November 20, 2025

PH4559-LET.01.REV.05

Whelan Truck Repair
P.O. Box 13090
Ottawa, Ontario
K2K 1X3

Attention: Greg Whelan

Subject: **Site Servicing Report**
Site Plan Application
158 Cardevco Road, Ottawa (Carp), Ontario

PATERSON GROUP
Consulting Engineers
9 Auriga Drive
Ottawa, Ontario
K2E 7T9
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Geotechnical Engineering
Environmental Engineering
Hydrogeology
Materials Testing
Building Science
Rural Development Design
Retaining Wall Design
Noise and Vibration Studies

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INTRODUCTION

Further to your request and authorization, Paterson group (Paterson) was commissioned to complete this servicing brief to address the proposed water and wastewater services for the Site Plan Application for the additional workspace at 158 Cardevco Road in Ottawa (Carp). There will not be any additional employees/employee shifts or fixtures due to the additional workspace and as such, the daily design sewage flow is not anticipated to change. Furthermore, the proposed addition will be constructed on existing impermeable area and no additional impermeable surfaces are being proposed. Therefore, there will be no changes in the available permeable surface areas. Due to the elevated chlorides (397 mg/L) and sodium (274 mg/L) found in the existing onsite well supply, the Site Plan application is to continue using the existing non-potable supply well.

Existing Conditions

The property consists of a lot of approximately 0.49 hectares (ha). The lot is currently occupied by a single-storey industrial building, and associated gravel access lanes, parking areas and existing septic system which services the development. The existing development is currently serviced by a private onsite sewage system and a drilled well. The water is used for non-potable (toilets/hand washing) uses. Bottled water is supplied to all employees, and signs have been posted indicating that the water supply is non-potable. There is no public access to the building. Refer to Figure 1 – Key Plan below showing the site location.

An Ottawa Septic System Office (OSSO) Part 10/11 application was completed along with the Site Servicing Report. Specifically, an OSSO application for a renovation. The septic flow volumes were confirmed to remain consistent with the use prior to the renovation, and as such no changes to the septic system were required.

Figure 1: Key Plan

City of Ottawa Hydrogeological Pre-consultation

A City of Ottawa Hydrogeological Pre-consultation was completed on July 7, 2022. During the Hydrogeological Pre-consultation, the City indicated that a pumping test would not be required should the existing water demand not be changing. Additionally, a Septic Impact Assessment would not be required if the existing septic flow volumes would not be changing. Should those conditions be met, a Site Servicing Report would be required in lieu of a Hydrogeological Assessment and Terrain Analysis.

Development Proposal

The Site Plan Application is to build an additional building as an extension to the current existing industrial building. Municipal services are not available at this site. The proposed development will be privately serviced by the existing onsite sewage system and existing water well supply. No additional fixtures or employees will be associated with the additional workspace provided by the building addition. Please refer to Shade Group Inc. Drawing titled Site Plan dated September 25, 2025 attached to this report for additional details.

AQUIFER ANALYSIS

A member of our hydrogeological staff visited the subject site on November 2nd and 3rd, 2022 to carry out the water supply well disinfection and an inspection of the existing water system which services the subject site. The fieldwork program consisted of disinfecting the existing well, an inspection of the existing drilled water supply well / existing water treatment / distribution system, the collection of a raw water sample for chemical and microbiological analysis, and the field testing of the water supply using portable testing kits.

The existing water supply is obtained from a drilled well. A Water Well Record (WWR) could not be located by the landowner and could not be found online using the Ministry of the Environment, Conservation, and Parks (MECP) WWR mapping tool. As such, the onsite water supply well was measured manually by Paterson personnel during the site visit.

The onsite drilled water supply well was measured to have a 158 mm diameter steel casing, which extends to at least 5.45 m from the top of the casing (TOC). It is inferred that the casing is a minimum length of 6.1 m based upon standard pipe length used in well installations. According to available drift thickness mapping, the drift thickness on the subject site mapped to be from 3 to 5 m thick. The well depth was measured to extend to approximately 16.7 m below the TOC, with a static water level measured at 1.1 m below the TOC.

The well head is fully accessible with the 158 mm diameter steel casing extending approximately 680 mm above the existing ground surface. The present water well regulations, Ontario Regulation 903, requires that the well casing extends at least 400 mm above the ground surface.

The well cap was observed to consist of a vermin proof well cap. The ground surface in the vicinity of the well was adequately shaped to shed surface water away from the well. The well is located greater than 15 m from the subject and neighboring sewage systems, as required by the regulations.

Existing Water Treatment / Distribution System

The existing water system, listed in the direction of flow consists of the following:

- ❑ Submersible Pump
- ❑ Flexcon Industries Well-Rite Pressure Tank

It was noted that no water treatment is currently being used at the time of writing this report. The well has been historically used as a non-potable supply well and is proposed to remain a non-potable supply well.

Water Quantity

A pumping test was not required as the number of fixtures and employees is not changing with the building addition. As the available water supply quantity has been sufficient historically, the existing well is considered to be capable of supplying an adequate volume of water to satisfy the water demand for the subject site.

As per the City of Ottawa Hydrogeological Pre-consultation, an assessment of the available water supply well quantity is not required if the proposed water demands will not be changing for the development.

Occupant Interview

An interview was completed by Paterson personnel with the current occupant on November 2, 2022. During the interview, the occupant noted that the well water is not used for drinking, and that there has never been any issues with available quantity.

Water Quality

On November 2, 2022 Paterson personnel chlorinated the well as per the MECP Water Well Disinfection Instruction Sheet, attached to this report.

The client completed the purging of the well on November 3, 2022. The existing submersible pump was used to purge the well. 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.

Groundwater samples were collected after the free chlorine residual was verified as non-detectable. A HACH Pocket Colorimeter II chlorine reader was used to measure the free chlorine residual levels. 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, VOC’s and PHC’s.

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 prior to the collection of the water samples. The parameters tested at the well head included: pH, total dissolved solids, conductivity, turbidity, true colour, and temperature. The results of the on-site testing are summarized in Table 1 below:

Table 1: Field Testing			
Parameter	Units	Raw Sample	ODWS Water Quality Objective
True Colour	TCU	3	5
Turbidity	NTU	1.12	5
pH	-	7.49	6.5-8.5
Total Dissolved Solids	mg/L	**990**	500
Conductivity	µs/L	1980	-
Temperature	°C	11.8	8-12

Laboratory Data

The Subdivision Package suite of parameters and trace metals laboratory water quality obtained from the onsite well supply is provided in Table 2a and 2b below and the laboratory analyses reports can be found attached. VOC and PHC laboratory analytical testing was completed and measured to be non-detect in the sample results. All laboratory test results can be found attached to this report.

TABLE 2A: GROUNDWATER GEOCHEMISTRY				
PARAMETER	UNITS	ODWS		Onsite Supply Well
		LIMIT	TYPE	GW1 2022-11-03
MICROBIOLOGICAL				
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0
Total Coliforms	ct/100mL	0	MAC	0
GENERAL CHEMICAL - HEALTH RELATED				
Fluoride	mg/L	1.5(2.4)	MAC	<0.10
N-NO2 (Nitrite)	mg/L	1	MAC	<0.10
N-NO3 (Nitrate)	mg/L	10	MAC	0.56
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	0.30
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	1.12
N-NH3 (Ammonia)	mg/L	-	-	0.02
Total Kjeldahl Nitrogen	mg/L	-	-	0.41
GENERAL CHEMICAL - AESTHETIC RELATED				
Hardness (as $CaCO_3$)	mg/L	100	OG	321
Ion Balance	unitless	-	-	0.96
Total Dissolved Solids	mg/L	500	AO	1,250
Alkalinity (as $CaCO_3$)	mg/L	500	OG	315
Chloride	mg/L	250	AO	397
Colour	TCU	5	AO	4
Conductivity	uS/cm	-	-	1930
pH	unitless	6.5-8.5	AO	7.44
Sulphide	mg/L	0.05	AO	<0.01
Sulphate	mg/L	500	AO	77
Phenols	mg/L	-	-	<0.001
Tannin & Lignin	mg/L	-	-	<0.1
Dissolved Organic Carbon	mg/L	5	AO	4.6

1. ODWS identifies the following types of parameters:
   MAC=Maximum Allowable Concentration
   AO = Aesthetic Objective
   OG= Operational Guideline
2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

TABLE 2B: GROUNDWATER GEOCHEMISTRY				
PARAMETER	UNITS	ODWS		Onsite Supply Well
		LIMIT	TYPE	GW1 2021-11-03
METALS				
Aluminum (Al)	mg/L	0.1	OG	<0.01
Antimony (Sb)	mg/L	0.006	IMAC	<0.0005
Arsenic (As)	mg/L	0.01	IMAC	<0.001
Barium (Ba)	mg/L	1	MAC	0.22
Beryllium (Be)	mg/L	-	-	<0.0005
Boron (B)	mg/L	5	IMAC	0.03
Cadmium (Cd)	mg/L	0.005	MAC	<0.0001
Calcium (Ca)	mg/L	-	-	102
Chromium (Cr)	mg/L	0.05	MAC	<0.001
Cobalt (Co)	mg/L	-	-	0.002
Copper (Cu)	mg/L	1	AO	0.009
Iron (Fe)	mg/L	0.3	AO	0.03
Lead (Pb)	mg/L	0.01	MAC	0.001
Magnesium (Mg)	mg/L	-	-	16
Manganese (Mn)	mg/L	0.05	AO	0.15
Mercury (Hg)	mg/L	0.01	MAC	<0.0001
Molybdenum (Mo)	mg/L	-	-	<0.005
Nickle (Ni)	mg/L	-	-	<0.005
Potassium (K)	mg/L	-	-	2
Selenium (Se)	mg/L	0.05	MAC	<0.001
Silver (Ag)	mg/L	-	-	<0.0001
Sodium (Na)	mg/L	200	AO	274
Strontium (Sr)	mg/L	-	-	0.604
Thallium (Tl)	mg/L	-	-	<0.0001
Uranium (U)	mg/L	0.02	MAC	0.001
Vanadium (V)	mg/L	-	-	<0.001
Zinc (Z)	mg/L	5	AO	<0.01

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

The bacteriological test results (Certificate of Analysis – Report No. 1989429) indicated that E.Coli and Total Coliforms were non-detectable in the well water (0 ct/100 mL).

The water quality of the subject water supply well meets all of the Ontario Drinking Water Standards (ODWS) maximum acceptable concentrations (MAC) other than Manganese. Furthermore, the water meets all of the aesthetic objectives (AO) and operational guidelines (OG) with the exception of the following:

- ❑ Hardness (as $CaCO_3$)
- ❑ Total Dissolved Solids (TDS)
- ❑ Chlorides
- ❑ Sodium
- ❑ Manganese

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

Hardness as $CaCO_3$

Hardness, expressed as calcium carbonate, an operational guideline, 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 of 100 mg/L. At the measured concentration of 321 mg $CaCO_3$/L, the water is considered hard. The Technical Support Document for the ODWS publication states that water with hardness in excess of 500 mg/L may be unacceptable for most domestic purposes, however, there is no maximum treatable value available. It is expected that the hardness concentration can be treated using commercial grade water softener technologies, if desired by the owner.

Total Dissolved Solids (TDS)

Total dissolved solids (TDS) refers to the concentration of inorganic substances dissolved in water. The main constituents are typically chloride, sulphates, calcium, magnesium, and bicarbonates. Water with a TDS concentration above 500 mg/L may not be palatable. As the water is not used for consumption (non-potable supply), palatability is not a concern. The non-potable supply will continue to be used only for hand washing and toilet flushing. Procedure D-5-5 does not provide a treatability limit for TDS, but it does require written rationale that corrosion, encrustation, or taste problems will not occur.

The Langelier Saturation Index (Langelier, 1936) is used to predict the calcium carbonate stability of the water. It indicates whether the calcium carbonate will precipitate, dissolve, or be in equilibrium with the water. The results of the Langelier calculation (LSI = - 0.3) indicate that the water is under saturated and tends to dissolve solid calcium carbonate (slightly corrosive but non-scale forming). Based on site observations, significant corrosion was not noted. Should corrosion become an issue, PEX piping would be the most effective mitigation measure for potential corrosion. See Langelier Saturation Index Calculation attached for calculation details.

Chloride

Chloride, an aesthetic parameter, was detected in the laboratory test sample at a concentration of 397 mg/L which is in excess of the ODWS aesthetic objective of 250 mg/L. The World Health Organization (WHO) prepared a document “Chloride in Drinking-water” dated 1996 that concludes that chloride concentrations in excess of 250 mg/L may potentially provide a detectable taste in the water. Consumers may become accustomed to chloride concentrations that exceed 250 mg/L. WHO noted that they would not be proposing limits for chlorides in drinking water.

Health Canada notes within the document “Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Chloride” that the aesthetic objective of <250 mg/L was established for chlorides in drinking water, however, a maximum concentration was not set by Health Canada.

Concentrations exceeding the aesthetic objective value may impart undesirable tastes to water and beverages. The treatability limit of chloride is 250 mg/L and as the chloride concentration is well above the treatability limit, the water is not considered to be palatable by the City of Ottawa Hydrogeological and Terrain analysis Guidelines (HTAG) standards. Therefore, imported bottled water or a water cooler will be used as an alternative drinking water source as the onsite well supply will not be a potable water well.

Sodium

Sodium is an aesthetic parameter and was detected in the test sample at a concentration of 274 mg/L, which is greater than 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.

As the sodium levels are above the maximum level considered treatable by the City of Ottawa HTAG (200 mg /L), the raw water encountered by the onsite well is not considered palatable.

