February 18, 2025



#### PM15625-LET.01-Rev.01

1818 Farm & Cidery 1811 Richardson Side Road Ottawa (Carp), Ontario K0A 1L0

Attention: Ken Hoppner

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Subject: Hydrogeological Assessment and Terrain Analysis Zoning Bylaw Amendment and Site Plan Control Application 1811 Richardson Side Road Ottawa (Carp), Ontario

## INTRODUCTION

Further to your request, Paterson has conducted a Hydrogeological Assessment and Terrain Analysis in support of a Re-Zoning Application and Site Plan Control Application for the proposed alteration to allow for a place of assembly as part of an on-farm diversified use (OFDU) and/or restaurant to be located at 1811 Richardson Side Road in Ottawa (Carp), Ontario.

The purpose of this work has been to determine the suitability of the water supply aquifer underlying the site as well as determine the capacity of the site to attenuate the sewage system impacts to support the Re-Zoning Application and Site Plan Control Application.

The Subject Site consists of a 11.68 ha lot and is currently occupied by a residential dwelling, located centrally near Bradley Side Road, a centrally located commercial building (Cidery), a commercial building to the south, and an agricultural area located on the northeastern portion of the property with an associated temporary tent-based greenhouse. The south-western portion of the site generally consists of treed areas. The ground surface generally slopes towards the east. There is a sharp slope from the central property to the northeastern agricultural area. The general direction of water flow is towards the Ottawa River to the north.

The Subject Site is bordered on all sides by agricultural lands, with a church and dwelling located to the south of the site. The site has frontage onto Bradley Side Road to the northwest, Huntmar Drive to the northeast and Richardson Side Road to the southeast.





The subject site itself and the surrounding commercial areas are zoned AG3 for Agricultural General Subzone 3 (GeoOttawa).

#### Hydrogeological Pre-consultation

A Hydrogeological pre-consultation was completed with a City of Ottawa Hydrogeologist on June 23, 2024. The City Hydrogeologist noted that water quantity and quality may be an issue. Evidence was provided from the water well hydrofracking process to increase the quantity and was to be confirmed with the pumping test. An 8-hour pumping test with the standard Subdivision Package suite of parameters, trace metals and Volatile Organic Compounds (VOC's) required by the City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG) was determined to be acceptable.

#### **Description of Subject Site**

The subject site is an approximately 11.68 ha lot and is currently occupied by a two-storey residential dwelling, a commercial building to the south with associated parking and storage, a commercial building (Cidery), and agricultural lands to the east, with an associated temporary tent-based greenhouse. The Re-zoning Application is for a zoning by-law amendment to increase the number of guests allowed at the OFDU and/or restaurant. Please refer to Figure-1 Key Plan, attached, for the proposed site location.

The residential dwelling is currently serviced by an onsite sewage system and an existing private drilled well. A newly drilled well was installed in 2022 to service the Cidery and a new sewage system will be required to service the proposed change of use . At this time no site plan has been completed.

The newly drilled well, hereafter referred to as Test Well 1 (TW1), is the well which is currently servicing the Cidery and will continue to service the building following the completion of construction. The property owner will need to ensure that protective measures are taken to protect the wellhead, such as the use of a barrier, during construction.

The suitability of the aquifer to supply the subject site was assessed using the methodology provided in City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG).

Based on available Ontario Geological Survey (OGS) mapping (GRS005), the subject site is not within an area of potential karst.

#### 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 and surrounding areas have not been



designated as a Significant Groundwater Recharge Area (SGRA), Highly Vulnerable Aquifer (HVA), or Intake Protection Zones (IPZ) Zone within the MRSPP.

There are no related requirements for this site relative to the MRSPP.

#### Karst Mapping

As discussed in the City pre-consultation meeting, karst was not considered a concern at the site. Available Karst mapping (OGS GRS005) was reviewed as part of this assessment. The available mapping does not indicate the presence of any inferred or potential karstic features. Furthermore, no indication of karstic features was observed during the site visits completed by Paterson personnel.

## FIELDWORK PROGRAM

#### Well Inspection

A visual inspection of TW1 was performed by Paterson personnel which confirmed that the well casing and cap are in good condition. The final grading around the well will be sufficiently graded to direct surface water away from the wellhead (as required by O.Reg 903) at the time of the new sewage system installation. The stick-up was measured to be 0.49 m above ground surface. Based on a visual inspection by Paterson personnel, the well was deemed to be in good condition.

#### Well Testing

As a means to demonstrate the adequacy of the aquifer underlying the subject lands, with respect to water quality and quantity, TW1 was tested. TW1 has a Water Well Record (WWR) Well ID of A342224 with a 152.4 mm diameter steel casing that extends to 20.1 m below ground surface (bgs) and a 0.49 m stick-up. The well itself extends to a depth of 121.9 m bgs. Based on available geological mapping, the drift thickness at TW1 varies from 15 to 25 m.

As a means to evaluate the water supply aquifer intercepted by the well, the well was subjected to an 8-hour constant rate pumping test. The pumping test was conducted on June 25, 2024 under the full-time supervision of Paterson personnel. Prior to the pumping test the well was disinfected as per the MECP Disinfection Instruction Sheet, and 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 as well as any septic systems in the area. Upon completion of the test, the system was returned to its normal configuration.



The pumping test was carried out at a pumping rate of 30 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 selected rate of 30 L/min provides approximately 1.4 times (14,400 L) the maximum total daily design sanitary sewage flow (TDDSSF) of 10,000 L/day for the subject site during the 8-hour pumping test in support of the Re-zoning Application. The TDDSSF for the proposed development is 7,125 L/day (design by others) under the Site Plan Application. This provides greater than 2 times the TDDSSF proposed for the Site Plan Application. The total daily design sanitary sewage flows (TDDSSF) are proposed to remain below the limit of 10,000 L/day as set out by the Ontario Building Code (OBC) and does not require a large-scale subsurface sewage system.

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 95% recovery approximately 13 hours 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. VOCs were sampled 4 hours and 8 hours after the start of pumping.

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 8hour pumping test. The parameters tested at the well head included: pH, total dissolved solids, conductivity, turbidity, apparent colour, hydrogen sulfide (olfactory only), 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.

Due to elevated measurements for turbidity, colour, and aluminum levels encountered during the pumping test, Paterson personnel returned to the site on July 19, 2024 to collect an additional untreated sample under normal operating conditions of TW1.



## **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)	1.68						
Pumping Rate (L/min)	30						
Pre-test Static Water Level (m)	4.25						
Post-test Static Water Level (m)	19.47						
Available Drawdown (m)	118.16						
% Drawdown During Pumping Test (%)	13						
Specific Capacity (L/min/m drawdown)	1.97						

The drawdown data was analyzed using the Theis and Cooper Jacob methods of analysis. Aquifer transmissivity is estimated to be 1.68 m<sup>2</sup>/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 15.22 m at approximately 8 hours into the pumping test (13% of the available drawdown). 95% recovery was achieved approximately 13 hours after the end of pumping.

The total volume of water pumped during the 8-hour pumping event was approximately 14,400 L. This is approximately 1.4 times the maximum total daily design volume of water (10,000 L/d) required to support the Re-Zoning Application for all uses on the property. This volume is more than twice the TDDSSF of 7,125 L/day for the Site Plan.

The suitability of the aquifer to support the proposed Re-Zoning Application and Site Plan Control Application for the proposed development was assessed using the methodology provided in the City of Ottawa 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 maximum site requirements under OBC.

Given the analyses presented and summarized above, it is our opinion that there is an adequate supply of water to support the proposed Re-Zoning Application and Site Plan Control Application. Available water well records (WWR) of the neighboring properties on



the MECP Well Record mapping website indicated that the wells were screened in limestone. Surrounding WWR's are attached to this report.

### 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 in 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 discharge water prior to the collection of the water samples.

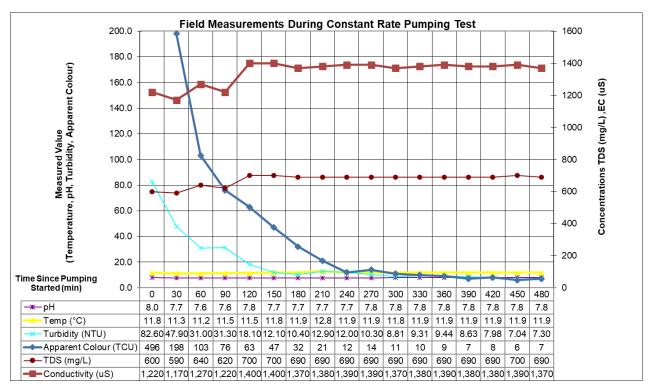


Figure 1: Field Testing Results



### 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 and 2b below and the laboratory analyses reports can be found attached. VOC laboratory analytical testing was completed and measured to be non-detect in the sample results and is provided in Table 2c. All laboratory test results can be found attached to this report.

TABLE 2a: GROUNDWATE	R MICROBIC	DLOGY & GE	NERAL GEO	DCHEMISTRY				
		OD	WS	TW 1				
PARAMETER	UNITS	LIMIT	TYPE	TW1 GW1 (4 hr) 6/25/2024	TW1 GW2 (8 hr) 6/25/2024	TW1 GW-3 7/19/2024		
MICROBIOLOGICAL	,		ļ	I				
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0	0	-		
Total Coliforms	ct/100mL	0	MAC	0	0	-		
GENERAL CHEMICAL - HE	ALTH RELA	TED						
Fluoride (F)	mg/L	1.5	MAC	1.32	1.34	-		
Ammonia (N-NH <sub>3</sub> )	mg/L	-	-	0.259	0.263	-		
Nitrite (N-NO <sub>2</sub> )	mg/L	1	MAC	< 0.5	<0.5	-		
Nitrate (N-NO <sub>3</sub> )	mg/L	10	MAC	<0.5	<0.5	-		
Total Kjeldahl Nitrogen	mg/L	-	-	1.460	0.483	-		
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	12.00	7.30	0.56		
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	11.5	7.1	3.3		
<b>GENERAL CHEMICAL - AE</b>	STHETIC RE	LATED		1	<b>I</b>			
Alkalinity (as CaCO3)	mg/L	30-500	OG	225	225	-		
Chloride (Cl)	mg/L	250	AO	85	86	-		
Colour (Apparent-Lab)	TCU	5	AO	10	10	12		
Colour (Apparent-Field)	TCU	5	AO	12	7	0		
Conductivity	uS/cm	-	-	1,350	1,370	-		
Dissolved Organic Carbon	mg/L	5	AO	1.3	1.0	-		
Hardness (as CaCO3)	mg/L	100	OG	356	360	-		
Ion Balance	unitless	-	-	1.01	1.02	-		
pН	unitless	6.5-8.5	AO	7.97	8.04	-		
Phenols	mg/L	-	-	<0.001	<0.001	-		
Sulphate (SO <sub>4</sub> )	mg/L	500	AO	388	394	-		
Sulphide (S <sub>2</sub> )	mg/L	0.05	AO	0.95	1.16	-		
Tannin & Lignin	mg/L	-	-	0.20	0.30	-		
Total Dissolved Solids	mg/L	500	AO	944	959	-		

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: GROUNDWA		T						
		UNITS LIMIT TYPE		TW1				
PARAMETER	UNITS			TW1 GW1 (4 hr) 6/25/2024	TW1 GW2 (8 hr) 6/25/2024	TW1 GW-3 7/19/2024		
METALS								
Aluminum (Al)	mg/L	0.1	OG	0.43	0.34	0.02		
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	0.19	0.19	-		
Beryllium (Be)	mg/L	-	-	< 0.0005	<0.0005	-		
Boron (B)	mg/L	5.0	IMAC	0.43	0.44	-		
Cadmium (Cd)	mg/L	0.005	MAC	< 0.0001	<0.0001	-		
Calcium (Ca)	mg/L	-	-	74	75	-		
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	0.68	0.44	-		
Lead (Pb)	mg/L	0.01	MAC	< 0.001	<0.001	-		
Magnesium (Mg)	mg/L	-	-	42	42	-		
Manganese (Mn)	mg/L	0.05	AO	0.02	0.02	-		
Mercury (Hg)	mg/L	0.001	MAC	< 0.0001	<0.0001	-		
Molybdenum (Mo)	mg/L	-	-	< 0.005	<0.005	-		
Nickel (Ni)	mg/L	-	-	< 0.005	<0.005	-		
Potassium (K)	mg/L	-	-	6	6	-		
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	181	186	-		
Strontium (Sr)	mg/L	-	-	2.64	2.72	-		
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

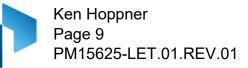


TABLE 2c: GROUNDWATER GEO	CHEMISTRY			_		
	ODWS TW1					
PARAMETER	UNITS			IV		
	ONITO	LIMIT	TYPE	TW1 GW1 (4 hr)	TW1 GW2 (8 hr)	
				6/25/2024	6/25/2024	
VOCs Surrogates						
1,2-dichloroethane-d4	%	-	-	122	109	
4-bromofluorobenzene	%	-	-	71	72	
Toluene-d8	%	-	-	110	113	
Volatiles						
1,1,1,2-tetrachloroethane	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	-	-	<2	<2	
Methyl Isobutyl Ketone (MIBK)	μg/L	-	-	<5	<5	
Methyl Tert Butyl Ether (MTBE)	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:

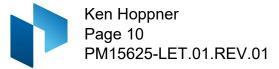
MAC = Maximum Acceptable Concentration

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. 3966666) indicated that the test samples at the 4 and 8 hour interval were non-detect (0 ct/100 mL) for E.Coli and Total Coliforms.

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 CaCO<sub>3</sub>)
- □ Total Dissolved Solids (TDS)
- □ Iron (Fe)
- Total Sulphides
- □ Aluminum (Al)
- Colour
- Turbidity

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 CaCO<sub>3</sub>

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 356 and 360 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).

The Langelier calculation provided an LSI of 0.0. Based on the evaluation of the result, the water is saturated and tends to precipitate a scale layer of calcium carbonate (scale forming and mildly corrosive). Based on the range of stability, there are no mitigative measures needed. See Langelier Saturation Index Calculation attached for calculation details.

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 build-up 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 944 and 959 mg/L, at the 4- and 8-hour points, respectively, 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 recommended that a point of use reverse osmosis unit be installed to remove taste issues, <u>if the owner desires</u>, for drinking purposes. As such, no taste problems will occur when the recommended treatment technology, or equivalent, is used.

The Langelier calculation provided an LSI of 0.0. Based on the evaluation of the result, the water is saturated and does not tend to precipitate a scale layer of calcium carbonate (non-scale forming and non-corrosive). Based on the range of stability in the positive direction, there are no mitigative measures needed. See Langelier Saturation Index Calculation attached for calculation details.

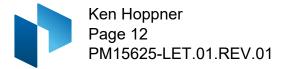
#### Iron

Concentrations of iron above 0.3 mg/L can contribute to staining of fixtures and a metallic taste at higher concentrations. Precipitation of iron can promote the growth of iron bacteria in pipes. The concentration of iron in the groundwater in TW1 was measured to be 0.68 and 0.44 mg/L. The concentration of iron in the groundwater in the test well is considered to be reasonably treatable in accordance with Procedure D-5-5. It is recommended that a water softener or manganese greensand filter be used to reduce the levels of iron and reduce the potential for excessive precipitate occurring in the water supply system, if desired by the property owner. If treatment is not used, negative impacts such as discolouration of water fixtures, precipitation of iron and staining may occur.

#### **Total Sulphides**

Total sulphides were reported to be present within the water supply aquifer at concentrations of 0.95 and 1.16 mg/L. These can present as compounds such as iron sulphide or hydrogen sulphide, but are not limited to these forms. The value noted is for the **total sulphides** within the sample as there is no laboratory test for only hydrogen sulphide. Total sulphides should **not** be equated to a result for hydrogen sulphide.

Hydrogen sulphide is a gas that is heavier than air and has a very distinct "rotten egg" odour. Through the latter portion of the test, a faint odour was detected periodically. The aesthetic objective for hydrogen sulphide, which is incidentally also the threshold of the average human olfactory detection, is 0.05 mg/L. Field testing (olfactory only) estimated values in the range of 0 to 0.1 mg/L, which is in line with the intermittent olfactory observation. MECP Procedure D-5-5 does not indicate a maximum treatable limit for sulphide. One method to remove hydrogen sulphide, if desired, is a chlorine feeder and filter through oxidation or equivalent method recommended by a water treatment professional.



