

October 23, 2025

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Geotechnical Engineering Environmental Engineering Hydrogeology **Materials Testing Building Science Rural Development Design Retaining Wall Design Noise and Vibration Studies**

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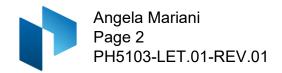
Subject: **Hydrogeological Assessment and Terrain Analysis**

> **Re-zoning Application** 2966-2978 Carp Road Ottawa (Carp), Ontario

INTRODUCTION

Paterson Group Inc. (Paterson) was retained by Nautical Lands Group to conduct a Hydrogeological Assessment and Terrain Analysis in support of a Re-zoning Application for a proposed cheer academy located at 2966-2978 Carp Road in Ottawa (Carp), Ontario. It is our understanding that the current property consists of a 1.28 hectares (ha) parcel with an existing dwelling in the southern portion of the site. The proposed re-zoning application aims to change the zoning of the existing warehouse footprint that is designated as Rural Commercial (RC7) to include instructional facility and athletic & recreational facility use. For specific planning details, please refer to the consultant report application package and to the attached Key Plan for the approximate site location.

The purpose of this work has been to determine the suitability of the water supply aquifer underlying the site and to carry out a sewage system impact assessment (terrain analysis) to determine the site's suitability for private on-site sewage systems. Specifically, the intent of the report is to determine the quality and quantity of water underlying the subject site, as well as to provide the maximum sewage flow volume which the subject site can support from a nitrate attenuation standpoint.



BACKGROUND

Subject Site

The subject property consists of a warehouse with associated landscaped areas and parking lots, and a residential dwelling with associated landscaped areas and driveways located at 2966 and 2978 Carp Road in the City of Ottawa (Carp), Ontario. The ground surface across the site is relatively flat, with a general downslope direction to the east. The general overburden groundwater flow direction is assumed to be north to northeast towards the Carp River.

The Carp Road corridor and buildings onsite are serviced by private services. The site is bordered to the northeast and northwest by undeveloped lands, to the southwest by Carp Road, followed by residential properties, and to the southeast by a commercial property.

The subject site is largely rectangular in shape with a total area of 1.28 ha. The site is currently zoned as RC7 (Rural Commercial). The land parcels to the north and east are zoned RC9 (Rural Commercial), and the residential properties to the west are zoned RR5 (Rural Residential Zone).

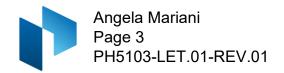
Regional Geology

Published surficial geology mapping (OGS MRD128) for the area in the vicinity of the subject site indicates that the subject site is underlain predominantly by stone-poor silty sand to sandy silt-textured till on Paleozoic Terrain.

Published bedrock geology mapping (OGS MRD219) indicates that the subject lands are underlain by limestone and shale of the Simcoe Group and Verulam Formation. The available bedrock mapping coincides with the well driller's description on the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records (WWR) for the surrounding well supplies installed within the subject area, which generally indicate a grey limestone.

Karst Mapping

Published karst mapping (OGS GRS005) for the area indicated that the subject site is not within a potential or inferred karst area.



MISSISSIPPI-RIDEAU SOURCE PROTECTION PLAN

The Mississippi-Rideau Source Protection Plan (MRSPP) provides guidance as to which policies apply to a given property, municipality or specific activity and if there are specific designations that apply to the area. The subject site has been designated as a Highly Vulnerable Aquifer (HVA within the MRSPP) and a Significant Groundwater Recharge Area (SGRA) and is identified as two of the four groundwater related vulnerable areas identified within the Clean Water Act (2006). The four vulnerable areas consists of HVA, SGRA, Intake Protection Zones (IPZ), and Wellhead Protection Areas (WHPA).

Based upon the designation, there are no restrictions of land uses on the subject site based upon its proposed usage. Therefore, there are no related requirements for an HVA or SGRA at this location.

Hydrogeological Pre-Consultation

A City of Ottawa pre-consultation was completed on August 27, 2025 to discuss the requirements for the hydrogeological assessment and terrain analysis of the subject site. Initial discussions were completed by email prior to the meeting.

FIELDWORK PROGRAM

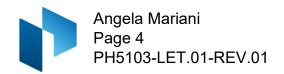
Well Testing

As a means to demonstrate the adequacy of the aquifer underlying the subject lands, with respect to water quality and quantity, the existing drilled well (TW1) servicing the existing warehouse was tested. TW1 has a Water Well Record (WWR) Well ID of A212621. TW1 has a 150 mm diameter steel casing that extends to 6.82 m bgs with a 0.45 m stick up. The well itself extends to a depth of 58.9 m bgs. According to the water well record, limestone bedrock was recorded at a depth of approximately 4.34 m bgs. Based on available geological mapping, the drift thickness at TW1 varies from 2 to 3 m.

As a means to evaluate the water supply aquifer intercepted by the well, the well was subjected to a 8-hour constant rate pumping test. The pumping test was conducted on March 22, 2022 under the full-time supervision of Paterson personnel. Prior to the pumping test a data-logger was installed to monitor the background groundwater levels.

The existing submersible pump was used for the 8-hour pumping test. A licensed water well technician (Air Rock) completed the necessary plumbing related activities. The discharge line was placed at a sufficient distance to ensure that the discharge water was being directed away from the well and the septic system onsite. Upon completion of the test, the system was returned to its normal configuration.

The pumping test was carried out at a pumping rate of 45 L/min for a duration of 8 hours. During the pumping test, the pumping rate was periodically measured using the timed volume correlation method. The pumping rate was maintained within 5% of the selected



pumping rate. The static water level was recorded manually and an electric datalogger (VanEssen TD-Diver) was installed in the test well prior to the start of the pumping test.

The data logger recorded water levels at 30 second intervals. In addition, manual water level readings were taken at periodic intervals during the test.

Recovery data was collected from the well following the completion of the pumping. The well was noted to have achieved 100% recovery approximately 1 minute after the completion of pumping.

Groundwater samples were collected at 4 hours and 8 hours after the start of pumping. Prior to collection of the groundwater samples, the free chlorine residual was verified as non-detectable. The water samples were submitted for comprehensive testing of bacteriological, chemical, and physical water quality parameters consistent with the standard "Subdivision Supply" suite of parameters plus trace metals along with Volatile Organic Compounds (VOCs).

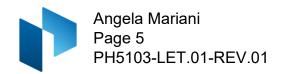
All samples were collected unfiltered and unchlorinated and were placed directly into clean bottles supplied by the analytical laboratory. Samples were placed immediately into a cooler with ice and were transported directly to Environmental Testing Canada Inc.(Eurofins) laboratory in Ottawa. All samples were received by the laboratory within 24 hours of collection.

A series of field tests of the pumped water were carried out at the well head during the 8-hour pumping test. The parameters tested at the well head included: pH, total dissolved solids, conductivity, turbidity, apparent colour, and temperature. Calibration / confirmation of calibration of all field-testing equipment was performed in Paterson's laboratory the day prior to the pumping test. Values are then confirmed again onsite prior to the start of the pumping test.

Total coliforms were detected in the analytical testing of TW1 during the pumping test at 19 ct/100 mL (TW1-GW1) in the sample taken 4 hours into the pumping test and at 23 ct/100 mL (Tw1-GW2) at 8 hours into the pumping test.

Paterson personnel went to site on April 1, 2022 to disinfect TW1 as per the Ministry of the Environment, Conservation and Parks (MECP) disinfection instruction sheet, attached. The existing submersible pump was used to circulate the water column ion order to ensure proper mixing of the disinfectant. Paterson personnel confirmed the presence and adequate mixing of the disinfectant.

On April 4, 2022, Paterson personnel confirmed the presence of free chlorine within the well water. The well was purged using the existing submersible pump to remove residual free chlorine prior to obtaining a bacteriological sample. The discharge locations were placed at a sufficient distance to ensure that the discharge water was being directed away from the wellhead.

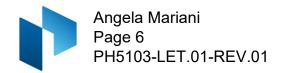


TW1 was pumped for 8 hours at a rate of approximately 15 L/min. Paterson personnel confirmed that the free chlorine residual was 0 mg/L prior to the collection of the bacteriological sample (GW1) at the end of 8 hours of purging the well.

All samples were collected unfiltered and unchlorinated and were placed directly into clean bottles supplied by the analytical laboratory. Sampled were placed immediately into a cooler with ice and were transported directly to the Eurofins Environmental Testing Canada Inc. (Eurofins) laboratory in Ottawa. All samples were received by the laboratory within 24 hours of collection.

Total Coliforms were reported as 4 ct/100 mL in the analytical testing of TW1 after the disinfection process. E. Coli was found to be non-detect as per the original results.

Additional sampling was completed on October 8, 2025 for the parameters of E.Coli, Total Coliforms and Nitrates/Nitrites. The sampling was completed by Nelson Water Inc. Total Coliforms and E.Coli were noted to be non-detect. Nitrate was found to be 0.25 mg/L and Nitrite was found to be non-detect.



Aquifer Analysis

Water Quantity

Pumping test data was analyzed using AQTESOLV Pro Version 4 aquifer analysis software package by HydroSOLVE Inc. Drawdown data was measured using an electronic water level tape and an electronic datalogger unit.

Table 1: SUMMARY OF WATER SUPPLY AQUIFER CHARACTERISTICS OF TW1					
AQUIFER PARAMETER	RESULT OF ANALYSIS				
Transmissivity (m²/day)	1,224				
Pumping Rate (L/min)	45				
Pre-test Static Water Level (m BTOC)	3.20				
Post-test Static Water Level (m BTOC)	3.26				
Maximum Drawdown (m BTOC)	3.34				
Available Drawdown (m)	55.7				
% Drawdown During Pumping Test (%)	0.3				
Specific Capacity (L/min/m drawdown)	321				

The drawdown data was analyzed using the Theis and Cooper Jacob methods of analysis. Aquifer transmissivity is estimated to be 1,224 m²/day. Refer to the Theis and Cooper Jacob methods of analysis data sheets attached to this report.

The pumping test results show that TW1 has a high yield to support the water demands that may be required. Overall maximum drawdown at a constant pumping rate for a period of 8 hours was approximately 0.14 m (0.3% of the available drawdown), but only 0.06 m at the end of the test period. 95% recovery was achieved approximately one minute after the end of pumping. It should be noted that the water level was measured to be increasing throughout the 8-hour constant rate pumping test.

The total volume of water pumped during the 8-hour pumping event was approximately 21,600 L. This is approximately 3.2 times the maximum total daily design volume of effluent (6,418 L/d) using 57% nitrate reduction required to support the Re-zoning Application. Further discussion in the Terrain Analysis notes an additional technology that can support greater than 10,000 L/day, however the 6,418 L/day is above the required flows as calculated under Part 8 – OBC for a subsequent application.

The suitability of the aquifer to support the proposed Re-zoning application was assessed using the methodology provided in the City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG).



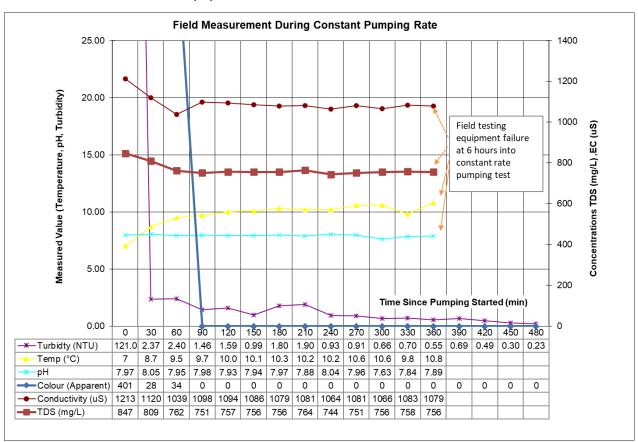
Based on the information summarized in Table 1, it is readily apparent that the water supply well has intercepted an adequately strong water supply aquifer which has sufficient quantity to service the proposed zoning usages.

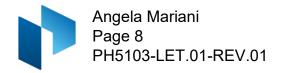
Given the analyses presented and summarized above, it is our opinion that there is an adequate supply of water to support the proposed Application.

Water Quality

Field Data

Turbidity, electrical conductivity, total dissolved solids (TDS), pH, true color and temperature were measured at the wellhead during the pumping test. The measurements and time intervals for each of these parameters are summarized on the graphical representation below. In addition, a HACH Pocket Colorimeter II chlorine reader was used to measure the free chlorine residual level. No chlorine residual was detected in the discharged water prior to the collection of the water samples. During the constant rate pumping test, the field-testing equipment which tests for pH, TDS, EC, and temperature malfunctioned at the 6-hour point. These parameters were noted to have stabilized prior to the malfunction of the equipment.





Laboratory Data

The Subdivision Package suite of parameters and trace metals laboratory water quality obtained from the pumping test of TW1 is provided in Table 2a, 2b, and 2c below and the laboratory analyses reports can be found attached. All laboratory test results can be found attached to this report.

TABLE 2a: GROUNDWATER MICROBIOLOGY & GENERAL GEOCHEMISTRY							
		OD	ws		TW1		
PARAMETER	PARAMETER UNITS LIMIT TYPE		GW1 (4 hr) 2022-03-22	GW2 (8 hr) 2022-03-22	GW1 2022-04-04		
MICROBIOLOGICAL			•	•	•	•	
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0	0	0	
Total Coliforms	ct/100mL	0	MAC	19	23	4	
GENERAL CHEMICAL - HE	ALTH RELA	TED					
Fluoride (F)	mg/L	1.5	MAC	<0.10	<0.10	-	
Ammonia (N-NH ₃)	mg/L	-	-	<0.010	<0.010	-	
Nitrite (N-NO ₂)	mg/L	1	MAC	<0.10	<0.10	-	
Nitrate (N-NO ₃)	mg/L	10	MAC	3.15	3.02	-	
Total Kjeldahl Nitrogen	mg/L	-	-	0.25	0.48	-	
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	0.93	0.23	-	
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	0.50	0.50	-	
GENERAL CHEMICAL - AE	STHETIC RE	LATED					
Alkalinity (as CaCO3)	mg/L	30-500	OG	251	243	-	
Chloride (Cl)	mg/L	250	AO	135	142	-	
Colour	TCU	5	AO	<2	<2	-	
Colour (Field - Apparent)	TCU	5	AO	0	0	-	
Conductivity	uS/cm	-	-	1,180	1,180	-	
Dissolved Organic Carbon	mg/L	5	AO	2.40	2.40	-	
Hardness (as CaCO3)	mg/L	100	OG	454	451	-	
Ion Balance	unitless	-	-	0.97	0.97	-	
pН	unitless	6.5-8.5	AO	7.95	7.93	-	
Phenols	mg/L	-	-	<0.001	<0.001	-	
Sulphate (SO ₄)	mg/L	500	AO	182	175	-	
Sulphide (S ₂ ⁻)	mg/L	0.05	AO	<0.01	<0.01	-	
Tannin & Lignin	mg/L	-	-	1.00	1.00	-	
Total Dissolved Solids	mg/L	500	AO	767	767	-	

1. ODWS identifies the following types of parameters:

MAC = Maximum Allowable Concentration

AO = Aesthetic Objective

OG = Operational Guideline

2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

TABLE 2b: GROUNDWATER GEOCHEMISTRY - METALS								
		OD	ws	TW1				
PARAMETER	UNITS	LIMIT	TYPE	GW1 (4 hr) 2022-03-22	GW2 (8 hr) 2022-03-22			
Volatiles	•		-1	•	1			
Aluminum (Al)	mg/L	0.1	OG	<0.01	<0.01			
Antimony (Sb)	mg/L	0.006	IMAC	<0.0005	<0.0005			
Arsenic (As)	mg/L	0.01	IMAC	<0.001	<0.001			
Barium (Ba)	mg/L	1.0	MAC	0.12	0.12			
Beryllium (Be)	mg/L	-	_	<0.0005	<0.0005			
Boron (B)	mg/L	5.0	IMAC	0.04	0.04			
Cadmium (Cd)	mg/L	0.005	MAC	<0.0001	<0.0001			
Calcium (Ca)	mg/L	-	-	162	161			
Chromium (Cr)	mg/L	0.05	MAC	<0.001	<0.001			
Cobalt (Co)	mg/L	-	-	<0.0002	<0.0002			
Copper (Cu)	mg/L	1.0	AO	<0.001	<0.001			
Iron (Fe)	mg/L	0.3	AO	< 0.03	< 0.03			
Lead (Pb)	mg/L	0.01	MAC	<0.001	<0.001			
Magnesium (Mg)	mg/L	-	-	12	12			
Manganese (Mn)	mg/L	0.05	AO	<0.01	<0.01			
Mercury (Hg)	mg/L	0.001	MAC	<0.0001	<0.0001			
Molybdenum (Mo)	mg/L	-	-	<0.005	< 0.005			
Nickle (Ni)	mg/L	-	-	<0.005	<0.005			
Potassium (K)	mg/L	-	-	2	2			
Selenium (Se)	mg/L	0.05	MAC	<0.001	<0.001			
Silver (Ag)	mg/L	-	-	<0.0001	<0.0001			
Sodium (Na)	mg/L	200	AO	77	75			
Strontium (Sr)	mg/L	-	-	0.879	0.876			
Thallium (TI)	mg/L	-	-	<0.0001	<0.0001			
Uranium (U)	mg/L	0.02	MAC	<0.001	<0.001			
Vanadium (V)	mg/L		-	<0.001	<0.001			
Zinc (Zn)	mg/L	5.0	AO	<0.01	<0.01			

1. ODWS identifies the following types of parameters:

MAC = Maximum Acceptable Concentration

IMAC = Interim Maximum Acceptable Concentration

AO = Aesthetic Objective

OG = Operational Guideline

2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

TABLE 2c: GROUNDWATER GEO	CHEMISTRY	/ - VOLATILI	ES		
		OD	ws		
PARAMETER	UNITS	TS TW1			
FARAMETER	UNITS	LIMIT	TYPE	GW1 (4 hr)	GW2 (8 hr)
				2022-03-22	2022-03-22
VOCs Surrogates					
1,2-dichloroethane-d4	%	-	-	100	119
4-bromofluorobenzene	%	-	-	71	76
Toluene-d8	%	-	-	91	98
Volatiles					
1,1,1,2-tetrachloroethane	μg/L	-	-	<0.5	<0.5
1,1,1-trichloroethane	μg/L	-	-	<0.4	<0.4
1,1,2,2-tetrachloroethane	μg/L	-	-	<0.5	<0.5
1,1,2-trichloroethane	μg/L	-	-	<0.4	<0.4
1,1-dichloroethane	μg/L	-	-	<0.4	<0.4
1,1-dichloroethylene	μg/L	14.0	MAC	<0.5	<0.5
1,2-dichlorobenzene	μg/L	200.0	MAC	<0.4	<0.4
1,2-dichloroethane	μg/L	5.0	IMAC	<0.2	<0.2
1,2-dichloropropane	μg/L	-	-	<0.5	<0.5
1,3,5-trimethylbenzene	μg/L	-	-	<0.3	<0.3
1,3-dichlorobenzene	μg/L	-	-	<0.4	<0.4
1,3-Dichloropropylene (cis+trans)	μg/L	-	-	<0.3	<0.3
1,4-dichlorobenzene	μg/L	5.0	MAC	<0.4	<0.4
Acetone	μg/L	-	_	<30	<30
Benzene	μg/L	1.0	MAC	<0.5	<0.5
Bromodichloromethane	μg/L	-	_	<0.3	<0.3
Bromoform	μg/L	-	_	<0.4	<0.4
Bromomethane	μg/L	-	_	<0.5	<0.5
c-1,2-Dichloroethylene	μg/L	-	-	<0.4	<0.4
c-1,3-Dichloropropylene	μg/L	-	-	<0.2	<0.2
Carbon Tetrachloride	μg/L	2.0	MAC	<0.2	<0.2
Chloroethane	μg/L	-	-	<0.2	<0.2
Chloroform	μg/L	-	-	<0.5	<0.5
Dibromochloromethane	μg/L	-	-	<0.3	<0.3
Dichlorodifluoromethane	μg/L	-	-	<0.5	<0.5
Dichloromethane	μg/L	50	MAC	<4.0	<4.0
Ethylbenzene	μg/L	140	MAC	<0.5	<0.5
Ethylene Dibromide	μg/L	-	-	<0.2	<0.2
Hexane	μg/L	-	-	<5	<5
m/p-xylene	μg/L	-	-	<0.4	<0.4
Methyl Ethyl Ketone (MEK)	μg/L	-	-	<10	<10
Methyl Isobutyl Ketone (MIBK)	μg/L	-	-	<10	<10
Methyl Tert Butyl Ether (MTBÉ)	μg/L	15	AO	<2	<2
Monochlorobenzene	μg/L	80	MAC	<0.5	<0.5
o-xylene	μg/L	-	-	<0.4	<0.4
Styrene	μg/L	-	-	<0.5	<0.5
t-1,2-Dichloroethylene	μg/L	-	-	<0.4	<0.4
t-1,3-Dichloropropylene	μg/L	-	-	<0.2	<0.2
Tetrachloroethylene	μg/L	10	MAC	<0.3	<0.3
Toluene	μg/L	60	MAC	<0.4	<0.4
Trichloroethylene	μg/L	5	MAC	<0.3	<0.3
Trichlorofluoromethane	μg/L	-	-	<0.5	<0.5
Vinyl Chloride	μg/L	1	MAC	<0.2	<0.2
Xylene; total	μg/L	90	MAC	<0.5	<0.5

1. ODWS identifies the following types of parameters:

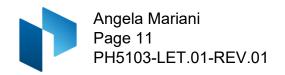
MAC = Maximum Acceptable Concentration

IMAC = Interim Maximum Acceptable Concentration

AO = Aesthetic Objective

OG = Operational Guideline

2. Shaded Concentration Indicates an Exceedance of the ODWS Objective



The bacteriological test results (Certificate of Analysis – Report No. 1973843) indicated that the test samples at the 4- and 8-hour interval were non-detect (0 ct/100 mL) for E.Coli, however, Total Coliforms were detected at concentrations of 19 ct/100 mL and 23 ct/100 mL, respectively.

Paterson personnel returned to site to disinfect the well. After the disinfection of the well and subsequent pumping, a bacteriological test was performed on the well water (Certificate of Analysis – Report No. 1974461) which indicated that E. Coli was not present (0 ct/100 mL) and that only 4 ct/100 mL Total Coliforms were present in the well water. Paterson personnel confirmed that the free chlorine residual was 0 mg/L prior to the collection of the bacteriological sample.

A water sample was taken by others on October 8, 2025. A bacteriological test was performed on the well water (Certificate of Analysis – Report No. 4491110) which indicated E.Coli and Total Coliforms were both non-detect (0 ct/100 mL). Additionally, Nitrate and Nitrite were analyzed (Certificate of Analysis – Report No. 4492546) with Nitrates at 0.25 mg/L and Nitrites at <0.1 mg/L.

