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February 21, 2024
Report: PH4398-1.REP.01.REV.01.

Southwell Homes LTD.
195 Julie Anne Crescent
Carleton Place, Ontario
K7C 4M5

Attention: **John Southwell**

Subject: **Hydrogeological Assessment and Terrain Analysis**
Proposed Residential Development
122 Old Mill Lane
Appleton, Ontario

Dear John Southwell,

Please find enclosed 3 copies of Report PH4398-1.REP.01.REV.01. regarding the Hydrogeological Assessment and Terrain Analysis conducted for the aforementioned location.

We trust that this information is to your satisfaction.

Sincerely,

Paterson Group Inc.

Michael Killam, P.Eng.

Geotechnical Engineering

Environmental Engineering

Hydrogeology

Geological Engineering

Materials Testing

Building Science

Noise and Vibration Studies

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Hydrogeological Assessment and Terrain Analysis

Proposed Residential Development
122 Old Mill Lane
Appleton, Ontario

Prepared For

Southwell Homes Ltd.

February 21, 2024

Report: PH4398-REP.01.REV.01

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Report History

Paterson Group (Paterson) was retained by Southwell Homes Ltd. to update the Hydrogeological Study and Terrain Analysis for the proposed rural subdivision situated on the south shore of the Mississippi River, in the Village of Appleton, Ontario (Refer to Figure-1: Site Location Plan (Appendix 5).

Since the initial release of the Hydrogeological Study and Terrain Analysis Report PH2723-REP.01 - Terrain Analysis and Hydrogeological Study dated November 13, 2015, the following regulatory authority comments and peer reviews have occurred:

- Mississippi Valley Conservation Authority (MVCA) review titled Terrain Analysis and Hydrogeological Study, project number 09-T-15005 dated May 18, 2015
- Mississippi Valley Conservation Authority Planning and Development Review Team comments titled Appleton Subdivision – Preliminary Comments, File number 09-T-15005 dated May 26, 2016
- Paterson Response to MVCA Review Comments dated May 18, 2016, Report number PH2723-LET.01. dated January 17, 2017
- Mississippi Valley Conservation Authority Memo titled Response to MVCA Review Comments dated May 18, 2016, Report number 09-T-15005 dated March 28, 2017
- Stantec Consulting Ltd. (Stantec) review titled Hydrogeological Review for a Redevelopment of a Brownfield, Appleton Subdivision, Part of Lot 4, concession 10, Geographic Township of Ramsay, Town of Mississippi Mills, Ontario, file number 160410034 dated September 11, 2017.
- Paterson Environmental Action Plan – Former Appletex Mill Property – 166-122 Old Mill Lane – Hamlet of Appleton, report number PE1114-MEMO.13 dated November 14, 2017
- Stantec Consulting Ltd. review titled Comments on Groundwater Sampling Program and Environmental Action Plan, Former Appletex Mill Property, Appleton, Ontario, file number 160410034 dated June 29, 2018
- Mississippi Mills review titled Appleton Subdivision 09-T-15005, dated August 14, 2018

- Lanark County Meeting notes titled Appleton Subdivision 09-T-15005 dated August 29, 2018
- JP2G Consultants Inc. (JP2G) peer review titled Peer Review of the Contaminated Site Related Documents – Proposed Residential Subdivision (Former Appletex Mill Property) – Appleton, Ontario, with file number 18-6061A dated September 28, 2018
- Mississippi Valley Conservation Authority Memo titled Status summary: Hydrogeological / private servicing review – Proposed subdivision at former Appletex Mill site, Project number 09-T-15005 dated October 9, 2018
- Mississippi Valley Conservation Authority Planning and Development Review Team review titled Appleton Subdivision, file number 09-T-15005 dated October 10, 2018
- Paterson Work Plan – Supplementary Hydrogeological Study and Assessment Work, file number PH4398-MEMO.01. dated October 15, 2021
- Paterson completed a revised Hydrogeological Assessment titled PH4398-REP.01 - Hydrogeological Assessment and Terrain Analysis – Proposed Residential Development – 122 Old Mill Lane, Appleton, Ontario dated August 23, 2022. The report was submitted to the township in September of 2022.
- Paterson completed a report titled PE1114-LET.03. – Environmental Action Plan Supplemental Groundwater Sampling Program - 116-122 Old Mill Lane, Appleton, Ontario dated March 1, 2022
- Paterson completed an Environmental Assessment Report titled PE1114-3 – Phase II Environmental Site Assessment – 116-122 Old Mill Lane, Appleton, Ontario dated June 14, 2023
- Paterson received peer review comments from Stantec in their letter entitled: “Peer Review of Phase II – Environmental Site Assessment, 116-122 Old Mill Lane, Appleton, Ontario for Redevelopment Application” dated September 15, 2023
- Paterson prepared a comment response to Stantec peer-review comments titled PE1114-MEMO.14 Phase II Environmental Site Assessment – Response to Stantec Peer Review, Proposed Residential Development – Appleton Shores, 116 to 122 Old Mill Lane – Ottawa, Ontario dated September 27, 2023

- Stantec's provided hydrogeological peer review comments on December 4, 2023 with file number 122170312 Task 200 and titled Peer Review of a Hydrogeological Assessment and Terrain Analysis - Proposed Residential Development - 122 Old Mill Lane, Appleton, ON
- Paterson prepared a Remedial Action Plan titled PE1114-LET.04R- Remedial Action Plan 116-122 Old Mill Lane, Appleton, Ontario dated February 14, 2024

Executive Summary

Paterson Group (Paterson) was retained by Southwell Homes Ltd. to update the Hydrogeological Study and Terrain Analysis for the proposed rural subdivision situated on the south shore of the Mississippi River, in the Village of Appleton, Ontario (Refer to Figure-1: Site Location Plan (Appendix 5).

The purpose of this study is to determine the suitability of the site for residential development on private services.

The subject property features a flat elevated area in the northeast and gently sloping land to the southwest. The remainder of the property is a floodplain of the Mississippi River and will remain undeveloped.

The subject property has a total area of 19.61 hectares (ha). The proposed subdivision occupies the southern portion of the property and covers an area of approximately 6.99 ha. The development involves 14 lots of variable size (0.40 ha to 0.57 ha with an average lot size of 0.43 ha) and a park. The lot layout, at the time of this submission is shown on Drawing No. PH4398-1-Lot Development Plan (see Appendix 5).