### Aluminum

Aluminum was reported to be present within the water supply aquifer at concentrations of 0.43 and 0.32 mg/L at the 4- and 8-hour marks, respectively. Aluminum has an OG of 0.1 mg/L where an exceedance may cause coating of pipes in the distribution system and flocculation in the distribution system. Aluminum has a federal health related guideline MAC of 2.9 mg/L, which was not exceeded. During a revisit to the subject site and resample, the aluminum concentration was 0.02 mg/L, indicating that TW1 operating under normal usage meets the required guidelines.

#### Colour

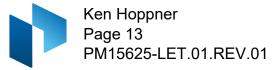
Colour may occur in drinking water for several reasons. It may be due to organic substances from the decay of vegetation, or the presence of metals such as iron, manganese, and copper, which are abundant in nature. The provincial aesthetic objective for colour in drinking water is 5 True Colour Units (TCU). The federal (Health Canada) guideline aesthetic objective limit for colour is 15 TCU (Guidelines for Canadian Drinking Water Quality, Health Canada June 2019). Procedure D-5-5 gives a maximum concentration considered reasonably treatable for colour as 7 TCU. As colour is a strictly aesthetic parameter, a manganese greensand filter or a carbon filter can be used to reduced manganese from the water supply, if desired by the owner.

During the field pumping test, a DR900 colorimeter was used to measure apparent colour in the groundwater at regular intervals. Field testing for colour had values of 12 and 7 TCU. Laboratory testing showed colour values of 10 TCU during the field test and 12 TCU from the revisit. Apparent colour in the groundwater was measured as 0 TCU during regular usage which is below the aesthetic objective of 5 TCU. The elevated apparent colour levels detected in the lab samples is attributed to the precipitation of iron and manganese out of the groundwater.

### Turbidity

Turbidity, which is generally an aesthetic parameter, was detected in the laboratory test samples at values of 11.5 and 7.1 NTU at the 4 hour and 8 h mark of the pumping test, and at 3.3 NTU during regular usage. Field testing of turbidity showed values of 12, and 7.3 NTU at the 4- and 8-hour mark of the pumping test and 0.56 NTU during regular usage. The test during regular usage was completed during the resample visit. Continued pumping showed a gradual decrease towards the end of the pumping test. The rented pump would have disturbed any precipitate in the water column during its installation and removal of the existing pump. This is demonstrated by the reduction in turbidity and iron during the pumping test, further corroborated by the reduction in turbidity under normal usage.

The ODWS maximum acceptable concentration for turbidity in drinking water entering the distribution system is 1 NTU. In accordance with Procedure D-5-5, Table 2 does not reflect a maximum concentration considered reasonably treatable for Turbidity. The Aesthetic Objective and Maximum Concentration Considered Reasonably Treatable



(MCCRT) for turbidity in drinking water reaching the consumer is 5 NTU (Procedure D-5-5, Table 3). Rather, Procedure D-5-5 indicated that "particular care must be taken during testing to ensure that the bacteria requirements of Table 1 are met." Based on the test results, the bacteria requirements of Table 1 of D-5-5 have been met (E.Coli = 0 and Total Coliforms = 0).

### Sodium

Sodium (Na), an aesthetic parameter, was detected in the laboratory test sample at concentrations of 181 and 186 mg/L, which does not exceed the ODWS aesthetic objective of 200 mg/L. Although sodium is not toxic and no maximum acceptable concentration 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. It should be noted that some water treatment technologies, such as water softeners, can increase the sodium concentration so care should be given if such treatment technologies are used.



## **Terrain Analysis**

### **Surficial Geology**

The subsurface conditions are mapped to be fine-textured glaciomarine deposits, mainly consisting of silt and clay, underlying the eastern side of the property; while the western side of the property is mapped to be underlain by stone-poor sandy-silt to silty-sand textured till (OGS MRD218, 2022). The bedrock geology is mapped to be limestone and shale of the Verulam formation of the Simcoe Group (OGS MRD219).

Drift thickness is mapped to be 15 to 25 m bgs, which coincides with neighbouring water well records. The WWR for TW1 showed an overburden thickness of 18m.

### Hydrogeological Sensitivity of the Site

The subject site currently contains a two-storey residential dwelling, a commercial building to the south with associated parking and storage, a commercial building (Cidery), and agricultural lands to the east. The subject site is bordered on all sides by agricultural lands, with a church and dwelling located to the south of the site. The site fronts onto Bradley Side Road to the north-west, Huntmar Drive to the north-east and Richardson Side Road to the south-east. All surrounding properties are on private services. The adjacent properties are serviced by private wells and septic systems.

According to available mapping and WWRs, the overburden thickness was observed to be greater than 2 m. As the proposed site does not have bedrock within 2 m of the ground surface, the site is not considered hydrogeologically sensitive. Separation distances are not required to be increased between the septic components and the onsite well.

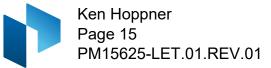
To corroborate our position in this matter, the water quality of the bedrock aquifer accessed by the onsite drilled potable supply well shows no indication of surface water or surface impacts from sewage system effluent.

### **Conceptual Lot Development**

This Terrain Analysis is completed to support a Re-zoning Application and a Site Plan Control Application. See the attached Site Plan titled "1818 Farm and Cidery – Site Plan" by Vandenberg & Wildeboer Architects, dated March 20, 2024. The place of assembly will consist of a cidery and open air assembly area along with associated parking.

### Sewage System Design and Total Daily Design Sewage Flow

This Terrain Analysis has been completed to support a Re-zoning Application and Site Plan Control Application. The associated Ontario Septic System Office permit and sewage treatment system design by D.B. Grey Engineering Inc has been included in the



overall application submission. The TDDSSF for the place of assembly was provided to be 7,125 L/day. 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 that include the existing residence. Any associated flows with the residence will be counted towards the total site capacity in the site plan application. The total volumes for the site, including the place of assembly and on-site residence, are less than 10,000 L/day per review and design by others.

The proposed property will be analysed as part of the Re-zoning Application and Site Plan Control 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 and without the use of tertiary treatment systems (nitrate reducing systems). Furthermore, to support the Site Plan Control Application, a maximum TDDSSF of 10,000 L/day will be examined to determine the nitrate concentration at the property boundary. The values shown in the Predictive Nitrate Impact Assessment calculation attached to this report are summarized below:

□ Site area	11.68 ha
□ Impervious area (%)	7 %
<ul> <li>Concentration of nitrate in effluent (Value based on typical effluent concentration)</li> </ul>	40 mg/L
Surplus Water (The surplus water value was estimated based on Environment Canad	329 mm/yr a Climate Office

(The surplus water value was estimated based on Environment Canada Climate Office values with a soil type comprised of a mixture between clay loam (Urban Lawns), fine sandy loam (Mature Forest) and anthropogenic sources.)

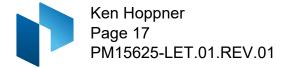


Combined infiltration factor based on:	0.45
<ul> <li>Topography infiltration factor</li> </ul>	0.10
<ul> <li>Soil texture infiltration factor</li> </ul>	0.20
<ul> <li>Cover infiltration factor</li> </ul>	0.15

The topography infiltration factor of 0.10 is based upon a hilly land with an average slope of 28 to 47 m/km. The soil texture infiltration factor was based upon "medium combinations of clay and loam" with a value of 0.2 which is a reasonable generalization based upon the site investigations and available geological mapping. The "cover infiltration factor" was calculated at 0.15 based upon the mix of tree cover and cultivated land.

The predicted nitrate concentration calculation for a conventional sewage system (system without nitrate reduction) results in a maximum of **14.16**  $m^3/day$  of an effluent using a nitrate concentration of 40 mg/L. This maximum is significantly more than the proposed maximum daily usage of 10 m<sup>3</sup>/d. Therefore, using a conventional sewage system, the maximum TDDSSF of 10,000 L/day (10 m<sup>3</sup>/d) is less than the maximum volumes that the site can support.

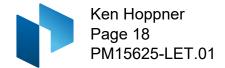
Based on the results of the predicted nitrate impact assessment, it is our opinion that the property can adequately support the proposed re-zoning and development without having an adverse impact on the underlying bedrock aquifer.



## CONCLUSIONS

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

- 1. The water supply aquifer intercepted by the existing well is considered to be adequate to support the water quantity demands for the proposed building usage.
- 2. Based on a visual inspection performed by Paterson personnel of TW1, the well casing, stickup, and well cap are in compliance with O.Reg 903. The final grading around the well will be sufficiently graded to direct surface water away from the wellhead at the time of the new sewage system installation. The water supply well should be protected from traffic.
- 3. The preferred water supply intercepted by TW1 contains a water supply that is potable, and contains only elevated concentrations of hardness, TDS, total sulphides, and iron. The noted parameters can be treated with current readily available water conditioning equipment and a water treatment specialist can be retained by the owner, if desired.
- 4. Colour, turbidity, and aluminum were measured to be elevated in initial laboratory testing. A resample was completed at a later date. The field testing of the resample showed 0 TCU for colour and 0.56 NTU for turbidity. Laboratory testing for aluminum was under the operational guideline at the resample. These values represent typical usage of TW1.
- 5. If desired by the property owner, a residential 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.
- 6. The sodium concentration was measured to be above the 20 mg/L reporting limit and, as such, the Medical Officer of Health for the City of Ottawa should be informed to assist area physicians in the treatment of local residents on sodium reduced diets. It should be noted that some water treatment equipment may further increase the sodium concentration.
- 7. The predicted nitrate concentrations at the property boundary is calculated to be below the required 10 mg/L threshold when a conventional treatment system is used for greater than 10,000 L/day.



- 8. A Sewage System Permit and Building Permit need to be issued prior to the commencement of construction.
- 9. The results of the Hydrogeological Assessment and Terrain Analysis have provided satisfactory evidence that the subject site can support the proposed Re-Zoning Application and Site Plan Control Application with respect to water quality, quantity and sewage system effluent (>10k L/day) attenuation within the property boundary.

We trust that the current submission satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Alexander Schopf, PhD, EIT

#### Attachments:

- Key Plan
- MECP Water Well Records
- Eurofins Certificate of Analysis
- AQTESOLV Pumping Test Analysis Reports
- Nitrate Impact Assessment Calculations
- Langelier Saturation Index (LSI) Calculation



Ottawa Head Office 9 Auriga Drive Ottawa – Ontario – K2E 7T9 Tel: (613) 226-7381 Ottawa Laboratory 28 Concourse Gate Ottawa – Ontario – K2E 7T7 Tel: (613) 226-7381 Northern Office and Laboratory 63 Gibson Street North Bay – Ontario – P1B 8Z4 Tel: (705) 472-5331



Michael S. Killam, P.Eng.



# **FIGURE 1**

## **KEY PLAN**



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2 14 31652 GROUND WATER BRANCH UTM / 8 2-425455E 5 R 50 17 205 N 62 Ontario Water Resources Commission Act 4R 10 3 55 ONTARIO WATER Elev. WELL RECORD REDHURLES COMMISSION Basin County PLETON Guntles ......Township<del>, Village</del> Con Comband # 31 Lot ALW Y2 15 1962. 307 Date completed (day Corp dress. Casing and Screen Record **Pumping Test** 6 Y4 " 30' Inside diameter of casing..... Static level Total length of casing 71 Test-pumping rate / 3 G.P.M. Pumping level 73 Type of screen 45 min. Duration of test pumping Length of screen Water clear or cloudy at end of test Depth to top of screen Diameter of finished hole 5' 3/4 5 Recommended pumping rate G.P.M. with pump setting of 95' feet below ground surface Well Log Water Record Depth(s) at which water(s) Kind of water From To Overburden and Bedrock Record (fresh, salty, sulphur) ft. ft. found 0 15 15 30 40 30 55 40 55 1 05 ノユゴ 105 100 -----For shat purpose(s) is the water to be used?..... **Location of Well** N house 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? Drilling or Boring Firm Wel M & Laughlein alton but. Address RO#31 Licence Number 5.9 Name of Driller or Borer Kelnelle Mr " Laura Laur Address Ashton Fat une 30 1962 Date (Signature of Licensed Drilling or Boring Contractor) 6,6 Form 7 15M Sets 60-5930 • S. . . OWRC COPY

UTM 18 2 425460 E VFR 5017460 N The Ontario Water Re Elev: 4R 8345 WATER WE Basin 25 County or District Conflation Con. Lot Ether 6	LL REC	on Act	and the second s	BRAMINI Nº 3028 1982 NVTER NOT
Casing and Screen Record		Pump	ing Test	
Inside diameter of casing	Static level			
Total length of casing 74'	Test-pumping			
Type of screen	Pumping level			G.P.M.
Length of screen	Duration of test		30 mm	
Depth to top of screen			of test	A.
Diameter of finished hole			s 5	
·	with pump setti	$\frac{1}{1000}$	JO ' feat hal	G.P.M.
Well Log				r Record
Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty,
clay & boulders.	0	20	104110	sulphur)
a rank	20	40		<u>_</u>
limestone rock	40	3-2	98	fresk.
For what purpose(s) is the water to be used?				
Is well on upland, in valley, or on hillside? upland Drilling or Boring Firm Mal M: Lalgely Address Arton Int Licence Number 593 Name of Driller or Borer Mehille M: Laughlin Address Ashton Int Date Nonember 7. 1962 Maluille M: Laughlin (Signature of Licensed Drilling or Boring Contractor) Form 7 10M-62-1152 OWRC COPY	In diagram road and 1.5 CARLETON.CO.	lot lline. Ind	distances of wellicate north by	l from arrow.
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Ontario	<b>W</b> A			Resources Act		$\sim 1$	6/
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grey	harpan	boulders		packed		45	64
grey	sand	boulders		packed soft		64	80
grey	limestone			soft		80	94
32         10         11           41         WATE           MATE         FOUND           AT         FEET           10-13         1           2         2           093         2	A 15 21 R RECORD KIND OF WATER FRESH 3 & SULPHUR <sup>14</sup> SALTY 4 IMINERAL	52/14/379 00.64 51 CASING & C NATUE DIAM. INCRES MATERIAL INCRES CASING & C INSTUE INCRES CASING & C INSTUE INCRES I			SA SA SOF OPENING 31-33 SOT NO.) TERIAL AND TYPE	65 DIAMETER 34-30 INCHES DEPTH TO TOP OF SCREEN	FEI 41-44 FEET
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WATER USE METHOD OF DRILLING	55     I     Image: Domestic       2     Stock       3     IRRIGATION       4     Image: Hydustrial       57     Image: Hydustrial       5     Image: Hydustrial       6     Image: Hydustrial       7     Image: Hydustrial       7 <td< td=""><td>SE) 8 🗌 JETTING 9 🗍 DRIVING</td><td>T USED</td><td>DRILLERS REMARKS:</td><td>r N</td><td></td><td>Huwrtey</td></td<>	SE) 8 🗌 JETTING 9 🗍 DRIVING	T USED	DRILLERS REMARKS:	r N		Huwrtey
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Ministry of the Environment	<b>ΜΛΤ</b>	The Ontario	Water Resource	
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LOG O	DF OVERBURDEN AND BEDROC		36	
GENERAL COLOUR MOST COMMON MATERIAL	OTHER MATERIALS		AL DESCRIPTION	DEPTH - FEET
Brown clay	Sand		~~ <i>a</i>	FROM TO
brown clay		pa	cked	3 20
grey clay	stones			20 46
grey sand a	lay + bouldus	2 pe	acked	46 55
greep limestone		mid	soft_	55 200
31 00036105128177 0020605	79 00 46120512 0	205522805131	220,012 15 855	
32         10         14 15         21           41         WATEB BECOBD         51				
(41)     WATER RECORD       WATER FOUND AT - FEET     KIND OF WATER KIND OF WATER			OF OPENING 31-33 NO I	DIAMETER 34-38 LENGTH 39-40
10-13 1 = FRESH 3 2 SULPHUR 14	s INCHES FROM	TH - FEET TO S S MATER	IAL AND TYPE	INCHES FEET DEPTH TO TOP 41-44 80 OF SCREEN 41-44 80
15-18 1 - FRESH 3 - SULPHUR 19 2 SALTY 4 - MINERAL	4     GALVANIZED     188       3     CONCRETE       4     OPEN HOLE	0056 61	PLUGGING &	
	7-18 1 🖸 STEEL 19 2 🔲 GALVANIZED	20-23 DEPTH SE	TAT - FEET	AL AND TYPE (CEMENT GROUT) LEAD PACKER, ETC.)
25-28 1 _ FRESH 3 _ SULPHUR 29 2 _ SALTY 4 _ MINERAL 24.	<sup>3</sup> ⊂ CONCRETE 4 COPEN HOLE -23 I □ STEEL 26 56	0200		
30-33   _ FRESH 3 _ SULPHUR 34 80 2 _ SALTY 4 _ MINERAL	2 🔲 GALVANIZED 3 🗔 CONCRETE	27-30 18-2		
PUMPING TEST METHOD 10 PUMPING RATE	114 DURATION OF PUMPING			
1 □ PUMP 2 BAILER 0007  STATIC WATER LEVEL END 2F WATER LEVEL 23 UEVEL END 2F WATER LEVELS DU	GPM. 0/ 15-16 307-18 HOURS 30 MINS		SHOW DISTANCES OF N	
PUMPING           19-21         22-24         15 MINUTES         30 MIN           26-28         26-28         26-28         15 MINUTES         30 MIN	24 RECOVERY	LOT LINE. INDIC	ATE NORTH BY ARROW.	ALL THOM ROAD AND
T IF FLOWING, GIVE RATE 38-41 PUMP INTAKE SET AT	29-31 32-34 35-37 FEET 075 FEET 075 FEET WATER AT END OF TEST 42		,	
U FEET 65 FEET 55 IF FLOWING, 38-41 PUMP INTAKE SET AT GIVE RATE GPM RECOMMENDED PUMP TYPE RECOMMENDED PUMP	FEET 1 CLEAR 2 CLOUDY		el .	110, 12"
C SHALLOW DEEP SETTING OSO	43-45 RECOMMENDED 46-49 PUMPING FEET RATE 0005 GPM		K	462
FINAL 1 Grwater Supply s	ABANCONED, INSUFFICIENT SUPPLY	12		20
STATUS	ABANDONED, POOR QUALITY	¥		
55-56 1 COMESTIC 5 C	OMMERCIAL	0.0	4	
WATER 0 3 IRRIGATION 7 PI	UNICIPAL UBLIC SUPPLY DOLING OR AIR CONDITIONING	$\sim$	Ŕ	
57 OTHER	9 🔲 NOT USED	Richards	on Side 1	Road.
METHOD     Image: Cable tool       2     ROTARY (CONVENTIONAL)       3     ROTARY (REVERSE)	6 [] BORING 7 [] DIAMOND 8 [] JETTING			
DRILLING 4 I ROTARY (AIR) 5 I AIR PERCUSSION	9 C DRIVING	ILLERS REMARKS.	P	
ADDRESS	LICENCE NUMBER	DATA 58 CONT		EIVED 3010 75 63-68 80
	LTO 1558	DATE OF INSPECTION	INSPECTOR	0100
BOY 490 STITTSUILL NAME OF DRILLER OR BORER		22/05/79 REMARKS:	1 Kn7	1
SIGNITURE OF CONTRACTOR	SUBMISSION DATE		<b>\</b>	
MINISTRY OF THE ENVIRONMENT				5.58
MINISTRY OF THE ENVIRONMEN	11 COPY			FORM NO. 0506-4-77

