface area of 175 m², which is considered suitable for the placement of the septic. This location is more than 15 m from the location of the proposed supply well on the Site, and the existing supply wells on neighbouring lands.
- "***System Isolation***" is the most appropriate consideration, as the area is confirmed to have a thick clay deposit, extending between approximately 20 and 30 m in depth in the area, and an estimated 17 and 26 m on the Site. Although seven (7) supply wells have been identified within 750 m of the Site, of which three (3) are within 500 m of the Site. All but one (1) of the supply wells are advanced into the underlying bedrock (shale or limestone). The neighbouring supply well to the east extends 21.3 m into the clay overburden, which is then followed by gravel to 22.6 m where bedrock was encountered. The well was constructed into the shale bedrock to 28.9 m below grade. A secondary well, approximately 225 m southwest of the Site is reported to have a similar construction with 30.3 m of clay encountered, followed by gravel to 31.5 m where bedrock was encountered. The well was constructed into the shale bedrock to a depth of 32.4 m below grade. No details of the newly constructed supply well on the Site have been retrieved at this time, other than that the well extended to an overall depth of 48.7 m with 30.4 m of

casing. Bedrock was encountered at 28.0 m below grade.

- Assuming that the proposed supply aquifer of the Site and neighbouring lands within 100 m of the Site is that of the gravel and shallow bedrock (shale) aquifer, confined by between approximately 17 and 30 m of clay, it is estimated that the effluent impacts could take more than 500 years to travel the vertical distance through the confining clay later, to the groundwater table. This is considered suitable time for the dilution and natural attenuation of the nitrates.

10 RECOMMENDATIONS

Based on the results of this investigation the following recommendations are provided:

1. It is recommended that the recently constructed proposed supply well at the Site be utilized as a water supply for the proposed development features of the Site. The well is found to generally have acceptable groundwater supply for the proposed Site activities and with conventional treatment applied. Furthermore, the well will be able to meet the daily supply demands, as determined through the 8-hour pumping test initiated.
2. The casing of the well should also be extended to 400 mm above final grade after construction.
3. Additional consideration with respect to maintaining the condition of the supply well, and the corresponding supply aquifer include the following:
    a. Snow should not be piled in the area of the well so as not to potentially damage the supply well; and
    b. The Site, post- development, should be graded such that surface run-off and drainage be diverted away from the supply well.
4. The water quality of the proposed supply well is found to be in general accordance with the ODWS. The following exceptions were encountered:
    - Alkalinity was reported to have values of 703 and 705 mg/L at 4- and 8-hour, respectively. These values are above the ODWS OG limit of 500 mg/L. Alkalinity can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply;
    - Hardness was found to be 1020 and 1030 mg/L at 4- and 8-hours, respectively, above the ODWS OG limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however as mentioned above, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water;
        - The Langelier Saturation Index (LSI) is used to determine the calcium carbonate stability of water and the pH at which water is saturated with calcium carbonate (pHs). The LSI calculation is used to establish the level of saturation. The Ryznar Stability Index (RI) is used to determine the aggressiveness of water which can indicate the scale and corrosion potential. The calculations for RI and LSI are shown in **Table 4**. Using a water temperature of 10°C (typical of an interior distribution system circulating

through a building), the LSI was calculated for the 8-hour sample of 1.78 which indicate the water is scale forming but non-corrosive. The RI was calculated to be 4.72 at the 8-hour sample which indicates heavy scaling.

- TDS values were found to be 7950 and 7880 mg/L in the 4- and 8-hour samples, respectively, above the AO of 500 mg/L. TDS can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. For individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the TDS in the water supply;
- Turbidity was measured to have a level of 3.8 NTU in the 4-hour sample, and 3.5 NTU in the 8-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration, however, are below the AO of 5 NTU and the D-5-5 level considered reasonably treatable of 5 NTU. If the water is to be disinfected using an ultra-violet filter, it is recommended that the water be pre-treated with a 5 um filter;
- Dissolved Organic Carbon (DOC) with a level of 9.4 and 8.5 mg/L, at the 4- and 8-hour sample, respectively, above the AO of 5 mg/L but below the D-5-5 level considered reasonably treatable of 10 mg/L. DOC can cause taste, odour, and colour. DOC can be reduced through the use of an activated carbon (AC) filter;
- Colour with a level of 8 TCU in both samples collected, above the AO of 5 TCU and the D-5-5 level considered reasonably treatable of 7 TCU. The colour can be attributed to the levels of organic materials (tannin and lignin) encountered, which imparts a yellow/brown tinge to the water. The color can be reduced by use of an activated carbon filter or a water softener.
- Chloride concentrations exceeded the ODWS AO of 250 mg/L with a value of 4560 mg/L after 4-hours of pumping, and 4460 mg/L after 8-hours of pumping. Chloride levels also exceeded the D-5-5 level of 250 mg/L. Chloride is found in nature in various forms such as in sodium (NaCl), potassium (KCl) and calcium ($CaCl^2$) salts. A reverse osmosis treatment system can be used to lower level of chloride in drinking water;
- Barium concentrations exceeded the ODWS of 1 mg/L with values of 4.17 and 4.22 mg/L. Barium is a naturally occurring element that is found in various minerals. Barium in drinking water is often related to dissolved compounds which migrate through rocks and soil deposits and enter into the supply aquifer. Barium can be treated through the use of an ion exchange system, however caution related to excess soil should be exercised as discussed above; and
- Sodium with a level of 2670 mg/L at 4-hours, and 2,620 mg/L at 8-hours, which is above the AO and the D-5-5 level considered reasonably treatable of 200 mg/L. It is also above the 20 mg/L warning level notification limit for those on a sodium restricted diet. The local Medical Officer of Health should be notified of these levels so that this information may be communicated to local physicians with regards to homeowners who follow a sodium-restricted diet. The levels of sodium can be reduced through reverse osmosis system.

VOC parameters were not detected in the samples submitted for analysis, and bacteria levels were either non-detected, or within the acceptable limit. Total Coliforms were detected with counts of 2 and 1 CFU/100 mL in the 4- and 8-hours samples. Although these counts are less

than the ODWS MAC, it is advisable to include an ultra-violet treatment system as a precautionary measure.

Although select parameters were encountered in excess of the regulation D-5-5 levels which are considered reasonably treatable, our findings from the initial water quality evaluation of the neighbouring well, the concentrations of alkalinity, hardness, TDS, chloride and sodium have been proven to be treatable through the use of generally considered conventional treatment units.

A water quality treatment specialist should be consulted to recommend the proper units, specifications and maintenance frequency, it is considered acceptable to assume the following system can be applied to the proposed development to support suitable drinking water supply to occupants:

- a water softener that uses potassium chloride as sodium is found to be elevated;
- Carbon filtration;
- Iodine dosage;
- Reverse osmosis;
- Ultra-violet (UV) light unit with a 5 µm filtration membrane to do reduce turbidity of the water and ensure effectiveness of the UV unit.

As the property will be used for commercial/light industrial purposes, it is considered feasible for such a system series to be supplied, and maintained on a regular basis.

5. Water Treatment options should be considered on an individual basis. Any water treatment system should be maintained on a regular basis in accordance with the manufacturer's recommendations to ensure that it is properly functioning and providing a safe drinking water.
6. The owner should maintain their well as outlined in the Ontario Ministry of Agricultural and Rural Affairs Best Management Series – Water Wells.
7. The subsurface conditions indicated for the Site are considered suitable for a Class IV septic sewage disposal system with a partially to fully raised leaching bed depending on the specific soil and groundwater conditions at the actual leaching bed locations. Sewage system designs shall be based on specific investigations to evaluate the suitability of local conditions on each lot. The system should be designed using the percolation time of the native and imported sand and according to the Ontario Building Code (OBC). The leaching beds should be constructed to conform to the specifications set out in the OBC. The septic systems shall be constructed above the groundwater table over the native soil once all organic soils have been stripped from is footprint.
8. Prior to installation of the septic disposal system, an updated application must be filed and approved by the Ontario Septic System Office (OSSO).
9. The septic system should be placed at least 15 m from any drilled supply wells, 30 m from any shallow/dug wells, and at least 3 m from the property boundary limits.
10. It is recommended that the water table be surveyed prior to installation of the sewage disposal systems.

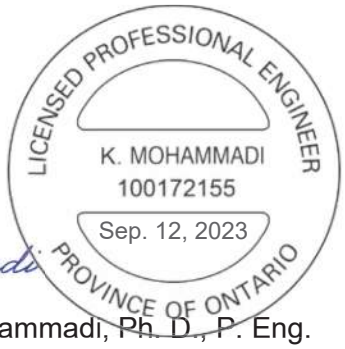
11 LIMITATIONS

The findings contained in this report are based on data and information collected during the Hydrogeological Assessment & Terrain Analysis of the subject property conducted by LRL Engineering. The conclusions and recommendations are based solely on-Site conditions encountered at the time of our fieldwork between April 17 and August 31, 2023, supplemented by historical information and data obtained as described in this report. The information presented in this report represents the groundwater conditions at the locations sampled. Due to natural variations in geological conditions, no inference is made to the soil or groundwater conditions between sampling points. No assurance is made regarding changes in conditions subsequent to the time of this investigation. If additional information is discovered or obtained, LRL Engineering should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

In evaluating the subject property, LRL Engineering has relied in good faith on information provided by individuals as noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretation or fraudulent acts of the persons contacted.

Yours truly,

LRL Associates Ltd.



Jessica Arthurs
Environmental Engineering Manager

Kourosh Mohammadi, Ph. D., P. Eng.
Hydrogeological Engineer

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FIGURES

LRL
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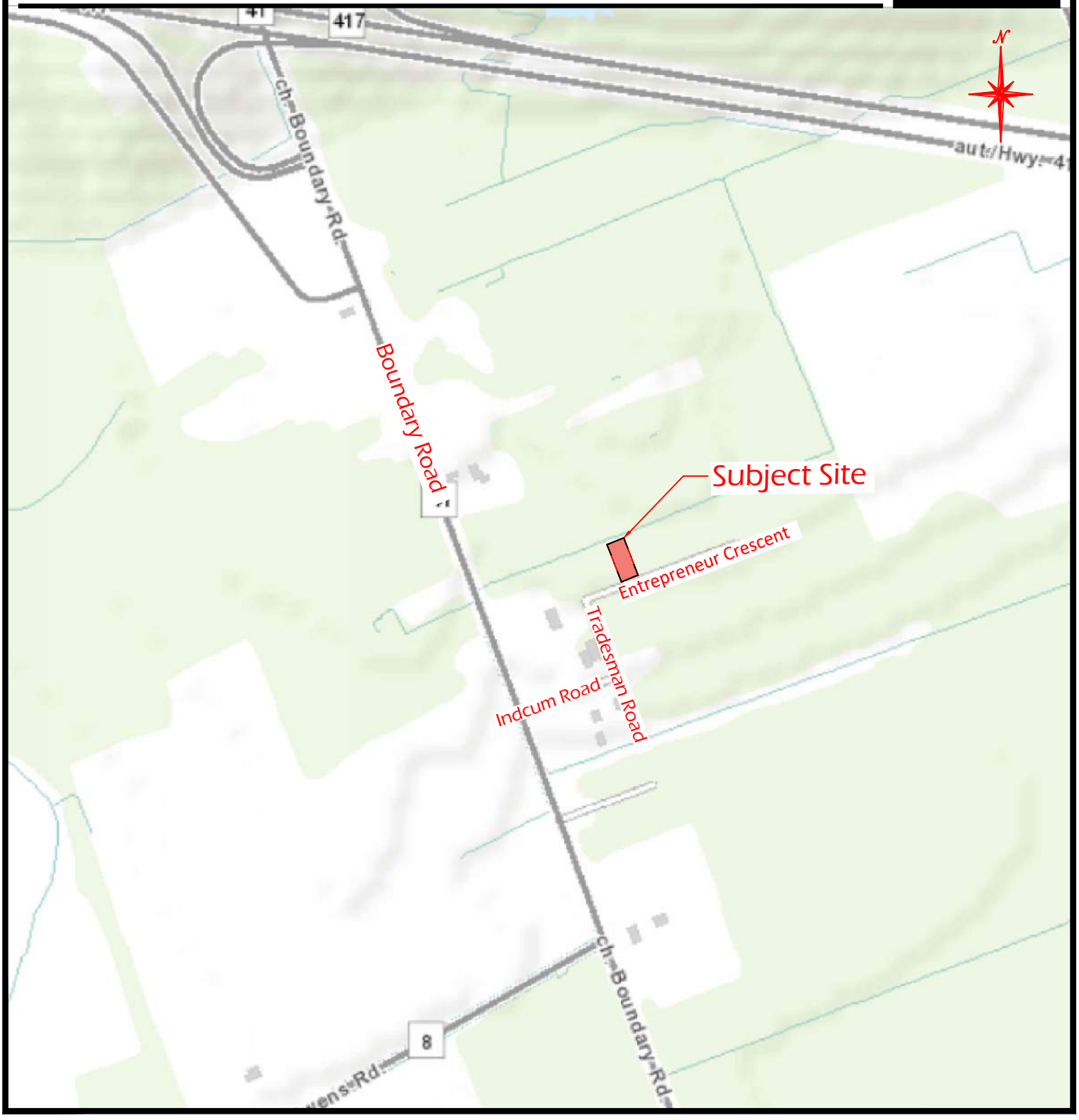
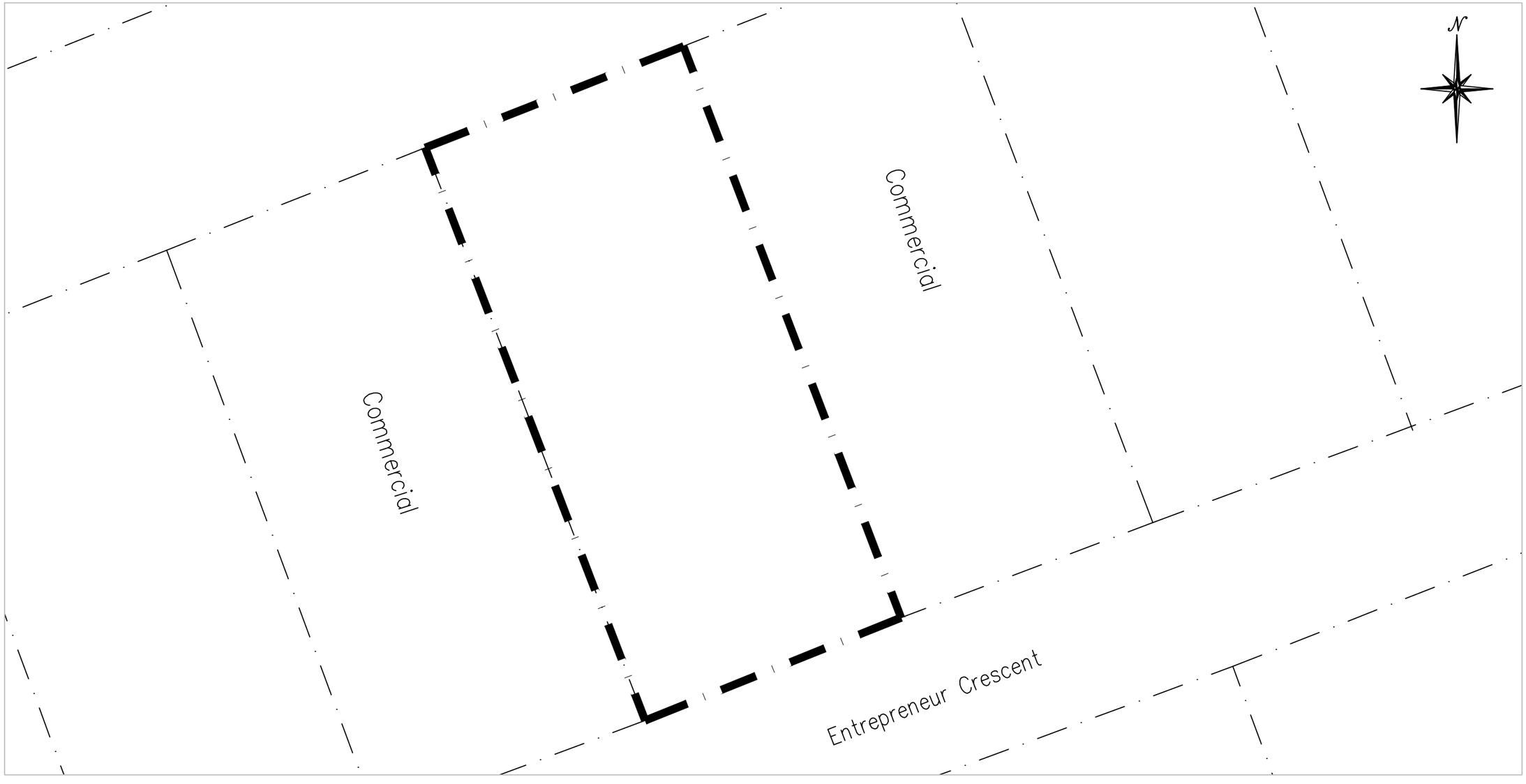
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
SITE LOCATION
(NOT TO SCALE)
SOURCE: GEOOTTAWA

CLIENT	DATE	PROJECT
ENTREPRENEUR HOLDING CORPORATION	SEPTEMBER 2023	220487

FIGURE1





LEGEND

Property Line – Subject Site (363 Entrepreneur Crescent)

Neighbouring Property Boundaries

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	04/09/2023

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C.C.	C.C.	J.A.

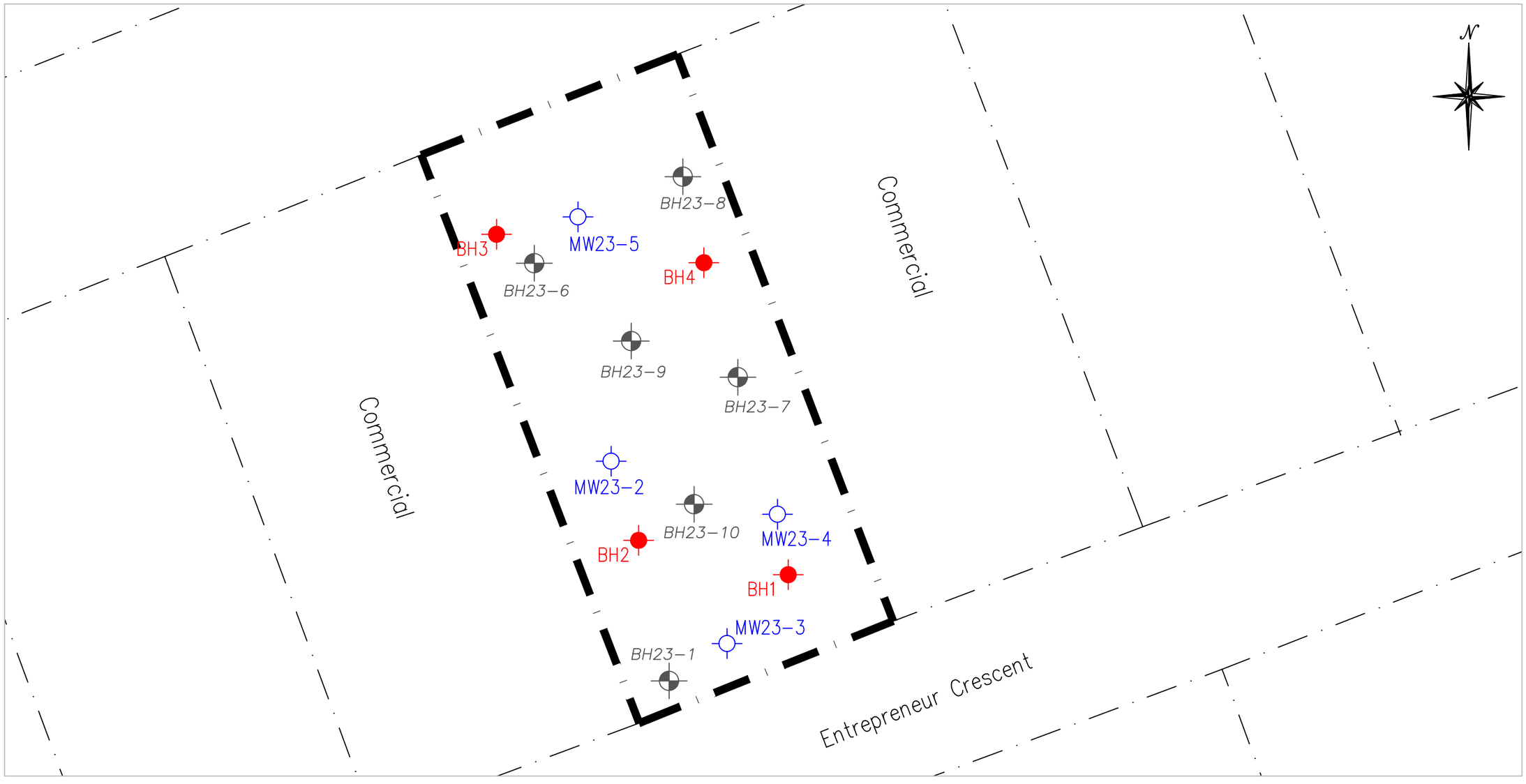
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
SITE PLAN

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE2



LEGEND

- Property Line – Subject Site (363 Entrepreneur Crescent)
- Neighbouring Property Boundaries
- BH–X — Borehole (Phase Two ESA)
- MW23–X — Monitoring Well (Phase Two ESA)
- BHX — Borehole (Geotechnical Investigation)

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
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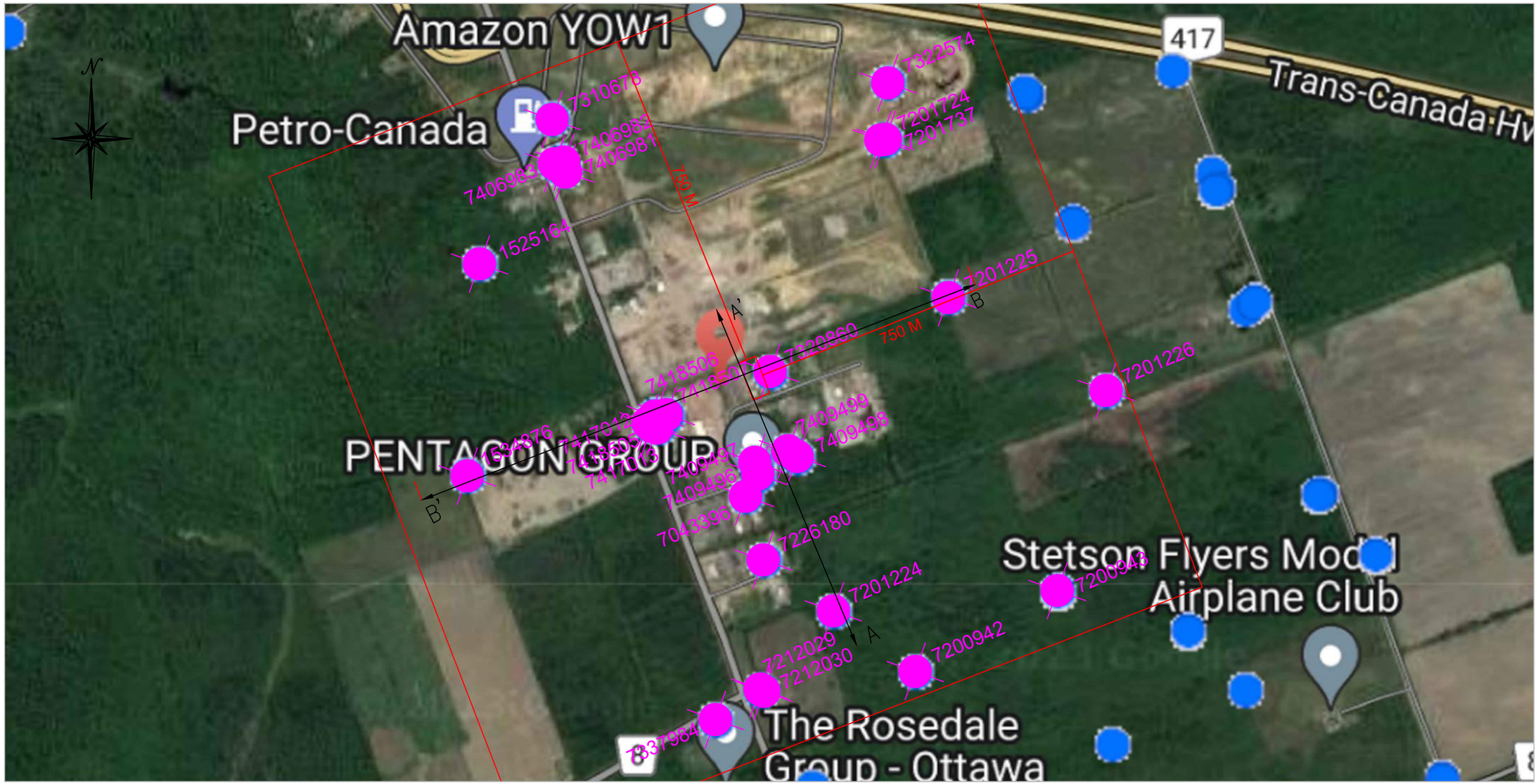
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
PREVIOUS INVESTIGATION - BOREHOLE AND MONITORING WELL LOCATIONS

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE3



Legend

- Property Line – Subject Site (363 Entrepreneur Crescent)
- xxxx — Wells within 500 m of the Site
- BH–X — Borehole
- MW23–X — Monitoring Well

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
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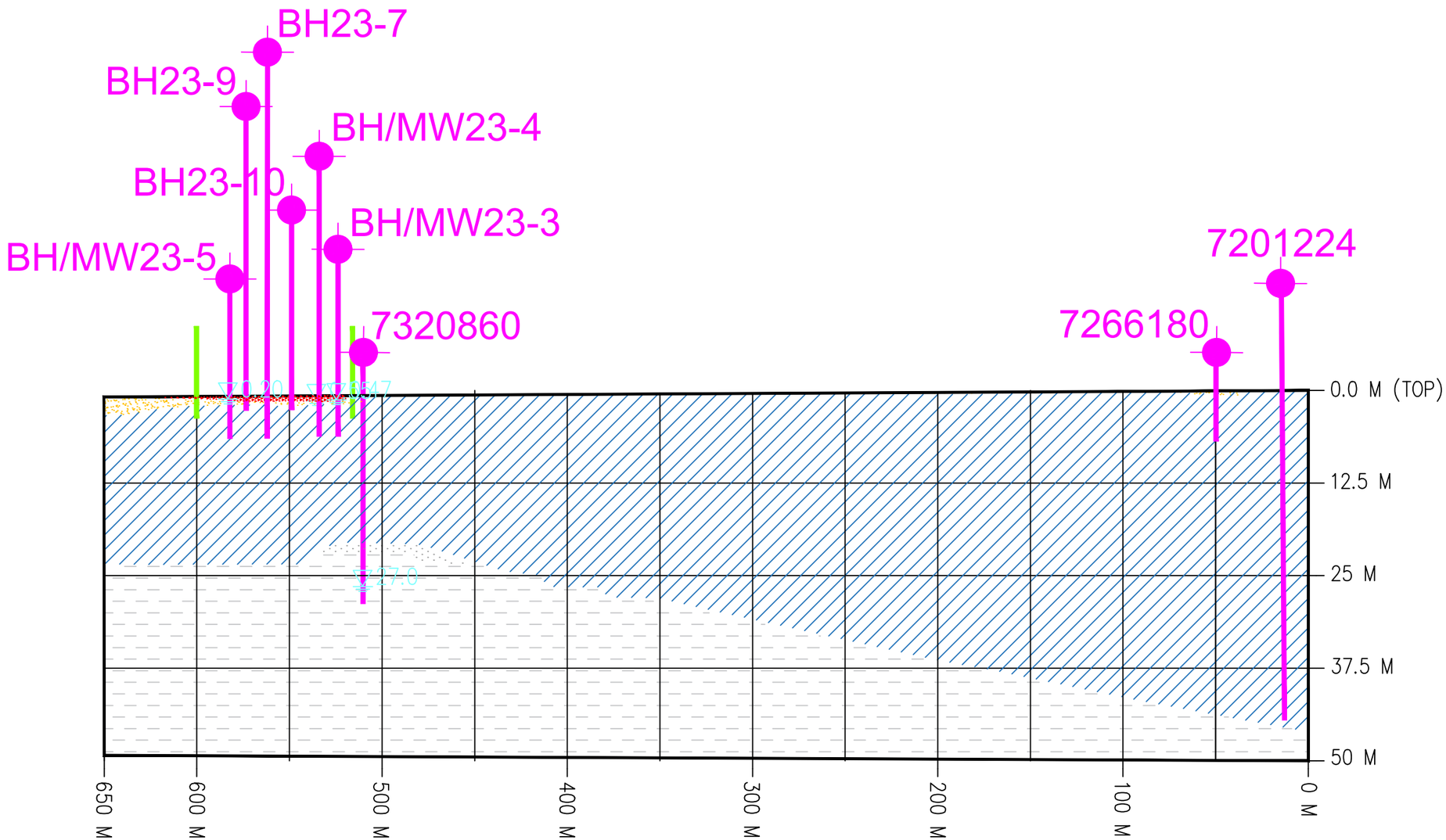
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
WELLS WITHIN 750 m OF THE SITE (SOURCE & BASE LAYER: MECP WELL RECORD DATABASE)

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE4



NORTH A' CROSS SECTION A' – A A SOUTH

LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Gravel
- Bedrock
- Fill

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
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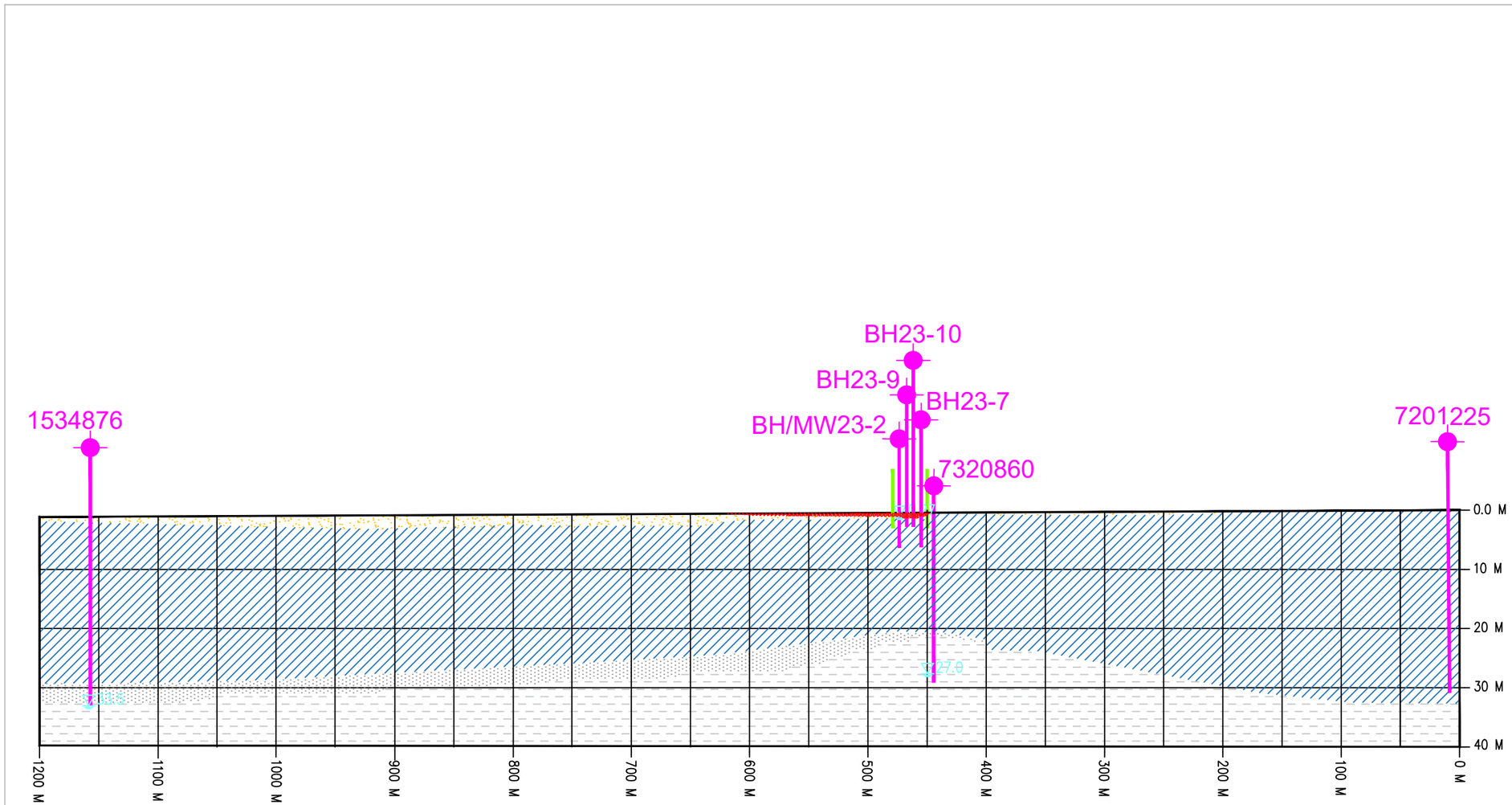
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED COMMERCIAL DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
CROSS SECTION A' - A

FIGURE5A



CROSS SECTION B' – B

LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Gravel
- Bedrock
- Fill

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
01	ISSUED FOR REVIEW	C.C.	05/09/2023