Fieldwork conducted by Paterson in 2008 and 2015 identified a variable thickness layer (0.5 to more than 1.55 metres) of sand and gravel fill over discontinuous native till, over bedrock. Available geological information (OGS, 2015) indicates that the site is underlain by horizontally bedded dolostone of the lower Ordovician Oxford Formation, which is part of the Beekmantown Group.

A topographic survey of the site was conducted by G.A. Smith Surveying Ltd. of Carleton Place Ontario in October 2014. Topographic contours are included on Drawing No. PH4398-2 – Test Hole Location Plan (Appendix 5).

Three (3) test wells (TW1, TW2 and TW3) were installed at the site in June, 2015. Test well locations are indicated on Drawing No. PH4398-2 - Test Hole Location Plan (Appendix 5). Pumping tests were conducted sequentially at each test well using the other test wells as observation wells. Each well was pumped at a constant rate of 91 L/min for six hours and was then allowed to recover. Drawdown observations during pumping and recovery were recorded manually and with electronic dataloggers. Pumping test data were analyzed using Aquifer Test Pro™ (V 2015.1) software.

Groundwater samples were collected at each well during the pumping tests. Samples were collected at three (3) hours and six (6) hours after the start of each test. Additional water quality sampling was conducted at five (5) neighboring offsite water supply wells. All groundwater samples were submitted for comprehensive testing of bacteriological, chemical and physical water quality parameters.

Paterson returned to site on June 23 and 24 2016 to collect additional groundwater samples from the onsite wells and select neighboring potable supply wells.

The analytical results for groundwater samples that were obtained from the three onsite test wells show that water quality at the site is acceptable and that there are no exceedances of the applicable health related parameter limits of the Ontario Drinking Water Standards (ODWS, 2003). Minor exceedances of the non-health related operational guidelines and aesthetic objectives were noted including hardness (TW1, TW2 and TW3), and TDS (TW1, TW3). These results are very similar to those obtained from the neighboring water supply wells that were tested.

Water quantity was assessed in terms of anticipated peak demand, long term safe yield and potential well interference. Peak demand based on four bedroom single family homes is estimated to be 18.75 L/min. Each test well was pumped at 114 L/min for six hours, in order to demonstrate that well yields at the proposed subdivision will be sufficient to handle peak demand loadings. A long term safe yield analysis indicates that well yields should be capable of yielding at least 3.6 times more water than the test pumping rate. A well interference model indicates a maximum anticipated drawdown of 1.3 m after 20 years of pumping at 3,000 L/day, which is approx. 10% of the available drawdown in the test wells.

Paterson personnel returned to site on December 7 and 8, 2021 to collect groundwater samples from TW1, TW2, and TW3. All groundwater samples collected were submitted for analytical testing of total metals, polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), benzene, toluene, ethylbenzene and xylene (BTEX), Dioxins and Furans. None of the samples submitted exceeded O.Reg 153 standards.

Future wells at the site should be constructed according to Ontario Regulation 903 and should be similar to the test wells that were installed and used as part of this investigation (i.e. 6.7 m steel casing to bedrock and depths of 20-25 m).

Raw water is expected to be relatively hard. Residential grade water softeners are recommended. Additional treatment to address TDS may be desired.

A predictive impact assessment for nitrates was conducted. The cumulative nitrate impact was calculated to be approximately 4.18 mg/L, which is well below the provincially mandated value of 10 mg/L. As such the impact of private sewage treatment systems on the drinking water aquifer will be acceptable.

Onsite sewage disposal needs can be accommodated by standard Class 4 sewage systems. The proposed Lot Development Plan (Drawing No. PH4398-1 - Lot Development Plan - Appendix 5) provides details of the proposed layout at each lot. Each home is to be serviced by a sewage system with a treatment capacity of 3,000 L/day.

The subject site is suitable for development as a residential subdivision at the proposed lot density. The hydrogeological recommendations contained within this report, if followed, will ensure that the development takes place in an effective manner, with a minimal impact on the natural environment.

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1.0 INTRODUCTION

1.1 Terms of Reference

Paterson Group (Paterson) was retained by Southwell Homes Ltd. to update the Hydrogeological Study and Terrain Analysis for a proposed rural residential subdivision situated on Part of Lot 4, Concession 10 in the geographic Township of Ramsay, Town of Mississippi Mills, Ontario. The property is situated on the south shore of the Mississippi River, in the Village of Appleton (Refer to Figure-1: Site Location Plan, located in Appendix 5).

The purpose of this study has been to ascertain and assess the specific terrain and hydrogeological conditions which currently exist beneath the subject property as they relate to the suitability of the site for residential development on private services.

This study was conducted in general accordance with Ontario Ministry of the Environment, Conservation and Parks (MECP) guidance as follows:

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

The investigation involved the following components:

- Review of available information regarding the subject site, the proposed subdivision, and surrounding lands.
- Terrain analysis including a topographic survey, test hole investigation, soil texture analyses and review of previous subsurface investigations.
- Hydrogeological water supply analysis including well record search, installation of test wells, pumping tests, groundwater sampling, geological information review, aquifer analysis and water quantity assessment.
- Hydrogeological wastewater analysis including review of subdivision specific conditions and nitrate impact assessment.

2.0 SITE DESCRIPTION

2.1 Site Location

The subject site is a proposed residential development that occupies the eastern third of the subject property as indicated on Figure-1: Site Location Plan. The subject property has a total area of approximately 19.61 hectares (ha), and is located on the west side of Old Mill Lane, north of Apple Street in the Village of Appleton, Ontario. The property is situated on the south shore of the Mississippi River and is immediately adjacent to the Appleton Swamp.

The topography of the subject site slopes down towards the wetlands to the west. A small escarpment runs in a north-south direction along the western portion of the site. The escarpment separates the low lying swampy area to the west from the slightly elevated area to the east. The western portion of the property is located on the floodplain of the Mississippi River and will remain undeveloped.

2.2 Proposed Subdivision

The portion of the subject property that comprises the proposed subdivision (herein referred to as the 'subject site' or 'Site') encompasses a total area of approximately 6.99 hectares out of the 19.61 ha site area.