Ministry of the			Water Resources		55d
Ontario Environment				DN,	RD
1. PRINT ONLY	IN SPACES PROVIDED ORRECT BOX WHERE APPLICABLE	6743 .	4.510.0.5 14 BLOCK, TRACT, SURVEY, ETC.		22 23 24 DOVA
COUNT OR DISTRICT		untley 1		COMPLETED	48-53
	P3 Cay	o Unt.	DAY	23 no 10	28
1 10 12		26 355 30			47
	LOG OF OVERBURDEN AND BEDROCK	MATERIALS (SEE IN	(STRUCTIONS)	DEPTH	· FEET
GENERAL COLOUR COMMON MATERIAL	OTHER MATERIALS	GENERA	AL DESCRIPTION	FROM	то
Brown Hardpan	boulders			0	21 32
Grup Haulpan	boulders		king	32	34
Hree Limestone	,	0	lum	34	115-
Black Limestone		med	um	115	250
Black Limestone		med	lum	250	260
			,		
			ar der		1 1 1
32 002/6/4/3 04	0322/4/3 00 342 1571 6	<u>1,1,5,2,15</u>	<u>0,2<b>6</b>0</u> 8 <b>1.5</b>		
41 WATER RECORD	51 CASING & OPEN HOLE RE	CORD Z SIZE (SLOT	54 5) OF OPENING 31-33 (NO.)	55 DIAMETER 34-38	75 80 LENGTH 39-40
WATER FOUND AT - FEET KIND OF WATER	INSIDE WALL DEP DIAM MATERIAL THICKNESS INCHES FROM		RIAL AND TYPE	INCHES DEPTH TO TOP OF SCREEN	FEET 41-44 80
0120 10-13 1 G FRESH 3 SULPHUR 2 SALTY MINERAL	1014 1 STEEL 12 188 0	29 0			FEET
15-18 1 _ FRESH 3 CULPHUR 2 _ SALTY _ MINERAL					DRD
20-23 1 _ FRESH 3 2 COLPHUR 2 _ SALTY _ MINERAL		0250 FROM	TO D-13 14-17		
25-28 1 🗍 FRESH 3 🗍 SULPHUR 2 🗋 SALTY 4 🗍 MINERAL			8-21 22-25		
30-33 1 🗍 FRESH 3 🗍 SULPHUR 2 🗌 SALTY 4 🗍 MINERAL	3 1 CONCRETE 250	260 26	.29 30-33 80		
PUMPING TEST METHOD 10 PUMPING	RATE 11-14 DURATION OF PUMPING 0-24 GPM 01 15-16 00 17-18 MINS		OCATION OF V		17
LEVEL PUMPING	TER LEVELS DURING	LOT LINE. IND	OW SHOW DISTANCES OF DICATE NORTH BY ARROW.		AND
	26.26 29.31 32.34 35.37	Richards	ion Side 1	Road	
U IF FLOWING, S8-41 PUMP IN GIVE RATE RECOMMENDED PUMP TYPE D RECOMMENDED PUMP TYPE PUMP	TAKE SET AT WATER AT END OF TEST 42	o		1	
RECOMMENDED PUMP TYPE RECOMM	FEIT FEOMMENDED 46-49 PUMPING	O,		2	
So-53	060 FEET RATE 0005 GPM			Z.	
FINAL 2 OBSERVATION	WELL 6 ABANDONED POOR QUALITY		0.2	82	
STATUS / 3		WE GAS	20		
55-56         1         DOMESTIC           2         STOCK         STOCK           WATER         3         IRRIGATION	5  COMMERCIAL  6  MUNICIPAL  7  PUBLIC SUPPLY			2	
USE 4 D INDUSTRIAL	8 COOLING OR AIR CONDITIONING 9 NOT USED		ĨŦ.)	L'E	
S7   CABLE TOOL METHOD.   2   ROTARY (COL	ASO-2606 DEBORING				
	VERSE) 8 🗌 JETTING () 9 🗋 DRIVING	N		·	
S LAIR PERCUSS		DATA 58	CONTRACTOR 59-62 DATE	RECEIVED 2 31	1780
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SUPPLY LID 1558	DATE OF INSPECTION	INSPECTOR	<u> </u>	<b>J</b> ' U
BON 490, STITT	SUILLE ONT-	Ш /7/05/ П REMARKS	79 KM	Į.	
NAME OF DRILLER OF BORER	Moore I SJBMISSION DATE	OFFICE	Cas	.`a.}	
Halter Fring	nuch CAY 26 MO. 10 YB28	ЧO	L origi		
MINISTRY OF THE EN	VIRONMENT COPY			FORM	1 NO. 0506-4-

:   _	R	Ministry of the Environment	,		The	Ontario	Water Resource	es Act	3165d
	Ontario	1. PRINT ONLY IN SP	ACES PROVIDED		15168			CON	
	COUNTY OR DIS	TRICT	TOWNSHIP. BOROUGH. CITY				1.5.0.0.6		LOT 25-27
	an	leton	March		<u> </u>		/	DATE COMPLETED	00 <b>6</b>
			The start	2.	Attou	Me.	Ont.	DAY 22 NO 10	2 .78
		·····	0/7		1 032 25 26	5 4			
	GENERAL COL	OUP MOST	GOF OVERBURDEN		ROCK MATERIA	ALS (SEE )	NSTRUCTIONS)		
	Benu	COMMON MATERIAL				GENER	AL DESCRIPTION	FROM	TO
	Bing	n Haidpan	Doulde	221			<u> </u>	0	10
	Blue.	Clay				· · · ·	<u> </u>	10	25
	Grey	Granite						29	29 90
ļ	Lidy.	Granite						90	130
	White	green gran	rite			med	hard	130	175
ł	guy	granite				ru	hard	175	200
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(		21061413 00256	05 0029	195	0130921		17512173	0200212/190	VZB
								65	75 80
	WATER FOUND AT - FEET		SIDE CASING & O	WALL	RECORD		OF OPENING 31-33 NO )	DIAMETER 34-38 L	ENGTH 39-40 Feet
	125		CHES TEEL 12	THICKNESS INCHES F	ком то О ОО-З О		IAL AND TYPE	DEPTH TO TOP OF SCREEN	41-44 50
ľ		1 FRESH 3 SULPHUR T9	4 2 GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	100	0 4050	61	PLUGGING &	SEALING RECO	
ł	20-23	1 - FRESH 3 - SULPHUR 24 2 - SALTY 4 - MINERAL	17-18 1 _ STEEL 19		20-23	DEPTH SE	TAT - FEET	RIAL AND TYPE (CEME)	T GROUT.
┢	25-28	1 🗌 FRESH 3 🗌 SULPHUR 29	3 GONCRETE 4 OPEN HOLE	5	0 0090	10-1			
┟	30-33	2 SALTY 4 MINERAL	24-25 1 GALVANIZED 2 GALVANIZED 3 CONCRETE		27-30	26-25			
Ĩ	UMPING TEST	2 SALTY 4 MINERAL	11-14 DURATION OF PUMP		0 0200	<u> </u>			
Ľ		AP 2 BAILER 0003	GPM. 0/ 15-16 HOURS	00 17-18 MINS			CATION OF		
		WATER LEVEL END OF PUMPING 9-21 22-24 15 MINUTES 30	5 DURING 1 PU 2 RE 2 MINUTES 45 MINUTES	COVERY	IN DIA LOT LI	GRAM BELOV NE. INDIC	SHOW DISTANCES OF	WELL FROM ROAD AN	1
		FEE 175 FEET -175 FEET	29-31 32-34 75EET - 175 FEET	60 MINUTES 35-37 175 FEET			BARNS		
	GIVE RATE	38-41 PUMP INTAKE SET AT	WATER AT END OF T	2 CLOUDY			6	m 1	8
		GPM PUNP TYPE RECOMMENDED PUMP OW DEEP SETTING 0/9	43-45 RECOMMENDED PUMPING	46-49				T ~	Coa
L	50-53		O FEET RATE 0002	GPM				2	1.5
	FINAL STATUS	2 OBSERVATION WELL	5 🗌 ABANDONED, INSUFFIC 6 🔲 ABANDONED, POOR QU					N.	fiel
	OF WEL	4 C RECHARGE WELL	7 UNFINISHED		11		p.	Noo N	
	WATER	9 <sup>2</sup> Втоск 6 [	COMMERCIAL		Hun	ley h	rim. Line		
	USE		PUBLIC SUPPLY COOLING OR AIR CONDITIO NOT USI P D NOT USI		1 mg	-			are -
$\vdash$		57 1 19 CARLE TOOL				•			ick
	METHOD OF	3 GROTARY (REVERSE)	) 7 [] DIAMOND B [] JETTING						8
		S GAIR PERCUSSION	9 [] DRIVING		DRILLERS REMARKS				
<u>م</u>	11.0	AL WATER SU	DOIN - LICENCI	e number 1558		58 CONT	SSB 59-62 DATE R	00117	Q** **
RACTOR					DATE OF INSPECT		INSPECTOR		
		490 STITTS		AKIO E NUMBER	H 22/05	179	n A	1	
CON	SIGNATURE OF	CONTRACTOR J. MICO	SUBMISSION DATE	7	OFFICE		C	98.9 <b>8</b>	
L	MINUOT-	KCONCARD.		2 18	0	<u></u>			
	WIINIST	RY OF THE ENVIRONM	IENT COPY					FORM NO.	0506—4—77

$\overline{\mathbf{Q}}$	MINISTRY OF The Ontario W	THE ENVIRONMENT ater Resources Act	<b>x</b> , , , ,	3165d
	WATER WE		ORD	
Ontario	IT ONLY IN SPACES PROVIDED CK $\boxtimes$ correct box where applicable	0 1516900	MUNICIP. CO	
COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VIL	AGE	BLOCK. TRACT, SURVEY, ETC.	CON 1 1 01 22 23 24 LOT 25-27
OWNER (SURNAME FUNCT)	WEST CAR	RETON	DATE	COMPLETED 094-53
	STWAY TA	VK 1995 MERIV	ALE RD DAY	25 MO SET YR 72
	LOG OF OVERBURDEN AND BE			4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
GENERAL COLOUR MOST			RAL DESCRIPTION	DEPTH - FEET
BROWN CLAY.	UOM		23E	FROM TO
BLUE CLOY	MARINE CLA			8 21
BLUE CLAY	HORD TON	- Pac,	KED	21 414
BROWN GRAVI BLUE LIMEST		OUC.	BURDEN	44 38
ELUE LIMEST	ONE	- SHI	aley	58 188
		•		
D 10086050277	10021310570577 100443105114	79 190586111121251	2/88/315/7	
41 WATER RECORD			OF OPENING 31-33 DIA	METER 34-38 LENGTH 39-40
10-13   FRESH 3 SULPI 2 SALTY MINET	UR 14 DIAM. MATERIAL THICKNESS INCHES		IAL AND TYPE	INCHES FEET DEPTH TO TOP 41-44 BD OF SCREEN
	IUR 19 3 CONCRETE	0 0060"	PLUGGING & SEA	
20-23 1 🗇 FRESH 3 🗇 SULPF 2 🖓 SALTY 4 🖓 MINER	IUR 24 617-18 1 STEEL 19		ET AT - FEET MATERIAL A	
25-28 1 _ FRESH 3 _ SULPH	IUR 29 CONCRETE	60 0188 10.1		
2 SALTY 4 MINER 30-33 1 FRESH 3 SULPH		27-30 18-2		
2 SALTY 4 MINER	AL	]		
1 AUME BAILER O STATIC WATER LEVEL 23	ير بين برجر المستريح	NS	OCATION OF WE	
LEVEL END OF PUMPING	WATER LEVELS DURING 2 RECOVERY	LOT LINE INDIC	W SHOW DISTANCES OF WELL CATE NORTH BY ARROW.	L FROM ROAD AND
	FEET FEET FEET FEET FEET FEET FEET FEET		HWY 17	/\
	INTAKE SET AT WATER AT END OF TEST			->
SHALLOW DEEP SETTI				
	FT. SPECIFIC CAPACITY			
FINAL STATUS STATUS	ON WELL 6 ABANDONED, POOR QUALITY	i min		
OF WELL 4 CRECHARGE			1.2	
WATER	6 D MUNICIPAL	RI	MARD SON 5	WE ROAD
USE 4 INDUSTRIA			Tax	
METHOD / 1 CABLE TOO 2 C ROTARY (C	ONVENTIONAL) 7 [] DIAMOND		Č	
OF 4 3 D ROTARY (R DRILLING 4 2 ROTARY (A 5 DRILLING 4 5 ROTARY (A	EVERSE) B [] JETTING	Ce Ce	· · · · · · · · · · · · · · · · · · ·	R.
NAME OF WELL CONTRACTOR	LICENCE NUMBER	DRILLERS REMARKS:		
	Rew ONTARIO	SOURCE	ACTOR 59-62 DATE RECEIVE	0279""
		18 17/05/77	INSPECTOR	
THE PAUL DAVIELS	Jin ENRICH 1746	D REMARKS	1	Р
9/11/talk	3UBMISSION DATE	OFFICE	C33.3 <b>8</b>	WI
MINISTRY OF THE EN	VIRONMENT COPY		<u> </u>	FORM 7 MOE 07-091