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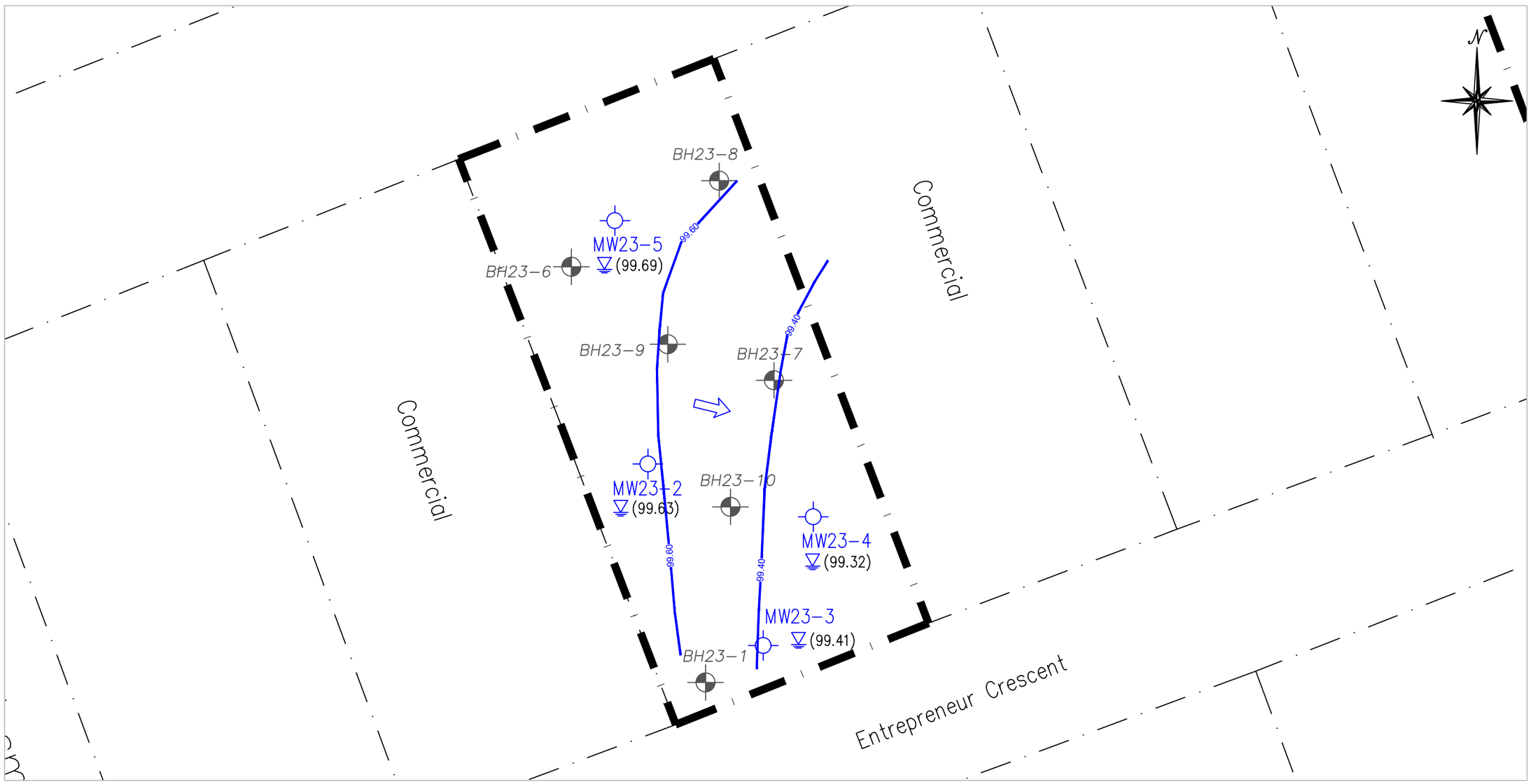
PROPOSED COMMERCIAL DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
CROSS SECTION B' - B

FIGURE5B



LEGEND

- Property Line – Subject Site (363 Entrepreneur Crescent)
- Neighbouring Property Boundaries
- BH–X — Borehole
- MW23–X — Monitoring Well
- Inferred Groundwater Flow Direction
- 99.99 — Groundwater Elevation
- Groundwater Elevation Contour

15m 0 30 60m

SCALE: 1:1250

No.	REVISIONS	BY	DATE
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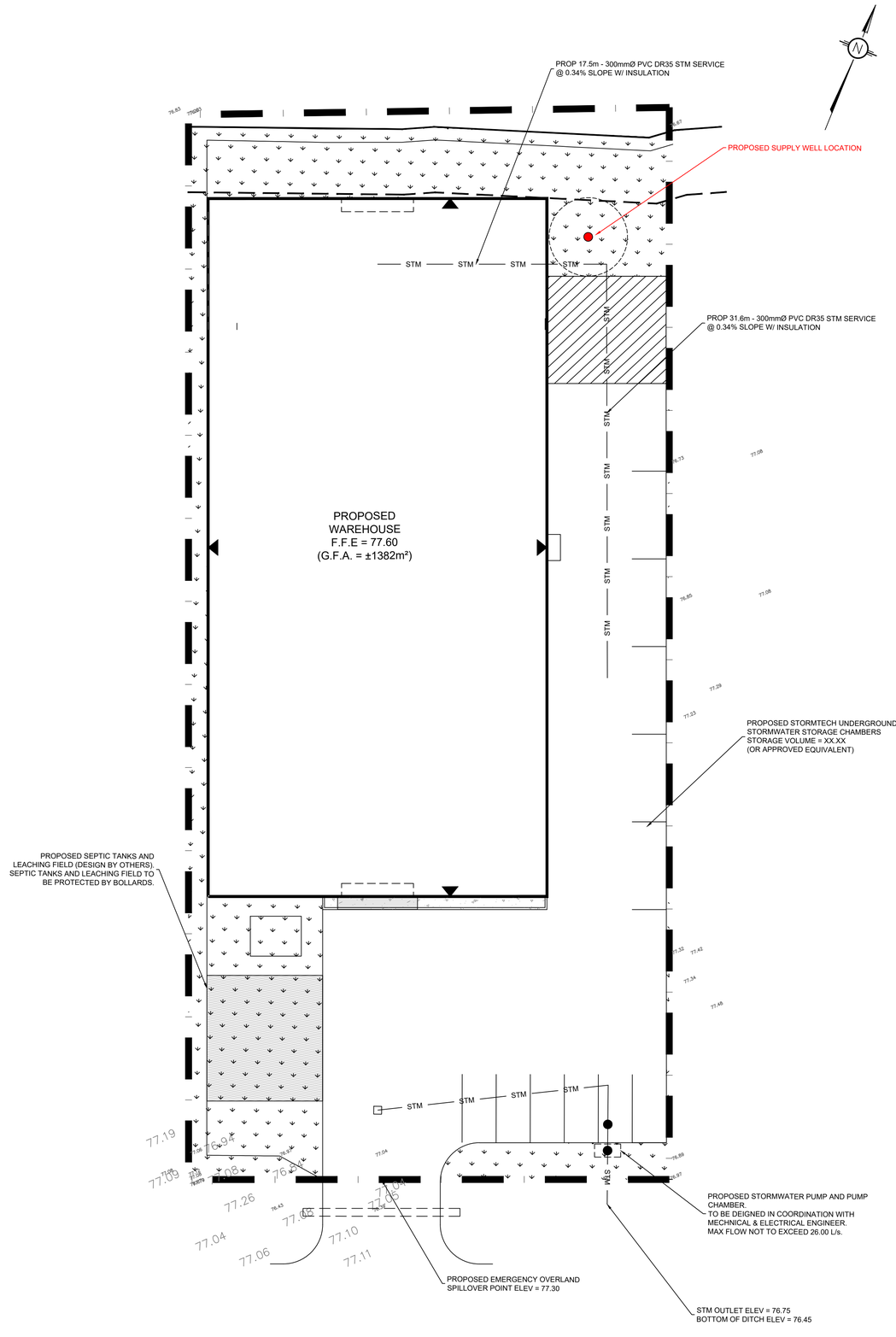
PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT
OTTAWA, ONTARIO

DRAWING TITLE
GROUNDWATER ELEVATIONS AND CONTOURS (MARCH 16, 2023)

PROJECT NO.
220487

DATE
SEPTEMBER 2023

FIGURE 6



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED GRAVEL
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB — SUB — PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM — STM — PROPOSED STORM SEWER
- SAN — SAN — PROPOSED SANITARY SEWER
- WTR — WTR — PROPOSED WATERMAIN
- STM — STM — EXISTING STORM SEWER
- SAN — SAN — EXISTING SANITARY SEWER
- WTR — WTR — EXISTING WATERMAIN
- GAS — GAS — EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX (CONTROLLED) — WATERSHED NAME
- AREA / RUNOFF — RUNOFF COEFFICIENT / AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS 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.

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IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m

SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
01	ISSUED FOR SITE PLAN CONTROL	K.H.	XX MAR 2023

NOT AUTHENTIC UNLESS SIGNED AND DATED

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CLIENT

ENTREPRENEUR HOLDING CORP.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
K.H.	K.H.	M.B.

PROJECT

HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
PROPOSED WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CRESCENT, OTTAWA

DRAWING TITLE

GENERAL PROPOSED DEVELOPMENT PLAN

PROJECT NO.

220487

DATE

OCT 2022

FIGURE7

TABLES

Table 1
Summary of Analysis of Water Sample Collected from the Neighbouring Supply Wells - 357 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		357 Entrepreneur - Pre	357 Entrepreneur - Post
Sample Date (d/m/y)						**17-Apr-23**	**17-Apr-23**
Microbiological Parameters							
E. Coli	CFU/100 mL	1	0	MAC		<1	<1
Fecal Coliforms	CFU/100 mL	1	0 [1]	MAC		<1	<1
Heterotrophic Plate Count	CFU/ml	10	--			<10	150
Total Coliforms	CFU/100 mL	1	0/5[1]	MAC		<1	<1
General Inorganics							
Alkalinity, total	mg/L	5	30 - 500	OG		**605**	**16**
Ammonia as N	mg/L	0.01	--			3.28	0.46
Dissolved Organic Carbon	mg/L	0.5	5	AO	10	7.8	<0.5
Colour	TCU	2	5	AO	7	5	<2
Conductivity	uS/cm	5	--			13100	1050
Hardness	mg/L	1	80 - 100	OG		**1050**	**0.00**
pH	pH Units	0.05	6.5 - 8.5	OG		8.2	7.0
Phenolics	mg/L	0.001	--			<0.001	<0.001
Total Dissolved Solids	mg/L	10	500	AO		**7640**	**508**
Sulphide	mg/L	0.02	0.05	AO		0.24	<0.02
Tannin & Lignin	mg/L	0.1	--			0.7	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	--			3.4	0.5
Organic Nitrogen	mg/L		0.15	OG		0.12	0.04
Turbidity	NTU	0.1	1/5[2]	MAC/AO	5	***12.0***	<0.1
Anions							
Chloride	mg/L	1	250	AO	250	***4350***	**302**
Fluoride	mg/L	0.1	1.5[3]/2.4	MAC		0.7	<0.1
Nitrate as N	mg/L	0.1	10	MAC		<0.1	<0.1
Nitrite as N	mg/L	0.05	1	MAC		<0.50	<0.05
Sulphate	mg/L	1	500	AO	500	13	<1
Metals							
Calcium	mg/L	0.1	--			97.8	<0.1
Iron	mg/L	0.1	0.3	AO	5	**1.3**	<0.1
Magnesium	mg/L	0.2	--			196	<0.2
Manganese	mg/L	0.005	0.05	AO	1	0.03	<0.005
Potassium	mg/L	0.1	--			91.4	1.9
Sodium	mg/L	0.2	20[4]/200	AO	200	***2010***	*152*

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 2
Specific Capacity and Longterm Availability
Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File: 220487

Well	Cs - Static mTOC	EOH mTOC	Cp - Pump* mTOC	Cp - Cs	Drawdown (m)	Pumping Rate L/min	*Sc* - Specific Capacity L/sec/m	Qsc -Maximum Pumping Rate L/min	Long Term Availability m^3/day	Qsc GPM (US)	Qsc GPM (IMP)
Proposed Supply Well	2.61	6.25	45.00	42.4	3.64	22.0	0.101	57.2	82.4	15.1	12.6

Notes:

$$Qsc = 0.67\frac{(C_p - C_s)S_c}{SF}$$

Qsc	Pumping rate with safety factor (SF) of 3 (L/min);
$C_p - C_s$	Difference between pump level and static water level (m);
S_c	Specific capacity (L/min/m); and
0.67	Is a factor that compensates for the variation of the static water level due to seasonal variations as well as to drawdown from nearby wells
SF	3
Minimum Demand	1.35 m^3
*	Depth of pump at the time of the pumping test - measured in field
	Greater than Minimum Demand
	Less than Minimum Demand

Table 3A
Summary of Analysis of Water Sample Collected - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		363 Entrepreneur Crescent Supply - 4 Hour	363 Entrepreneur Crescent Supply - 8 Hour
Sample Date (d/m/y)						**30-Aug-23**	**30-Aug-23**
Microbiological Parameters							
E. Coli	CFU/100 mL	1	0	MAC		<1	<1
Fecal Coliforms	CFU/100 mL	1	0 [1]	MAC		<1	<1
Heterotrophic Plate Count	CFU/ml	10	--			90	40
Total Coliforms	CFU/100 mL	1	0/5[1]	MAC		2	1
General Inorganics							
Alkalinity, total	mg/L	5	30 - 500	OG		**703**	**705**
Ammonia as N	mg/L	0.01	--			4.72	4.71
Dissolved Organic Carbon	mg/L	0.5	5	AO	10	**9.4**	**8.5**
Colour	TCU	2	5	AO	7	**8**	**8**
Conductivity	uS/cm	5	--			14300	14200
Hardness	mg/L	1	80 - 100	OG		**1020**	**1030**
pH	pH Units	0.05	6.5 - 8.5	OG		8.2	8.3
Phenolics	mg/L	0.001	--			<0.001	<0.001
Total Dissolved Solids	mg/L	10	500	AO		**7950**	**7880**
Sulphide	mg/L	0.02	0.05	AO		0.23	0.23
Tannin & Lignin	mg/L	0.1	--			0.7	0.7
Total Kjeldahl Nitrogen	mg/L	0.1	--			4.7	4.7
Organic Nitrogen	mg/L		0.15	OG		-0.02	-0.01
Turbidity	NTU	0.1	1/5[2]	OG/AO	5	**3.8**	**3.5**
Anions							
Chloride	mg/L	1	250	AO	250	***4560***	***4460***
Fluoride	mg/L	0.1	1.5[3]/2.4	MAC		0.2	0.2
Nitrate as N	mg/L	0.1	10	MAC		<0.1	<0.1
Nitrite as N	mg/L	0.05	1	MAC		<0.25	<0.25
Sulphate	mg/L	1	500	AO	500	3	4

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 3B
Summary of Analysis of Water Sample Collected (Metals) - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample	
			Standard	Type		363 Entrepreneur Crescent Supply - 4 Hour	363 Entrepreneur Crescent Supply - 8 Hour
Sample Date (d/m/y)						**30-Aug-23**	**30-Aug-23**
Metals							
Aluminum	mg/L	0.001	0.1	AO		0.025	0.018
Antimony	mg/L	0.0005	0.006	MAC		<0.0005	<0.0005
Arsenic	mg/L	0.001	0.01	MAC		<0.001	<0.001
Barium	mg/L	0.001	1	MAC		**4.17**	**4.22**
Beryllium	mg/L	0.0005				<0.0005	<0.0005
Boron	mg/L	0.01	5	MAC		0.79	0.76
Cadmium	mg/L	0.0001	0.005	MAC		<0.0001	<0.0001
Calcium	mg/L	0.1				48.3	49.0
Chromium	mg/L	0.001	0.05			<0.001	<0.001
Cobalt	mg/L	0.0005				<0.0005	ND (0.0005)
Copper	mg/L	0.0005	1	AO		<0.0005	ND (0.0005)
Iron	mg/L	0.1	0.3	AO	5	0.3	0.3
Lead	mg/L	0.0001	0.01	MAC		<0.0001	ND (0.0001)
Magnesium	mg/L	0.2				218	220
Manganese	mg/L	0.005	0.05	AO	1	0.009	0.007
Molybdenum	mg/L	0.0005				<0.0005	ND (0.0005)
Nickel	mg/L	0.001				<0.001	ND (0.001)
Potassium	mg/L	0.1				61.3	63.3
Selenium	mg/L	0.001	0.05	MAC		<0.001	ND (0.001)
Silver	mg/L	0.0001				<0.0001	ND (0.0001)
Sodium	mg/L	0.2	20/200	MAC/AO	200	***2670***	***2620***
Strontium	mg/L	0.01				5.71	5.71
Thallium	mg/L	0.001				ND (0.001)	ND (0.001)
Tin	mg/L	0.01				ND (0.01)	ND (0.01)
Titanium	mg/L	0.005				ND (0.005)	ND (0.005)
Tungsten	mg/L	0.01				ND (0.01)	ND (0.01)
Uranium	mg/L	0.0001	0.02	MAC		ND (0.0001)	ND (0.0001)
Vanadium	mg/L	0.0005				ND (0.0005)	ND (0.0005)
Zinc	mg/L	0.005	5	AO		ND (0.005)	ND (0.005)

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline

ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"

[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption

[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.

[4] Limit at which Local Medical Officer of Health should be notified of Levels.

[5] MOECC D-5-5 guideline, maximum concentration considered reasonably treatable

Table 3C
Summary of Analysis of Water Sample Collected (VOC) - 363 Entrepreneur Crescent
Hydrogeological Assessment and Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

			Sample	
Parameter	**Units**	**MRL**	**363 Entrepreneur Crescent Supply - 4 Hour**	**363 Entrepreneur Crescent Supply - 8 Hour**
Sample Date (d/m/y)			**30-Aug-23**	**30-Aug-23**
Volatile Organic Compounds (VOCs)				
Acetone	mg/L	0.0050	<0.0050	<0.0050
Benzene	mg/L	0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/L	0.0005	<0.0005	<0.0005
Bromoform	mg/L	0.0005	<0.0005	<0.0005
Bromomethane	mg/L	0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/L	0.0002	<0.0002	<0.0002
Chlorobenzene	mg/L	0.0005	<0.0005	<0.0005
Chloroethane	mg/L	0.0010	<0.0010	<0.0010
Chloroform	mg/L	0.0005	<0.0005	<0.0005
Dibromochloromethane	mg/L	0.0005	<0.0005	<0.0005
Dichlorodifluoromethane	mg/L	0.0010	<0.0010	<0.0010
Ethylene dibromide (dibromoethane, 1,2-)	mg/L	0.0002	<0.0002	<0.0002
1,2-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,3-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,4-Dichlorobenzene	mg/L	0.0005	<0.0005	<0.0005
1,1-Dichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, total	mg/L	0.0005	<0.0005	<0.0005
1,2-Dichloropropane	mg/L	0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropylene	mg/L	0.0005	<0.0005	<0.0005
trans-1,3-Dichloropropylene	mg/L	0.0005	<0.0005	<0.0005
1,3-Dichloropropene, total	mg/L	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.0005	<0.0005	<0.0005
Hexane	mg/L	0.0010	<0.0010	<0.0010
Methyl Ethyl Ketone (2-Butanone)	mg/L	0.0050	<0.0050	<0.0050
Methyl Isobutyl Ketone	mg/L	0.0050	<0.0050	<0.0050
Methyl tert-butyl ether	mg/L	0.0020	<0.0020	<0.0020
Methylene Chloride	mg/L	0.0050	<0.0050	<0.0050
Styrene	mg/L	0.0005	<0.0005	<0.0005
1,1,1,2-Tetrachloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/L	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0005	<0.0005	<0.0005
1,1,1-Trichloroethane	mg/L	0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	mg/L	0.0005	<0.0005	<0.0005
Trichloroethylene	mg/L	0.0005	<0.0005	<0.0005
Trichlorofluoromethane	mg/L	0.0010	<0.0010	<0.0010
Vinyl Chloride	mg/L	0.0002	<0.0002	<0.0002
m/p-Xylene	mg/L	0.0005	<0.0005	<0.0005
o-Xylene	mg/L	0.0005	<0.0005	<0.0005
Xylenes, total	mg/L	0.0005	<0.0005	<0.0005

Table 4
Langelier and Ryznar Calculations

Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent , Ottawa, Ontario
LRL File: 220487

Analyzed Parameters

TDS (mg/L)	7880
Hardness(mg/L)	1030
alkalinity(mg/L)	705
pH (pH units)	8.3
Temperature °C	10

Langelier

LSI = pH - pHs

pHs = (9.3 +A+B) - (C+D) Where

A= (Log10(TDS)-1)/10	=	0.2896526
B= (-13.12*Log10(T°C+273)+34.55	=	2.382562
C= Log10(Hardness)-0.4	=	2.6128372
D= Log10(Alkalinity)	=	2.8481891

Ryznar

RI=2pHs-pH

pHs=	6.511188
LSI=	1.788812
RI=	4.722376

ATTACHMENT A

Topographic Map

LOT 22 CONCESSION II

PART 7 PLAN 4R-32589
PART 1 PLAN 4R-27827
PIN 14558 - 0408

SIB (AOG)

(N 67° 48' 00" E Pl. P3)
N 67° 48' 50" E (P2)&Set

94.39 (P2)&Set

Fd. SIB(AOG) Disturbed & Reset

C/L of Ditch

36.76 (P1,P2,P3)&Set

Edge of Gravel

TOS

190.62 (P1,P2,P3)&Meas.

59.47 (P1,P3)&Meas.

(N67°49'00"E P1,P3)
N67°49'50"E (P2)&Set
120.76 (P1,P2,P3)&Set

SIB (AOG)

IB (WIT)

1.50

CLF 0.19 West

BLOCK 9
0.5 Reserve

BLOCK 1 PART 4 PLAN 50R-6774

ROAD

TRADESMAN

REGISTERED

PLAN

BLOCK 3 50M-136

81.38 (P1,P3)&Meas.

81.93 (P1,P3)&Meas.

80.43

Gravel

Metal Containers

50R-6694

Drilled Well (Top Elev=77.90)

PIN 14558 - 0356
PART 2

PART 1

PIN 14558 - 0401
PART 3

PIN 14558 - 0402
PART 4

PART 5

PART 8

PART 5 PLAN 50R-6774

SUBJECT TO EASEMENT PER INST. OC1627867

SITE BENCHMARK
Nail in Hydro Pole
Elev=77.79

N21°20'40"W

CLF 0.13 East

Metal Building

Edge of Gravel

PART 8 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627866

PART 9 PLAN 4R-27830

PART 10 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627868

PART 14
PLAN 4R-27830

PART 15
PLAN 4R-27830

CLF 0.08 West

36.75 (P1,P3)&Set

N68°39'20"E

SSIB

Drain (Inv.=76.69)

6.0

174.45 (P1,P3)&Meas.

211.20 (P1,P3)&Meas.

UP

SIB (AOG)

C/L of Ditch

Edge of Gravel

TOS

CSP 0.5ø Inv.=76.43

CSP 0.5ø Inv.=76.39

Edge of Asphalt

Centreline of Road

ENTREPRENEUR CRESCENT

PIN 14558 - 0066

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF BLOCK 3
REGISTERED PLAN 50M-136
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 400

16 12 8 4 0 8 16 Metres

Metric

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

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the regulations made under them.
2. The survey was completed on December 8, 2022.

Dec 14/22
Date

Tyler J. Allison
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-33900

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR IN ACCORDANCE WITH Regulation 1026, Section 29 (3)

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(WIT)	"	Witness
Meas.	"	Measured
(P1)	"	Plan 4R-27830
(P2)	"	Plan 4R-32589
(P3)	"	Plan 50R-6694
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
—OH—	"	Overhead Wires
UP	"	Utility Pole
CSP	"	Corrugated Steel Pipe
Inv.	"	Invert
CLF	"	Chain Link Fence
TOS	"	Top of Slope
+65.00	"	Location of Elevations
C/L	"	Centreline

Bearings are grid, derived and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
165 Bay Street
Embrun, Ont. K0A 1W1
Phone: (613) 443-3364
Email: Embrun@aovltd.com
Ontario Land Surveyors

Job No. E-2488-22 BIN

ATTACHMENT B

Borehole Logs – Previous Investigations

Borehole Log: BH1

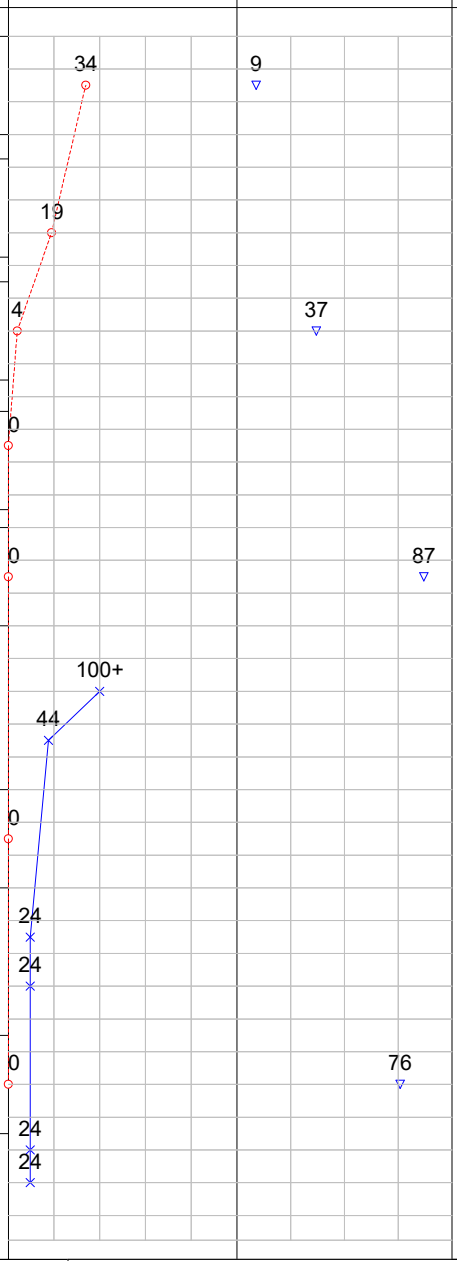
Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)
0 / 0	Ground Surface	100.28				
0 / 0	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00		SS1	34	42
3 / 1		99.22		SS2	19	58
4 / 1	**SILTY SAND** brown, moist, compact.	1.07				
5 / 2	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	98.83 1.45		SS3	4	50
8 / 3				SS4	WH	100
10 / 3				SS5	WH	100
13 / 4		96.16				
14 / 4	**SILTY CLAY** grey, very soft, wet.	4.12				
16 / 5				SS6	WH	100
20 / 6				SS7	WH	100
23 / 7		93.28				
23 / 7	End of Borehole	7.00				



Monitoring Well Details

Easting: 465773 m **Northing:** 5020883 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.285 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface	100.17							
0 – 3 / 0 – 1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 – 99.57		SS1	30	42	30		
3 – 5 / 1 – 1.5	**SILTY SAND** brown, moist, compact.	0.60 – 98.72		SS2	15	50	15	22	
5 – 13 / 1.5 – 4	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45 – 96.05		SS3	1	50	1		
				SS4	WH	58	0	65	
				SS5	WH	75	0		
13 – 19 / 4 – 5.8	**SILTY CLAY** grey, very soft, wet.	4.12		SS6	WH	100	20, 30, 0, 24, 30		

Easting: 465762 m **Northing:** 5020885 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.165 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
20									
21				SS7	WH	100	0	85	
22							24		
23	7						24		
24							0		
25							0		
26	8						0		
27							0		
28							0		
29							0		
30	9						0		
31							0		
32							0		
33	10						0		
34							0		
35							0		
36	11						0		
37							0		
38							0		
39									

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) × 50 150 × / SPT N Value ○ (Blows/0.3 m) ○ 20 40 60 80	Water Content ▽ (%) ▽ 25 50 75 / Liquid Limit □ (%) □ 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
40							0		
41							0		
42							0		
43	13						5		
44							5		
45							6		
46	14						6		
47							7		
48							7		
49	15						6		
50							7		
51							9		
52	16						8		
53							9		
54							10		
55							11		
56	17						12		
57							13		
58							12		
59							13		

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
60							17		
61		81.56					21		
	INFERRED GLACIAL TILL	18.60					20		
62	19						14		
63							20		
64							15		
65							15		
66	20						15		
67							15		
68							13		
69	21						18		
70							15		
71							15		
72	22						16		
73							17		
74							17		
75	23						16		
76							27		
77							35		
78							47		

NOTES

Borehole Log (continued): BH2

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

SUBSURFACE PROFILE		SAMPLE DATA					Shear Strength (kPa) 50 150 / SPT N Value (Blows/0.3 m) 20 40 60 80	Water Content (%) 25 50 75 / Liquid Limit (%) 25 50 75	Monitoring Well Details
Depth	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)			
79							44		
80							50		
		75.67							
	End of Borehole	24.50							
81									
82	25								
83									
84									
85									
	26								
86									
87									
88									
	27								
89									
90									
91									
92	28								
93									
94									
95	29								
96									
97									
98									

NOTES

Borehole Log: BH3

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	SPT N Value (Blows/0.3 m)	Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface	100.18							
0–2 / 0–1	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00		SS1	36	50	36	11	
		99.49							
2–4 / 1	**SILTY SAND** brown, moist, compact.	0.69		SS2	14	50	14		
		98.73							
5–7 / 2	**CLAYEY SILT** trace sand, grey, very soft, wet.	1.45		SS3	1	100	1	83	
8–9 / 3							20		
9–10 / 3							32		
10–11 / 3				SS4	WH	100	0		
11–12 / 3–4	-Sand seam at about 3.65 m bgs								
		96.06							
13–15 / 4	**SILTY CLAY** grey, very soft, wet.	4.12							
15–16 / 5				SS5	WH	100	0	61 90	
17–18 / 5							32		
18–19 / 5							32		
20–22 / 6							24		
22–23 / 6–7							24		
		93.18							
23 / 7	End of Borehole	7.00							

Monitoring Well Details: 0.5 m bgs Dec 6, 2022

Easting: 465745 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.180 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** 19 mm

NOTES:

Borehole Log: BH4

Project No.: 220487 **Project:** Proposed Warehouse

Client: Entrepreneur Holding Corp. **Location:** 363 Entrepreneur Cres. Vars ON

Date: November 17, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Track Mount CME 75 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 ft / 0 m	Ground Surface	100.22							
0 – 1 ft / 0 m	**FILL MATERIAL** crushed stone, grey, moist, dense.	0.00 – 99.63		SS1	35	33	35		
3 – 4 ft / 1 m	**SILTY SAND** brown, moist, compact.	0.60 – 98.77		SS2	14	50	14	24	
5 – 10 ft / 1.45 – 3 m	**CLAYEY SILT** trace sand, grey, firm to very soft, wet.	1.45 – 96.10		SS3	2	100	2	67 / 77	
							24		
				SS4	WH	100	24		
							0		
13 – 23 ft / 4 – 7 m	**SILTY CLAY** grey, very soft, wet.	4.12 – 93.22					24		
							22		
							26		
							24		
							28		
							24		
23 ft / 7 m	End of Borehole	7.00							

Easting: 465770 m **Northing:** 5020920 m

Site Datum: TBM - Top of Culvert located at Southwest of Driveway entrance. (100.00 m)

Groundsurface Elevation: 100.225 m **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

BOREHOLE LOG: BH23-1

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1 (SS50)		100	PHC, VOC, Metals & General Inorganics	0.1	
		99.03								
1.0 / 3.0	**SAND:** Silty, brown, moist becoming saturated with depth.	0.85			SS2				<0.1	
		98.68								
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.65 - 4.50 m bgs), grey, brown at (1.20 - 1.95 m bgs), saturated.	1.20			SS3			PHC & VOC	<0.1	
2.0 / 6.0							100			
					SS4			PAH & PCB	<0.1	
					SS5				<0.1	
3.0 / 10.0							100			
					SS6				<0.1	
4.0 / 13.0					SS7				<0.1	
							100			
					SS8				<0.1	
5.0 / 16.0					SS9				<0.1	
							100			
					SS10				<0.1	
6.0 / 20.0	End of Borehole	93.88 / 6.0								

EASTING: 18T 0465761 **NORTHING:** 5020902

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-2

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

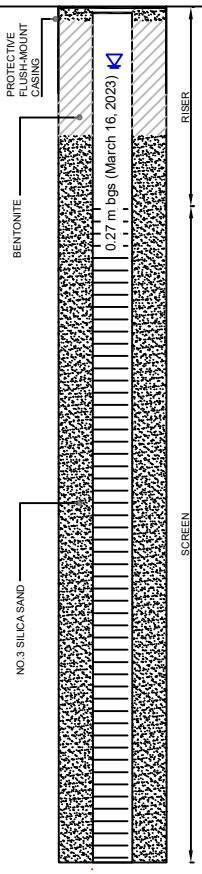
CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.90							
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1 (SS40)		100	PHC, VOC, Metals & General Inorganics	0.2
1.0 / 1.0	**SAND:** Silty, brown, moist.	99.05 / 0.85			SS2				<0.1
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.60 - 4.80 m bgs), brown becoming grey at (1.95 m bgs), saturated.	98.70 / 1.20			SS3		100		<0.1
2.0 / 2.0					SS4				<0.1
					SS5				<0.1
3.0 / 3.0					SS6		100		<0.1
4.0 / 4.0					SS7				<0.1
					SS8		100		<0.1
5.0 / 5.0					SS9				<0.1
6.0 / 6.0	End of Borehole	93.90 / 6.0			SS10		100		<0.1