The current proposal calls for 14 residential lots and a park of variable sizes covering an area of approximately 6.06 ha within a total subdivision area of approximately 6.99 ha. Individual lot sizes range from 0.40 ha (Lot 1) to 0.57 ha (Lot 11), with the average lot size being 0.43 ha.

The lot layout, at the time of this submission is shown on Paterson Drawing PH4398-1 Lot Development Plan (see Appendix 5).

The development is intended to be serviced by individual water supply wells and Class 4 sewage disposal systems.

2.3 Surrounding Land Uses

Surrounding land uses within approx. 500 m of the proposed subdivision are described below:

- North
  - Mississippi River (open water).
  - Appleton Swamp (forest).

- East
  - Residential houses along Old Mill Lane.
  - Old Mill Lane right of way.
  - Mississippi River.
  - Residential houses on the east side of the river.
  - Agricultural land on the far side of the Missisippi.
- West
  - Appleton Swamp (forest).
  - A golf course (Mississippi Golf Club).
- South
  - Partial forest or unused / grazing land.
  - Residential houses.

All existing developments in the area utilize private individual water supply and onsite sewage systems.

Based on the available information, there are no obvious indicators of potential groundwater contamination present on the surrounding lands within 500 m of the subject property, which may negatively impact the proposed development.

A textile mill was previously located on the southern portion of the site. The former buildings were demolished and removed. A thorough environmental cleanup was conducted. Contamination issues at the site have been addressed and fully remediated (Paterson, 2010 and Paterson, 2022).

2.4 Potential Sources of Contamination

A textile mill (Appletex Woolen Mill) was previously located on part of the southern portion of the site. The mill was operated from around the middle of the last century until the early 1990s.

Potential sources of contamination associated with woolen mills include heavy metals (from the use of colored dyes), and chlorinated solvents (used to clean up dyes). Other potential environmental concerns at the former mill include hydrocarbons (from use of liquid fuels for heating), and PCBs (from old electrical transformers).

The following is a brief coverage of the environmental assessment history of the site:

- MOECC investigated a dam breach in 1990.

- A Phase I ESA by Dames and Moore in 1992 identified environmental concerns at the site including chemical discharge to lagoons, onsite storage of waste, liquid fuels handling, chemical storage and the presence of PCB containing equipment (limited sampling identified mercury at a concentration exceeding the provincial surface water limit in one of the ponds).

- MOECC investigated the site in 1993 and found the concentrations of some heavy metals (lead and strontium) in the ponds were above provincial limits.

- WESA conducted test pitting and installed three boreholes/monitoring wells in 1994. One test pit soil sample exceeded the remediation criteria for hexavalent chromium. PCB containing transformers were present. Analysis of bedrock groundwater samples did not identify any concerns. The report states that “no further action is recommended with regard to potential impacts on the groundwater regime arising from former industrial activities at the site”.

- A fire occurred at the mill building in November 1994. All PCB containing oil and equipment was subsequently removed from the site.

- In 2007, an oil spill occurred in the vicinity of the former heating plant.

- In 2007, two lagoons were breached resulting in further MOECC involvement. MOECC identified high concentrations of manganese in one sediment sample.

- Paterson conducted test pitting and installed three boreholes/monitoring wells in 2008 (Paterson, 2009). Heavy metals (lead and vanadium) exceeded the soil remediation criteria at three test pit locations. Petroleum hydrocarbons exceeded the soil remediation criteria at one location. Petroleum hydrocarbons exceeded the groundwater remediation criteria at two monitoring well locations. PAHs exceeded the groundwater remediation criteria at one boreholes/monitoring well location. PAHs were detected in soil in the vicinity of the former mill building. Petroleum hydrocarbon free product was identified at two of the Paterson monitoring well locations. Various metals (cadmium, chromium, copper, nickel and zinc) from the three former ponds exceeded the sediment standards.

- Paterson conducted a remediation program at the site from 2007 to 2010 (Paterson, 2010). Metals impacted surface soils (136 metric tons) were removed from several large areas including the area where the former ponds had been located. Petroleum hydrocarbon impacted soils (1,740 metric tons) were removed from one excavation in the vicinity of the former heating plant. A further 33,828 L of impacted groundwater was removed during the remediation program.

- Two (2) records of site condition (RSCs) were subsequently filed in the Environmental Site Registry (ESR) in 2010: RSC #97711 covers the bulk of the subject site and RSC #102721 is for the 30 m buffer area along the banks of the Mississippi River. The environmental condition of the subject property at the time the RSCs were filed, was in accordance with the then applicable 2004 MOECC Table 1 and Table 2 standards. The RSC's were filed prior to July 1, 2011, which is when the current regulation (O.Reg. 153/04 Records of Site Condition) came into effect.
- On March 16, 2018, two boreholes (BH1-18 and BH2-18) were placed on the subject property, within the former remedial area along the bank of the Mississippi River. Monitor Wells (MW) were installed in BH1-18 and BH2-18.
- On March 1, 2021 Paterson released a report PE1114-LET.03 dated March 1, 2021 which states that based on the findings of the groundwater programs, the groundwater has not been impacted by past on-site activities.
- Paterson completed an Environmental Assessment Report titled PE1114-3 – Phase II Environmental Site Assessment – 116-122 Old Mill Lane, Appleton, Ontario dated June 14, 2023 which concluded that *All groundwater results comply with the selected MECP Table 6 Residential standards.*
- Paterson prepared a Remedial Action Plan titled PE1114-LET.04R- Remedial Action Plan 116-122 Old Mill Lane, Appleton, Ontario dated February, 2024

Based on a thorough review of all of the available environmental information about the site, the following list of 'contaminants of concern' were identified:

- Heavy metals (primarily copper, lead, mercury and chromium)
- Volatile Organic Compounds (VOCs)
- Petroleum Hydrocarbons (PHCs)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Biphenyls (PCBs)

The risk to water quality in the bedrock aquifer from these contaminants is considered to be very small due to the massive nature of the upper bedrock.