The water quality of the subject water supply well meets all the Ontario Drinking Water Standards maximum acceptable concentrations (MAC). Furthermore, the water meets all of the Aesthetic Objectives (AO) and Operational Guidelines (OG) with the exception of the following.

Hardness ((as CaCO₃)	
Total Disso	olved Solids ((TDS)

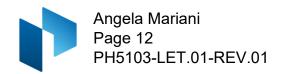
Exceedances of the above parameters are not uncommon of the water supply in the subject aquifer. Each of these groundwater parameters are discussed in detail below.

Should any water treatment be desired by the owner, it is recommended that a water treatment specialist be retained to ensure that water treatment occurs in a safe manner.

Hardness as CaCO₃

Hardness, expressed as calcium carbonate, is an operation guideline and does not appear in the ODWS. Rather, it appears in the Technical Support Documents for Ontario Drinking Water Standards, Objectives and Guidelines as a parameter with an operational guideline at 100 mg/L. At the measured concentrations of 454 and 451 mg/L, the water is considered to be very hard, however, it is below the reasonable treatable limit of 500 mg/L specified in Table 3 of the MOECC guidance document Procedure D-5-5 (1996), thus, hardness can be treated with readily available technologies.

It is recommended that water hardness be treated using conventional technologies such as water softening or reverse osmosis, if desired by the owner. Without treating hardness, scaling can occur which can result in discolouration and residue buildup on water fixtures, or reduction in boiler efficiency due to scale build-up. According to Health Canada's *Guidelines for Canadian Drinking Water Quality - Summary Tables* "Although hardness



may have significant aesthetic effects, a guideline has not been established because public acceptance of hardness may vary considerably according to the local conditions; major contributors to hardness (calcium and magnesium) are not of direct public health concern".

Total Dissolved Solids (TDS)

TDS refers to the concentration of inorganic substances dissolved in water. The main constituents are typically chloride, sulphates, calcium, magnesium, and bicarbonates. The TDS concentration of 767 mg/L exceeds the Aesthetic Objective of 500 mg/L. At concentrations above 500 mg/L, some consumers may find the taste objectionable, however, as the objective is an aesthetic objective, no treatment is required. It is, however, recommended that a point-of-use reverse osmosis unit be installed or to provide bulk bottled water on an as-needed basis for drinking water purposes. As such, no taste problems will occur when the system is used, or bottled water is consumed.

The Langelier calculation provided an LSI of 0.7. Based on the evaluation of the result, the water is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive). Based on the range of stability in the positive direction, it is recommended that water softening be used to prevent scaling. See Langelier Saturation Index Calculation attached for calculation details.

Total Coliforms

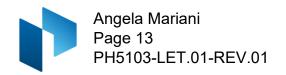
Total Coliforms are a type of bacteria which naturally occur in soil and decaying vegetation. Total Coliforms may also be associated with animal and/or human waste.

The maximum acceptable concentration (MAC) for Total Coliforms for potable drinking water in support of a Re-zoning application, as established by the City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG, 2021), is less than 6 ct/100 mL. According to the City of Ottawa HTAG, Total Coliforms counts of less than 6 per 100 mL sample shall be considered indicative of acceptable water quality.

Total Coliforms were detected at 19 and 23 count per 100 mL at the 4- and 8- hour mark of the pumping test, respectively. After disinfecting the well and purging the chlorinated water, Total Coliforms were detected at 4 ct/100 mL. 4 ct/100 mL Total Coliforms is below the City of Ottawa HTAG standard of less than 6 ct/100 mL.

As the site is not hydrogeologically sensitive (competent bedrock was encountered during the field investigations at depths of 2.4 to 5.9 m bgs), and is not located in an area which is mapped as potentially karstic, the Total Coliform level of 4 ct/100 mL. The subsequent analytical results in October 2025 indicate that Total Coliforms is non-detect (0 ct/100 mL) and is considered acceptable.

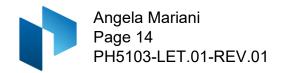
Consideration should be given to utilizing a Ultraviolet (UV) disinfection system on the water supply entering the existing warehouse and proposed development. Additionally,



the turbidity was less than 1 NTU, indicating that there should be no turbidity based interference in disinfection.

Sodium

Sodium (Na), an aesthetic parameter, was detected in the laboratory test sample at a concentration of 77 and 75 mg/L, which does not exceed the ODWS aesthetic objective of 200 mg/L. Although sodium is not toxic and no MAC has been set, concentrations above 20 mg/L require that the Medical Officer of Health be notified of the water quality results, so that this information may be passed on to local physicians for use in treatment of those requiring a sodium-restricted diet.



TERRAIN ANALYSIS

The fieldwork which was completed as part of a Geotechnical Investigation for the site (PH3834-1R, dated January 5, 2017; and PG3834-2, dated March 1, 2022) is used in support of this assessment. Additional information pertaining to this investigation was gathered from available geological mapping and surrounding WWRs.

Surficial Geology

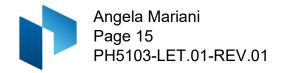
A series of test pits were excavated on the subject parcel to delineate the subsurface soil conditions as part of a Geotechnical Field Investigation. On February 8, 2022, seven (7) test pits were completed on the property. A previous investigation (PG3834-1R, dated January 5, 2017) was completed at the subject site in June and November 2016, during which fourteen (14) test pits were excavated and eleven (11) boreholes were completed onsite. The location of the test pits are delineated on the drawing PH5103-1-Test Hole Location Plan, attached. Note that the site plan on the drawing is not reflective of the proposed usage.

The test hole locations were recorded and the subsurface conditions, including the soil morphology and depth to the groundwater table (if encountered), were carefully observed and recorded. The soils encountered were classified texturally in the field and later reviewed in the laboratory.

The boreholes and test pits were advanced to a maximum depth of 5.9 and 3.4 m below ground surface (bgs), respectively. Bedrock was recorded in the WWR for TW1 at 4.34 m bgs. Refusal to excavation was recorded at depths ranging from 0.7 m to 5.9 m bgs on fractured bedrock. Competent bedrock was encountered at depths of 2.4 to 5.9 m bgs.

The subsurface profile generally consisted of topsoil extending to a maximum depth of 0.6 m bgs, underlain by silty sand to sandy silt with gravel, cobbles, boulders and trace clay which extend to a maximum depth of 1.9 m bgs. Frost heave/ frost shattered bedrock infilled with silty sand, gravel, cobbles, and boulders (unconsolidated soils) was observed under the silty sand to sandy silt with gravel, cobbles, boulders and trace clay. The testhole logs note split spoon sampling within this layer with significant sample recovery. TP1-22, TP2-22, TP6-22, and TP7-22 noted a fill of varying composition underlying the topsoil extending to depths of 1.75 m bgs. Groundwater was observed at depths between 3.6 to 4.3 m bgs in the boreholes and test pits.

Reference should be made to the borehole logs appended to this report for the details of the soil profiles encountered at each test hole location. The client should be aware that any information pertaining to soils are furnished as a matter of general information only and borehole descriptions are not to be interpreted as descriptive of conditions at locations other than those described by the boreholes themselves.



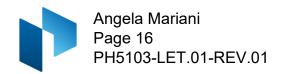
Materials encountered during Paterson's Geotechnical Investigation were generally consistent with the available surficial and bedrock geology mapping.

Hydrogeological Sensitivity of the Site

The subject site currently consists of a warehouse and residential dwelling. The dwelling is currently unoccupied. The topography of the site is generally sloping downwards to the east. The local flow direction of the surficial aquifer is expected to be in the northeasterly direction towards the Carp River. The regional groundwater flow is considered to be in the northeast direction towards the Ottawa River.

The onsite overburden generally consists of topsoil overlying a brown silty sand with gravel, cobbles, boulders and trace clay which is underlain by a fractured bedrock (frost heave/frost shatter) infilled with unconsolidated soils. The unconsolidated soils are noted to have 50 to 80% recovery during split spoon sampling within this stratum. Competent bedrock was encountered during the field investigations at depths of 2.4 to 5.9 m bgs. The frost heave bedrock noted during the borehole field investigation contained high amounts of interspersed silty sand to sandy silt (unconsolidated soils), and some clay with fragmented bedrock. For the purposes of hydrogeological sensitivity, the "fractured bedrock" unit is considered an unconsolidated soil which would provide separation form the ground surface and the underlying competent bedrock. Furthermore, based on hydraulic conductivity testing, the fastest onsite T-time was 13.8 min/cm, which is an order of magnitude slower than the T-time of less than 1 min/cm required for highly permeable soils. There were five additional test locations completed that have estimated T-times in the range of 20 to 40 mins/cm and are all considered to be not hydrogeologically sensitive. Based on this, the soils and underlying interbedded materials are not considered as highly permeable when reviewing against Ontario Building Code (OBC) Section 8.7.2.1 (1) (b)(i) and the MMAH Supplementary Standards SB-6.

Refusal to excavation was recorded on competent bedrock ranging from 2.4 to 5.9 m bgs. According to the geotechnical investigation, the overburden thickness (which includes the fractured bedrock unit with interspersed unconsolidated soils) was observed to be greater than 2 m at all borehole locations. The subject site does not have any mapped karst topography on site. Furthermore, from the TW1 WWR, bedrock was observed at a depth of 4.34 m bgs. As the proposed site does not have bedrock within 2 m of the ground surface, the site is not considered hydrogeologically sensitive. Although mitigative measures, such as increased separation distances, are not required, there is sufficient space onsite to keep the onsite well greater than 30 m away from any onsite septic components.



Conceptual Lot Development

As this Terrain Analysis is completed to support a Re-zoning Application, a Site Plan is not available.

Sewage System Design and Total Daily Design Sewage Flow

As this Terrain Analysis is completed to support a Re-zoning Application, a Site Plan is not available at this time. As such a sewage system design and flows have not yet been completed. A maximum predicted nitrate concentration will be determined for the site as a whole, and the current assessment will be completed based on existing conditions.

The proposed property will be analyzed as part of the Re-zoning Application to ensure the theoretical impacts are below the Ontario Drinking Water Objective maximum allowable concentration of 10 mg/L of nitrate in the groundwater prior to the property line.

PREDICTIVE NITRATE IMPACT ASSESSMENT

Nitrate is considered to be a critical parameter of concern when assessing impacts to groundwater quality downgradient of an onsite sewage system. The City of Ottawa annotated MECP Procedure D-5-4 in the Hydrogeological and Terrain Analysis Guidelines (HTAG) applies for the proposed development. For the purpose of this guideline, the Ontario Drinking Water Objective of 10 mg/L of nitrate is the maximum allowable concentration detectable in the groundwater prior to the property line.

A detailed impact assessment is required due to the proposed zoning of the site. In order to demonstrate that private services would adequately support the proposed Re-zoning Application, a predictive nitrate impact assessment for the subject site was completed. This calculation was completed to determine the maximum sewage flow volume which could be applied to the subject site with the current site conditions. As the site is within the Carp Road Corridor, the use of tertiary treatment systems (nitrate reducing systems) are allowed to be considered in support of re-zoning. The values shown in the Predictive Nitrate Impact Assessment calculation attached to this report are summarized below:

Site area	1.28 ha
Impervious area %	45 %
Concentration of nitrate in effluent (Value based on conventional effluent concentration)	40 mg/L
Concentration of nitrate in effluent	17.2 mg/L

Surplus Water	378 mm/year
(The surplus water value was estimated based on Environ values with a soil type comprised of clay loam (urban lawn, which can be found attached.)	
Combined infiltration factor based on:	0.67
 Topography infiltration factor 	0.25
 Soil texture infiltration factor 	0.30
 Cover infiltration factor 	0.12

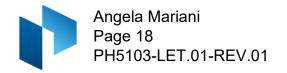
The topography infiltration factor of 0.25 is based upon a slope between "flat land" (<0.6 m/km) and "rolling land" (average slope of 2.8 to 3.8 m/km) based on available mapping.

The soil texture infiltration factor was based upon a soil that is between "open sandy loam" with a value of 0.4 and "medium combinations of clay and loam" with a value of 0.2 which is a reasonable generalization based upon the field investigation by Paterson, available geological mapping and surrounding WWRs.

The "vegetative cover infiltration factor" was calculated as 0.12 based upon the site being used as cultivated land with some trees throughout the site.

As part of the rezoning process, the City of Ottawa does not typically allow the use of tertiary treatment systems to support the re-zoning application, however, as the site is within the Carp Road Corridor, tertiary treatment systems can be used to support the re-zoning application. As a tertiary treatment system requires annual monitoring by the Ottawa Septic System Office (OSSO), and allows for advanced treatment of sewage effluent, a tertiary treatment system is being reviewed for the Subject Site. The mandatory monitoring required on tertiary treatment systems by the OSSO ensures that the system is properly maintained and replaced when required, whereas there is no mandatory monitoring on a conventional sewage system. In order to demonstrate the viability and sustainability aspects of private servicing on the subject site, a Nitrate Impact Assessment was completed using the above noted parameters.

The predicted nitrate concentration calculation for a conventional sewage system (system without nitrate reduction) results in a maximum of **1.58 m³/day** of effluent using a nitrate concentration of 40 mg/L. The inclusion of nitrate reduction technology (57 % nitrogen reduction in the of the effluent nitrate) would result in a maximum of **6.42 m³/day** of effluent using a nitrate concentration of 17.2 mg/L. The Waterloo-Biofilter technology (WaterNOx) is capable of up to 90% nitrate reduction, which would allow greater than **10 m³/day**. Both maximum sewage flow volumes with their respective reduced nitrate concentrations meet the nitrate concentration threshold of below 10 mg/L at the property boundary. Additional re-infiltration from stormwater (up to 10%) could be used to increase the dilution of septic effluent, if needed.



A sewage system installation application for a new sewage system on any site in the City of Ottawa with a sewage flow volume of less than 10 m³/day will require an OSSO application.

CONCLUSIONS

Based on the information contained within the body of this report the following conclusions can be drawn:

- 1. The water supply aquifer underlying the subject site is considered to be adequate to support the water quantity demands for the proposed zoning uses.
- The preferred water supply intercepted by TW1 contains a water supply that is potable and contains only elevated concentrations of hardness and TDS. The noted parameters can be treated with current readily available water conditioning equipment.
- 3. Total Coliforms were detected at 0 ct/100 mL, however, it is recommended that a UV system is installed to assist in the removal of any potential Total Coliforms found in the groundwater, as a precautionary measure.
- 4. If desired by the property owner, a commercial grade water softener can be used to facilitate the reduction of the hardness concentration and reduce scaling. If a water softener is used for the proposed development, the owner should be made aware that additional sodium will be added to the water to reduce hardness. If desired, a point-of-use reverse osmosis system can be used to provide a drinking tap source without increasing sodium levels.
- 5. It is recommended that either a point-of-use reverse osmosis system be used to reduce the TDS concentration, or bulk bottled water is provided as a drinking water source.
- 6. The subject site is sufficient in size to accommodate two new sewage systems and meet all of the regulatory separation criteria. As a precautionary measure, a 30 m setback should be maintained between the drinking water well and any septic system components.
- 7. A maximum sewage flow volume of **1.58 m³/day** at a nitrate concentration of 40 mg/L or **6.42 m³/day** at a nitrate concentration of 17.2 mg/L can be accommodated on the subject site based on the current layout and still be below the predictive nitrate concentration threshold of 10 mg/L at the property boundary.



- 8. Onsite sewage disposal needs can be accommodated with a Class 4 Sewage System utilizing tertiary treatment technologies.
- 9. A Sewage System Permit and Building Permit need to be issued prior to the commencement of construction on the proposed structures or amenities/services.
- 10. The results of the Hydrogeological Assessment and Terrain Analysis have provided satisfactory evidence that the subject site can support the proposed zoning usage with respect to water quality, quantity and sewage system placement.

We trust that the current submission satisfies your immediate requirements.

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Best Regards,

Paterson Group Inc.

Michael Killam, P.Eng

Alexander Schopf, PhD, EIT

Attachments:

Kev	Plan

- MECP Water Well Records 1973843 & 1974461
- Eurofins Certificate of Analysis
- ☐ Paterson PG3834 Test Pit and Borehole Logs
- AQTESOLV Pumping Test Analysis Reports
- Langelier Calculation
- ☐ Nitrate Impact Assessment Calculations
- □ Paterson Drawing PH5103-1 Test Hole Location Plan
- Well Disinfection Instruction Sheet

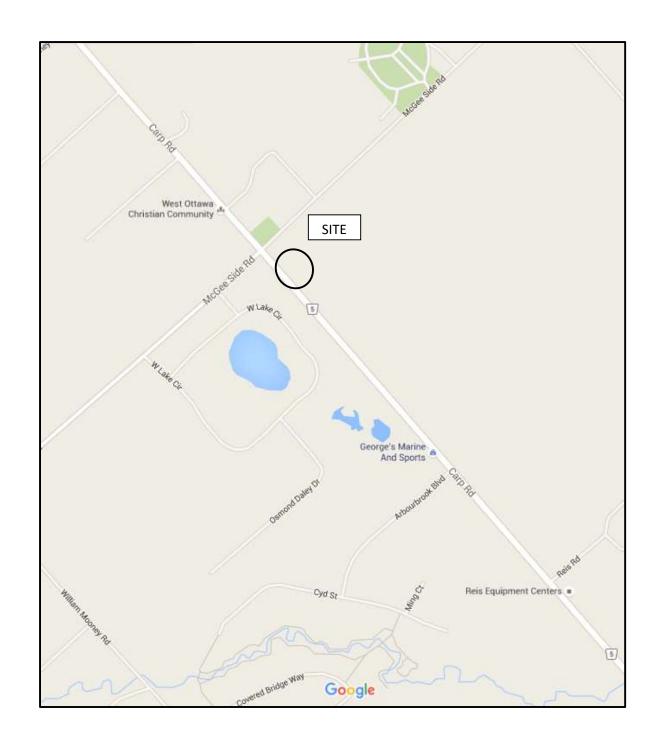


Figure 1 – Key Plan

Ministry of the Environment Well Tag No. (Place Sticker and/or Print Below) Well Record and Climate Change Tag#: A 212621 Regulation 903 Ontario Water Resources Act Page Well Owner's Information Last Name / Organization E-mail Address Mailing Address (Street Number/Name) ☐ Well Constructed by Well Owner Municipality Province Postal Code Telephone No. (inc. area code) Well Location Address of Well Location (Street Number/Name) Lot County/District/Municipality City/Town/Village Province Postal Code Ontario UTM Coordinates | Zone | Easting Northing Municipal Plan and Sublot Number NAD | 8 | 3 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) General Colour Most Common Material Other Materials Depth (m/ft) General Description and+grave gral

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Water found at Depth Kind of Water: Fresh Untested

Water found at Depth Kind of Water: Fresh Untested

Province Postal Code Business E-mail Address

Well Contractor and Well Technician Information

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

58,90 (m/ft) Gas Other, specify

Business Name of Well Contractor

Business Address (Street Number/Name)

(m/ft) Gas Other, specify

Well Owner's Copy

Municipality

Date Package Delivered Ministry Use Only Audit No. **Z**24243 DOININGS

417 HWY

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UTM 18 2 4 2 1 9 2 0 E GROUND WATER BRANCH 15 R 1501791010 N 6 1860 Elev. 4 R 031810 The Ontario Water Resources Commission Act, 1957 RECOURCES COMMISSION Basin 2 5 WATER WELL Carleton Township, Villago, Town or City Huntley
18 mar 1960 **RECORD** County or District..... ate completed 18 max Casing and Screen Record **Pumping Test** Inside diameter of casing 2/ " Static level 20 ' Total length of casing 24 Test-pumping rate 5 G.P.M. Pumping level 21' Type of screen None Length of screen Duration of test pumping /2 hv Depth to top of screen..... Water clear or cloudy at end of test Clear Diameter of finished hole..... Recommended pumping rate _______ G.P.M. Well Log **Water Record** Depth(s) Kind of water From ft. No. of feet Overburden and Bedrock Record found 41 Location of Well For what purpose(s) is the water to be used? in diagram below show distances of well from road and lot line. Indicate north by arrow. Is well on upland, in valley, or on hillside? Licence Number 484 Lot 10 Con 2 Form 5 15M-58-4149 TOWNS HIP HUNTLEY

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MINISTRY OF THE ENVIRONMENT The Ontario Water Resources Act

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į.	19-21	PUMPING 22-24 15 MINUTES	2 R	RECOVERY	4	LOT LIN		TATE NORTH BY ARROV	WELL FROM I	ROAD AND	` \ \
Ĥ	025 1	185 FEET 085 FEET	POSEET POS FEE	1085 FEET	1			5	1		^
CINCOLA	GIVE RATE	38-41 PUMP INTAKE SE	WATER AT END OF	TEST 42 2 □ CLOUDY]			• lmi	*#		
5	RECOMMENDED PUMP	TYPE RECOMMENDED	43-45 RECOMMENDED	46.49				·		_	
L.	50-53	GPM./FT. SPECI	FIC CAPACITY	БРМ GРМ							1
	FINAL	1 WATER SUPPLY 2 OBSERVATION WELL	S ABANDONED, INSUFFI	ICIENT SUPPLY	j	í.	1				
	STATUS OF WELL	3 TEST HOLE 4 RECHARGE WELL	6 ABANDONED POOR Q	UALITY		ĺ					
	55-50	1 DOMESTIC	5 COMMERCIAL 6 MUNICIPAL			\ <u>'</u>	6				
	WATER USE	3 🔲 IRRIGATION	7 D PUBLIC SJPPLY 8 COOLING OR AIR CONDITION	ONING			j.				
L		OTHER	9 □ NOT U:								
Ì	METHOD OF	1 CABLE TOOL 2 ROTARY (CONVENTIO					R	chardson	dide	Rise	1
	DRILLING 5	3 ROTARY (REVERSE) 4 ROTARY (AIR) 5 AIR PERCUSSION	8 [] JETTING 9 [] DRIVING					0.100(11.30)0	·	· · · · ·	
	NAME OF WELL CON	TRACTOR	Luces	CE NUMBER		S REMARKS		EEWSWA			
OR	000		PPLY LID 1.	558	SOU		58 CONT	1.55 8 DATE !	RECEIVED O	770	63-68 80
RACTOR	Box 490		LE ONTAL		SE O	7/05	DN/	INSPECTOR	4		
CONTR	S M	R BORER	LICEN	CE NUMBER	→ REM			71	M.	P`	
၂ၓ			SUBMISSION DATE	1 -10	OFFICE					ļ . —	
<u></u> М	7 1	THE ENVIRONME	DAY QU MO. Z	2/8				· · · · · · · · · · · · · · · · · · ·	<u> </u>	WI	
		THE THAILONNINE	INI GOPT			2KOM			FC	RM 7 MO	E U7-091