1       1				11 - 11 - 2000. Li				a di sa			
Territoria de la del del de la del		•	,						ces Act		DD
Image: Discrete structure       Image:				WAI		K	VV E				RD
Control         Decker Carlos         Decker Carlos<	Ontario			11	152	222	259			<u></u>	22 23 74
R. & 3; Caro, Ottario, KA 10       Del de marche de la colorada de la c		ICT	TOWNSHIP, BOROUGH. CIT				CON		EY ETC	L.	OT 25-27
It. If J Carbo, Charter, Name       International State		n Carlokón	Woot Carleto	-							
LUCE OF OVERAUDEN AND BEDROCK MATERIALS OF ARTICLATOR Under Antiparties and antipartity and a			R.	3; Carp,	Onta	rio.	KOA 14	AASIN CODE			
Santa Longer and Aller								31			47
Barting during and provide and provid		MOST									
Cray     Clay     Doublers     Packed     20     34       Cray     Sand     Clay and Boulders     Loose     34     55       Gray     Bardgan     Boulders, Sand     Packed     644     83       Gray     Linestone     Medium Bard     644     83       Gray     Linestone     Gray     Gray     Medium Bard     644     83       Gray     Linestone     Gray     Linestone     Gray     Medium Bard     64     83       Gray     Linestone     Gray     Linestone     Gray     Linestone     Gray     Medium Bard     65       Gray     Linestone     Gray     Linestone     Gray     Linestone     Medium Bard     Medium Bard     Medium Bard     Medium Bard     Medium Bard     Medium Bard											
Sidey     City     Dallatis     Forward Boulders     Loose     24     55       Gray     Bardpan     Boulders, Sand     Packed     55     66       Gray     Linestone     Medium Bard     644     83       Gray     Linestone     Medium Bard     64     83       Gray     Linestone     Status     Status     Status     14       Gray     Status     Status     Status     Status     Status       Gray     Mark     Status     Status     Status     Status       Gray     Status     Status     Status     Status     Status     Status       Gray     Status     Status     Status     Status     Status     Status     Status     Status       Gray     Status     Status     Status     Status     Status     Status     Status     Status     Status       Gray     Status     Status     Status     Status     Status     Status     Status     Status     Status       S											
Gray     Hardpan     Boulders, Sand     Packed     55     64       Gray     Linestone     Medium Bard     644     83       Gray     Linestone     Linestone     Linestone     644       Gray     Linestone     Linestone     Linestone     Linestone       Gray     Linestone     Linestone     Linest				Poulders				4		34	55
Sray     Linestone     Medium Bard     644     83       31     Linestone     State of the stat			_					3		55	64 <del>]</del>
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Image: Second Control Second	31			1 1 1 1 1 1		ЩĻ					
All of ward	3 2 10							54 0F OPENING	31-33 DIAME	TER 34-38 L	75 4 ENGTH 39-4
	WATER FOUND		INSIDE	WALL	DEPTH - F	EET					FEE1
79       1.10       <	10-13	2 A CALTY 4 MINERALS	INCHES	INCHES F		13-1				OF SCREEN	FEET
79       10 <td< td=""><td>15-18</td><td>1 FRESH 3 DSULPHUR</td><td></td><td>•188</td><td>0</td><td>.62</td><td>61</td><td>PLUGGIN</td><td>IG &amp; SEAI</td><td>LING RECO</td><td>RD</td></td<>	15-18	1 FRESH 3 DSULPHUR		•188	0	.62	61	PLUGGIN	IG & SEAI	LING RECO	RD
11       1		1 FRESH 3 ULUPHUR 24	17-18 1 □ STEEL 2 □ GALVANIZED	19			FROM	ro	MATERIAL AN		
	25-28		J 15 400PEN HOLE	26	65						
	30-33	2 U SALIY 6 GAS	C 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE				26	-29 30-33 8	<b>5</b>		<u> </u>
1       R PUMP 1       BalleR       8 ord       16 rout       10 rout       10 rout         Static       Watta stell       Watta stell<	PILMPING TE	2 GALTY 6 GAS	5 PLASTIC	PUMPING			 				
STATUS 20 rect 30 rec	71	JMP <sup>2</sup> 🗍 BAILER	8 GPM	OURS MINS		IN D				<u> </u>	
Big       200 FEET       300 FEET       300 FEET       300 FEET       300 FEET       300 FEET       431 FEET OF THE SET AT THE SET AT THE SET AT THE OF THE SET AT THE OF THE	LEVEL	END OF WATER PUMPING	t [	RECOVERY							
SHALLOW GOEEP       SETTING       60       FEET [ARTE       50%         Image: Status		20 20	20 20-30 TET <u>30</u> FEET <u>30</u>	FEET 30FEET							
SHALLOW GOEEP       SETTING       60       FEET [ARTE       50%         Image: Status	IF FLOWING GIVE RATE								ine.		
Image: Status       Image: Status<		ED PUMP TYPE RECOMMENDE PUMP	D 43-45 RECOMMENDE PUMPING			•	/		100		
HNAL       I ABANDONED POOR QUALITY         STATUS       I BEST HOLE       I MARADONED POOR QUALITY         STATUS       I TEST HOLE       I UNIFINISHED         OF WELL       I REST HOLE       I UNIFINISHED         WATER       I BOOMESTIC       I COMMERCIAL         USE       I BRIGATION       I UNIFINISHED         WATER       I BRIGATION       I COMMERCIAL         USE       I BRIGATION       I COLONG OR AIR CONDITIONING         OF       Constractor       I DIMOND         OF       CONSTRUCTION       I DIMOND       I DIMOND         I DIMOND       I DIGGING I OTHER       I DIMOND       I DIMOND         MAME OF WELL CONTRACTOR       WELL CONTRACTOR       I DIMOND       I DIGGING I OTHER         MAME OF WELL CONTRACTOR       WELL CONTRACTOR       I DIGGING I OTHER       I DIGNOND         MAME OF WELL TOCHTRACTOR       LICENCE NUMBER       I DIGNOND			00				(	93.	2		
OF WELL STOCK WATER USE WATER USE STOCK STOC	1		LL . ABANDONED PO			-		Bradler	1 Side		
Image: orgen construction       Image:	- · · ·	LL 4 RECHARGE WELL						Rođ	2d		
Image: orgen construction       Image:	WATE		. MUNICIPAL			Ð	1 1	< 1	01		
METHOD OF CONSTRUCTION       I CABLE TOOL R ROTARY (CONVENTIONALI I CONTRACTOR I ROTARY (CONVENTIONALI I CONTRACTOR I DIAMOND I DIAMOND	1	4 D INDUSTRIAL	COOLING OR AIR CO		-	7/1	chards	an wae	<u>, N</u>		
OF CONSTRUCTION       I ROTARY (REVERSE)       I JETTING       25060         I ROTARY (AIR)       I DRIVING       I DRIVING       25060         I ROTARY (AIR)       I DIGGING       OTHER       0 DIGGING       OTHER         I RAME OF WELL CONTRACTOR       I DIGGING       OTHER       DIGGING       OTHER         I RAME OF WELL CONTRACTOR       WELL CONTRACTOR'S LICENCE NUMBER       ISOURCE       Source       APR 11 1988         I ROTARY INCONTRACTOR       WELL TECHNICIAN'S LICENCE NUMBER       INSPECTION       INSPECTION       INSPECTION         INAME OF WELL TECHNICIAN       MOORE       WELL TECHNICIAN'S LICENCE NUMBER       INSPECTION       INSPECTION       INSPECTION         INAME OF WELL TECHNICIAN       SUBMISSION DATE       INSPECTION       INSPECTION       INSPECTOR         INAME OF WELL TECHNICIAN       SUBMISSION DATE       INSPECTOR       INSPECTOR       INSPECTOR         I RIMARAS       SUBMISSION DATE       INSPECTOR       INSPECTOR       INSPECTOR       INSPECTOR         I RIMARAS       SUBMISSION DATE       INSPECTOR       INSPECTOR       INSPECTOR       INSPECTOR         I RIMARAS       I RIMARAS       I RIMARAS       I RIMARAS       I RIMARAS       I RIMARAS	METH	CABLE TOOL			11					11	
Image: State of the state	OF	3 C ROTARY (REVERS	E) I DETTING	G						25	06 <b>0</b>
NAME OF WELL CONTRACTOR     LICENCE NUMBER       Capital Water Supply Ltd.     1558       ADDRESS     APR 1 1 1988       Dox 490: Stittsville, Ont. KOA 3CO       NAME OF WELL TECHNICIAN'S       J. MOORE       Signat/Le of Technician/Contractor       Submission Date       Or Mathematical And Contractor       Submission Date       Out of the of th		S AIR PERCUSSION	·····						SZ DATE RECEIN	£0	63-68
Box 490: Stittsville, Ont. KOA 3G0 NAME OF WELL YECHNICIAN SUBMISSION DATE J. MOORE SIGNAT/REOF TECHNICIAN/CONTRACTOR MULL ALCONTRACTOR SUBMISSION DATE O CGC.ES FORM NO ORDE 11/20100 CGC.ES			LIC	CENCE NUMBER		SOURCE		·	APF		1
J. MOORE SIGNATIVE OF TECHNICIAN/CONTRACTOR SUBMISSION DATE MOCO YR. CO CQC. ES COMMING OF COMMING OF COM		x 490. Stittenill	e. Ont. 201 201	n	SE 0			INSPECTOR			
Altrelarant mo CZ VR. ST 5 Coc. BS				ELL TECHNICIAN'S CENCE NUMBER		REMARKE					
	Signaty			$\rightarrow$ $\sim$	OFFI					Cor	. B.S
	MINI	STRY OF THE ENVIRO		1R/2¥	┙┗╼┵				F	ORM NO. 0506 (	(11/86) FORM

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Mini:				ntario Water Resourc	
of th Envi	ronment	WAT	ER	WELL	RECORD
Ontario	1. PRINT ONLY IN SPAC	ces provided	15260	23 150,05	
COUNTY OR DISTRICT	2. CHECK 🗵 CORRECT	BOX WHERE APPLICABLE		10 14 CON BLOCK TRACT SURVEY	
Ottawa C	ST) 24-47	West Carleton	<u> </u>	1	DATE COMPLETED 46-53
	Whitford Ltd.	C-20 2285 St.Lauren	eLEVATION	RE MASIN CODE	DAY 21 NO 10 YR 91
21	ZONE EASTING T L L L L L M 10 12	<b>K4G</b> H# <b>426</b> PC.			
	LOG	OF OVERBURDEN AND BEDROC	K MATERIAI	S (SEE INSTRUCTIONS)	DEPTH - FEET
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS		GENERAL DESCRIPTION	FROM TO
Brown	Clay				0 10
Gray	Clay	Stones & Gravel			10 33
Gray	Limestone				33300
	- Sea			· · · · · · · · · · · · · · · · · · ·	
		+ × (19656).			<u> </u>
			1 11.1		
31 32				╶╹╎╵╵╎╎╹╵	
1 Z 10	TER RECORD	51 CASING & OPEN HOLE R	ECORD	SIZE(S) OF OPENING SIZE(S) OF OPENING (SLOT NO)	31-33 DIAMETER 34-38 LENGTH 39-40
WATER FOUND AT - FEET	KINU OF WATER	INSIDE WALL DI DIAM MATERIAL THICKNESS INCHES INCHES FRU	EPTH - FEET	C MATERIAL AND TYPE	INCHES FEET DEPTH TO TOP 41-44 30 OF SCREEN 30
243 *	FRESH 3 DSULPHUR SALTY 4 DMINERALS 6 DGAS	5 1 <sup>10</sup> /4 1 STEEL 12 2 GALVANIZED .188	0 34		FEET
1 I	☐ FRESH 3 □ SULPHUR <sup>19</sup> ☐ SALTY 4 □ MINERALS 6 □ GAS	4 POPEN HOLE 5 DPLASTIC	20-23	DLOTH SET AT - FEET	G & SEALING RECORD
	] FRESH 3 □SULPHUR <sup>24</sup> 3 SALTY 4 □ MINERALS 3 SALTY 6 □ GAS		34 200	FROM 10 10-13 14-17	
	☐ FRESH 3 □ SULPHUR 29 ☐ SALTY 6 □ GAS	24-25 1 D STEEL 26	<del>ې</del>	Grouted 18-21 22-25	Cement (
	FRESH 3 USULPHUR 34 60 4 MINERALS 5 ALTY 6 GAS		200 300	25-29 30-33 80	
71 PUMPING TEST ME	ETHOD 10 PUMPING RATE	11-14 DURATION OF PUMPING		LOCATION O	F WELL
	Z D BAILER WATER LEVEL ZS END OF WATER LEVE	Z-D GPMHOURSNINS		AGRAM BELOW SHOW DISTANCI	S OF WELL FROM ROAD AND
	PUNPING	2         RECOVERY           30 MINUTES         45 MINUTES         60 MINUTES           29-31         32-34         35-37	$\mathbb{Z}$	ļ	
		200 <sub>EET</sub> 200 <sub>EET</sub> 200 <sub>FEET</sub>	'	D - He	y Side Rd
U IF FLOWING GIVE RATE RECOMMENDED PI	GPM	FEET 1 CLEAR 2 CLOUDY		Dradie	7_0/46
RECOMMENDED PL	UMP TYPE RECOMMENDED PUMP W DEEP SETTING	43-45 RECOMMENDED 46-49 PUMPING 225 EET RATE 2.5 GPM		6	
50-53	54		(		nunderbird well
FINAL STATUS	54 1 2 WATER SUPPLY 2 OBSERVATION WELL 3 TEST HOLE	S 🛒 ABANDONED, INSUFFICIENT SUPPLY G 🗋 ABANDONED POOR QUALITY 7 🔲 UNFINISHED		х v v	undertitest
OF WELL	SS-56 I 20 DOMESTIC			5	CUL X + 185
WATER	2 STOCK 3 I IRRIGATION	6 MUNICIPAL 7 DE PUBLIC SUPPLY	-	Y	
USE	4 🗍 INDUSTRIAL	COOLING OR AIR CONDITIONING     D NOT USED	6	5	
метнор	57 1 CABLE TOOL 2 ROTARY (CONVENTIO	6 DORING 7 DIAMOND			
OF CONSTRUCT	3 C ROTARY (REVERSE)	I JETTING     DRIVING		Richardson	$^{\text{Side}}$ 100188
NAME OF WELL	s AIR PERCUSSION	UIGGING OTHER	DRILLERS REMAR		DATE RECEIVED 63-68
	L Water Supply Lt	LICENCE NUMBER	DATE OF INS	1558	JAN 1 3 1992
<b>U</b>	) Stittsville, C		R.		
Box 490 NAME OF WE OS Mill SIGNATURE O	ler	WELL TECHNICIAN'S LICENCE NUMBER TO096			
SIGNATURE O	OF TECHNICIAN / CONTRACTOR	SUBMISSION DATE DAY 25 MO. 10 YR.91	OFFICE		CSSIED
MINIST	RY OF THE ENVIRON		<b>t</b>		FORM NO. 0506 (11/86) FORM 5