MONITORING WELL DETAILS



Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

EASTING: 18T 0465753 **NORTHING:** 5020904

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.90 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-3

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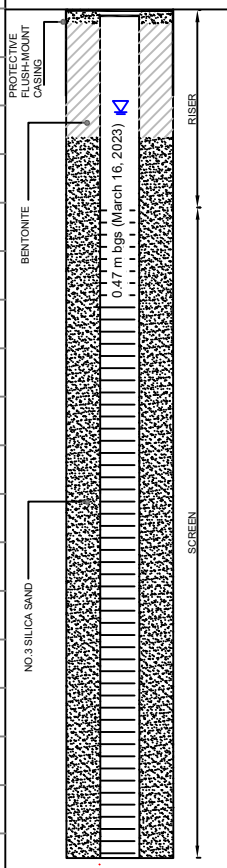
PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV/DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1		69	PHC, VOC, Metals & General Inorganics	0.1	
		99.03								
1.0 / 3.0	**SAND:** Silty, green, moist.	0.85			SS2			PHC & VOC	<0.1	
		98.68								
	CLAY: Silty at (1.20 - 1.95 m bgs) and at (3.60 - 4.25 m bgs), brown becoming grey at (1.95 m bgs), some red at (1.95 - 2.4 m bgs) and at (4.25 - 4.8 m bgs), saturated.	1.20			SS3		100	Metals & General Inorganics	<0.1	
2.0 / 7.0					SS4			PAH & PCB	<0.1	
					SS5		100		<0.1	
3.0 / 10.0					SS6				<0.1	
					SS7		100		<0.1	
4.0 / 13.0					SS8				<0.1	
5.0 / 16.0					SS9		100		<0.1	
6.0 / 18.0					SS10				<0.1	
		93.88								
20.0	End of Borehole	6.0								



Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

EASTING: 18T 0465763 **NORTHING:** 5020877

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-4

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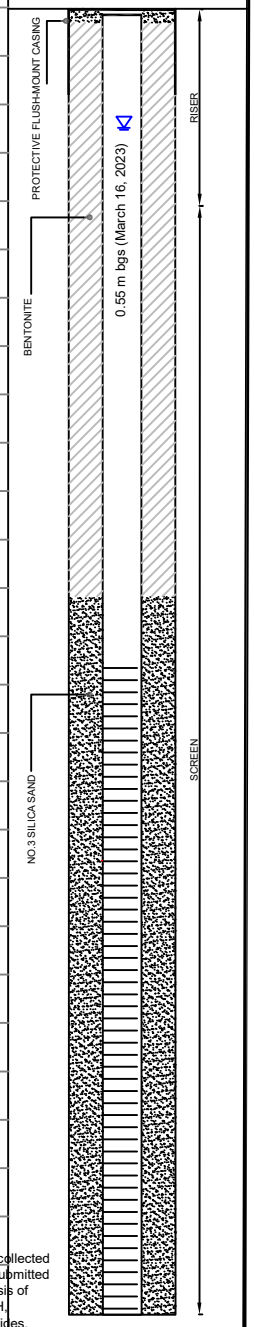
PROJECT NO.: 220487
PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT
CLIENT: ENTREPRENEUR HOLDING CORPORATION
LOCATION: 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO
DATE: MARCH 13, 2023
FIELD PERSONNEL: ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.87							
	FILL: Sand and gravel, grey, loose, moist, saturated at (0.0 - 0.2 m bgs).	0.00			SS1		65	Metals & General Inorganics	0.1
1.0 / 1.0	**SAND:** Silty, brown, moist.	1.0 / 98.87			SS2			PHC & Metals	<0.1
	CLAY: Silty sandy at (1.20 - 2.0 m bgs), silty at (3.60 - 4.25 m bgs), brown becoming grey at (2.0 m bgs), saturated.	1.20			SS3		100	Metals & General Inorganics	<0.1
2.0 / 2.0					SS4			PAH & PCB	<0.1
3.0 / 3.0					SS5		100		<0.1
					SS6				<0.1
4.0 / 4.0					SS7		100		<0.1
					SS8				<0.1
5.0 / 5.0					SS9		100		<0.1
6.0 / 6.0					SS10				<0.1
	End of Borehole	93.87 / 6.0							

Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

MONITORING WELL DETAILS



EASTING: 18T 0465769 **NORTHING:** 5020895

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.87 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH/MW23-5

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

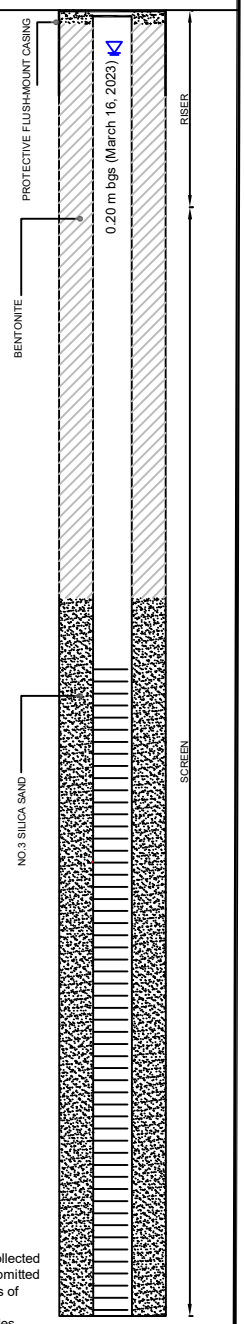
DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)
0.0 / 0.0		99.89							
	FILL: Sand and gravel, brown at (0.0 - 0.2 m bgs) followed by grey to (0.9 m bgs) followed by red stone to (1.0 m bgs), moist.	0.00			SS2 (SS20)		75	PHC, VOC, Metals & General Inorganics	0.3
1.0		98.89							
	SAND: Silty, brown, moist.	1.0			SS2				0.2
		98.69							
	CLAY: Silty at (1.20 - 1.75 m bgs), brown becoming grey at (1.75 m bgs), some red, saturated.	1.20			SS3			PHC, VOC, & Metals	0.1
2.0					SS4		100		<0.1
					SS5				<0.1
3.0					SS6		100		<0.1
4.0					SS7				<0.1
					SS8		100		<0.1
5.0					SS9				<0.1
					SS10		100		<0.1
6.0	End of Borehole	93.89 / 6.0							

Groundwater samples collected March 16, 2023 were submitted for laboratory analysis of VOC, PHC, PAH, Metals, Metals hydrides, and General Inorganics.

MONITORING WELL DETAILS



EASTING: 18T 0465749 **NORTHING:** 5020933

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-6

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.90								
	FILL: Sand and gravel, brown at (0.0 - 0.35 m bgs) followed by grey to (0.85 m bgs), dry, loose.	0.00			SS1		100		0.1	
		99.05								
1.0 /	**SAND:** Silty, brown, moist.	0.85			SS2			PHC, VOC, Metals & General Inorganics	0.1	
		98.70								
	CLAY: Silty sandy at (1.20 - 1.9 m bgs), silty at (4.8 - 6.0 m bgs), brown becoming grey with depth, saturated, the sampling tube was empty at (3.6 - 4.8 m bgs) due to high water content.	1.20			SS3				<0.1	
2.0 /					SS4		100		<0.1	
					SS5				<0.1	
3.0 /					SS6		100		<0.1	
4.0 /										
5.0 /					SS7				<0.1	
					SS8		100		<0.1	
6.0 /	End of Borehole	93.90 6.0								

Combustible Soil Vapours (ppm): 10 30 50 70 90
ISOBUTYLENE (ppm): 200 600 1000 1400 1800

EASTING: 18T 0465743 **NORTHING:** 5020927

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.90 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-7

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) 10 30 50 70 90 / ISOBUTYLENE (ppm) 200 600 1000 1400 1800	MONITORING WELL DETAILS
0.0 / 0.0		99.89								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00			SS1		71	PHC, VOC, Metals & General Inorganics	0.3	
3.0 / 1.0	**SAND:** Silty, brown, moist.	1.0 / 98.89			SS2				<0.1	
4.0	**CLAY:** Silty at (1.20 - 1.95 m bgs) and at (3.6 - 4.20 m bgs), grey, brown at (1.20 - 1.95 m bgs), some red at (1.20 - 2.4 m bgs) and at (4.8 - 6.0 m bgs), saturated.	1.20			SS3		100	Metals	<0.1	
7.0 / 2.0					SS4				<0.1	
9.0					SS5		100		<0.1	
10.0 / 3.0					SS6				<0.1	
13.0 / 4.0					SS7		100		<0.1	
14.0					SS8				<0.1	
16.0 / 5.0					SS9		100		<0.1	
18.0					SS10				<0.1	
20.0 / 6.0	End of Borehole	93.89 / 6.0								

EASTING: 18T 0465765 **NORTHING:** 5020919

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-8

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PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 13, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.87								
	FILL: Sand and gravel, grey, moist.	0.00			SS1		92		0.1	
		98.07								
3.0 / 1.0	**SAND:** Silty to (1.10 m bgs). followed by silty clayey, brown with some red spots, wet.	0.80			SS2			PHC, VOC, Metals & General Inorganics	<0.1	
		98.67								
4.0	**CLAY:** Silty at (1.20 - 1.95 m bgs), grey, grey-brown at (1.20 - 1.95 m bgs), some red at (1.95 - 2.4 m bgs), saturated.	1.20			SS3			Metals	<0.1	
6.0 / 2.0							100			
7.0					SS4				<0.1	
8.0					SS5				<0.1	
10.0 / 3.0							100			
11.0					SS6				<0.1	
12.0					SS7				<0.1	
13.0 / 4.0										
14.0					SS8		100		<0.1	
15.0										
16.0 / 5.0					SS9				<0.1	
17.0										
18.0					SS10		100		<0.1	
19.0										
20.0 / 6.0		93.87								
	End of Borehole	6.0								

EASTING: 18T 0465756 **NORTHING:** 5020940

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.87 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-9

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road| Ottawa, ON, K1J 9G2
www.lrl.ca| (613) 842-3434

PROJECT NO.: 220487 **PROJECT:** PHASE II ENVIRONMENTAL SITE ASSESSMENT

CLIENT: ENTREPRENEUR HOLDING CORPORATION **LOCATION:** 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO

DATE: MARCH 14, 2023 **FIELD PERSONNEL:** ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) / ISOBUTYLENE (ppm)	MONITORING WELL DETAILS
0.0 / 0.0		99.89								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00			SS1		92	PHC, VOC, Metals & General Inorganics	<0.1	
		98.89								
1.0 /	**SAND:** Silty, brown, moist.	1.0			SS2				<0.1	
		98.69								
	CLAY: Silty at (1.20 - 1.85 m bgs), grey-brown with some red at (1.20 - 1.85 m bgs) followed by grey at (1.85 - 2.4 m bgs), saturated.	1.20			SS3		100		<0.1	
2.0 /					SS4				<0.1	
		97.49								
	End of Borehole	2.4								
3.0 /										
4.0 /										
5.0 /										
6.0 /										

EASTING: 18T 0465765 **NORTHING:** 5020921

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.89 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:

bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

BOREHOLE LOG: BH23-10

LRJ ENGINEERING | INGÉNIERIE
5430 Canotek Road| Ottawa, ON, K1J 9G2
www.lrl.ca| (613) 842-3434

PROJECT NO.: 220487
PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT
CLIENT: ENTREPRENEUR HOLDING CORPORATION
LOCATION: 363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO
DATE: MARCH 14, 2023
FIELD PERSONNEL: ABDUL KADER

DRILLER: GEORGE DOWNING ESTATE DRILLING LTD. **DRILLING EQUIPMENT:** TRACK MOUNTED GEO-PROBE **DRILLING METHOD:** DIRECT PUSH

DEPTH (FT / M)	SOIL DESCRIPTION	ELEV./DEPTH (m)	LITHOLOGY	TYPE	SAMPLE NUMBER	N OR RQD (%)	RECOVERY (%)	LABORATORY ANALYSIS	Combustible Soil Vapours (ppm) 10 30 50 70 90 / ISOBUTYLENE (ppm) 200 600 1000 1400 1800	MONITORING WELL DETAILS
0.0 / 0.0		99.88								
	FILL: Sand and gravel, grey, dry, moist at (0.0 - 0.1 m bgs).	0.00 / 99.03			SS1		90	PHC, VOC, Metals & General Inorganics	<0.1	
1.0 / 3.0	**SAND:** Silty, brown, moist.	0.85 / 98.68			SS2			Metals	<0.1	
4.0	**CLAY:** Silty at (1.20 - 1.9 m bgs), grey-brown with some red at (1.20 - 1.9 m bgs), followed by grey with red at (1.9 - 2.4 m bgs), saturated.	1.20			SS3		100		<0.1	
2.0 / 7.0					SS4				<0.1	
8.0	End of Borehole	97.48 / 2.4								
3.0 / 10.0										
4.0 / 13.0										
5.0 / 16.0										
6.0 / 20.0										

EASTING: 18T 0465761 **NORTHING:** 5020893

SITE DATUM: Elevations measured from temporary benchmark established at the top surface of the Entrepreneur Crescent Centerline opposite the the Site entrance (100.00 m).

GROUNDSURFACE ELEVATION: 99.88 m **TOP OF RISER ELEVATION:** N/A

HOLE DIAMETER: 91 mm **MONITORING WELL DIAMETER:** N/A

NOTES:
bgs: Below Ground Surface
VOC: Volatile Organic Compounds
PHC: Petroleum Hydrocarbons
PAH: Polycyclic Aromatic Hydrocarbons
PCB: Polychlorinated Biphenyls
N/A: Not applicable

Symbols and Terms Used on Borehole and Test Pit Logs

The following explains the data presented in the borehole and test pit logs.

1. Soil Description

The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves some judgement and LRL Associates Ltd. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. Boundaries between zones on the logs are often not distinct but transitional and were interpreted.

a. Proportion

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

b. Compactness and Consistency

The state of compactness of granular soils is defined on the basis of the Standard Penetration Test. See Section 2c for more details. The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by field vane tests and by a visual and tactile assessment of the soil strength.

The state of compactness of granular soils is defined by the following terms:

State of Compactness Granular Soils	Standard Penetration Number "N"
Very loose	0 – 4
Loose	4 – 10
Compact or medium	10 - 30
Dense	30 - 50
Very dense	over - 50

The consistency of cohesive soils is defined by the following terms:

Consistency Cohesive Soils	Undrained Shear Strength (Cu) (kPa)
Very soft	under 10
Soft	10 - 25
Medium or firm	25 - 50
Stiff	50 - 100
Very stiff	100 - 200
Hard	over - 200

2. Sample Data

a. Elevation depth

This is a reference to the geodesic elevation of the soil or to a benchmark of an arbitrary elevation at the location of the borehole or test pit. The depth of geological boundaries is measured from ground surface.

b. Type

Symbol	Type	Letter Code
	Auger	AU
	Split spoon	SS
	Shelby tube	ST
	Rock Core	RC

c. Sample Number

Each sample taken from the borehole is numbered in the field as shown in this column.

LETTER CODE (as above) – Sample Number

d. Blows (N) or RQD

This column indicates the Standard Penetration Number (N) as per ASTM D-1586. This is used to determine the state of compactness of the soil sampled. It corresponds to the number of blows

required to drive 300 mm of the split spoon sampler using a 622 kg*m/s^2 hammer falling freely from a height of 760 mm. For a 600 mm long split spoon, the blow counts are recorded for every 150 mm. The "N" index is obtained by adding the number of blows from the 2nd and 3rd count. Technical refusal indicates a number of blows greater than 50.

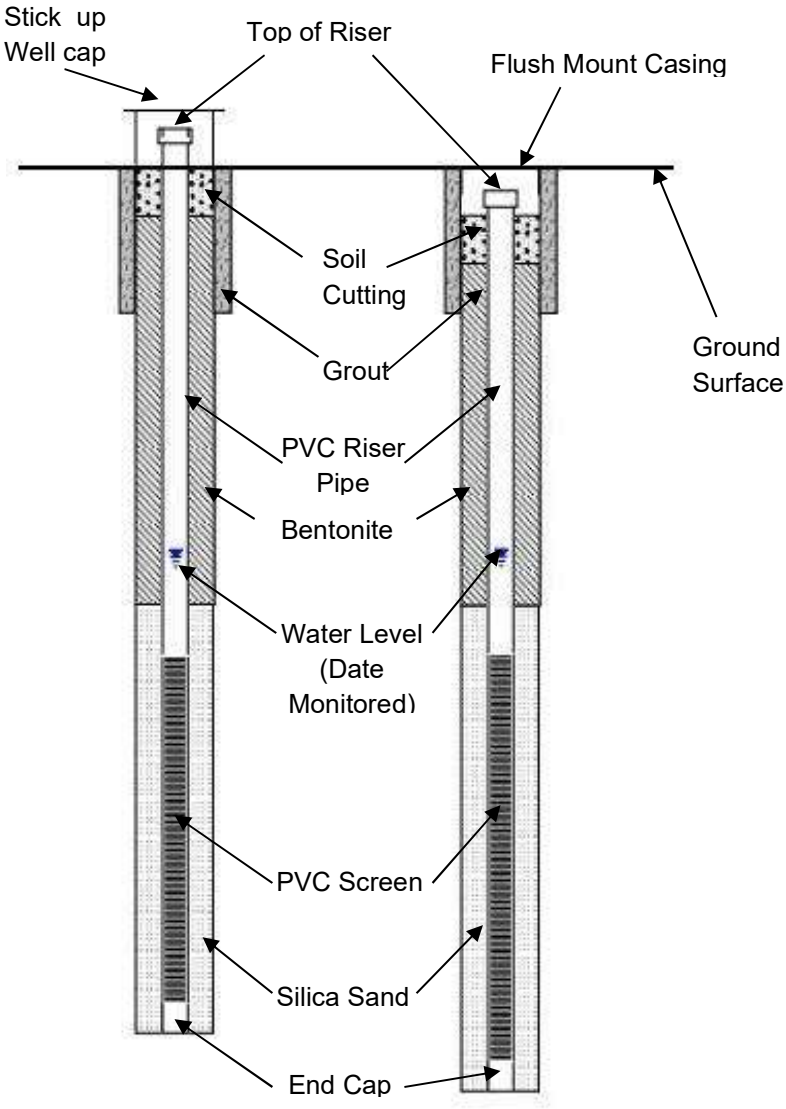
In the case of rock, this column presents the Rock Quality Designation (RQD). The RQD is calculated as the cumulative length of rock pieces recovered having lengths of 10 cm or more divided by the length of coring. The qualitative description of the bedrock based on RQD is given below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 –25	very poor
25 – 50	poor
50 – 75	fair
75 – 90	good
90 – 100	excellent

e. Recovery (%)

For soil samples this is the percentage of the recovered sample obtained versus the length sampled. In the case of rock, the percentage is the length of rock core recovered compared to the length of the drill run.

3. General Monitoring Well Data



ATTACHMENT C

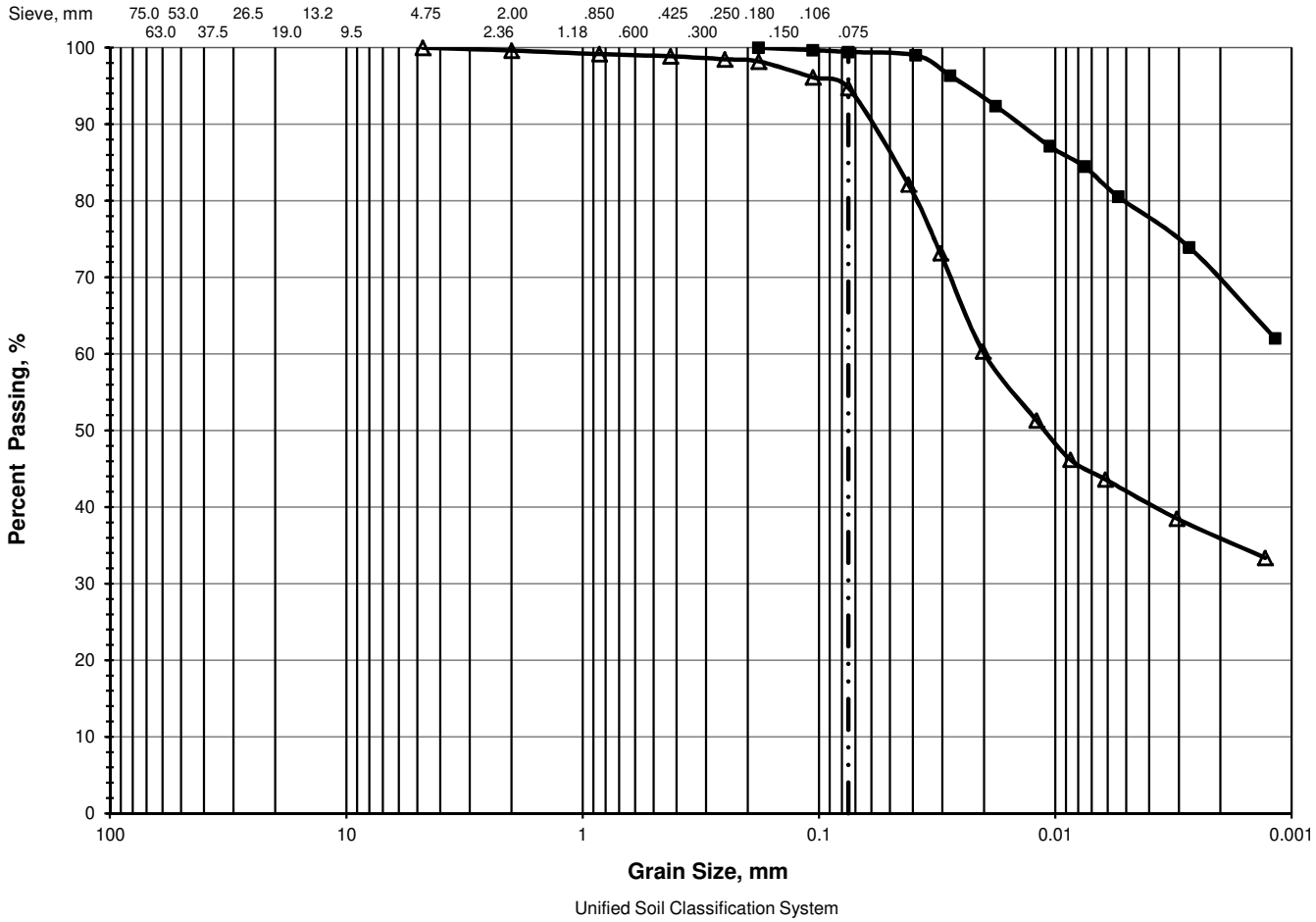
Gradation Analytical Report

LRL Associates Ltd.

PARTICLE SIZE ANALYSIS

ASTM D 422 / LS-702

Client:	Entrepreneur Holding Corporation	**File No.:**	220487
Project:	Geotechnical Investigation	**Report No.:**	2
Location:	363 Entrepreneur Crescent, Navan, ON.	**Date:**	November 17, 2022



Unified Soil Classification System

	> 75 mm	% GRAVEL		% SAND			% FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
△	0.0	0.0	0.0	0.4	0.8	4.1	59.3	35.4
■	0.0	0.0	0.0	0.0	0.0	0.6	31.0	68.4

	Location	Sample	Depth, m	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
△	BH 1	SS-3	1.52 - 2.13	0.0199	0.0111					
■	BH 2	SS-7	6.10 - 6.71							

ATTACHMENT D

MECP Water Well Records

Ontario — Ministry of the Environment, Conservation and Parks

W Tag#:A379014 (Print Below)

A379014

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Dustin Wilson		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
310 Sanctuary Private	Ottawa	ON	K1S 5W1	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
363 Entrepreneur Crescent	Cumberland	23	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Navan	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465760	5020936	50R-6694	

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	Depth (m/ft) To
	Clay			0'	86'
	Gravel			86'	92'
Black	~~Sandstone~~ Shale			92'	154'
Black	~~Sandstone~~ Shale			154'	160'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³)
98'	88'	Neat cement	12.48
88'	0'	Bentonite slurry	21.00

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☒ Air percussion SURGED ☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	98'
6"	Open Hole		98'	160'

Construction Record - Screen

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

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From (m/ft)	Depth To	Diameter (cm/in)
154' ☐ Gas	☐ Fresh ☐ Untested ☒ Other, specify	0'	98'	9 3/4"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	98'	160'	6"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

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

Pump intake set at (m/ft): 150

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 103.2"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 150'

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

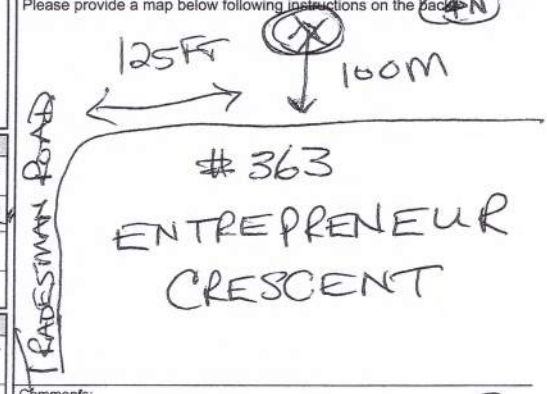
Well production (l/min/GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	92"		103.2"
1	22.4	1	87
2	31.9	2	78.6
3	37.5	3	71.1
4	42.2	4	63.8
5	46.4	5	57.4
10	61.7	10	32.8
15	71.9	15	19.7
20	79.4	20	11.3
25	85.1	25	9.5
30	89.9	30	9.2
40	97	40	9.2
50	100.9	50	9.2
60	103.2	60	9.2

Map of Well Location

Please provide a map below following instructions on the back. N



Comments: 3/4HP-10GPM Set @ 150 ft

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7681

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6859 Franktown Road	Richmond	ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
6138382170	Hanna, Jeremy	T3632		2023 09 29

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2023 08 28	Audit No. Z408138
	20230823	Received

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A111208

12-04-3

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Colder	Capital Region Resource	—	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P1P7	6137454551

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
370 FRONTIER RD	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A3H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18T	466522	5020872		

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	Depth (m/ft) To
GRAY	CLAY	SAND - Till-Rock	SAND TO CLAY(to) Till then ROCK	0	143
				VSP	

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		COATED BENTONITES	
		BENTONITS CHIPS	
		BENTONITE GROUT	

Method of Construction

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, *specify* ____

☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

☐ Public ☐ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, *specify* ____

☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling & Air Conditioning

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2"	PLASTIC	1/4		

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify* ____
☐ Other, *specify* ____

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* ____

If pumping discontinued, give reason: ____

Pump intake set at *(m/ft)* ____

Pumping rate *(l/min / GPM)* ____

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)* ____

If flowing give rate *(l/min-/ GPM)* ____

Recommended pump depth *(m/ft)* ____

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

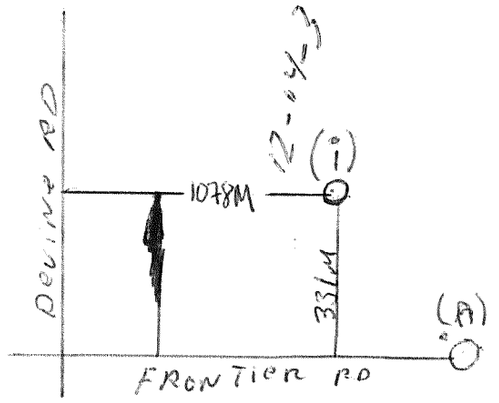
Well production *(l/min / GPM)* ____

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: ____

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co. Ltd	6894

Business Address (Street Number/Name)	Municipality
6847 Hiram DR	Greely

Province	Postal Code	Business E-mail Address
ON	K4P1A2	mwells@marathondrilling.ca

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138220571	Wells, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013 04 25

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed Y Y Y Y M M D D

Ministry Use Only

Audit No. Z 82629

MAY 0 6 2013

Received

Ontario

Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: N/A

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
2030470	ONTARIO LIMITED	c/o Rosedale	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
TransportGroup, 6845 Invader Cres,	Mississauga,	Ont	L5T 2B7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#9460 MITCH OWENS ROAD	OSGOODE	Pt Lt 1	11

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA-CARLETON	EDWARDS	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465655	5020146	RP-5R-13558 Part 2	

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	Depth (m/ft) To
	6" Drilled Well Abandonment			0'	85'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
85'	5'	3/8 Hole Plug	24 Bags
5'	0'	Back fill	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To

Construction Record - Screen

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

New Construction

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☒ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter *(cm/in)*

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

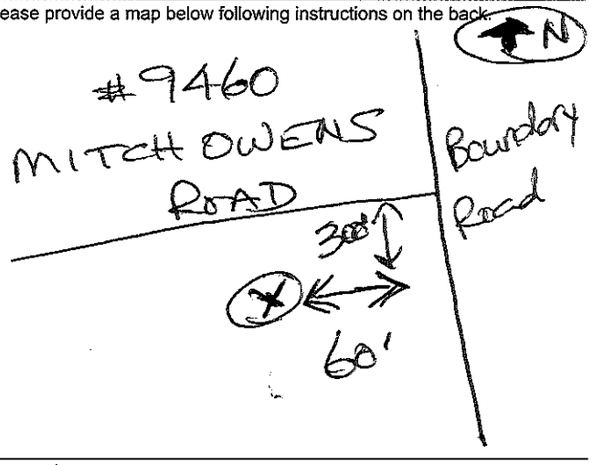
Well production *(l/min / GPM)*

Disinfected? ☒ Yes ☐ No

	Draw Down Time *(min)*	Draw Down Water Level *(m/ft)*	Recovery Time *(min)*	Recovery Water Level *(m/ft)*
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING Co LTD	C-7681

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

Province	Postal Code	Business E-mail Address
Ont	K0A 2Z0	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138382170	HANNA JEREMY

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T36322		2019/06/28

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No	2019/06/26	2019/06/26

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Audit No. Z302260

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Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag N: A244754 — Tag#: A244754

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Amazon	OTTAWA		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
5371 Boundary, Rd	Cumberland.	ON	K4B1P6	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5371 Boundary, Road	Cumberland.	21	11

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA City	NAVAN	Ontario	K4B1P6

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466045	5021560		

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	Depth (m/ft) To
Brown	Sand.		Soft	0	2.12
Blue	Clay		Soft	2.12	24.24
Grey	Gravel		Soft	24.24	26.06
Grey	Limestone		Hard.	26.06	42.42

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	6.06	Quik Crete	4 Bag.