Ministry		The Ontario	Water Resources	Act 31 & Ry
of the Environment	WAT	ER WI	ELLR	ECORD
Ontario 1. PRINT ONLY IN SPACES PROVIDED 2. CHECK OCRRECT BOX WHERE APPLICABLE COUNTY OR DISTRICT TOWNSHIP, BORQUEN C	CHY TOWN WHIAGEA	1517377	15.005	C. 9. N
Casteton Des	t Carleter	r (Heartly)	on a.	0/05-27 E COMPLETED / 88-53
IING	Majestic	ELEVADO DA RC	O, Mesean DA	$\langle \langle 0 \rangle \rangle \langle 1 \rangle \langle 2 \rangle \langle 1 \rangle$
LOG OF OVERBURDE	EN AND BEDRO	CK MATERIALS (SEE IN	ISTRUCTIONS).	
CENERAL COLOUR MOST	MATERIALS	GENERA	L DESCRIPTION	DEPTH - FEET FROM TO
grey clay stones				00
		- Company		
grey shaly limed no				12 84
32 GG/720512 GG8H21582				
41 WATER RECORD 51 CASING & WATER FOUND AT - FEET KIND OF WATER DIAM MATERIAL	OPEN HOLE RE	ECORD SIZE SIZE SIZE SIZE SIZE SIZE SIZE SIZE	OF OPENING 31-33	55 75 80 DIAMETER 34-38 LENGTH 39-40
10-13 TFRESH 3 SULPHUR 14 INCHES 2 SALTY 4 MINERAL CO 10-11 CSTEEL	THICKNESS FROM		AL AND TYPE	INCHES FEET DEPTH TO TOP OF SCREEN FEET
15-18 GALVANIZEO 2 GALVANIZEO 2 GALVANIZEO 2 CONCRETE 4 OPEN HOLE 20-23 1 24 17-16 1 STEEL	15 /88 0	20-23 61 DEPTH SE	PLUGGING & S	SEALING RECORD
20-23 FRESH 3 SULPHUR 24 2 GALVANIZED 3 CONLRETE 4 OPEN HOLE		FRGM 10-13	TO MATERIA	L AND TYPE SEMENT GROUT LEAD PACKER ETC
2 SALTY 4 MINERAL 24-25 STEEL 2 GALVANIZED 30-33 1 FRESH 3 SULPHUR 34 80 3 CONCRETE	26	27-30 18-21		,
2 SALTY 4 MINERAL 4 DEPENHALE 71 PUMPING TEST METHOD 10 PUMPING RAIL 11-14 DURATION OF I		LO	CATION OF W	ELL
STATIC WATER LEVEL 25 LEVEL END OF WATER LEVELS DURING	PUMPING RECOVERY	IN DIAGRAM BELOW	SHOW DISTANCES OF WATE NORTH BY ARROW.	
	5 60 MINUTES 2-34 60 35-37			<i>X</i> .
PECOMMENDED BUMP TYPE	R 2 CLOUDY	1		. 21
SHALLOW DEEP SETTING STATE TO SECOMMENDED PUMP SETTING STATE SO-53	6PM GPM			S.J. 10.
FINAL TOWATER SUPPLY STATUS TO WATER SUPPLY STATUS TO OBSERVATION WELL TO OBSERVATION W			Acri	S.J. Pd.
OF WELL 1 TEST HOLE 7 UNFINISHED			2 Km	
WATER STOCK OMMERCIAL	DITIONING		B	(17.15)
□ OTHER 9 □ NOT			\sim	
METHOD OF OF DRILLING CONVENTIONAL 7				
NAME OF WELL CONTROLOGY - / 11 04 ()	CENGE NUMBER	DRILLERS REMARKS DATA 58 CONT	RACTOR 59-62 DATE RECE	:IVED 63-68 80
Berry Hains Old Stilling Ber 326, Richmond C		SOURCE J	10 4.4 0	11280
E MAN SOREM / MAN -	CENCE NUMBER	REMAPKS	m	
SIGNATURE OF CONTRACTOR SUBMISSION DATE DAY	1/ 80	2110		ecc.Es
MINISTRY OF THE ENVIRONMENT COPY				FORM NO. 0506—4—77 FORM.7

-Ministry of the	\A/A'	The Ontario Water Resources Act
Environment Ontario	WA	TER WELL RECORD
1. PRINT ONLY II 2. CHECK ⊠ COF	N SPACES PROVIDED RRECT BOX WHERE APPLICABLE	1523227 NUNICIP O S CON
COUNTY OR DISTRICT	TOWNSHIP, BOROUGH CITY, TOWN, VILLAGE	E CON. BLOCK TRACT SURVEY ETC LOT 25.27
O VISWAIT CARRELL VI		2 E FON M-600 W-3 10
	OF NAC	RC ELEVATION RC BASIN CODE II III IV
	00.05.045.841.855.444	
GENERAL COLOUR MOST	OTHER MATERIALS	ROCK MATERIALS (SEE INSTRUCTIONS)
GREY CLAY		GENERAL DESCRIPTION FROM TO
GREY SIZO	4 42.	HARD 0 30 SOUPY 30 90
GREY SAND	CLAYLAYE	
GREY GRAVEZ	STONES	PACRED 150/68
	,	
31		
32 14 15 21 14 15 14 14 15 14	51 CASING & OPEN HOLE	SIZE S) OF OPENING 31-33 DIAMETER 34-13 DIAMETER 34
WATER FOUND KIND OF WATER	INSIDE WALL THICKNESS	DEPTH - FEET W
16 10-13 1 TRESH 3 SULPHUR 14 4 MINERALS 6 GAS	INCHES INCHES F	FROM TO MATERIAL AND TYPE DEPTH TO TOP AL-44 10 OF SCREEN
15-18 FRESH 3 SULPHUR 19 2 SALTY 6 GAS	62 3 CONCRETE 188	61 PLUGGING & SEALING RECORD
20-23 1 FRESH 3 SULPHUR 24	17-18 1 STEEL 19 2 GALVANIZED 3 CONCRETE	20-23 DEPTH SET AT - FEET MATERIAL AND TYPE (CEMENT GROUT FROM TO LEAD PACKER ETC.)
25-28 1 FRESH 3 SULPHUR 29	4 □ OPEN HOLE 5 □ PLASTIC	27.30 0 10-13 30 Cement
30-33 1 FRESH 3 SULPHUR 34 10	1 □ STEEL 2 □ GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE	26-29 30-33 40
PUMPING TEST METHOD 10 PUMPING RATE	5 PLASTIC	
71 1 PUMP 2 BAILER 25	5 GPM 15-16 17-18 HOURSMINS	
LEVEL END OF WATER LE	EVELS DURING RECOVERY 30 MINUTES 45 MINUTES 60 MINUTES	IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW.
D FEET FEET FEET FEET	7 20-31 1 32-34 C) 35-37 T FEET FEET FEET	25'] * WEZL
FEET FEET FEET FEET IF FLOWING 38-41 PUMP INTAKE S GYP RECOMMENDED PUMP TYPE RECOMMENDED PUMP TYPE PUMP PUMP	WATER AT END OF TEST 41	1 50
RECOMMENDED PUMP TYPE RECOMMENDED PUMP SETTING	GO FEET RATE COMMENDED 46-49 PUMPING GPM	
50-53		House
FINAL STATUS 1 WATER SUPPLY 2 OBSERVATION WELL		
OF WELL 4 RECHARGE WELL	7 UNFINISHED 9 DEWATERING	
WATER 3 IRRIGATION	5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY	
USE 4 INDUSTRIAL OTHER	■ ☐ COOLING OR AIR CONDITIONING ■ ☐ NOT USED	
METHOD CABLE TOOL	● □ BORING	CAVANBUIGH DRIVE
OF 3 ROTARY (REVERSE) CONSTRUCTION 4 ROTARY (AIR)		32740
NAME OF WELL CONTRACTOR	DIGGING OTHER	DRILLERS REMARKS
MANE OF WELL CONTRACTOR Sille	in Color Sumber 5 222	SOURCE STATE CONTRACTOR STATE PACE PACE PACE PACE PACE PACE PACE PAC
ADDRESS PRAY CAND	P.O. 437	SE
NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S	A REMARKS
SIGNATURE OF TECHNICAN CONTRACTOR	SUBMISSION DATE	MDE WDE
MINISTRY OF THE ENVIRON	MENT COPY	FORM NO. 0506 (11/86) FORM 9



The Ontario Water Resources Act WATER WELL RECORD

Ontario	1. PRINT ONLY IN 2. CHECK ⊠ CORR	SPACES PROVIDED SECT BOX WHERE APPLICABLE		15276	642	1,50,05	CON.		1 102
COUNTY OR DISTRICT		TOWNSHIP, BOROUGH, CITY, TOWN, VI				BLOCK, TRACT, SURVE	Y ETC		22 23 24 OT 25-27
		3		on - Huntl	-		DATE COMPLETE	•	10
		O McGee Ro	_	Carp,Onta	rio KO	A ILO	DAY_20	мо _12_	YR. 93_
1 2	N 10 12	17 16 24		25 26	30	31			
GENERAL COLOUR	MOST	OG OF OVERBURDEN AND B	EDR	OCK MATERIA				DEPTH -	FFFT
Provin	COMMON MATERIAL	OTHER MATERIALS			GENERA	L DESCRIPTION		FROM	TO
Brown Gray					•			0	4
Gray	Linestone	Soft Lagers		:				4	155
									1
					· 				
31			1.1		, , .			<u> </u>	
32	14 15		LL LL	المللما	بالنال يالنال				
41 WAT	TER RECORD	51 CASING & OPEN H	OLE		SIZE(S)	OF OPENING 31	-33 DIAMETER	34-38 LEN	75 BO GTH 39-40
AT - FEET	FRESH 3 SULPHUR	INSIDE DIAM MATERIAL THICKNESS INCHES	FI	DEPTH - FEET RUM TO	MATERI	AL AND TYPE		INCHES I TO TOP REEN	FEET 41-44 30
14	SALTY 4 MINERALS 6 GAS	5 174 STEEL 12 -188		0 22"	S				FEET
132 ' -	SALTY 4 MINERALS 6 GAS	4 OPEN HOLE 5 PLASTIC 17-18 1 OSTEEL	1 -	20-23	61 DEPTH SET	PLUGGING			
	SALTY 6 DGAS	2 □ GALVANIZED		22 155	F ROM 10-13	10	TERIAL AND TYPE	CEMENT LEAD PACK	
2 🛭	SALTY 4 MINERALS 6 GAS	24-25 1 STEEL 26 2 GALVANIZED	#	27-30	21	0 Gr	outed Cem	ent (4	1)
" "	FRESH 3 SULPHUR 34 10 4 MINERALS SALTY 6 GAS	3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC			26-29	30-33 00			
71 PUMPING TEST METH		II-14 DURATION OF PUMPING	17-18		LO	CATION OF	WELL		
STATIC LEVEL	WATER LEVEL 25 END OF WATER LEV	GPM HOURS	MINS	IN DIA	GRAM BELOW	SHOW DISTANCES	OF WELL FROM	ROAD AND	
19-21	PUMPING 22-24 15 MINUTES 24-28	2 RECOVERY 30 MINUTES	TES 35-37	1		ATE NORTH BY ARRO	OW.	1	
IF FLOWING. GIVE RATE	85 FEET 76 FEET	85 FEET 85	- 4		<u></u>			7	<u> </u>
IF FLOWING, GIVE RATE RECOMMENDED PUMP	GPM P TYPE RECOMMENDED	FEET 1 CLEAR 2 T CLOI							
SHALLOW	PUMP	PUMPING	GPM			:			ਧ
5.	4		_					Ž V	Road
FINAL STATUS	Z OBSERVATION WELL	 ABANDONED, INSUFFICIENT SUPPRESSION ABANDONED POOR QUALITY UNFINISHED 	?LY					•) U
OF WELL	4 RECHARGE WELL 6 1 DOMESTIC S	☐ DEWATERING ☐ COMMERCIAL	_			مار	, drive	way	¥ 3
WATER	2 STOCK 5	☐ MUNICIPAL ☐ PUBLIC SUPPLY				1	St.	,	E
USE	4 INDUSTRIAL &	COOLING OR AIR CONDITIONING 9 NOT USED				36	\		
METHOD 57	CABLE TOOL 750	.555							
OF CONSTRUCTION	N 1 ROTARY (REVERSE) N 2 ROTARY (AIR)	■ □ JETTING 9 □ DRIVING		12/2			_		
NAME OF WELL CO		1-75 □ DIGGING □ OTHER		DRILLERS REMARKS				L380	165
	Nater Supply Ltd	well contractor Licence number 1558)R 5	DATA SOURCE DATE OF INSPECT	SA CONTA	5 5 8 DATE	JAN 24	1994	63-68 80
ပ်	Stittsville, On			O DATE OF INSPECT		NSPECTOR		ivy i	
NAME OF WELL		WELL TECHNICIAN LICENCE NUMBER	₹	D REMARKS			<u> </u>		
SIGNATURE OF TE	CHNICIAN/CONTRACTOR	SUBMISSION DATE	20	OFFICE					
MINISTRY O	F THE ENVIRONME	DAY <u>29 MO /2 YR</u> NT COPY	النا	<u> </u>			FORM NO. 0	S. E	2 50840

The Ontario Water Resources Act

WATER WELL RECORD

Ontario		SPACES PROVIDED RECT BOX WHERE APPLICABLE	11	1528	596	115005	con.	1 102
COUNTY OR DISTRICT	^	TOWNSHIP, BOROUGH, CITY,	RLETON	s Hunz		BLOCK TRACT, SURVEY	ETC	22 23 74 LOT 25-27
		21	70 L	Ac Cace	≤ 1	$\widehat{\mathcal{R}}_{\alpha}$	DATE COMPLETED DAY 10 MO 5	
1 2	M 10 12	ING	<u>/ </u>	C. ELEVATION		MASIN CODE	" " " " " " " " " " " " " " " " " " "	
		OG OF OVERBURDEN	AND BEDR		ALS (SEE)	NSTRUCTIONS)		47
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATE	ERIALS		GENER	AL DESCRIPTION	DEPTH FROM	- FEET
BROWN	SAND	STONES	Chry				0	7
GREY	LIMESTONE		,		ME	O, HARD	7'	110
GREY	LIMESTONE	BLACK	Limes	1		O HARD	110	150
GREY	HIMESTONE	BLACK-LIN	MESTU	∪Æ		9×1)	150	200
			. 448.4					
		,						
31					البلبا	111111		
1 Z 10	TER RECORD	51 CASING & O	PEN HOLE	RECORD.	SIZE(S	OF OPENING 31-3	65 13 DIAMETER 34-38 L	75 10 ENGTH 39-40
WATER FOUND AT - FEET	KIND OF WATER	INSIDE DIAM MATERIAL INCHES	WALL	DEPTH - FEET	U ISLOT	RIAL AND TYPE	DEPTH TO TOP	FEET 41-44 30
140	FRESH 3 SULPHUR SALTY 4 MINERALS 6 GAS	1971 1 DSTEEL 12	188 (22"	SC		OF SCREEN	FEET
1.101	FRESH 3 SULPHUR 4 MINERALS 5ALTY 6 GAS	3 CONCRETE 4 OPEN HOLE 5 PLASTIC	700	20-23	61	PLUGGING 8	SEALING RECO	
2 0	FRESH 3 SULPHUR 24 SALTY 6 GAS	1 STEEL 2 GALVANIZED 3 GONCRETE 4 BOPEN HOLE	2	Z' 200'	FROM	TO MATI		NT GROUT CKER ETC)
2 🗆	FRESH 3 SULPHUR 29 4 MINERALS 5 GAS	5 □ PLASTIC 24-25 1 □ STEEL 2 □ GALVANIZED		27-30	18.		MENT GR	out
	FRESH 3 SULPHUR 34 00 4 MINERALS SALTY 6 GAS	3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC			26-2	9 30-33 40		
71 PUMPING TEST MET	HOD IO PUMPING RATE	11-14 DURATION OF PUM 2 15-16	17-18		L	OCATION OF	WELL	
STATIC LEVEL	WATER LEVEL 25 END OF WATER LE	VELS DURING PROPERTY REPORTS	ÜMPING	IN DI.		W SHOW DISTANCES O CATE NORTH BY ARRO	F WELL FROM ROAD AI W.	ND D
18 /8	22-24 15 MINUTES 26-28					4.GRESJ. R	ð.	
FEET F FLOWING. GIVE RATE RECOMMENDED PUM	FEET FEE 38-41 PUMP INTAKE S	ET AT WATER AT END OF	TEST 42			-		
RECOMMENDED PUM	PUMP	FEET 1 CLEAR 43-45 RECOMMENDED PUMPING 2	2 CLOUDY 46-49					ĺ
SHALLOW	DEEP SETTING	/S FEET RATE	GPM		§ 5			_
FINAL STATUS	WATER SUPPLY 2 G OBSERVATION WELL	5 ABANDONED INSUFFI		6000	200			
OF WELL	3 TEST HOLE 4 RECHARGE WELL	7 UNFINISHED DEWATERING						J
WATER	DOMESTIC To STOCK Registrion	5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY			hema	- x	15' -	
USE	4 INDUSTRIAL OTHER	COOLING OR AIR CONDITION Output Outp			28	1-401		
METHOD	CABLE TOOL CABLE TOOL CONVENTE	6 BORING ONAL) 7 DIAMOND			4			
OF CONSTRUCTIO	3 ROTARY (REVERSE)	# JETTING 9 DRIVING			r		1 4 0	574
NAME OF WELL CO		WELL C	OTHER	DRILLERS REMARK		TRACTOR 59.62 DATE		574
D ADDRESS	4 DRILLING	- INC SZ	ZZ	SOURCE DATE OF INSPER	5		AUG 2 8 1995	
NAME OF VELLE	BOX 437	CARP, ON	ECHNICIAN'S	S REMARKS				
SIGNATURE OF T	ECHNICIAN CONTRACTOR		NUMBER	FFICE				
1.	Show	вач мо	YR	9		·	CSS.E	
MINISTRY C	OF THE ENVIRONM	ENT COPY					FORM NO. 0506 (11	/86) FORM 9

Ontario Ministry of the Environment	Well Tat 4 04970:	it Below)	Well Record
O I I COI I O	A049T	Regulation	on 903 Ontario Water Resources Ac Page of
Well Owner's Information			
First Name Last Name	E-mail Addres	SS	☐ Well Constructed
Mailing Address (Street Number/Name, RR)	Municipality	Province \(\) Rostal Code	by Well Owner Telephone No. (inc. area code)
+2171 MEGE Side	Road Carp	CAT KOLA	relephone No. (inc. area code)
Part A Construction and/or Major Alteration of a			44911111111
Address of Well Location (Street Number/Name, RR)	0 Township 0	Lot 11	Concession
County/District/Municipality	City/Town/Village	WITTER III	Province Postal Code
Otowa Cor leter	Car	0	Ontario Jan 1 1
UTM Coordinates Zone Easting Northing	GPS Unit Make Model	Mode of Operation:	Undifferentiated Averaged
NAD 8 3 1 5 4 5 9 4 1 9 9 10	121 Magellon	Differentiated, specify	
Overburden and Bedrock Materials (see instructions on General Colour Most Common Material	Other Materials	General Description	Depth (Metres)
Sand Go	20,00		From To
Carlo	205		
5,00	1100100		10/0
	A Market and the second and the seco		
		The state of the s	
~ 01	0000	· · · · · · · · · · · · · · · · · · ·	
ATRI	RIDKINE	210 W	
Annular Space/Abandonment Se			ell Yield Testing
Depth Set at (Metres) Type of Sealant Used From To (Material and Type)	Volume Placed (Cubic Metres)	Check box if after test of well yield, water was:	Draw Down Recovery Time Water Level Time Water Level
610 0 West Coment	5/400 1.2724	Clear and sand free	(Min) (Metres) (Min) (Metres)
	7	state If pumping discontinued, give reason:	Static Static Level 34-70
		in pumping discontinued, give reason.	1708 1 3236
		Pumping test method	2 8 00 2 3 30
		Pump intake set at (Metres)	3 9 50 3 2 25
Method of Construction ☐ Cable Tool ☐ Diamond ☐ Public	Water Use	9144	4 10 30 4 29 18
☐ Rotary (Conventional) ☐ Jetting ☐ Dőmestic	☐ Municipal ☐ Dewatering	Pumping rate (Litres/min)	5 11 20 5 20 20
☐ Rotary (Reverse) ☐ Driving ☐ Livestock ☐ Rotary (Air) ☐ Digging ☐ Irrigation	☐ Test Hole ☐ Monitoring ☐ Cooling & Air Conditioning	Duration of pumping	100
Air percussion Boring Industrial	A CONTRACT OF THE STATE OF THE	hrs + min	15, 22, 3
Other, specify Status of Well		Final water level end of pumping (Metres)	15 18 60 15 20.
Water Supply Dewatering Well	Observation and/or Monitoring Hole	Recommended pump type	20 9, 40 20 1660
☐ Replacement Well ☐ Abandoned, Insufficient Supply ☐ Test Hole ☐ Abandoned, Poor Water Quality	☐ Alteration (Construction) ☐ Other, specify	☐ Shallow ☐ Deep	25 23.87 25 1390
Recharge Well Abandoned, other, specify		Recommended pump depth	30 26. 30 158
Location of Well Please provide a map below showing:		Recommended pump rate	40 2966 40 9 90
- all property boundaries, and measurements sufficient to locate	the well in relation to fixed points,	(Litres/min))	50 2 56 50 7 80
 an arrow indicating the North direction detailed drawings can be provided as attachments no larger that 	an legal size (8.5" by 14")	If flowing give rate (Litres/min)	60 34 90 60 63
- vidigital pictures of inside of well can also be provided			I have a
	\sim	The state of the s	r Details of Water
		Gas Fri	sh Salty Sulphur Minerals
IN IKM	(60)		of Water
		Water found at Depth Kind	esh
70/2	171 MCGEE		esh Salty Sulphur Minerals
	171 20000	Casing Used Screen User	
7	3(DE)	Galvanized Galvanized	Diameter of the Hele (Centimetres)
		Steel Steel Fibreglass	Depth of the Hole (tytetres)
Date Well Completed Was the well owner's information C	ate the Well Record and Package elivered to Well Owner (yyyylmm/dd)	Plastic Plastic	1000
Clyyyy/mre/dd) S package delivered? O No S No S	207-8-3	Concrete Concrete	Wall Thickness (Metres)
Well Contractor and Well Technici		No Casing and Screen Used	Inside Diameter of the Casing (Metres)
Business Name of Well Contractor	Well Contractor's Licence No.	Disinfected?	Double of the David William
Business Address (Street No./Name, number, RR)	Municipality 7	Yes No	Depth of the Casing (Majords)
KRA 1	RICHMOND	/ Ministr	y Use Only
Province Postal Code Business E-mail Ad		Audit No. z 60149	Well Contractor No.
Bus. Telephone No. (inc. area code) Name of Well Technician (L	ast Name, First Name)	Date Received (yyyy/mm/dd)	Date of Inspection (yyyy/mm/dd)
G13838A17/ DESCU	invers ten	OCT 1 5 2007	
Well Technician's Licence No. Signature of Technician	Date Submitted (yyyy/mm/dd)	Remarks	1
0506E (11/2006)	0007-10-10		@ Outpools Politics Co. 1
popul (History)	Ministry's Copy		© Queen's Printer for Ontario, 2006