In order to demonstrate that there has been no impact to the bedrock aquifer from the listed contaminants, a comprehensive program of groundwater sampling and analysis was conducted in June of 2016. All three onsite wells (TW1, TW2 and TW3) were fully purged and sampled on June 23 and 24, 2016. The groundwater samples were submitted to Exova Laboratories of Ottawa Ontario for analysis of the following suite of parameters:

- Subdivision supply (no bacteria)
- VOCs
- PHCs
- PAHS
- PCBs
- RVCA metals + hexavalent chromium

The 2016 analytical results were all non-detectible for VOCs, PHCs, PAHs and PCBs except for one low level detection of toluene on the sample from TW2 (and this is probably due to laboratory error). The toluene concentration is well below the maximum allowable concentration. The analytical results for general chemistry are consistent with previous findings from the same wells (i.e. elevated hardness and TDS). The analytical results from testing of metals were all either non-detectible or well below ODWS limits.

Due to Regulatory Authority Comments, the three onsite wells (TW1, TW2, and TW3) were fully purged until field parameters were noted to stabilize, and sampled on December 7 and 8, 2021. The groundwater samples were submitted to Eurofins Environment Testing Canada Inc. for analysis of the following suite of parameters:

- Benzene, Toluene, Ethylbenzene and Xylene (BTEX)
- Total Metals
- PAHS
- PCBs
- Dioxins and Furans

The results from the December 7 and 8, 2021 sampling program are all in compliance with the MECP O.Reg. 153 Table 1 and MECP Table 2 standards.

The comprehensive groundwater testing program did not identify any environmental concerns. The bedrock aquifer beneath the site has demonstrated that it can provide water that is safe and suitable for human consumption.

A review of the most recent Environmental Assessments were completed. Paterson recently released a report titled Remedial Action Plan (RAP) with report number PE1114-LET.04R dated February 14, 2024 which summarises the onsite environmental activities. Paterson's Hydrogeological Assessment report should be read in conjunction with the RAP. The RAP consists of excavation and disposal of impacted soils at an approved waste disposal facility to be undertaken in conjunction with the redevelopment of the subject site. The report further states that, "*Based on the Phase II ESA, the groundwater beneath the subject site meets the selected MECP Table 6 and Table 8 standards"*. Should an environmental assessment identify potential contamination in the underlying groundwater aquifer, then this Hydrogeological Assessment report will need to be updated. As the Environmental Assessments have already concluded that environmental impacts are not present in the groundwater underlying the site, further action is not required.

3.0 METHOD OF STUDY

3.1 Terrain Analysis

Subsurface investigations (drilling and test pitting) were conducted at the site in 2008, 2015 and 2018. Refer to Paterson Drawing No. PH4398-2 – Test Hole Location Plan, located in Appendix 5.

Five (5) boreholes were drilled in August and October, 2008 by Paterson (Paterson, 2009). A series of 21 test pits were excavated by Paterson in 2008. Test pit and auger hole graphical logs are included in Appendix 1. Borehole graphical logs are provided in Appendix 2.

A series of eight (8) hand auger test holes were completed at the site by Paterson on August 28 and 31, 2015 to further delineate subsurface soil conditions.

Additional test pitting was conducted at the site on August 18, 2016 in order to obtain overburden thickness information at specific locations across the site. Test pitting was completed using a backhoe. A total of 24 test pits were excavated to a maximum depth of 3 m below ground surface (i.e. maximum reach of backhoe).

Two boreholes (BH1-18 and BH2-18) were placed on the subject property on March 16, 2018, within the former remedial area along the bank of the Mississippi River. Monitoring Wells (MW) were installed in BH1-18 and BH2-18.

Test pit locations were recorded and the subsurface conditions, including the soil morphology and depth to the groundwater table (where encountered), were carefully observed and recorded as the test pits were advanced. Representative samples of the soils were recovered from the test pits. All samples were classified texturally in the field and sealed in proper containers for reference purposes and laboratory analysis. Soil sample depths are indicated on the Soil Profile and Test Data sheets provided in Appendix 1.

Four (4) representative soil samples from the hand auger drilling program conducted in August 2015 were submitted to the Paterson materials testing laboratory in Ottawa for grain size analysis. Results of the soil testing are provided on the Grain Size Distribution curves included in Appendix 1.

Three test pits (TP18, TP21 and TP22) encountered significant amounts of fabric waste. All of the soil and debris was subsequently removed from this area.

3.2 Well Record Search

A review of available MOECC Water Well Records within a 500 m radius of the site was undertaken as part this study. Water well record information was obtained directly from the MOECC water well records interactive GIS system located at:

http://www.ontario.ca/environment-and-energy/map-well-records.

Overburden thickness, depth of casing, aquifer interception points and reported well yields were reviewed in detail in order to assist in establishing a hydrogeological conceptual model for the site.

3.3 Surrounding Permit to Take Water (PTTW)

A search of the MECP Permit to Take Water database provided one active PTTW within 500 m of the subject site. Permit Number 0507-9D5Q5X, located approximately 85 m east of the subject site, has been registered to Canadian Hydro Developers Inc. and contains one source. The permit is provided as power production, with a maximum taking of 3,500,000,000 L/day. The permit expired on January 15, 2024.

A search of the MECP Environmental Activity and Sector Registry (EASR) database did not provide any active EASR's within 500 m of the subject site.

This water taking will not be affected by the proposed residential development on the subject site.

3.4 Test Well Installation

Three (3) test wells (TW1, TW2 and TW3) were installed at the subject site on June 22 and 23, 2015. The test well locations were selected to provide adequate coverage of aquifer conditions across the site and are suitably constructed to ensure an adequate prediction of the quality and quantity of groundwater that will be provided by future wells at the site. Test well locations are indicated on Drawing No. PH4398-2 - Test Hole Locations (Appendix 5).

The test wells were drilled by Air Rock Drilling Co. Ltd. (Well Contractor License No.1119). A technical representative from Paterson was present during the installation of well casing and grouting of the annular space for each test well. The MOECC Water Well Records for each test well are included in Appendix 2.

It is intended that the test wells will be used as private water supply wells for individual lots in the proposed subdivision. If for any reason one or more of the test wells cannot be utilized

for that purpose, the test well(s) should be abandoned according to the requirements of O.Reg. 903.