Manganese

The manganese concentration results from the laboratory test samples yielded a value of 0.15 mg/L in the onsite well, which is above the aesthetic objectives in the ODWSOG of 0.05 mg/L. Additionally, the manganese concentration in the aquifer exceeds the Canadian Guidelines of Drinking Water Quality maximum acceptable concentration (MAC) of 0.12 mg/L. The City of Ottawa annotated procedure D-5-5 gives a maximum concentration considered reasonably treatable for manganese as 1.0 mg/L. The water supply aquifer will only be used for non-potable activities and potable drinking water will be provided through external sources. A conventional water softener or manganese greensand filter can be used to reduce the levels of manganese, if desired.

Private Sewage Service

The proposed development will continue to be serviced by the existing onsite sewage system. Refer to the attached OSSO Sewage System Certificate of Completion (OSSO COC) with Sewage System Permit Number 18-222 for additional details on the existing sewage system.

Existing Sewage System Design

The existing Class 4 sewage system was installed in 2018 and consists of a septic tank and leaching bed/treatment system. According to the OSSO COC, the existing system consists of a 4,500 L concrete septic tank which gravity feeds two (2) runs of eight (8) units of the Eljen Model GSF A-42 treatment system (total of 16 units) over a 122 m^2 sand bed. The concrete septic tank is outfitted with a Tuf-Tite Ef-6 effluent filter. The septic tank and treatment bed meet the setback requirements from the onsite and neighboring drilled wells, as well as all required distances set by the OBC.

Existing Sewage System Capacity

The estimated sewage flow in the OSSO permit is based on the number of 8-hour employee shifts. It has been specified that there will be 14 x 8-hour shifts per day, which according to the OBC guideline of 75 L per 8-hour shift for factories, workshops, etc., results in a daily flow rate of 1,050 L/day. The existing system has been designed to support 1,500 L/d (approximately 20 employee shifts).

The septic tank, for commercial applications, should have a minimum working capacity of at least three (3) times the total design daily sanitary sewage flow of 1,500 L/d based on the maximum the system can support. As such, the existing septic tank, with a volume of 4,500 L, is considered adequate to support the estimated sewage flow.

The number of modules for the Eljen GSF A-42 treatment system required is determined by the formula Q/95, where “Q” is the design daily sewage flow. Based on the flow rate of 1,050 L/d, 12 modules would be required, however, the existing system was designed with two (2) rows of eight (8) modules for a total of 16 modules. The sand area required is calculated by QT/400, where “Q” is the design daily sewage flow and “T” is the percolation rate of the soil. For the current site, a percolation rate of 30 min/cm was used, resulting in a required sand area of 78.75 m^2. The existing sand area is 122 m^2 which is greater than the required sand area and can support a daily sewage flow of 1,600 L/day.

Since no additional fixtures or additional employee shifts are being proposed as part of the proposed building expansion, the septic flow volumes are not anticipated to change.

As the septic system is already oversized compared to the calculated volume under OBC, it can be concluded that the existing system is sufficient to support the proposed development.

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 warehouse addition.

2. As the onsite well currently provides non-potable water to the existing building, the client is familiar with the quality of the groundwater.

3. Bottled water must be provided to all employees, and signage indicating that the water is non-potable must be posted at all drinking water locations.

4. The preferred water supply aquifer intercepted by the onsite drilled supply well contains a water supply that is not potable, and contains elevated concentrations of Hardness, TDS, and Manganese. All of these parameters can be treated with current readily available water conditioning equipment.

5. The preferred water supply aquifer intercepted by the onsite drilled supply well contains a water supply that is not potable and contains elevated concentrations of Chlorides and Sodium which exceed the City of Ottawa's HTAG (Section 3.2 - annotated MECP Procedure D-5-5) maximum concentrations considered reasonably treatable. As such, the onsite water supply is considered a non-potable water supply well.

6. The sodium concentrations were 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.

7. A Building Permit needs to be issued prior to the commencement of construction on the proposed warehouse addition.

8. The results of the Site Servicing Report have provided satisfactory evidence that the subject site can support the proposed workplace addition with the existing non-potable water supply and the existing septic system.

We trust that the current submission satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

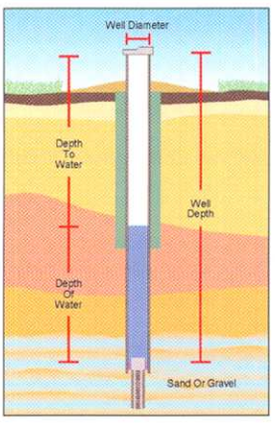
Alexander Schopf, PhD, EIT

Erik Ardley, P.Geo

Attachments:

- ❑ MECP Water Well Disinfection Instruction Sheet
- ❑ Eurofins Certificate of Analysis
- ❑ Langelier Saturation Calculation
- ❑ Ottawa Public Health's Manganese in Drinking Water Fact Sheet, dated September 12, 2024
- ❑ OSSO Sewage System Certificate of Completion with permit No.18-222
- ❑ Shade Group Inc. - Site Plan – Drawing No. 1 of 1 dated September 25, 2025

Disinfection Instruction Sheet



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

The first step in identifying the reason for repeated adverse water quality is to conduct a visual inspection of your well. Start with a close look at your well. The area around it should be clear of any potential contaminant sources, such as pets, lawn care products, and gardens. Once you're satisfied that the area around your well is okay, take a good, close look at the well itself. If you have an older well, make sure that the cap and the sealant around the well casing isn't cracked or damaged. If it is, you need to fix or replace it right away.

If the source of the problem can't be detected, consult a licensed well contractor right away to identify the source of the problem and eliminate it. You can save yourself a lot of money by doing this instead of rushing out to buy a home treatment device that may be expensive to install, operate, and maintain. And it may not eliminate the source of your trouble.

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

1. Measure the diameter of the well.
2. Measure the well depth and the static or resting water level, then calculate the depth of water in the well.
3. Using the table on this sheet, measure out the amount of bleach needed. (The table gives the volume of bleach needed for different well sizes.) Then, pour the mixture into your well.
4. If possible, mix the water in the well. This can be accomplished by attaching a hose to a tap, running water from the well, through the hose and back into the well.
5. After adding chlorine to the well, remove or bypass any carbon filters that are in the system for water treatment. If you don't, these filters will remove the chlorine from the water, and any pipes beyond the filter will not get disinfected. Replace with new filters after chlorination to avoid reintroducing bacteria into the system.
6. Run water at every faucet in the house (and barn, if you have one) until a strong chlorine odour is detected. Be aware that your nose may lose its ability to detect chlorine.
7. If there is no chlorine smell or it is very weak, add more bleach to the well and repeat Step 6 above.
8. Drain the water heater and fill with chlorinated water.
9. Backflush the water softener and all water filters (except carbon filters).
10. Let the chlorinated water stand in the system for at least 12 hours.
11. Clear chlorine from the well by running an outside hose to the ground surface. Then, run clear water through the faucets until the water no longer smells of chlorine.
12. Avoid putting too much chlorine into the septic system because the bacteria needed for septic decomposition may be killed.
13. Do not drink the water without boiling it until test results show the water is safe to drink.

Volume of Bleach to Add for Every 3 Metres (10 Feet) of Water in the Well*

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

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

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

For more information

Ontario Government Ministry Abbreviations

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

Ministry of the Environment
MOE (also MOEE)

Ontario Ministry of Agriculture and Food
OMAF (also OMAFRA)

Ontario Government Information Lines

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

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

MOHLTC INFOline: 1-800-268-1154

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

Ontario Government Web Sites

MOE: www.ene.gov.on.ca

MOHLTC: www.health.gov.on.ca

OMAF: www.gov.on.ca/omaf

Publications available on-line

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

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

MOHLTC: www.health.gov.on.ca

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

OMAF: www.gov.on.ca/omaf

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

MOE: www.ene.gov.on.ca

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

Ontario

Certificate of Analysis

Client: Paterson Group
9 Auriga Dr
Nepean, ON
K2E 7T9
Attention: Mr. Alex Schopf
PO#: 56114
Invoice to: Paterson Group

Report Number: 1989429
Date Submitted: 2022-11-04
Date Reported: 2022-12-20
Project: PH4559
COC #: 902536

Dear Alex Schopf:

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

Report Comments:

Revision 1: This is an amendment and supersedes all other copies of this report issued on 2022-11-18. VOCs added as per the client's request.

APPROVAL: _____
Emma-Dawn Ferguson, Chemist

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

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

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

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

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

Certificate of Analysis

eurofins | Environment Testing

Client: Paterson Group
9 Auriga Dr
Nepean, ON
K2E 7T9
Attention: Mr. Alex Schopf
PO#: 56114
Invoice to: Paterson Group

Report Number: 1989429
Date Submitted: 2022-11-04
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				Lab I.D.	1660784
				Sample Matrix	GW
				Sample Type	
				Sampling Date	2022-11-03
				Sample I.D.	GW1
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Anions	Cl	1	mg/L	AO 250	397*
	F	0.10	mg/L	MAC 1.5	<0.10
	N-NO2	0.10	mg/L	MAC 1.0	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	0.56
	SO4	1	mg/L	AO 500	77
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG 30-500	315
	Colour (Apparent)	2	TCU	AO 5	4
	Conductivity	5	uS/cm		1930
	DOC	0.5	mg/L	AO 5	4.6
	pH	1.00		6.5-8.5	7.44
	Phenols	0.001	mg/L		<0.001
	S2-	0.01	mg/L	AO 0.05	<0.01
	TDS (COND - CALC)	1	mg/L	AO 500	1250*
	Turbidity	0.1	NTU	AO 5	0.3
Hardness	Hardness as CaCO3	1	mg/L	OG 80-100	321*
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20
	F2 (C10-C16)	300	ug/L		<300
	F3 (C16-C34)	750	ug/L		<750
	F4 (C34-C50)	750	ug/L		<750
Indices/Calc	Ion Balance	0.01			0.96
Metals	Ag	0.0001	mg/L		<0.0001
	Al	0.01	mg/L	OG 0.1	<0.01
	As	0.001	mg/L	IMAC 0.01	<0.001
	B	0.01	mg/L	IMAC 5.0	0.03
	Ba	0.01	mg/L	MAC 1.0	0.22

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

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Client: Paterson Group
9 Auriga Dr
Nepean, ON
K2E 7T9
Attention: Mr. Alex Schopf
PO#: 56114
Invoice to: Paterson Group

Report Number: 1989429
Date Submitted: 2022-11-04
Date Reported: 2022-12-20
Project: PH4559
COC #: 902536

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1660784 / GW / / 2022-11-03 / GW1
Metals	Be	0.0005	mg/L		<0.0005
	Ca	1	mg/L		102
	Cd	0.0001	mg/L	MAC 0.005	<0.0001
	Co	0.0002	mg/L		0.0020
	Cr	0.001	mg/L	MAC 0.05	<0.001
	Cu	0.001	mg/L	AO 1	0.009
	Fe	0.03	mg/L	AO 0.3	0.03
	Hg	0.0001	mg/L	MAC 0.001	<0.0001
	K	1	mg/L		2
	Mg	1	mg/L		16
	Mn	0.01	mg/L	AO 0.05	0.15*
	Mo	0.005	mg/L		<0.005
	Na	1	mg/L	AO 200	274*
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L	MAC 0.010	0.001
	Sb	0.0005	mg/L	IMAC 0.006	<0.0005
	Se	0.001	mg/L	MAC 0.05	<0.001
	Sr	0.001	mg/L		0.604
	Tl	0.0001	mg/L		<0.0001
	U	0.001	mg/L	MAC 0.02	0.001
	V	0.001	mg/L		<0.001
	Zn	0.01	mg/L	AO 5	<0.01
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0	0
	Total Coliforms	0	ct/100mL	MAC 0	0
Nutrients	N-NH3	0.020	mg/L		0.023

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Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1660784 / GW / / 2022-11-03 / GW1
Nutrients	Total Kjeldahl Nitrogen	0.100	mg/L		0.407
PHC Surrogate	Alpha-androstrane	0	%		101
Subcontract	Tannin & Lignin	0.1	mg/L		0.9
VOCs Surrogates	1,2-dichloroethane-d4	0	%		83
	4-bromofluorobenzene	0	%		76
	Toluene-d8	0	%		106
Volatiles	1,1,1,2-tetrachloroethane	0.5	ug/L		<0.5
	1,1,1-trichloroethane	0.4	ug/L		<0.4
	1,1,2,2-tetrachloroethane	0.5	ug/L		<0.5
	1,1,2-trichloroethane	0.4	ug/L		<0.4
	1,1-dichloroethane	0.4	ug/L		<0.4
	1,1-dichloroethylene	0.5	ug/L	MAC 14	<0.5
	1,2-dichlorobenzene	0.4	ug/L	MAC 200	<0.4
	1,2-dichloroethane	0.5	ug/L	IMAC 5	<0.5
	1,2-dichloropropane	0.5	ug/L		<0.5
	1,3,5-trimethylbenzene	0.3	ug/L		<0.3
	1,3-dichlorobenzene	0.4	ug/L		<0.4
	1,3-Dichloropropylene (cis+trans)	0.5	ug/L		<0.5
	1,4-dichlorobenzene	0.4	ug/L	MAC 5	<0.4
	Acetone	30	ug/L		<30
	Benzene	0.5	ug/L	MAC 1	<0.5
	Bromodichloromethane	0.3	ug/L		<0.3
	Bromoform	0.4	ug/L		<0.4
	Bromomethane	0.5	ug/L		<0.5
	c-1,2-Dichloroethylene	0.4	ug/L		<0.4

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Report Number: 1989429
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Project: PH4559
COC #: 902536