Mini	strv		Th	e Ontar	io Water Resour	ces Act		
of th	ie	WA			/ELL		CO	RD
Ontario Envi	ronment		1526		MUNICIP	CON,		
	1. PRINT ONLY IN S 2. CHECK 🛛 CORRE	ECT BOX WHERE APPLICABLE			10	4 15		
COUNTY OR DISTRICT	arl ot on	TOWNSHIP. BOROUGH. CITY. TOWN. VILLAC			CON., BLOCK, TRACT, SURVE	Y ETC		or 25-27 6
OTTAWA C	IST) 28-47	ADDRESS				DATE COMP		ν <sub>γ</sub> , 91
Jacques	Whitford Ltd.	C-20 2285 St. La	AUTENT BIV	d Otta	Wa, Ontario	DAY 12	<u>ин на на</u>	<u> </u>
21				<u> </u>		<u> </u>		
		G OF OVERBURDEN AND BED	ROCK MATE	RIALS is	EE INSTRUCTIONS)		DEPTH -	FEET
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS		G E	ENERAL DESCRIPTION		FROM	ro
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41 WA	TER RECORD	51 CASING & OPEN HO	LE RECORD	Z	54 SIZEISI OF OPENING SLOT NO 1	3I-33 DIAME	TER 34-38 LE	NGTH 39-40
WATER FOUND AT - FEET	KIND OF WATER	INSIDE WALL DIAM MATERIAL IHICKNESS INCHES INCHES	DEPTH - FEET FRUM TO	CREE	MATERIAL AND TYPE		INCHES DEPTH TO TOP OF SCREEN	FEET 41-44 30
	] FRESH 3 □SULPHUR <sup>14</sup> ] SALTY 4 □MINERALS 6 □GAS	6 174 1 STEEL 12 -188	0 :	26 Š				FEET
15-14 1	] FRESH 3 □SULPHUR <sup>19</sup> ] Salty <b>4</b> □ Minerals 6 □ Gas	3 CONCRETE 4 COPEN HOLE 5 CPLASTIC		61		G & SEAL	ING RECO	RD
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	SALTY 6 GAS	6 1/8 DOPEN HOLE		05	10-13 14-17			
	G GAS	24-25 1 □ STEEL 26 2 □ GALVANIZED 3 □ CONCRETE			18-21 22-25 26-29 30-33 80			
	SALTY 6 GAS	4 DOPEN HOLE 5 DPLASTIC						
71 PUMPING TEST NET	THOD 10 PUMPING RATE	7 15-16 13	7-18		LOCATION	DF WEL	L	
STATIC	WATER LEVEL 25 END. OF WATER L PUMPING	EVELS DURING 2 DUMPING		N DIAGRAM OT LINE	BELOW SHOW DISTANC		FROM ROAD AN	ID
	· · · · · · · · · · · · · · · · · · ·		1-37	R	adley Si	10 T	24	
U 18 FEET	t 45 FEET 45 FEE 30-01 PUNP INTAKE		42		adieg Di			
U IO FEET GIVE RATE RECOMMENDED PU	GPM JMP TYPE RECOMMENDED	45 FEET 1 1 CLEAR 2 CLOU					-1	
	PUMP	PUMPING				160		
\$0-\$3						Ý		
FINAL STATUS	SA 1 WATER SUPPLY 2 OBSERVATION WEL		т у		Thurder Golf	X		
OF WELL	3 🗍 TEST HOLE 4 🗌 RECHARGE WELL	7 UNFINISHED DEWATERING	Ľ l		Thurder	یں۔ میں ی	ser	
WATER	1 2 DOMESTIC 2 STOCK	S 🗌 COMMERCIAL S 📋 MUNICIPAL	X		Col			
USE	3 A IRRIGATION 4 INDUSTRIAL OTHER	PUBLIC SUPPLY     COOLING OR AIR CONDITIONING     OOLING OR AIR CONDITIONING     OOLING OR AIR CONDITIONING	l ő					
METHOD OF	2 CABLE TOOL 75	TIONAL) 7 DIAMOND						
-		9 DRIVING	DRILLERS F	EMARKS			113	303
NAME OF WELL	CONTRACTOR	WELL CONTRACTO				DATE RECEIVED		63-68 80
Capital	Water Supply L		z	INSPECTION	1558	APR	3 0 1997	2
	Stittsville,	Ontario K2S 1A6	]SE					
151	er/ J. Moore	WELL TECHNICIA LICENCE NUMBER		S.				
NNV	TECHNICIAN/CONTRACTOR	SUBMISSION DATE					250	- Fr
	RY OF THE ENVIRO					FO	ORM NO. 0506 (1	

nistr of the				Intario Water Resources A	
Ontario Enviro	I PRINT ONLY IN	SPACES PROVIDED	15270		
COUNTY OR DISTRICT	2 CHECK 🗵 CORR	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE		CON BLOCK, TRACT, SURVEY ETC	LOT 25-27
Ottawa Car.	leton 28-47	West Carleton -	Huntley	<b>]</b>	COMPLETED 48-53
[	ZUNE EASTING	NORTHING	f & Athletie	c Club Carp, Ontario	<u>14 мо 01 ук 93</u>
			25 26	30 31	
GENERAL COLOUR	NOST COMMON MATERIAL	OG OF OVERBURDEN AND BEDR		GENERAL DESCRIPTION	DEPTH - FEET
Brown	Clay	Sand and Stones	<b>.</b>	Packed	FROM TO
Brown	Sand	Stones		Loose	8 13
Gray	Hardpan	Boulders		HArd	13 36
Gray	Limestone	Black Layers		Medium	36 90
WATER FOUND AT - FEET     KI       10-13     1     FRE       54     2     SAI       15-18     1     FRI       20-23     NOT FRI       20-23     NOT FRI       20-33     1     FRE       20-33     1     FRI       30-33     1     FRI       30-33 <th>LTY     4     MINERALS       6     GAS     19       4     MINERALS     19       LTY     6     GAS       LTY     6     GAS       LTY     6     GAS       SME     4     MINERALS       LTY     6     GAS       SME     4     MINERALS       CSME     4     MINERALS       SSME     4     MINERALS       SSME     4     MINERALS       SSME     4     MINERALS       SSH     3     SULPHUR       4     MINERALS       SSH     3     SULPHUR       4     GAS       SSH     3     SULPHUR       4     GAS       SSH     4       MINERALS     10       GAS     5       SSH     GAS       Corr     PUMPING RATE       LTY     5       VATER     LE       VATER     15       MINERALS     55       SSH     PUMP INTAKE SI       GRM     GRM</th> <th>6 1/4 1 STEEL 12 GALVANIZED 3 CONCRETE 4 OPPEN HOLE 5 □ PLASTIC 17.19 1 □ STEEL 19 2 □ GALVANIZED 3 □ CONCRETE 4 QOPEN HOLE 5 □ PLASTIC 24-25 24-25 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 QOPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ CLEAR 2 CLOUDY 43-45 HECOMMENDED 46-49</th> <th>DEPTH - FEET RUM TO 0 40<sup>16</sup> 20-23 40 90 27-30</th> <th>Islot NO ,         MATERIAL AND TYPE         61       PLUGGING &amp; SI         DLPTH SET AT - FEET         FROM       10         10-13       14-17         40       2         26-29       30-33         26-29       30-33         ADCCATION OF W         RAM BELOW SHOW DISTANCES OF WE</th> <th>ELL FROM ROAD AND</th>	LTY     4     MINERALS       6     GAS     19       4     MINERALS     19       LTY     6     GAS       LTY     6     GAS       LTY     6     GAS       SME     4     MINERALS       LTY     6     GAS       SME     4     MINERALS       CSME     4     MINERALS       SSME     4     MINERALS       SSME     4     MINERALS       SSME     4     MINERALS       SSH     3     SULPHUR       4     MINERALS       SSH     3     SULPHUR       4     GAS       SSH     3     SULPHUR       4     GAS       SSH     4       MINERALS     10       GAS     5       SSH     GAS       Corr     PUMPING RATE       LTY     5       VATER     LE       VATER     15       MINERALS     55       SSH     PUMP INTAKE SI       GRM     GRM	6 1/4 1 STEEL 12 GALVANIZED 3 CONCRETE 4 OPPEN HOLE 5 □ PLASTIC 17.19 1 □ STEEL 19 2 □ GALVANIZED 3 □ CONCRETE 4 QOPEN HOLE 5 □ PLASTIC 24-25 24-25 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 QOPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 24-25 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 GALVANIZED 3 □ CONCRETE 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ STEEL 26 2 □ PLASTIC 1 □ STEEL 27 4 □ OPEN HOLE 5 □ PLASTIC 1 □ CLEAR 2 CLOUDY 43-45 HECOMMENDED 46-49	DEPTH - FEET RUM TO 0 40 <sup>16</sup> 20-23 40 90 27-30	Islot NO ,         MATERIAL AND TYPE         61       PLUGGING & SI         DLPTH SET AT - FEET         FROM       10         10-13       14-17         40       2         26-29       30-33         26-29       30-33         ADCCATION OF W         RAM BELOW SHOW DISTANCES OF WE	ELL FROM ROAD AND
FINAL FINAL STATUS OF WELL 35-56 WATER USE METHOD OF CONSTRUCTION NAME OF WELL CONTR CONSTRUCTION	DEEP SETTING  SETTING S	7 UNFINISHED DEWATERING 3 COMMERCIAL 4 MUNICIPAL 7 PUBLIC SUPPLY 4 COOLING OR AIR CONDITIONING 9 NOT USED 6 BORING 0NAL) 7 OIAMOND 6 JETTING 9 DRIVING 1 DIGGING OTHER WELL CONTRACTOR'S LICENCE NUMBER 1559	DRILLERS REMARKS	40' 40' 40' 40' 19'&" X 19'&" X 19'& X 19'&" X 19	130012
DI MARE OF WELL TEC J. MOORE SIGNATURE OF TECH	NICIAN/CONTRACTOR	LICENCE NUMBER TOO96 SUBMISSION DATE DAY _20 MO. 01 YR.23		· · · · · · · · · · · · · · · · · · ·	CSS.65 FORM NO. 0506 (11/86) FORM 9

🕅 Ontario	Ministry of the Environment	Well Tag Number (Plac 		<ul> <li>A state of the sta</li></ul>	lation 903 Ontario	Well Record Water Resources Act
Instructions for Comple	eting Form	A 0545	ige			page <u>2 of</u> 3
<ul> <li>Questions regarding of</li> <li>All metre measurem</li> </ul>	ce of Ontario only. This completed in full to avo completing this applicati ents shall be reported	o delays in processin on can be directed to	n Further instruction	tions and explanation Anagement Coord	ns are available on inator at 416-235-	
<ul> <li>Please print clearly in Well Owner's Informati</li> </ul>		lell Information	MUN		nistry Use Only	LOT
First Name	Last Namo	ESBYTERA	iling Address (Stree	et Number/Name, RR	Lot,Concession)	
County/District/Municipality	Township	City/Town/Village	<u>//O</u> /V)C Province	Postal Code	, Telephone Nur	mber (include,area code)
Address of Well Location (Cou	nty/District/Municipality)	TAWA	Vnship	Kalazo	615-83	<u>36-1429</u>
RR#/Street Number/Name	RELTON		EST CAREL City/Town/Village		IT 6	1
1817 RICHARD		<b>D</b> .	OTTAW	9	te/Compartment/Blc	ck/Tract etc.
8 (3	Zone Easting 7255/0	5017644	Init Make/Model	Mode of Operation	Undifferentiated	Averaged
Log of Overburden and General Colour Most comm		ee instructions) Other Materials	•	General Description		Depth Metres
BROWN SAND		, STONES, BOL	Nnepe	General Description		Depth Metres
GREY CLAY	SANK	), STONES, E	ROUDERS		1.	$\frac{0}{1}\frac{\sqrt{375}}{15}$
GREY LIMES	STONE BRU	WN LIMEST	ME		1 9	5-8446-63
					1	Je 5 / 1000
Hole Diameter Depth Metres Diameter	r Incida	Construction Recor			Test of Well Y	
From To Centimetre	- Giann	unickness -		tres Pumping tes	Time Water	
0 16.91 24.7		Casing	From T	o Pump intake (metres)	set at Static	
16.91 46.63 152		ibreglass	1252	Pumping rate	- 112.	09 1 16-91
Water Record		oncrete 648 (	s <sup>+</sup> <sup>1~5</sup> ₹ 16.	91 (litres/min)	001	
Water found atMetres / Kind of Water		ibreglass	· · · · · · · · · · · · · · · · · · ·	hrs +	<u>U</u> min	
Gas Salty Mineral	s Cotractor d	oncrete		Final water le	metres	27 3 14,96
Other: UNTESTES		breglass		Recommende	ed pump 4 60 3	3 4 14.08
Gas Salty Mineral	s Plastic C	oncrete		Recommende	d pump 5 705	5 13.16
43.5 Fresh Sulphu	Galvanized	Screen		depth 4 3. C		
Gas Salty Mineral	s Outside Steel Fi	breglass Slot No.		rate. 36/m	15 22	58 10 9,07
After test of well yield, water was	Plastic C Galvanized	oncrete		If flowing give (litres/m	in 25 14	50 20 5 5/ 0 25 3, 50
Other, specify		No Casing or Scree	<u> </u>	If pumping dis ued, give reas	ontin- 5n. 30 77, 0 40 78-	03, 30 2.62
Chlorinated X Yes No	Open hole		6.91 46.	63 1	50 18	44 40 1.57 47 50 1.03
Plugging and S	L		ndonment		60 18 -	49 60 . 88
Death and Matrice	ype (bentonite slurry, neat ceme		Placed In diagra	m below show distances	of well from road, lot li	ne, and building.
3 16-91 BENT	ONITE SLU			north by arrow.		1.
				1		IN
				1	30	
				,	11	- 1. a
Cable Tool	Method of Construction	· · · · · · · · · · · · · · · · · · ·			ev'	1
Rotary (conventional)	rcussion	ng 🗌 Ot	gging her	ł	11	
Rotary (reverse) Boring	Driv Water Use	ing		and all	13	
Domestic Industr		ic Supply	her Side	ROSON	<u> </u>	
Irrigation Munici	pal 🗌 Coo	ling & air conditioning	Audit No	z 44855	Date Well Comple	ted
Water Supply		nished Abandoned	d, (Other) Was the	well owner's information	Date Delivered	876 1/2 PP
Test Hole Abandoned		atering	package	delivered?	<ul> <li>A state of the state</li> </ul>	26 1/21/19
Name of Well Contractor	ntractor/Technician Info		nce No. Data Sou		try Use Only	
T, SAUNDERS Business Address (street name, num	ORILLING LTD	4879	and the second		Contractor	8
RK#1 RRAE	SIDE ONT.	KOA 160	Date Rec		DD Date of Inspection	YYYY MM DD
Name of Well Technician (last name,	first name) TROY	Well Technician's Lice	nce No. Remarks		Well Record Num	ber
Signature of Technician/Contractor		Date Submitted	M 78		ŕ	
0506E (09/03)	Contractor's Copy	☐ Ministry's Copy []	Well Owner's Copy		Cette formule est dis	ponible en français



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

#### **OFFICIAL CERTIFICATE OF ANALYSIS : 3966666**

#### WORK REQUEST : 100292480 Report Date : 2024-07-03

Paterson Group	Reception Date :	2024-06-26
9 Auriga Dr	Project :	PM15625
Nepean, Ontario	Sampler :	NA
K2E 7T9	PO Number :	60535
Attention : Alex Schopf	Temperature :	6 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	2	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	2	Modified from EPA 350.1
Chloride (Water, IC)	2	Modified from SM 4110 B and C
Colour, Apparent (Water, Spectrophotometry)	2	Modified from SM 2120 C
Conductivity (Water, Automated)	2	Modified from SM 2510 B
DOC (Water, IR)	2	Modified from SM 5310 B
Escherichia coli (DC Plate)	2	Modified from MECP E3407
Fluoride (Water, Auto/ISE)	2	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	2	SM 2340 B
Ion Balance (Water, Calculation)	2	Modified from SM1030 E
Metals Scan (Water, ICP/MS)	2	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	2	Modified from SM 3120 B
Nitrate (Water, IC)	2	Modified from SM 4110 B and C
Nitrite (Water, IC)	2	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	2	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	2	Modified from EPA 420.2
Sulphate (Water, IC)	2	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	2	Modified from SM 4500-S2 D
Tannin and Lignin (Water, Spec)	2	Modified from SM 5550 B
TDS (Estimated)	2	Modified from SM 2510 A
Total Coliforms (DC Plate)	2	Modified from MECP E3407
Total Kjeldahl Nitrogen (Water, Colorimetry)	2	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	2	Modified from SM 2130 B
VOCs (Water, GC/MS)	2	Modified from EPA 8260

#### Criteria :

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

#### Sample status upon receipt :

7802343 7802344 Compliant

#### **Certificate Comments :**

#### 7802344

Anions MRL increase due to matrix interference. B spike not available due to high native analyte concentration in the mother sample. B results were verified for this sample. DOC analyzed from plastic sample bottle.