TEST WELLS SUMMARY						
Well ID	**Year drilled**	**Depth to BR (m)**	**Casing depth (m)**	**Depth to water bearing fractures (m)**	**Total depth (m)**	**Recommended pumping rate (L/min)**
TW1	2015	1.22	6.10	20	21.64	91+
TW2	2015	0.91	6.10	20	21.34	91+
TW3	2015	3.66	6.40	11.89 / 18.29	20.42	91+

Table 1 - Test Wells Summary

TW1

A 248 mm diameter casing hole was advanced using a rotary tri-cone bit through the sandy overburden material to the limestone/dolostone bedrock, which was encountered at a depth of approximately 1.2 m bgs. The casing hole was advanced into the bedrock an additional 4.9 m to ensure that the casing was seated into competent (i.e. unfractured) bedrock.

A new 6.7 m long section of 152 mm diameter steel casing was installed in the casing hole. Casing stickup is approximately 0.6 m above ground surface. The annular space was grouted using a bentonite grout slurry pumped to the bottom of the annular space using pressure grouting equipment. The return of the grout to ground surface was visually observed by the Paterson representative. The casing installation and grouting of the annular space is considered to be in compliance with Ontario Regulation (O.Reg.) 903.

After the completion of the casing installation the open borehole was advanced using a 152 mm diameter air percussion button bit to a total depth of 21.6 m bgs.

The well contractor reported a significant influx of groundwater at a depth of 19.8 m bgs.

Following completion of the well installation Air Rock Drilling Co. Ltd. developed the well and conducted shock chlorination (disinfection) in accordance with O.Reg. 903.

A one hour constant rate pumping test was then carried out. A pumping rate of 91 L/min was based on the preliminary findings of the well contractor at the time of installation. The well contractor measured a drawdown of 0.38 m at the end of the one hour test.

TW2

A 248 mm diameter casing hole was advanced using a rotary tri-cone bit through the sandy overburden material to the limestone/dolostone bedrock, which was encountered at a depth

of approximately 0.9 m bgs. The casing hole was advanced into the bedrock an additional 5.2 m to ensure that the casing was seated into competent bedrock.

A new 6.7 m long section of 152 mm diameter steel casing was installed in the casing hole. Casing stickup is approximately 0.6 m above ground surface. Grouting of the annular space was observed by the Paterson representative and is considered to be in compliance with O.Reg. 903. The borehole was advanced using a 150 mm diameter air percussion button bit to a total depth of 21.3 m bgs.

The well contractor reported a significant influx of groundwater at a depth of 19.5 m bgs.

Following completion of the well installation Air Rock Drilling Co. Ltd. developed the well and conducted shock chlorination (disinfection) in accordance with O.Reg. 903.

A one hour constant rate pumping test was then carried out. The chosen pumping rate 91 L/min resulted in a measured drawdown of 0.30 m at the end of the one hour test.

TW3

A 248 mm diameter casing hole was advanced using a rotary tri-cone bit through unconsolidated sand and fill material to the limestone/dolostone bedrock, which was encountered at a depth of approximately 3.7 m bgs. The casing hole was advanced into the bedrock an additional 2.1 m to ensure that the casing was seated into competent bedrock.

A new 6.7 m long section of 152 mm diameter steel casing was installed in the casing hole. Casing stickup is approximately 0.6 m above ground surface. Grouting of the annular space was observed by the Paterson representative and is considered to be in compliance with O.Reg. 903. The borehole was advanced using a 150 mm diameter air percussion button bit to a total depth of 20.42 m bgs.

The well contractor reported a significant influx of groundwater at a depth of 18.3 m bgs.

Following completion of the well installation Air Rock Drilling Co. Ltd. developed the well and conducted shock chlorination (disinfection) in accordance with O.Reg. 903.

A one hour constant rate pumping test was the carried out. The chosen pumping rate of 91 L/min resulted in a measured a drawdown of 0.81 m at the end of the one hour test.

3.5 Pumping Tests

Pumping tests were conducted sequentially at each test well using the other test wells as observation wells. The pumping tests were carried out following Air Rock's development of each well. All tests began with a static water level and involved pumping at a fixed rate

(+/- 5%) for six hours. Water levels were measured at the pumping well and observations wells at one minute intervals, and the pumped water was discharged far enough away from the test wells to ensure that artificial recharge did not occur.

Each of the test wells was pumped at a constant rate of 114 L/min for six hours and was then allowed to recover. The pumping discharge rates (114 L/min for each test) were selected to ensure a demonstrable reduction in potentiometric head (i.e. a lowering of the static water levels) within the water supply aquifer being tested. During the pumping test, the pumping rate was monitored at 60 minute intervals in order to ensure that the rate of discharge remained reasonable constant (i.e. < 5% variation).

Drawdown observations during pumping and recovery were recorded using manual measurements taken with an electronic water level tape. Electronic dataloggers (Schlumberger Micro-Diver™) were installed in each of the test wells prior to the test program. Full recovery was monitored using the dataloggers which were not removed from the wells until at least 24 hours after each pumping test.

Turbidity and free chlorine residual measurements were taken using a Hanna HI93414 Fast Tracker portable meter at the well head at regular intervals during each pumping test. No residual chlorine was detected at the time of water sample collection.

Field measurements of pH, temperature, conductivity and TDS were carried out during each test using an Extech™ ExStik II portable multi-meter. Field parameter results are included on the field test sheets in Appendix 4.

3.6 Groundwater Sampling

Groundwater samples were collected at each well during the pumping tests. Samples were collected at 3 hours and 6 hours after the start of each test. Prior to collection of the pumping test water samples, the free chlorine residual was verified to be non-detectable using field test equipment.

Five (5) offsite water supply wells were also sampled as part of the investigation. The locations are indicated on Drawing No. PH4398-2 Test Hole Location (Appendix 5). A well and septic owner survey was conducted at offsite well locations in August, 2015.

All groundwater samples were submitted for comprehensive testing of bacteriological, chemical and physical water quality parameters consistent with standard ‘Subdivision Assessment Package’ suite of parameters. One sample from test well TW3 was submitted for analysis of metals and selected volatile organic compounds (VOCs).

No methane or other potentially explosive gases were encountered during the water supply assessment.

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 the Exova laboratory in Ottawa. All samples were received by the laboratory within 24 hours of collection.