Measurements recorded in:

Well Owner's Information

Ministry of the Environment

Metric Imperial

Last Name / Organization

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

Well Record

A076883

A076883

E-mail Address

n 903 Ontario Water Resources Act

Page_

First Name Last Name / Organization Shell Star Holdings						1					Constructed			
Mailing Address (Street Number/Name) P.O. Box 569 Municipality Stittsville									by Well Owner one No. (inc. area code) [8 8β1 9041					
Well Location				1										
	ocation (Street N	,		I	ownship	mloton		L	_ot 10		Concession	on 3		
245 West County/District/M	Lake Circ	re			West Ca					Provin	ice		Il Code	
Ottawa C	arleton			I	Carp					Ont	ario			
UTM Coordinates	1 1 -		orthing		funicipal Pla	n and Sublo	ot Number			Other				
NAD 8 3	1 8 4217 d Bedrock Mate		501804		rd (see instn	ictions on the	back of this form	n)		2800 (325) 8		331.000.000		
General Colour	i .	ımon Material			er Materials		, 		Description	W. C.	200000000000000000000000000000000000000	De _l From	oth (<i>m/ft)</i> To	
Brown	Hardpa	n	İ	Boul	ders	***************************************						0	2.43	
Gray	Limest						Laver	ed & S	Soft			2.43	6.09	
Gray	Limest						Mediu					6.09	49.37	
GLay	Lunest	OHE					110010					· · · · · · · · · · · · · · · · · · ·		

										,moras manus (1170)				

		Annular	Space					Re	sults of We	ell Yiel	d Testing	ı		
Depth Set at (n From T	n/ft)	Type of Sea (Material an	lant Used	******		Placed	After test of we	ell yield, wa	ter was:		aw Down	F	Recovery	
		***************************************			.31n		Other, sp			(min)	Water Lev (m/ft)	et Time (min)	Water Level (m/ft)	
7.31 0	Groute	d Cement	а веш	conrce	.311		If pumping dis	continued,	give reason:	Static Level	4.89			
										1	5.55	1	5.27	
						***************************************	Pump intake)	2	5.79	2	5.06	
							Pumping rate	2.85	24.43	3	1	3		
	of Construction	. 6		_Well Us				4.6	·WI)	4	5.89	4	4.98	
	☐ Diamoi ntional) ☐ Jetting	□ Do	mestic	☐ Commer ☐ Municipa		Not used Dewatering	Duration of po			5	5.96	5	4.93	
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X Air percussion		☐ Ind	ustrial	ccoming	a 7 iii oonanie	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	5.23	amping (mm)	10	6.07	10		
Other, specify_	201 - 1000-1000 - 1000-1000-1000-1000-10		er, specify_	1.074950085274710390	II alkala o par paran		If flowing give	rate (I/min	/ GPM)	15	6.10	15		
Inside Ope	Construction of Hole OR Material	Wall		(<i>m/ft</i>)	X Water S	of Well Supply	Recommende	ed pump de	epth (m/ft)	20	6.12	20		
Diameter (Gal (cm/in) Con	lvanized, Fibreglass, crete, Plastic, Steel)	Thickness (cm/in)	From	То	Replace		22	2.85		25	6.13	25		
15.86	Steel	.48	+.45	7.31	Recharg	ge Well	Recommende (I/min / GPM)	ed pump ra	ite	30	6.14	30		
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093679 Ministry of Well Record the Environment Regulation 903 Ontario Water Resources Act mperial Page of le Circle Province Postal Code Ontario Other Municipal Plan and Sublot Number NAD | 8 | 3 | 8 4M Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m(ft) Other Materials General Description From 9 01 Results of Well Yield Testing Annular Space Depth Set at (n(ft) After test of well yield, water was Volume Placed Recovery (Material and Type) (meft3) Time Water Level Time Water Level (min) (m/lt) (m/ft) Static Level L(') If pumping discontinued, give reason Pump intake set at (n/ft) 168" 3 Pumping rate (I/min GPM) Method of Construction Well Use Public Commercial ☐ Not used Rotary (Conventional) Domestic Jetting ☐ Municipal Dewatering 1118 hrs + min Rotary (Reverse) Driving Livestock Test Hole ☐ Monitoring Boring Digging ☐ Imigation Cooling & Air Conditioning Final water level end of pumping (m/ft) 10 Air percussion 56 Industrial Other, specify Other, specify 15 f flowing give rate (Vmin / GPM) Construction Record - Casing Status of Well 3'4" 20 Open Hole OR Material (Galvanized, Fibreglass Depth (m/ft) Water Supply
Replacement Well Wall Recommended pump depth (m/ft) Thickness 54-6" 25 100 To (cm/in) Concrete, Plastic, Steel) (cm/in) ☐ Test Hole C inded pump rate 188" 30 Recharge Well (GPM) Dewatering Well 40 Observation and/or Well production (Vmin GPM)
Disinfected? Monitoring Hole 50 5'8" Alteration (Construction) Pes No 60 Abandoned, Insufficient Supply Construction Record - Screen Map of Well Location Abandoned, Poor Please provide a map below following instructions on the back Outside Depth (m/ft) Water Quality Material Slot No (Plastic, Galvanized, Steel) Abandoned, other, From specify Other, specify Water Details Hole Diameter Depth (m/ft) Water found at Depth Kind of Water: Fresh Untested Diameter 52(n) Gas Other, specify To (u Water, found at Depth Kind of Water. ☐ Fresh ☐ tested ☐ Other, specify 6 Vater found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Well Contractor's Licence No. ess (Street Number/Name)) () (Comments: Etmond ostal Code Business E-mail Address ROAD 70 Well owner information Date Package Delivered Ministry Use Only Nechnician (Last Name, First Name) 010000 package 08236 10 Kathan delivered Yes Yes MAR 2 2 2010 00031 No 20100201 0506E (12/2007) Queen's Printer for Ontario, 2007 Ministry's Copy

A105394 Well Tay IVO. Well Record elow) Ministry of Regulation 903 Ontario Water Resources Act the Environment Metric | Imperial Page Measurements recorded in: of Well Location (Street Number/Name) Ontario Municipal Plan and NAD | 8 | 3 2029454 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) General Colour Other Materials General Description a Caravel (Annular Space Results of Well Yield Testing Type of Sealant Used (Material and Type) Volume Placed After test of well yield, water was Depth Set at (pa/ft) Draw Down Recovery Time Water Level (m/ft) (m/ft) Static Level 162 11184 ation of pumping Method of Construction Well Use Diamond ■ Not used Cable Tool Public Commercial Domestic Rotary (Conventional) Jetting Municipal Dewatering hrs + O min Rotary (Reverse) Driving Livestock Test Hole ■ Monitoring ☐ Digging Boring ☐ Irrigation Cooling & Air Conditioning Final water level end of pumping (m/ft, wing give rate (I/min / GPM) Air percussion Industrial Other, specify Other, specify Construction Record - Casing Status of Well Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) mended pump depth (neft) Depth (met) Inside Wall Water Supply Replacement Well To Test Hole Recharge Well 28 -188 Dewatering Well 160 Observation and/or 120 Well production (Vm min (GPM) Monitoring Hole 50 Alteration (Construction) XYes No 60 Abandoned, Insufficient Supply Construction Record - Screen Map of Well Loy Abandoned, Poor Outside Please provide a map below following Depth (m/ft) Water Quality (Plastic, Galvanized, Steel) Abandoned, other, From (cm/in) specify 3KM Other, specify Water Details Water found at Depth Kind of Water: Fresh Watested Depth (m) Gas Other, specify found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Municipality Comments: 1CHMON Business E-mail Address Well owner's information package Ministry Use Only Well Technician (Last Name, First Name) 201001703 Ministry's Copy

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the Environment on 903 Ontario Water Resources Act A102298 A102298 Measurements recorded in: X Metric Imperial Page of Address of Well Location (Street Number/Name) Township Concession Lot 5 West Lake Estates West Carleton-Huntley 10 County/District/Municipality City/Town/Village Postal Code Ottawa Carleton Carp Ontario UTM Coordinates Zone Easting Northing Municipal Plan and Sublot Number Other NAD | 8 | 3 1 8 | 421718 | 5018158 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) General Colour Most Common Material Other Materials General Description From 0 .60 Brown Soil. Brown Shale. Soft .60 5.48 Grey 70.40 Limestone Brown Layers Medium Soft 5.48 Annular Space Results of Well Yield Testing After test of well yield, water was: Depth Set at (m/ft) Type of Sealant Used Volume Placed Draw Down Recovery Clear and sand free Other, specify (Material and Type) (m3/ft3) Time Water Level Time Water Level .21m³ (min) (m/ft) (m/ft) (min) 8.83 0 Grouted Cement Slurry Static If pumping discontinued, give reason: 6.38 Level 6.65 1 1 7.03 Pump intake set at (m/ft) 2 2 6.41 7.14 18.28 3 6.38 Pumping rate (I/min / GPM) 7.18 3 Method of Construction Well Use 45.5 Cable Tool 4 Diamond Public 7.19 4 Commercial ☐ Not used Duration of pumping X Domestic Rotary (Conventional) Jettina Municipal Dewatering 5 5 Driving 7.20 2 hrs + min X Rotary (Reverser Livestock Test Hole Monitoring Boring Final water level end of pumping (m/ft) Digging Irrigation Cooling & Air Conditioning 10 7.22 10 X Air percussion Industrial 7.46 Other, specify 15 7.26 15 If flowing give rate (I/min / GPM) Construction Record - Casing Status of Well 20 20 7.32 Open Hole OR Material Depth (m/ft) Wall X Water Supply Recommended pump depth (m/ft) (Galvanized, Fibreglass, Concrete, Plastic, Steel) Thickness From Replacement Well 18.28 25 7.40 25 To (cm/in) Test Hole Recommended pump rate (Vmin / GPM) 45.5 15.86 Recharge Well 30 30 +.45 8.83 Stee1 .48 7.45 Dewatering Well 40 40 Observation and/or Monitoring Hole Well production (I/min / GPM) 50 7.48 50 Alteration Disinfected? (Construction) 7.47 60 60 X Yes No Abandoned, Insufficient Supply Construction Record - Screen Map of Well Location Abandoned, Poor Outside Depth (m/ft) Water Quality Please provide a map below following instructions on the back Material (Plastic, Galvanized, Steel) Diamete (cm/in) Abandoned, other, From specify WEST LAKE ESTATES Other, specify Water Details Hole Diameter Water found at Depth Kind of Water: Fresh X Untested Diamete (cm/in) Depth (m/ft) From 70.10 m/h Gas Other, specify To LOT#5 0 8.83 Water found at Depth Kind of Water: Fresh Untested 15.86 (m/ft) Gas Other, specify 8.83 70.40 15.55 Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Business Name of Well Contractor Well Contractor's Licence No. Capital Water Supply Ltd. 1 | 5 | 5 | 8 Business Address (Street Number/Name) Municipality Comments Box 490 Stittsville Province Postal Code Business E-mail Address office@capitalwater.ca K2S | 1A6 | Well owner's information Ontario Date Package Delivered Ministry Use Only Bus.Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name) Audit No. 2 0 1 0 0 17 2 6
 613 836 1766 | Miller, Stephen

 Well Technician's Licence No. Signature of echnician and/or Contractor Date Submitted

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Well Record

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asurements recorded in: X Metric | Imperial Well Owner's Information Last Name / Organization E-mail Address ☐ Well Constructed by Well Owner Shell Star Holdings Municipality Telephone No. (inc. area code) Mailing Address (Street Number/Name) Province Postal Code P.O. Box 569 Stittsville Ontario K2\$ 1A6 613 831 9041 Well Location Address of Well Location (Street Number/Name) Township Lot Concession Lot 30 West Lake Estates West Carleton - Huntley 10 Postal Code County/District/Municipality City/Town/Village Ottawa Carleton Carp Ontario UTM Coordinates Zone Easting Northing Municipal Plan and Sublot Number 421995 5017833 NAD 8 3 1 8 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) General Colour Most Common Material General Description From 0 7.31 Brown Soil Large Boulders Grey Limestone Dark Layers Medium 7.31 83.20 Annular Space Results of Well Yield Testing After test of well yield, water was: Volume Placed Draw Down Recovery Depth Set at (m/ft) Type of Sealant Used (Material and Type) (m^2/Π^3) X Clear and sand free Time Water Level Water Level .548m³ Other, specify (min) (m/ft) (m/ft) 10.36 0 Grouted Bentonite Slurry Statio If pumping discontinued, give reason: 4.14 Level 38.65 1 6.40 1 Pump intake set at (m/ft) 2 8.53 37.60 45.71 3 36.17 Pumping rate (I/min / GPM) Well Use Method of Construction 36.40 4 10.42 4 34.60 Cable Tool
Rotary (ConvMudhal) Diamond Public Commercial ☐ Not used Duration of pumping X Domestic Municipal Jettina Dewatering 1 hrs + 5 12.40 33.15 min ☐ Monitoring Rotary (Reverse) Driving Livestock Test Hole Cooling & Air Conditioning Final water level end of pumping (m/ft) Boring Digging Irrigation 16.50 10 10 26.60 Air percussion Industrial 41.0 Other, specify Other, specify 15 20.08 15 If flowing give rate (Vmin / GPM) 20.49 Construction Record - Casing Status of Well 20 22.20 20 17.30 Open Hole OR Material X Water Supply Recommended pump depth (m/ft) Wall (Galvanized, Fibreglass, Concrete, Plastic, Steel) Replacement Well 25 16.26 From 45.71 25.13 25 (cm/in) Test Hole Recommended pump rate Recharge Well 28.85 30 12.46 15.86 Stee1 .48 +.45 10.36 Dewatering Well 36.40 40 9.91 40 32.95 Observation and/or Well production (I/min / GPM) Monitoring Hole Alteration (Construction) 50 36.77 50 6.43 Disinfected? 60 41. 60 4.40 X Yes No Abandoned, Insufficient Supply Map of Well Location Construction Record - Screen Abandoned, Poor Depth (m/ft) Water Quality Please provide a map below following instructions on the back Diamete (cm/in) Abandoned, other, From specify WEST LAKE ESTATES 1 Other, specify Water Details Hole Diameter Water found at Depth Kind of Water: Fresh X Untested Depth (m/ft) Diameter 33.52(m/ft) Gas Other, specify 0 10.36 15.86 Water found at Depth Kind of Water: Fresh X Untested 6 79.24(m/ft) Gas Other, specify 10.36 83.20 15.39 Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Business Name of Well Contractor Well Contractor's Licence No Capital Water Supply Ltd. 1 | 5 | 5 | 8 Business Address (Street Number/Name) Municipality Comments: Box 490 Stittsville Province Postal Code Business E-mail Address office@ capitalwater.ca Well owner's information Date Package Delivered Ministry Use Only Ontario K2S 1A6 Bus.Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name) 201011111 package 5651 Miller, Stephen 613 886 1766 delivered $z \perp$ Date Work Completed X Yes Well Technician's Licence No. Signature Technician and/or Contractor Date Submitted 0 0 9 201011115 2010110 7

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			nment Sealing	g Reco	rd (see instructions on the b	eack of this form)	Robbies	Mill		Don	tle (ma/fill)
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Rotary (f	Reverse) Driving Diggin	The state of the s		Test Ho Cooling	le Monitoring & Air Conditioning	Final water level end		10		10	
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Other, s _i			er, specify		Chatra of Wall	If flowing give rate (l	min / GPM)	15		15	
Inside	Construction Open Hole OR Material	Wall	Depth (m	/ft)	Status of Well Water Supply	Recommended pur	p depth (m/ft)	20		20	
Diameter (cm/in)	(Galvanized, Fibreglass, Concrete, Plastic, Steel)	Thickness (cm/in)	From	То	Replacement Well			25		25	
					☐ Test Hole . ☐ Recharge Well	Recommended puri	p rate	30		30	
1 1 1 1 1 1 1 1					Dewatering Well			40		40	
1 1 1 1 1 1				200	Observation and/or Monitoring Hole	Well production (I/m	in / GPM)	1			
					Alteration (Construction)	Disinfected?		50		50	
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0.44	Construction	Record - Scre			Abandoned, Poor	Please provide a maj	Map of W			ook	
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Box 49	Address (Street Number/	Name)		1 11	nicipality	Comments:					
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Well Record

in 903 Ontario Water Resources Act

Page Imperial Measurements recorded in: X Metric Well Owner's Information ☐ Well Constructed E-mail Address Last Name / Organization First Name by Well Owner T. Goddard Construction Postal Code Telephone No. (inc. area code) Province Mailing Address (Street Number/Name) Municipality Carp Ontario KOA 1LO 613 227 7870 335 West Lake Circle Well Location Address of Well Location (Street Number/Name) Township West Carleton - Huntley Lot 29 West Lake Estates Postal Code Province City/Town/Village County/District/Municipality Ontario Ottawa Carleton Carp Municipal Plan and Sublot Number Other 5017894 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) General Description Most Common Material Other Materials General Colour From 0 5.48 Large Boulders Brown Soil Grey 5.48 83.20 Limestone Dark Layers Results of Well Yield Testing Annular Space Draw Down After test of well yield, water was: Recovery Type of Sealant Used (Material and Type) Volume Placed Depth Set at (m/ft) (m^3/ft^3) Time Water Level Time Water Level X Clear and sand free (min) (m/ft) (min) (m/ft) Other, specify .46m³ 0 Grouted Bentonite Slurry 8.53 Static If pumping discontinued, give reason: 3.65 Level 5.04 4.74 Pump intake set at (m/ft) 2 4.29 5.13 76.19 3 3 Pumping rate (I/min / GPM) 5.38 3.98 Method of Construction Well Use 45.5 5.56 3.87 Diamond
Jetting ☐ Commercial ☐ Municipal ☐ Not used ☐ Dewatering Cable Tool Public Duration of pumping X Domestic Rotary (Conventional) 1 hrs + 5 min 5.68 3.82 Livestock ☐ Monitoring Test Hole Rotary (Reverse) Driving ☐ Irrigation Final water level end of pumping (m/ft) Boring Digging Cooling & Air Conditioning 10 10 5.96 3.76 Industrial
Other, specify Air percussion 6.79 Other, specify 15 6.02 3.71 If flowing give rate (I/min / GPM) Construction Record - Casing Status of Well 20 20 3.68 Depth (m/ft) Water Supply Open Hole OR Material Recommended pump depth (m/ft) Inside N/Vall (Galvanized, Fibreglass, Concrete, Plastic, Steel) Diamete (cm/in) Thicknes (cm/in) Replaceme Replacement Well 25 22.85 From To 6.03 Recommended pump rate 30 Recharge Well 6.42 (I/min / GPM) 15.86 Steel 48 +.45 8.53 45.5 Dewatering Well 40 40 6.76 Observation and/or Monitoring Hole Well production (I/min / GPM) 50 6.78 Alteration Disinfected? (Construction) 60 X Yes No 6.79 Abandoned, Insufficient Supply Map of Well Location Construction Record - Screen Abandoned, Poor Please provide a map below following instructions on the back. Water Quality Depth (m/ft) Material (Plastic, Galvanized, Steel) Slot No. Abandoned, other, WEST LAKE (cm/in) specify M ESTATES LOT#29 Other, specify Water Details Hole Diameter Depth (m/ft) Water found at Depth Kind of Water; Fresh X Untested From 57.90(m/ft) Gas Other, specify Water found at Depth Kind of Water: Fresh X Untested 15.86 0 8.53 82.29(m/ft) Gas Other, specify 8.53 83.20 Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information Business Name of Well Contractor Well Contractor's Licence No. 1 | 5 | Capital Water Supply Ltd. 5 8 Comments: Business Address (Street Number/Name) Municipality Box 490 Stittsville Business E-mail Address Province Postal Code K2S 1A6 Well owner's information office @ capitalwater.ca Date Package Delivered Ministry Use Only Bus.Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name) package 2 0 1 1 0 6 1 7 15728 613 836 1766 Miller, Stephen delivered Date Work Completed Well Technician's Licence No. Sign X Yes Technician and/or contractor Date Submitted NOV 0 2 2011 0 0 9 7 20110617 No 20110617

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Ministry of the Environment

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

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Well Record tion 903 Ontario Water Resources Act