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1660784 / GW / / 2022-11-03 / GW1
Volatiles	c-1,3-Dichloropropylene	0.5	ug/L		<0.5
	Carbon Tetrachloride	0.2	ug/L	MAC 2	<0.2
	Chloroethane	0.5	ug/L		<0.5
	Chloroform	0.5	ug/L		<0.5
	Dibromochloromethane	0.3	ug/L		<0.3
	Dichlorodifluoromethane	0.5	ug/L		<0.5
	Dichloromethane	4.0	ug/L	MAC 50	<4.0
	Ethylbenzene	0.5	ug/L	MAC 140	<0.5
	Ethylene Dibromide	0.2	ug/L		<0.2
	Hexane	5	ug/L		<5
	m/p-xylene	0.4	ug/L		<0.4
	Methyl Ethyl Ketone (MEK)	10	ug/L		<10
	Methyl Isobutyl Ketone (MIBK)	10	ug/L		<10
	Methyl Tert Butyl Ether (MTBE)	2	ug/L	AO 15	<2
	Monochlorobenzene	0.5	ug/L	MAC 80	<0.5
	o-xylene	0.4	ug/L		<0.4
	Styrene	0.5	ug/L		<0.5
	t-1,2-Dichloroethylene	0.4	ug/L		<0.4
	t-1,3-Dichloropropylene	0.5	ug/L		<0.5
	Tetrachloroethylene	0.3	ug/L	MAC 10	<0.3
	Toluene	0.4	ug/L	MAC 60	<0.4
	Trichloroethylene	0.3	ug/L	MAC 5	<0.3
	Trichlorofluoromethane	0.5	ug/L		<0.5
	Vinyl Chloride	0.2	ug/L	MAC 1	<0.2
	Xylene; total	0.5	ug/L	MAC 90	<0.5

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Report Number: 1989429
Date Submitted: 2022-11-04
Date Reported: 2022-12-20
Project: PH4559
COC #: 902536

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 432536 **Analysis/Extraction Date** 2022-11-05 **Analyst** DRA **Method** AMBCOLM1			
Escherichia Coli			
Total Coliforms			
Run No 432577 **Analysis/Extraction Date** 2022-11-04 **Analyst** ACG **Method** C SM2130B			
Turbidity	<0.1 NTU	101	70-130
Run No 432702 **Analysis/Extraction Date** 2022-11-07 **Analyst** SD **Method** EPA 200.8			
Silver	<0.0001 mg/L	102	80-120
Aluminum	<0.01 mg/L	101	80-120
Arsenic	<0.001 mg/L	90	80-120
Boron (total)	<0.01 mg/L	97	80-120
Barium	<0.01 mg/L	93	80-120
Beryllium	<0.0005 mg/L	99	80-120
Cadmium	<0.0001 mg/L	96	80-120
Cobalt	<0.0002 mg/L	102	80-120
Chromium Total	<0.001 mg/L	99	80-120

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Date Submitted: 2022-11-04
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COC #: 902536

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Copper	<0.001 mg/L	102	80-120
Iron	<0.03 mg/L	99	80-120
Manganese	<0.01 mg/L	105	80-120
Molybdenum	<0.005 mg/L	94	80-120
Nickel	<0.005 mg/L	101	80-120
Lead	<0.001 mg/L	102	80-120
Antimony	<0.0005 mg/L	85	80-120
Selenium	<0.001 mg/L	91	80-120
Strontium	<0.001 mg/L	92	80-120
Thallium	<0.0001 mg/L	97	80-120
Uranium	<0.001 mg/L	96	80-120
Vanadium	<0.001 mg/L	98	80-120
Zinc	<0.01 mg/L	99	80-120
Run No 432727 **Analysis/Extraction Date** 2022-11-08 **Analyst** ACG **Method** C SM2120C			
Colour (Apparent)	<2 TCU	100	90-110
Run No 432747 **Analysis/Extraction Date** 2022-11-08 **Analyst** ACG **Method** C SM4500-S2-D			

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
S2-	<0.01 mg/L	101	80-120
Run No 432787 **Analysis/Extraction Date** 2022-11-08 **Analyst** ACG **Method** SM2320,2510,4500H/F			
Alkalinity (CaCO3)	<5 mg/L	101	90-110
Conductivity	<5 uS/cm	101	90-110
F	<0.10 mg/L	103	90-110
pH		99	90-110
Run No 432789 **Analysis/Extraction Date** 2022-11-09 **Analyst** AaN **Method** SM 4110			
N-NO2	<0.10 mg/L	104	90-110
N-NO3	<0.10 mg/L	102	90-110
SO4	<1 mg/L	100	90-110
Run No 432807 **Analysis/Extraction Date** 2022-11-09 **Analyst** PJ **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L		60-140
Run No 432821 **Analysis/Extraction Date** 2022-11-09 **Analyst** Z S **Method** M SM3120B-3500C			
Calcium	<1 mg/L	95	90-110
Potassium	<1 mg/L	95	87-113

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Report Number: 1989429
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COC #: 902536

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Magnesium	<1 mg/L	94	76-124
Sodium	<1 mg/L	93	82-118
Run No 432822 **Analysis/Extraction Date** 2022-11-09 **Analyst** SKH **Method** EPA 350.1			
N-NH3	<0.020 mg/L	89	80-120
Run No 432843 **Analysis/Extraction Date** 2022-11-09 **Analyst** SKH **Method** EPA 351.2			
Total Kjeldahl Nitrogen	<0.100 mg/L	102	70-130
Run No 432885 **Analysis/Extraction Date** 2022-11-10 **Analyst** AaN **Method** SM 4110			
Chloride	<5 mg/L		90-110
Run No 432886 **Analysis/Extraction Date** 2022-11-09 **Analyst** SD **Method** EPA 200.8			
Mercury	<0.0001 mg/L	111	80-120
Run No 432898 **Analysis/Extraction Date** 2022-11-10 **Analyst** ACG **Method** C SM5310C			
DOC	<0.5 mg/L	108	84-116
Run No 432901 **Analysis/Extraction Date** 2022-11-10 **Analyst** SKH **Method** C SM2340B			

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Hardness as CaCO3			
Ion Balance			
TDS (COND - CALC)			
Run No 432913 **Analysis/Extraction Date** 2022-11-10 **Analyst** SS **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	84	60-140
Petroleum Hydrocarbons F3	<50 ug/L	84	60-140
Petroleum Hydrocarbons F4	<50 ug/L	84	60-140
Run No 432919 **Analysis/Extraction Date** 2022-11-10 **Analyst** IP **Method** SM5530D/EPA420.2			
Phenols	<0.001 mg/L	111	50-120
Run No 433456 **Analysis/Extraction Date** 2022-11-17 **Analyst** AET **Method** SUBCONTRACT-A			
Tannin & Lignin	<0.10 mg/L	96	
Run No 435457 **Analysis/Extraction Date** 2022-11-08 **Analyst** PJ **Method** EPA 8260			
Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	98	60-130
Trichloroethane, 1,1,1-	<0.4 ug/L	91	60-130
Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	99	60-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Trichloroethane, 1,1,2-	<0.4 ug/L	97	60-130
Dichloroethane, 1,1-	<0.4 ug/L	92	60-130
Dichloroethylene, 1,1-	<0.5 ug/L	81	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	94	60-130
Dichloroethane, 1,2-	<0.5 ug/L	92	60-130
Dichloropropane, 1,2-	<0.5 ug/L	92	60-130
1,3,5-trimethylbenzene	<0.3 ug/L	99	60-130
Dichlorobenzene, 1,3-	<0.4 ug/L	90	60-130
Dichloropropene,1,3-	<0.5 ug/L		
Dichlorobenzene, 1,4-	<0.4 ug/L	90	60-130
Acetone	<30 ug/L		60-130
Benzene	<0.5 ug/L	94	60-130
Bromodichloromethane	<0.3 ug/L	92	60-130
Bromoform	<0.4 ug/L	94	60-130
Bromomethane	<0.5 ug/L	81	60-130
Dichloroethylene, 1,2-cis-	<0.4 ug/L	90	60-130
Dichloropropene,1,3-cis-	<0.5 ug/L	82	60-130
Carbon Tetrachloride	<0.2 ug/L	93	60-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chloroethane	<0.5 ug/L	83	60-130
Chloroform	<0.5 ug/L	93	60-130
Dibromochloromethane	<0.3 ug/L	93	60-130
Dichlorodifluoromethane	<0.5 ug/L	72	60-130
Methylene Chloride	<4.0 ug/L	97	60-130
Ethylbenzene	<0.5 ug/L	90	60-130
Ethylene dibromide	<0.2 ug/L	99	60-130
Hexane (n)	<5 ug/L	100	60-130
m/p-xylene	<0.4 ug/L	97	60-130
Methyl Ethyl Ketone	<10 ug/L	100	60-130
Methyl Isobutyl Ketone	<10 ug/L		60-130
Methyl tert-Butyl Ether (MTBE)	<2 ug/L	90	60-130
Chlorobenzene	<0.5 ug/L	93	60-130
o-xylene	<0.4 ug/L	92	60-130
Styrene	<0.5 ug/L	89	60-130
Dichloroethylene, 1,2-trans-	<0.4 ug/L	93	60-130
Dichloropropene,1,3-trans-	<0.5 ug/L	86	60-130
Tetrachloroethylene	<0.3 ug/L	90	60-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Toluene	<0.4 ug/L	88	60-130
Trichloroethylene	<0.3 ug/L	89	60-130
Trichlorofluoromethane	<0.5 ug/L	80	60-130
Vinyl Chloride	<0.2 ug/L	79	60-130
Run No 435458 **Analysis/Extraction Date** 2022-12-20 **Analyst** PJ **Method** EPA 8260			
Xylene Mixture			

Guideline = ODWSOG *** = Guideline Exceedence**

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Sample Comment Summary

Sample ID: 1660784 GW1 F2-F4 MRLs are elevated due to insufficient sample volume.

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patersongroup

158 Cardevco Road, Carp, ON

PH4559

TW1	inputs		
pH	7.44	A	0.21
TDS	1250	B	2.35
Calcium	102	C	1.61
Alkalinity	315	D	2.50
Temp.	11.8		
		pHs =	7.749215673

Langelier Saturation Index (LSI) Calculation

(Langelier, 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 =	-0.3

LSI	Effect
0.5 to 2	Water is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive)
0 to 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).

Manganese in Drinking Water Fact Sheet

WHAT IS MANGANESE?

Manganese is a naturally occurring element that is an essential nutrient for humans and animals. It is found in many foods, as well as in air, water, soil, and rocks.[1] Manganese makes up 0.1% of the Earth's crust, and can be found as a component of other minerals like sulfides, oxides, carbonates, and silicates.[2] Manganese is used in the manufacture of various products including iron and steel alloys, batteries, glass, fireworks, fertilizers, cosmetics, paints, and cleaning and disinfection products.[1,2] Manganese can also be purchased as a nutritional supplement.[2]

HOW DOES MANGANESE GET INTO DRINKING WATER?

Manganese is naturally occurring in many surface and ground waters. Manganese can also be dissolved from soils, sand and rocks to enter surface and ground waters.[1] Human activities like mining, industrial discharges, or landfills may also contribute to manganese in surface and ground waters.[1,2] In general, manganese can be found at higher concentrations in groundwater compared to surface water.[2] Some lakes and reservoirs can also have higher levels of manganese due to natural water chemistry.[2]

Permanganate, a compound that contains manganese, may also be added to water during the treatment of drinking water to remove other chemicals (e.g., for the removal of iron).[2,3]

HOW DOES MANGANESE INTAKE AFFECT MY HEALTH?

Too much or too little manganese in your body can lead to health problems.

Manganese deficiency: Manganese deficiency is rare and symptoms are not well defined. Health effects observed in individuals with diets very low in manganese include skin rashes, slow nail growth, reduced bone density, loss of pigmentation in hair, and low cholesterol levels.[2]

Manganese excess: There are few reports of adverse health effects from people who ingest too much manganese from food and water.[1] Recent evidence reviewed by Health Canada indicates that high levels of manganese in drinking water may impact memory and learning, behaviour, and fine motor control in infants and young children.[2,4] Formula-fed infants may be more susceptible to health risks if water with high concentrations of manganese is used to prepare formula. This is because infant brains are rapidly developing, they drink more water in proportion to their body weight, and they absorb more manganese and are less able to remove

it from their bodies compared to other age groups.[3] For adults and older children, short term exposure to manganese in drinking water at levels slightly above the guideline is unlikely to cause negative health effects.[3]

Health Canada notes that exposure to manganese while showering (either through breathing in water vapour or absorption through skin) is likely to be negligible.[2]

WHAT ARE THE LEVELS OF MANGANESE FOUND IN CANADIANS?

For most Canadians, diet is the main source of manganese. The Canadian Health Measures Survey (CHMS) is a national survey that collects information about the general health of Canadians and includes measurements of chemicals in blood and urine samples.[5] The objective of the chemical measurements in the CHMS survey is to establish baseline levels in the Canadian population. Given that manganese is an essential trace element, its presence in the blood and urine of Canadians is expected. Manganese in blood and urine can be interpreted as an indicator of exposure, but does not necessarily mean that health effects will occur.[5] Data collected from 2007 to 2011 for the CHMS found that the average levels of manganese measured in the blood of people in the Canadian population (aged 3 to 79) ranged from 8.8 – 11 µg/L.[6] More information on the CHMS and the levels of manganese in Canadians can be obtained by visiting the Canadian Biomonitoring Dashboard.[6]

ARE THERE STANDARDS FOR MANGANESE IN DRINKING WATER?