3.7 Topographic Survey

A topographic survey of the site was conducted by G.A. Smith Surveying Ltd. of Carleton Place Ontario in October 2014. The survey information was used to develop the Lot Development Plan (Paterson Drawing PH4398-1) included in Appendix 5.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Surficial Geology

The subsurface investigations conducted by Paterson identified a variable thickness layer of sand and gravel fill over discontinuous native till, over bedrock. Available Ontario Geological Survey (OGS) mapping suggest that the site is in an area of exposed Paleozoic Bedrock and Organic Deposits. This information conflicts with onsite observations from the subsurface investigations. Surficial soil delineation mapping data from the OGS Earth website is included in Figure-2: Surficial Soil Delineation Mapping (Appendix 5).

Based on the test pit and borehole program, overburden thickness across the site is variable with thickness typically ranging from bedrock at surface to 4.6 m. Several small isolated areas of bedrock outcrop occur at the site. Most of the site (more than 95%) is covered with native soil and/or clean fill material. Refer to the Soil Profile and Test Data sheets in Appendix 1 for the details of the soil profile at each test hole location. Textural soil classifications are provided in Appendix 1. Test hole locations are summarized on the Test Hole Location Plan (Drawing No. PH4398-2 in Appendix 5).

4.2 Bedrock Geology

Geological mapping information provided by OGS reveals that the site and immediate surroundings are underlain by dolostone and sandstone of the lower Ordovician Oxford Formation, which is part of the Beekmantown Group, as indicated in Figure-3: Bedrock Geology (Appendix 5).

A review of the available MOECC Water Well Records shows that wells in the surrounding area have encountered limestone and sandstone (please note that dolostone is often interpreted as limestone by drilling contractors as it has a very similar appearance and is often associated with limestone). Dolostone typically occurs due to magnesium replacement of the calcium in limestone during lithification, and is very common in the Ottawa region.

4.3 Hydrogeology

From a hydrogeological perspective, ‘aquifer zones’ within horizontally bedded carbonate strata are typically associated with bedding plane fracture zones and associated interconnected vertical and sub-vertical fracturing. Relatively unfractured layers behave like aquitards.

The locations of MOECC Water Well Records located within a 500 m radius of the site are included on Figure 4 - MECP Water Well Location Plan (Please note: well location accuracy

is variable based on the MOECC database). A total of 27 well records were identified within 500 m of the site, on the west side of the Mississippi River. Table 1: MOECC Water Well Records Summary (below) provides a summary of hydrogeological information obtained from the available well records.

MECP WATER WELL RECORDS SUMMARY							
Well Record ID	Year Drilled	Depth to Bedrock (m)	Casing Depth (m)	Depth to Water Bearing Fractures (m)		Total Depth (m)	Recommended Pumping Rate (L/min)
Well Records located to the west of the Mississippi River							
3502099	1958	0.0	4.3	13.1		14.3	not provided
3502100	1952	0.6	1.8	18.6		20.4	not provided
3502101	1958	1.2	7.0	14.0		15.2	not provided
3502129	1949	1.2	1.8	18.6		20.4	not provided
3502130	1951	2.4	3.2	18.9		19.5	not provided
3502135	1959	1.8	3.0	15.2		19.5	11.4
3502138	not provided	3.0	3.7	20.7		22.3	not provided
3502139	1961	3.7	4.0	27.1	34.1	38.1	132.5
3502152	1964	1.5	3.7	21.3		21.3	45.4
3503276	1972	0.6	7.6	29.9		31.4	68.2
3503339	1973	0.3	7.6	8.2	19.5	19.8	18.9
3503366	1973	0.6	6.7	18.3		19.5	90.9
3503546	1973	0.9	7.6	18.3		19.5	136.4
3504685	1977	0.9	6.7	19.8		22.9	22.7
3504686	1977	1.2	6.7	21.0		22.9	22.7
3504687	1977	1.2	6.7	28.0		30.5	22.7
3504689	1977	0.6	6.7	20.7		22.9	22.7
3504691	1977	0.9	6.7	21.0		22.9	26.5
3504813	1977	0.6	6.7	35.7		37.8	40.9
3505232	1977	1.2	6.7	20.7		22.9	not provided
3505550	1979	0.6	7.0	15.8		20.7	94.6
3507000	1984	0.9	6.1	18.3		19.8	68.2
3507253	1985	3.0	6.1	19.2		19.8	26.5
7235377	2014	Abandoning Record - PVC Well					
7244927	2015	1.2	6.1	19.5		21.6	91.0
7244928	2015	0.9	6.1	19.5		21.3	90.9
7244929	2015	3.7	6.4	11.9	18.3	20.4	91.0

Table 2 - MECP Water Well Records Summary

Depth to bedrock varies from at ground surface to 3.7 m bgs in the available well records. The depth to significant water bearing fractures varies from 8.2 to 35.7 m bgs.

The pumping rates recommended by the drilling contractor at the time of well installation vary from 11 to 136 liters/minute (L/min). The average rate of pumping based on the available well records that included recommended pumping rates is 59 L/min.

The site is considered to be hydrogeologically sensitive due to bedrock occurring within 2 m of the ground surface. It should be noted that although the site is considered hydrogeologically sensitive, septic impacts were not observed in the groundwater analytical results from the pumping tests of the onsite wells. The presence of relatively shallow overburden and isolated bedrock outcrops will not promote higher than anticipated rates of infiltration due to the massive nature of the upper bedrock strata. No significant fracturing was identified in bedrock outcrops at the site. No karst related features were identified in outcrops at the site. The site is not located in an area of potential or inferred karst as determined by OGS.

4.4 Neighbouring Water Quality

Additional water quality sampling was conducted at five (5) offsite water supply wells. The wells that were sampled are all used for private domestic water supply at residences located along Old Mill Lane, Wilson Street and Apple Street, in close proximity to the subject site.

The locations of the offsite water wells that were sampled are included on Drawing No. PH4398-2 Test Hole Location (Appendix 5). Available Water Well Record information is included in Appendix 2.

A summary of the laboratory water quality results for the offsite sampling is presented in Table 2: Groundwater Geochemistry – Offsite Wells (below). Laboratory certificates of analysis are included for reference purposes in Appendix 3.

Analysis of the water quality data for the offsite water supply wells reveals that the aquifer has not been adversely impacted as a result of the existing development in the area. The development density of the existing lots that border the subject site along Old Mill Lane and Apple Street is approximately 7.2 lots/hectare. The proposed development density is approximately 0.7 lots/hectare, so the proposed development is unlikely to have a significant impact on groundwater quality.