7802343

Anions MRLs increased due to matrix interferences. B spike not available due to high native analyte concentration in the mother sample. B results were verified for this sample.

#### Notes :

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

This certificate of analysis corrects and replaces any previous version. The analysis results refer only to what was provided for testing. This certificate shall not be reproduced except in full, without the written approval of Eurofins Environment Testing Canada Inc. Method references and/or additional QA/QC information available on request.



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

- 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

#### **OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY**

#### Client : Paterson Group

Project : PN	115625				Recep	otion Date :	2024-06-20
Eurofins	Client Sample					Exceeded C	riteria
Sample No	Identification	Analyte	Result	Units	Α	В	С
Colour, Appar	ent (Water, Spectrophoto	metry)					
7802343	TW1 - GW1	Colour (Apparent)	10	TCU	5		
7802344	TW1 - GW2	Colour (Apparent)	10	TCU	5		
Hardness (Wa	ter, Calculation Only)						
7802343	TW1 - GW1	Hardness as CaCO3 (Calculation)	356	mg/L	80-100		
7802344	TW1 - GW2	Hardness as CaCO3 (Calculation)	360	mg/L	80-100		
Metals Scan (	Nater, ICP/MS)						
7802343	TW1 - GW1	Aluminum	0.43	mg/L	0.1		
7802344	TW1 - GW2	Aluminum	0.34	mg/L	0.1		
7802343	TW1 - GW1	Iron	0.68	mg/L	0.3		
7802344	TW1 - GW2	Iron	0.44	mg/L	0.3		
Sulphide (Wat	er, Colorimetry)						
7802343	TW1 - GW1	Sulphide (S2-)	0.95	mg/L	0.05		
7802344	TW1 - GW2	Sulphide (S2-)	1.16	mg/L	0.05		
TDS (Estimate	ed)						
7802343	TW1 - GW1	TDS (Estimated)^	944	mg/L	500		
7802344	TW1 - GW2	TDS (Estimated)^	959	mg/L	500		
Turbidity (Wat	er, Turbidimeter)						
7802343	TW1 - GW1	Turbidity	11.5	NTU	5		
7802344	TW1 - GW2	Turbidity	7.10	NTU	5		



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#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client :	Paterson Group
Project :	PM15625

Reception [	Date: 2	024-06-26
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	Eurofins Sample No : Matrix :					7802343	7802344		
						Drinking water	Drinking water		
Sampling Date :						2024-06-25	2024-06-25		
			Client Sa		Identification :	TW1 - GW1	TW1 - GW2		
Anions		Criteria							
	RL	Unit	A	В	C				
Chloride	0.5	mg/L	250			84.9	86.4		
Nitrate (as Nitrogen)	0.1	mg/L	10.0			<0.5	<0.5		
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.5	<0.5		
Sulphate	1	mg/L	500			388	394		
•							1		
	Eurofins	Sample No :	7802343		7802344				
		Matrix :	Drinking		Drinking				
	Com	nling Data i	water 2024-06-2		water				
	Sampling Date : Client Sample Identification :				2024-06-25				
			TW1 - GW	/1	TW1 - GW2				
Calculations	RL	Unit							
Ion Balance (Calculation) <sup>A</sup>	0.1		1.01		1.02				
			E	urofins	s Sample No :	7802343	7802344		
					Matrix :	Drinking	Drinking		
				50	ampling Date :	water 2024-06-25	water 2024-06-25		
Concret Chamister					Identification :	TW1 - GW1	TW1 - GW2		
General Chemistry	RL	Unit		Criter B	na C				
	5	mg/L	500	В		225	225		
Alkalinity (as CaCO3)	2	TCU	5			10	10		
Colour (Apparent) Conductivity @ 25°C	5	μS/cm	5			1350	1370		
	0.5	mg/L	5			1.3	1.0		
Dissolved Organic Carbon	0.5	mg/L	1.5			1.32	1.34		
	1	mg/L	80-100			356	360		
Hardness as CaCO3 (Calculation)	1	iiig/L	6.5-8.5			7.97	8.04		
pH @ 25°C Phenols-4AAP	0.001	mg/L	0.0 0.0			<0.001	<0.001		
Sulphide (S2-)	0.001	mg/L	0.05			0.95	1.16		
Tannin and Lignin	0.01	mg/L	0.00			0.33	0.3		
TDS (Estimated)^	5	mg/L	500			944	959		
Turbidity	0.1	NTU	5			11.5	7.10		
randialty	0.1		~			L 11.0	1.10		

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#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client :	Paterson Group
Project :	PM15625

Eurofins Sample No :					7802343	7802344		
	Matrix :						Drinking water	
Sampling Date :						2024-06-25	2024-06-25	
Client Sample Identification :						TW1 - GW1	TW1 - GW2	
Metals	Criteria							
	RL	Unit	Α	в	С			
Metals Scan (Water, ICP/MS)								
Aluminum	0.01	mg/L	0.1			0.43	0.34	
Antimony	0.0005	mg/L	0.006			<0.0005	<0.0005	
Arsenic	0.001	mg/L	0.01			<0.001	<0.001	
Barium	0.001	mg/L	1			0.191	0.190	
Beryllium	0.0005	mg/L				<0.0005	<0.0005	
Boron	0.01	mg/L	5			0.43	0.44	
Cadmium	0.0001	mg/L	0.005			<0.0001	<0.0001	
Chromium	0.001	mg/L	0.05			0.001	<0.001	
Cobalt	0.0002	mg/L				0.0002	<0.0002	
Copper	0.001	mg/L	1			<0.001	<0.001	
Iron	0.03	mg/L	0.3			0.68	0.44	
Lead	0.001	mg/L	0.01			<0.001	<0.001	
Manganese	0.01	mg/L	0.05			0.02	0.02	
Mercury	0.0001	mg/L	0.001			<0.0001	<0.0001	
Molybdenum	0.005	mg/L				<0.005	<0.005	
Nickel	0.005	mg/L				<0.005	<0.005	
Selenium	0.001	mg/L	0.05			<0.001	<0.001	
Silver	0.0001	mg/L				<0.0001	<0.0001	
Strontium	0.001	mg/L				2.64	2.72	
Thallium	0.0001	mg/L				<0.0001	<0.0001	
Uranium	0.001	mg/L	0.02			<0.001	<0.001	
Vanadium	0.001	mg/L				0.001	<0.001	
Zinc	0.01	mg/L	5			<0.01	<0.01	
Metals Scan (Water, ICP/OES)								
Calcium	1	mg/L				74	75	 
Magnesium	1	mg/L				42	42	 
Potassium	1	mg/L				6	6	 
Sodium	1	mg/L	200			181	186	
			C,	urofins Sam	nle No ·	7802343	7802344	
				aronna odli	Matrix :	Drinking	Drinking	
					waux.	water	water	
				Samplir	ng Date :	2024-06-25	2024-06-25	
			Client So			TW1 - GW1	TW1 - GW2	
Microbiology	Client Sample Identification : Criteria				1441 - 0441	1 1 1 - 0112		
	RL	Unit		B	С			
Escherichia coli (DC)	0	CFU/100mL	0	_	-	0	0	
Total Coliforms (DC)	0	CFU/100mL	0			0	0	

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#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client : Paterson Group Project : PM15625

Reception Date: 2024-06-26

	Eurofins Sample No : Matrix :		7802343	7802344			
			Drinking	Drinking			
			water	water			
	San	npling Date :	2024-06-25	2024-06-25			
Client Sample Identification :		TW1 - GW1	TW1 - GW2				
Nutrients	RL	Unit					
Ammonia (Total, as Nitrogen)	0.02	mg/L	0.259	0.263			
Total Kjeldahl Nitrogen	0.1	mg/L	1.46	0.483			

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#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client :	Paterson Group
Project :	PM15625

Reception Date: 2	2024-06-26
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				Eurofins Sar	nple No :	7802343	7802344	
					Matrix :	Drinking water	Drinking water	
				Sampli	ng Date :	2024-06-25	2024-06-25	
			Client	Sample Ident	ification :	TW1 - GW1	TW1 - GW2	
Volatile Organic Compounds			Criteria					
	RL	Unit	Α	в	С			
OCs (Water, GC/MS)								
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-Dichloroethene	0.4	ug/L	14			<0.4	<0.4	
1,2-Dibromoethane	0.2	ug/L				<0.2	<0.2	
1,2-Dichlorobenzene	0.4	ug/L	200			<0.4	<0.4	
1,2-Dichloroethane	0.2	ug/L	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	
1,4-Dichlorobenzene	0.4	ug/L	5			<0.4	<0.4	
Acetone	5	ug/L				<5.0	<5.0	
Benzene	0.5	ug/L	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	
Carbon tetrachloride	0.2	ug/L	2			<0.2	<0.2	
Chloroethane	0.2	ug/L				<0.2	<0.2	
Chloroform	0.5	ug/L				<0.5	<0.5	
Chloromethane	0.2	ug/L				<0.2	<0.2	
cis-1,2-Dichloroethene	0.4	ug/L				<0.4	<0.4	
cis-1,3-Dichloropropene	0.2	ug/L				<0.2	<0.2	
Dibromochloromethane	0.3	ug/L				<0.3	<0.3	
Dichloromethane	4	ug/L	50			<4.0	<4.0	
Diethyl ether	5	ug/L				<5	<5	
Ethylbenzene	0.5	ug/L	140			<0.5	<0.5	
m/p-Xylene	0.4	ug/L				<0.4	<0.4	
Methyl ethyl ketone (MEK)	2	ug/L				<2.0	<2.0	
Methyl isobutyl ketone (MIBK)	5	ug/L				<5.0	<5.0	
Methyl tert-butyl ether (MTBE)	2	ug/L				<2	<2	
Monochlorobenzene	0.5	ug/L	80			<0.5	<0.5	
o-Xylene	0.4	ug/L				<0.4	<0.4	
Styrene	0.5	ug/L				<0.5	<0.5	
Tetrachloroethylene (PCE)	0.3	ug/L	10			<0.3	<0.3	
Toluene	0.4	ug/L	60			<0.4	<0.4	
trans-1,2-dichloroethene	0.4	ug/L				<0.4	<0.4	
trans-1,3-dichloropropene	0.2	ug/L				<0.2	<0.2	
Trichloroethylene (TCE)	0.3	ug/L	5			<0.3	<0.3	
Trichlorofluoromethane	0.5	ug/L				<0.5	<0.5	

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#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client : Paterson Group Project : PM15625

Reception Date: 2024-06-26

				Eurofins Sa	ample No :	7802343	7802344		
					Matrix :	Drinking water	Drinking water		
				Samp	ling Date :	2024-06-25	2024-06-25		
Client Sample Identification :							TW1 - GW2		
Volatile Organic Compounds			Criteria						
	RL	Unit	Α	В	С				
Vinyl chloride	0.2	ug/L	1			<0.2	<0.2		
Xylene (Total)	0.5	ug/L	90			<0.5	<0.5		
1,2-dichloroethane-d4 (surrogate)	0	%				122	109		
4-bromofluorobenzene (surrogate)	0	%				71	72		
Toluene-d8 (surrogate)	0	%				110	113		

Approved by :

Emma-1/1 wh Ferguson, M.Sc. Environmental Chemist

Approved by :

Jason Kennedy

Project Manager

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#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

				QC	<b>`</b>	Matrix S	Spiko	Dupl	ioata
Parameter	Unit	RL	Blank	Recovery %	-	Recovery %		RPD %	Range %
Alkalinity (Water, Automated)						, <b>,</b>			<b>J</b>
	Method : Alkalinity (water, tit	ration to pH	4.5, automated	l). Internal metho	od: OTT-I-A	T-WI45398.			
Alkalinity (as CaCO3)	mg/L	5	<5	100	95-105			-	0-20
	Associated Sam	ples : 78023	343, 7802344				,	Prep Date: Analysis Date:	: 2024-06-28 : 2024-07-02
Ammonia, Total (Water, Colorimetr	<b>'y)</b> Method : Ammonia (V	Nater Colori	imetry) Interna	al method: OTT-	I-NII IT-W/146	201			
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	104	80-120	112	80-120	3	0-20
	Associated Sam			104	00 120	112	00 120	•	: 2024-06-27
	7650614164 6411	pico : 70020	, 1002011				1	Analysis Date:	
Chloride (Water, IC)									
, , , ,	Method : Anions (Wate	r, Ion Chrom	natography). Int	ernal method: O	TT-I-IC-WI4	5985.			
Chloride	mg/L	0.5	<0.5	96	80-120	101	80-120	-	0-20
	Associated Sam	ples : 78023	343, 7802344				1	Prep Date: Analysis Date:	2024-06-27
Colour, Apparent (Water, Spectrop	• /								
	Method : Colour (Water,					145980.		0	0.40
Colour (Apparent)	TCU	2	<2	110	39-159			2	0-40
	Associated Sam	ples : 78023	343, 7802344					Prep Date: Analysis Date:	: 2024-07-03 : 2024-07-03
Conductivity (Water, Automated)									
	Method : Conductivity	/ (Water, Au	totitrator). Inter	nal Method: OT	T-I-AT-WI45	398.			_
Conductivity @ 25°C	uS/cm	5	<5	98	98-102			2	0-20
	Associated Sam	ples : 78023	343, 7802344					Prep Date: Analysis Date:	: 2024-06-28 : 2024-07-02
DOC (Water, IR)									
M	lethod : Organic carbon (water	r, IR, combu	,		OTT-I-E	DEM-WI46148.			
Dissolved Organic Carbon	mg/L	0.5	<0.5	89	84-116	99	80-120	-	0-15
	Associated Sam	ples : 78023	343, 7802344				,	Prep Date: Analysis Date:	: 2024-06-28 : 2024-07-02
Escherichia coli (DC Plate)									
Me	ethod : Total Coliforms and E.C	Coli by MF (N	Water, DC plate	e). Internal meth	od: OTT-M-	BAC-WI45296			
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
	Associated Sam	ples : 78023	343, 7802344				,	Prep Date: Analysis Date:	: 2024-06-26 : 2024-06-27
Fluoride (Water, Auto/ISE)									
	Method : Fluoride by autotitr	ator, ion sele	ective electrode	. Internal metho	d: OTT-I-A	T-WI45398.			