The Ontario Drinking Water Standard (ODWS) published in 2006 sets an aesthetic objective for manganese in drinking water at 0.05 mg/L.[7] The aesthetic objective is not intended to prevent health effects (e.g., not a health-based standard), but instead is intended to prevent the discolouration and staining of fixtures, and the undesirable taste caused by higher levels of manganese in water.

The Canadian Drinking Water Guideline for manganese developed by Health Canada stipulates a maximum acceptable concentration (MAC) in drinking water of 0.12 mg/L and an aesthetic objective of 0.02 mg/L.[2] The MAC is a health-based value intended to be protective of neurological effects in infants, the most sensitive population, and therefore it is also protective for chronic exposure in children and adults.[2]

ARE THERE OTHER STANDARDS OR GUIDELINE VALUES FOR MANGANESE?

The main source of exposure to manganese is via food, with grains, nuts and vegetables contributing the most to a person's daily intake of manganese. The average dietary intakes of manganese across all age groups according to the Canadian Total Diet Study (TDS) were estimated to range between 44.0 to 61.3 µg/kg of bodyweight per day (based on data gathered from different Canadian cities for the TDS).[2] Health Canada has also established Adequate Intake Levels for manganese ranging with age or lifestage from 0.003 to 2.6 mg/day and Tolerable Upper Intake Levels ranging from 2 to 11 mg/day.[8]

Infant formula sold in Canada is regulated to contain a minimum of 5 µg of manganese per 100 available kilocalories (equivalent to 3.33 µg per 100 mL of ready-to-feed formula); a maximum amount of manganese has not been set for infant formula.[9]

HOW CAN I TELL IF MY DRINKING WATER HAS HIGH MANGANESE LEVELS?

Water testing is the only way to know if manganese is present. Although water with elevated levels of manganese may impart a bitter metallic taste, tint water purplish brown or black (water discolouration may occur at concentrations as low as 0.005 to 0.02 mg/L), and stain laundry and plumbing fixtures;[2,10,11] but these issues can also be caused by other chemicals.

WHAT SHOULD I DO IF A HIGH LEVEL OF MANGANESE IS FOUND IN MY WELL WATER?

For households who do not obtain their drinking water from a municipal source, a residential drinking water treatment device may be an option to reduce manganese concentrations in drinking water. Options can be explored with professionals specialized in water treatment, but examples of treatment processes effective at removing manganese include reverse osmosis, ion exchange (including water softeners and other cation exchange systems) and oxidizing filters.[2] As with any water treatment system, it is important to follow the manufacturer's recommendations for operation and maintenance (e.g., replacement of filter media).

REFERENCES

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2. Health Canada. Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Manganese [Internet]. 2019. Available from: https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-manganese.html

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11. World Health Organization (WHO). Manganese in drinking-water: Background document for development of WHO Guidelines for drinking-water quality [Internet]. 2021. Available from: https://www.who.int/publications/i/item/WHO-HEP-ECH-WSH-2021.5

Please note: This fact sheet was created by Ottawa Public Health in consultation with Public Health Ontario.

Certificate of Completion

Ottawa Septic System Office / Bureau des systèmes septiques d'Ottawa

For the use and operation of an on-site sewage disposal system in accordance with the Sewage System Permit.
This certifies that the on-site sewage system conforms to the *Ontario Building Code* and *Ontario Regulation 332/12* as amended by Ontario Regulation 151/13

Sewage System Permit Number	18-222	Issued to	GREG WHALEN

Legal Description	Lot	Concession	Sub. Lot	Registered/Reference Plan

Municipal Address: 158 Cardevco

In the former Township/City of West Carleton - Huntley — Within the City of Ottawa

Details Pertaining to System: Replacement

a) Type of System: Class 4 sewage system BMEC Area Bed

b) (•) New ( ) Existing Septic tank with a working capacity of 4500 litres constructed of Concrete

c) Trench bed: _____ metres of _____ mm laid in _____ runs of _____ m and fed by _____ Loading Area _____ m²

d) Filter bed: Stone _____ m³ Loading Area _____ m² Ex. Base _____ Pipe _____ Fed by _____

e) Shallow Buried Trench: _____ metres of _____ millimetre diameter distribution pipe laid in _____ runs at _____ metres

f) Area Bed: Stone _____ m³ Sand 122 m³ Pipe 2 runs @ 8 Eljen Fed by Gravity

g) Effluent Filter: Manufacturer Tuf-Tite Model EF-6

h) Sewage Treatment Unit(s):* Manufacturer Eljen Model GSF A-42 (x16)

i) Maintenance Contract* Rideau Valley Septic Services Expiry Date* JUNE 22, 2019

j) Other: _____

Service provider must have Manufacturer Certification

Certificate Issued By:

Director of Regulations
Ottawa Septic System Office — Date Issued JULY 12, 2018

July 2014
2K12-1547-OSSO

Certificate of Completion

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Director of Regulations
Ottawa Septic System Office — Date Issued JULY 12, 2018

July 2014
2K12-1547-OSSO

Batch # 11471
Entry #: 1

Rideau Valley C. A.
P.O. Box 599
Manotick, Ontario K4M 1A5
Canada
Phone: (613) 692-3571
Fax: (613) 692-0831

DOCUMENT NO.: PY000030647

DATE: 5/23/2018

AMOUNT RECEIVED 936.00 CAD

FROM Doug Norton

SIGNATURE

PAID BY: DEBITC

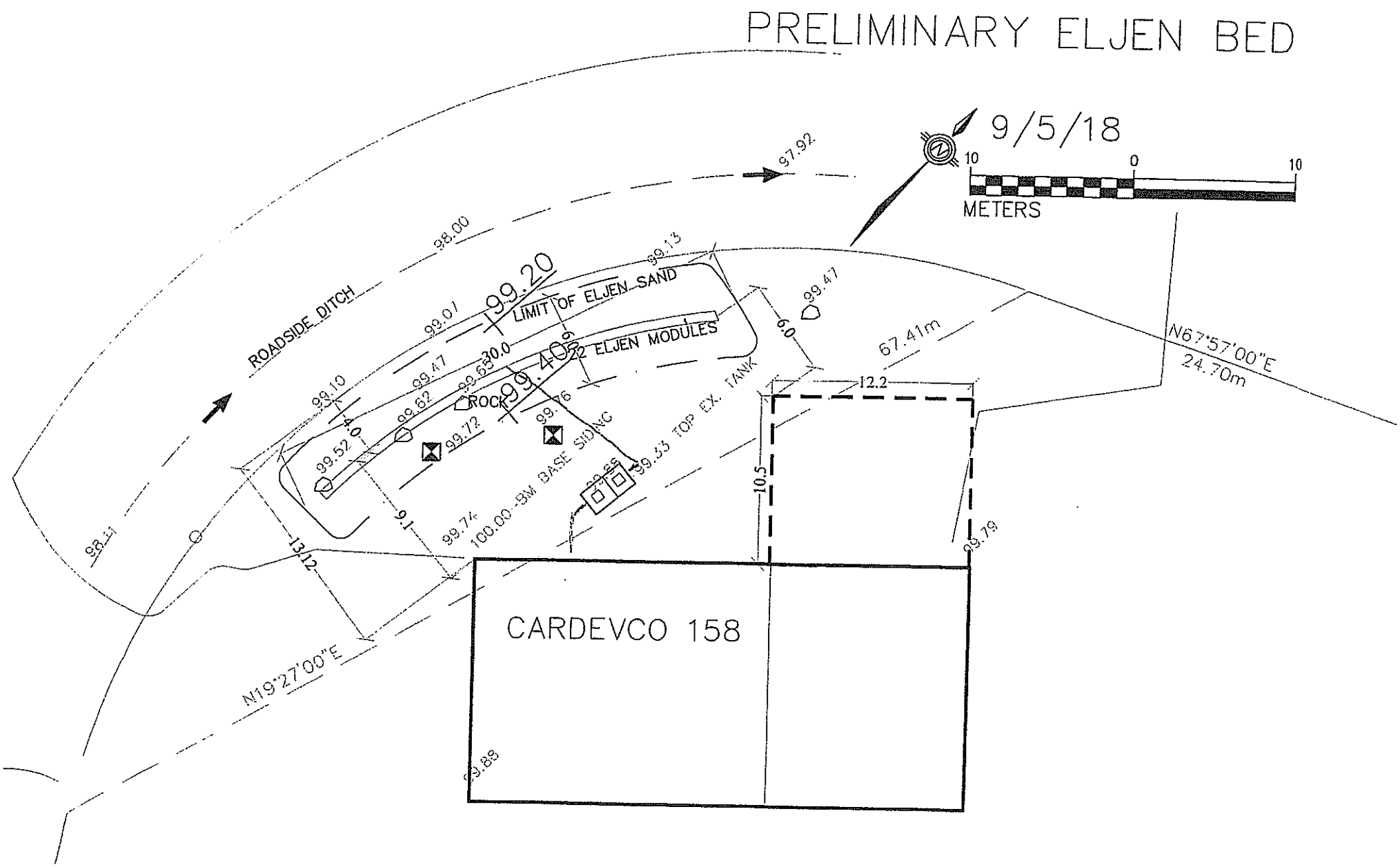
CHECK/RECEIPT NO.: 000011471-00001

DATE RECEIVED: 5/23/2018

	DESCRIPTION	AMOUNT
4300-20-20600	158 Cardevco (HUN) Septic 18-222 - Part 8	936.00
	SUB-TOTAL:	936.00
	TOTAL:	936.00

#18 350

PRELIMINARY ELJEN BED



Certificate of Completion

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j) Other: _____

Service provider must have Manufacturer Certification

Certificate Issued By:

Director of Regulations
Ottawa Septic System Office

Date Issued JULY 12, 2018

July 2014
2K12-1547-0550

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa
3889 Rideau Valley Drive Box 599 Manotick, ON K4M 1A5
Phone: 613-692-3571 1-800-267-3504 Fax: 613-692-1507 Email: septic@rvca.ca

Scan - Email -Phone
Folder – CanadaPost -PickUp Box

SEPTIC APPLICATION # 18 - 2 2 1
REQUIRED FOR ALL INQUIRIES

Address of property: 158 Cascade Township: OSG HUN-GLO-FIT-CUM-NEP-GOU-RID-KAN

Contact for pickup: Thao Eye Phone#/Email:

INFORMATION FOR OWNER/APPLICANT

Attached is your Sewage System Permit. **A minimum of two inspections are required before your proposed sewage system can be approved for use (additional inspections may be required for clay soils/bedrock and/or re-inspections).** Inspections must be requested in writing. Please see attached:

- Inspection fax request form (all inspections MUST be requested in writing)
- As-built components and drawing form
- Copy of the approved application and schedule pages
- Approved Part 8 permit (applicant copy – YELLOW)(CITY copy#2 – PINK ** Agent Deliver Direct To City**)

Special Note

- **A permit is valid for 12 months from the original date of issuance noted in "*permit date*".** If lapsed, it may be renewed only once for a period of 12 months *from the date of expiry*.

- No person shall make a material change or cause a material change to be made to a plan, specification, document or other information on the basis of which a permit was issued without notifying, filing details with and obtaining the authorization of the Chief Building Official. *(Building Code Act 1992, c.23, s.8(12))*

Sewage System Permit Construction Requirements

1. Clay Soils/Bedrock only (if required per issued Approval)
In clay soils/bedrock, a site preparation inspection is required. The total contact area must be properly prepared. Scarification must be done under dry conditions prior to importing leaching bed fill.

2. Installation Inspection – 2nd inspection
When the sewage system is substantially completed (i.e., before the final fill is placed over the septic tank and leaching bed system) an installation inspection is required. Prior to any inspection request, the following must be submitted:

a) "as-built components" and "as-built drawings" — see attached form
b) "engineer letter" — if the system is engineered
c) grain size analysis and weight bills for all Filter Media types of septic systems
d) Weigh bills for washed septic stone, where applicable
e) Maintenance/service contract for treatment unit installed

3. Final Grading Inspection – 3rd inspection
When construction of the sewage system is complete, a final grading inspection is required. Before a Certificate of Completion can be issued, the following must be complete:

a) The leaching bed and septic tank must be covered with sand fill and topsoil and graded accordingly
b) All conditions of the Sewage System Permit & comments on the installation inspection report must be met
c) The depth of cover & material type must be identified by inspection pipes or holes placed over trenches at 4 corners of bed
d) The 4 corners of the bed must be staked

Ottawa Septic System Office / Bureau des systèmes septiques d'Ottawa

Main Phone: 613-692-3571 x 1129

Inspection Request Form

Complete and fax to: 613-692-1507 or e-mail: septic@rvca.ca

Section A. Property and General Information			
Date Submitted		Septic File Number:	
Civic Address			
Former Township	☐ Osgoode ☐ Cumberland ☐ Goulbourn ☐ Torbolton ☐ Nepean ☐ Huntley ☐ Rideau ☐ Gloucester ☐ Fitzroy ☐ Kanata ☐ Ottawa		
Property Owner			

Section B. Requestor Information			
Name of Requestor		Phone Number:	
E-mail		Fax Number:	
I am the (check one)	☐ Installer ☐ Engineer ☐ Property Owner		

Section C. I am Requesting the following:		
☐ 1st – Subgrade (If required - check one):	☐ 2nd – Installation Inspection (Check all that apply)	☐ 3rd – Final Grade Inspection
☐ Scarification	Refer to attached:	Note: Topsoil must be applied unless winter conditions exist at Director's discretion All deficiencies must be addressed from installation report
☐ Clay Seal	☐ As-Built Components Page	
☐ Subgrade	☐ As-Built Drawing	
	☐ Engineers Letter	
	☐ Filter Media Bills	
	☐ Grain Size Analysis	
	☐ Maintenance Agreement	
	☐ ESA Permit Number:	
Notes/Comments		

Section D. Re-inspection			
☐ Re-inspection - 1st call	☐ Re-inspection Request – 2nd call		
	Note: Re-inspection fee applies on requests for same deficiency – Please provide payment information below		
	Card Type:	☐ Mastercard	☐ Visa
	Card Number:		Expiry:
	Cardholder Name:		
Notes/Comments			

Please Note:

- 3-5 business day turn around for inspections
- OSSO file will be given to inspector upon receipt of this request form
- PRIORITY will be given to requests that have septic file/permit numbers

Submit	Reset	Print

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

SEPTIC PERMIT NO.