Several exceedances of operational and aesthetic guideline limits are noted for Hardness, TDS, colour and DOC.

POTABLE SUPPLY WELL GEOCHEMISTRY - OFF-SITE WELLS								
PARAMETER	UNITS	ODWS		OFF-SITE WELL				
		LIMIT	TYPE	104 Old Mill	116 Old Mill	124 Wilson	119 Old Mill	110 Apple
				15-Dec-09	01-Feb-10	23-Dec-09	28-Aug-15	28-Aug-15
MICROBIOLOGICAL								
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0	0		0	0
Total Coliforms	ct/100mL	0	MAC	0	0		0	0
Heterotrophic Plate Count	ct/1mL			0	0			
Faecal Coliforms	ct/100mL			0	0			
Faecal Streptococcus	ct/100mL			0	0			
GENERAL CHEMICAL - HEALTH RELATED								
Fluoride	mg/L	1.5(2.4)	MAC	0.26	0.31	0.32	0.32	0.43
Nitrite	mg/L	1	MAC	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate	mg/L	10	MAC	0.6	0.41	5.30	<0.10	1.23
Turbidity	NTU	1.0(5.0)	MAC/AO	0.2	0.3	0.1	0.6	0.1
Ammonia	mg/L			<0.02	<0.02		0.02	0.02
TKN	mg/L			<0.10	<0.10		<0.1	<0.1
GENERAL CHEMICAL - AESTHETIC RELATED								
Hardness	mg/L	100	OG	322	376		370	430
Ion Balance	unitless			1.04	1.01		1.04	0.98
TDS	mg/L	500	AO	417	487	832	506	611
Alkalinity	mg/L	500	OG	279	339	339	319	352
Chloride	mg/L	250	AO	19	32	177	50	84
Colour	TCU	5	AO	4	<2	3	18	16
Conductivity	uS/cm			641	749	1280	779	940
pH	unitless	6.5-8.5	AO	7.86	7.70	7.67	8.16	8.27
Sulphide	mg/L	0.05	AO	<0.01	<0.01		<0.02	<0.02
Sulphate	mg/L	500	AO	39	33	40	38	39
Calcium	mg/L			86	98		92	98
Iron	mg/L	0.3	AO	<0.03	<0.03		<0.03	<0.03
Potassium	mg/L			3	5		4	9
Magnesium	mg/L			26	32		34	35
Manganese	mg/L	0.05	AO	<0.01	<0.01		<0.01	<0.01
Sodium	mg/L	200	AO	17	20		33	30
Phenols	mg/L			<0.001	<0.001		<0.001	<0.001
Tannin & Lignin	mg/L			<0.1	<0.1	<0.1	0.2	<0.1
DOC	mg/L	5	AO	2.2	1.8		63.9	65.1

MAC=Maximum Allowable Concentration AO = Aesthetic Objective OG= Operational Guideline
Shaded cell indicates an exceedance of the ODWS limit

Table 3 – Potable Supply Well Geochemistry - Offsite Wells

4.5 Source Protection

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 been designated as a Highly Vulnerable Aquifer (HVA), and Intake Protection Zone (IPZ) Zone 3 within the MRSPP, and are identified as **two** of four groundwater related vulnerable areas identified within the Clean Water Act (2006). The four vulnerable areas consist of Significant Groundwater Recharge Area **(**SGRA**)**, HVA, IPZ and wellhead protection area (WHPA).

Based upon the designation of an IPZ Zone 3 and HVA, the MRSPP provides a list of activities that are prohibited, managed or encouraged dependent upon the vulnerable area type. The subject site is mapped to be in IPZ zone 3 (Source Protection Atlas), however has

an IPZ score of less than 8 (MRSPP). There is no prohibition of land uses on the subject site based upon its proposed usage.

Therefore, there are no related requirements for an HVA or a IPZ with a score of less than 8 at this location.

5.0 AQUIFER ANALYSIS

The results of the groundwater review and pumping tests performed on the test wells are presented in the following sections.

5.1 Static Conditions

Subsurface conditions are indicated in a cross-section which is included as Figure-5: Generalized North - South Site Cross-Section (Appendix 5). The cross-section shows bedrock and overburden units as well as static groundwater levels in the test wells. Static water level data is summarized in Table 4: Water Level Elevations (below).

WATER LEVEL ELEVATIONS					
Test Well ID	**Date**	**Elevation Ground Surface (m)**	**Elevation Top of Casing (m)**	**Water Level Below Top of Casing (m)**	**Water Elevation (m)**
TW1	08-Jul-15	129.00	129.46	11.13	118.33
	15-Jul-15			11.22	118.24
	07-Dec-21			11.12	118.34
TW2	08-Jul-15	126.89	127.39	9.06	118.33
	15-Jul-15			9.17	118.22
	08-Dec-21			8.83	118.56
TW3	08-Jul-15	123.93	124.33	5.97	118.36
	15-Jul-15			6.06	118.27
	08-Dec-21			5.94	118.39

Note: Elevations are calculated relative to assumed local elevation from topographic survey, and are not specifically accurate relative to mean sea level.

Table 4 - Water Level Elevations

Prior to the initiation of the pumping tests, water levels were measured in the three (3) test wells. The static groundwater levels were between 118.33 and 118.36 m above sea level (ASL) on July 8, 2015 prior to the pumping tests. The groundwater elevations suggest that

groundwater flow in the bedrock is from south to north. The three wells were completed in the same geological unit (dolostone) and at relatively similar depths (Figure-5: Generalized North - South Site Cross-Section). This information is consistent with the expected direction of groundwater flow, which is towards the Mississippi River.

The horizontal hydraulic gradient in the shallow bedrock is estimated at be approximately 0.0003 based on an estimated head difference of 3 cm over 95 m.

5.2 Aquifer Characteristics

Table 5: Summary of Pumping Tests (below) provides a summary of the pumping test program including drawdown observed at each pumping well and at observation wells during pumping.