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☑ Rotary (Reverse) Air ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☑ 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) From	Depth (m/ft) To
15.55	Steel	0.48	0.90	26.06

Construction Record - Screen

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

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth (m/ft) From	To	Diameter (cm/in)
7.87 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify Salty	0	6.06	25.40
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☑ Untested ☐ Other, specify	0	42.42	15.55
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 24.24

Pumping rate (l/min / GPM): 54:00

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 2.25

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 24.24

Recommended pump rate (l/min / GPM): 56:00

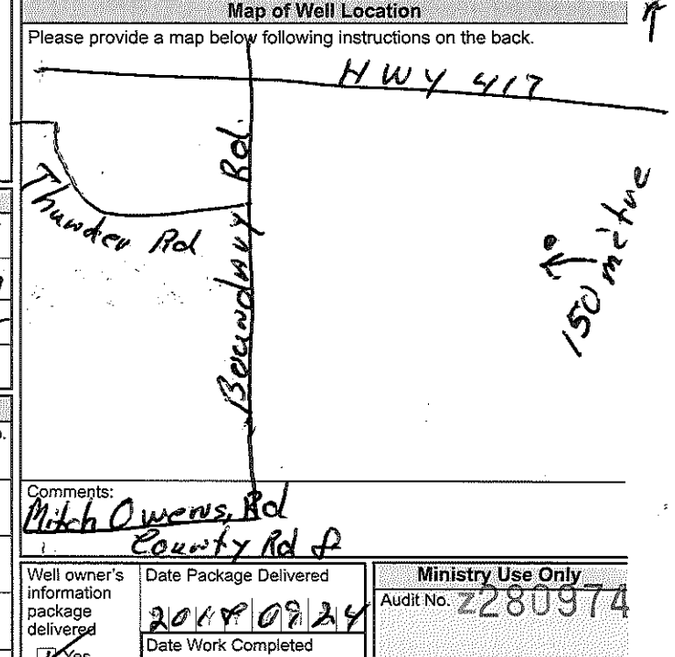
Well production (l/min / GPM): 90:00

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		2.12		2.25
1	1	2.14	1	2.18
2	2	2.16	2	2.16
3	3	2.18	3	2.12
4	4	2.20	4	2.12
5	5	2.21	5	2.12
10	10	2.23	10	2.12
15	15	2.24	15	2.12
20	20	2.25	20	2.12
25	25	2.25	25	2.12
30	30	2.25	30	2.12
40	40	2.25	40	2.12
50	50	2.25	50	2.12
60	60	2.25	60	2.12

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Mitch Owens Rd
County Rd 2

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
DXR-WATER-well-Drilling	7526

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
1763 - Route 200 west	Nation	ON	K0A3G0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
6139827558	Monette Raul	3773	Raul Monette	2018/09/24

Well owner's information package delivered: ☑ Yes ☐ No

Date Package Delivered: 2018/09/24

Date Work Completed: 2018/09/11

Ministry Use Only

Audit No. Z280974

Received NOV 22 2018

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Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. Tag#: A249297 — A249297

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	
	VSB Carpentry Inc.	N/A	[ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
357 Entrepreneur Crescent	Navan	On.	K4B1T8	6132291925

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
357 Entrepreneur Crescent	City of Ottawa	23	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Cumberland		Ontario	K4B1T8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	457750	5020916	50R-6694 Part 4	

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	Depth (m/ft) To
Brown	clay	Silt, Stone	Hard	0	3.7
Grey	clay	silt	Soft	3.7	21.3
Grey	gravel	Medium Sand	packed	21.3	22.6
Grey	Shale		layered	22.6	28.9

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	12.1	cement grout	.3 m³

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify ____

Well Use

[ ] Public [X] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] 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) From	Depth (m/ft) To
15.55	Steel	.48	1.6	23.1
15.32	Open Hole		23.1	28.9

Construction Record - Screen

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

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify ____
[ ] Other, specify ____

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
27 (m/ft)	[ ]	[ ] Fresh [X] Untested	
(m/ft)	[ ]	[ ] Fresh [ ] Untested	
(m/ft)	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	12.1	24.9
12.1	28.9	15.32

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Bourgeois Well Drilling Ltd	7417

Business Address (Street Number/Name)	Municipality
14245 Conc. 10-11	Clysdale

Province	Postal Code	Business E-mail Address
On.	K0A1R0	N/A

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139875291	GENIER, MICHAEL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
34913		2018/10/10

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, specify ____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 22

Pumping rate (l/min / GPM): 13

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 21.61

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 22

Recommended pump rate (l/min / GPM): 15

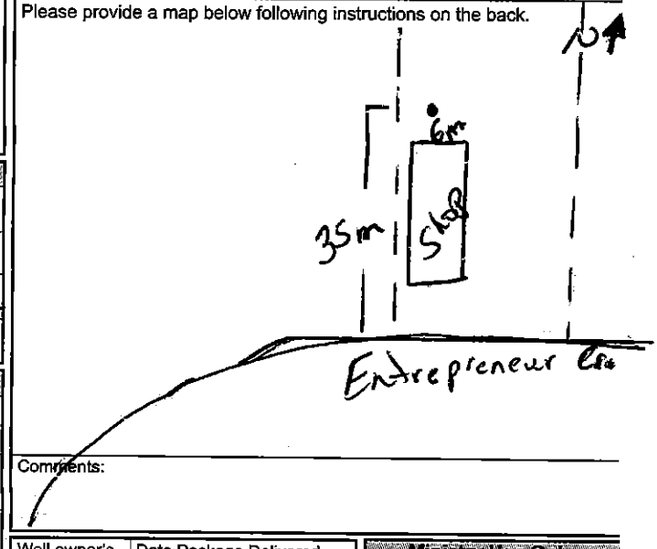
Well production (l/min / GPM): 20

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	9.62		21.61
1	10.49	1	20.79
2	10.73	2	19.58
3	11.15	3	19.27
4	11.53	4	19.07
5	11.71	5	18.50
10	13.38	10	16.91
15	14.71	15	14.99
20	15.88	20	13.21
25	16.87	25	12.83
30	17.77	30	10.99
40	19.40	40	9.74
50	20.65	50	9.69
60	21.61	60	9.62

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 2018/10/10

Date Work Completed: 2018/10/05

Ministry Use Only

Audit No. Z300222

Received OCT 25 2018

0506E (2014/11)

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Ontario — Ministry of the Environment and Climate Change

Well Tag No. (A 236242) Tag#: A 236242

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Boundry Road Development Inc.	N/A	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
16766 Transcanadienne Suite 500	Kirland	Qc.	H9H4M7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5371 Boundry Road	Cumberland	21	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Cumberland Spring	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465300	5021483		

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	Depth (m/ft) To
Brown	Fill	clay, Stone	Hard	0	1.8
Brown	clay	Silt	Hard	1.8	3.9
Grey	clay		Soft	3.9	21.0
Grey	gravel	Silt, Sand	packed	21.0	60.96 ~~60.96~~ 22.25
Grey	shale		layered	22.25	60.96

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	24.99	cinent grout	1.5 m^3

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	To
15.55	Steel	.48	4.6	24.99
15.32	Open Hole		24.99	60.96

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	
27 (m/ft) ☐ Gas	☐ Fresh ☑ Untested ☐ Other, *specify*	
52 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	24.99	24.9
24.99	60.9	

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☒ Other, *specify* cloud

If pumping discontinued, give reason:

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 42

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 5.75

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 58

Recommended pump rate (l/min / GPM): 66

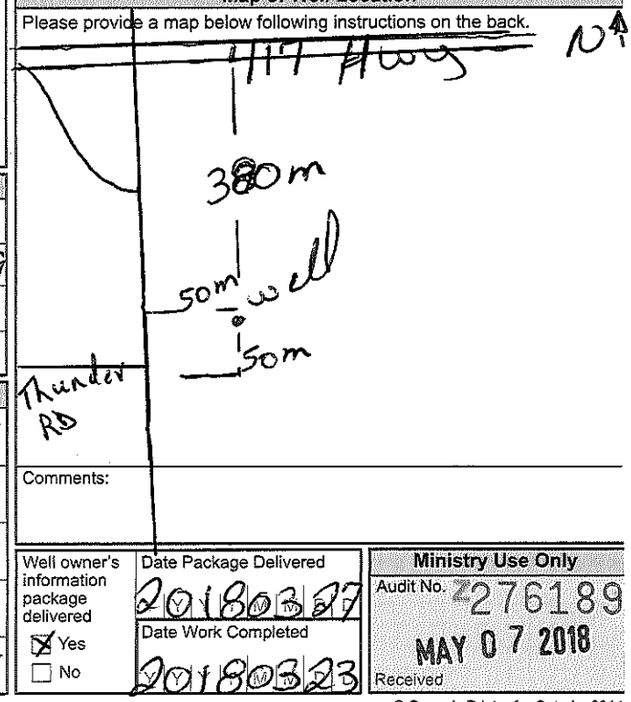
Well production (l/min / GPM): 75

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	3.83		5.75
1	4.42	1	4.64
2	4.61	2	4.36
3	4.75	3	4.26
4	4.78	4	4.23
5	4.79	5	4.18
10	4.96	10	4.10
15	5.16	15	4.03
20	5.24	20	3.95
25	5.31	25	3.89
30	5.32	30	3.85
40	5.62	40	3.83
50	5.70	50	3.83
60	5.75	60	3.83

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Bourgeois Well Drilling Ltd.	7417

Business Address (Street Number/Name)	Municipality
14245 Conc. 10-11	Guyler

Province	Postal Code	Business E-mail Address
On	K0A1R0	N/A

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139875291	GENIER, MICHAEL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3493		2018 03 26

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2018 03 27	Audit No. Z276189
	Date Work Completed: 2018 03 23	MAY 07 2018 Received

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Ontario — Ministry of the Environment

Measurements recorded in: [x] Metric [ ] Imperial

Well Tag (ow) **Tag#: A131930**

A-131930

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
100 Entrepreneur Crescent	Ottawa		
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Ottawa	Ottawa	Ontario	
UTM Coordinates Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83 18	465599	5020270		

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
Brown	topsoil		compacted	0	~20m
Grey	Fissured clay		" "	~20m	2.75m
Grey/Blue	elastic clay.		" "	2.75m	4.0m
Blue	VERY elastic clay.		" "	4.0m	7.0m

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	2.5m	elastic clay	15.0m³

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [x] Digging
[ ] Air percussion
[ ] Other, *specify*

Well Use

[ ] Public [x] Commercial [ ] Not used
[x] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] 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) From	To
	1-2" SCH Rubber	~2cm	0	7.5m

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
	geotextile synthetic		0	3.0m

Status of Well

[x] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, *specify*
[ ] Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	3.0m	60m
3.0m	5.0m	40m
5.0m	7.0m	40m

Results of Well Yield Testing

After test of well yield, water was:
[x] Clear and sand free
[ ] Other, *specify*

If pumping discontinued, give reason: see report attach.

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

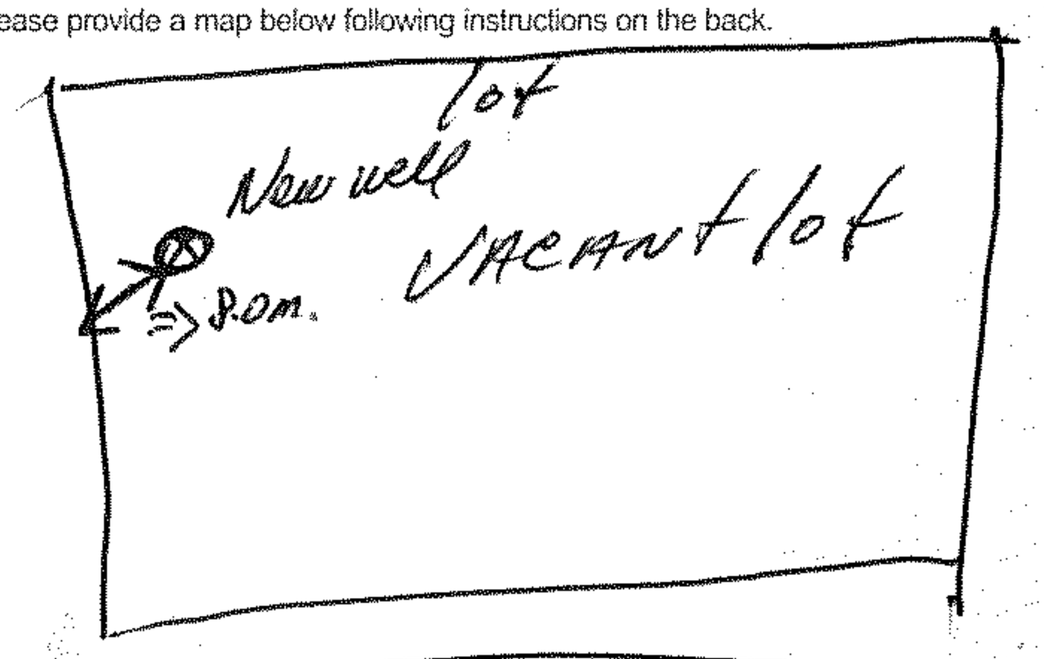
Well production (l/min / GPM)

Disinfected? [ ] Yes [x] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level			
1/		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Leo Sarault & Fils Inc	T6667
Business Address (Street Number/Name)	**Municipality**
4882 County Rd 10 Fournier	Nation
Province	**Postal Code**	**Business E-mail Address**
Ontario	K0B1G0	leosarault@yahoo.com
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
6135245449	Gilles Sarault
Well Technician's Licence No.	**Signature of Technician and/or Contractor**	**Date Submitted**
T2124	Gilles Sarault	2015 03 23

Well owner's information package delivered [ ] Yes [ ] No — Date Package Delivered 2015 03 23

Date Work Completed 2015 03 23

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Audit No. Z 197003

Received JUL 11 2016

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7212030

S-14448

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A154131 **Tag#: A154131**

TAGGART MILLER ENVIRONMENTAL SERVICES

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5775 Boundary Rd			CX25

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	465752	5020214		

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	Depth (m/ft) To
BLK	gravel	sand	loose	0	.31
BRN	sand	silt, clay	soft	.31	2.44
GRY	clay	silt	soft	2.44	6.4

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	5.18	bentonite	
5.18	6.4	filter sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☑ Other, *specify* Direct Push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	PVC	.356	0	5.49

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	5.49	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Other, specify
	☐ Fresh ☐ Untested	☐ Gas ☐ Other
	☐ Fresh ☐ Untested	☐ Gas ☐ Other
	☐ Fresh ☐ Untested	☐ Gas ☐ Other

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	6.4	8.25

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

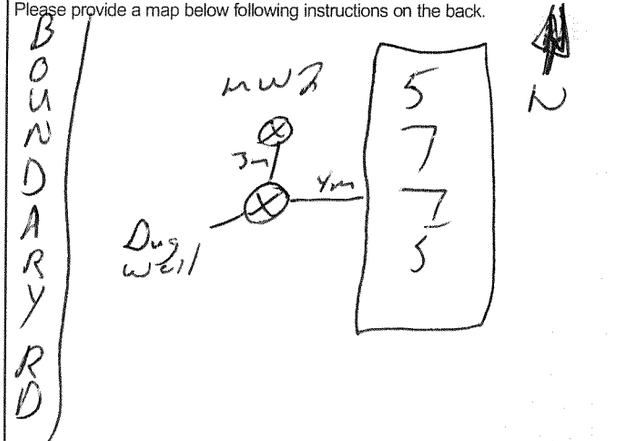
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147 West Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1G6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
905 764 9301	McCoy, James

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3165		2013/11/22

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: ____

Date Work Completed: 2013/10/28

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Audit No. Z 179936

Received

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S-147148

Ontario Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. (Place Sticker and/or Print Below) A154128 Tag#: A154128

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5775 Boundary Road			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ohama	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	457547	5020210		

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	Depth (m/ft) To
BLK	gravel	sand	loose	0	.31
BRN	sand	silt, clay	soft	.31	2.44
GRY	clay	silt	soft	2.44	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	5.88	bentonite	
5.88	6.4	filter sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☑ Other, specify Direct Push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.25	PVC	.156	0	5.49

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	5.49	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	6.4	8.25

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping _____ hrs + _____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

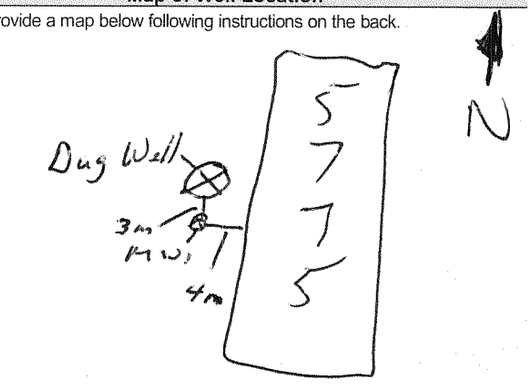
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147 West Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1G6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
905 764-9304	McCoy, James

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3656		2013/11/22

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2013/10/28

Ministry Use Only

Audit No. Z179935

Received NOV 29 2013

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Ontario — Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below): Tag#: A145307 A145307

S-13894

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☑ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery Centre		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
708 - 225 Metcalfe	Ottawa	ON	K2P1P9	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Boundy Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466037	5021430		

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	Depth (m/ft) To
Brn	Sand		soft wet	0	1.5
Gry	Clay		soft, wet	1.5	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	3.96	Holeplug	
3.96	6.4	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☑ Other, specify D.P

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	PVC	.56	0	4.88

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	4.88	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

See Map

11 M

Comments:

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	11.43

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7241

Business Address (Street Number/Name)	Municipality
147-2 W. Beaver Creek	Ottawa

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9057649304	Beath, Brian

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3616		2013/04/12

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2013/04/10

Ministry Use Only

Audit No. Z152772

MAY 15 2013 Received

S-13894

12-1125-0045-1000

Boundary Road Site

location I tuesday

C-7241

2152772

MAY 15 2013

Ontario — Ministry of the Environment

Tag#: A145308 (A145308)

5-13894

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☑ Metric ☐ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery Centre		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
708-225 Metcalfe	Ottawa	ON	K2P1P9	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Boundry Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	460302	5021430		

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	Depth (m/ft) To
Brn	fine Sand		soft, wet	0	1.5

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	.61	Bensea1	
.61	1.5	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☑ Other, specify D.P.

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☑ Test Hole ☑ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ 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) From	Depth (m/ft) To
3.45	PVC	.356	0	.61

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	PVC	10	.61	1.5

Status of Well

☐ Water Supply ☐ Replacement Well ☑ Test Hole ☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

See Map "M"

Comments:

Water Details

Water found at Depth (m/ft)	Kind of Water	
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	1.5	11.43

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7214

Business Address (Street Number/Name)	Municipality
47-2 W. Beaver Creek	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	WRECORDS@STRATASOIL.COM

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9057649304	BEATTY BRIAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3616		2013/04/12

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: YYYY MM DD

Date Work Completed: 2013/04/12

Ministry Use Only

Audit No. Z152773

Received MAY 15 2013

Ministry's Copy

S-138944

12-1125-0045-1000

Boundary Road Site

location A tuesday

C-7241

2152773

MAY 15 2013

Ontario — Ministry of the Environment

13-05-40

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* **A111204** N

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Gordon	Capital Region Resource	—	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5506 Frontier Rd	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A3H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466179	5021081		

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	Depth (m/ft) To
GRAY	CLAY	SAND & Till/Rock		0	103'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		Bentonite Tablets	
		Bentonite grout & Portland	
		Bentonite Chips	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
1"		1/8	0	103'

Construction Record - Screen

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

Status of Well

☐ Water Supply
☑ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

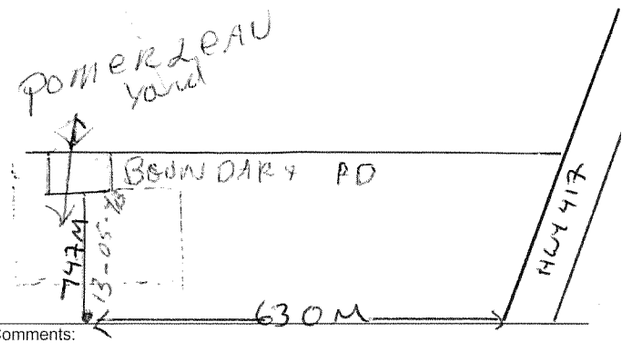
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co Ltd.	6894

Business Address (Street Number/Name)	Municipality
6847 Hiram Dr.	Greely

Province	Postal Code	Business E-mail Address
ON	K4P 1A2	mwebb@marathondrilling.ca

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
4136220571	Webb, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013 04 25

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	Y Y Y Y M M D D	Y Y Y Y M M D D

Ministry Use Only

Audit No. Z 82643

MAY 03 2013

Received

0506E (12/2007)

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Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A111206 ✓

13-6-3

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Golder	Capital Region Resource	–	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
708-225 Metcalfe St	Ottawa	ON	K2P 1P9	6133454554

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5800 Frontier Rd	Ottawa		

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa	Ottawa	Ontario	K0A 3H0.

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	459142	5020386		

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	Depth (m/ft) To
GRAY	CLAY	SAND TILL ROCK		0	147 10'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
		bentonite Tablets	
		bentonite-grout with portland	
		bentonite chips	

Method of Construction

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, *specify* ____

☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

☐ Public ☐ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, *specify* ____

☐ Commercial ☑ Municipal ☑ Test Hole ☐ Cooling & Air Conditioning

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2 1/4	PLASTIC	1/8	0	147 10'

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth (m/ft) From	To	Diameter (cm/in)
☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* ____

If pumping discontinued, give reason: ____

Pump intake set at *(m/ft)* ____

Pumping rate *(l/min / GPM)* ____

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)* ____

If flowing give rate *(l/min / GPM)* ____

Recommended pump depth *(m/ft)* ____

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

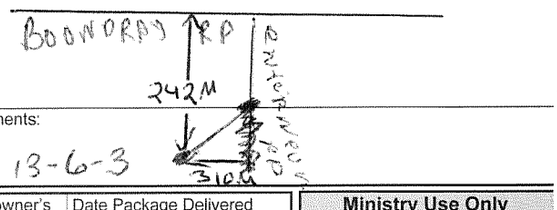
Well production *(l/min / GPM)* ____

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 13-6-3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Marathon Drilling Co ltd	6594

Business Address (Street Number/Name)	Municipality
6847 Hiram Dr	Greely

Province	Postal Code	Business E-mail Address
ON	K4P 1A2	mwebb@marathondrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138220571	Webb, Matthew

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3279		2013/09/25

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	Y Y Y Y M M D D	Y Y Y Y M M D D

Ministry Use Only

Audit No. Z 82647

Received MAY 0 6 2013

0506E (12/2007) **Ministry's Copy**

Ontario — Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below) **Tag#: A145268** A145268

5-13834

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Region	Resources Recovery centre Ltd		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
705 - 225 Metcalfe st.	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Rochester Rd.			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OTTAWA	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	466412	5020426		

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	Depth (m/ft) To
Brown	Sand	organics	soft, loose.	0	.91
Grey	Clay		wet.	.91	6.4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	3.96	Bonseal	
3.96	6.4	Sand	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, specify Direct push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☒ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	plastic	.356	0	4.88

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.21	plastic	10	4.88	6.4

Status of Well

☐ Water Supply
☐ Replacement Well
☒ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	11.43

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping _____ hrs + _____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

Labelled 13-15-3 P on Map

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Soil Sampling	7241

Business Address (Street Number/Name)	Municipality
2-147 west Beaver creek Rd.	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9052649304	Parsons Robert

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3122	Robert	20130328

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		20130326

Ministry Use Only

Audit No. z152746

Received APR 30 2013

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5-13834

C-7241
2152746

APR 30 2013

Ontario — Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*

Tag#: A145269 A145269

5-13834

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Capital Recycling Resources	Recovery Centre Ltd.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
705 - 225 Metcalfe St.	Ottawa	ON	K2P1P9	6134545580

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Frontier Rd.			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OTTAWA	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	460975	5020251		

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	Depth (m/ft) To
Brown	Sand.	organics	Soft, Loose.	0	.91
Grey	Clay		Loose, Soft	.91	1.5

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	.31	Bensel.	
.31	1.5	Sand.	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* Direct push

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☒ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ 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) From	Depth (m/ft) To
3.45	plastic	.356	0	.5

Construction Record - Screen

Outside Diameter *(cm/in)*	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
4.27	plastic	10	.5	1.5

Status of Well

☐ Water Supply
☐ Replacement Well
☒ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter *(cm/in)*
0	1.5	11.43

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

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

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

	Draw Down Time *(min)*	Draw Down Water Level *(m/ft)*	Recovery Time *(min)*	Recovery Water Level *(m/ft)*
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

Labelled
13-14-3
S on Map

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Soil Sampling	7241

Business Address (Street Number/Name)	Municipality
2-147 West Beaver Creek Rd.	Richmond Hill

Province	Postal Code	Business E-mail Address
ON	L4B1C6	wrecords@stratasoil.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9057649304	Parsons Robert

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3122		2013/03/28

Comments:

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2013/03/26

Ministry Use Only

Audit No. z152745

Received APR 30 2013

Ministry's Copy

5138834

C-724/
215245

APR 30 2013

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A053936 / A053936

Well Record

Regulation 903 Ontario Water Resources Act

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality): OTTAWA - City

Township: Cumberland

Lot: 2

Concession: 11

RR#/Street Number/Name: 120 Indcum

City/Town/Village: CARLSBAD-ON

Site/Compartment/Block/Tract etc.: 50R-6420

GPS Reading: NAD 83 | Zone 18 | Easting 465723 | Northing 5020642

Unit Make/Model: Mage/AW

Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify: UTM

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	Clay		Soft	0	0.90
Red	Clay		Soft	0.90	3.63
Grey	Clay		Soft	3.63	30.30
Grey	Gravel		Soft	30.30	31.51
Grey	SHALE		Porous	31.51	32.42

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	7.57	20.32

Water Record

Water found at Metres / Kind of Water

- 31.51 m ☐ Fresh ☑ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☑ Clear and sediment free ☐ Other, specify

Chlorinated: ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.55	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.48	0	31.51
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
15.55	☑ Open hole		31.51	32.42

Test of Well Yield

Pumping test method: Submercible

Pump intake set at - (metres): 9.09

Pumping rate - (litres/min): 58.50

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping: 3.04 metres

Recommended pump type: ☑ Shallow ☐ Deep

Recommended pump depth: 9.09 metres

Recommended pump rate: 45.50 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		2.89		3.04
1	3.20		1	2.89
2	3.17		2	
3	3.12		3	
4	3.10		4	
5	3.10		5	
10	3.08		10	
15	3.04		15	
20	3.04		20	
25	3.04		25	
30	3.04		30	
40	3.04		40	
50	3.04		50	
60	3.04		60	

Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	7.57	Cement Grout	120 Kgs.

Method of Construction

☐ Cable Tool ☑ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

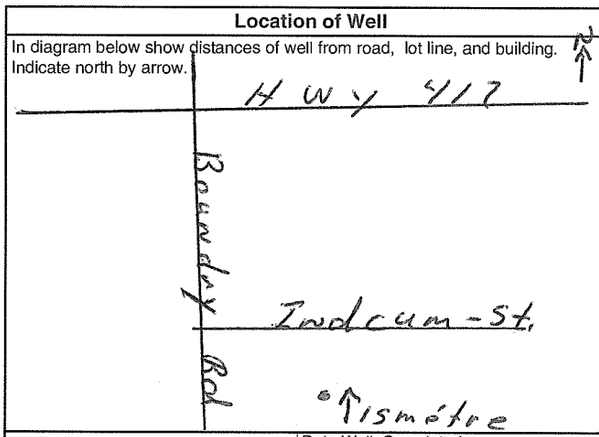
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☑ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.: Z 71657

Date Well Completed: YYYY 2007 MM 04 DD 26

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: YYYY 2007 MM 04 DD 26

Well Contractor/Technician Information

Name of Well Contractor: DXR-WATER-well-Drilling

Well Contractor's Licence No.: 6006

Business Address (street name, number, city etc.): CP 98 - St-Albert - ON

Name of Well Technician (last name, first name): Louis Desnoyers

Well Technician's Licence No.: T-625

Signature of Technician/Contractor: X [signature]

Date Submitted: YYYY 2007 MM 04 DD 26

Ministry Use Only

Data Source:

Contractor: 6006

Date Received: YYYY MAY 09 2007 MM OO

Date of Inspection: YYYY MM OO

Remarks:

Well Record Number:

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A012415

A012415

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN 1500 CON OF LOT 02

Well Owner's Information and Location of Well Information

[redacted]

Plan 50M-136 Pt BLK1 | Cumberland (Ottawa) | RR2-3 | RPS 0176 Y 20

RR#/Street Number/Name: 145 Orleans Rd. | City/Town/Village: Carlsbad Springs | Site/Compartment/Block/Tract etc.:

GPS Reading: NAD 83 | Zone 18 | Easting 465247 | Northing 5020692 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (feet)	Depth To (feet)
Brown	Sandy soil	clay		0	5
grey	clay			5	15
blue	clay			15	95
grey	hard pan	gravel		95	109
grey	rock			109	110

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	110	6"

Water Record

Water found at (Metres)	Kind of Water
110' m	☐ Fresh ☐ Sulphur ☐ Gas ☑ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
6"/4	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	188"	0	109'
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Sub.

Pump intake set at - (metres) 52'

Pumping rate - (litres/min) 40

Duration of pumping ___ hrs + ___ min

Final water level end of pumping ___ metres

Recommended pump type. ☐ Shallow ☑ Deep

Recommended pump depth. 50' metres

Recommended pump rate. 50 (litres/min)

If flowing give rate - (litres/min) C

If pumping discontinued, give reason. C

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		2.60		2.77
1	1	2.70	1	2.65
2	2	2.70	2	2.64
3	3	2.70	3	2.63
4	4	2.72	4	2.62
5	5	2.72	5	2.61
10	10	2.72	10	2.60
15	15	2.74	15	2.60
20	20	2.74	20	2.60
25	25	2.75	25	2.60
30	30	2.75	30	2.60
40	40	2.75	40	2.60
50	50	2.76	50	2.60
60	60	2.77	60	2.60

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - From	Depth set at - To (Metres)	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	30'	grout.	3 bag.

Method of Construction

☑ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

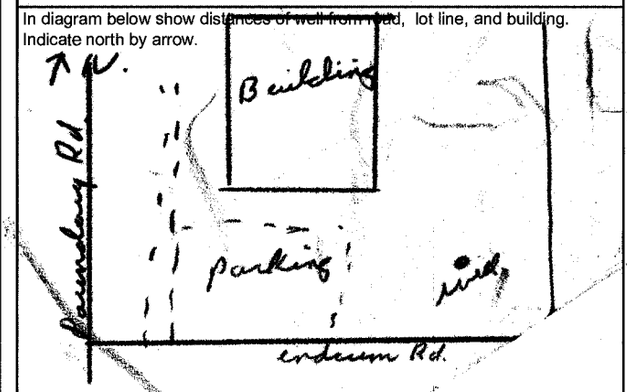
☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 12477

Date Well Completed: YYYY 2004 MM 05 DD 27

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: YYYY 2004 MM 05 DD 27

Well Contractor/Technician Information

Name of Well Contractor: Maurice Cayer ltd | Well Contractor's Licence No.: 1517

Business Address (street name, number, city etc.): Cassleman ont

Name of Well Technician (last name, first name) | Well Technician's Licence No.

Signature of Technician/Contractor: X Maurice Cayer | Date Submitted: YYYY 2004 MM ___ DD ___

Ministry Use Only

Data Source | Contractor: 1517

Date Received: YYYY AUG MM 18 DD 2004 | Date of Inspection: YYYY MM DD

Remarks | Well Record Number: 1534876

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

OTTAWA - CARLETON

1. PRINT ONLY IN SPACES PROVIDED
2. CNECK ☒ CORRECT BOX WHERE APPLICABLE

11 1525164 MUNICIP 15002 CON. CON 09

COUNTY OR DISTRICT [redacted]

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Gloucester

CON. BLOCK, TRACT, SURVEY, ETC 9

LOT 1

DATE COMPLETED DAY 3 MO 5 YR 90

[redacted]lesbad Springs

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Yellow	Sand	Loam	Loose	0	2
Blue	Clay		Dense	2	70
Grey	Till		Packed	70	77
Grey	Limestone		Layered	77	100

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
95	1 ☐ FRESH 2 ☐ SALTY 3 ☒ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	77
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		77	100
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
2	77	Clay

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 25 GPM

DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	40 FEET	16 FEET	26 FEET	36 FEET	40 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: 40 FEET

WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

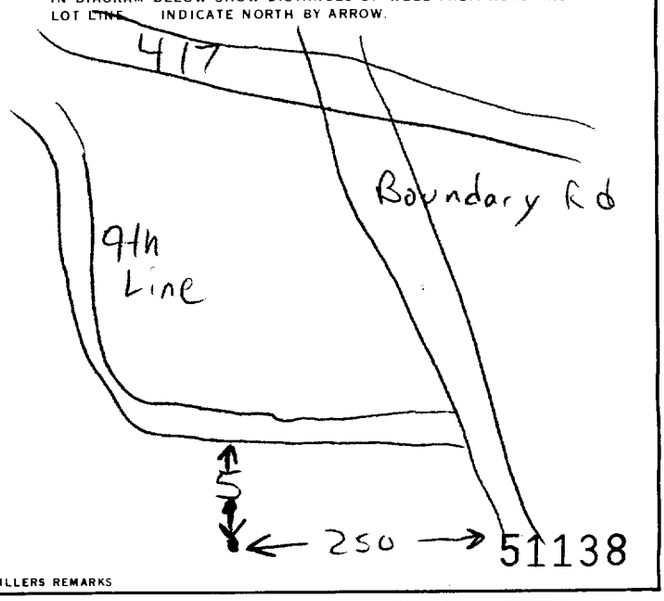
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING: 40 FEET

RECOMMENDED PUMPING RATE: 25 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☒ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 5 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Roy's LBR Ltd

WELL CONTRACTOR'S LICENCE NUMBER: 4609

ADDRESS: Cornwall

NAME OF WELL TECHNICIAN: Roger Rox

WELL TECHNICIAN'S LICENCE NUMBER: T-0330

SIGNATURE OF TECHNICIAN/CONTRACTOR

SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 4609 | DATE RECEIVED DEC 04 1990

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

ATTACHMENT E

OSSO Submission

Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority	
Application number:	Permit number (if different):
Date received:	Roll number:

Application submitted to: OTTAWA SEPTIC SYSTEM OFFICE
(Name of municipality, upper-tier municipality, board of health or conservation authority)

A. Project information

Building number, street name		Unit number	Lot/con.
363 ENTREPRENEUR CRESCENT			
Municipality	**Postal code**	**Plan number/other description**	
NAVAN (CITY OF OTTAWA)	K4B 1T8		
Project value est. $		**Area of work (m^2)**	
28,000.00		68.04 m^2	

B. Purpose of application

X New construction	Addition to an existing building	Alteration/repair	Demolition	Conditional Permit

Proposed use of building	Current use of building
WAREHOUSE w/ OFFICE SPACE	VACANT LOT

Description of proposed work

NEW ELJEN SYSTEM FOR WAREHOUSE + OFFICE SPACE.

C. Applicant

Applicant is: Owner or X Authorized agent of owner

Last name	First name	Corporation or partnership	
DECOEUR	MARC-ANDRÉ	ABSOLUTE DRAFTING + DESIGN INC.	
Street address		**Unit number**	**Lot/con.**
1257 MONTÉE DROUIN			
Municipality	**Postal code**	**Province**	**E-mail**
THE NATION (CASSELMAN)	K0A 1M0	ONTARIO	INFO@ADND.CA
Telephone number	**Fax**		**Cell number**
(613) 434-2844	( )		(613) 229-0869

D. Owner (if different from applicant)

Last name	First name	Corporation or partnership	
WILSON	DUSTIN	ENTREPRENEUR HOLDING CORPORATION	
Street address		**Unit number**	**Lot/con.**
310 SANCTUARY PVT			
Municipality	**Postal code**	**Province**	**E-mail**
OTTAWA	K1S 5W1	ONTARIO	justdustinwilson@gmail.com
Telephone number	**Fax**		**Cell number**
( )	( )		(613) 700-5262

E. Builder (optional)

Last name	First name	Corporation or partnership (if applicable)	
UNKNOWN @ TIME OF APPLICATION.			
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number ( )	Fax ( )	Cell number ( )	

F. Tarion Warranty Corporation (Ontario New Home Warranty Program)

i. Is proposed construction for a new home as defined in the *Ontario New Home Warranties Plan Act*? If no, go to section G.	Yes	No ✓
ii. Is registration required under the *Ontario New Home Warranties Plan Act*?	Yes	No ✓

iii. If yes to (ii) provide registration number(s): _____

G. Required Schedules

i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.

ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.