Page_____ of ___

Measurements record	led in: 🕌 Metric 🗌 Imp	perial		****		A113020			Page_		of	
Well Owner's Info												
First Name	Last Name / Org					E-mail Address				Well Constructed by Well Owner		
Mailing Address (Stree	Shell St	ar noid	-	unicipality		Province	Postal Code		elephone N	o. (inc.	area code)	
P.O. Box 569			1	tittsvil	11e	Ontario	K2S 1A6	(513 831	904	$\cdot 1 \mid \ \mid \ \mid$	
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Lot 6 West L			1	est Car. ty/Town/Villa		Huntley		Provinc	e	Postal	Code	
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Overburden and Bed	drock Materials/Abandonr	nent Sealin			tions on the b	back of this form)	al Description				th (<i>m/ft</i>)	
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						If pumping discontinue	d, give reason:	Level	6.60			
								1	8.30	1	9.50	
						Pump intake set at (n	n/ft)	2	9.05	2	8.50	
gradient in the second of the second						60.95 Pumping rate (I/min /	CPM)	3	9.50	3	8.00	
Method of Co	nstruction		Well Use			36.40	GF WI)	4	9.81	4	7.59	
Cable Tool	Diamond Publi	-	Commen Municipa		Not used Dewatering	Duration of pumping						
Rotary (Conventiona Rotary (Reverse)	Driving Lives	stock	Test Hole	e 🔲 !	Monitoring		nin	5	10.10	5	7.20	
Boring	☐ Digging ☐ Irriga		Cooling 8	& Air Condition	ning	Final water level end of 11.77	f pumping (m/it)	10	10.91	10	6.89	
Air percussion Other, specify	Indus	striai r, <i>specify</i>				If flowing give rate (I/r	nin / GPM)	15	11.36	15	6.59	
	nstruction Record - Casi	ng		Status	of Well			20	11.54	20		
	le OR Material Wall ed. Fibreglass, Thickness	Depth (n	n/ft)	☑ Water St	1	Recommended pump	depth (m/ft)	25		25	<u> </u>	
Diameter (Galvaniz (cm/in) Concrete	ed, Fibreglass, Thickness Plastic, Steel) (cm/in)	From	То	Replace		30.47 Recommended pump	n rate	╂				
15.86 St	eel .48	+.45	9.75	Recharg		(I/min / GPM) 36.40	3 1410	30		30		
				Dewater Observat	-	Well production (I/mir	1 / GPM)	40		40		
Abanyana				Monitorin	ng Hole	Wolf production (####	.,,	50		50		
				Alteration (Constru		Disinfected?		60	11.77	60		
				Abandor	ned, ent Supply	X Yes No		<u> </u>		<u> </u>		
	onstruction Record - Scree		/(1)	Abandor Water Q	ned, Poor	Please provide a map	Map of W			oack.		
Diameter (Plastic G	Material Slot No.	Depth (n	n/π) Το	Abandor	· '		MEKEE					
(cm/in) (riasto, c		, , , , , ,		specify								
				Other, s	specify	WEST LAKE			, į			
arte con a contrata de la contrata del contrata de la contrata del contrata de la contrata del la contrata de contrata del la contrata del l	i de la companya de					ESTRTES	L	01#	b /			
	Water Details		00/2/2010/09/2019 11/2019 11/20	ole Diamet		03	·	/	,			
	Kind of Water: Fresh X	Untested	Dept From	th (<i>m/ft)</i> To	Diameter (cm/in)			1			/	
42.66m/ft) Gas	S Other, specify Kind of Water: Fresh X	Untested	0	9,75	15.86			/			/	
73.75m/ft) Gas		1	9.75	75.58	15.23	4	JEST			\ <u>\</u>	,	
Water found at Depth	Kind of Water: Fresh	Untested	· · · · ·	, , , ,			213	ie 📐		`	/	
	Other, specify				WW		VEST 419	C ,	1000 CE		/	
Business Name of We	Vell Contractor and Well	<u> rechnician</u>	Informat We	tion ell Contractor's	Licence No.						_	
	er Supply Ltd.		1		5 8							
Business Address (St		The second secon	-	unicipality		Comments:						
Box 490				Stittsvi	ille							
		E-mail Addre		a+a ==		Well owner's Date	Package Delive	red	Mini	stry Us	se Only	
Ontario	K2S 1A6 office area code) Name of Well To	ce @ cap: echnician (La	⊥ta⊥wa st Name	First Name		information	1 2 $ 0 $ $ 4 $		Audit No.	-		
⊥ 613 836 176	6 Miller.	Stepher	n			Deta	Work Complete	d TITE	Z	13	9757	
Well Technician's Licence	e No. Signature of Vechnician	and/or Con	tractor Da	te Submitted	01.4 01.0	X Yes 2 0	1 2 0 4	1, 9	r.		2 U 2U1	
0 0 9	7 // 20/1/4///	m	1 2	0 1 2 0			Y Y M M	1010	received .	JEP	<u>2 0 201</u> 5	
0506E (2007/12) © Qน	een's Printer Id Phiatio, 2007		ζ.	WIINIST	ry's Copy							

Tag#: A137237 Well Record Ministry of the Environment Regulation 903 Ontario Water Resources Act H137237 Metric Imperial Page easurements recorded in: Well Owner's Information Last Name / Organization E-mail Address First Name Thomas Cayanash Construction ccollins whomas coward by Well Owner
Province Postal Code Telephorle No. (inc. area code) Mailing Address (Street Number/Name) 9094 Cavanagh KOA1BO6132572918 Well Location Address of Well Location (Street Number/Name) Concession West Lake Circle 305 Carleton - North 28 County/District/Municipality Province Postal Code Carleton Ontario Municipal Plan and Sublot Number Northing NAD 8 3 1 5 4 2 1 9 41 4m1316 501179412 Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) Most Common Material General Colour General Description From till, sand, gravela boulders 5.66 was the only well drilled It was tagged. **Annular Space** Results of Well Yield Testing Type of Sealant Used Depth Set at (m/ft) After test of well yield, water was Volume Placed Draw Down Recovery From Time Water Level (Material and Type) (m^3/ft^3) Clear and sand free Time Water Level Other, specify (min) (m/ft) (m/ft) (min, 2-31 hole plug Static If pumping discontinued, give reason: Level 1 1 Pump intake set at (m/ft) 2 2 3 Pumping rate (Ilmin / GPM) Method of Construction Well Use Cable Tool ☐ Diamond Public Commercial ☐ Not used Duration of pumping Municipal
Sest Hole Rotary (Conventional) ☐ Jetting Domestic ☐ Dewatering 5 5 hrs + min Rotary (Reverse) Livestock ☐ Monitoring Boring □ Digging Irrigation Cooling & Air Conditioning Final water level end of pumping (m/ft) 10 10 Air percussion
Other, specify HS Auger ☐ Industrial Other, specify 15 15 If flowing give rate (Ilmin / GPM) Construction Record - Casing Status of Well 20 20 Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) Inside Wall Depth (m/ft) Water Supply Recommended pump depth (m/ft) Replacement Well (cm/in) From 25 25 (cm/in) ☐ Test Hole Recommended pump rate Recharge Well 30 plastic 0.4 2.62 (l/min / GPM) Dewatering Well 40 40 Observation and/or Well production (Ilmin / GPM) Monitoring Hole 50 50 ☐ Alteration (Construction) Abandoned, Insufficient Supply Yes No Construction Record - Screen Abandoned, Poor Water Quality Map of Well Location Outside Depth (m/ft) Please provide a map below following instructions on the back. Material Diameter Slot No. (Plastic, Galvanized, Steel) Abandoned, other, (cm/in) From specify 6.0 2.62 5.66 plashe Other, specify Water Details Hole Diameter Water found at Depth Kind of Water: Fresh Untested Depth (m/ft) Diameter Tite plan and area 1.02 (m/ft) Gas Other, specify Nater found at Depth Kind of Water: Fresh Untested 0 1.37 map are enclosed. 22
 (m/ft)
 ☐ Gas
 ☐ Other, specify

 Vater found at Depth
 Kind of Water:
 ☐ Fresh
 ☐ Untested
 5.66 Other, specify Well Contractor and Well Technician Information usiness Name of Well Contractor Well Contractor's Licence No OGS INC 6964 usiness Address (Street Number/Name) Comments 5518 of Wal Tachnidan (Last Name First Name) Well owner's information Date Package Delivered Ministry Use Only 66 Strude Tasa Name, Fi package delivered dalmim vivivi Z 163946 Date Work Completed Yes OH 6- tous 2013 61 47 __ No 90130108 eddu 19 2012 © Queen's Printer for Ontario, 2007 Ministry's Copy



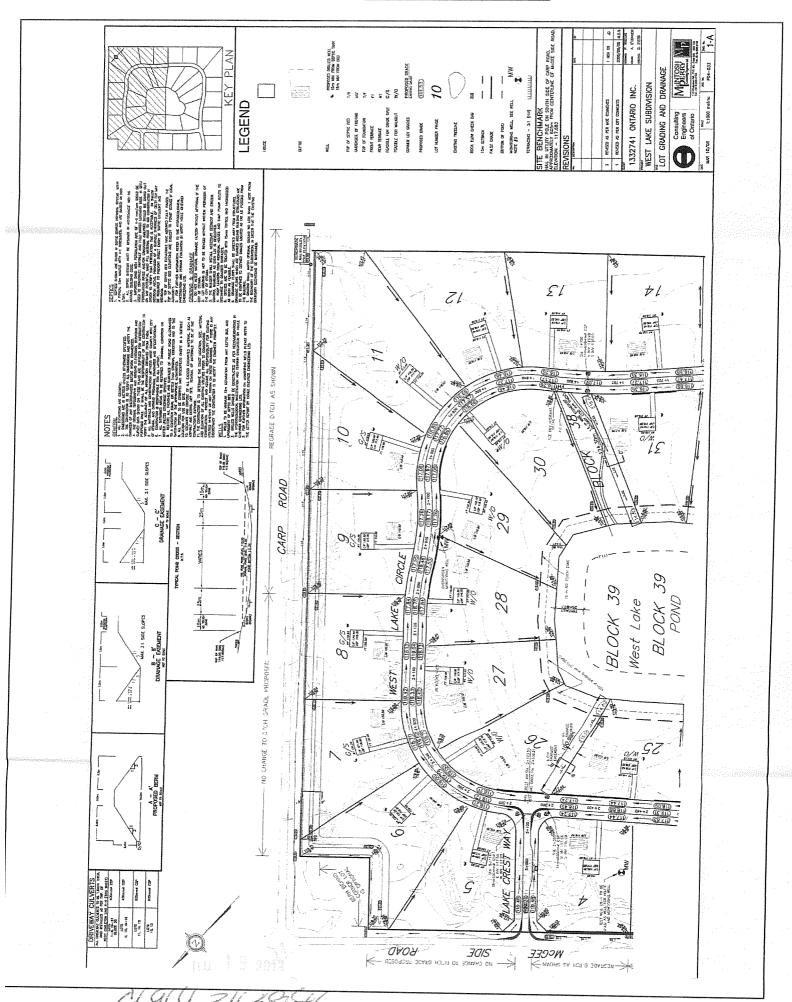
Well Record for Well Cluster - Part 3 of 3 Detailed Drawing of All Well Locations

Note: This **Well Record for Well Cluster Part 3 - Detailed Drawing of all Well Locations**, must be attached to Parts 1 and 2. The drawing must include all property boundaries, an arrow indicating the North direction, all named roads and sufficient measurements to locate all wells in the cluster in relation to fixed points. The drawing must show the location of each well and each well must be numbered on the drawing to match number used for that well on the **Well Record for Well Cluster Parts 1 and 2**. The well with the well tag must be clearly identified on the Drawing.

UTM coordinates should appear beside each well, if space permits. Additional comments on wells can be included on the drawing

Well Tag Number: # A\37 237

"Well Record for Well Cluster" Form Audit Number: # _ そ 1 し 3 9 寸 し





Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group Page 1 of 14

Report Number:

Date Submitted:

Date Reported:

Project:

COC #:

1973843

PH4484

887701

2022-03-23

2022-03-30

Dear Oliver Blume:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL:

Addrine Thomas, Inorganics Supervisor

Addrine Thomas

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.



Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. Guideline	1615821 GW 2022-03-22 GW1	1615822 GW 2022-03-22 GW2
Anions	Cl	1 1	mg/L	AO 250	135	142
7(110113	F	0.10	mg/L	MAC 1.5	<0.10	<0.10
	N-NO2	0.10	mg/L	MAC 1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	3.15	3.02
	SO4	1	mg/L	AO 500	182	175
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG 30-500	251	243
	Colour (Apparent)	2	TCU	AO 5	<2	<2
	Conductivity	5	uS/cm		1180	1180
	DOC	0.5	mg/L	AO 5	2.4	2.4
	Hq	1.00		6.5-8.5	7.95	7.93
	Phenols	0.001	mg/L		<0.001	<0.001
	S2-	0.01	mg/L	AO 0.05	<0.01	<0.01
	TDS (COND - CALC)	1	mg/L	AO 500	767*	767*
	Turbidity	0.1	NTU	AO 5	0.5	0.5
Hardness	Hardness as CaCO3	1	mg/L	OG 80-100	454*	451*
Indices/Calc	Ion Balance	0.01			0.97	0.97
Mercury	Hg	0.0001	mg/L	MAC 0.001	<0.0001	<0.0001
Metals	Ag	0.0001	mg/L		<0.0001	<0.0001
	Al	0.01	mg/L	OG 0.1	<0.01	<0.01
	As	0.001	mg/L	IMAC 0.01	<0.001	<0.001
	В	0.01	mg/L	IMAC 5.0	0.04	0.04
	Ва	0.01	mg/L	MAC 1.0	0.12	0.12
	Be	0.0005	mg/L		<0.0005	<0.0005
	Ca	1	mg/L		162	161
	Cd	0.0001	mg/L	MAC 0.005	<0.0001	<0.0001

Guideline = ODWSOG

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.

^{* =} Guideline Exceedence



Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

Report Number: 1973843
Date Submitted: 2022-03-23
Date Reported: 2022-03-30
Project: PH4484
COC #: 887701

				Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1615821 GW 2022-03-22 GW1	1615822 GW 2022-03-22 GW2
Group	Analyte	MRL	Units	Guideline		
Metals	Со	0.0002	mg/L		<0.0002	<0.0002
	Cr	0.001	mg/L	MAC 0.05	<0.001	<0.001
	Cu	0.001	mg/L	AO 1	<0.001	<0.001
	Fe	0.03	mg/L	AO 0.3	<0.03	<0.03
	К	1	mg/L		2	2
	Mg	1	mg/L		12	12
	Mn	0.01	mg/L	AO 0.05	<0.01	<0.01
	Мо	0.005	mg/L		<0.005	<0.005
	Na	1	mg/L	AO 200	77	75
	Ni	0.005	mg/L		<0.005	<0.005
	Pb	0.001	mg/L	MAC 0.010	<0.001	<0.001
	Sb	0.0005	mg/L	IMAC 0.006	<0.0005	<0.0005
	Se	0.001	mg/L	MAC 0.05	<0.001	<0.001
	Sr	0.001	mg/L		0.879	0.876
	TI	0.0001	mg/L		<0.0001	<0.0001
	U	0.001	mg/L	MAC 0.02	<0.001	<0.001
	V	0.001	mg/L		<0.001	<0.001
	Zn	0.01	mg/L	AO 5	<0.01	<0.01
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0	0	0
	Total Coliforms	0	ct/100mL	MAC 0	19*	23*
Nutrients	N-NH3	0.010	mg/L		<0.010	<0.010
	Total Kjeldahl Nitrogen	0.100	mg/L		0,252	0.477
Subcontract	Tannin & Lignin	1	mg/L			1
	-	1.0	mg/L		1.0	
/OCs Surrogates	1,2-dichloroethane-d4	0	%		100	119

Guideline = ODWSOG

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Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

Report Number: 1973843
Date Submitted: 2022-03-23
Date Reported: 2022-03-30
Project: PH4484
COC #: 887701

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. Guideline	1615821 GW 2022-03-22 GW1	1615822 GW 2022-03-22 GW2
VOCs Surrogates	4-bromofluorobenzene	0	%		71	76
	Toluene-d8	0	%		91	98
Volatiles	1,1,1,2-tetrachloroethane	0.5	ug/L		<0.5	<0.5
	1,1,1-trichloroethane	0.4	ug/L		<0.4	<0.4
	1,1,2,2-tetrachloroethane	0.5	ug/L		<0.5	<0.5
	1,1,2-trichloroethane	0.4	ug/L		<0.4	<0.4
	1,1-dichloroethane	0.4	ug/L		<0.4	<0.4
	1,1-dichloroethylene	0.5	ug/L	MAC 14	<0.5	<0.5
	1,2-dichlorobenzene	0.4	ug/L	MAC 200	<0.4	<0.4
	1,2-dichloroethane	0.2	ug/L	IMAC 5	<0.2	<0.2
	1,2-dichloropropane	0.5	ug/L		<0.5	<0.5
	1,3,5-trimethylbenzene	0.3	ug/L		<0.3	<0.3
	1,3-dichlorobenzene	0.4	ug/L		<0.4	<0.4
	1,3-Dichloropropylene (cis+trans)	0.3	ug/L		<0.3	<0.3
	1,4-dichlorobenzene	0.4	ug/L	MAC 5	<0.4	<0.4
	Acetone	30	ug/L		<30	<30
	Benzene	0.5	ug/L	MAC 1	<0.5	<0.5
	Bromodichloromethane	0.3	ug/L		<0.3	<0.3
	Bromoform	0.4	ug/L		<0.4	<0.4
	Bromomethane	0.5	ug/L		<0.5	<0.5
	c-1,2-Dichloroethylene	0.4	ug/L		<0.4	<0.4
	c-1,3-Dichloropropylene	0.2	ug/L		<0.2	<0.2
	Carbon Tetrachloride	0.2	ug/L	MAC 2	<0.2	<0.2
	Chloroethane	0.2	ug/L		<0.2	<0.2
	Chloroform	0.5	ug/L		<0.5	<0.5

Guideline = ODWSOG

* = Guideline Exceedence

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Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

Report Number: 1973843
Date Submitted: 2022-03-23
Date Reported: 2022-03-30
Project: PH4484
COC #: 887701

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. Guideline	1615821 GW 2022-03-22 GW1	1615822 GW 2022-03-22 GW2
Volatiles	Dibromochloromethane	0.3	ug/L		<0.3	<0.3
	Dichlorodifluoromethane	0.5	ug/L		<0.5	<0.5
	Dichloromethane	4.0	ug/L	MAC 50	<4.0	<4.0
	Ethylbenzene	0.5	ug/L	MAC 140	<0.5	<0.5
	Ethylene Dibromide	0.2	ug/L		<0.2	<0.2
	Hexane	5	ug/L		<5	<5
	m/p-xylene	0.4	ug/L		<0.4	<0.4
	Methyl Ethyl Ketone (MEK)	10	ug/L		<10	<10
	Methyl Isobutyl Ketone (MIBK)	10	ug/L		<10	<10
	Methyl Tert Butyl Ether (MTBE)	2	ug/L	AO 15	<2	<2
	Monochlorobenzene	0.5	ug/L	MAC 80	<0.5	<0.5
	o-xylene	0.4	ug/L		<0.4	<0.4
	Styrene	0.5	ug/L		<0.5	<0.5
	t-1,2-Dichloroethylene	0.4	ug/L		<0.4	<0.4
	t-1,3-Dichloropropylene	0.2	ug/L		<0.2	<0.2
	Tetrachloroethylene	0.3	ug/L	MAC 10	<0.3	<0.3
	Toluene	0.4	ug/L	MAC 60	<0.4	<0.4
	Trichloroethylene	0.3	ug/L	MAC 5	<0.3	<0.3
	Trichlorofluoromethane	0.5	ug/L		<0.5	<0.5
	Vinyl Chloride	0.2	ug/L	MAC 1	<0.2	<0.2
	Xylene; total	0.5	ug/L	MAC 90	<0.5	<0.5

Guideline = ODWSOG

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Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Ar	nalyte	Blank		QC % Rec	QC Limits
Run No 418950 Method C SM2130B	Analysis/Extraction Date 20	022-03-23 A r	nalyst	AaN	
Turbidity		<0.1 NTU		99	70-130
Run No 418958 Method AMBCOLM1	Analysis/Extraction Date 20	022-03-24 A r	nalyst	DRA	
Escherichia Coli					
Total Coliforms					
Run No 418995 Method M SM3120B-3	Analysis/Extraction Date 20)22-03-24 A r	nalyst	Z S	
Calcium		<1 mg/L		95	90-110
Potassium		<1 mg/L		96	87-113
Magnesium		<1 mg/L		95	76-124
Sodium		<1 mg/L		102	82-118
Run No 419016 Method EPA 350.1	Analysis/Extraction Date 20	022-03-24 A r	nalyst	SKH	
N-NH3		<0.010 mg/L		113	80-120
Run No 419027 Method EPA 351.2	Analysis/Extraction Date 20	022-03-24 A r	nalyst	SKH	
Total Kjeldahl Nitr	rogen	<0.100 mg/L		110	70-130

Guideline = ODWSOG

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Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 419078 Analysis/Extraction Date 20 Method EPA 8260	22-03-24 A na	alyst YH	
Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	92	60-130
Trichloroethane, 1,1,1-	<0.4 ug/L	88	60-130
Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	114	60-130
Trichloroethane, 1,1,2-	<0.4 ug/L	104	60-130
Dichloroethane, 1,1-	<0.4 ug/L	94	60-130
Dichloroethylene, 1,1-	<0.5 ug/L	93	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	104	60-130
Dichloroethane, 1,2-	<0.2 ug/L	115	60-130
Dichloropropane, 1,2-	<0.5 ug/L	106	60-130
1,3,5-trimethylbenzene	<0.3 ug/L	97	60-130
Dichlorobenzene, 1,3-	<0.4 ug/L	96	60-130
Dichloropropene,1,3-	<0.3 ug/L		
Dichlorobenzene, 1,4-	<0.4 ug/L	97	60-130
Acetone	<30 ug/L		60-130
Benzene	<0.5 ug/L	100	60-130
Bromodichloromethane	<0.3 ug/L	108	60-130

Guideline = ODWSOG

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Environment Testing

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154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

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 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Bromoform	<0.4 ug/L	104	60-130
Bromomethane	<0.5 ug/L	93	60-130
Dichloroethylene, 1,2-cis-	<0.4 ug/L	98	60-130
Dichloropropene,1,3-cis-	<0.2 ug/L	103	60-130
Carbon Tetrachloride	<0.2 ug/L	93	60-130
Chloroethane	<0.2 ug/L	91	60-130
Chloroform	<0.5 ug/L	100	60-130
Dibromochloromethane	<0.3 ug/L	96	60-130
Dichlorodifluoromethane	<0.5 ug/L	86	60-130
Methylene Chloride	<4.0 ug/L	113	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Ethylene dibromide	<0.2 ug/L	98	60-130
Hexane (n)	<5 ug/L	110	60-130
m/p-xylene	<0.4 ug/L	93	60-130
Methyl Ethyl Ketone	<10 ug/L	100	60-130
Methyl Isobutyl Ketone	<10 ug/L		60-130
Methyl tert-Butyl Ether (MTBE)	<2 ug/L	110	60-130
Chlorobenzene	<0.5 ug/L	93	60-130

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Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte	Blank	QC % Rec	QC Limits
o-xylene	<0.4 ug/L	84	60-130
Styrene	<0.5 ug/L	90	60-130
Dichloroethylene, 1,2-trans-	<0.4 ug/L	89	60-130
Dichloropropene,1,3-trans-	<0.2 ug/L	112	60-130
Tetrachloroethylene	<0.3 ug/L	91	60-130
Toluene	<0.4 ug/L	96	60-130
Trichloroethylene	<0.3 ug/L	82	60-130
Trichlorofluoromethane	<0.5 ug/L	87	60-130
Vinyl Chloride	<0.2 ug/L	88	60-130
Run No 419082 Analysis/Extraction Date 20 Method EPA 8260	022-03-25 A na	alyst YH	
Xylene Mixture			
Run No 419088 Analysis/Extraction Date 20 Method SM5530D/EPA420.2	022-03-25 A na	alyst IP	
Phenols	<0.001 mg/L	50	50-120
Run No 419093 Analysis/Extraction Date 20 Method C SM4500-S2-D)22-03-25 A na	alyst AsA	
S2-	<0.01 mg/L	111	80-120

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.



Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte		Blank		,	QC % Rec	QC Limits
Run No 419123 Method C SM2120C	Analysis/Extraction Date 20)22-03-28	Analy	/st A	\sA	
Colour (Apparent)		<2 TCU			106	90-110
Run No 419127 Method SM 4110	Analysis/Extraction Date 20	022-03-28	Analy	/st A	aN	
Chloride		<5 mg/L				90-110
N-NO2		<0.10 mg/L			103	90-110
N-NO3		<0.10 mg/L			104	90-110
SO4		<5 mg/L			105	90-110
Run No 419170 Method SUBCONTRAG	Analysis/Extraction Date 20	022-03-25	Analy	∕st A	ÆΤ	
Tannin & Lignin		<1.0 mg/L			106	
Run No 419184 Method SM2320,2510,	Analysis/Extraction Date 20 4500H/F	022-03-28	Analy	/st A	AsA	
Alkalinity (CaCO3))	<5 mg/L			98	90-110
Conductivity		<5 uS/cm			101	90-110
F		<0.10 mg/L			99	90-110
рН					100	90-110

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.



Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Ar	nalyte	Blank	Ċ	QC % Rec	QC Limits
Run No 419188 Method SM 5310B	Analysis/Extraction Date 20	022-03-28 A n	alyst A	sA	
DOC		<0.5 mg/L		102	80-120
Run No 419190 Method SUBCONTRA	Analysis/Extraction Date 20	022-03-25 A n	alyst R	. K	
Tannin & Lignin		<1.0 mg/L		106	
Run No 419203 Method C SM2340B	Analysis/Extraction Date 20	022-03-29 A n	alyst A	ET	
Hardness as CaC	03				
Ion Balance					
TDS (COND - CA	LC)				
Run No 419228 Method EPA 200.8	Analysis/Extraction Date 20	022-03-29 A n	alyst S	D	
Silver		<0.0001 mg/L		82	80-120
Aluminum		<0.01 mg/L		111	80-120
Arsenic		<0.001 mg/L		97	80-120
Boron (total)		<0.01 mg/L		116	80-120
Barium		<0.01 mg/L		102	80-120
Beryllium		<0.0005 mg/L		105	80-120

Guideline = ODWSOG

* = Guideline Exceedence

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Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Cadmium	<0.0001 mg/L	101	80-120
Cobalt	<0.0002 mg/L	99	80-120
Chromium Total	<0.001 mg/L	94	80-120
Copper	<0.001 mg/L	106	80-120
Iron	<0.03 mg/L	99	80-120
Manganese	<0.01 mg/L	104	80-120
Molybdenum	<0.005 mg/L	99	80-120
Nickel	<0.005 mg/L	101	80-120
Lead	<0.001 mg/L	102	80-120
Antimony	<0.0005 mg/L	83	80-120
Selenium	<0.001 mg/L	108	80-120
Strontium	<0.001 mg/L	97	80-120
Thallium	<0.0001 mg/L	102	80-120
Uranium	<0.001 mg/L	99	80-120
Vanadium	<0.001 mg/L	98	80-120
Zinc	<0.01 mg/L	108	80-120
Run No 419288 Analysis/Extraction Date 20 Method M SM3112B-3500B)22-03-30 A na	ilyst AaN	

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.



Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

 Report Number:
 1973843

 Date Submitted:
 2022-03-23

 Date Reported:
 2022-03-30

 Project:
 PH4484

 COC #:
 887701

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Mercury	<0.0001 mg/L	96	76-123

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.



Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

Invoice to: Paterson Group

Report Number: 1973843
Date Submitted: 2022-03-23
Date Reported: 2022-03-30
Project: PH4484
COC #: 887701

Sample Comment Summary

Sample ID: 1615821 GW1 CI & SO4 MRL elevated due to matrix interference (dilution was done). Sediments not included for Hg analysis.

Sample ID: 1615822 GW2 CI & SO4 MRL elevated due to matrix interference (dilution was done). Sediments not included for Hg analysis.

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Methods references and/or additional QA/QC information available on request.

eurofins | Environment Testing

Certificate of Analysis

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#: 32614

Invoice to: Paterson Group Page 1 of 2

 Report Number:
 1974461

 Date Submitted:
 2022-04-04

 Date Reported:
 2022-04-05

 Project:
 PH4484

 COC #:
 889009

Dear Oliver Blume:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana

Dzeletovic
Angara Inclutoric 2022.04.05

16:55:16

-04'00'

APPROVAL:

Dragana Dzeletovic-Andric, Microbiology Team Lead

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.



Environment Testing

Client: Paterson Group

154 Colonnade Rd. South

Nepean, ON K2E 7T7

Attention: Mr. Oliver Blume

PO#:

32614

Invoice to: Paterson Group

Report Number: 1974461 Date Submitted: 2022-04-04 Date Reported: 2022-04-05 Project: PH4484 COC #: 889009

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. Guideline	1617476 GW 2022-04-04 GW1
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0	0
	Total Coliforms	0	ct/100mL	MAC 0	4*

Guideline = ODWSOG

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted. Analytical Method: AMBCOLM1 additional QA/QC information available on request.



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS: 4491110

WORK REQUEST : 100392148 Report Date : 2025-10-09

Reception Date: 2025-10-08

Project: NELSON WATER - Non-Regulated

Sampler: NA

PO Number: Not Applicable

Temperature: 14 °C

Analysis	Quantity	External Method
E.Coli and Total Coliforms (DC Plate)	1	Modified from MECP E3407

Criteria:

Nelson Water

Carp, Ontario

K0A 1L0

248 Westbrook Rd.

A: Ontario Regulation 169/03 (Non-Regulated Drinking Water)

Sample status upon receipt :

Attention: Customer Service

9096463 Compliant

Notes :

- All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated.
- Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at https://directory.cala.ca/
- Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Legend :



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client: Nelson Water

Project: NELSON WATER - Non-Regulated Reception Date: 2025-10-08

			9096463					
			Drinking water					
			2025-10-07					
			York - HOP					
Microbiology				Criteria				
	RL	Unit	Α	В	С			
E.Coli and Total Coliforms (DC Plate)								
Escherichia coli (DC)	0	CFU/100mL	0			0		
Total Coliforms (DC)	0	CFU/100mL	0			0		

Approved by:

Jason Kennedy, Project Manager



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client: Nelson Water

Project: NELSON WATER - Non-Regulated Reception Date: 2025-10-08

	Unit	RL	DII.	Q		Matrix S	Spike	Duplicate			
Parameter			Blank	Recovery %	Range %	Recovery %	Range %	RPD %	Range %		
E.Coli and Total Coliforms (DC Plate)											
Method : Total C	Coliforms and E.C	Coli by MF (V	Water, DC plate)	. Internal meth	nod: OTT-M-	-BAC-WI45296					
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30		
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30		
Associated Samples : 9096463 Prep Date: 2025-10 Analysis Date: 2025-10											

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.



Page _____ of _____

DRINKING WATER CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, KZE 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

	CLII	NT IN	FORMATION	0.7				-			100	DRIN	KING 1	NATER	SYSTE	M (DV	ŃS) IŅI	FORM	ATION		
Company: NELSO	ON WATER INC			* 4		æ.		· " Livi	DWS Name:											T 11 1	
contact: Juan O	spina .			· · · · · · · · · · · · · · · · · · ·			~		DWs #:		y		3 × 177			7		e de la composition della comp	11.		ž
Address: 248 We	estbrook Rd, Carp, Of	1, K0/	A 1L0						Contact:					,					1747		•
Telephone: 61383	318491	3. 0	3	is is is to be		16			Address:		8. 1	3	10	0.					8 8		
Email #1: Custom	erservice@nelsonwa	ter.co	m #2:						Telephone:					9							
Project:			* *** ***						Ccil Phone:									<u> </u>			
PO#:		-			<i>9</i> 17.	Quote f	l:		Email #1:					.,		#2;					
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O, Reg. 1	70/03 C. Reg. 170/03, Sch. 15.1, Lend		Non-Regulated: (Ontario)	Z	Other:	. 2			1 Day* (10	10%)		2 Day**	(50%)		3-5 Days	[25%]			5-7 Days	(Standan	1)
O. Reg. 3	19/06 D. Reg. 243/07		Non-Regulated (Federal)					7.9	N			- 1 - 4 - 1 -		L11-L	Illes Coss	m	au analu	to much s	andea Ria	ta thut so	me tests (i.e. O. Reg. 170/03
Has an L	SN form been submitted to MECP of N	MOHLTC	Public Health Unit				30		Schedule 24 pesticide											te that so	ine tests [1.0. O. Reg. 270/03
(If applica	able)?		rubile fleakii Offi	T			Sampl	e Detalls			Si	ample /	inalysis	Regula	ed		Fie	eld Mea	sureme	ints	-
cannot be frozen. Not reported where (and The COC must be com surcharge if required i grey).	ture conditions during transport a te that for drinking water samples how) applicable legislation requi- plete upon submission of the sam information is missing (required	, adverse es. ples, the fields a	results will be	Sample Type Code (see below)	Resample?	MECP/MCH Reportable radverse notification	# of Containers	SPI Code/Watertrax	Sample Location	E. COLI	TOTAL COLIFORMS	NITRATESMITRITES				3	H	Total Chlorine	Free Chlorine	Turbidity	Sample RN# (Lab Use Only)
York - HOP			/2025 3:24PM	DW	N	N	1		,	1	1			,							9096463
YORK - HOP	, i , , , , , , , , , , , , , , , , , ,	07/10	/2025 3:24PM	TW	N	N	1					1									
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	× 2 2								•												
Sample Type Codes for D	Orinking Water; RW = Raw Water, TW g: Occasionally, situations arise in whi	Treated th Furnish	d Water at POE to d	istribuțio ting Cana	on, TW-N	e Untreat	ed Water le to prèc	at POE to distribu	ition, DW = Distribution receipt. By signing this	, RP = Ro chain-of-	sidential 1 custody f	Plumbing, orm, the	NRP = No	n-Reside	ntial Plum urofins En	vironiser	Standing	Canada (ied, PW = Ottawa) (Private W	oli." Pract samples to a laboratory
that is accredited and, w	here applicable, holds a drinking wate	r licensa.	Agreements made	lu taksu	ce to sub	contract to	a specific	laboratory will b	g honored.							- 31					
M 5 .5	PRINT			SIGN	e e e		1	OCATION	PATE/1	IME	1,18		TEMP ('C	3		7 <u></u> -			-		
Sampled By:	Les Orr							_	07/10/2025	3:2	4PM		60 16								
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OTT-P-SOP73681, Revision 11

Copies: White - Laboratory, Yellow - Sampler



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS: 4492546

WORK REQUEST : 100392167 Report Date : 2025-10-14

Reception Date: 2025-10-08

Project: NELSON WATER - Non-Regulated

Sampler: NA

PO Number: Not Applicable

Temperature: 14 °C

Analysis	Quantity	External Method
Nitrate and Nitrite (Water, Colorimetry)	1	Modified from SM 4500-NO3-F

Criteria:

Nelson Water

Carp, Ontario

K0A 1L0

248 Westbrook Rd.

A: Ontario Regulation 169/03 (Non-Regulated Drinking Water)

Sample status upon receipt :

Attention: Customer Service

9096602 Compliant

Notes :

- All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated.
- Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at https://directory.cala.ca/
- Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Legend

RL : Reporting limit N/A : Not applicable * : Analysis conducted by external subcontracting QC : Reference material (QC) 1 : Results in annex ^ : Analysis not accredited



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client: Nelson Water

Project: NELSON WATER - Non-Regulated Reception Date: 2025-10-08

			9096602				
			Drinking water				
			2025-10-07				
			YORK - HOP				
Nutrients				Criteria			
	RL	Unit	Α	В	С		
Nitrate and Nitrite (Water, Colorimetry)							
Nitrate (as Nitrogen)	0.1	mg/L	10.0			0.25	
Nitrate + Nitrite (as Nitrogen)	0.1	mg/L				0.25	
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.10	

Approved by:

Jason Kennedy,

Project Manager



146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

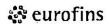
OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client: Nelson Water

Project: NELSON WATER - Non-Regulated Reception Date: 2025-10-08

	Limit	DI.	Dlank	Q	C	Matrix S	Spike	Duplicate	
Parameter	Unit	RL	Blank	Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Nitrate and Nitrite (Water, Colorimetry)									
Metho	od : Nitrates/Nitrate	es (Water, Co	olorimetry). Inte	ernal method: O	TT-I-NUT-W	/146199.			
Nitrate (as Nitrogen)	mg/L	0.1	<0.10	99	80-120			8	0-20
Nitrate + Nitrite (as Nitrogen)	mg/L	0.1	<0.10	99	80-120	104	80-120	5	0-20
Nitrite (as Nitrogen)	mg/L	0.1	<0.10	106	80-120	104	80-120	-	0-20
	Associated	Samples : 9	096602				Δ	Prep Date	: 2025-10-0

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.



DRINKING WATER CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

CLIENTINFORMATION	3. 数据的 1. 数据 1. 数是 1. 数据 1. 数是 1. 数是 1. 数据 1. 数是 1.	DRINKING WATER SYSTEM (PWS) INFORMATION							
COMPANY: NELSON WATER INC	āti Kamenāti	DW3 Name:							
Caniest Juan Ospina	are mulained	OW OF THE PROPERTY OF THE PROP							
Addies: 248 WestbrookiRd, Carp, ON: KOA 110		Conjustific and the second sec							
Telephone 6138318491	之为。他上, 古报 出	Address:							
Email #1: customerservice@nelsonwater.com #2:		Telephone:	24年,6月1日,1878年	White and the second	是也是在代表的				
Project:		Cett Phone:		<u> </u>					
PO#:	Quote#:	Email #1:	#2:		Approximation and the second s				
REGULATION/GUIDELINE REQUIRED O Reg. 170/03		1 Day* (100%)	TURN: AROUND TIME: 2 Day** [50%] 3-5 Days [25%] 100 to determine rush availability. Surcharge 3 weeks to analyze]. Please see notes (on ce	may apply to rush service. Note that so	d)				
(if applicable)?	*Carrinle Details		Sample Analysis Required	Field Measurements					
The optimal temperature conditions during transport are 4 - 10 °C Sample(s) teamed be frozen. Note that for drinking water samples, adverse results will be reported where (and how) applicable legislation requires. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).	MED VIOLE Reportable (always world action) and action acti	Sample Location (I.e. Kitchen, POE)	NIIATESNITATES	pH Total Chlorine Free Chlorine	Sample RN# (Lab Use Only)				
York - HOP 97/10/2025 3124PM DW N	N 1 1 1 1	V.V.		3	2 15.07				
YORK HOP 07/10/2025 3/24PM TW: N	Nie 1	area and the area	Was I a vie to		9096602				
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Notics of Jubicangusting Occapios (), plystiant plos in which by under Environment I string Lenada (Cita that is accredited and, where spoilestia, holds a unburg yeter license. Asception it medel in edge my legale	ka) ja muahia 12 biotekka asaubin alika Kaninact to a charido jabalatary wili b	r repaipt, by diantria this she is of surrod) a honored	torm, the client agrees that Europin's Environ	ment Teeling Ceneva (Ottawa) may subco	United foundation laberatory				
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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Office Building 2966 Carp Road - Ottawa, Ontario

DATUM Geodetic FILE NO. **PG3834 REMARKS** HOLE NO. TP 1-22 **BORINGS BY** Backhoe DATE 2022 February 8 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+120.05**TOPSOIL** 1 FILL: Brown silty sand with gravel <u>0</u>.40 [∑ G 2 Brown SILTY SAND with gravel, cobbles and boulders, trace clay G 3 1 + 119.05Highly fractured **BEDROCK** interbedded with silty sand to sandy silt, some clay with fragmented G 4 bedrock End of Test Pit TP terminated on fractured bedrock surface at 1.83 m depth (TP dry upon completion) 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Geotechnical Investigation

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

Proposed Office Building 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 2966 Carp Road - Ottawa, Ontario **DATUM** Geodetic FILE NO. **PG3834 REMARKS** HOLE NO. TP 2-22 **BORINGS BY** Backhoe DATE 2022 February 8 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % **GROUND SURFACE** 80 20 0+120.05**TOPSOIL** G 1 0.15 G 2 FILL: Brown silty sand trace gravel, organics and metallic debris 0.50 3 Brown SILTY SAND with gravel, cobbles and boulders, trace clay 1 + 119.05G 4 G 5 1.90 Highly fractured **BEDROCK** interbedded with silty sand to sandy 2+118.05silt, some clay with fragmented G 6 2.10 bedrock End of Test Pit TP terminated on fractured bedrock surface at 2.1 m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Office Building 2966 Carp Road - Ottawa, Ontario

DATUM Geodetic FILE NO. **PG3834 REMARKS** HOLE NO. **TP 3-22 BORINGS BY** Backhoe DATE 2022 February 8 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT **DEPTH** ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+119.19**TOPSOIL** G 1 0.10 Brown SILTY SAND with gravel, cobbles and boulders G 2 G 3 1 + 118.191.20 Highly fractured **BEDROCK** interbedded with silty sand to sandy G 4 silt, some clay with fragmented bedrock End of Test Pit TP terminated on fractured bedrock surface at 1.45 m depth (TP dry upon completion) 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Office Building 2966 Carp Road - Ottawa, Ontario

E TYPE	NUMBER	RECOVERY TO		2022 Feb	ruary 8	Pen. Re	HOLE N	O. TP 4-22	
\/		I PLE				Pen. Re	alat D	17 4-22	_
\/				DEPTH	EI EV	Pen. Re	aiat D		
\/	NUMBER	VER		(m)	(m)	• 50		lows/0.3m ia. Cone	eter
\/	z	ြိုင်	N VALUE or RQD			0 W	ater Co	ntent %	Piezometer Construction
\ G		R	z °	n-	-110 22	20	40 60 80		
	1			0	110.55				
G	2								
G	3								
				1-	-117.33				
						20	40	60 80 1	
	G	G 2	G 2	G 1 G 2	G 1 G 2 G 3	G 1 G 2	G 1 G 2 1-117.33	G 1 G 2 G 3 1-117.33	G 2 G 3 1-117.33

Geotechnical Investigation **Proposed Office Building**

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5 2966 Carp Road - Ottawa, Ontario **DATUM** Geodetic FILE NO. **PG3834 REMARKS** HOLE NO. TP 5-22 **BORINGS BY** Backhoe DATE 2022 February 8 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD NUMBER **Water Content % GROUND SURFACE** 80 20 0+117.88**TOPSOIL** 1 0.15 Brown SILTY SAND with gravel, cobbles and boulders G 2 0.65 Highly fractured **BEDROCK** interbedded with silty sand to sandy G 3 silt, some clay with fragmented bedrock 1 + 116.88End of Test Pit TP terminated on fractured bedrock surface at 1.75 m depth (TP dry upon completion) 40 60 80 100 Shear Strength (kPa)

Geotechnical Investigation

SOIL PROFILE AND TEST DATA

40

▲ Undisturbed

Shear Strength (kPa)

60

△ Remoulded

100

Proposed Office Building 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 2966 Carp Road - Ottawa, Ontario **DATUM** Geodetic FILE NO. **PG3834 REMARKS** HOLE NO. **TP 6-22 BORINGS BY** Backhoe DATE 2022 February 8 **SAMPLE** Pen. Resist. Blows/0.3m Piezometer Construction STRATA PLOT DEPTH ELEV. **SOIL DESCRIPTION** 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY NUMBER **Water Content % GROUND SURFACE** 80 20 0+118.91**BEDROCK** G 1 0.10 FILL: Brown silty sand with brick fragments, concrete and gravel G 2 G 3 1 + 117.91 4 G End of Test Pit TP terminated on fractured bedrock surface at 1.75 m depth (TP dry upon completion)

154 Colonnade Road South, Ottawa, Ontario K2F 7.I5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Office Building 2966 Carp Road - Ottawa, Ontario

2966 Carp Road - Ottawa, Ontario											
DATUM Geodetic									FILE NO	PG3834	
REMARKS									HOLE N	o. TP 7-22	
BORINGS BY Backhoe					ATE	2022 Feb	ruary 8			IF 1-22	
SOIL DESCRIPTION			SAN	/IPLE		DEPTH (m)	ELEV. (m)		esist. Bl 0 mm Di	lows/0.3m a. Cone	Piezometer Construction
		TYPE	NUMBER	% OVERY	LUE	(111)	(111)				Zome
GROUND SURFACE	STRATA	TY	NUM	RECOVERY	N VALUE or RQD			O W	/ater Co	ntent % 60 80	S Pie
TOPSOIL	\	7				0-	118.67	<u> </u>	. [
0.15		G	1								
FILL: Brown silty sand with gravel some clay		G	2								
Some day											
		G	3								
		7									
						1 -	117.67				
1.05		7				1	117.07				
Highly fractured BEDROCK interbedded with silty sand to sandy											
silt, some clay with fragmented bedrock		G	4								
1.50											
End of Test Pit											
TP terminated on fractured bedrock surface at 1.50 m depth											
(TP dry upon completion)											
								20	40	60 00 1	00
								20 Shea ▲ Undistr	r Streng	60 80 1 I th (kPa) Remoulded	00

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

DATUM

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

119.73m.

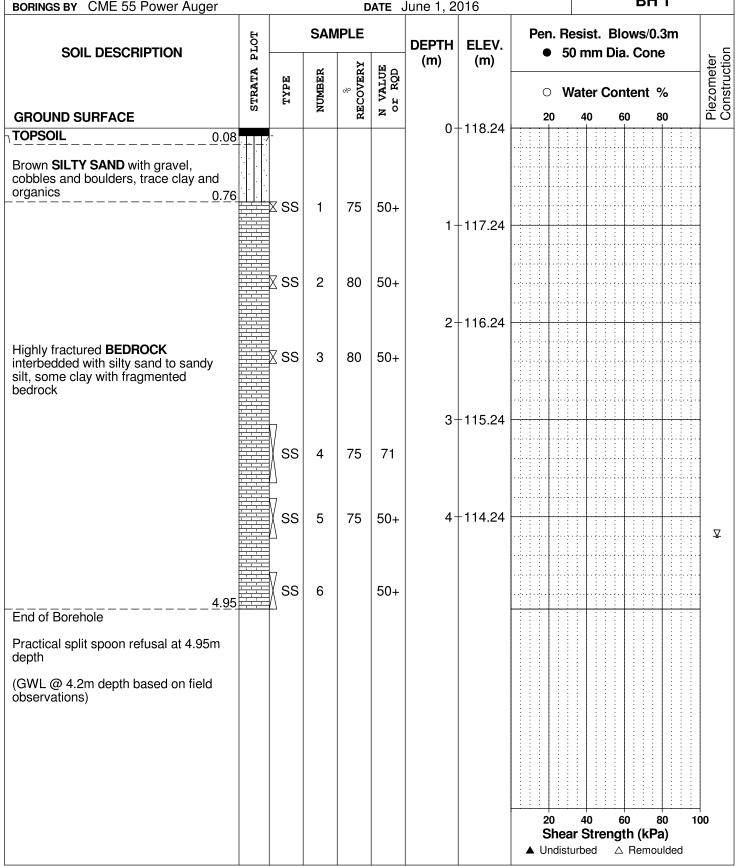
REMARKS

FILE NO.

PG3834

HOLE NO.