AS-BUILT COMPONENTS

(required prior to installation inspection)

Elevations of installed system must be supplied with this report (in reference to the TBM).
Exact size and location of all structures, well(s) and system(s) and its components must be shown (including neighbouring lots).

Septic/Holding Tank: _____ L
Manufacturer: _____
☐ concrete ☐ plastic ☐ other
Filter: ☐ no ☐ yes _____ make
Treatment: Make _____
Unit: Model _____
Diameter of pipes _____ mm/inches
Make of pipes: _____
Ends: ☐ capped ☐ interconnected
Number of runs: _____ m
Length of runs: _____ m
Stone area _____ m²

Filter media:
Amount Purchased: _____ kg
Date Purchased: _____
Supplier: _____
Grain/size analysis by: _____
Analysis dated: _____

Stone:
Amount Purchased: _____ kg
Date Purchased: _____
Supplier: _____

Name of owner: _____
Installer: _____
Installer Signature: _____
License Number: _____
Date of Installation: _____

Pump Systems:
ESA Permit #: _____
Volume discharge rates: _____ /15min
Alarm location: _____
Dimension of Pump Chamber: _____
Height of Float Switch: _____

Grease Interceptor:
☐ no ☐ yes Size: _____
Location: _____

*** Grain Size Analysis and weight bills must be supplied with this report.**

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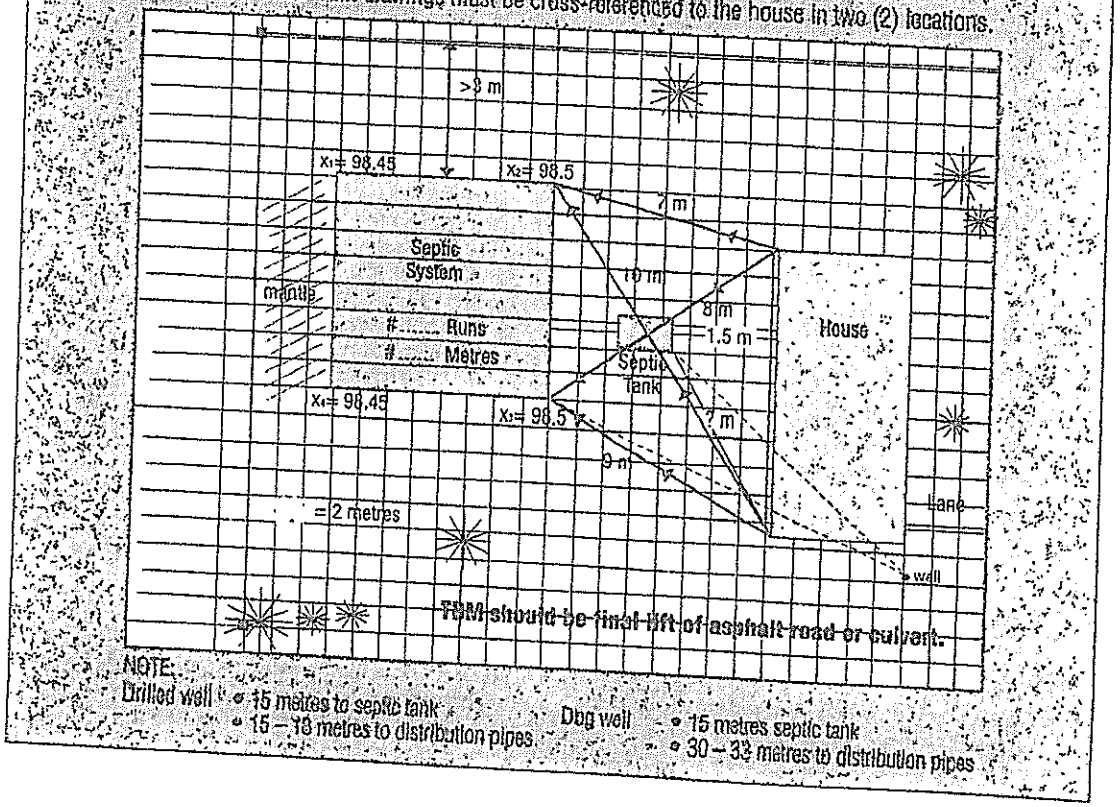
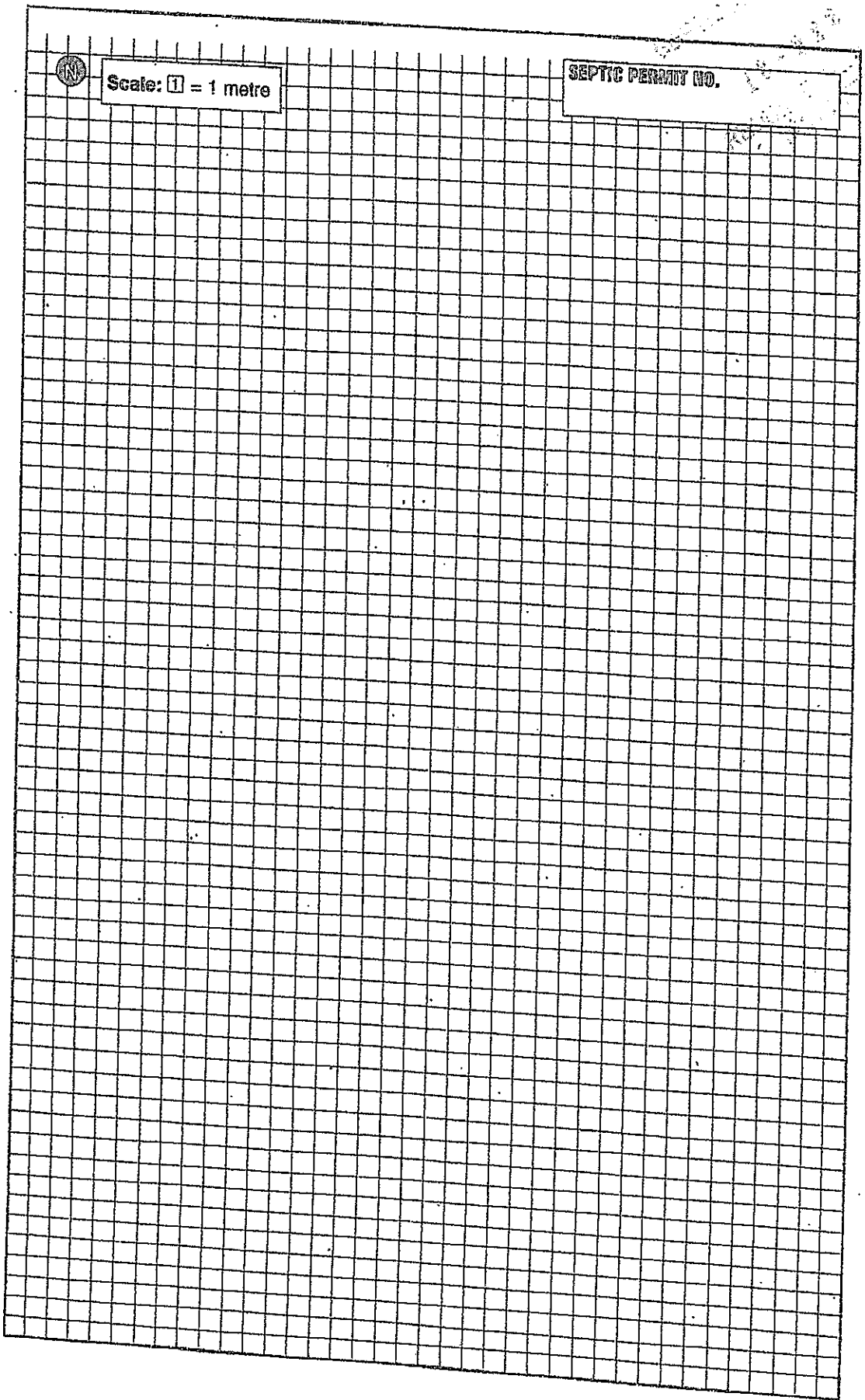
NOTE: All as-built drawings must be cross-referenced to the house in two (2) locations.



NOTE:
Drilled well • 15 metres to septic tank
• 15 – 18 metres to distribution pipes
Dug well • 15 metres septic tank
• 30 – 33 metres to distribution pipes

AS-BUILT DRAWING



Batch # 11471
Entry #: 1

Rideau Valley C. A.
P.O. Box 599
Manotick, Ontario K4M 1A5
Canada
Phone: (613) 692-3571
Fax: (613) 692-0831

DOCUMENT NO.: PY000030647

DATE: 5/23/2018

AMOUNT RECEIVED 936.00 CAD

FROM Doug Norton

SIGNATURE

PAID BY: DEBITC

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4300-20-20600	158 Cardevco (HUN) Septic 18-222 - Part 8	936.00
	SUB-TOTAL:	936.00
	TOTAL:	936.00

If you are using a web browser other than Microsoft Internet Explorer, please use the Export button to save this report as Word or pdf. You can then print the saved document.

1 of 1 175%

Ottawa

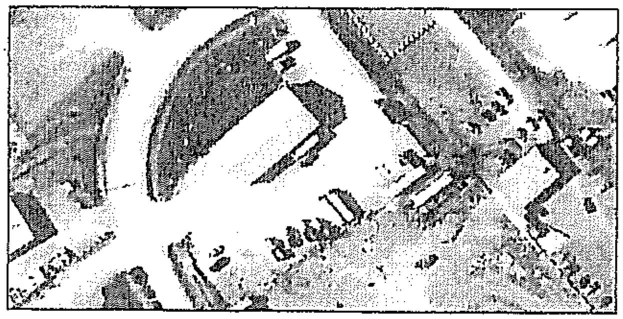
PROPERTY INFORMATION
INFORMATION SUR LA PROPRIÉTÉ

Run On 5/17/2018 5:28:10 AM

168 CARDEVCO RD PIN: 045350142

LEGAL DESCRIPTION / DESCRIPTION OFFICIELLE

PIN	LEGAL DESCRIPTION / DESCRIPTION OFFICIELLE
045360142	PLAN 4M-356 PT BLK 10 & 11,RP 4R7593 PARTS 1 & 2 RP 4R7616 PARTS 19 TO 22



Change = TD West

R.V.C.A. RECEIVED
MAY 17 2018
REFER TO:

PROPERTY DIMENSIONS / DIMENSIONS DE LA PROPRIÉTÉ

	045360142
FRONTAGE - ft / FAÇADE - pi	0.00
DEPTH - ft / PRONFONDEUR - pi	0.00
PROPERTY AREA - acre / SUPERFICIE - acre	1.2100

SERVICES / SERVICES

PIN	WASTE COLLECTION PICK-UP DAY AND ZONE / JOUR ET ZONE DE LA COLLECTE DES ORDURES
045360142	Z1 WM TUE A

WARD INFORMATION / INFORMATIONS WARD

PIN	WARD NUMBER / NUMÉRO DU QUARTIER	WARD NAME / NOM DU QUARTIER	COUNCILLOR NAME / NOM DU CONSEILLER - (ÈRE)
045360142	5	WEST CARLETON-MARCH	Eli El-Chantiry

Page 1 of 1

(2)

Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority

R.V.C.A. RECEIVED
MAY 17 2018

Application number:

Permit number (if different):

Date received:

Roll number:

REFER TO:
OTTAWA SEPTIC SYSTEM OFFICE

Application submitted to: _____
(Name of municipality, upper-tier municipality, board of health or conservation authority)

A. Project information

Building number, street name: 158 Cardevco Rd

Unit number:

Lot/con.:

Municipality: Carp / Huntley

Postal code: K0A 1L0

Plan number/other description: 4M 356

Project value est. $:

Area of work (m²):

B. Purpose of application

New construction | Addition to an existing building | Alteration/repair | Demolition | Conditional Permit

Proposed use of building: Com / Truck Shop

Current use of building: Same

Description of proposed work: CLASS IV PRIVATE SEWAGE INSTALLATION
Replace Septic System

Site location - NORTH ON CARP RD FROM RICHARDSON SIDE RD 500m - LEFT ON CARDEVCO RD. - 250m - CIVIC # 158 ON RIGHT.

C. Applicant Applicant is: Owner or Authorized agent of owner

Last name | First name | Corporation or partnership

Street address | Unit number | Lot/con.

Municipality | Postal code | Province | E-mail

Telephone number ( ) | Fax ( ) | Cell number ( )

D. Owner (if different from applicant)

Last name: Whalen | First name: Greg | Corporation or partnership: TDL West

Street address: 158 Cardevco Rd | Unit number | Lot/con.

Municipality | Postal code: K0A 1L0 | Province | E-mail

Telephone number: (613) 831-7677 | Fax ( ) | Cell number: greg.whelan@tdlwest.com

**Commercial **

E. Builder (optional)

Last name	First name	Corporation or partnership (If applicable)	
Street address	R.V.C.A. RECEIVED	Unit number	Lot/con.
Municipality	MAY 17 2018 Postal code	Province	E-mail
Telephone number ( )	REFER TO: Fax ( )	Cell number ( )	

F. Tarion Warranty Corporation (Ontario New Home Warranty Program)

i. Is proposed construction for a new home as defined in the *Ontario New Home Warranties Plan Act*? If no, go to section G.	Yes	No ✓
ii. Is registration required under the *Ontario New Home Warranties Plan Act*?	Yes	No ✓

iii. If yes to (ii) provide registration number(s): _____

G. Required Schedules

i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.

ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.

H. Completeness and compliance with applicable law

i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the Building Code (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted).	Yes ✓	No
Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the *Building Code Act, 1992*, to be paid when the application is made.	Yes ✓	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992*.	Yes ✓	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992* which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	Yes ✓	No
iv) The proposed building, construction or demolition will not contravene any applicable law.	Yes ✓	No

I. Declaration of applicant

I Greg Whelan (print name) declare that:

1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date May 14 2018 Signature of applicant

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor, Toronto, M5G 2E5 (416) 585-6666.

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MAY 17 2018
REFER TO ORIGINAL

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project information

Building number, street name	Unit no.	Lot/con.
150 CARDELCO RD		

Municipality	Postal code	Plan number/ other description
OTTAWA		PM 356 BLK 10-11

B. Individual who reviews and takes responsibility for design activities

Name	Firm	
JONATHAN MAYBURY	THIRD EYE TECH.	
Street address	**Unit no.**	**Lot/con.**
5430 RIVERSIDE CR.		
Municipality	**Postal code / Province**	**E-mail**
MANOTICK	K4M1G9 ON	j.bmbuilt@gmail.com
Telephone number	**Fax number**	**Cell number**
(613) 229-9692	( )	( )

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

House	HVAC – House	Building Structural
Small Buildings	Building Services	Plumbing – House
Large Buildings	Detection, Lighting and Power	Plumbing – All Buildings
Complex Buildings	Fire Protection	On-site Sewage Systems

Description of designer's work

CLASS IV PRIVATE SEWAGE DESIGN.

D. Declaration of Designer

I JONATHAN MAYBURY. declare that (choose one as appropriate):

(print name)

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 12924

Firm BCIN: 26787

I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

Basis for exemption from registration: _____

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

16-5-18
Date

Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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Schedule 2: Sewage System Installer Information

A. Project Information

Building number, street name		Unit number	Lot/con.
1525 CARDELCO RD.			
Municipality	Postal code	Plan number/ other description	
OTTAWA-IN-CARLETON		4M 336 BLK 10/11.	

B. Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

Yes (Continue to Section C) — No (Continue to Section E) — Installer unknown at time of application (Continue to Section E)

C. Registered installer information (where answer to B is "Yes")

Name		BCIN	
ALL IN ONE SEPTIC + EXC.		36933	
Street address		Unit number	Lot/con.
Municipality	Postal code / Province	E-mail	
Telephone number ( )	Fax ( )	Cell number ( )	

D. Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)
GARNET NORTON	15470.
DOUG NORTON	10586.

E. Declaration of Applicant:

I Co. WHITEY LAW (print name) declare that:

I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date May 14 2018 Signature of applicant

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

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Permit No _____
Revision No _____
Date _____

Schedule 4
Proposed Services
Complete Sections 1 thru 7

1. **Engineered**
   - ☐ Yes
   - ☒ No

2. **Water supply**
   - ☐ Proposed
   - ☒ Existing

3. **Type of work proposed**
   - ☐ New Installation
   - ☒ Replacement
   - ☐ Alteration

4. **Type of Well**
   - ☐ Dug/bored/Sandpoint well
   - ☒ Drilled well
   - ☐ Municipal
   - ☐ Other

5. **Residential** Sewage Design Flow Info.
   - **Bedrooms** _____
   - **House (floor area)** _____ m²
   - **People** _____
   - **Total Fixture Units** _____ (Schedule 8)
   - **Residential Flow** _____ L/day

6. Sewage Design Flow **Other Occupancies**
   Actual Design Flow 1650 L/day DESIGNED FOR Q = 1500 L
   Detailed sewage flow calculations:
   14 Employees @ 75 L each
   ECOFLO
   - ☒ Class 4 – BMEC Area Bed (Schedule 11)
     - ☐ Fully raised
     - ☐ Partially raised
     - ☒ In-ground
   - ☐ Class 4 – "Type A" Dispersal (Schedule 13)
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – "Type B" Dispersal (Schedule 14)
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 5 – Holding Tank (9000L min)
   - ☐ Tank/TreatmentUnit/PumpChamber ONLY
   - ☐ Effluent Filter/Risers ONLY

7. **Type of System** ECOFLO
   - ☒ Treatment Unit GSF-A-42
   - ☐ Class 2 – Leaching Pit
   - ☐ Class 3 – Cesspool
   - ☐ Class 4 – Shallow Buried Trench

     _____
     - ☐ Class 4 – Trench (Schedule 9)
       - ☐ Fully raised
       - ☐ Partially raised
       - ☐ In-ground
     - ☐ Class 4 – Filter Media (Schedule 10)
       - ☐ Fully raised
       - ☐ Partially raised
       - ☐ In-ground

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Permit No _____
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Schedule 5
Sewage System Details

Type of System CLASS 4 PRIVATE SEWAGE SYSTEM. (Schedule 4)

Septic/Holding Tank Size: 4500 Litres min. Make: _____

Septic Tank Effluent Filter Make: YES Model: _____

Treatment Unit – Make & Model ELJEN GSF-A-42.

Number of Units: 16 Other: _____

Refer to Typical Drawing # AR 1580. Pump(s) required N/A

Mantle Information: Pump Rate _____ L/15min

Native or imported =15m in N/A direction(s) **Note:** Alarm required for all pumping systems

Slope subgrade N/A % slope

_____ direction(s)

Site to be Scarified (If clay) (YES) NO

Clay Seal Required (If bedrock) YES (NO)

☐ **Trench**

Distribution Pipe Length _____ m

Loading Area _____ m^2

Type of Chamber _____

Length of Chamber _____ m

☐ **Shallow Buried Trench**

Pipe Length _____ m

☒ ELJEN **BMEC ~~Area~~ Bed**

☐ **Type A**

☐ **Type B**

Stone _____ m^2

Sand 122. m^2 ← ELJEN

Pipe _____ m

Linear Loading _____ L/m^2

☐ **Filter Media Bed**

Stone _____ m^2

Extended Base _____ m^2

Pipe _____ m

Weight of Filter Media _____ Kg

Loading Area _____ m^2

☐ **Tank/Treatment Unit/Pump Chamber Replacement** ONLY

☐ **Effluent Filter & Riser** ONLY

Construction Notes:

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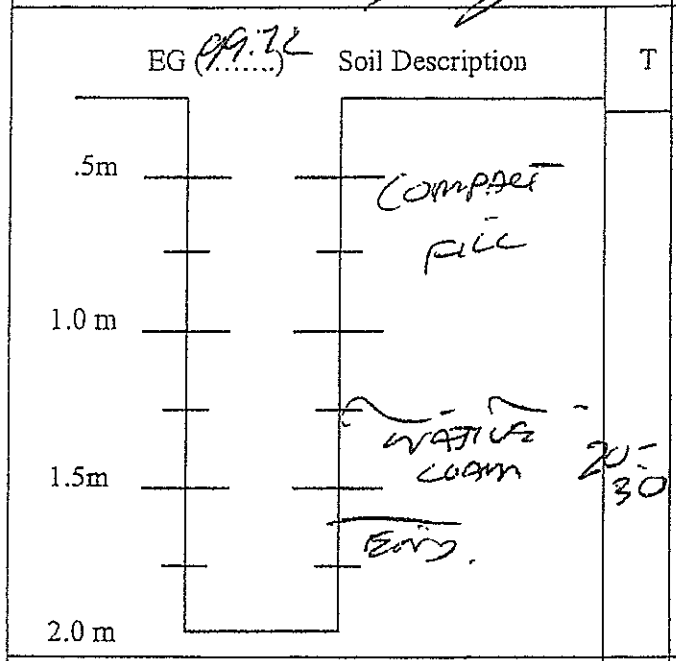
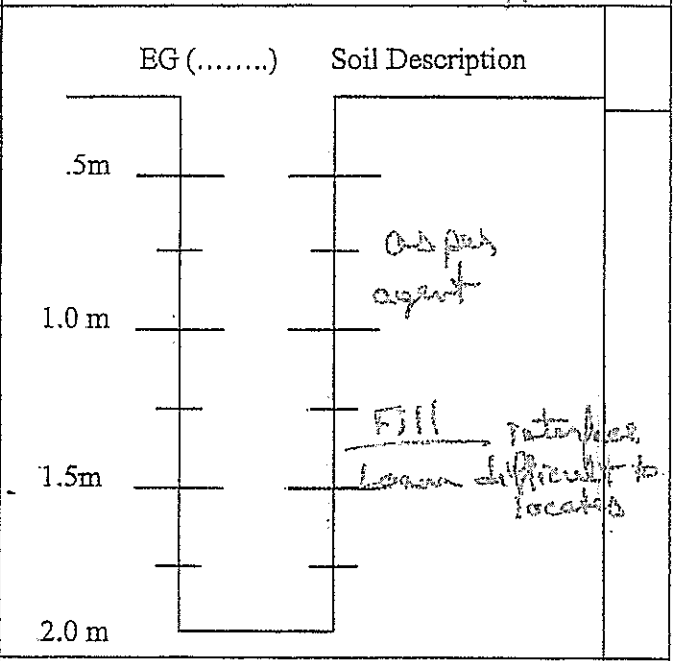
Permit No _____
Revision No _____
Date _____

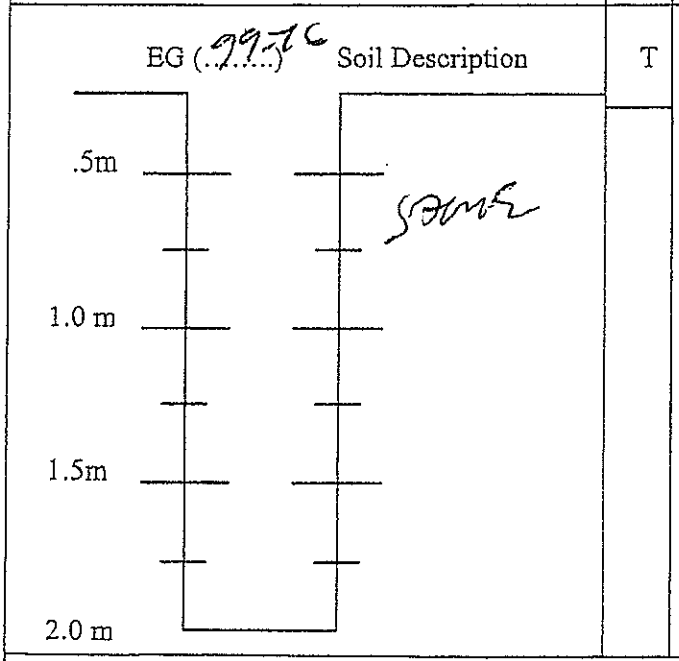
Schedule 6
Soil and Water Table Information
(Minimum depth of test pit: 2 metres)

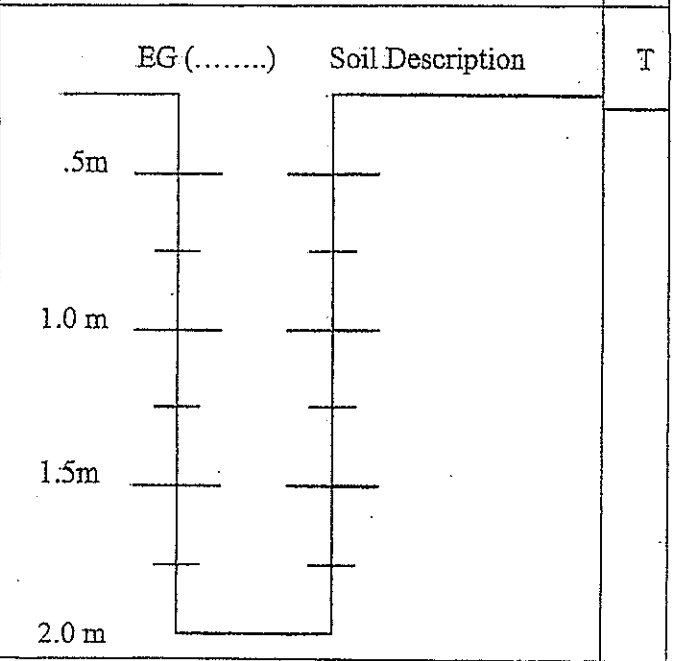
Name of Applicant/Agent: J. B MAYBURY
Date: 9-5-18 Time: 4:30pm
Applicant/Agent Signature: [signature]

Inspector: _____
Date: May 18/18 Time: 11:15AM
Inspector Signature: [signature]









LEGEND
BR = Bedrock
GWT = Ground water table
HGWT = High ground water table
M = metres
EG = Existing grade
T = percolation rate

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Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 7
Layout Section

Scale: 1Block = _____

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MAY 7 2018
REFER TO:

N

REFERENCE DRAWINGS BY
THIRD EYE TECH.