H. Completeness and compliance with applicable law

i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the Building Code (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted).	Yes ✓	No
Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the *Building Code Act, 1992*, to be paid when the application is made.	Yes ✓	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992*.	Yes ✓	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992* which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	Yes ✓	No
iv) The proposed building, construction or demolition will not contravene any applicable law.	Yes ✓	No

I. Declaration of applicant

I MARC-ANDRÉ DECOELHO [ABSOLUTE DRAFTING + DESIGN INC.] declare that:
(print name)

1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date April 19, 2023

Signature of applicant

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name		Unit no.	Lot/con.
363 ENTREPRENEUR CRESCENT			
Municipality	**Postal code**	**Plan number/ other description**	
NAVAN [OTTAWA]	K4B 1T8		

B. Individual who reviews and takes responsibility for design activities

Name		Firm	
MARC-ANDRE DECOEUR		ABSOLUTE DRAFTING + DESIGN INC	
Street address		**Unit no.**	**Lot/con.**
1257 MONTEE DROUIN			
Municipality	**Postal code**	**Province**	**E-mail**
THE NATION	K0A 1M0	ONTARIO	INFO@ADND.CA
Telephone number	**Fax number**		**Cell number**
613-434-2844 EXT. 1001			613-229-0869

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

☑ House	☑ HVAC – House	☑ Building Structural
☑ Small Buildings	☑ Building Services	☑ Plumbing – House
☑ Large Buildings	☑ Detection, Lighting and Power	☑ Plumbing – All Buildings
☑ Complex Buildings	☐ Fire Protection	☑ On-site Sewage Systems

Description of designer's work

NEW ELSEN SYSTEM FOR WAREHOUSE + OFFICE SPACE.

D. Declaration of Designer

I MARC-ANDRE DECOEUR (ABSOLUTE DRAFTING + DESIGN INC.) declare that (choose one as appropriate):
(print name)

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 44555

Firm BCIN: 45254

I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

Basis for exemption from registration: _____

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

April 19, 2023
Date

Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information			
Building number, street name: 363 ENTREPRENEUR CRESCENT		Unit number	Lot/con.
Municipality: NAVAN [OTTAWA]	Postal code: K4B 1T8	Plan number/ other description	

B. Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

Yes (Continue to Section C) | No (Continue to Section E) | ✓ Installer unknown at time of application (Continue to Section E)

C. Registered installer information (where answer to B is "Yes")

Name			BCIN	
Street address			Unit number	Lot/con.
Municipality	Postal code	Province	E-mail	
Telephone number ( )	Fax ( )		Cell number ( )	

D. Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)

E. Declaration of Applicant:

I MARC-ANDRÉ DÉCOEUR [ABSOLUTE DRAFTING + DESIGN INC.] declare that:
(print name)

✓ I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date April 19, 2023 Signature of applicant

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 4
Proposed Services
Complete Sections 1 thru 7

1. **Engineered**
- ☐ Yes
- ☑ No

2. **Water supply**
- ☑ Proposed
- ☐ Existing

3. **Type of work proposed**
- ☑ New Installation
- ☐ Replacement
- ☐ Alteration

4. **Type of Well**
- ☐ Dug/bored/Sandpoint well
- ☑ Drilled well
- ☐ Municipal
- ☐ Other

5. **Residential** Sewage Design Flow Info.

Bedrooms _____
House (floor area) _____ **m²**
People _____
Total Fixture Units _____ **(Schedule 8)**
Residential Flow _____ **L/day**

6. Sewage Design Flow **Other Occupancies**

Design Flow 1310 L/day
Detailed sewage flow calculations:
SEE "FLOW CALCULATION" DRAWING.

☑ Class 4 – BMEC Area Bed **(Schedule 11)**
→ ELJEN
- ☐ Fully raised
- ☑ Partially raised
- ☐ In-ground

7. **Type of System**
- ☐ Treatment Unit _____
- ☐ Class 2 – Leaching Pit
- ☐ Class 3 – Cesspool
- ☐ Class 4 – Shallow Buried Trench

_____

☐ Class 4 – Trench **(Schedule 9)**
- ☐ Fully raised
- ☐ Partially raised
- ☐ In-ground

☐ Class 4 – Filter Media **(Schedule 10)**
- ☐ Fully raised
- ☐ Partially raised
- ☐ In-ground

☐ Class 4 – "Type A" Dispersal **(Schedule 13)**
- ☐ Fully raised
- ☐ Partially raised
- ☐ In-ground

☐ Class 4 – "Type B" Dispersal **(Schedule 14)**
- ☐ Fully raised
- ☐ Partially raised
- ☐ In-ground

☐ Class 5 – Holding Tank (9000L min)
☐ Tank/TreatmentUnit/PumpChamber ONLY
☐ Effluent Filter/Risers ONLY

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 5
Sewage System Details

Type of System ELJEN SYSTEM (Schedule 4)
Septic/Holding Tank Size: 5509 Litres Make: LON-BOY CONCRETE (PROPOSED)
Septic Tank Effluent Filter Make: POLYLOK Model: PL 525 OR EQUIVALENT.

Treatment Unit – Make & Model ELJEN GSF A42 MODULES
Number of Units: 14 Other: _____
Refer to Typical Drawing # FLOW CALCULATIONS. Pump(s) required YES.
Mantle Information: Pump Rate _____ L/15min
Native or imported =15m in _____ direction(s)

Note: Alarm required for all pumping systems

8 DOSING PER DAY @ 163.8 LITER PER DOSING
* SEE SEPTIC SECTION FOR CALCULATION.

Slope subgrade 2% MIN. % slope
NORTH. direction(s)

Site to be Scarified (If clay) YES / NO "SILTY SAND."
Clay Seal Required (If bedrock) YES / NO ↳ AS PER LRL "GEOTECH REPORT."

☐ **Trench**
Distribution Pipe Length _____ m
Loading Area _____ m²
Type of Chamber _____
Length of Chamber _____ m

☐ **Dispersal Bed** $L = \frac{8T}{400}$
☑ **BMEC** ☐ **Type A** ☐ **Type B**
Stone _____ m²
Sand 65.5m² MIN ∴ 68.04 m² PROVIDED
Pipe ↳ SEE "FLOW CALCULATION"
Linear Loading _____ L/m²

☐ **Shallow Buried Trench**
Pipe Length _____ m

☐ **Filter Media Bed**
Stone _____ m²
Extended Base _____ m²
Pipe _____ m
Weight of Filter Media _____ Kg
Loading Area _____ m

☐ **Tank/Treatment Unit/Pump Chamber Replacement** ONLY
☐ **Effluent Filter & Riser** ONLY

Construction Notes:

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

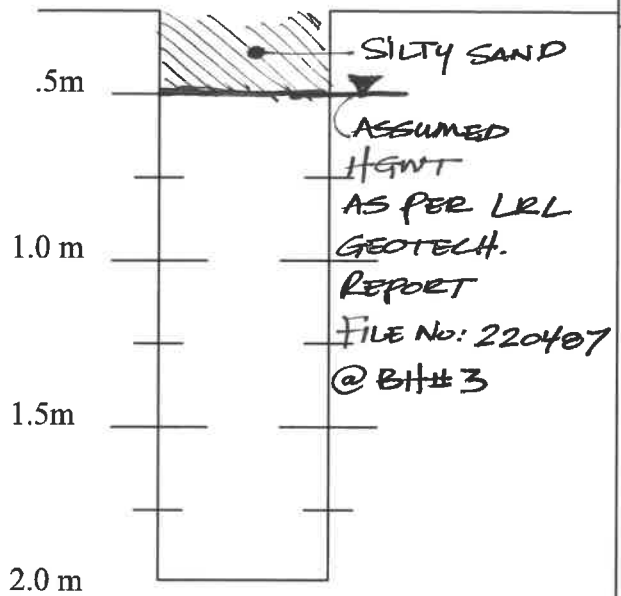
Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 6
Soil and Water Table Information
(Minimum depth of test pit: 2 metres)

Name of Applicant/Agent: MARC-ANDRÉ DÉGREUR
Date: April 19, 2023 Time: _____
Applicant/Agent Signature: _____

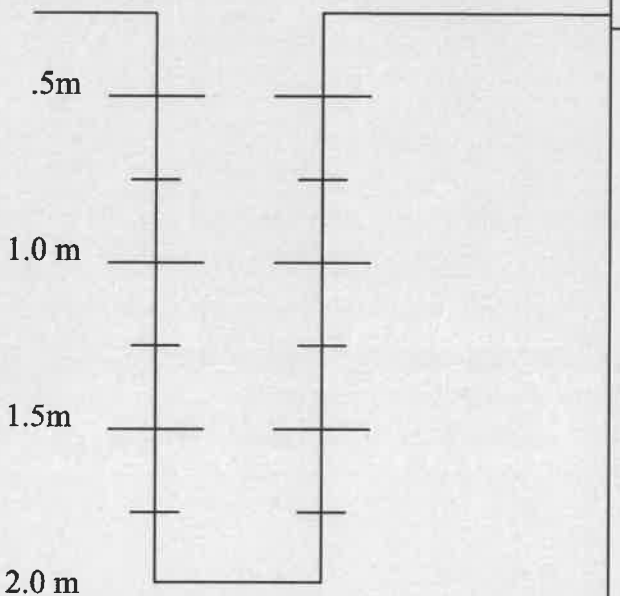
Inspector: _____
Date: _____ Time: _____
Inspector Signature: _____

EG (76.94) | Soil Description | T

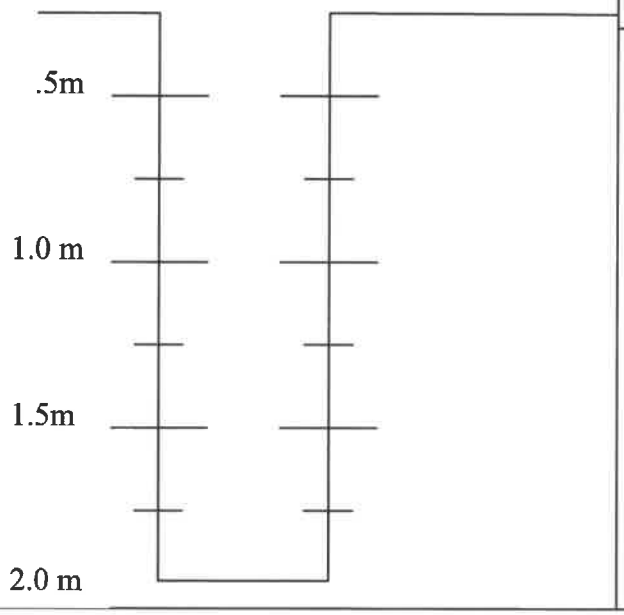


@ 20 for SILTY SAND [SB-6]

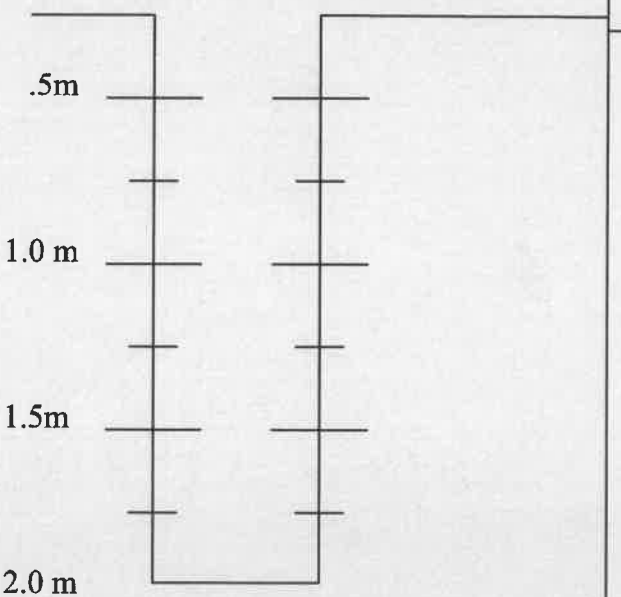
EG (……..) | Soil Description



EG (……..) | Soil Description | T



EG (……..) | Soil Description | T



LEGEND

BR = Bedrock	HGWT = High ground water table	EG = Existing grade
GWT = Ground water table	M = metres	T = percolation rate

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

Do Not Complete
Permit # _____
Revision # _____
Date _____

Scale: 1Block = _____

Schedule 7
Layout Section

○Dug Well ●Drilled Well ▲Neighbouring Homes ◊Benchmark ---Tile Drainage —Property Line

Elevations (metric only)
B.M. _____ m
B.M.Description _____
_____
Exact Location _____

Min. of 5 elevations in proposed system area (in X pattern)

X_1 _____ X_2 _____
X_3 _____ X_4 _____
X_5 _____ $X_{6\ (toe)}$ _____
X_7 X_8

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 8
Fixture unit count

Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom Bathroom group (toilet, sink and tub **or** shower) installed in the **same** room		+		X	6	=	
Bathtub with/without overhead shower		+		X	1.5	=	
Shower stall		+	4	X	1.5	=	6
Wash basin (SINK) (1½inch trap)		+	5	X	1.5	=	7.5
Watercloset (TOILET) tank operated		+	5	X	4	=	20
Bidet / URINAL		+	3	X	1	=	3
Kitchen Dishwasher		+	1	X	1	=	1
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+	1	X	1.5	=	1.5
Other Domestic washing machine		+	1	X	1.5	=	1.5
Combination sink and laundry tray single or double (Installed on 1½ trap)		+	1	X	1.5	=	1.5

***Total:** 42

***Insert the TOTAL in section 5 of Schedule 4** (0.Reg 151/13 Table 7.4.9.3)

1. **Sump pumps and floor drains are not to be connected to the sewage system.** Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

_____ April 19, 2023

Agent/Owner signature **Date**

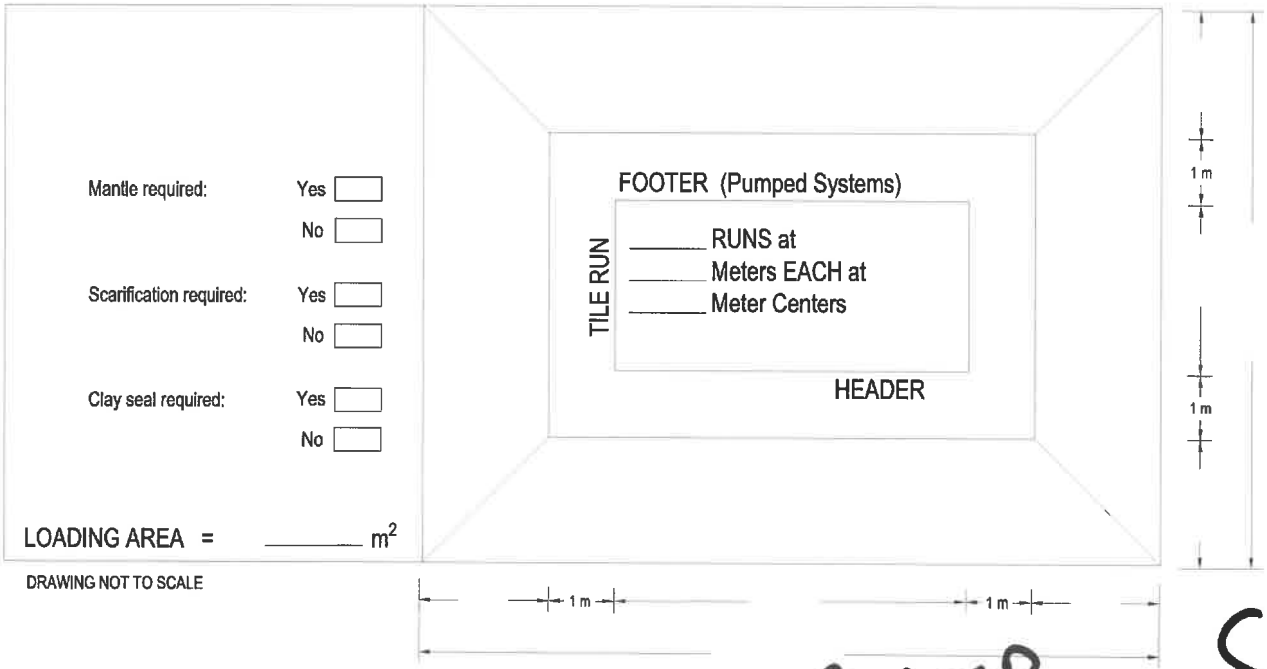
Do Not Complete
Permit # _____
Revision # _____
Date _____

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

TYPICAL DRAWING C

BURIED OR RAISED BED - BMEC ELJEN System

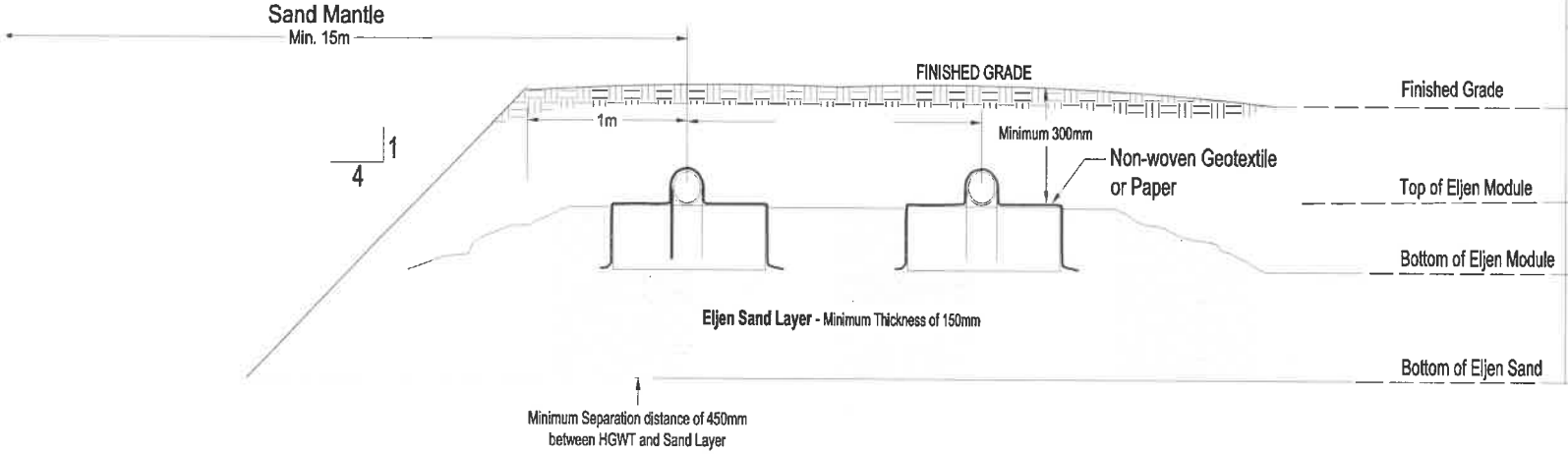
Plan View



DRAWING NOT TO SCALE

See Provided "Septic Section"

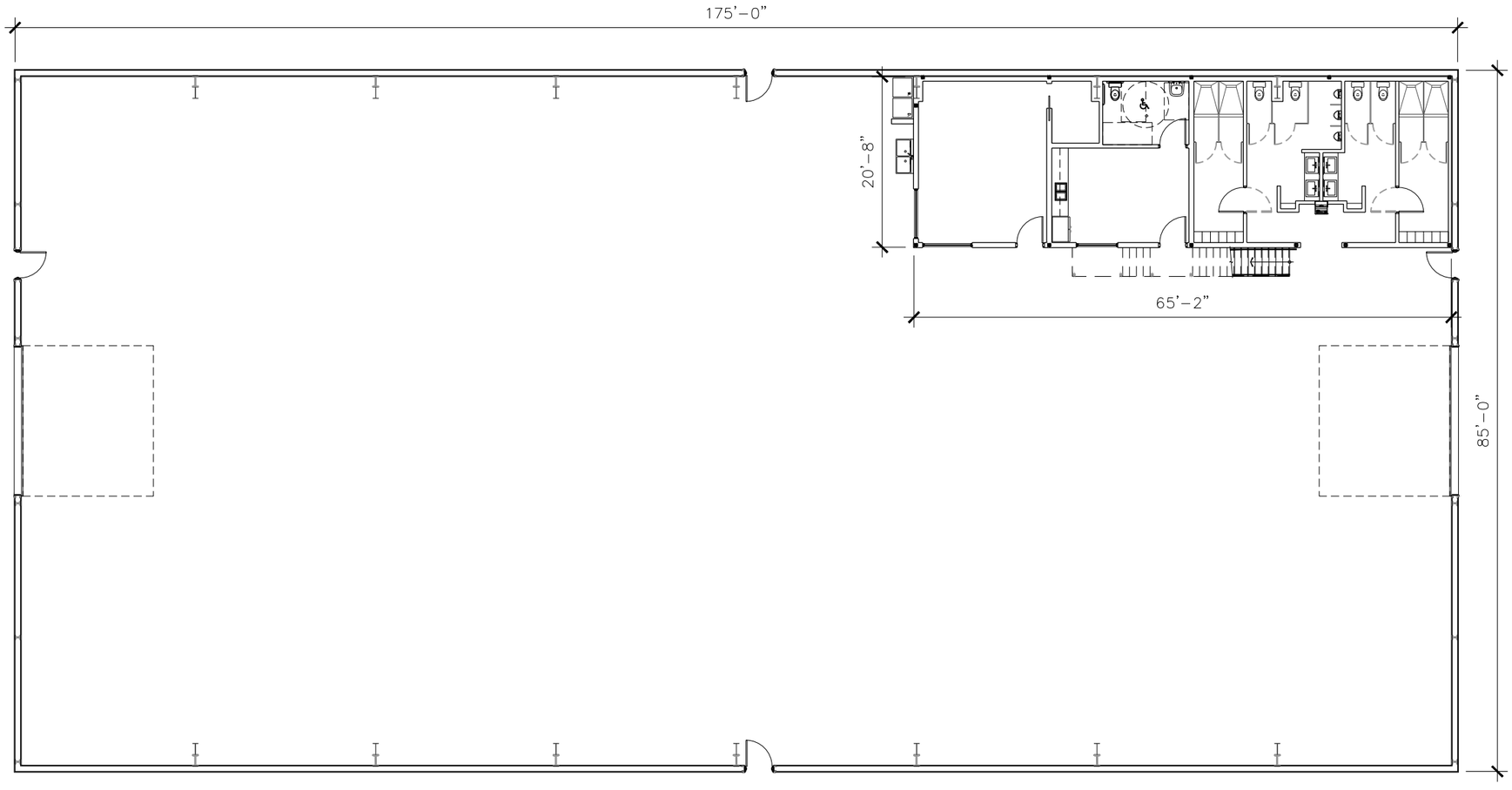
Cross-Section Profile



	Proposed Installation Grades	Approved Installation Grades	Existing Grade
Finished Grade			
Top of Eljen Module			
Bottom of Eljen Module			
Bottom of Eljen Sand			

DRAWING NOT TO SCALE

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434



GROUND FLOOR PLAN

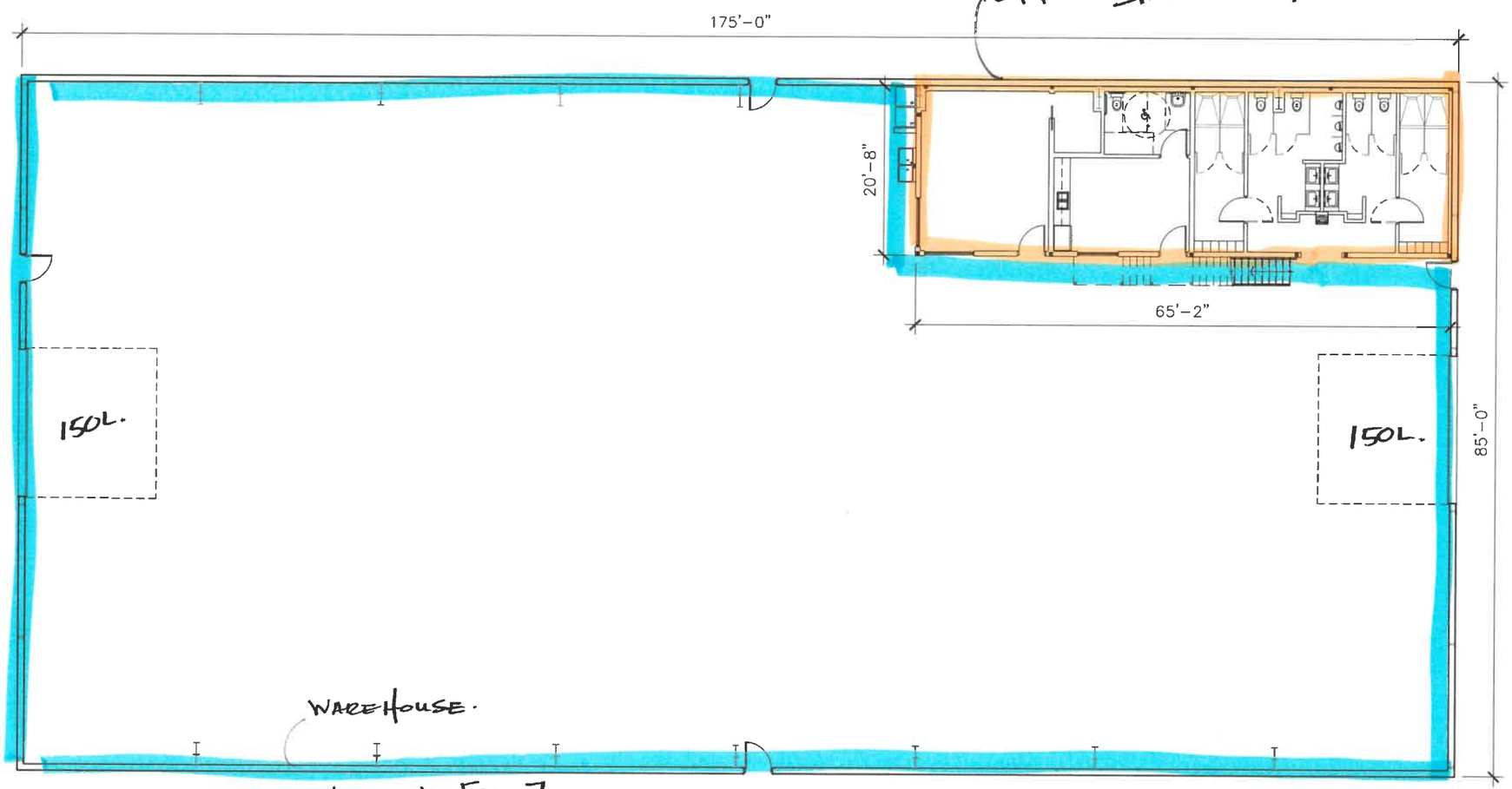
SCALE: 1/16" = 1'–0"

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

- WAREHOUSE = 2x Loading Bay = 2x150L = 300L.
- OFFICE AREA = 75L/9.3m² = 1347 sq.ft. = 125.12m²/9.3m² = 13.46 x 75L = 1010L

300L + 1010L = 1310L/D.
↳ Design Flow/Day.

75L/9.3m²/PERSON
↳ AS PER T.3.1.17 OBC.



@TEST PIT "BH3"

* HGWT @ 0.5m BELOW EXISTING GRADE [SEE LRL REPORT]

SILTY SAND [SB-6]

GROUND FLOOR PLAN

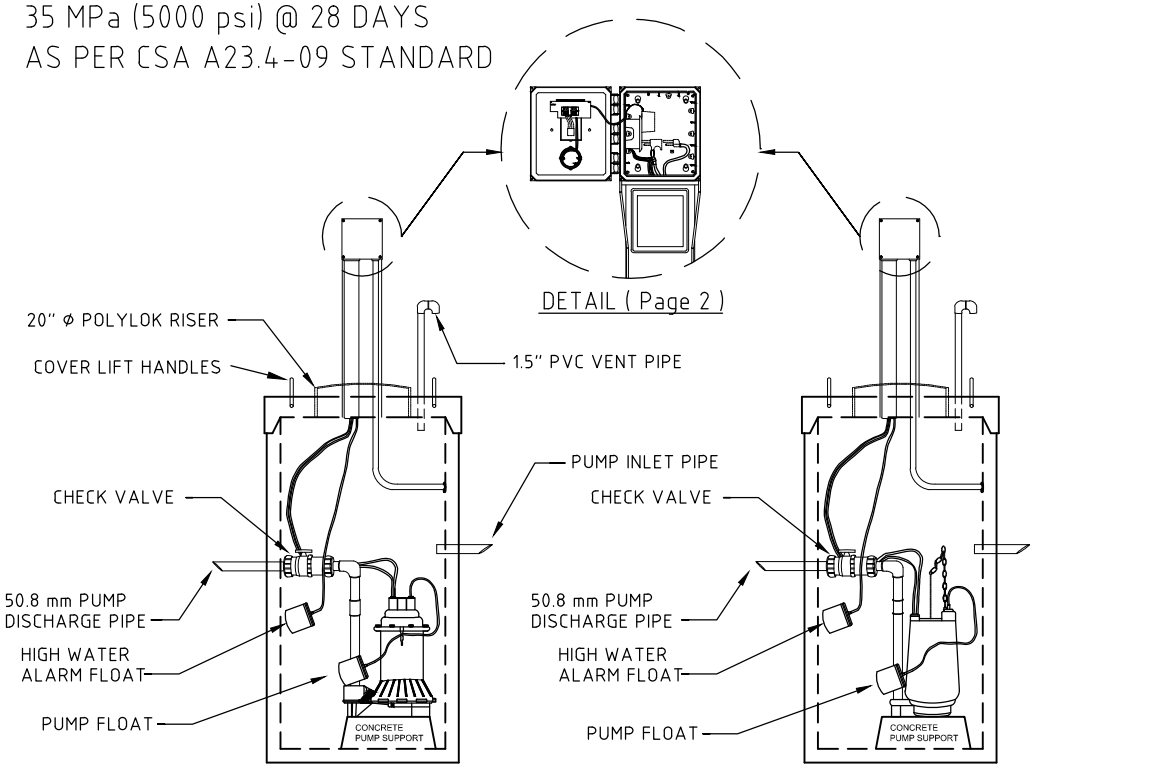
SCALE: 1/16" = 1'-0"

LOADING AREA.
= GFA/400 = 1310 x 20/400
= 65.5m² MIN.
PROVIDED = 4.2m x 16.2m
= 68.04m²

ELJEN SYSTEM.
↳ L/D/95
= 1310/95 = 13.79
= 14 MODULES REQ'D.
2 RUNS OF 7 MODULES.

SEPTIC TANK = L/D x 3
= 1310 x 3
= 3930 L MIN. TANK.
↳ PROPOSED 5,509L TANK.

6% - 8% AIR ENTRAINED
35 MPa (5000 psi) @ 28 DAYS
AS PER CSA A23.4-09 STANDARD



SRM 4 0.40 HP PUMP SYSTEM

MRG 20 2.0 HP GRINDER PUMP SYSTEM

BOTH PUMP SHOWN ARE 250 GAL / 1135 L PUMP STATIONS, NOT TO SCALE

SIDE VIEW

GENERAL NOTES:

A PUMP STATION IS REQUIRED WHEN A SEPTIC SYSTEM IS UNABLE TO FUNCTION BY GRAVITY.

FROM 8.6.1.3. (3) OF THE O.B.C. 2006, WHERE 2 OR MORE PUMPS ARE EMPLOYED WITHIN A DOSING TANK, THE PUMPS SHALL BE DESIGNED SUCH THAT THE PUMPS ALTERNATE DOSING, AND DOSING SHALL CONTINUE IN THE EVENT THAT ONE OF THE PUMP FAILS.

FROM 8.6.1.3. (4) OF THE O.B.C. 2006, WHERE A PUMP OR SIPHON IS REQUIRED, THE PUMP OR SIPHON SHALL BE DESIGNED TO DISCHARGE A DOSE OF AT LEAST 75% OF THE INTERNAL VOLUME OF THE DISTRIBUTION PIPE WITHIN A TIME PERIOD NOT EXCEEDING 15 MINUTES.

A PUMP STATION SHALL HAVE A WORKING VOLUME OF A THIRD OF THE DAILY FLOW OF THE SEPTIC SYSTEM IT IS DESIGNED FOR.

PUMP STATION ARE AVAILABLE IN MULTIPLE SIZES,
AND MULTIPLE PUMP SIZES ALSO AVAILABLE.
DUAL PUMP STATION ALSO AVAILABLE, SEE LIST BELOW,
VOLUME INDICATED IS MAXIMUM WORKING VOLUME:

175 GAL / 800 LITERS : 3 FEET ø - 4 FEET WELL TILE
250 GAL / 1135 LITERS : 3 FEET ø - 6 FEET WELL TILE
450 GAL / 2045 LITERS : 4 FEET ø - 6 FEET WELL TILE
DUAL - 760 GAL / 3450 LITERS : NORMAL 800 GAL / 3630 L TANK
DUAL - 1175 GAL / 5340 LITERS : NORMAL 1210 GAL / 5509 L TANK

ALARMS, ELECTRICAL BOXES AND CHECK VALVES MAY DIFFERS FROM ONE PUMP STATION SYSTEMS TO ANOTHER. SIMPLEX AND DUPLEX TIME DOSING CONTROL PANEL AVAILABLE.

16525 SIXTH RD, MOOSE CREEK, ON
KOC 1W0
PHONE : (613)-538-2381
FAX : (613)-538-4870

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED
PUMP STATION SIDE VIEW (Page 1 / 2)

SCALE	NOT TO SCALE	DATE	JULY 2011

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED 538-2381

TECHNICAL BROCHURE
B3872 R1

WW05 Series Model 3872

SUBMERSIBLE SEWAGE PUMPS

GOULDS WATER TECHNOLOGY
a xylem brand

FEATURES

Impeller: Glass-filled thermoplastic Full-Vortex design with pump out vanes for mechanical seal protection.