BH 1 DATE June 1, 2016 BORINGS BY CME 55 Power Auger



SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

▲ Undisturbed

△ Remoulded

DATUM

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

PG3834 119.73m. **REMARKS** HOLE NO. **BH 2 DATE** June 1, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % **GROUND SURFACE** 80 20 0+118.42**TOPSOIL** 0.10 Brown SILTY SAND with gravel. cobbles and boulders, trace clay and organics 1+117.42SS 1 92 51 1.45 × SS 2 25 50+ 2+116.42 Highly fractured **BEDROCK** interbedded with silty sand to sandy silt, some clay with fragmented bedrock 3+115.42 \mathbf{SS} 3 50 +50 4+114.42 4.80 SS 4 67 50+ End of Borehole Practical split spoon refusal at 4.80m depth (BH dry - June 6, 2016) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road

40

▲ Undisturbed

Shear Strength (kPa)

60

△ Remoulded

100

Ottawa, Ontario TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. **BH 3 DATE** June 1, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % 80 **GROUND SURFACE** 20 0+118.29**TOPSOIL** 0.15 Brown SILTY SAND with gravel, cobbles and boulders, trace clay and organics SS 1 50+ Highly fractured **BEDROCK** 1+117.29interbedded with silty sand to sandy silt, some clay with fragmented bedrock End of Borehole Practical refusal to augering at 1.12m depth (BH dry upon completion)

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

DATUM

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

PG3834 119.73m. **REMARKS** HOLE NO. **BH 3A DATE** June 1, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % **GROUND SURFACE** 80 20 0+118.29**TOPSOIL** 0.15 Brown SILTY SAND with gravel. cobbles and boulders, trace clay and organics 1+117.291.80 SS 1 58 54 2+116.29 Highly fractured **BEDROCK** interbedded with silty sand to sandy silt, some clay with fragmented 3+115.29bedrock 2 75 50 +4+114.29 ∇ 4.65 SS 3 50 +67 End of Borehole Practical split spoon refusal at 4.65m depth (GWL @ 4.3m depth based on field observations) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

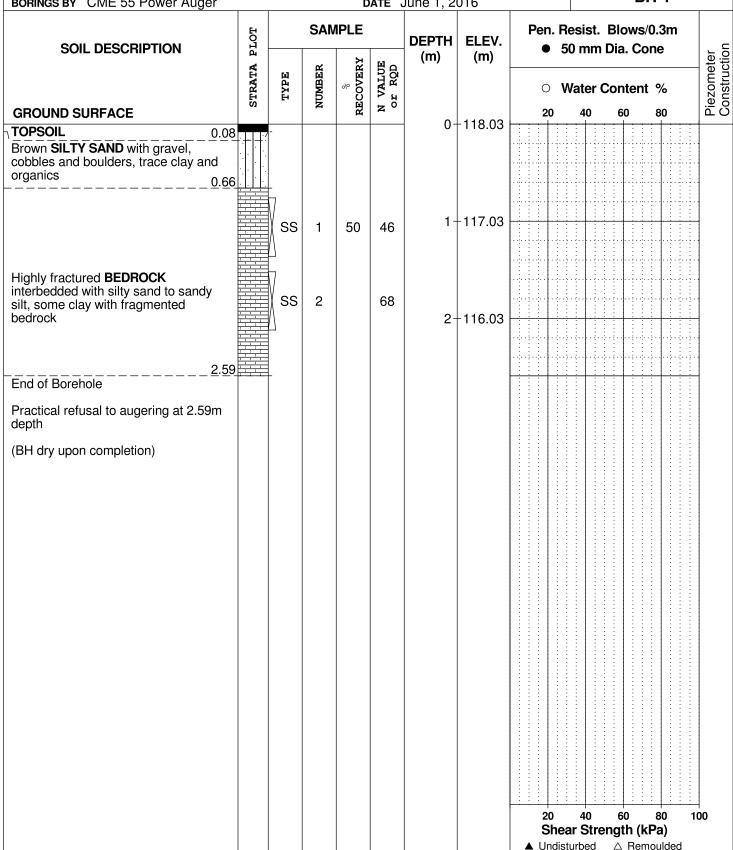
Geotechnical Investigation

Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. **BH 4** BORINGS BY CME 55 Power Auger **DATE** June 1, 2016



SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

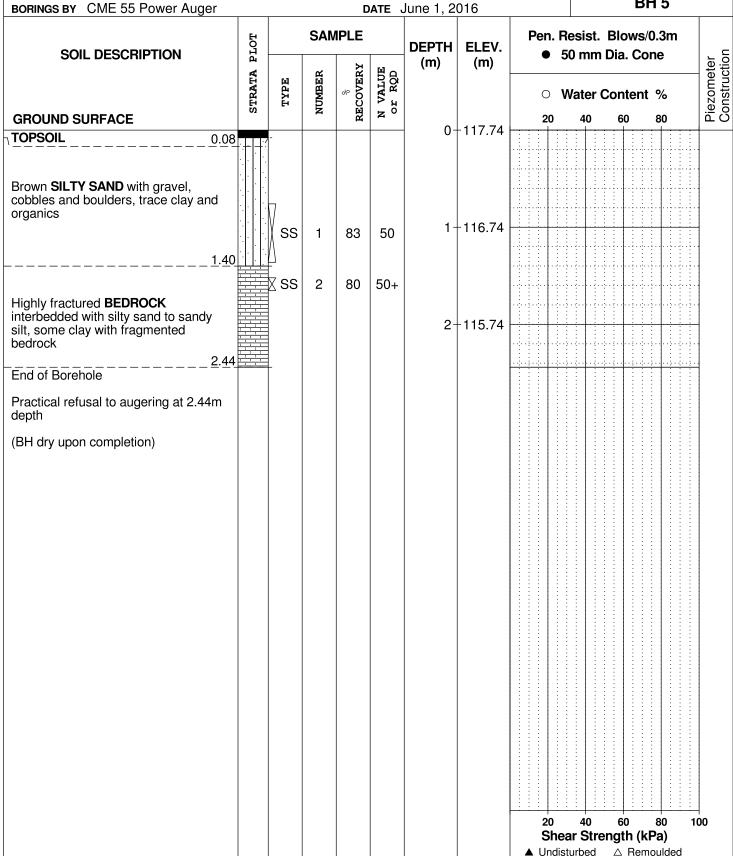
Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = 119.73m.

REMARKS
BORINGS BY CME 55 Power Auger

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = PG3834

HOLE NO. BH 5



SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

DATUM

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = 119.73m.

FILE NO. **PG3834**

REMARKS HOLE NO. **BH 6 DATE** June 1, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER TYPE Water Content % **GROUND SURFACE** 80 20 0+117.71**TOPSOIL** 0.10 Brown SILTY SAND with gravel, cobbles and boulders, trace clay and organics 0.91 1+116.71SS 1 83 55 2 SS 92 88 2+115.71Highly fractured **BEDROCK** interbedded with silty sand to sandy SS 3 77 58 silt, some clay with fragmented bedrock 3+114.71SS 4 78 50 +4 + 113.714.70 ₺ 🛚 SS 5 100 50+ End of Borehole Practical split spoon refusal at 4.70m depth (GWL @ 3.93m-June 6, 2016) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

DATUM

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

119.73m.

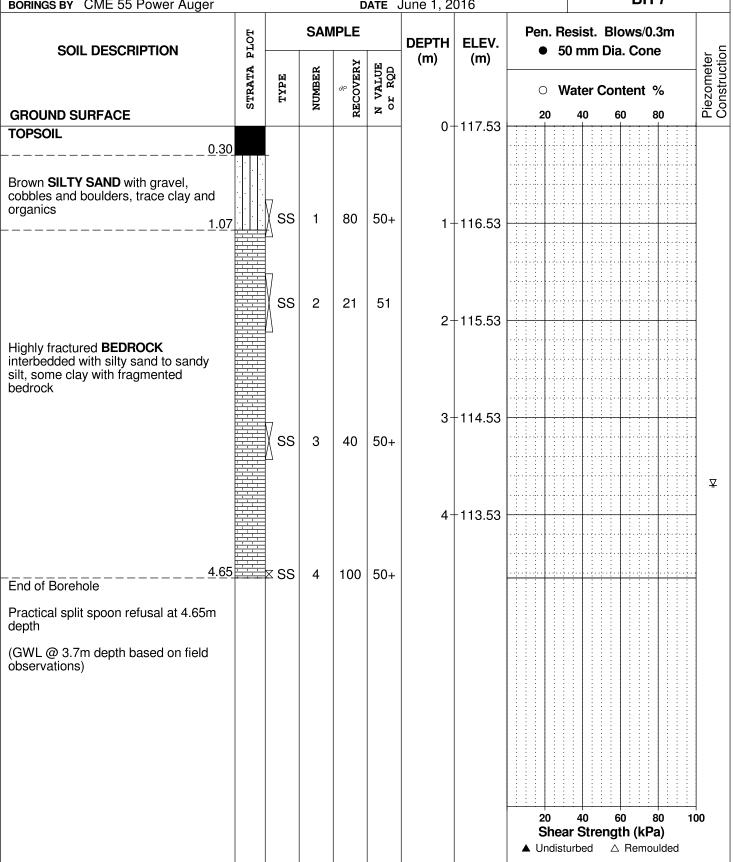
REMARKS

BORINGS BY CME 55 Power Auger

DATE June 1, 2016

PG3834

HOLE NO. BH 7



154 Colonnade Road South, Ottawa, Ontario K2E 7J5

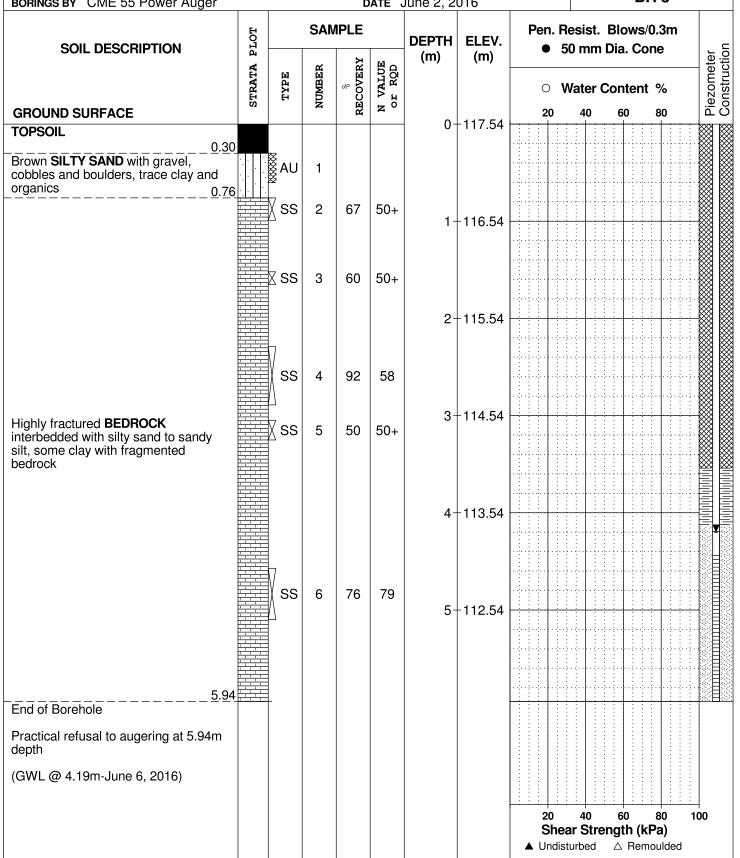
SOIL PROFILE AND TEST DATA

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

DATUM PG3834 119.73m. **REMARKS** HOLE NO. **BH8 DATE** June 2, 2016 BORINGS BY CME 55 Power Auger



Geotechnical Investigation

Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

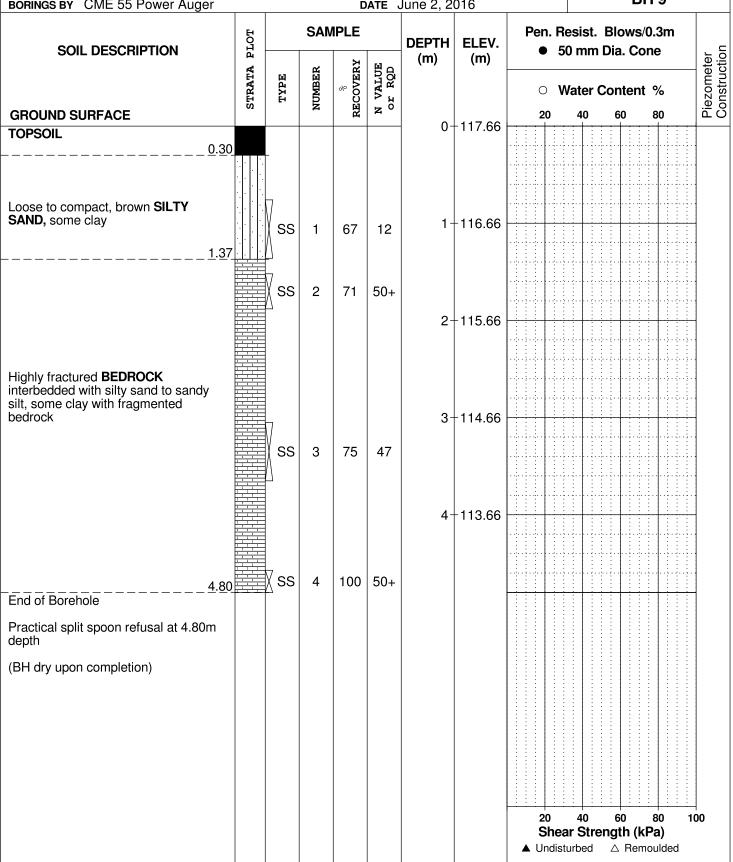
SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

DATUM PG3834 119.73m. **REMARKS** HOLE NO. **BH9 DATE** June 2, 2016 **BORINGS BY** CME 55 Power Auger



SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. 119.73m.

PG3834

HOLE NO. **BH10 DATE** June 2, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+117.46**TOPSOIL** 0.10 Loose to compact, brown SILTY SAND, some clay 1+116.46SS 1 75 21 1.37 2 SS 58 49 2+115.46Highly fractured **BEDROCK** interbedded with silty sand to sandy silt, some clay with fragmented bedrock 3+114.46SS 3 50+ 80 4 + 113.46End of Borehole Practical refusal to augering at 4.27m depth (GWL @ 3.62m-June 6, 2016) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

DATUM

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

FILE NO.

40

▲ Undisturbed

Shear Strength (kPa)

60

80

△ Remoulded

100

PG3834 119.73m. **REMARKS** HOLE NO. **BH11 DATE** June 2, 2016 BORINGS BY CME 55 Power Auger **SAMPLE** Pen. Resist. Blows/0.3m PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER Water Content % 80 **GROUND SURFACE** 20 0+117.45**TOPSOIL** 1 0.60 Brown SILTY SAND with gravel, cobbles and boulders, trace clay and 1+116.45SS 2 70 11 organics SS 3 75 62 Highly fractured **BEDROCK** 2+115.45interbedded with silty sand to sandy silt, some clay with fragmented bedrock 3+114.45End of Borehole Practical refusal to augering at 3.05m (Piezometer blocked at 1.72m depth - June 6, 2016)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

▲ Undisturbed

△ Remoulded

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 1 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % 80 **GROUND SURFACE** 20 0+117.72**TOPSOIL** 1 0.20 Brown SILTY SAND to SANDY SILT, some tree roots G 2 1+116.721.20 Highly fractured **BEDROCK** with 1.30 ₽ sandy silt, gravel, cobbles and boulders, some clay End of Test Pit TP terminated on fractured bedrock surface at 1.30m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 2 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % 80 **GROUND SURFACE** 20 0+118.08**TOPSOIL** 0.20 Highly fractured **BEDROCK** with sandy silt, gravel, cobbles and boulders, some clay 0.70 End of Test Pit TP terminated on fractured bedrock surface at 0.70m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 3 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT DEPTH ELEV. Piezometer Construction **SOIL DESCRIPTION** • 50 mm Dia. Cone (m) (m) N VALUE or RQD RECOVERY STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+117.47**TOPSOIL** 0.20 Brown SILTY SAND to SANDY SILT 0.50 Highly fractured **BEDROCK** with 1+116.47sandy silt, gravel, cobbles and boulders, some clay End of Test Pit TP terminated on fractured bedrock surface at 1.60m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

Geotechnical Investigation

Proposed Storage Building - 2978 & 2966 Carp Road

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

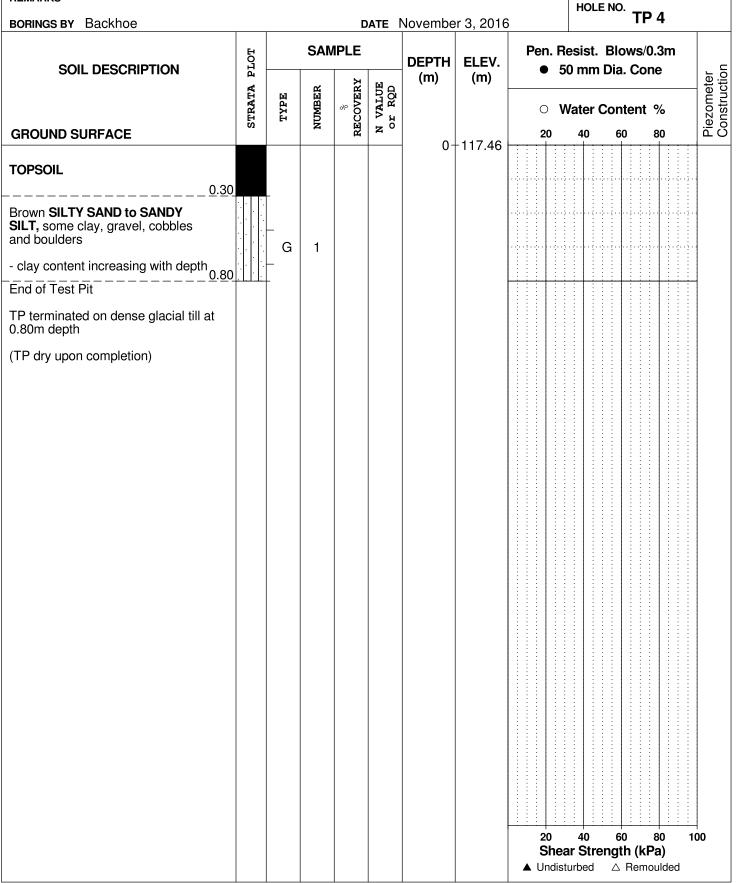
119.73m.

Ottawa, Ontario TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation =

REMARKS

DATUM

FILE NO. **PG3834**



SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 5 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+118.06**TOPSOIL** 0.20 Brown SANDY SILT with clay to G 1 SILTY SAND 0.50 Highly fractured **BEDROCK** with sandy silt, gravel, cobbles and boulders, some clay 1 + 117.06End of Test Pit TP terminated on fractured bedrock surface at 1.30m depth (TP dry upon completion) 40 60 100

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nai 119.73m.	l in utility pole on Carp Road. Geodetic elevation =				FILE NO. PG3834								
REMARKS BORINGS BY Backhoe	DATE November 3, 2016 HOLE NO. TP 6												
SOIL DESCRIPTION			SAN	IPLE		DEPTH	ELEV.	Pen. Re	Pen. Resist. Blows/0. • 50 mm Dia. Con				
	STRATA PLOT	TYPE	NUMBER	% RECOVERY	N VALUE or RQD	(m)	(m)				tent %		Piezometer Construction
GROUND SURFACE	ST	H	N	REC	N			20	40	60			Piez
TOPSOIL 0.10						0+	-118.08						
Highly fractured BEDROCK													
End of Test Pit		-											
TP terminated on fractured bedrock surface at 0.40m depth													
(TP dry upon completion)													
								20	40	6	0 8	D 10	00
								Shea ▲ Undisti	r Str	engt	h (kPa)	

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 7 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT DEPTH ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+117.37TOPSOIL 0.15 Brown SILTY SAND 1 G Highly fractured **BEDROCK** with silty clay, sand, gravel, cobbles and boulders 1 + 116.37End of Test Pit TP terminated on fractured bedrock surface at 1.10m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP8 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT **DEPTH** ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) N VALUE or RQD RECOVERY NUMBER Water Content % **GROUND SURFACE** 80 20 0+118.54Crushed stone 0.05 **TOPSOIL** 0.20 Brown SILTY SAND, trace gravel 0.80 1 + 117.54Highly fractured **BEDROCK** with brown silty sand, gravel and cobbles, trace boulders G 1 End of Test Pit TP terminated on fractured bedrock surface at 1.50m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. TP 9 **BORINGS BY** Backhoe DATE November 3, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % **GROUND SURFACE** 80 20 0+118.16**TOPSOIL** 0.20 Brown SILTY SAND with clay and fractured bedrock by 0.4m depth 0.65 G 1 Highly fractured **BEDROCK** with 1+117.16grey-brown silty sand, gravel, cobbles and boulders End of Test Pit TP terminated on fractured bedrock surface at 1.5m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

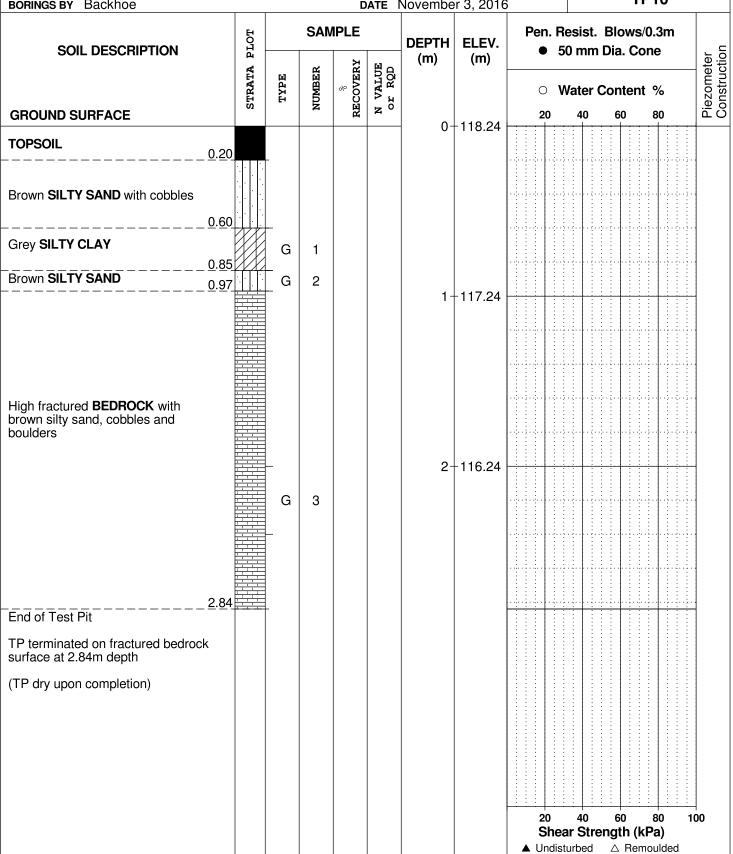
TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = PG3834