(1) CAR 1 SEP

(2) CAR 1 SEP

oDug Well •Drilled Well ▲Neighbouring Homes ◊Benchmark ---Tile Drainage ——Property Line

Elevations (metric only)
B.M _____ m
B.M Description _____
_____
Exact Location _____
_____

Min. of 5 elevations in proposed system area (in X pattern)
X_1 _____ X_2 _____
X_3 _____ X_4 _____
X_5 _____ $X_{6\ (toe)}$ _____
X_7 X_8

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Permit No _____
Revision No _____
Date _____

Schedule 8
Fixture unit count

REFER TO: # Existing + # Proposed X unit count = Fixture Count

Fixtures							
Bathroom							
Bathroom group (toilet, sink and tub or shower) with flush tank		+		X	6	=	
Bathtub with/without overhead shower		+		X	1.5	=	
Shower stall		+		X	1.5	=	
Wash basin (1½inch trap)	3	+		X	1.5	=	4.5
Watercloset (toilet) tank operated	2	+		X	4	=	8.0
Bidet		+		X	1	=	
Kitchen							
Dishwasher		+		X	1	=	
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+		X	1.5	=	
Other							
Domestic washing machine		+		X	1.5	=	
Combination sink and laundry tray single or double (Installed on 1½ trap)		+		X	1.5	=	

*Total: 12.5

*Insert the TOTAL in section 5 of Schedule 4 (0.Reg 151/13 Table 7.4.9.3)

1. Sump pumps and floor drains are not to be connected to the sewage system. Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

Agent/Owner signature

May 14th 2018
Date

158
CARDEVCO RD.
PRIVATE
SEWAGE SYSTEM
DEVELOPMENT PLAN

PLAN 4M 356
PART BLK 10/11
RP 4R 7953
PARTS 1 & 2
RP 4R 7616
PARTS 19 & 22
CITY OF OTTAWA
(W. CARLETON)

DWG. #CAR 158
DRAWN BY: JBM
DATE: 16/5/18

J. B. MAYBURY o/a THIRD EYE TECH.
©COPYRIGHT 2018
SCALE 1 : 250 (11 by 17 paper size)
10 0 10
METERS

V.C.A. RECEIVED MAY 17 2018 REFER TO:

CARDEVCO RD.
ROADSIDE DITCH
BOULDERS TO BE REMOVED-RELOCATED MINIMUM 3m FROM ELJEN MODULES
99.10
99.40
12.2 PARKING
EXISTING DRILLED WELL

CARDEVCO 158
TRUCK REPAIR GARAGE
SPECIAL NOTES:
-ONLY DOMESTIC SEWAGE TO BE DISCHAGED TO PRIVATE SEWAGE SYSTEM
-EMPLOYEES TO CLEAN GREASE OFF HANDS WITH CLOTH PRIOR TO RINSE

LEGEND

1. PROPOSED SEPTIC TANK:
   -MINIMUM WORKING VOLUME: 4500 LITRES
   -APPROVED EFFLUENT FILTER TO BE INSTALLED
   -ACCESS RISER(S) TO GRADE TO BE INSTALLED
2. PROPOSED FLOW DIVIDOR
3. 2 RUNS OF 8 ELJEN GSF A-42 MODULES
   16 ELJEN MODULES
4. ELJEN SAMPLING PORT:
   -INSTALL ELJEN SYSTEM SAMPLING DEVICE AS PER MANUFACTURES RECOMMENDATIONS.
   -INSTALL COLLECTION PIPES (3) BELOW FIRST,LAST AND MIDDLE MODULE.
5. LIMIT OF ELJEN SAND

EXISTING ELEVATION
99.20+ PROPOSED ELEVATION (SEE SITE PLAN)
TEST HOLE LOCATION

A. EXISTING SEPTIC TANK (+-) TO BE PUMPED OUT BY LICENSED HAULER AND FILLED IN - PUMP OUT RECEIT TO BE FORWARDED TO OSSO
B. EXISTING SEPTIC BED(+-)TO BE ABANDONED- ANY CONTAMINATED MATERIAL TO BE HANDLED AS PER REGULATOR'S POLICY

NOTES:

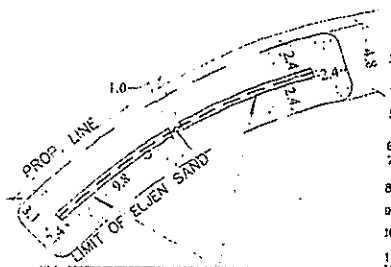
1.0 THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE SEWAGE SYSTEM PERMIT AND DWG #CAR 158-D.
2.0 THE SEPTIC TANK SYSTEM CONTRACTOR IS RESPONSIBLE TO CONFIRM ALL DESIGN REQUIREMENTS PRIOR TO COMMENCE WORK.
3.0 THE DEVELOPMENT AS PROPOSED IS UNDER THE DIRECTION OF THE OWNER/AGENT. THE OWNER/AGENT ASSUME FULL RESPONSIBILITY FOR DEVELOPMENT AS PROPOSED.
4.0 PROPERTY LINE/EASEMENT/LEGAL DESCRIPTION AND EXISTING/NEIGHBOURING WELL INFORMATION WAS PROVIDED BY OWNER OR THEIR AGENT, NOT THIRD EYE TECHNICAL SERVICE. THE OWNER OR THEIR AGENT ASSUME FULL RESPONSIBILITY FOR SCOPE & ACCURACY OF THIS INFORMATION AS DETAILED.
5.0 IT IS RECOMMENDED THAT THE INLET/OUTLET PIPES AND SEPTIC TANK BE INSULATED PRIOR TO BACKFILLING
6.0 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF UTILITIES.
7.0 THE GRADING AND DRAINAGE DESIGN AS COMPLETED IS OF A GENERAL NATURE. ALL ELEVATIONS AND GRADING SPECIFICATIONS TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO COMMENCE WORK.
8.0 ALL MEASUREMENTS AND ELEVATIONS ARE METRIC.
9.0 THIS PLAN NOT TO BE SCALED FOR LAYOUT.

CAUTION: THIS IS NOT A PLAN OF SURVEY
METRIC: DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048
BENCH MARK: THE BENCH MARK ELEVATION IS BASED ON LOCAL GEODETIC DATUM AND IS FOR USE ON THIS PROJECT ONLY.

THIRD EYE
Declaration of Designer under section 2.17.4 of O.B.C.
Firm BCIN #26787 Individual-J.B Maybury- BCIN #12374
54-50 Riverside Dr.
Manotick On K4M 3G9
(613)229-9692
e mail jaebuild@gmail.com
TECHNICAL SERVICE

ELJEN GSF A-42 MODULE BED PLAN VIEW

NTS



2 RUNS @ 8 ELJEN MODULES/RUN

NOTES:

1.0 SEPTIC TANK SYSTEM DESIGN IS BASED ON MAXIMUM 15 EMPLOYEES.
PLUMBING FIXTURE UNITS COUNT: 12.5

DESIGN DAILY SEWAGE VOLUME(Q): 14 * 75L = 1050L

2.0 NO. OF ELJEN GSF A-42 MODULES REQUIRED Q/95=1050/95=15
USE 2 RUNS OF 8 MODULES= 16 MODULES TOTAL
SAND AREA REQUIRED = QT/400 = 1050*30/400 =78.8m²
SAND AREA PROVIDED: 122m ²

3.0 THE CONSTRUCTION AND OPERATION OF THE PRIVATE SEWAGE SYSTEM SHALL CONFORM WITH ONTARIO REGULATION 332/12 AS AMENDED MADE UNDER THE BUILDING CODE ACT, 1992.

4.0 THE APPROVED TREATMENT UNIT SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH THE OBC-BMEC AUTHORIZATION AND THE MANUFACTURER'S RECOMMENDATIONS.

5.0 ALL VEGETATION\STUMPS TO BE REMOVED FROM ENTIRE AREA BED FILL ZONE. PRIOR TO PLACEMENT OF PERMEABLE FILL. ONLY LIGHT TRACKED EQUIPMENT SHALL BE PERMITTED TO TRAVEL OVER PREPARED INTERFACE OF NATIVE MATERIAL.

6.0 THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE SEWAGE SYSTEM PERMIT AND DRAWING #CAR 156.

7.0 THE SEPTIC TANK SYSTEM CONTRACTOR IS RESPONSIBLE TO CONFIRM ALL DESIGN REQUIREMENTS PRIOR TO COMMENCE WORK.

8.0 THE DEVELOPMENT AS PROPOSED IS UNDER THE DIRECTION OF THE OWNER/AGENT.

9.0 THE OWNER/AGENT ASSUME FULL RESPONSIBILITY FOR DEVELOPMENT AS PROPOSED. THIRD EYE TECHNICAL SERVICE CANNOT BE HELD RESPOSIBLE FOR THE INSTALLATION, ULTIMATE OPERATION AND ENVIRONMENTAL IMPACT OF THE PRIVATE SEWAGE DISPOSAL SYSTEM.

10.0 THE GRADING AND DRAINAGE DESIGN AS COMPLETED IS OF A GENERAL NATURE. ALL ELEVATIONS AND GRADING SPECIFICATIONS TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO COMMENCE WORK.

11.0 ALL MEASUREMENTS AND ELEVATIONS ARE METRIC.

12.0 THIS PLAN NOT TO BE SCALED.

THIRD EYE

TECHNICAL SERVICE

158
CARDEVCO RD.

PRIVATE
SEWAGE SYSTEM
DETAIL PLAN

PLAN 4M 356
PART BLK. 10/11
RP 4R 7953
PARTS 1 & 2
RP 4R 7615
PARTS 19 & 22
CITY OF OTTAWA
(W. CARLETON)

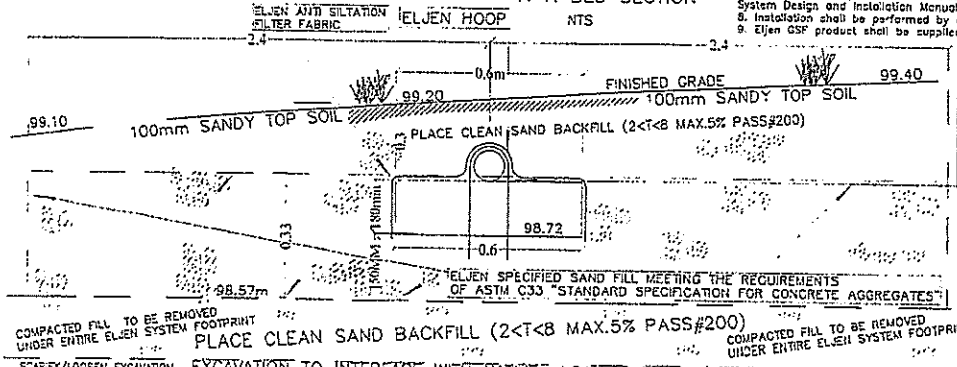
DWG. #CAR 158D
DRAWN BY: JBM
DATE: 16/5/18

SPECIAL NOTES:

1. This system (is/is not) designed for the use of a garbage disposal.
2. This system is not designed to receive backwash from a domestic water treatment device.
3. Organic Loam Layer must be removed from bed and slope extension areas prior to fill placement. Scarify subsoil prior to fill placement.
4. All fill material shall be clean and permeable and meet Eljen design manual requirements. The 150 mm of Specified Sand underneath and surrounding the GSF modules shall comply with ASTM C33 sand.
5. Backfill material can be native soil with no stones larger than 50 mm in any dimension to a maximum depth of 30 cm over the GSF modules and covered with a minimum 150 mm of clean loam.
6. Any Eljen GSF System that is more than 450 mm below finish grade as measured from the top of the module shall be vented.
7. This design complies with and must be installed in accordance with THE MOST CURRENT Eljen GSF System Design and Installation Manual for Ontario.
8. Installation shall be performed by an authorized ELJEN Installer detaining a valid
9. Eljen GSF product shall be supplied by an Ontario authorized Eljen GSF Distributor.

ELJEN GSF A-42 MODULE A-A BED SECTION

NTS



SPECIAL NOTE:
SCARIFICATION/LOOSENING OF THE NATIVE SOIL INTERFACE IS TO BE COMPLETED DURING DRY SOIL CONDTIONS

INVERT ELEVATIONS (BOTTOM OF PIPES)		
FEED HEADER		
PROPOSED	REVISED	AS-BUILT
98.90		
END HEADER		
98.90		

R.V.C.A. RECEIVED
MAY 17 2018
REFER TO:

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

Do Not Complete	
Permit No	
Revision No	
Date	
Related Application	

Permit
Part 8 – Sewage System
Ontario Building Code

A copy of this permit must be posted on the property at all time during construction. OBC, Division C — Part 1, Section 1.3.2.1

This permit verifies that the on-site sewage system was reviewed and approved for construction under the *Ontario Building Code* and *O.Reg. 323/12* as amended by *O.Reg. 151/13.*

Inspected & Recommended by: T. Hutton
Owner: TN West
Inspection Date & Time: May 18/18 (11:15AM)
Weather: Sunny, warm
Civic Address: 158 Corduroy Rd
Legal:

number of bedrooms:
fixture units:
finished floor area:
Q: 1500L/day

septic/holding tank/pretreatment tank 4500 L
effluent filter yes
pump rate ______ L/15 min
treatment unit Elten GSF A-42
number of units 16

weigh bills for Elten filter media	☑ yes	☐ no
grain size analysis required	☑ yes	☐ no
site to be scarified	☑ yes	☐ no
clay seal inspection	☐ yes	☑ no
mantle required	☐ yes	☑ no
sub-grade inspection	☑ yes	☐ no

ELEVATION ☐ In Ground ☐ Partially Raised ☐ Fully Raised

TYPE OF SYSTEM

☐ **Trench**
○ **Pipe and Stone** or ○ **Chambers**

type of chamber
loading area ______ m^2
total trench length ______ m
trench configuration

☑ **Dispersal Bed**

☑ BMEC ☐ Type A ☐ Type B

stone —
sand 182 m^2
pipe 2 runs of 8 Elten
linear loading — L/m²

☐ **Shallow Buried Trench**

pipe length ______ m
orifice spacing ______ m

☐ **Filter Media Bed**

stone ______ m^2
extended base ______ m^2
pipe
weight of filter media ______ kg
loading area ______ m^2