Casing and Base: Rugged glass-filled thermoplastic design provides superior strength and corrosion resistance.

Motor Housing: Cast iron for efficient heat transfer, strength, and durability.

Motor Cover: Thermoplastic cover with integral handle and float switch attachment points.

Bearings: Upper and lower heavy duty ball bearing construction.

Power Cable: Severe duty rated oil and water resistant.

O-ring: Provides positive sealing. Easily replaced during maintenance.

Stainless steel fasteners

AGENCY LISTINGS

By Canadian Standards Association

APPLICATIONS

Specifically designed for the following uses:

- Residential sewage systems
- Dewatering
- Water transfer

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

Pump:

- Solids handling capability: 2" maximum
- Capacities: up to 75 GPM
- Total heads: up to 18 feet
- Discharge size: 2" NPT
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent
- Class B Insulation
- Fasteners: 300 series stainless steel
- Capable of running dry without damage to components.

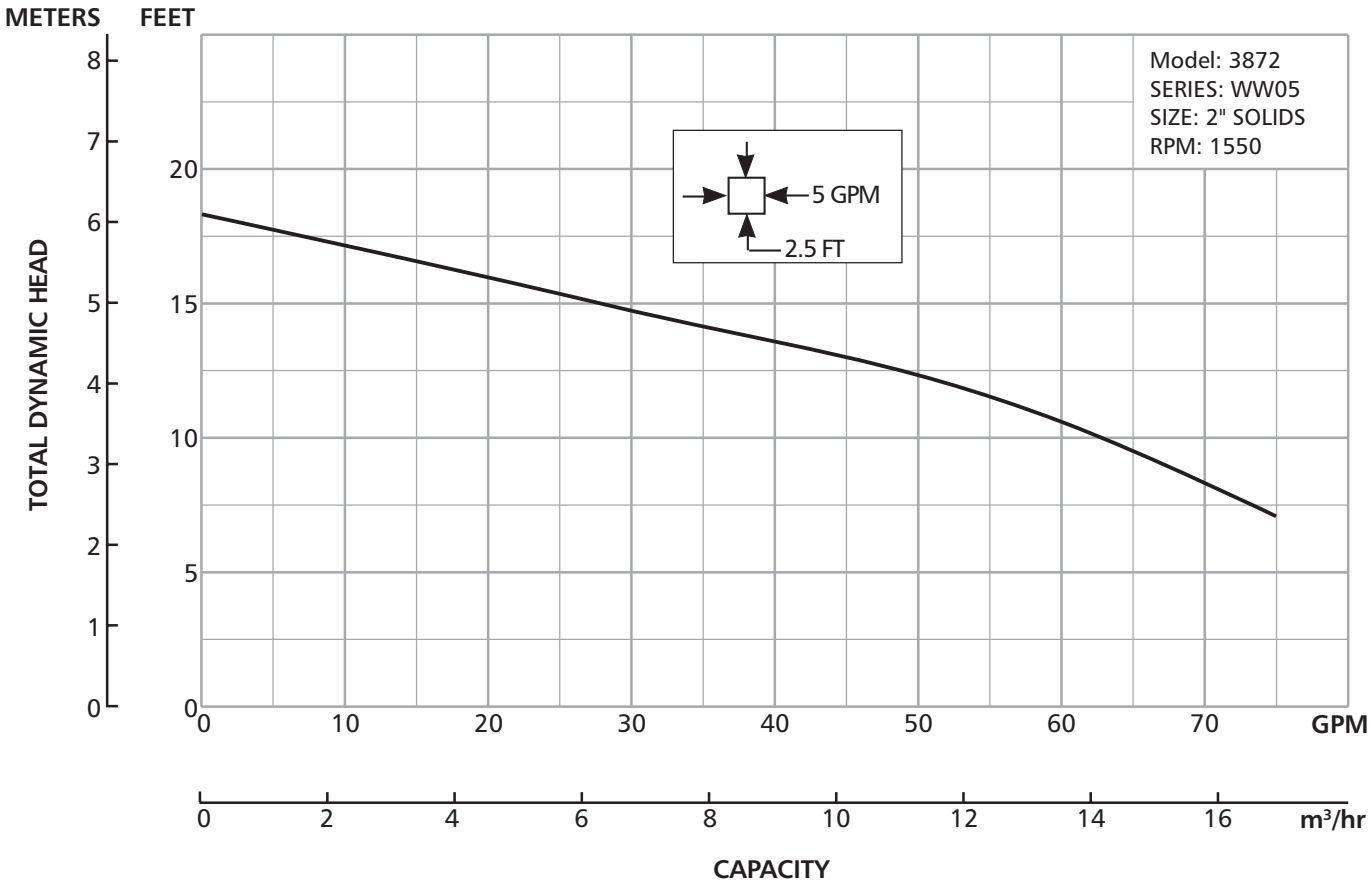
Motor

- Single phase: ½ HP, 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug.
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation. Automatic models include Mechanical Float Switch assembled and preset at the factory.

MODEL INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum On Level	Minimum Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
WW0511	.5	115	13	20	1	Plug / No Switch	10'	2"	Manual	Manual	18"	2"	22 / 10
WW0511A						Piggyback / Wide-Angle	10'	2"	15"	9"	18"		23 / 10.4
WW0511F						Plug / No Switch	20'	2"	Manual	Manual	18"		22 / 10
WW0511AC						Piggyback / Wide-Angle	20'	2"	15"	9"	18"		23 / 10.4
WW0512		230	6.5	10		Plug / No Switch	10'	2"	Manual	Manual	18"		22 / 10
WW0512F						Plug / No Switch	20'	2"	Manual	Manual	18"		22 / 10



PERFORMANCE CHARTS

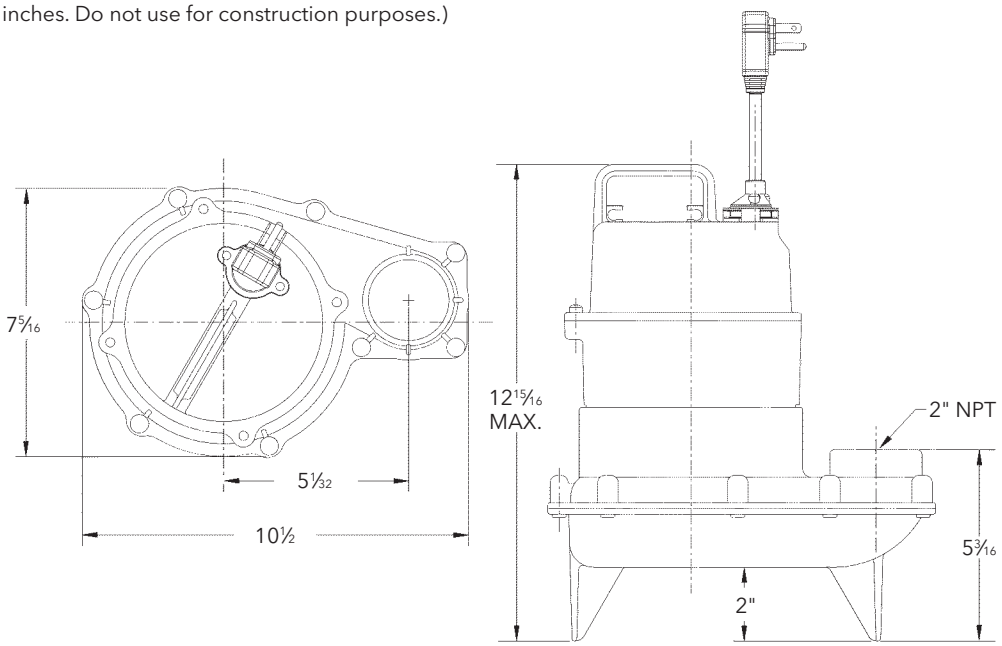
These charts show actual system performance with friction loss factored in for various discharge pipe lengths. Calculations and performance based on a system with 2" PVC, schedule 40 plastic pipe (C150), (4) 90° elbows, (1) check valve and (1) shut-off valve. Wastewater requires a minimum scouring velocity of 21 gpm for 2" pipe. Shaded areas do not provide min. scouring velocity - use only for gray water with no solids.

WW05 (3872)

	4	6	8	10	12	14	16
25	75	68	62	52	40	27	13
50	67	61	54	45	35	24	12
75	61	55	48	40	32	22	11
100	56	50	44	37	29	21	11
150	48	43	38	32	26	18	10
200	43	39	34	29	23	17	10
250	39	35	31	26	21	15	10
300	35	32	29	24	20	14	10

DIMENSIONS

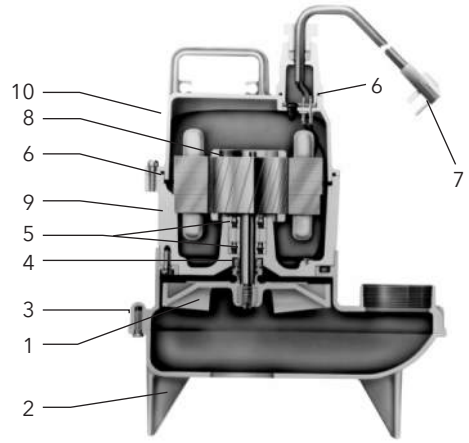
(All dimensions are in inches. Do not use for construction purposes.)



COMPONENTS *(for reference only)*

Item No.	Description
1	Impeller
2	Rugged thermoplastic base
3	Rugged thermoplastic pump casing
4	Mechanical seal
5	Ball bearings
6	O-rings
7	Power cord
8	Oil filled motor
9	Cast iron motor housing/stator assembly
10	Thermoplastic motor cover

* Parts available on repair parts selection chart.



xylem
Let's Solve Water

Xylem, Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.gouldswatertechnology.com

part 1 plan 4R-27827
pin 14558 - 0408

(N 67° 48' 00" E P1, P3)
N 67° 48' 50" E (P2)&Set
94.39 (P2)&Set
Fd. SIB(AOG) Disturbed & Reset
C/L of Ditch
36.76 (P1,P2,P3)&Set
Edge of Gravel
DITCH TOP OF SLOPE (TOS)
190.62 (P1,P2,P3)&Meas.
59.47 (P1,P3)&Meas.
TOS
IB (WIT)
CLF 0.19 West
x. 77.75
Gravel
25.9m
BLOCK
PLAN
81.38 (P1,P3)&Meas.
81.93 (P1,P3)&Meas.
3
50M-136
50R-6694
PROPOSED 3.5m WIDE PARALLEL PARKING DRIVING AISLE & 3.0m SINGLE DIRECTION DRIVING AISLE
PROPOSED 2.6m X 6.7m PARALLEL PARKING SPACES
PROPOSED 0.3m GRASS BUFFER
PROPOSED 1.5m GRASS BUFFER
Metal Container
Drilled Well (Top Elev=77.90)
pin 14558 - 0356
part 2
pin 14558 - 0401
part 3
pin 14558 - 0402
part 4
part 5
PROPOSED WAREHOUSE
F.F.E = 77.60
(G.F.A. = ±1382m²)
53.3m
80.43
Metal Building
REGISTERED
SUBJECT TO EASEMENT PER INST. OC1627867
SITE BENCHMARK
Nail in Hydro Pole
Elev=77.79
N21°20'40"W
PROPOSED NEW DRILL WELL LOCATION
part 8 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627866
part 9 PLAN 4R-27830
part 10 PLAN 4R-27830
SUBJECT TO EASEMENT
PER INST. OC1627868
CLF 0.08 West
CLF 0.13 East
36.75 (P1,P3)&Set
N68°39'20"E
SSIB (AOG)
SSIB
174.45 (P1,P3)&Meas.
211.20 (P1,P3)&Meas.
UP
Drain (Inv.=76.69)
C/L of Ditch
Edge of Gravel
Edge of Asphalt
TOS
CSP 0.5ø Inv.=76.43
CSP 0.5ø Inv.=76.39
Centreline of Road
ENTREPRENEUR CRESCENT
pin 14558 - 0066

SEPTIC SITE LOCATION
SCALE: 1: 200

SCALE: 1: 200

DATE: 2023.04.19.
ISSUED FOR PERMIT

PROJECT: 23A011-REV01

ABSOLUTE DRAFTING + DESIGN INC.
PERS. BCIN #44555
FIRM. BCIN #45254

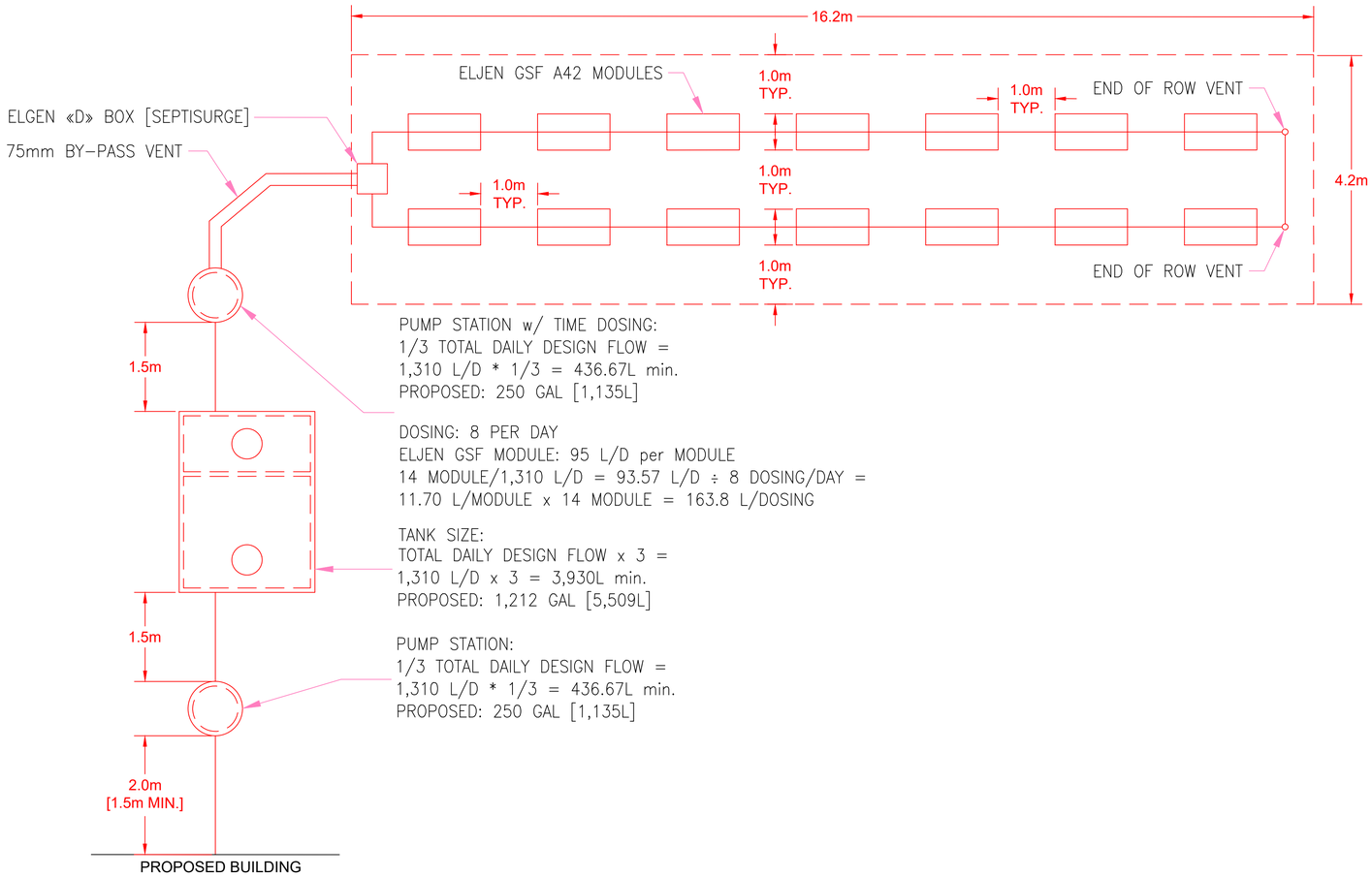
I, ABSOLUTE DRAFTING + DESIGN INC., HAVE REVIEWED THE FOLLOWING DOCUMENTS AND TAKE RESPONSIBILITY FOR THE DESIGN ACTIVITIES.

DESSIN/DRAWING
SEPTIC LOCATION

PROJET/PROJECT
WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CR., OTTAWA

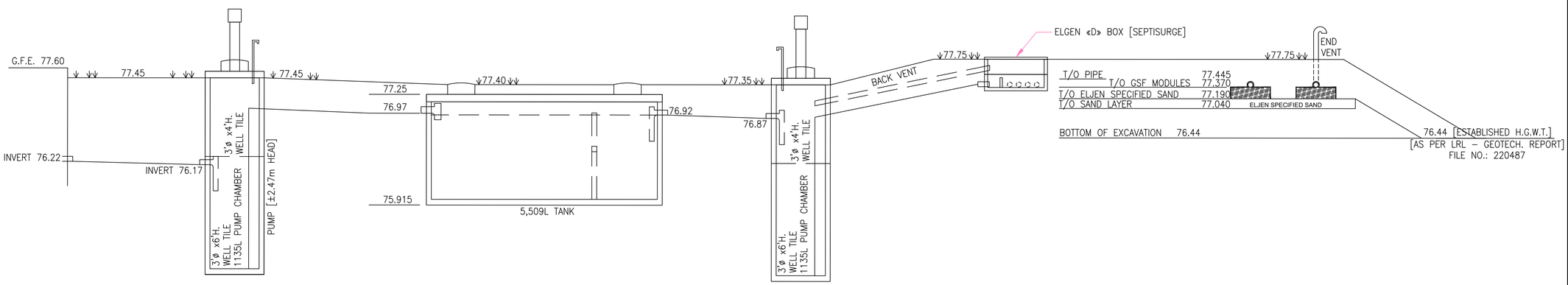
CLIENT
DUSTIN WILSON

S-101 of S-102



SEPTIC LAYOUT

SCALE: 1:50



SEPTIC SECTION

SCALE: 1:35

ABSOLUTE DRAFTING + DESIGN INC.

SCALE: AS INDICATED

DATE: 2023.04.19. ISSUED FOR PERMIT

PROJECT: 23A011-REV01

ABSOLUTE DRAFTING + DESIGN INC.
PERS. BCIN #44555
FIRM. BCIN #45254

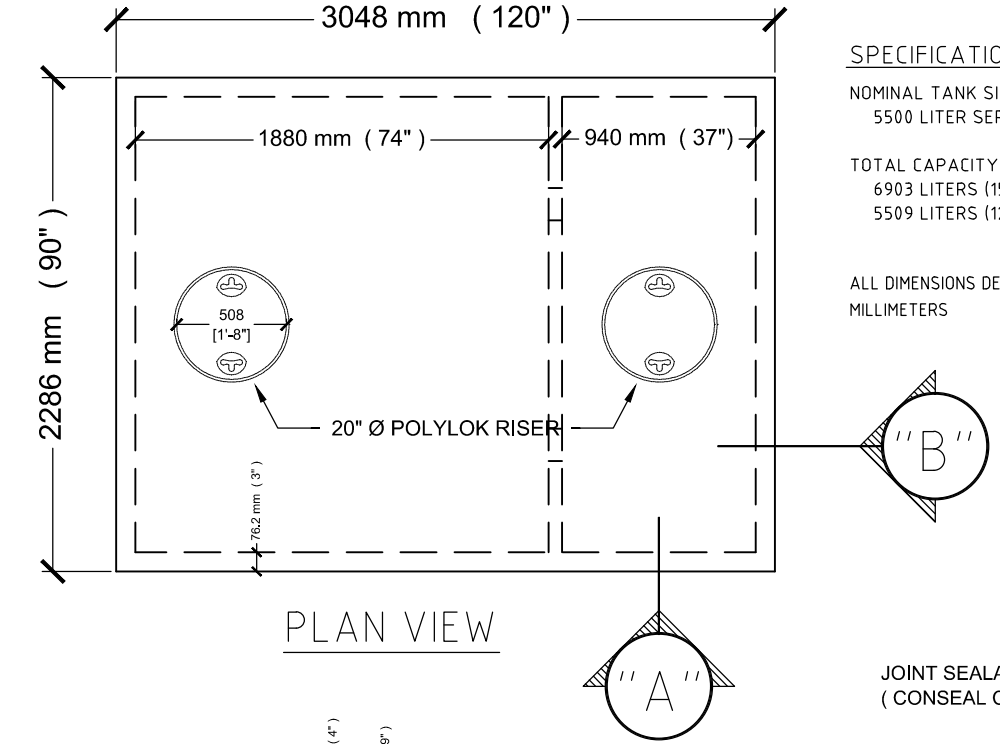
I, ABSOLUTE DRAFTING + DESIGN INC., HAVE REVIEWED THE FOLLOWING DOCUMENTS AND TAKE RESPONSIBILITY FOR THE DESIGN ACTIVITIES.

DESSIN/DRAWING: SEPTIC LAYOUT + SPEC'S

PROJET/PROJECT: WAREHOUSE DEVELOPMENT
363 ENTREPRENEUR CR., OTTAWA

CLIENT: DUSTIN WILSON

S-102 of S-102



PLAN VIEW

SPECIFICATIONS:

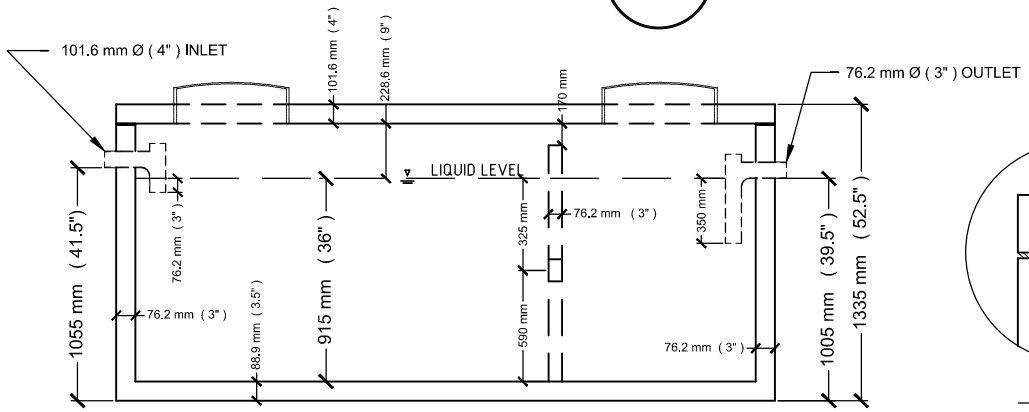
NOMINAL TANK SIZE
5500 LITER SEPTIC TANK

TOTAL CAPACITY
6903 LITERS (1518 GAL)
5509 LITERS (1212 GAL) TO OUTLET

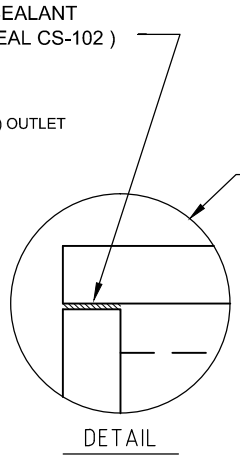
ALL DIMENSIONS DEFAULT TO MILLIMETERS [mm / in]

GENERAL NOTES:

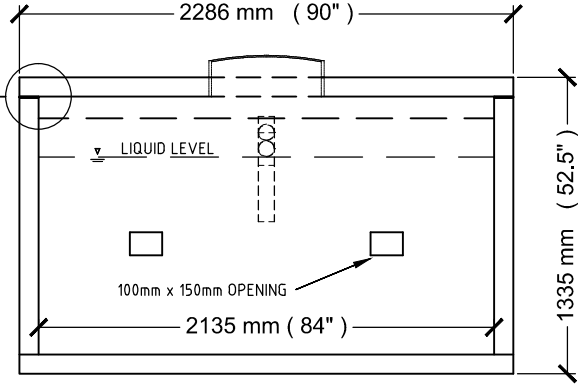
1) CONCRETE TO BE 30 MPa @ 28 DAYS WITH 5-8% AIR ENTRAINMENT
2) CONCRETE MIX IS NON-SULPHATE RESISTANT
3) REINFORCEMENT TO CONFORM TO G30.15 AND CAN/CSA G30.18
4) REINFORCEMENT: TOP SLAB REINFORCEMENT
   -10M REBAR EQUALLY SPACED IN BOTH DIRECTION
   BOTTOM SLAB REINFORCEMENT
   -10M REBAR EQUALLY SPACED IN BOTH DIRECTION
   WALL REINFORCEMENT
   -FIBERGLASS MESH ADDED IN CONCRETE MIX
5) MINIMUM CONCRETE COVER OVER REINFORCEMENT IS 25.4mm / 1"
6) CERTIFIED MINIMUM BURIAL DEPTH: 0.6M (24")
7) WEIGHT OF TOP SLAB = 1635 KG / 3605 LBS
8) WEIGHT OF TANK SECTION = 4113 KG / 9068 LBS
9) ASSEMBLED WEIGHT = 5748 KG / 12672 LBS
10) CHAMBER DIVIDER IS CAST SEPARATELY
11) NO CENTER JOINT IN TANKS
12) 100mmØ INLET AND 75mmØ OUTLET PVC PIPE STUB
13) TOP OF OUTLET FITTING EXTENDS TO AT LEAST THE HEIGHT OF CHAMBER DIVIDER WITH 25mm MINIMUM AIR SPACE
14) PRODUCT IS FACTORY ASSEMBLED AND AS PER CSA A23.4-09 STANDARD AND CSA B 66-00 STANDARD



CROSS SECTION A



DETAIL



CROSS SECTION B

16525 SIXTH RD, MOOSE CREEK, ON
KOC 1W0
PHONE : (613)-538-2381
FAX : (613)-538-4870

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED

LOW-BOY CONCRETE 1212 GALLON / 5509 LITER SEPTIC TANK

SCALE	NOT TO SCALE	DATE	JULY 2011

MOOSE CREEK CEMENT PRODUCTS (2006) LIMITED 538-2381

ATTACHMENT F

Pumping Test – Field Data

Pump Test Data
Hydrogeological Assessment & Terrain Analysis
Proposed Warehouse Development - 363 Entrepreneur Crescent, Ottawa, Ontario
LRL File No. 220487

Date:	**30/07/2023**	**Technician:**	E. Lavergne
Well Number:	**Tag A37901**	**Pump Depth (m BTC):**	45.7
Depth of Well (m BTC):	49.10	**Start Time:**	8:15 AM
Ground Surface Elev. (m):	--	**End Time:**	4:30 PM
Top of Casing Elev. (m):	--	**Average Pump Rate (L/min):**	22.0
Water Level before Pump In (m BTC)	2.75		
Water Level after Pump In (m BTC)	2.61		

				Field Parameters					
Time[1] (min)	**Water Level (Pump In) (m BTC)**	**Drawdown (m)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Residual Chlorine (mg/L)**	**Colour (TCU)**	**pH**	**Conductivity (µs)**	**Total Dissolved (mg/L)**
0.0	2.61	0.00							
0.5	3.01	0.40	22.0						
1.0	3.75	1.14	22.0						
1.5	4.01	1.40	22.0						
2.0	4.26	1.65	22.0						
2.5	4.50	1.89	22.0						
3.0	4.71	2.10	22.0						
3.5	4.95	2.34	22.0						
4.0	5.13	2.52	22.0						
4.5	5.23	2.62	22.0						
5.0	5.30	2.69	22.0						
6.0	5.38	2.77	22.0						
7.0	5.52	2.91	22.0						
8.0	5.59	2.98	22.0						
9.0	5.67	3.06	22.0						
10.0	5.73	3.12	22.0						
15.0	5.88	3.27	22.0						
20.0	5.97	3.36	22.0						
25.0	6.03	3.42	22.0						
30.0	6.06	3.45	22.0						
40.0	6.11	3.50	22.0						
50.0	6.13	3.52	22.0						
60.0	6.18	3.57	22.0	3.58	0.03	92	7.90	3999+	2000+
90.0	6.19	3.58	22.0						
120.0	6.20	3.59	22.0	2.31	0.05	52	7.92	3999+	2000+
150.0	6.21	3.60	22.0						
180.0	6.20	3.59	22.0	2.04	0.06	13	8.05	3999+	2000+
240.0	6.22	3.61	22.0	2.54	0.02	66	8.40	3999+	2000+
300.0	6.23	3.62	22.0	2.12	0.02	33	8.05	3999+	2000+
360.0	6.21	3.60	22.0	2.23	0.06	12	8.10	3999+	2000+
420.0	6.24	3.63	22.0	2.16	0.02	21	8.12	3999+	2000+
480.0	6.25	3.64	22.0	2.54	0.02	34	8.10	3999+	2000+
495.0	6.23	3.62	22.0						

Recovery			**% Recovery**
0 (2.95)	6.23	3.62	0.0
0.5	4.30	1.69	53.3
1.0	4.19	1.58	56.4
1.5	4.11	1.50	58.6
2.0	4.05	1.44	60.2
2.5	3.94	1.33	63.3
3.0	3.81	1.20	66.9
3.5	3.68	1.07	70.4
4.0	3.56	0.95	73.8
4.5	3.51	0.90	75.1
5.0	3.45	0.84	76.8
6.0	3.38	0.77	78.7
7.0	3.32	0.71	80.4
8.0	3.28	0.67	81.5
9.0	3.26	0.65	82.0
10.0	3.22	0.61	83.1
15.0	3.14	0.53	85.4
20.0	3.09	0.48	86.7
25.0	3.05	0.44	87.8
30.0	3.03	0.42	88.4
40.0	2.99	0.38	89.5
50.0	2.98	0.37	89.8
60.0	2.97	0.36	90.1
960.0	2.87	0.26	92.8
1440.0	2.93	0.32	91.2

[1] Time elapse from pump turning on or off.
BTC: Below Top of Casing

ATTACHMENT G

Aquifer Test – Theis Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario

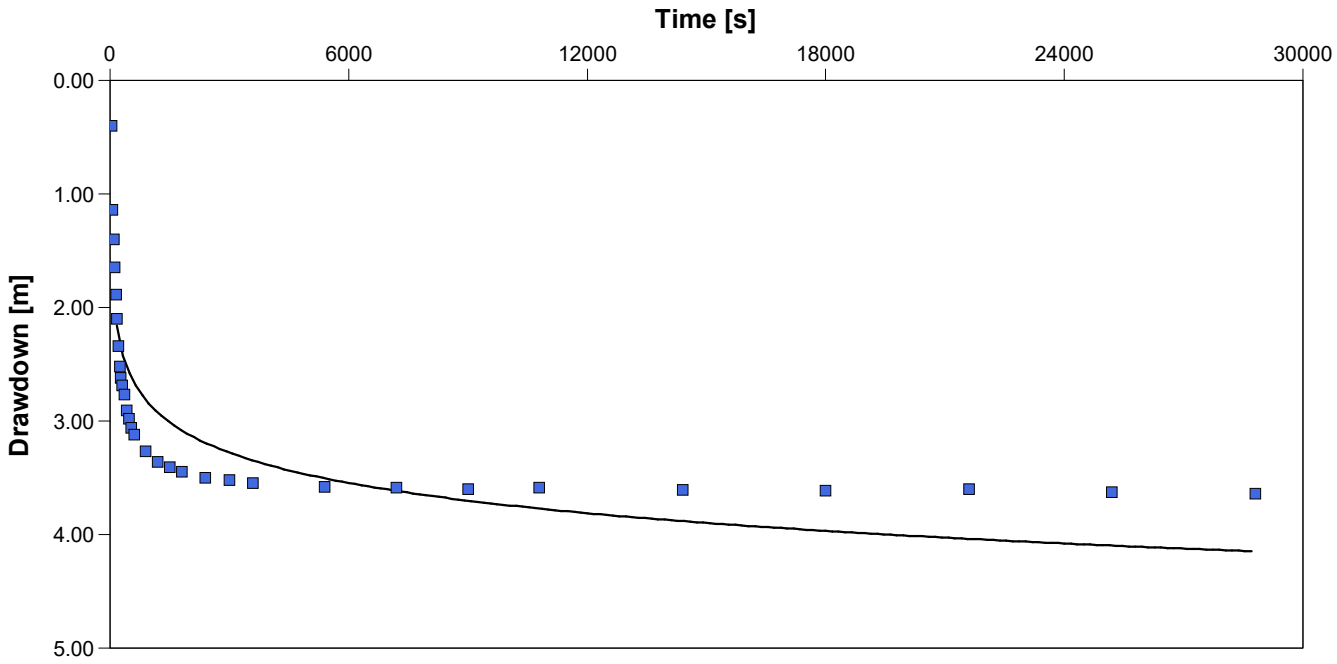
Pumping Test Analysis Report

Project: 363 Entrepreneur Cresent

Number: 220487

Client: Entrepreneur Holding

Location: 363 Entrepreneur Cresent	Pumping Test: Pumping Test 1	Pumping Well: Well 1
Test Conducted by: LRL Engineering		Test Date: 2023-08-30
Analysis Performed by: LRL Engineering	Draw Down - August 30 2023	Analysis Date: 2023-09-07
Aquifer Thickness:	Discharge Rate: 0.022 [m³/min]	



Calculation using Theis

Observation Well	Transmissivity [m²/s]	Storage coefficient	Radial Distance to PW [m]	
Well 1	7.59×10^{-5}	4.51×10^{-3}	0.15	

ATTACHMENT H

Laboratory Certificate of Analysis

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 220487
Custody: 18167

Report Date: 25-Apr-2023
Order Date: 17-Apr-2023

Order #: 2316079

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2316079-01	357 Entrepreneur-Pre
2316079-02	357 Entrepreneur-Post