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#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

Client :	Paterson Group
Proiect :	PM15625

Reception Date: 2024-06-26

			<b>.</b>	G	QC	Matrix	Spike	Dup	licate
Parameter	Unit	RL	Blank		6 Range %		6 Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
	Method : Me	tals (Water, IC	CP/MS). Interna	al method: AM	IMTFQE1.				
Aluminum	mg/L	0.01	<0.01	100	80-120	-	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	89	80-120	95	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	100	80-120	100	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	-	70-130	-	0-20
Beryllium	mg/L	0.0005	<0.0005	112	80-120	113	70-130	-	0-20
Boron	mg/L	0.01	<0.01	110	80-120	119	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	103	80-120	-	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	110	80-120	-	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	105	80-120	-	70-130	-	0-20
Copper	mg/L	0.001	<0.001	110	80-120	-	70-130	-	0-20
Iron	mg/L	0.03	<0.03	90	80-120	101	70-130	-	0-20
Lead	mg/L	0.001	<0.001	100	80-120	-	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	-	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	110	80-120	-	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	100	80-120	95	70-130	-	0-20
Nickel	mg/L	0.005	< 0.005	110	80-120	-	70-130	-	0-20
Selenium	mg/L	0.001	< 0.001	105	80-120	114	70-130	_	0-20
Silver	mg/L	0.0001	< 0.0001	113	80-120	-	70-130	_	0-20
Strontium	mg/L	0.001	< 0.001	100	80-120	_	70-130	_	0-20
Thallium	mg/L	0.0001	<0.0001	99	80-120	-	70-130	-	0-20
Uranium	mg/L	0.001	<0.0001	90	80-120	90	70-130		0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	-	70-130	-	0-20
	mg/L	0.001	<0.001	110	80-120	-	70-130	-	0-20
Zinc	-	d Samples : 78		110	00-120	-	70-130	- Dron Data	e: 2024-07-02
	Associate	u Samples . / c	502343				A		: 2024-07-02 : 2024-07-03
	Method : Me	tals (Water, IC	CP/MS). Interna	al method: AM	IMTFQE1.				
Aluminum	mg/L	0.01	<0.01	100	80-120	117	70-130	8	0-20
Antimony	mg/L	0.0005	<0.0005	89	80-120	-	70-130	_	0-20
Arsenic	mg/L	0.001	<0.001	100	80-120	104	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	83	70-130	1	0-20
Beryllium	mg/L	0.0005	< 0.0005	112	80-120	-	70-130	-	0-20
Boron	mg/L	0.01	< 0.01	110	80-120			1	0-20
Cadmium	mg/L	0.0001	< 0.0001	103	80-120	_	70-130	_	0-20
Chromium	mg/L	0.001	< 0.001	110	80-120	99	70-130	_	0-20
Cobalt	mg/L	0.0002	< 0.0002	105	80-120	103	70-130	_	0-20
Copper	mg/L	0.001	<0.001	110	80-120	93	70-130	_	0-20
Iron	mg/L	0.03	< 0.03	90	80-120	100	70-130	4	0-20
Lead	mg/L	0.001	<0.001	100	80-120	89	70-130	-	0-20
Manganese	mg/L	0.001	<0.001	100	80-120	103	70-130	-	0-20
-	mg/L	0.001	<0.001	110	80-120	103	70-130		0-20
Mercury								-	
Molybdenum	mg/L	0.005	< 0.005	100	80-120	109	70-130	-	0-20
Nickel	mg/L	0.005	< 0.005	110	80-120	101	70-130	-	0-20
Selenium	mg/L	0.001	< 0.001	105	80-120	-	70-130	-	0-20
Silver	mg/L	0.0001	< 0.0001	113	80-120	-	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	73	70-130	1	0-20

Thallium

Uranium

< 0.0001

<0.001

99

90

80-120

80-120

94

70-130

70-130

-

0.0001

0.001

mg/L

mg/L

3966666-V1

0-20

0-20



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#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

				QC	,	Matrix S	Snike	Dupl	icate
Parameter	Unit	RL	Blank	Recovery %		Recovery %		RPD %	Range %
Metals Scan (Water, ICP/MS)									
	Method : Me	tals (Water, IC	CP/MS). Interna	al method: AMN	ITFQE1.				
Vanadium	mg/L	0.001	<0.001	100	80-120	100	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	110	80-120	-	70-130	-	0-20
	Associated	d Samples : 78	302344						2024-07-0
							P	nalysis Date	2024-07-0
Metals Scan (Water, ICP/OES)			<b>5</b> 0) <i>leterned</i>			4			
Calcium	Method : Metals (	1 vvater, ICP/Ot	=5). Internal m <1	107 107 107	86-115	1.	70-130	0	0-20
	mg/L mg/L	1	<1	107	91-109	100	70-130	0	0-20
Magnesium Potassium	mg/L	1	<1	105	87-113	116	70-130	-	0-20
Sodium	mg/L	1	<1	100	85-115	108	70-130	- 0	0-20
Sociali	Associated San			104	00-110	100	70-100		2024-07-02
	Associated San	npies . 70020-	10, 1002044				A	nalysis Date:	
Nitrate (Water, IC)									
	Method : Anions (Wate	er, Ion Chroma	atography). Int	ernal method: C	DTT-I-IC-WI4	45985.			
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	97	80-120	101	80-120		
	Associated San	nples : 780234	43, 7802344						2024-06-2
							A	nalysis Date	2024-06-28
Nitrite (Water, IC)									
	Method : Anions (Wate								
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	93	80-120	100	80-120		
	Associated San	nples : 780234	43, 7802344				۵	Prep Date nalysis Date	2024-06-2
pH (25°C) (Water, Automated)							,		2021002
ph (25 C) (Water, Automated)	Method : pH (Wate	r Automated	Meter) Interna	al method: OTT	I_AT_W/I453	98			
pH @ 25°C	mothod : pri (trato	1	5.78	100	97-103			0	0-20
	Associated San	nples : 780234						Prep Date	2024-06-2
		· · · · · · · · · · · · · · · · · · ·					A	nalysis Date	
Phenols (Water, Colorimetry)									
	Method : Phenols (W	/ater, Colorim	etry). Internal i	method: OTT-I-	4AAP-WI46	150.			
Phenols-4AAP	mg/L	0.001	<0.001	114	75-125	111	70-130	-	0-20
	Associated San	nples : 780234	43, 7802344					•	2024-06-2
							A	nalysis Date	2024-07-02
Sulphate (Water, IC)									
	Method : Anions (Wate								
Sulphate	mg/L	1	<1	95	90-110	95	80-120		
	Associated San	nples : 780234	43, 7802344				۵	Prep Date nalysis Date	2024-06-2
Sulphide (Water, Colorimetry)									202.002
Sulpinde (Water, Colorimetry)	Method : Sulphide, S2-	(Water Color	rimetrv) Intern	al method: OTT	-I-SPEC-WI	45931			
Sulphide (S2-)	mg/L	0.01	<0.01	96	80-120	40001.			0-20
	Associated San				00.20			Prep Date	2024-07-02
		······					A	nalysis Date	
Tannin and Lignin (Water, Spec)									
		tout a datate a	Ones) Internes	I mathead OTT		7602			
	Method : Tannin and L	lignin (vvater,	Spec), interna	i metnoa: OTT-	1-3PEC-0013	07093.			
Tannin and Lignin	Method : Tannin and L mg/L	<i>.ignin (vvater,</i> 0.1	<0.1	96	80-120	7093.		-	0-20



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

#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

Client : Paterson Group Project : PM15625							Recepti	on Date: 2	024-06-26
_				QC		Matrix S	Spike	Duplicate	
Parameter	Unit	RL	Blank	Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Total Coliforms (DC Plate)									
Method : Tota	al Coliforms and E.C	oli by MF (V	Vater, DC plate)	. Internal meth	nod: OTT-M·	-BAC-WI45296			
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
	Associated Sam	ples : 780234	43, 7802344				A	Prep Date nalysis Date	: 2024-06-26 : 2024-06-27
Total Kjeldahl Nitrogen (Water, Colorimetry)									
	Method : TKN (Wa	ter, colorime	try). Internal me	thod: OTT-I-N	UT-WI4620	1.			
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	95	70-130	102	70-130	1	0-20
	Associated Sam	ples : 780234	43, 7802344				β	Prep Date nalysis Date	: 2024-06-27 : 2024-06-28
Turbidity (Water, Turbidimeter)									
Μ	ethod : Turbidity (W	ater, Turbidii	meter). Internal	method: OTT-I	-TUR-WI46	288.			
Turbidity	NTU	0.1	<0.1	100	80-120			2	0-30
	Associated Sam	oles : 780234	43, 7802344				A	Prep Date nalysis Date	: 2024-06-27 : 2024-06-28



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

#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

#### Client : Paterson Group Project : PM15625

Reception Date: 2024-06-26
----------------------------

Parameter	Unit	RL	Blank	Q		Matrix		Dupl	
			-	Recovery %	Range %	Recovery %	Range %	RPD %	Range %
VOCs (Water, GC/MS)	lathad : Valatila Oraan	ia Campauna	la (Matar CC/	(C) Internal m	athad: ANAV				
1,1,1,2-Tetrachloroethane	lethod : Volatile Organi	0.5	<0.5	109 109 109	70-130	91	70-130	-	0-30
1,1,1-Trichloroethane	ug/L	0.3	<0.3	92	70-130	114	70-130	-	0-30
	ug/L	0.4	<0.4	119	70-130	86	70-130	-	0-30
1,1,2,2-Tetrachloroethane	ug/L							-	
1,1,2-Trichloroethane	ug/L	0.4	<0.4	118	70-130	104	70-130	-	0-30
1,1-Dichloroethane	ug/L	0.4	<0.4	97	70-130	110	70-130	-	0-30
1,1-Dichloroethene	ug/L	0.4	<0.4	99	70-130	113	70-130	-	0-30
1,2-Dibromoethane	ug/L	0.2	<0.2	96	70-130	108	70-130	-	0-30
1,2-Dichlorobenzene	ug/L	0.4	<0.4	111	70-130	87	70-130	-	0-30
1,2-Dichloroethane	ug/L	0.2	<0.2	106	70-130	100	70-130	-	0-30
1,2-Dichloropropane	ug/L	0.5	<0.5	100	70-130	94	70-130	-	0-30
1,3,5-Trimethylbenzene	ug/L	0.3	<0.3	111	70-130	103	70-130	-	0-30
1,3-Dichlorobenzene	ug/L	0.4	<0.4	110	70-130	104	70-130	-	0-30
1,4-Dichlorobenzene	ug/L	0.4	<0.4	110	70-130	107	70-130	-	0-30
Acetone	ug/L	5	<5.0	74	70-130	114	70-130	-	0-30
Benzene	ug/L	0.5	<0.5	97	70-130	107	70-130	-	0-30
Bromodichloromethane	ug/L	0.3	<0.3	96	70-130	106	70-130	-	0-30
Bromoform	ug/L	0.4	<0.4	96	70-130	106	70-130	-	0-30
Bromomethane	ug/L	0.5	<0.5	104	70-130	83	70-130	-	0-30
Carbon tetrachloride	ug/L	0.2	<0.2	97	70-130	105	70-130	-	0-30
Chloroethane	ug/L	0.2	<0.2	100	70-130	97	70-130	-	0-30
Chloroform	ug/L	0.5	<0.5	83	70-130	91	70-130	-	0-30
Chloromethane	ug/L	0.2	<0.2	83	70-130	91	70-130	-	0-30
cis-1,2-Dichloroethene	ug/L	0.4	<0.4	97	70-130	105	70-130	-	0-30
cis-1,3-Dichloropropene	ug/L	0.2	<0.2	79	70-130	119	70-130	-	0-30
Dibromochloromethane	ug/L	0.3	<0.3	95	70-130	100	70-130	-	0-30
Dichloromethane	ug/L	4	<4.0	90	70-130	91	70-130	-	0-30
Diethyl ether	ug/L	5	<5	100	70-130	100	70-130	-	0-30
Ethylbenzene	ug/L	0.5	<0.5	117	70-130	117	70-130	-	0-30
m/p-Xylene	ug/L	0.4	<0.4	94	70-130	98	70-130	-	0-30
Methyl ethyl ketone (MEK)	ug/L	2	<2.0	74	70-130	93	70-130	-	0-30
Methyl isobutyl ketone (MIBK)	ug/L	5	<5.0	90	70-130	119	70-130	-	0-30
Methyl tert-butyl ether (MTBE)	ug/L	2	<2	90	70-130	90	70-130	-	0-30
Monochlorobenzene	ug/L	0.5	<0.5	104	70-130	100	70-130	-	0-30
o-Xylene	ug/L	0.4	<0.4	117	70-130	96	70-130	-	0-30
Styrene	ug/L	0.5	<0.5	107	70-130	100	70-130	-	0-30
Tetrachloroethylene (PCE)	ug/L	0.3	<0.3	95	70-130	112	70-130	-	0-30
Toluene	ug/L	0.4	<0.4	109	70-130	92	70-130	-	0-30
trans-1,2-dichloroethene	ug/L	0.4	<0.4	90	70-130	104	70-130	-	0-30
trans-1,3-dichloropropene	ug/L	0.2	<0.2	83	70-130	113	70-130	-	0-30
Trichloroethylene (TCE)	ug/L	0.3	<0.3	102	70-130	104	70-130	-	0-30
Trichlorofluoromethane	ug/L	0.5	<0.5	97	70-130	117	70-130	-	0-30
Vinyl chloride	ug/L	0.2	<0.2	83	70-130	117	70-130	-	0-30
Xylene (Total)	ug/L	0.5	<0.2				-		-
	Associated Sam							Prep Date:	

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

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### STANDARD CHAIN-OF-CUSTO

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Company:	Paterson Group								Compar	ıy:											
Contact:	Alex Schopf							<u> </u>	Contact	:											
Address:	9 Auriga Drive						Address	printed On: 2024-06-26 17:07:06													
Telephone:	613-218-3444	Cell:							Telepho	ne:						PO #:	60	535			
Email:	#1: eardley@paterso	ngroup.ca, mlaflamme@pater	songr	oup.ca								R	EGUL	ATIO	N/GUI	DELI	NERE	QUIRE	D		
Email:	#2: aschopf@pater	rsongroup.ca;						Sanitary Sewer, City: Ollawa O. Reg 1				; 153									
Project:	PM15625		, <b></b> )	Quote #	:					Storm Se	ewer, City	n:Ottawa			_		Tab	le#c	Course / Fi	ne, Surface / subs	urface.
200000	т	JRN-AROUND TIME (Business	is Days)					ODWSOG					Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment								
1 Da		Day** (50%) 3-5 Da	00000000000			✓ 5-	7 Days (S	tandard)		PWQO				•			Excess 5	ioil, Table: _		Type:	
		ase contact Lab in advance to determine rush av er rush due date, surcharges will apply: before 1			12:00 - 50	)%.	10			O. Reg 3	47/558										
	••For results reported after rush due date, surcharges will apply:				12:00 - 25	%.				Other: _						The :				nission will form (SC) under O.Reg.	
										None										No	
	he optimal temperature conditions during transport should be less than 10°C. Sample							r	-		Sampl	e Analysis Req	uired	-	r		-	<u>г т</u>		RI	10
	cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note at this COC is not to be used for drinking water samples. The COC must be complete upo		FIELU FU	tered>			O.Re	l. g.153 par	ameters		1		1	1	1	1	<u> </u>			(Lab Us	1000 ALVIN
	the samples, there will be a \$25	surcharge if required information is missing	27524							nics	1	Ada Ada	11.	1	Metals						
	(required fields are	shaded in grey).	atrix	iners	त्त					orgai	2	bhed CTC			Me		1				
i .			Sample Matrix	of Containers	F <b>1</b> - F4	1537				4 + SI	ls on	See attached Subdivision S Bacti 2 (Ec/T)			Total						
Sample ID		Date/Time Collected	Samp	# of (	PHC F1	втех	vocs	PAHs	PCBs	Meta	Meta	Sub Sub Bad	TSS	Hd	<mark>۴</mark>	Ρđ					
]	TW1-GW1	June 25, 2024	GW	10			$\square$								$\Box$					7802	
]	TW1-GW2	June 25, 2024	GW	10			$\Box$								$\overline{\Sigma}$	-1					44
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Sampled By:	ampled By: Alex Schopf			<u> </u>	June 25, 2024				aidí		ace N	netal	2								
Relinguished E	Alex Schopf		-	P.	the	16	A	5_	June 26							100000				an and a second s	
Received By:								INE 26 Due 83			6	····	CUSTO	DY SEAL:		YES	NO Ice	packs submitted:	YesNo		

401 Magnetic Drive, Unit #1, North York, ON, M31 3H9 - Telephone: 416-661-5287 • 380 Vansickle Angd, Unit #640, St. Catharines, ON, L2S 085 - Telephone: 905-680-8887 • 608 Norris Court, Kingston, ON, K7P 2R9 - Telephone: 613-634-9307

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#### **OFFICIAL CERTIFICATE OF ANALYSIS : 3991228**

#### WORK REQUEST : 100298583 Report Date : 2024-07-22

Paterson Group	Reception Date :	2024-07-19
9 Auriga Dr	Project :	PM15625
Nepean, Ontario	Sampler :	NA
K2E 7T9	PO Number :	60753
Attention : Alex Schopf	Temperature :	14 °C

Analysis	Quantity	External Method
Colour, Apparent (Water, Spectrophotometry)	1	Modified from SM 2120 C
Turbidity (Water, Turbidimeter)	1	Modified from SM 2130 B

#### Criteria :

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

#### Sample status upon receipt :

7872590 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

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3991228-V1



# **Environment Testing**

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

#### **OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY**

Client : Pat Project : PM	erson Group 15625				Rece	eption Date :	2024-07-19
Eurofins	Client Sample		<b>D</b>			Exceeded C	riteria
Sample No	Identification	Analyte	Result	Units	Α	В	С
Colour, Appare	ent (Water, Spectrophoton	netry)					
7872590	TW1 - GW - 3	Colour (Apparent)	12	TCU	5		