☐ **Class 5 Holding Tank**

☐ **Septic Tank Only**

Manager, Septic System Approvals: [signature]
Permit Date: MAY 29, 2018
Comments: (1) Subgrade inspection required. Contractor to ensure that all compost fill is removed down to native loam soil

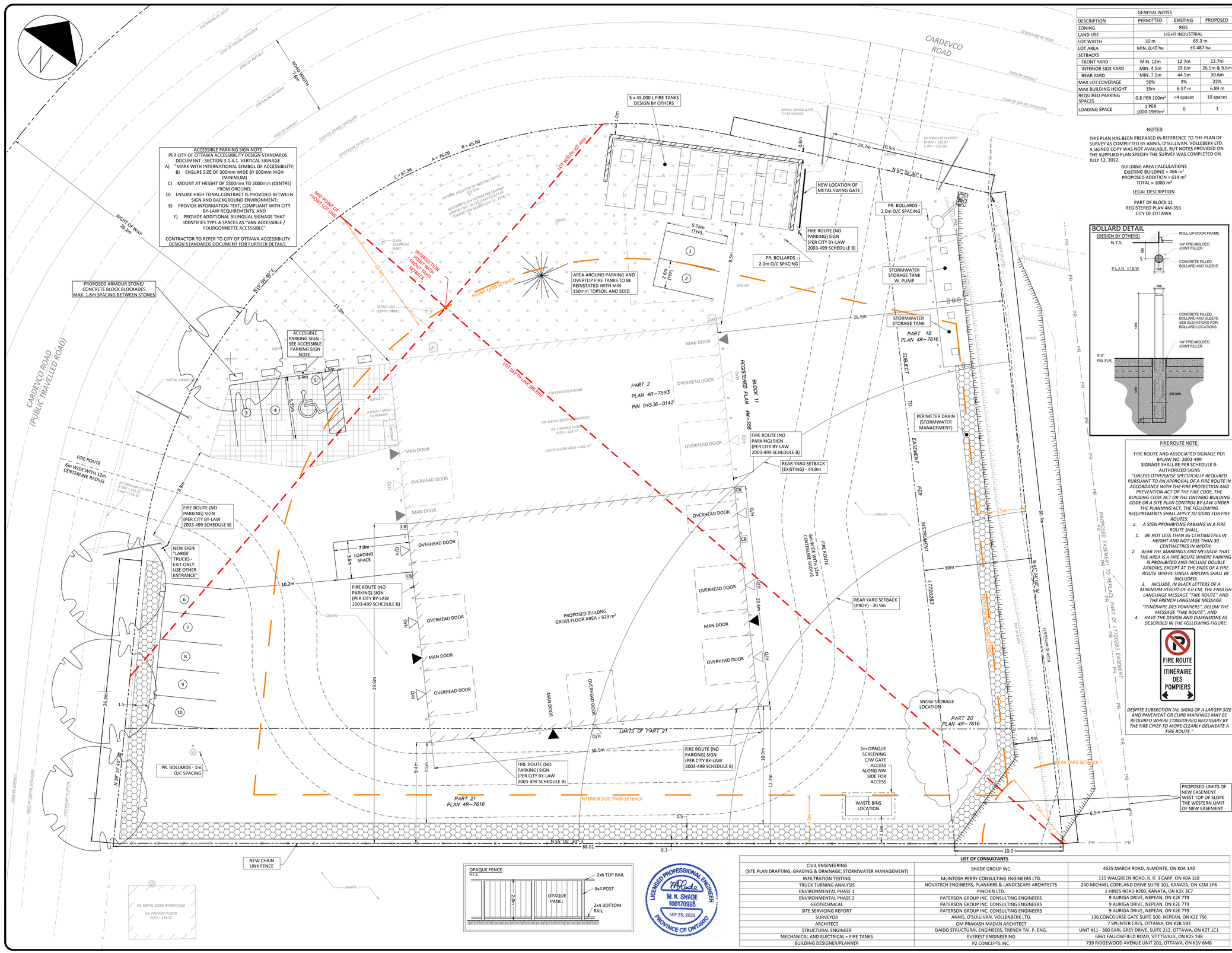
☑ maintenance/pumping required
☐ ESA permit # required
☐ engineer to verify
☐ subgrade
☐ squirt height

☐ Class 5 Holding Tank approval only valid for three years from date of issue

Manager, Septic System Approvals:
Revision Date:
Comments:

NOTE: For further details, refer to corresponding application.

November 2016
Docket 2914-1601-0550



GENERAL NOTES			
DESCRIPTION	PERMITTED	EXISTING	PROPOSED
ZONING		RG5	
LAND USE		LIGHT INDUSTRIAL	
LOT WIDTH	30 m	65.3 m	
LOT AREA	MIN. 0.40 ha	±0.487 ha	
SETBACKS			
FRONT YARD	MIN. 12m	12.7m	12.7m
INTERIOR SIDE YARD	MIN. 4.5m	29.6m	26.5m & 9.6m
REAR YARD	MIN. 7.5m	44.5m	30.6m
MAX LOT COVERAGE	50%	9%	22%
MAX BUILDING HEIGHT	15m	6.57 m	6.89 m
REQUIRED PARKING SPACES	0.8 PER 100m²	>4 spaces	10 spaces
LOADING SPACE	1 PER 1000-1999m²	0	1

NOTES

THIS PLAN HAS BEEN PREPARED IN REFERENCE TO THE PLAN OF SURVEY AS COMPLETED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. A SIGNED COPY WAS NOT AVAILABLE, BUT NOTES PROVIDED ON THE SUPPLIED PLAN SPECIFY THE SURVEY WAS COMPLETED ON JULY 12, 2022.

BUILDING AREA CALCULATIONS
EXISTING BUILDING = 466 m²
PROPOSED ADDITION = 614 m²
TOTAL = 1080 m²

LEGAL DESCRIPTION

PART OF BLOCK 11
REGISTERED PLAN 4M-356
CITY OF OTTAWA

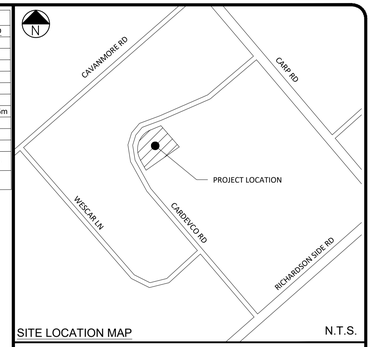
BOLLARD DETAIL
(DESIGN BY OTHERS)
N.T.S.

FIRE ROUTE NOTE:

FIRE ROUTE AND ASSOCIATED SIGNAGE PER BYLAW NO. 2003-499
SIGNAGE SHALL BE PER SCHEDULE B- AUTHORIZED SIGNS
"UNLESS OTHERWISE SPECIFICALLY REQUIRED PURSUANT TO AN APPROVAL OF A FIRE ROUTE IN ACCORDANCE WITH THE FIRE PROTECTION AND PREVENTION ACT OR THE FIRE CODE, THE BUILDING CODE ACT OR THE ONTARIO BUILDING CODE OR A SITE PLAN CONTROL BY-LAW UNDER THE PLANNING ACT, THE FOLLOWING REQUIREMENTS SHALL APPLY TO SIGNS FOR FIRE ROUTES:

a. A SIGN PROHIBITING PARKING IN A FIRE ROUTE SHALL:
1. BE NOT LESS THAN 45 CENTIMETRES IN HEIGHT AND NOT LESS THAN 30 CENTIMETRES IN WIDTH;
2. BEAR THE MARKINGS AND MESSAGE THAT THE AREA IS A FIRE ROUTE WHERE PARKING IS PROHIBITED AND INCLUDE DOUBLE ARROWS, EXCEPT AT THE ENDS OF A FIRE ROUTE WHERE SINGLE ARROWS SHALL BE INCLUDED;
3. INCLUDE, IN BLACK LETTERS OF A MINIMUM HEIGHT OF 4.0 CM, THE ENGLISH LANGUAGE MESSAGE "FIRE ROUTE" AND THE FRENCH LANGUAGE MESSAGE "ITINÉRAIRE DES POMPIERS", BELOW THE MESSAGE "FIRE ROUTE", AND
4. HAVE THE DESIGN AND DIMENSIONS AS DESCRIBED IN THE FOLLOWING FIGURE:

DESPITE SUBSECTION (A), SIGNS OF A LARGER SIZE AND PAVEMENT OR CURB MARKINGS MAY BE REQUIRED WHERE CONSIDERED NECESSARY BY THE FIRE CHIEF TO MORE CLEARLY DELINEATE A FIRE ROUTE."



SITE LOCATION MAP N.T.S.

SCALE BAR — DO NOT SCALE DRAWING
0 5 10 15m
ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MARKED.

PAGE SIZE ARCH D | SCALE 1:150

SHADE GROUP INC.
4625 MARCH ROAD
ALMONTE, ON
K0A 1A0

SITE BENCHMARK: MAG NAIL AND WASHER IN UTILITY POLE ON NORTH SIDE OF CARDEVCO ROAD, DIRECTLY EAST OF ENTRANCE TO HARRIS REBAR. ELEVATION=117.72

LEGEND
(IF APPLICABLE)

- PROPERTY BOUNDARY
- EX. LEGAL FABRIC
- PR. EASEMENT
- EX. ROAD CENTRE LINE
- EX. EDGE OF ASPHALT
- EX. EDGE OF SHOULDER
- EX. DITCH
- EX. OVERHEAD UTILITIES
- SETBACK FROM PROPERTY LINES
- LOT WIDTH CALCULATION LINES
- PR. FENCE LINE
- EX. TOP OF SLOPE
- PR. TOP OF SLOPE
- EX. BUILDING
- PR. BUILDING
- FIRE ROUTE
- PR. CLEARSTONE FILLED PERIMETER DRAIN
- PR. RETAINING WALL
- EX. UTILITY POLE
- EX. WELL
- EX. GAS METER
- EXISTING AIR CONDITIONING
- PR. CATCHBASIN
- EX./PR. MAN DOOR
- EX./PR. OVERHEAD DOOR
- PR. TREES
- GRASS COVER
- ASPHALT

REV. #	REVISION DESCRIPTION	DATE
08	REVISED PER CITY+MVCA COMMENTS	SEP 25, 2025
07	ISSUED FOR BUILDING PERMIT	JUL. 23, 2025
06	ISSUED FOR CONSTRUCTION	APR. 1, 2025
05	REVISED PER CITY COMMENTS	JAN 27, 2025
04	REVISIONS TO FIRE TANKS + EASEMENT	NOV 25, 2024
03	REVISION TO FIRE TANKS	APRIL 2024
02	REVISED PER CITY COMMENTS	NOV 30, 2023
01	REVISED PER CITY COMMENTS	AUG 17, 2023
00	REV. 00 SITE PLAN BY OTHERS	

SITE OWNER	WHELAN TRUCK REPAIR INC.
PROJECT TITLE	WHELAN TRUCK REPAIR - BUILDING ADDITION
PROJECT ADDRESS	158 CARDEVCO ROAD CARP, ON K0A 1L0
DRAWING TITLE	SITE PLAN
DRAWING NO.	1 OF 1

LICENSED PROFESSIONAL ENGINEER
M. K. SHADE
100170995
SEP 25, 2025
PROVINCE OF ONTARIO

LIST OF CONSULTANTS

CIVIL ENGINEERING (SITE PLAN DRAFTING; GRADING & DRAINAGE; STORMWATER MANAGEMENT)	SHADE GROUP INC.	4625 MARCH ROAD, ALMONTE, ON K0A 1A0
INFILTRATION TESTING	McINTOSH PERRY CONSULTING ENGINEERS LTD.	115 WALGREEN ROAD, R. R. 3 CARP, ON K0A 1L0
TRUCK TURNING ANALYSIS	NOVATECH ENGINEERS, PLANNERS & LANDCSCAPE ARCHITECTS	240 MICHAEL COPELAND DRIVE SUITE 101, KANATA, ON K2M 1P6
ENVIRONMENTAL PHASE 1	PINCHIN LTD.	1 HINES ROAD #200, KANATA, ON K2K 3C7
ENVIRONMENTAL PHASE 2	PATERSON GROUP INC. CONSULTING ENGINEERS	9 AURIGA DRIVE, NEPEAN, ON K2E 7T9
GEOTECHNICAL	PATERSON GROUP INC. CONSULTING ENGINEERS	9 AURIGA DRIVE, NEPEAN, ON K2E 7T9
SITE SERVICING REPORT	PATERSON GROUP INC. CONSULTING ENGINEERS	9 AURIGA DRIVE, NEPEAN, ON K2E 7T9
SURVEYOR	ANNIS, O'SULLIVAN, VOLLENBEKK LTD.	136 CONCOURSE GATE SUITE 500, NEPEAN, ON K2E 7S6
ARCHITECT	OM PRAKASH MADAN ARCHITECT	7 SPLINTER CRES, OTTAWA, ON K2B 1B3
STRUCTURAL ENGINEER	DAIDO STRUCTURAL ENGINEERS, TRENCH TAI, P. ENG.	UNIT #11 - 300 EARL GREY DRIVE, SUITE 213, OTTAWA, ON K2T 1C1
MECHANICAL AND ELECTRICAL + FIRE TANKS	EVEREST ENGINEERING	6861 FALLOWFIELD ROAD, STITTSVILLE, ON K2S 1B8
BUILDING DESIGNER/PLANNER	P2 CONCEPTS INC.	739 RIDGEWOOD AVENUE UNIT 201, OTTAWA, ON K1V 6M8

FILE# D07-12-23-0002 SITE PLAN# 19363