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	18-Apr-23	18-Apr-23
Ammonia, as N	EPA 351.2 - Auto Colour	19-Apr-23	19-Apr-23
Anions	EPA 300.1 - IC	18-Apr-23	18-Apr-23
Colour	SM2120 - Spectrophotometric	18-Apr-23	18-Apr-23
Conductivity	EPA 9050A- probe @25 °C	18-Apr-23	18-Apr-23
Dissolved Organic Carbon	MOE 3247B - Combustion IR	20-Apr-23	20-Apr-23
E. coli	MOE E3407	18-Apr-23	18-Apr-23
Fecal Coliform	SM 9222D	18-Apr-23	18-Apr-23
Heterotrophic Plate Count	SM 9215C	18-Apr-23	18-Apr-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	18-Apr-23	18-Apr-23
pH	EPA 150.1 - pH probe @25 °C	18-Apr-23	18-Apr-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	19-Apr-23	19-Apr-23
Hardness	Hardness as CaCO3	18-Apr-23	18-Apr-23
Sulphide	SM 4500SE - Colourimetric	21-Apr-23	21-Apr-23
Tannin/Lignin	SM 5550B - Colourimetric	20-Apr-23	20-Apr-23
Total Coliform	MOE E3407	18-Apr-23	18-Apr-23
Total Dissolved Solids	SM 2540C - gravimetric, filtration	18-Apr-23	19-Apr-23
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	18-Apr-23	18-Apr-23
Turbidity	SM 2130B - Turbidity meter	19-Apr-23	19-Apr-23

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

	Client ID:	357 Entrepreneur-Pre	357 Entrepreneur-Post	-	-
	Sample Date:	17-Apr-23 11:15	17-Apr-23 11:35	-	-
	Sample ID:	2316079-01	2316079-02	-	-
	MDL/Units	Drinking Water	Drinking Water	-	-
Microbiological Parameters					
E. coli	1 CFU/100mL	ND	ND [1]	-	-
Fecal Coliforms	1 CFU/100mL	ND	ND	-	-
Total Coliforms	1 CFU/100mL	ND	ND [1]	-	-
Heterotrophic Plate Count	10 CFU/mL	<10	150	-	-
General Inorganics					
Alkalinity, total	5 mg/L	605	16	-	-
Ammonia as N	0.01 mg/L	3.28	0.46	-	-
Dissolved Organic Carbon	0.5 mg/L	7.8	<0.5	-	-
Colour	2 TCU	5	<2	-	-
Conductivity	5 uS/cm	13100	1050	-	-
Hardness	mg/L	1050	0.00	-	-
pH	0.1 pH Units	8.2	7.0	-	-
Phenolics	0.001 mg/L	<0.001	<0.001	-	-
Total Dissolved Solids	10 mg/L	7640	508	-	-
Sulphide	0.02 mg/L	0.24	<0.02	-	-
Tannin & Lignin	0.1 mg/L	0.7	<0.1	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	3.4	0.5	-	-
Turbidity	0.1 NTU	12.0	<0.1	-	-
Anions					
Chloride	1 mg/L	4350	302	-	-
Fluoride	0.1 mg/L	0.7	<0.1	-	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	-	-
Nitrite as N	0.05 mg/L	<0.50 [2]	<0.05	-	-
Sulphate	1 mg/L	13	<1	-	-
Metals					
Calcium	0.1 mg/L	97.8	<0.1	-	-
Iron	0.1 mg/L	1.3	<0.1	-	-
Magnesium	0.2 mg/L	196	<0.2	-	-
Manganese	0.005 mg/L	0.030	<0.005	-	-
Potassium	0.1 mg/L	91.4	1.9	-	-
Sodium	0.2 mg/L	2010	152	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Fluoride	ND	0.1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Colour	ND	2	TCU						
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Total Dissolved Solids	ND	10	mg/L						
Sulphide	ND	0.02	mg/L						
Tannin & Lignin	ND	0.1	mg/L						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Turbidity	ND	0.1	NTU						
Metals									
Calcium	ND	0.1	mg/L						
Iron	ND	0.1	mg/L						
Magnesium	ND	0.2	mg/L						
Manganese	ND	0.005	mg/L						
Potassium	ND	0.1	mg/L						
Sodium	ND	0.2	mg/L						
Microbiological Parameters									
E. coli	ND	1	CFU/100mL						
Fecal Coliforms	ND	1	CFU/100mL						
Total Coliforms	ND	1	CFU/100mL						
Heterotrophic Plate Count	ND	10	CFU/mL						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	157	1	mg/L	158			0.1	20	
Fluoride	ND	0.1	mg/L	ND			NC	20	
Nitrate as N	ND	0.1	mg/L	ND			NC	20	
Nitrite as N	ND	0.05	mg/L	ND			NC	20	
Sulphate	32.4	1	mg/L	32.6			0.7	20	
General Inorganics									
Alkalinity, total	15.2	5	mg/L	16.2			6.2	14	
Ammonia as N	0.150	0.01	mg/L	0.151			1.0	17.7	
Dissolved Organic Carbon	ND	0.5	mg/L	ND			NC	37	
Colour	5	2	TCU	5			0.0	12	
Conductivity	1000	5	uS/cm	1050			4.0	5	
pH	7.0	0.1	pH Units	7.0			0.6	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	7550	10	mg/L	7640			1.2	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	0.2	0.1	mg/L	0.2			4.5	11	
Total Kjeldahl Nitrogen	3.34	0.2	mg/L	3.42			2.2	16	
Turbidity	ND	0.1	NTU	12.0			NC	10	
Metals									
Calcium	110	0.1	mg/L	97.8			11.9	20	
Iron	1.5	0.1	mg/L	1.3			12.4	20	
Magnesium	219	0.2	mg/L	196			11.3	20	
Manganese	0.035	0.005	mg/L	0.030			13.8	20	
Potassium	102	0.1	mg/L	91.4			10.5	20	
Sodium	2140	0.2	mg/L	2010			6.3	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	ND			NC	30	
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Total Coliforms	ND	1	CFU/100mL	ND			NC	30	
Heterotrophic Plate Count	ND	10	CFU/mL	ND			NC	30	

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 25-Apr-2023

Order Date: 17-Apr-2023

Project Description: 220487

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	167	1	mg/L	158	90.3	70-124			
Fluoride	1.00	0.1	mg/L	ND	100	70-130			
Nitrate as N	1.09	0.1	mg/L	ND	109	77-126			
Nitrite as N	0.940	0.05	mg/L	ND	94.0	82-115			
Sulphate	41.5	1	mg/L	32.6	88.4	70-130			
General Inorganics									
Ammonia as N	1.21	0.01	mg/L	0.151	106	81-124			
Dissolved Organic Carbon	17.2	0.5	mg/L	7.8	93.5	60-133			
Phenolics	0.027	0.001	mg/L	ND	107	67-133			
Total Dissolved Solids	100	10	mg/L	ND	100	75-125			
Sulphide	0.48	0.02	mg/L	ND	96.0	79-115			
Tannin & Lignin	1.2	0.1	mg/L	0.2	92.9	71-113			
Total Kjeldahl Nitrogen	4.31	0.1	mg/L	3.42	88.9	81-126			
Metals									
Calcium	8370	0.1	mg/L	ND	83.7	80-120			
Magnesium	8180	0.2	mg/L	ND	81.8	80-120			
Manganese	42.2	0.005	mg/L	ND	84.3	80-120			
Potassium	10400	0.1	mg/L	1820	85.6	80-120			
Sodium	8460	0.2	mg/L	ND	84.6	80-120			

Qualifier Notes:

Sample Qualifiers :

1 : Confluent background colonies on filter: may interfere with target reactions and the analysts' ability to count E. coli & Total Coliform. The target colonies may be under-represented.

2 : Elevated reporting limit due to dilution required because of high target analyte concentration.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

PARACE LABORATORIES LT

Paracel ID: 2316079

Paracel Order Number	Chain Of Custody Ontario Drinking Water Samples № 18167

Client Name:	LRL	Project Ref:	220487	Waterworks Name:	Samples Taken By:
Contact Name:	Jessica Arthurs	Quote #:		Waterworks Number:	Name: Jessica Arthurs
Address:	5430 Canotek Rd. Ottawa, on K1J9G2	PO #:		Address: 357 Entrepreneur	Signature:
After Hours Contact:	Jessica Arthurs	E-mail:	jarthurs@lrl.ca	ottawa, ontario	Page 1 of 1
Telephone:	6138423434	Fax:		Public Health Unit:	Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day

Samples Submitted Under: (Indicate **ONLY one**)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☒ No ☐ N/A

Are these samples for human consumption?: ☒ Yes ☐ No

All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Sodium (see package)			
1	Pressure Tank	357 Entrepreneur - Pre	R	G	N	–	April 17/23	11:15	8	–	F					X			
2	Washroom Tap	357 Entrepreneur - Post	T	G	N	–	April 17/23	11:35	8	–	F					X			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jessica Arthurs	Date/Time:	Date/Time: Apr 17/23 1pm	Date/Time: Apr 17/23 1:19pm
Date/Time: April 17, 2023 12:58 pm	Temperature: °C	Temperature: 11.6 °C	pH Verified: ☐ By:

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Certificate of Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Eric Lavergne

Client PO:
Project: 220487
Custody: 18335

Report Date: 5-Sep-2023
Order Date: 31-Aug-2023

Order #: 2335315

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2335315-01	363 Entrepreneur Crescent Supply Well - 4 Hour
2335315-02	363 Entrepreneur Crescent Supply Well - 8 Hour

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	1-Sep-23	1-Sep-23
Ammonia, as N	EPA 351.2 - Auto Colour	1-Sep-23	1-Sep-23
Anions	EPA 300.1 - IC	31-Aug-23	31-Aug-23
Colour	SM2120 - Spectrophotometric	31-Aug-23	31-Aug-23
Conductivity	EPA 9050A- probe @25 °C	1-Sep-23	1-Sep-23
Dissolved Organic Carbon	MOE 3247B - Combustion IR	31-Aug-23	31-Aug-23
E. coli	MOE E3407	31-Aug-23	31-Aug-23
Fecal Coliform	SM 9222D	31-Aug-23	31-Aug-23
Heterotrophic Plate Count	SM 9215C	31-Aug-23	31-Aug-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	31-Aug-23	1-Sep-23
pH	EPA 150.1 - pH probe @25 °C	1-Sep-23	1-Sep-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	31-Aug-23	31-Aug-23
Hardness	Hardness as CaCO3	31-Aug-23	1-Sep-23
Sulphide	SM 4500SE - Colourimetric	1-Sep-23	1-Sep-23
Tannin/Lignin	SM 5550B - Colourimetric	31-Aug-23	1-Sep-23
Total Coliform	MOE E3407	31-Aug-23	31-Aug-23
Total Dissolved Solids	SM 2540C - gravimetric, filtration	31-Aug-23	1-Sep-23
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	1-Sep-23	1-Sep-23
Turbidity	SM 2130B - Turbidity meter	31-Aug-23	31-Aug-23
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	1-Sep-23	1-Sep-23

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Microbiological Parameters							
E. coli	1 CFU/100mL	ND [1]	1 [1]	-	-	-	-
Total Coliforms	1 CFU/100mL	2 [1]	1 [1]	-	-	-	-
Fecal Coliforms	1 CFU/100mL	ND	ND	-	-	-	-
Heterotrophic Plate Count	10 CFU/mL	90	70 [4]	-	-	-	-
General Inorganics							
Alkalinity, total	5 mg/L	703	705	-	-	-	-
Ammonia as N	0.01 mg/L	4.72	4.71	-	-	-	-
Dissolved Organic Carbon	0.5 mg/L	9.4	8.5	-	-	-	-
Colour	2 TCU	8	8	-	-	-	-
Conductivity	5 uS/cm	14300	14200	-	-	-	-
Hardness	mg/L	1020	1030	-	-	-	-
pH	0.1 pH Units	8.2	8.3	-	-	-	-
Phenolics	0.001 mg/L	<0.001	<0.001	-	-	-	-
Total Dissolved Solids	10 mg/L	7950	7880	-	-	-	-
Sulphide	0.02 mg/L	0.23	0.23	-	-	-	-
Tannin & Lignin	0.1 mg/L	0.7	0.7	-	-	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	4.7	4.7	-	-	-	-
Turbidity	0.1 NTU	3.8	3.5	-	-	-	-
Anions							
Chloride	1 mg/L	4560	4460	-	-	-	-
Fluoride	0.1 mg/L	0.2	0.2	-	-	-	-
Nitrate as N	0.1 mg/L	<0.1	<0.1	-	-	-	-
Nitrite as N	0.05 mg/L	<0.25 [2]	<0.25 [2]	-	-	-	-
Sulphate	1 mg/L	3	4	-	-	-	-

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Metals							
Aluminum	0.001 mg/L	0.025	0.018	-	-	-	-
Antimony	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Arsenic	0.001 mg/L	<0.001	<0.001	-	-	-	-
Barium	0.001 mg/L	4.17	4.22	-	-	-	-
Beryllium	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Boron	0.01 mg/L	0.79	0.76	-	-	-	-
Cadmium	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Calcium	0.1 mg/L	48.3	49.0	-	-	-	-
Chromium	0.001 mg/L	<0.001	<0.001	-	-	-	-
Cobalt	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Copper	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Iron	0.1 mg/L	0.3	0.3	-	-	-	-
Lead	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Magnesium	0.2 mg/L	218	220	-	-	-	-
Manganese	0.005 mg/L	0.009	0.007	-	-	-	-
Molybdenum	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Nickel	0.001 mg/L	<0.001	<0.001	-	-	-	-
Potassium	0.1 mg/L	61.3	63.3	-	-	-	-
Selenium	0.001 mg/L	<0.001	<0.001	-	-	-	-
Silver	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Sodium	0.2 mg/L	2670	2620	-	-	-	-
Strontium	0.01 mg/L	5.71	5.71	-	-	-	-
Thallium	0.001 mg/L	<0.001	<0.001	-	-	-	-

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Metals							
Tin	0.01 mg/L	<0.01	<0.01	-	-	-	-
Titanium	0.005 mg/L	<0.005	<0.005	-	-	-	-
Tungsten	0.01 mg/L	<0.01	<0.01	-	-	-	-
Uranium	0.0001 mg/L	<0.0001	<0.0001	-	-	-	-
Vanadium	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Zinc	0.005 mg/L	<0.005	<0.005	-	-	-	-
Volatiles							
Acetone	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Benzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromodichloromethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromoform	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Bromomethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Carbon Tetrachloride	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
Chlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Chloroethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Chloroform	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Dibromochloromethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Dichlorodifluoromethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
1,2-Dibromoethane	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
1,2-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,3-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,4-Dichlorobenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1-Dichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-

Certificate of Analysis

Report Date: 05-Sep-2023

Client: **LRL Associates Ltd.**

Order Date: 31-Aug-2023

Client PO:

Project Description: 220487

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-	-	-
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-		
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Volatiles							
1,2-Dichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
cis-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
trans-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,2-Dichloroethylene, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,2-Dichloropropane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
cis-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
trans-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,3-Dichloropropene, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Ethylbenzene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Hexane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Methyl Isobutyl Ketone	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Methyl tert-butyl ether	0.002 mg/L	<0.0020	<0.0020	-	-	-	-
Methylene Chloride	0.005 mg/L	<0.0050	<0.0050	-	-	-	-
Styrene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,1,2-Tetrachloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,2,2-Tetrachloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Tetrachloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Toluene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,1-Trichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
1,1,2-Trichloroethane	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Trichloroethylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-

	Client ID:	363 Entrepreneur Crescent Supply Well - 4 Hour	363 Entrepreneur Crescent Supply Well - 8 Hour	-	-		
	Sample Date:	30-Aug-23 12:05	30-Aug-23 16:15	-	-	-	-
	Sample ID:	2335315-01	2335315-02	-	-		
	Matrix:	Drinking Water	Drinking Water	-	-		
	MDL/Units						
Volatiles							
Trichlorofluoromethane	0.001 mg/L	<0.0010	<0.0010	-	-	-	-
Vinyl chloride	0.0002 mg/L	<0.0002	<0.0002	-	-	-	-
m,p-Xylenes	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
o-Xylene	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Xylenes, total	0.0005 mg/L	<0.0005	<0.0005	-	-	-	-
Toluene-d8	Surrogate	102%	103%	-	-	-	-
4-Bromofluorobenzene	Surrogate	100%	105%	-	-	-	-
Dibromofluoromethane	Surrogate	103%	92.7%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Chloride	ND	1	mg/L					
Fluoride	ND	0.1	mg/L					
Nitrate as N	ND	0.1	mg/L					
Nitrite as N	ND	0.05	mg/L					
Sulphate	ND	1	mg/L					
General Inorganics								
Alkalinity, total	ND	5	mg/L					
Ammonia as N	ND	0.01	mg/L					
Dissolved Organic Carbon	ND	0.5	mg/L					
Colour	ND	2	TCU					
Conductivity	ND	5	uS/cm					
Phenolics	ND	0.001	mg/L					
Total Dissolved Solids	ND	10	mg/L					
Sulphide	ND	0.02	mg/L					
Tannin & Lignin	ND	0.1	mg/L					
Total Kjeldahl Nitrogen	ND	0.1	mg/L					
Turbidity	ND	0.1	NTU					
Metals								
Aluminum	ND	0.001	mg/L					
Antimony	ND	0.0005	mg/L					
Arsenic	ND	0.001	mg/L					
Barium	ND	0.001	mg/L					
Beryllium	ND	0.0005	mg/L					
Boron	ND	0.01	mg/L					
Cadmium	ND	0.0001	mg/L					
Calcium	ND	0.1	mg/L					
Chromium	ND	0.001	mg/L					
Cobalt	ND	0.0005	mg/L					
Copper	ND	0.0005	mg/L					
Iron	ND	0.1	mg/L					
Lead	ND	0.0001	mg/L					
Magnesium	ND	0.2	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Manganese	ND	0.005	mg/L					
Molybdenum	ND	0.0005	mg/L					
Nickel	ND	0.001	mg/L					
Potassium	ND	0.1	mg/L					
Selenium	ND	0.001	mg/L					
Silver	ND	0.0001	mg/L					
Sodium	ND	0.2	mg/L					
Strontium	ND	0.01	mg/L					
Thallium	ND	0.001	mg/L					
Tin	ND	0.01	mg/L					
Titanium	ND	0.005	mg/L					
Tungsten	ND	0.01	mg/L					
Uranium	ND	0.0001	mg/L					
Vanadium	ND	0.0005	mg/L					
Zinc	ND	0.005	mg/L					
Microbiological Parameters								
E. coli	ND	1	CFU/100mL					
Total Coliforms	ND	1	CFU/100mL					
Fecal Coliforms	ND	1	CFU/100mL					
Heterotrophic Plate Count	ND	10	CFU/mL					
Volatiles								
Acetone	ND	0.0050	mg/L					
Benzene	ND	0.0005	mg/L					
Bromodichloromethane	ND	0.0005	mg/L					
Bromoform	ND	0.0005	mg/L					
Bromomethane	ND	0.0005	mg/L					
Carbon Tetrachloride	ND	0.0002	mg/L					
Chlorobenzene	ND	0.0005	mg/L					
Chloroethane	ND	0.0010	mg/L					
Chloroform	ND	0.0005	mg/L					
Dibromochloromethane	ND	0.0005	mg/L					
Dichlorodifluoromethane	ND	0.0010	mg/L					
1,2-Dibromoethane	ND	0.0002	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2-Dichlorobenzene	ND	0.0005	mg/L					
1,3-Dichlorobenzene	ND	0.0005	mg/L					
1,4-Dichlorobenzene	ND	0.0005	mg/L					
1,1-Dichloroethane	ND	0.0005	mg/L					
1,2-Dichloroethane	ND	0.0005	mg/L					
1,1-Dichloroethylene	ND	0.0005	mg/L					
cis-1,2-Dichloroethylene	ND	0.0005	mg/L					
trans-1,2-Dichloroethylene	ND	0.0005	mg/L					
1,2-Dichloroethylene, total	ND	0.0005	mg/L					
1,2-Dichloropropane	ND	0.0005	mg/L					
cis-1,3-Dichloropropylene	ND	0.0005	mg/L					
trans-1,3-Dichloropropylene	ND	0.0005	mg/L					
1,3-Dichloropropene, total	ND	0.0005	mg/L					
Ethylbenzene	ND	0.0005	mg/L					
Hexane	ND	0.0010	mg/L					
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L					
Methyl Isobutyl Ketone	ND	0.0050	mg/L					
Methyl tert-butyl ether	ND	0.0020	mg/L					
Methylene Chloride	ND	0.0050	mg/L					
Styrene	ND	0.0005	mg/L					
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L					
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L					
Tetrachloroethylene	ND	0.0005	mg/L					
Toluene	ND	0.0005	mg/L					
1,1,1-Trichloroethane	ND	0.0005	mg/L					
1,1,2-Trichloroethane	ND	0.0005	mg/L					
Trichloroethylene	ND	0.0005	mg/L					
Trichlorofluoromethane	ND	0.0010	mg/L					
Vinyl chloride	ND	0.0002	mg/L					
m,p-Xylenes	ND	0.0005	mg/L					
o-Xylene	ND	0.0005	mg/L					
Xylenes, total	ND	0.0005	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	*0.0808*		*%*	*101*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0781*		*%*	*97.6*	*50-140*			
Surrogate: Toluene-d8	*0.0793*		*%*	*99.1*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	4460	20	mg/L	4460			0.0	20	
Fluoride	0.20	0.1	mg/L	0.19			3.0	20	
Nitrate as N	ND	0.1	mg/L	ND			NC	20	
Nitrite as N	ND	0.25	mg/L	ND			NC	20	GEN07
Sulphate	4.24	1	mg/L	4.47			5.4	20	
General Inorganics									
Alkalinity, total	698	5	mg/L	703			0.7	14	
Ammonia as N	4.66	0.04	mg/L	4.71			0.9	18	
Dissolved Organic Carbon	8.4	0.5	mg/L	9.4			11.2	37	
Colour	4	2	TCU	4			0.0	12	
Conductivity	14000	5	uS/cm	14300			1.7	5	
pH	8.2	0.1	pH Units	8.2			0.1	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	92.0	10	mg/L	84.0			9.1	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	0.7	0.1	mg/L	0.7			1.4	11	
Total Kjeldahl Nitrogen	4.82	0.2	mg/L	4.70			2.6	16	
Turbidity	ND	0.1	NTU	ND			NC	10	
Metals									
Aluminum	0.022	0.001	mg/L	0.025			15.3	20	
Antimony	ND	0.0005	mg/L	ND			NC	20	
Arsenic	ND	0.001	mg/L	ND			NC	20	
Barium	4.52	0.010	mg/L	4.17			7.9	20	
Beryllium	ND	0.0005	mg/L	ND			NC	20	
Boron	0.82	0.01	mg/L	0.79			2.8	20	
Cadmium	ND	0.0001	mg/L	ND			NC	20	
Calcium	45.8	0.1	mg/L	48.3			5.4	20	
Chromium	ND	0.001	mg/L	ND			NC	20	
Cobalt	ND	0.0005	mg/L	ND			NC	20	
Copper	ND	0.0005	mg/L	ND			NC	20	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Iron	0.3	0.1	mg/L	0.3			12.2	20	
Lead	0.0001	0.0001	mg/L	ND			NC	20	
Magnesium	203	0.2	mg/L	218			7.1	20	
Manganese	0.008	0.005	mg/L	0.009			11.6	20	
Molybdenum	ND	0.0005	mg/L	ND			NC	20	
Nickel	ND	0.001	mg/L	ND			NC	20	
Potassium	59.1	0.1	mg/L	61.3			3.7	20	
Selenium	ND	0.001	mg/L	ND			NC	20	
Silver	0.0002	0.0001	mg/L	ND			NC	20	
Sodium	2650	2.0	mg/L	2670			1.0	20	
Thallium	ND	0.001	mg/L	ND			NC	20	
Tin	ND	0.01	mg/L	ND			NC	20	
Titanium	ND	0.005	mg/L	ND			NC	50	
Tungsten	ND	0.01	mg/L	ND			NC	20	
Uranium	ND	0.0001	mg/L	ND			NC	20	
Vanadium	ND	0.0005	mg/L	ND			NC	20	
Zinc	ND	0.005	mg/L	ND			NC	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	1			NC	30	BAC01
Total Coliforms	ND	1	CFU/100mL	1			NC	30	BAC01
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Heterotrophic Plate Count	60	10	CFU/mL	70			15.0	30	
Volatiles									
Acetone	ND	0.0050	mg/L	ND			NC	30	
Benzene	ND	0.0005	mg/L	ND			NC	30	
Bromodichloromethane	ND	0.0005	mg/L	ND			NC	30	
Bromoform	ND	0.0005	mg/L	ND			NC	30	
Bromomethane	ND	0.0005	mg/L	ND			NC	30	
Carbon Tetrachloride	ND	0.0002	mg/L	ND			NC	30	
Chlorobenzene	ND	0.0005	mg/L	ND			NC	30	
Chloroethane	ND	0.0010	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloroform	ND	0.0005	mg/L	ND			NC	30	
Dibromochloromethane	ND	0.0005	mg/L	ND			NC	30	
Dichlorodifluoromethane	ND	0.0010	mg/L	ND			NC	30	
1,2-Dibromoethane	ND	0.0002	mg/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloropropane	ND	0.0005	mg/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
Ethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Hexane	ND	0.0010	mg/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	0.0050	mg/L	ND			NC	30	
Methyl tert-butyl ether	ND	0.0020	mg/L	ND			NC	30	
Methylene Chloride	ND	0.0050	mg/L	ND			NC	30	
Styrene	ND	0.0005	mg/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
Tetrachloroethylene	ND	0.0005	mg/L	ND			NC	30	
Toluene	ND	0.0005	mg/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
Trichloroethylene	ND	0.0005	mg/L	ND			NC	30	
Trichlorofluoromethane	ND	0.0010	mg/L	ND			NC	30	
Vinyl chloride	ND	0.0002	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	ND	0.0005	mg/L	ND			NC	30	
o-Xylene	ND	0.0005	mg/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*0.0886*		*%*		*111*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0765*		*%*		*95.7*	*50-140*			
Surrogate: Toluene-d8	*0.0798*		*%*		*99.8*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.86	1	mg/L	ND	98.6	78-114			
Fluoride	1.17	0.1	mg/L	0.19	97.8	70-130			
Nitrate as N	1.00	0.1	mg/L	ND	99.6	77-126			
Nitrite as N	1.08	0.05	mg/L	ND	108	82-110			
Sulphate	14.8	1	mg/L	4.47	103	70-130			
General Inorganics									
Ammonia as N	1.02	0.01	mg/L	ND	102	81-124			
Dissolved Organic Carbon	12.8	0.5	mg/L	3.1	97.1	60-133			
Phenolics	0.026	0.001	mg/L	ND	103	67-133			
Total Dissolved Solids	96.0	10	mg/L	ND	96.0	75-125			
Sulphide	0.50	0.02	mg/L	ND	100	79-115			
Tannin & Lignin	1.8	0.1	mg/L	0.7	110	71-113			
Total Kjeldahl Nitrogen	0.99	0.1	mg/L	ND	98.7	81-126			
Metals									
Aluminum	82.2	0.001	mg/L	25.1	114	80-120			
Arsenic	49.1	0.001	mg/L	0.246	97.8	80-120			
Barium	48.6	0.001	mg/L	ND	97.3	80-120			
Beryllium	37.3	0.0005	mg/L	0.0182	74.5	80-120			QM-07
Boron	50.0	0.01	mg/L	ND	100	80-120			
Cadmium	50.6	0.0001	mg/L	ND	101	80-120			
Calcium	10600	0.1	mg/L	ND	106	80-120			
Chromium	50.5	0.001	mg/L	0.330	100	80-120			
Cobalt	49.6	0.0005	mg/L	0.287	98.7	80-120			
Copper	44.3	0.0005	mg/L	0.0834	88.5	80-120			
Iron	2510	0.1	mg/L	344	86.5	80-120			
Lead	40.8	0.0001	mg/L	0.0346	81.6	80-120			
Magnesium	10200	0.2	mg/L	ND	102	80-120			
Manganese	55.0	0.005	mg/L	9.04	92.0	80-120			
Molybdenum	53.7	0.0005	mg/L	0.137	107	80-120			
Nickel	46.5	0.001	mg/L	0.196	92.6	80-120			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Potassium	69700	0.1	mg/L	61300	83.6	80-120			
Selenium	48.9	0.001	mg/L	ND	97.8	80-120			
Silver	51.0	0.0001	mg/L	ND	102	80-120			
Sodium	10100	0.2	mg/L	ND	101	80-120			
Thallium	45.7	0.001	mg/L	0.014	91.4	80-120			
Tin	39.5	0.01	mg/L	0.05	78.8	80-120			QM-07
Titanium	57.8	0.005	mg/L	ND	116	70-130			
Tungsten	55.5	0.01	mg/L	0.17	111	80-120			
Uranium	51.3	0.0001	mg/L	0.0266	103	80-120			
Vanadium	51.7	0.0005	mg/L	0.221	103	80-120			
Zinc	35.2	0.005	mg/L	2.19	66.0	80-120			QM-07
Volatiles									
Acetone	0.0934	0.0050	mg/L	ND	93.4	50-140			
Benzene	0.0447	0.0005	mg/L	ND	112	60-130			
Bromodichloromethane	0.0478	0.0005	mg/L	ND	120	60-130			
Bromoform	0.0338	0.0005	mg/L	ND	84.5	60-130			
Bromomethane	0.0422	0.0005	mg/L	ND	105	50-140			
Carbon Tetrachloride	0.0417	0.0002	mg/L	ND	104	60-130			
Chlorobenzene	0.0377	0.0005	mg/L	ND	94.3	60-130			
Chloroethane	0.0504	0.0010	mg/L	ND	126	50-140			
Chloroform	0.0410	0.0005	mg/L	ND	102	60-130			
Dibromochloromethane	0.0421	0.0005	mg/L	ND	105	60-130			
Dichlorodifluoromethane	0.0446	0.0010	mg/L	ND	112	50-140			
1,2-Dibromoethane	0.0442	0.0002	mg/L	ND	110	60-130			
1,2-Dichlorobenzene	0.0395	0.0005	mg/L	ND	98.7	60-130			
1,3-Dichlorobenzene	0.0419	0.0005	mg/L	ND	105	60-130			
1,4-Dichlorobenzene	0.0396	0.0005	mg/L	ND	99.0	60-130			
1,1-Dichloroethane	0.0473	0.0005	mg/L	ND	118	60-130			
1,2-Dichloroethane	0.0407	0.0005	mg/L	ND	102	60-130			
1,1-Dichloroethylene	0.0451	0.0005	mg/L	ND	113	60-130			
cis-1,2-Dichloroethylene	0.0502	0.0005	mg/L	ND	125	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,2-Dichloroethylene	0.0486	0.0005	mg/L	ND	122	60-130			
1,2-Dichloropropane	0.0460	0.0005	mg/L	ND	115	60-130			
cis-1,3-Dichloropropylene	0.0453	0.0005	mg/L	ND	113	60-130			
trans-1,3-Dichloropropylene	0.0446	0.0005	mg/L	ND	111	60-130			
Ethylbenzene	0.0371	0.0005	mg/L	ND	92.8	60-130			
Hexane	0.0490	0.0010	mg/L	ND	122	60-130			
Methyl Ethyl Ketone (2-Butanone)	0.0958	0.0050	mg/L	ND	95.8	50-140			
Methyl Isobutyl Ketone	0.0931	0.0050	mg/L	ND	93.1	50-140			
Methyl tert-butyl ether	0.127	0.0020	mg/L	ND	127	50-140			
Methylene Chloride	0.0406	0.0050	mg/L	ND	101	60-130			
Styrene	0.0440	0.0005	mg/L	ND	110	60-130			
1,1,1,2-Tetrachloroethane	0.0432	0.0005	mg/L	ND	108	60-130			
1,1,2,2-Tetrachloroethane	0.0454	0.0005	mg/L	ND	114	60-130			
Tetrachloroethylene	0.0404	0.0005	mg/L	ND	101	60-130			
Toluene	0.0374	0.0005	mg/L	ND	93.6	60-130			
1,1,1-Trichloroethane	0.0418	0.0005	mg/L	ND	105	60-130			
1,1,2-Trichloroethane	0.0430	0.0005	mg/L	ND	107	60-130			
Trichloroethylene	0.0496	0.0005	mg/L	ND	124	60-130			
Trichlorofluoromethane	0.0445	0.0010	mg/L	ND	111	60-130			
Vinyl chloride	0.0476	0.0002	mg/L	ND	119	50-140			
m,p-Xylenes	0.0744	0.0005	mg/L	ND	93.0	60-130			
o-Xylene	0.0359	0.0005	mg/L	ND	89.8	60-130			
Surrogate: 4-Bromofluorobenzene	*0.0701*		*%*		*87.6*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0841*		*%*		*105*	*50-140*			
Surrogate: Toluene-d8	*0.0729*		*%*		*91.2*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container(s) - Labeled improperly/insufficient information - 1x VOC vial received unlabelled.

Applies to Samples: 363 Entrepreneur Crescent Supply Well - 8 Hour

Sample Qualifiers :

1: Greater than 200 CFU of background colonies present. This may interfere with target growth and ability of the analyst to count E. coli & Total Coliform. The target colonies may be under-represented.

2: Elevated reporting limit due to dilution required because of high target analyte concentration.

4: This isolate was present as a spreading colony, potentially caused as a consequence of condensation within the strip/plate. Typically, this type of colony is a result of a few colonies or less. The proportions may differ and other isolates may be masked.