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

#### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client : Paterson Group Project : PM15625

Reception Date: 2024-07-19

			7872590						
			Groundwater						
	2024-07-19								
	Client Sample Identification :								
General Chemistry				Criteria					
	RL	Unit	Α	в	С				
Colour (Apparent)	2	TCU	5			12			
Turbidity	0.1	NTU	5			3.29			

Approved by :

Emma-Dawn Ferguson, M.Sc. Envirormental Chemist

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3991228-V1



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

#### OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group Project : PM15625							Recepti	on Date: 2	024-07-19
				Q	2	Matrix S	Spike	Dup	licate
Parameter	Unit	RL	Blank		Recovery % Range %				Range %
Colour, Apparent (Water, Spectrophotom	etry)								
Λ	lethod : Colour (Water,	Spectrophot	ometric). Inter	nal method: OT	T-I-SPEC-W	145980.			
Colour (Apparent)	TCU	2	<2	102	39-159			-	0-40
	Associated	Samples : 7	872590				A	•	: 2024-07-22 : 2024-07-22
Turbidity (Water, Turbidimeter)									
	Method : Turbidity (V	/ater, Turbidi	meter). Interna	al method: OTT-i	I-TUR-WI46	288.			
Turbidity	NTU	0.1	<0.1	102	80-120			2	0-30
	Associated	Samples : 7	872590				Δ	•	: 2024-07-20 : 2024-07-20

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

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### STANDARD CHAIN-OF-CUSTODY

			12 IV	145 Col	onnade Ri	oad, Unit	#8, Ottav	a, ON, K2I	E 7Y1 - Pho	ne: 613-	727-5692,	Fax: 613-7	27-5222								85
		CLIENT INFORMATIO	N								ICE IN					100	2985	83		N: Y	(ES 🖌 NO 📄 )
Company:	Paterson Group			_					Compar	ay:		· · · · · · · · · · · · · · · · · · ·								and the second	
Contact:	Alex Schopf								Contact	;											
Address:	9 Auriga Drive			-				<u> </u>	Address	· [				Prin	ted On	: 20	24-07-	-19 17:1	13:38		
Telephone:	613-218-3444	Cell:		. <u></u>		<u> </u>			Telepho	ine:			<u></u>	<u> </u>	<u></u>	<u></u>	PO #:	607	753		
Email:	<u> </u>	ngroup.ca, mkillam@paterso	naroup	ca		17		18 - 17			<u>.</u>		R	EGUL	ATIO	N/GU				ED	
Email:	#2: aschopf@pate		<u> </u>							Sanitary Sewer, City: Ottawa O. Reg 153											
Project:	PM15625			Quote A	ł:										Sino Surface / subsurface						
		JRN-AROUND TIME (Busine	ss Davs	1													Agri / GW / All Other / Sediment				
1 Da			Days (25%)			✓ 5-	7 Days (S	tandard)		PWQO								Excess So	oil, Table	:	Түре:
		ase contact Lab in advance to determine rush er rush due date, surcharges will apply: befor			12:00 - 50			20		O. Reg	347/558										
	1100 No. 20	iter rush due date, surcharges will apply: befo							10	Other:		<u>16</u>					The s				bmísslon will form part of a formal
					<u></u>				10	None								Record	of Site (		( <u>RSC</u> ) under O.Reg. 153/04 No
The ontimal t	emperature conditions during tra	ansport should be less than 10°C. Sample(s	Sample	e Details			367 				Samp	le Analy	sis Requ	ired							60 Calo
cannot be fro	cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note at this COC is not to be used for drinking water samples. The COC must be complete upor ubmission of the samples, there will be a \$25 surcharge if required information is missing			tered>												 	. 7		1		RN#
					<u> </u>	<u> </u>	O.Re	g.153 par	ameters	7 22	-	- la	승을			SIE				<u>  </u> E	(Lab Use Only)
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			Mat	Itain	Ŧ					Inort	VInc	ache	Ed sig					9.1	3	<u> </u>	
			Sample Matrix	of Containers	PHC F1	×	5	<u>ې</u>	ş	Metals + Inorganics	Vietals only	See attached pape	Subdiv Bacti 2	TSS	Hd	Total	Hg	Turbidity	Colour	Aluminum	
Sample ID		Date/Time Collected		*	H H	BTEX	voc	PAHs	PCBS	ž	ž i	, w	0.00	1 <u>1</u>						A I	
<u> </u>	TW1 - GW - 3	July 19, 2024	GW	1																	7872590
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1				 																	
1									ЦЦ												
			<u> </u>																		
	PRINT				A	SIGN			_		DAT	/TIME		TEM	P ("C)	COMME	NTS:		0.0		
Sampled By:	Alex Schopf	· · · · · · · · · · · · · · · · · · ·		-#	Sil	in	2				July 1	9, 202	4	_							
Relinguished B	Alex Schopf			1	the	Tu	X	1			July 1	9, 202	4	20		L			1991 - 199 - 199		
Received By:			-			/	Y	1		JĨ	WI	4/24		)j			DY SEAL:				Ice packs submitted: Yes No
	401 Magnetic Drive, Unit	#1, North York, ON, M3J 3H9 - Telephone:	416-661-5	287 •	380 Van	ilckle Roa	ad, Unit #	610, St. C	atharines,	ON, 125	085 - 161	phone: 9	05-680-88	87 •	608 Norr	is Court, I	(ingston,	ON, K7P	2R9 - Te	lephone:	613-634-9307

order#:



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#### **OFFICIAL CERTIFICATE OF ANALYSIS : 3993095**

#### WORK REQUEST : 100298584 Report Date : 2024-07-24

Paterson Group 9 Auriga Dr Nepean, Ontario K2E 7T9 Attention : Alex Schopf Reception Date :2024-07-19Project :PM15625Sampler :NAPO Number :60753Temperature :14 °C

Analysis	Quantity	External Method
Metals Scan (Water, ICP/MS)	1	Modified from EPA 200.8

#### Criteria :

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

Sample status upon receipt :

7872596

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

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3993095-V1



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### **OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client : Paterson Group Project : PM15625							Re	eception Date	: 2024-07-19
				Eurofins Sa	ample No :	7872596			
					Matrix :	Groundwater			
				Samp	oling Date :	2024-07-19			
			Client S	Sample Ide	ntification :	TW1 - GW - 3			
Metals				Criteria					
	RL	Unit	Α	В	С				
Aluminum	0.01	mg/L	0.1			0.02			

Approved by :

Emma-Dawn Ferguson, M.Sc. Envirormental Chemist

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3993095-V1



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#### **OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL**

Client : Paterson Group Project : PM15625							Receptio	on Date: 2	024-07-19
_			<b>D</b>	QC	)	Matrix S	Spike	Dupl	icate
Parameter	Unit	RL	Blank	Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
	Method : Met	als (Water, IC	CP/MS). Intern	al method: AMM	ITFQE1.				
Aluminum	mg/L	0.01	<0.01	100	80-120	106	70-130	0	0-20
	Associated	Samples : 7	872596				A	•	: 2024-07-21 : 2024-07-23

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

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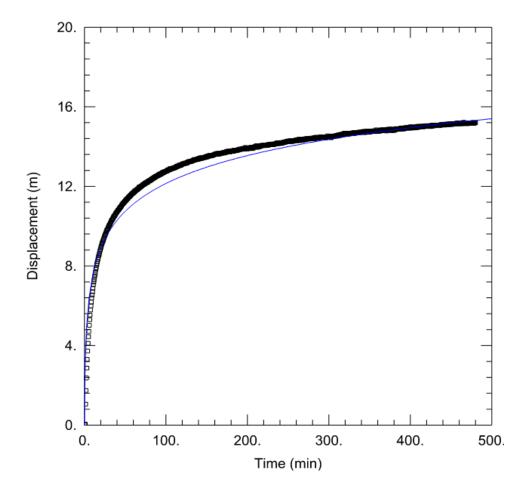
### STANDARD CHAIN-OF-CUSTODY

. A				146 Co	onnade R	oad, Unit	#8, Ottaw	a, ON, K2E	E 7Y1 - Pho	ne: 613-72	7-5692. F	ax: 613-7	27-5222									
		CLIENT INFORMAT	ION		10				- <b>-</b> -	NVOI		2.5	2000 C	N (\$		1	10029	9858	4	ā	YES 🗸 N	10 🗌 )
Company:	Paterson Group								Compan	iy:					H H H H H H H H H H H H H H H H H H H			1				
Contact:	Alex Schopf				<u> </u>				Contact		<u>.                                    </u>		<u> </u>	Ĩ							note te	
Address:	9 Auriga Drive			T.			·		Address	i j	<del>منت مح</del>			=	Printed	On:	2024	07-19	17:15:	-		
Telephone:	613-218-3444		 Cell:		<u></u>			<u>_  </u>	Telepho	ne:	<u></u>	<u> </u>	<u></u>				PO #:		753	49		
Email:	······	ngroup.ca, mkillam@pate	rsonarou	p.ca					1				R	EGUL	ATIO	N/GU				RED		·
Email:	#2: aschopf@pate			<u> </u>						Sanitary	Sewer, C	tity: Otta		_				O. Reg				
Project:	PM15625			Quote	#:					Storm Se								Tabl	le #	Course	/Fine, Surface/si	uhsurface
		URN-AROUND TIME (Busi	iness Day	/s)						opwso							) т				/ Agri / GW / All Ot	
1 Day			3-5 Days (25		-	🖌 5-	7 Days (S	tandard)	$1\square$	PWQO								Excess S	oil, Table		Түре:	
		ease contact Lab in advance to determine er rush due date, surcharges will apply: b			12:00 - 5	0%.				O. Reg 3	47/558											
	and a state of the	fter rush due date, surcharges will apply:				200				Other:							The s					rm part of a formal
										None	2							Record		Yes	n (RSC) under O.R	leg. 153/04
The optimal te	mperature conditions during tra	ansport should be less than 10°C. Sam	nterst	ple Details	r	<b>-</b>	r —	<b>-</b>			Samp	e Analy	sis Req	uired		chui dauba		12				8 - C
cannot be fro	zen, unless otherwise indicated	or agreed upon with the Laboratory. I	Note Field	Filtered				484	<u> </u>						5		ç			11	All and a second s	RN# Use Only)
		er samples. The COC must be complete surcharge if required information is m			-	1	О.не	eg.153 par.	ameters	1	1	aper	A			als				E	(600	ose only
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	-			Ē	PHC F1	8	20Cs	PAHs	PCBs	Metals -	Metals only	88 at	Subdiv Bacti 2	ISS	H	ota	Нg	5	ō	12		
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Received By:						1	Y	Δ_		UU		4124	N	l		10-04110-010-00-00-00-00-00-00-00-00-00-00-00	DY SEAL:				tce packs submitted	d: Yes N
	401 Magnetic Drive, Unit	t #1, North York, ON, M3J 3H9 - Teleph	one: 416-661	-5287 •	380 Van.	sickle Roa	ad, Uni <b>l</b> #	680, St. Ca	atharines,	ON, L25 0	85 - Telej	phone: 90	05-680-8	87 •	608 Norr	is Court, k	Kingston,	ON, K7P	2R9 - Te	lephone	: 613-634-9307	

H.

### Pumping Test Analysis Report

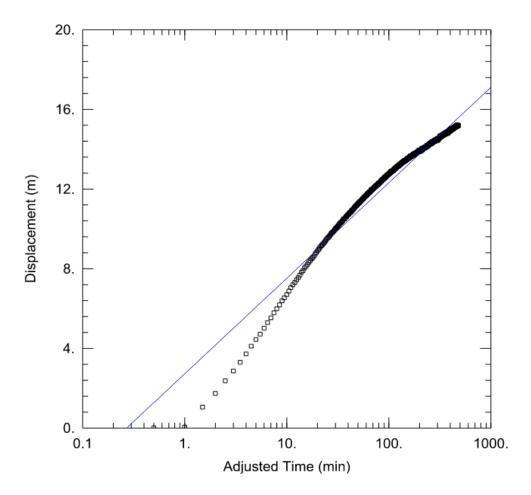
File No.	PM15625	Well ID:	TW1
Date:	Tuesday, June 25, 2024	Solution Method:	Theis
Client:	Ken Hoppner	Transmissitivity (m2/day):	1.7
Site Address:	1811 Richardson Side Road	Discharge Rate (L/min)	30
Project:	Re-zoning Application	Analysis performed by:	AS





### Pumping Test Analysis Report

File No.	PM15625	Well ID:	TW1
Date:	Tuesday, June 25, 2024	Solution Method:	Cooper-Jacob
Client:	Ken Hoppner	Transmissitivity (m2/day):	1.65
Site Address:	1811 Richardson Side Road	Discharge Rate (L/min)	30
Project:	Re-zoning Application	Analysis performed by:	AS





#### Pumping Test Analysis Report

File No.	PM15625
Date:	Tuesday, June 25, 2024
Client:	Ken Hoppner
Site Address:	1811 Richardson Side Road
Project:	<b>Re-zoning Application</b>

Summary Table:		
Solution Method:	Well ID:	Transmissitivity (m2/day):
Theis	TW1	1.7
Cooper-Jacob	TW1	1.65
Average:		1.68



JOB NO.

patersongroup 1811 Richardson Side Road

PREDICTIVE NITRATE I	MPAC <sup>-</sup>	T ASSESSE	EMENT
Infiltration Factors			
Topography		0.10	
Soil		0.20	
Cover		0.15	
Total		0.45	
Site Characteristics			
Area of Site :		116782	m²
Total of roof areas:		2500	m²
Total area of paved driveway areas:		6215	m²
Roof + paved driveway areas		8715	m²
Impervious Area		8715	m <sup>2</sup>
Percent Impervious Area =		7	%
Infiltration Area =		108067	m²
Septic Effluent			
Concentration of Effluent (Cs) =		40	mg/L
Infiltration Calculation			
Nitrate concentration in precipitation $(C_i) =$		0	mg/L
Surplus Water (Environment Canada)		329	mm/yr
Factored Water Surplus =		148	mm/yr
Infiltration % due to stormwater management measures		-	%
Infiltration rate from stormwater management measures =		0	mm/yr
Infiltration Flow Entering the System $(Q_i) =$		44	m³/day
Mass Balance Model (MOEE, 1995) $C_T = (Q_bC_b+Q_eC_e+Q_iC_i)/(Q_b+Q_e+Q_i)$	) = Cumulative	Nitrate Concentration	
$Q_b$ = flow entering the system across the upgradient area		0	m³/day
C <sub>b</sub> = background nitrate concentration		0	mg/L
Cs = concentration of nitrates in the septic effluent		40	mg/L
Q <sub>i</sub> = flow entering the system from infiltration		44	m³/day
C <sub>i</sub> = Concentration of nitrates in the infiltrate		0	mg/L
	<b>C</b> <sub>T</sub> =	10.00	mg/L
Maximum Allowable Sewage Flow Volume			
Daily Sewage Flow (Qs)=		14.61122351	m <sup>3</sup>

### patersongroup

1811 Richardson Side Road PM15625

MW1	inputs			
рН	8	А	0.20	
TDS	952	В	2.36	
Calcium	75	С	1.48	
Alkalinity	225	D	2.35	
Temp.	11			
		pHs =	8.03	

Lange	lier Saturation Index (LSI) Calc	ulation	(Lange	elier, 1936)					
	LSI = pH - pHs pHs = (9.3 + A + B) - (C + D) Where:	A = (Log10 [TDS] - 1) / 10 B = -13.12 x Log10 (oC + 273) + 34.55 C = Log10 [Ca2+ as CaCO3] - 0.4 D = Log10 [alkalinity as CaCO3]							
	LSI = 0.0								
LSI	LSI Effect								
0.5 to 2	Water is super saturated and tends to precipitate a scale lay	yer of calcium carbonate (s	cale forming b	ut non-corrosive)					
0 to 0.5	0.5 Water is super saturated and tends to precipitate a scale layer of calcium carbonate (slightly scale forming and corrosive).								
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).								