REMARKS

BORINGS BY Backhoe

DATE November 3, 2016

Pen. Resist. Blows/0.3m



SOIL PROFILE AND TEST DATA

▲ Undisturbed

△ Remoulded

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = **DATUM** FILE NO. **PG3834** 119.73m. **REMARKS** HOLE NO. **TP11 BORINGS BY** Backhoe DATE November 8, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT DEPTH ELEV. Piezometer Construction SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+117.97TOPSOIL 0.15 Brown SILTY FINE SAND, some gravel, cobbles, boulders, trace clay and organics G 1 1 + 116.971.20 Highly fractured **BEDROCK** interbedded with sandy silt, some clay with fragmented bedrock throughout 2+115.97End of Test Pit TP terminated on fractured bedrock surface at 2.45m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

▲ Undisturbed

△ Remoulded

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. **TP12 BORINGS BY** Backhoe DATE November 8, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT DEPTH ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER Water Content % 80 **GROUND SURFACE** 20 0+117.46**TOPSOIL** 0.25 Brown SILTY SAND, trace cobbles, G 1 boulders and clay - intermittent thin layers of silty clay from 1.25m depth 1 + 116.46Highly fractured **BEDROCK** interbedded with sandy silt, some 2+115.46clay with fragmented bedrock throughout End of Test Pit TP terminated on fractured bedrock surface at 2.65m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa)

SOIL PROFILE AND TEST DATA

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road Ottawa, Ontario

TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = FILE NO. **DATUM PG3834** 119.73m. **REMARKS** HOLE NO. **TP13 BORINGS BY** Backhoe DATE November 8, 2016 **SAMPLE** Pen. Resist. Blows/0.3m STRATA PLOT DEPTH ELEV. Piezometer Construction 50 mm Dia. Cone **SOIL DESCRIPTION** (m) (m) RECOVERY N VALUE or RQD NUMBER Water Content % 80 **GROUND SURFACE** 20 0+117.43**TOPSOIL** 0.25 Brown SILTY SAND, some clay and tree roots, trace gravel, cobbles and boulders G 1 1.00 1 + 116.43Highly fractured **BEDROCK** interbedded with sandy silt, some clay with fragmented bedrock throughout End of Borehole TP terminated on fractured bedrock surface at 1.80m depth (TP dry upon completion) 40 60 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

SOIL PROFILE AND TEST DATA

40

▲ Undisturbed

Shear Strength (kPa)

60

△ Remoulded

100

Geotechnical Investigation Proposed Storage Building - 2978 & 2966 Carp Road 154 Colonnade Road South, Ottawa, Ontario K2E 7J5 Ottawa, Ontario TBM - Top of magnetic nail in utility pole on Carp Road. Geodetic elevation = **DATUM** FILE NO. **PG3834** 119.73m. **REMARKS** HOLE NO. **TP14 BORINGS BY** Backhoe DATE November 8, 2016 **SAMPLE** Pen. Resist. Blows/0.3m PLOT DEPTH ELEV. Piezometer Construction SOIL DESCRIPTION • 50 mm Dia. Cone (m) (m) RECOVERY N VALUE or RQD STRATA NUMBER Water Content % **GROUND SURFACE** 80 20 0+117.91**TOPSOIL** 0.20 Brown SILTY FINE SAND, some gravel, cobbles and boulders 0.55 1 + 116.91Highly fractured **BEDROCK** interbedded with sandy silt, some clay with fragmented bedrock G 1 throughout

End of Test Pit TP terminated on fractured bedrock at 1.85m depth (TP dry upon completion)

SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD %	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
ws	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC% - Natural moisture content or water content of sample, %

LL - Liquid Limit, % (water content above which soil behaves as a liquid)
PL - Plastic limit, % (water content above which soil behaves plastically)

PI - Plasticity index, % (difference between LL and PL)

Dxx - Grain size which xx% of the soil, by weight, is of finer grain sizes

These grain size descriptions are not used below 0.075 mm grain size

D10 - Grain size at which 10% of the soil is finer (effective grain size)

D60 - Grain size at which 60% of the soil is finer

Cc - Concavity coefficient = $(D30)^2 / (D10 \times D60)$

Cu - Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:

Well-graded gravels have: 1 < Cc < 3 and Cu > 4 Well-graded sands have: 1 < Cc < 3 and Cu > 6

Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.

Cc and Cu are not applicable for the description of soils with more than 10% silt and clay

(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

p'_o - Present effective overburden pressure at sample depth

p'c - Preconsolidation pressure of (maximum past pressure on) sample

Ccr - Recompression index (in effect at pressures below p'c)
Cc - Compression index (in effect at pressures above p'c)

OC Ratio Overconsolidaton ratio = p'_c / p'_o

Void Ratio Initial sample void ratio = volume of voids / volume of solids

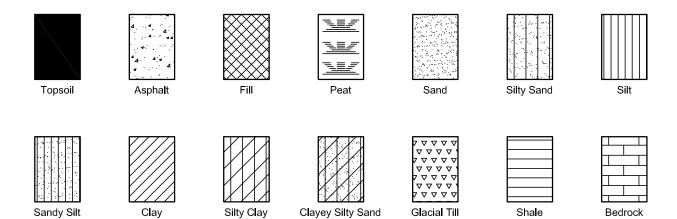
Wo - Initial water content (at start of consolidation test)

PERMEABILITY TEST

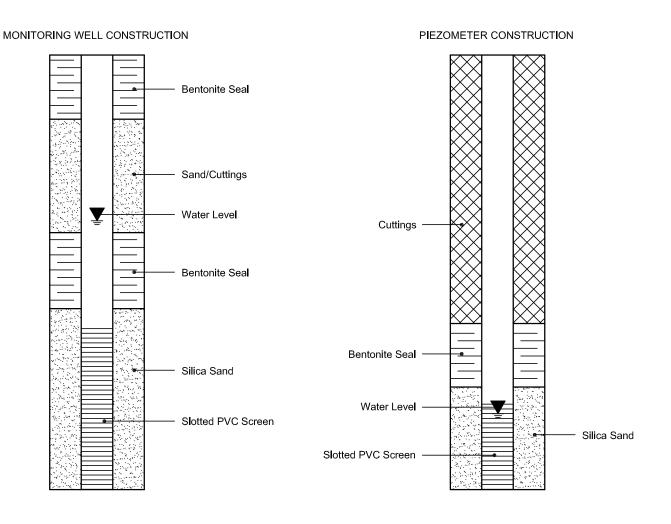
Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

SYMBOLS AND TERMS (continued)

STRATA PLOT

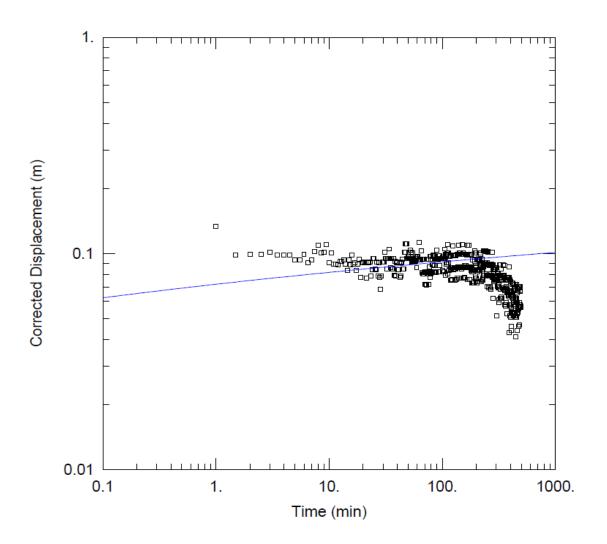


MONITORING WELL AND PIEZOMETER CONSTRUCTION



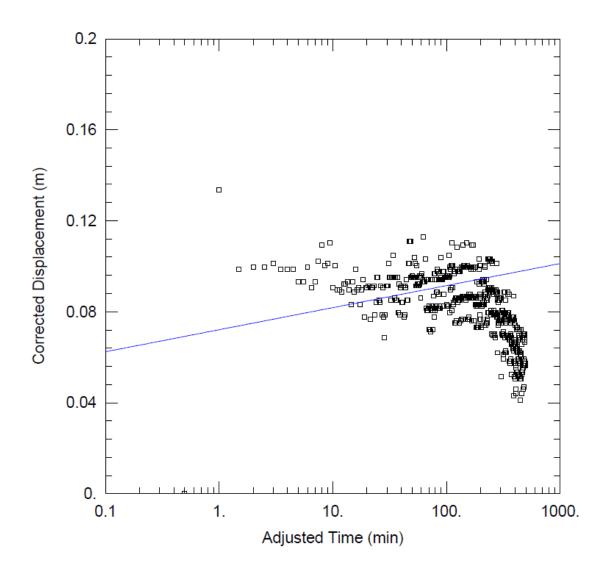
Pumping Test Analysis Report

File No.	PH4484	Well ID:	TW1
Date:	April 13, 2022	Solution Method:	Theis
Client:	Nautical Lands Group	Transmissitivity (m2/day):	1224.1
Site Address:	2966 Carp Road, Ottawa	Discharge Rate (L/min)	45
Project:	Site Plan Application	Analysis performed by:	EA



Pumping Test Analysis Report

File No.	PH4484	Well ID:	TW1
Date:	April 13, 2022	Solution Method:	Cooper-Jacob
Client:	Nautical Lands Group	Transmissitivity (m2/day):	1224.1
Site Address:	2966 Carp Road, Ottawa	Discharge Rate (L/min)	45
Project:	Site Plan Application	Analysis performed by:	EA



Pumping Test Analysis Report

File No. PH4484

Date: April 13, 2022

Client: Nautical Lands Group

Site Address: 2966 Carp Road, Ottawa

Project: Site Plan Application

Summary Table:							
Solution Method:	Well ID:	Transmissitivity (m2/day):					
Theis	TW1	1224.1					
Cooper-Jacob	TW1	1224.1					
Average:		1224.10					

patersongroup

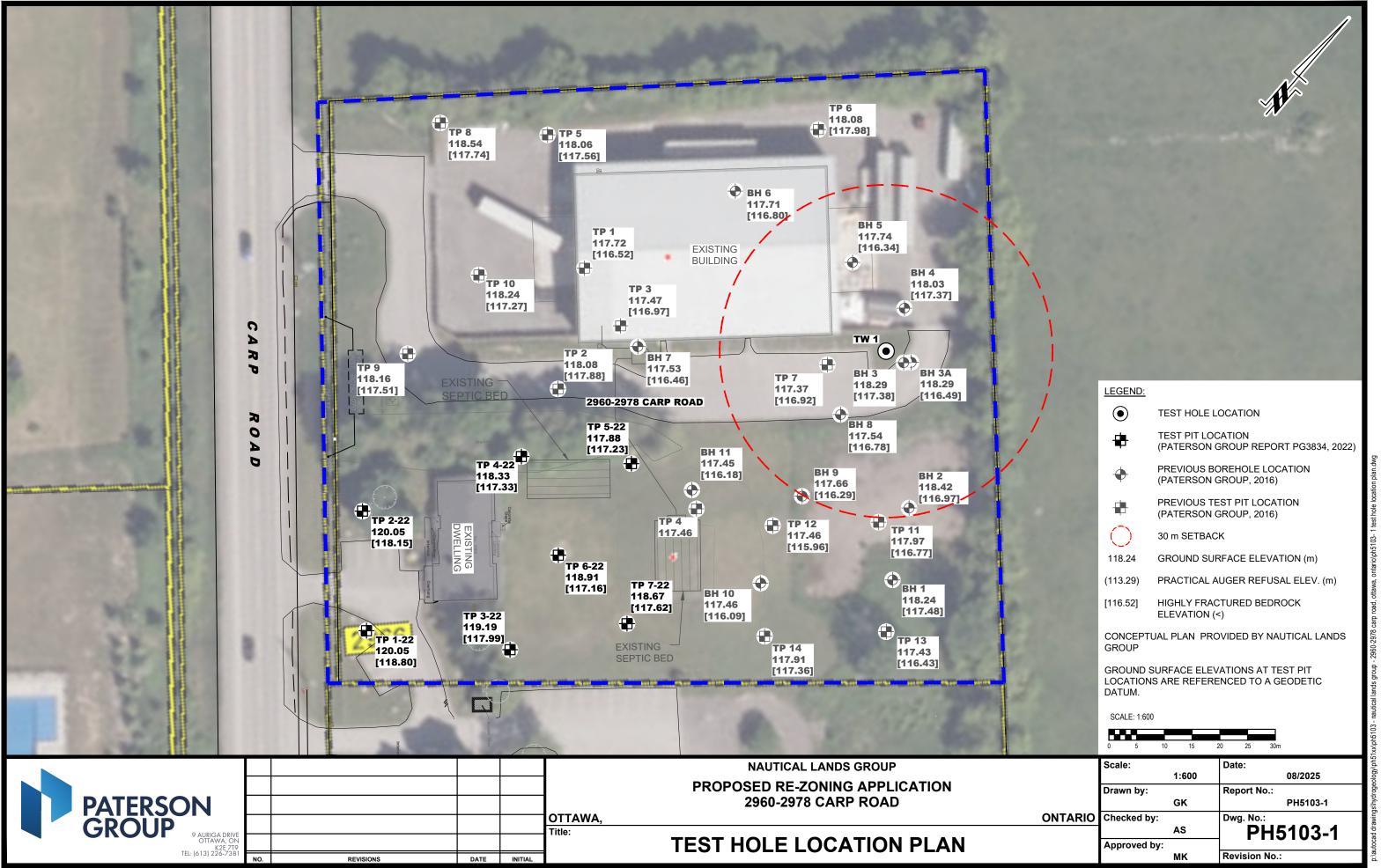
2966 Carp Road, Ottawa PH4484

TW1	inputs		
pН	7.93	A	0.19
TDS	767	В	2.37
Hardness	451	С	2.25
Alkalinity	243	D	2.39
Temp.	10.8		
		pHs =	7.215174149

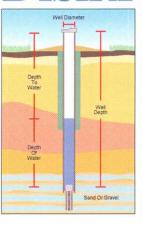
Langel	ier Saturation Index (LSI) Calcu	ulation	(Langelier, 1936)			
	LSI = pH - pHs $A = (Log10 [TDS] - 1) / 10$ pHs = (9.3 + A + B) - (C + D) $B = -13.12 \times Log10 (oC + 273) + 34.55$ Where: $C = Log10 [Ca2 + as CaCO3] - 0.4$ D = Log10 [alkalinity as CaCO3]					
		LSI =	0.7			
LSI	Effect					
0.5 to 2	Water is super saturated and tends to precipitate a scale la	yer of calcium carbonate (scale	forming but non-corrosive)			
0 to 0.5	Water is super saturated and tends to precipitate a scale la	yer of calcium carbonate (sligh	tly scale forming and corrosiv	e).		
0	Water is saturated (in equilibrium) with calcium carbonate. A scale layer of calcium carbonate is neither precipitated nor dissolved.					
0 to -0.5	Water is under saturated and tends to dissolve solid calcium carbonate (slightly corrosivebut non-scale forming).					
-0.5 to -2	Water is under saturated and tends to dissolve solid calcium carbonate (seriously corrosive).					

PREDICTIVE NITRATE I	MPACT A	SSESS	EMENT
Infiltration Factors			
Topography		0.25	
Soil		0.30	
Cover		0.12	
Total		0.67	
Site Characteristics			
Area of Site :	1	2832	m^2
Total of roof areas:		1713	m^2
Total area of paved driveway areas:		4051	m^2
Roof + paved driveway areas	;	5764	m^2
Impervious Area	;	5764	m^2
Percent Impervious Area =		45	%
Infiltration Area =		7068	m^2
Septic Effluent			
Concentration of Effluent (Cs) =		17.2	mg/L
Infiltration Calculation			
Nitrate concentration in precipitation (C _i) =		0	mg/L
Surplus Water (Environment Canada)		378	mm/yr
Factored Water Surplus =		253	mm/yr
Infiltration % due to stormwater management measures		-	%
Infiltration rate from stormwater management measures =		0	mm/yr
Infiltration Flow Entering the System (Q_i) =		5	m³/day
Mass Balance Model (MOEE, 1995)			
$C_{T} = (Q_{b}C_{b} + Q_{e}C_{e} + Q_{i}C_{i})/(Q_{b} + Q_{e} + Q_{i})$) = Cumulative Nitra	te Concentratio	n
Q _b = flow entering the system across the upgradient area		0	m³/day
C _b = background nitrate concentration		0.25	mg/L
Cs = concentration of nitrates in the septic effluent		17.2	mg/L
Q _i = flow entering the system from infiltration		5	m³/day
C _i = Concentration of nitrates in the infiltrate		0	mg/L
	C _T =	9.75	mg/L
Maximum Allowable Sewage Flow Volume			
Daily Sewage Flow (Qs)=	6.41	8279445	m ³

PREDICTIVE NITRATE	IMPAC	T ASSESSE	EMENT
Infiltration Factors			
Topography		0.25	
Soil		0.30	
Cover		0.12	
Total		0.67	
Site Characteristics			
Area of Site :		12832	m^2
Total of roof areas:		1713	m^2
Total area of paved driveway areas:		4051	m^2
Roof + paved driveway areas		5764	m^2
Impervious Area		5764	m^2
Percent Impervious Area =		45	%
Infiltration Area =		7068	m ²
Septic Effluent			
Concentration of Effluent (Cs) =		40	mg/L
Infiltration Calculation			
Nitrate concentration in precipitation (C _i) =		0	mg/L
Surplus Water (Environment Canada)		378	mm/yr
Factored Water Surplus =		253	mm/yr
Infiltration % due to stormwater management measures		-	%
Infiltration rate from stormwater management measures =		0	mm/yr
Infiltration Flow Entering the System (Q _i) =		5	m³/day
Mass Balance Model (MOEE, 1995)			
$C_T = (Q_b C_b + Q_e C_e + Q_i C_i)/(Q_b + Q_e + C_e)$	ગુ _i) = Cumulativ	e Nitrate Concentration	
Q _b = flow entering the system across the upgradient area		0	m³/day
C _b = background nitrate concentration		0.25	mg/L
Cs = concentration of nitrates in the septic effluent		40	mg/L
Q _i = flow entering the system from infiltration		5	m³/day
C _i = Concentration of nitrates in the infiltrate		0	mg/L
	C _T =	9.75	mg/L
Maximum Allowable Sewage Flow Volume			
Daily Sewage Flow (Qs)=		1.580700227	m^3



Disinfection Instruction Sheet



vour trouble.

If your drinking water continues to test positive on repeated submissions, consult your local health unit, which can help you interpret the results of your tests and provide you with advice on what measures you can take to safeguard your drinking water.

The first step in identifying the reason for repeated adverse water quality is to conduct a visual inspection of your well. Start with a close look at your well. The area around it should be

clear of any potential contaminant sources, such as pets, lawn care products, and gardens. Once you're satisfied that the area around your well is okay, take a good, close look at the well itself. If you have an older well, make sure that the cap and the sealant around the well casing isn't cracked or damaged. If it is, you need to fix or replace it right away. If the source of the problem can't be detected, consult a licensed well contractor right away to identify the source of the problem and eliminate it. You can save yourself a lot of money by doing this instead of rushing out to buy a home treatment device that may be expensive to install, operate,

and maintain. And it may not eliminate the source of

(If you have a cistern, please talk to your public health unit about disinfection requirements.)

- 1. Measure the diameter of the well.
- 2. Measure the well depth and the static or resting water level, then calculate the depth of water in the well.
- 3. Using the table on this sheet, measure out the amount of bleach needed. (The table gives the volume of bleach needed for different well sizes.) Then, pour the mixture into your well.
- 4. If possible, mix the water in the well. This can be accomplished by attaching a hose to a tap, running water from the well, through the hose and back into the well.
- 5. After adding chlorine to the well, remove or bypass any carbon filters that are in the system for water treatment. If you don't, these filters will remove the chlorine from the water, and any pipes beyond the filter will not get disinfected. Replace with new filters after chlorination to avoid reintroducing bacteria into the system.
- 6. Run water at every faucet in the house (and barn, if you have one) until a strong chlorine odour is detected. Be aware that your nose may lose its ability to detect chlorine.
- 7. If there is no chlorine smell or it is very weak, add more bleach to the well and repeat Step 6 above.
- 8. Drain the water heater and fill with chlorinated water.
- 9. Backflush the water softener and all water filters (except carbon filters).

Casing Di	Volume of Unscented Bleach (5.25% solution)	
Millimetres	Inches	Millilitres
50	2	6
100	4	30
150	6	60
200	8	100
250	10	200
300	12	250
400	16	400
500	20	650
600	24	900
900	36	2000 (2 litres)
1200	48	3600 (3.6 litres)

For example: If you have 6 metres (20 feet) of water in your well and it has a casing diameter of 100 mm or 4 inches, you would add 60 mm or 2 fluid ounces of bleach.

* For questions or more information on how to disinfect your well, contact your local health unit.

stand in the system for at least 12 hours.

10. Let the chlorinated water

- 11. Clear chlorine from the well by running an outside hose to the ground surface. Then, run clear water through the faucets until the water no longer smells of chlorine.
- 12. Avoid putting too much chlorine into the septic system because the bacteria needed for septic decomposition may be killed.
- 13. Do not drink the water without boiling it until test results show the water is safe to drink.

For more information

Ontario Government Ministry Abbreviations

Ministry of Health and Long-Term Care MOHLTC (also MOH)

Ministry of the Environment MOE (also MOEE)

Ontario Ministry of Agriculture and Food OMAF (also OMAFRA)

Ontario Government Information Lines

MOE Public Information Centre: 1-800-565-4923

MOE Water Well Records: 1-888-396-9355

MOHLTC INFOline: 1-800-268-1154

OMAF Agricultural Information Contact Centre: 1-877-424-1300

Ontario Government Web Sites

MOE: www.ene.gov.on.ca

MOHLTC: www.health.gov.on.ca

OMAF: www.gov.on.ca/omaf

Publications available on-line

Health Canada: www.hc-sc.gc.ca

- $\bullet \ A \ Guide \ to \ Well \ Water \ Treatment \ and \ Maintenance;$
- Water treatment devices for disinfection of drinking water.

MOHLTC: www.health.gov.on.ca

- How to use water safely during a "Boil Water Advisory";
- E. coli Bacteria;
- List of Public Health Units in Ontario.

OMAF: www.gov.on.ca/omaf

- Assessing the Potential for Ground Water Contamination on Your Farm, Publication 97-017;
- Best Management Practices: Water Wells, OMAFRA and Agriculture and Agri-Food Canada, 2003 (to order).

MOE: www.ene.gov.on.ca

- Important Facts About Water Well Construction, Publication 3788;
- Water Wells and Groundwater Supplies: The Protection of Water Quality in Bored and Dug Wells, Information Sheet PIB 601b;
- Water Wells and Groundwater Supplies: The Protection of Water Quality in Drilled Wells, Information Sheet PIB 602b.