QC Qualifiers:

BAC01 Greater than 200 CFU of background colonies present. This may interfere with target growth and ability of the analyst to count E. coli & Total Coliform. The target colonies may be under-represented.

GEN07 Elevated reporting limit due to dilution required because of high target analyte concentration.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

PARACE LABORATORIES L

Paracel ID: 2335315

Paracel Order Number	Chain Of Custody
2335315	Ontario Drinking Water Samples № 18335

Client Name:	LRL Associates Ltd.	Project Ref:	220487	Waterworks Name:	Samples Taken By:
Contact Name:	Eric Lavergne	Quote #:		Waterworks Number:	Name: Eric Lavergne
Address:	5430 Canotek Rd	PO #:		Address:	Signature:
After Hours Contact:		E-mail:	elavergne@lrlca		Page ___ of ___
Telephone:	613 842 3434	Fax:		Public Health Unit:	Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day

Samples Submitted Under: (Indicate ONLY one)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☒ No ☐ N/A
Are these samples for human consumption?: ☐ Yes ☒ No
All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Sodium, Nitrate/Nitrite	VOC	Trace Metals
1	363 Entrepreneur crescent	363 Entrepreneur crescent Supply Well - 4 Hour	R	G			Aug 30/2023	12:15 pm	12							X	X	X
2																		
3	363 Entrepreneur crescent	363 Entrepreneur Crescent Supply Well - 8 Hour	R	G				4:15 PM	12							X	X	X
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Walk In

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: KB 904	Verified By: SD
Relinquished By (Print): Eric Lavergne	Date/Time:	Date/Time: Aug 31/23	Date/Time: Aug 31, 2023 9:31 am
Date/Time:	Temperature: °C	Temperature: 16.1 °C	pH Verified: ☑ By: SD

SCHEDULE C

July 26, 2024

Shelley Kilby
Coordinator, Water Well Management Program Environmental Monitoring and Reporting Branch
Ministry of the Environment, Conservation and Parks 125 Resources Rd
Toronto, ON M9P 3V6

ATTENTION: Ms. Shelley Kilby, Coordinator, Water Well Management Program

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Re: **363 ENTREPRENEUR CRESCENT, OTTAWA, ONTARIO, REQUEST FOR DIRECTOR APPROVAL**

Ms. Kilby,

Further to a discussion with our Project Manager, Jessica Arthurs, we have been advised that the operation of the well (A379014) located on our site at 363 Entrepreneur Crescent, Ottawa, Ontario will require Director Approval for it to be used in our operation. Additionally, for Director Approval to be considered, the following requirements are to be followed, they are:

1. Ensure that the well is properly vented to the outside atmosphere in a manner that will safely disperse all gases, as per section 15.1 of Regulation 903;

2. The services of a water treatment specialist shall be retained and we shall install, operate and maintain a water treatment system in the distribution system, in accordance with recommendations of the water treatment specialist, to address the total dissolved solids and chloride present in the well water prior to the water being used in the building;

3. The water treatment system shall be properly maintained and operational at all times in accordance with the recommendations of the water treatment specialist;

4. All faucets within the building shall be labelled to indicate that the water is not intended for human consumption;

5. The well water shall not be used as a drinking water source under any circumstances by any person and botted water shall be supplied for consumption by employees;

6. Due to elevated chloride, steps shall be taken to mitigate the impact of corrosion on plumbing including: use of approved PEX pipe and fittings, installation of stainless steel fixtures, and not installing water treatment systems that may increase corrosivity of the water; and

7. The well identified by well record number A379014 shall be maintained as per Reg. 903 until such time as the water supply is no longer required. At that point, the water supply well shall be decommissioned in accordance with Reg. 903.

Once the water treatment system becomes operational, we shall immediately notify, in writing, the Director appointed for the purposes of subsection 21 (10) of the Wells Regulation of the date when the water treatment system is operational.
To notify the Director, we will send an email correspondence to the wellshelpdesk@ontario.ca.

We find these requirements acceptable and would politely request that the Ministry of Environment, Conservation and Parks consider our application for Director Approval for this site.

Please advise at your earliest convenience.

Title: Owner

Signature: 

Date: July 30th, 2024

ATTACHMENT J

Moisture Surplus Values (Ottawa)

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 50 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 30 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	27	83	50	299
28- 2	-8.8	57	12	18	1	1	0	29	110	50	356
31- 3	-2.7	66	32	80	5	5	0	107	64	50	422
30- 4	5.9	72	67	69	32	32	0	104	0	50	494
31- 5	13.0	74	74	0	80	79	-1	13	0	32	568
30- 6	18.3	82	82	0	116	97	-19	4	0	14	651
31- 7	20.8	89	89	0	135	94	-41	3	0	5	740
31- 8	19.5	87	87	0	117	83	-34	1	0	9	827
30- 9	14.6	84	84	0	75	66	-9	7	0	20	912
31-10	8.1	77	76	0	36	35	-1	24	0	37	77
30-11	1.3	80	63	8	10	10	0	50	9	49	157
31-12	-7.0	78	26	15	1	1	0	38	47	50	236
AVE	5.9 TTL	911	705	205	608	503	-105	407			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	0	55
28- 2	2.6	29	15	27	1	1	0	37	59	0	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	11	5	21	0	19	85
30- 6	1.2	38	38	0	9	26	26	17	0	19	93
31- 7	1.2	42	42	0	8	30	31	12	0	14	93
31- 8	1.3	39	39	0	8	30	32	5	0	16	107
30- 9	1.5	38	38	0	8	14	13	20	0	21	110
31-10	1.4	37	37	2	7	7	3	27	0	19	37
30-11	1.7	27	28	9	4	4	0	30	13	6	45
31-12	3.0	30	22	14	1	1	0	29	34	0	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 75 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 45 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	27	83	75	299
28- 2	-8.8	57	12	18	1	1	0	29	110	75	356
31- 3	-2.7	66	32	80	5	5	0	107	64	75	422
30- 4	5.9	72	67	69	32	32	0	104	0	75	494
31- 5	13.0	74	74	0	80	80	0	13	0	56	568
30- 6	18.3	82	82	0	116	107	-10	4	0	28	651
31- 7	20.8	89	89	0	135	104	-32	2	0	10	740
31- 8	19.5	87	87	0	117	85	-32	1	0	12	827
30- 9	14.6	84	84	0	75	66	-9	4	0	26	912
31-10	8.1	77	76	0	36	35	-1	15	0	52	77
30-11	1.3	80	63	8	10	10	0	42	9	71	157
31-12	-7.0	78	26	15	1	1	0	36	47	75	236
AVE	5.9 TTL	911	705	205	608	526	-84	384			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	0	55
28- 2	2.6	29	15	27	1	1	0	37	59	0	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	19	19	17	0	28	93
31- 7	1.2	42	42	0	8	28	30	11	0	22	93
31- 8	1.3	39	39	0	8	29	31	5	0	23	107
30- 9	1.5	38	38	0	8	14	14	17	0	29	110
31-10	1.4	37	37	2	7	7	2	23	0	28	37
30-11	1.7	27	28	9	4	4	0	33	13	11	45
31-12	3.0	30	22	14	1	1	0	30	34	3	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...100 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 60 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	25	83	99	299
28- 2	-8.8	57	12	18	1	1	0	28	110	99	356
31- 3	-2.7	66	32	80	5	5	0	106	64	100	422
30- 4	5.9	72	67	69	32	32	0	104	0	100	494
31- 5	13.0	74	74	0	80	80	0	13	0	81	568
30- 6	18.3	82	82	0	116	112	-4	4	0	47	651
31- 7	20.8	89	89	0	135	115	-21	2	0	19	740
31- 8	19.5	87	87	0	117	88	-29	1	0	18	827
30- 9	14.6	84	84	0	75	66	-8	3	0	32	912
31-10	8.1	77	76	0	36	35	-1	10	0	63	77
30-11	1.3	80	63	8	10	10	0	34	9	91	157
31-12	-7.0	78	26	15	1	1	0	33	47	97	236
AVE	5.9 TTL	911	705	205	608	545	-63	363			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	5	55
28- 2	2.6	29	15	27	1	1	0	37	59	3	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	12	11	17	0	34	93
31- 7	1.2	42	42	0	8	25	26	11	0	30	93
31- 8	1.3	39	39	0	8	29	30	5	0	30	107
30- 9	1.5	38	38	0	8	14	13	15	0	35	110
31-10	1.4	37	37	2	7	6	2	21	0	36	37
30-11	1.7	27	28	9	4	4	0	34	13	19	45
31-12	3.0	30	22	14	1	1	0	30	34	8	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...125 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 75 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	24	83	122	299
28- 2	-8.8	57	12	18	1	1	0	28	110	123	356
31- 3	-2.7	66	32	80	5	5	0	105	64	125	422
30- 4	5.9	72	67	69	32	32	0	104	0	125	494
31- 5	13.0	74	74	0	80	80	0	13	0	106	568
30- 6	18.3	82	82	0	116	115	-1	4	0	69	651
31- 7	20.8	89	89	0	135	122	-13	2	0	33	740
31- 8	19.5	87	87	0	117	92	-25	1	0	28	827
30- 9	14.6	84	84	0	75	67	-7	3	0	41	912
31-10	8.1	77	76	0	36	35	-1	9	0	74	77
30-11	1.3	80	63	8	10	10	0	27	9	108	157
31-12	-7.0	78	26	15	1	1	0	29	47	119	236
AVE	5.9 TTL	911	705	205	608	560	-47	349			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	10	55
28- 2	2.6	29	15	27	1	1	0	37	59	8	59
31- 3	2.3	28	22	47	4	4	0	54	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	4	17	0	39	93
31- 7	1.2	42	42	0	8	21	23	11	0	37	93
31- 8	1.3	39	39	0	8	26	28	5	0	38	107
30- 9	1.5	38	38	0	8	13	11	14	0	42	110
31-10	1.4	37	37	2	7	6	2	20	0	42	37
30-11	1.7	27	28	9	4	4	0	32	13	25	45
31-12	3.0	30	22	14	1	1	0	30	34	14	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...150 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 90 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	23	83	144	299
28- 2	-8.8	57	12	18	1	1	0	26	110	146	356
31- 3	-2.7	66	32	80	5	5	0	103	64	150	422
30- 4	5.9	72	67	69	32	32	0	104	0	150	494
31- 5	13.0	74	74	0	80	80	0	13	0	131	568
30- 6	18.3	82	82	0	116	116	0	4	0	93	651
31- 7	20.8	89	89	0	135	127	-8	2	0	52	740
31- 8	19.5	87	87	0	117	97	-19	1	0	41	827
30- 9	14.6	84	84	0	75	68	-6	3	0	54	912
31-10	8.1	77	76	0	36	36	-1	8	0	88	77
30-11	1.3	80	63	8	10	10	0	23	9	126	157
31-12	-7.0	78	26	15	1	1	0	26	47	140	236
AVE	5.9 TTL	911	705	205	608	573	-34	336			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	15	55
28- 2	2.6	29	15	27	1	1	0	37	59	12	59
31- 3	2.3	28	22	47	4	4	0	54	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	8	1	17	0	41	93
31- 7	1.2	42	42	0	8	18	18	11	0	42	93
31- 8	1.3	39	39	0	8	22	23	5	0	44	107
30- 9	1.5	38	38	0	8	12	10	14	0	49	110
31-10	1.4	37	37	2	7	6	2	19	0	47	37
30-11	1.7	27	28	9	4	4	0	30	13	31	45
31-12	3.0	30	22	14	1	1	0	29	34	20	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...200 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....120 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	21	83	187	299
28- 2	-8.8	57	12	18	1	1	0	24	110	191	356
31- 3	-2.7	66	32	80	5	5	0	99	64	199	422
30- 4	5.9	72	67	69	32	32	0	103	0	200	494
31- 5	13.0	74	74	0	80	80	0	13	0	181	568
30- 6	18.3	82	82	0	116	116	0	4	0	143	651
31- 7	20.8	89	89	0	135	132	-3	2	0	97	740
31- 8	19.5	87	87	0	117	106	-11	1	0	78	827
30- 9	14.6	84	84	0	75	70	-4	3	0	89	912
31-10	8.1	77	76	0	36	36	0	7	0	123	77
30-11	1.3	80	63	8	10	10	0	19	9	164	157
31-12	-7.0	78	26	15	1	1	0	22	47	182	236
AVE	5.9 TTL	911	705	205	608	589	-18	318			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	24	55
28- 2	2.6	29	15	27	1	1	0	36	59	20	59
31- 3	2.3	28	22	47	4	4	0	55	83	4	65
30- 4	1.7	31	31	84	8	8	0	83	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	11	10	11	0	48	93
31- 8	1.3	39	39	0	8	16	16	5	0	54	107
30- 9	1.5	38	38	0	8	10	8	14	0	59	110
31-10	1.4	37	37	2	7	6	1	19	0	55	37
30-11	1.7	27	28	9	4	4	0	29	13	41	45
31-12	3.0	30	22	14	1	1	0	28	34	29	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...225 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....135 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	21	83	209	299
28- 2	-8.8	57	12	18	1	1	0	24	110	214	356
31- 3	-2.7	66	32	80	5	5	0	97	64	224	422
30- 4	5.9	72	67	69	32	32	0	103	0	225	494
31- 5	13.0	74	74	0	80	80	0	13	0	206	568
30- 6	18.3	82	82	0	116	116	0	4	0	168	651
31- 7	20.8	89	89	0	135	133	-2	2	0	121	740
31- 8	19.5	87	87	0	117	109	-8	1	0	99	827
30- 9	14.6	84	84	0	75	71	-4	3	0	109	912
31-10	8.1	77	76	0	36	36	0	7	0	143	77
30-11	1.3	80	63	8	10	10	0	18	9	185	157
31-12	-7.0	78	26	15	1	1	0	21	47	204	236
AVE	5.9 TTL	911	705	205	608	594	-14	314			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	28	55
28- 2	2.6	29	15	27	1	1	0	36	59	24	59
31- 3	2.3	28	22	47	4	4	0	56	83	7	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	10	7	11	0	49	93
31- 8	1.3	39	39	0	8	14	13	5	0	58	107
30- 9	1.5	38	38	0	8	10	7	14	0	63	110
31-10	1.4	37	37	2	7	6	1	19	0	58	37
30-11	1.7	27	28	9	4	4	0	29	13	44	45
31-12	3.0	30	22	14	1	1	0	28	34	33	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...250 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....150 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	20	83	232	299
28- 2	-8.8	57	12	18	1	1	0	23	110	238	356
31- 3	-2.7	66	32	80	5	5	0	96	64	248	422
30- 4	5.9	72	67	69	32	32	0	102	0	250	494
31- 5	13.0	74	74	0	80	80	0	13	0	231	568
30- 6	18.3	82	82	0	116	116	0	4	0	193	651
31- 7	20.8	89	89	0	135	134	-1	2	0	145	740
31- 8	19.5	87	87	0	117	111	-6	1	0	121	827
30- 9	14.6	84	84	0	75	72	-3	3	0	130	912
31-10	8.1	77	76	0	36	36	0	7	0	164	77
30-11	1.3	80	63	8	10	10	0	18	9	207	157
31-12	-7.0	78	26	15	1	1	0	20	47	226	236
AVE	5.9 TTL	911	705	205	608	598	-10	309			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	32	55
28- 2	2.6	29	15	27	1	1	0	36	59	27	59
31- 3	2.3	28	22	47	4	4	0	56	83	9	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	9	5	11	0	50	93
31- 8	1.3	39	39	0	8	12	11	5	0	61	107
30- 9	1.5	38	38	0	8	9	6	14	0	66	110
31-10	1.4	37	37	2	7	7	1	19	0	61	37
30-11	1.7	27	28	9	4	4	0	29	13	47	45
31-12	3.0	30	22	14	1	1	0	28	34	36	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...265 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....159 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	20	83	246	299
28- 2	-8.8	57	12	18	1	1	0	23	110	252	356
31- 3	-2.7	66	32	80	5	5	0	96	64	263	422
30- 4	5.9	72	67	69	32	32	0	102	0	265	494
31- 5	13.0	74	74	0	80	80	0	13	0	246	568
30- 6	18.3	82	82	0	116	116	0	4	0	208	651
31- 7	20.8	89	89	0	135	134	-1	2	0	160	740
31- 8	19.5	87	87	0	117	112	-5	1	0	135	827
30- 9	14.6	84	84	0	75	72	-3	3	0	144	912
31-10	8.1	77	76	0	36	36	0	7	0	177	77
30-11	1.3	80	63	8	10	10	0	18	9	221	157
31-12	-7.0	78	26	15	1	1	0	20	47	240	236
AVE	5.9 TTL	911	705	205	608	599	-9	309			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	34	55
28- 2	2.6	29	15	27	1	1	0	36	59	29	59
31- 3	2.3	28	22	47	4	4	0	56	83	10	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	4	11	0	51	93
31- 8	1.3	39	39	0	8	11	10	5	0	62	107
30- 9	1.5	38	38	0	8	9	5	14	0	68	110
31-10	1.4	37	37	2	7	7	1	19	0	62	37
30-11	1.7	27	28	9	4	4	0	29	13	49	45
31-12	3.0	30	22	14	1	1	0	28	34	38	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...275 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....165 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	255	299
28- 2	-8.8	57	12	18	1	1	0	23	110	261	356
31- 3	-2.7	66	32	80	5	5	0	96	64	272	422
30- 4	5.9	72	67	69	32	32	0	101	0	275	494
31- 5	13.0	74	74	0	80	80	0	13	0	256	568
30- 6	18.3	82	82	0	116	116	0	4	0	218	651
31- 7	20.8	89	89	0	135	135	-1	2	0	170	740
31- 8	19.5	87	87	0	117	113	-4	1	0	144	827
30- 9	14.6	84	84	0	75	72	-2	3	0	153	912
31-10	8.1	77	76	0	36	36	0	7	0	186	77
30-11	1.3	80	63	8	10	10	0	18	9	230	157
31-12	-7.0	78	26	15	1	1	0	20	47	249	236
AVE	5.9 TTL	911	705	205	608	601	-7	307			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	35	55
28- 2	2.6	29	15	27	1	1	0	36	59	30	59
31- 3	2.3	28	22	47	4	4	0	56	83	11	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	3	11	0	51	93
31- 8	1.3	39	39	0	8	11	9	5	0	63	107
30- 9	1.5	38	38	0	8	9	5	14	0	69	110
31-10	1.4	37	37	2	7	7	1	19	0	63	37
30-11	1.7	27	28	9	4	4	0	29	13	50	45
31-12	3.0	30	22	14	1	1	0	28	34	39	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...280 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....168 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	260	299
28- 2	-8.8	57	12	18	1	1	0	23	110	266	356
31- 3	-2.7	66	32	80	5	5	0	95	64	277	422
30- 4	5.9	72	67	69	32	32	0	101	0	280	494
31- 5	13.0	74	74	0	80	80	0	13	0	261	568
30- 6	18.3	82	82	0	116	116	0	4	0	223	651
31- 7	20.8	89	89	0	135	135	-1	2	0	175	740
31- 8	19.5	87	87	0	117	113	-4	1	0	148	827
30- 9	14.6	84	84	0	75	72	-2	3	0	157	912
31-10	8.1	77	76	0	36	36	0	7	0	191	77
30-11	1.3	80	63	8	10	10	0	18	9	234	157
31-12	-7.0	78	26	15	1	1	0	20	47	254	236
AVE	5.9 TTL	911	705	205	608	601	-7	306			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	35	55
28- 2	2.6	29	15	27	1	1	0	36	59	31	59
31- 3	2.3	28	22	47	4	4	0	56	83	12	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	3	11	0	52	93
31- 8	1.3	39	39	0	8	10	9	5	0	64	107
30- 9	1.5	38	38	0	8	9	5	14	0	69	110
31-10	1.4	37	37	2	7	7	1	19	0	64	37
30-11	1.7	27	28	9	4	4	0	29	13	50	45
31-12	3.0	30	22	14	1	1	0	28	34	39	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...300 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....180 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	279	299
28- 2	-8.8	57	12	18	1	1	0	23	110	285	356
31- 3	-2.7	66	32	80	5	5	0	95	64	297	422
30- 4	5.9	72	67	69	32	32	0	101	0	300	494
31- 5	13.0	74	74	0	80	80	0	13	0	281	568
30- 6	18.3	82	82	0	116	116	0	4	0	243	651
31- 7	20.8	89	89	0	135	135	0	2	0	194	740
31- 8	19.5	87	87	0	117	114	-3	1	0	167	827
30- 9	14.6	84	84	0	75	73	-2	3	0	176	912
31-10	8.1	77	76	0	36	36	0	7	0	209	77
30-11	1.3	80	63	8	10	10	0	18	9	252	157
31-12	-7.0	78	26	15	1	1	0	20	47	272	236
AVE	5.9 TTL	911	705	205	608	603	-5	306			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	37	55
28- 2	2.6	29	15	27	1	1	0	36	59	33	59
31- 3	2.3	28	22	47	4	4	0	57	83	13	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	2	11	0	52	93
31- 8	1.3	39	39	0	8	10	8	5	0	65	107
30- 9	1.5	38	38	0	8	9	5	14	0	71	110
31-10	1.4	37	37	2	7	7	1	19	0	65	37
30-11	1.7	27	28	9	4	4	0	29	13	52	45
31-12	3.0	30	22	14	1	1	0	28	34	41	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...400 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....240 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	375	299
28- 2	-8.8	57	12	18	1	1	0	22	110	382	356
31- 3	-2.7	66	32	80	5	5	0	94	64	395	422
30- 4	5.9	72	67	69	32	32	0	99	0	400	494
31- 5	13.0	74	74	0	80	80	0	13	0	381	568
30- 6	18.3	82	82	0	116	116	0	4	0	343	651
31- 7	20.8	89	89	0	135	135	0	2	0	294	740
31- 8	19.5	87	87	0	117	116	-1	1	0	265	827
30- 9	14.6	84	84	0	75	74	-1	3	0	272	912
31-10	8.1	77	76	0	36	36	0	7	0	305	77
30-11	1.3	80	63	8	10	10	0	18	9	349	157
31-12	-7.0	78	26	15	1	1	0	19	47	369	236
AVE	5.9 TTL	911	705	205	608	606	-2	301			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	44	55
28- 2	2.6	29	15	27	1	1	0	36	59	39	59
31- 3	2.3	28	22	47	4	4	0	57	83	20	65
30- 4	1.7	31	31	84	8	8	0	80	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	0	11	0	53	93
31- 8	1.3	39	39	0	8	8	4	5	0	69	107
30- 9	1.5	38	38	0	8	8	2	14	0	76	110
31-10	1.4	37	37	2	7	7	0	19	0	69	37
30-11	1.7	27	28	9	4	4	0	29	13	57	45
31-12	3.0	30	22	14	1	1	0	28	34	46	56

ATTACHMENT K

Sewage Disposal System Specifications

GSF®

Geotextile Sand Filter

Eljen GSF System Overview

eljen CORPORATION

Innovative Onsite Products & Solutions Since 1970

www.eljen.com

Eljen GSF System Description

Each GSF Module is made up of geotextile fabric and a plastic core material that work together to provide vertical surface area and oxygen transfer. The GSF System applies secondary treated effluent to the soil, increasing the soil's long-term acceptance rate. A Specified Sand layer provides additional filtration, and prevents saturated conditions.

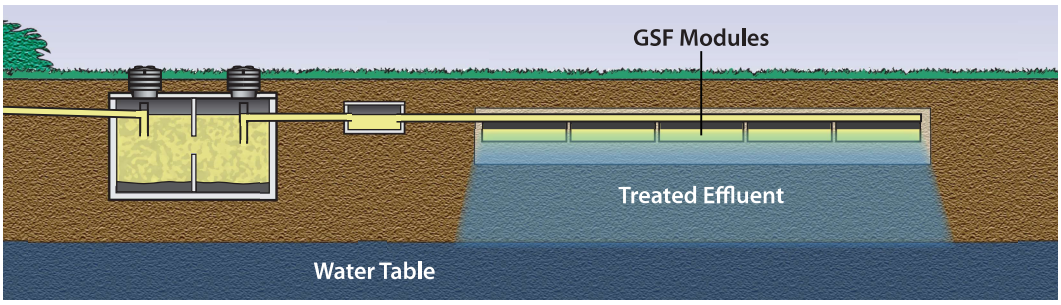
PRIMARY TREATMENT ZONE

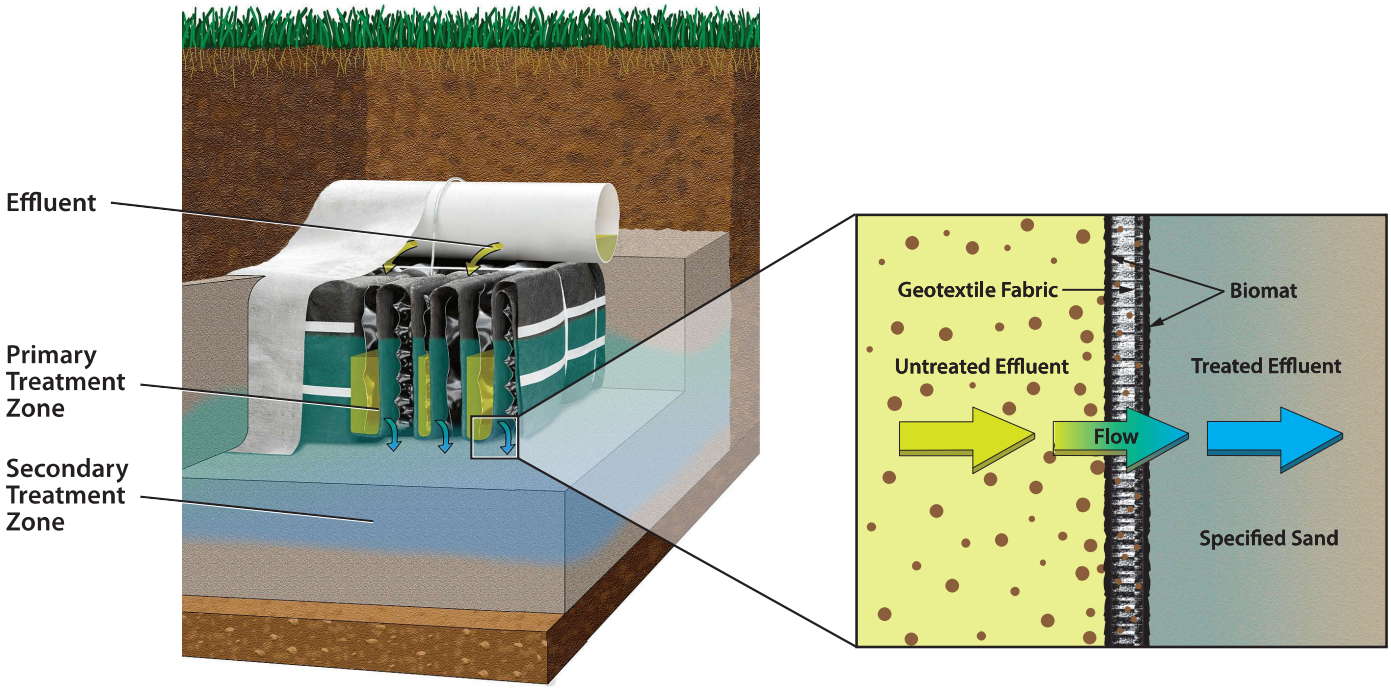
- Perforated pipe is centered above the GSF Module to distribute septic effluent over and into corrugations created by the plastic core of the GSF Module.
- The Module's unique design provides increased surface area for biological treatment of nutrients and contaminants.
- Open air channels within the Module support aerobic bacterial growth on the Module's geotextile fabric interface, and promote oxygen in the system.
- An anti-siltation geotextile fabric covers the top and sides of the GSF Module to protect the system from the migration of fines.
- The GSF Module provides biomat management, and takes the burden of treatment and biomat development off of the native soil.

SECONDARY TREATMENT ZONE

- Effluent drips into the Specified Sand layer and supports unsaturated flow into the native soil.
- The Specified Sand layer also protects the soil from compaction and helps maintain cracks and crevices in the soil.
- Native soil provides final filtration and allows for groundwater recharge.

GSF SYSTEM OPERATION





Testing Overview and Performance

NSF Standard 40

Certified to NSF/ANSI Standard 40

This standard determines whether treatment systems product secondary treatment effluent quality, with Class I systems achieving a 30-day average effluent quality of 25 mg/L CBOD5 and 30 mg/L TSS or less, and pH 6.0-9.0. Testing and certification are done at an independent third party testing facility.

SETUP: Gravity GSF system with 6" of ASTM C33 sand in a bed configuration. 450 gal/day, (2.0 gal/ ft^2 loading rate).

RESULTS: The Eljen GSF is Tested and Certified by NSF to NSF Standard 40 Class 1 since 2014.

More information can be found at www.NSF.org.

NSF Standard 245

Certified to NSF/ANSI Standard 245

This standard includes Total Nitrogen reduction requirements with Class I systems achieving a 30-day average effluent quality of more than 50% Total Nitrogen removal, 25 mg/L CBOD5 and 30 mg/L TSS or less, and PH 6.0-9.0. Testing and certification are done at an independent third party testing facility.

SETUP: Gravity GSF system in a bed configuration with 18" of ASTM C33 sand, 12" of sand/woodchip mixture, and 2" of limestone. 450 gal/day (2.0 gal/ft^2 loading rate).

RESULTS: Tested and Certified by NSF to NSF Standard 245 Class 1 since 2018.

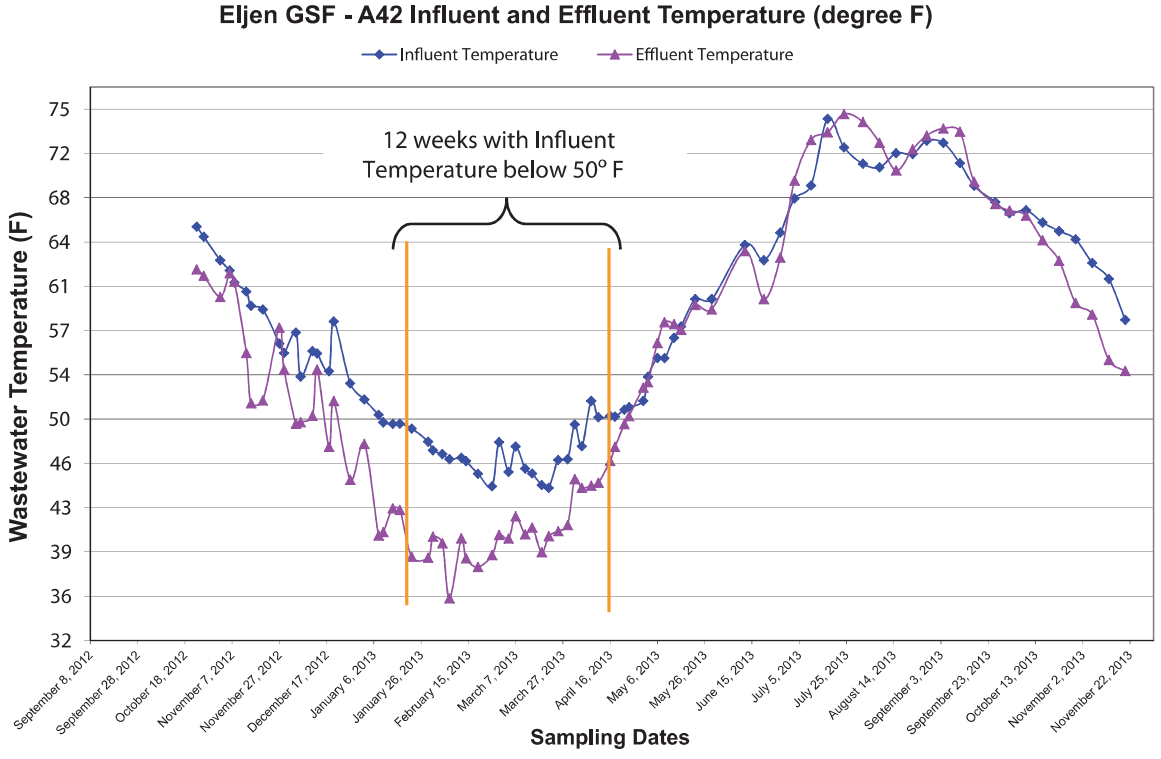
More information can be found at www.NSF.org.

The third-party testing results listed below were taken over a 12 month consecutive period. This extended sampling period provided verification to the stability and consistency of the Eljen GSF's performance and capability to handle colder weather conditions. A summary of the test results from the independent third-party evaluation are listed below:

Eljen GSF A42 Modules Treatment Performance during third party 12 months testing (includes 12 consecutive weeks with influent temperature below 50° F)

	CBOD (mg/L)	TSS (mg/L)	Fecal Coliform (MPN/100ml)
Average	2.0	2.7	66*
Average (cold water period)	1.2	1.7	13*
Median	1.0	2.5	71*
Min Value	1.0	2.5	2*
Max Value	7.2	7.0	10 965*

*Geometric average



COMPANY HISTORY

Established in 1970, Eljen Corporation created the world's first prefabricated drainage system for foundation drainage and erosion control applications. In the mid-1980s, we introduced our Geotextile Sand Filter products for the passive advanced treatment of onsite wastewater in both residential and commercial applications. Today, Eljen is a global leader in providing innovative products and solutions for protecting our environment and public health.

COMPANY PHILOSOPHY

Eljen Corporation is committed to advancing the onsite industry through continuous development of innovative new products, delivering high-quality products and services to our customers at the best price, and building lasting partnerships with our employees, suppliers, and customers.

eljen CORPORATION

Innovative Onsite Products & Solutions Since 1970

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