SUMMARY OF PUMPING TESTS					
Pumping Well ID	Pumping Rate (L/min)	Maximum Drawdown in Pumping Well (m)	Observation Well ID	Max Drawdown in Observation Well (m below top of casing)	Distance between Pumping Well and Observation Well (m)
TW1	114	0.53	TW2	0.23	140
			TW3	0.42	95
TW2	114	0.47	TW1	0.42	140
			TW3	0.4	206
TW3	114	0.77	TW1	0.42	95
			TW2	0.4	206

Note: Drawdown values calculated from manual field measurements taken during pumping tests

Table 5 - Summary of Pumping Tests

Pumping test data were analyzed using Aquifer Test Pro™ (V 2015.1) software. Drawdown data from dataloggers were analyzed using Theis (Theis, 1935), Theis with Jacob correction (Jacob, 1944) and Cooper-Jacob I (Cooper and Jacob, 1946) methods of analysis. Datalogger recovery data was analyzed using Theis (Theis, 1935).

All pressure data from the dataloggers was corrected for atmospheric pressure variations (i.e. barometric compensation) using Schlumberger Diver-Office™ software and a barometric pressure data logger that was deployed during the investigation.

The aquifer characteristics determined from the three pumping tests are summarized in Table 6: Summary of Aquifer Characteristics (below).

SUMMARY OF AQUIFER CHARACTERISTICS			
Analysis	**Well**	**Transmissivity (m2/d)**	**Storativity**
Test 1			
Theis	TW2	2.05E+02	3.05E-06
Theis	TW3	2.20E+02	4.39E-06
Theis Jacob	TW2	2.08E+02	3.20E-06
Theis Jacob	TW3	2.22E+02	4.64E-06
Cooper Jacob I	TW2	2.05E+02	3.05E-06
Cooper Jacob I	TW3	2.09E+02	5.87E-06
Theis Recovery	TW2	1.77E+02	
Theis Recovery	TW3	1.70E+02	
	Test 1 Average	2.02E+02	4.03E-06
Test 2			
Theis	TW1	3.58E+02	1.00E-07
Theis	TW2	1.53E+02	1.00E-07
Theis Jacob	TW1	3.65E+02	1.00E-07
Theis Jacob	TW2	2.80E+02	*1.37E-10*
Cooper Jacob I	TW1	4.56E+02	5.39E-09
Cooper Jacob I	TW2	*2.73E+02*	1.17E-10
Theis Recovery	TW1	5.45E+02	
Theis Recovery	TW2	4.52E+02	
	Test 2 Average	3.60E+02	5.09E-08
Test 3			
Theis	TW1	4.12E+02	1.00E-07
Theis	TW3	2.79E+02	1.00E-07
Theis Jacob	TW1	3.65E+02	1.00E-07
Theis Jacob	TW3	2.85E+02	1.00E-07
Cooper Jacob I	TW1	4.12E+02	1.00E-07
Cooper Jacob I	TW3	2.79E+02	1.00E-07
Theis Recovery	TW1	2.78E+02	
Theis Recovery	TW3	1.98E+02	
	Test 3 Average	3.14E+02	1.00E-07
	Average for all tests	**2.92E+02**	**1.39E-06**
	Worst case values	**1.53E+02**	**1.17E-10**

Table 6 - Summary of Aquifer Characteristics

5.3 Groundwater Geochemistry Assessment

Water quality analysis data from the test wells is summarized in Table 7: Onsite Groundwater, General Geochemistry, and Table 8: Onsite Groundwater Geochemistry, Metals and VOCs (below). The analytical results for the six (6) groundwater samples that were obtained from the three onsite test wells show that water quality at the subject site is acceptable and that there are no exceedances of the applicable health related parameter limits of the Ontario Drinking Water Standards (ODWS).

TEST WELL GEOCHEMISTRY - ONSITE WELLS - GENERAL													
PARAMETER	UNITS	ODWS		TEST WELL									
				TW 1			TW 2			TW 3			
		LIMIT	TYPE	11-Jul-15		23-Jun-16	13-Jul-15		24-Jun-16	10-Jul-15		23-Jun-16
				3hr	6hr		3hr	6hr		3hr	6hr	
MICROBIOLOGICAL													
Escherichia Coli	ct/100mL	0	MAC	0	0	-	0	0	-	0	0	-
Total Coliforms	ct/100mL	0	MAC	0	0	-	0	0	-	0	1	-
GENERAL CHEMICAL - HEALTH RELATED													
Fluoride	mg/L	1.5(2.4)	MAC	0.39	0.32	0.41	0.33	0.31	0.33	0.43	0.43	0.4
Nitrite	mg/L	1	MAC	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate	mg/L	10	MAC	0.72	0.73	1.36	0.16	0.23	0.7	0.93	1.16	0.48
Turbidity - Lab	NTU	1.0(5.0)	MAC/AO	2.7	0.2	0.1	1.0	1.6	0.5	0.2	0.2	0.3
Ammonia	mg/L			0.02	0.02	0.01	0.02	0.03	0.03	<0.05	<0.05	0.1
TKN	mg/L			<0.10	<0.10	0.2	0.20	0.10	0.20	0.14	0.33	0.3
GENERAL CHEMICAL - AESTHETIC RELATED													
Hardness	mg/L	100	OG	383	383	394	346	348	368	414	419	409
TDS	mg/L	500	AO	520	520	544	449	460	526	565	578	621
Alkalinity	mg/L	500	OG	329	343	358	322	316	327	358	369	439
Chloride	mg/L	250	AO	53	56	60	30	34	60	62	68	57
Colour	TCU	5	AO	<2	<2	<2	11	11	4	<2	<2	2
Conductivity	uS/cm			800	815	837	691	707	810	869	869	955
pH	unitless	6.5-8.5	AO	7.94	7.98	8.19	7.98	7.91	8.1	7.70	7.76	8.04
Sulphide	mg/L	0.05	AO	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sulphate	mg/L	500	AO	40	36	40	37	37	41	36	35	34
Calcium	mg/L			94	96	95	89	90	93	100	102	98
Iron	mg/L	0.3	AO	<0.03	<0.03	<0.03	0.18	0.16	0.1	<0.03	<0.03	<0.03
Potassium	mg/L			7	7	7	3	3	3	7	7	7
Magnesium	mg/L			36	37	38	30	30	33	40	40	40
Manganese	mg/L	0.05	AO	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02
Sodium	mg/L	200	AO	31	32	36	18	19	38	39	42	66
Phenols	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001
Tannin & Lignin	mg/L			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
DOC	mg/L	5	AO	75.4	71.2	1.6	70.3	73	2.4	2.3	2.1	3.5

MAC=Maximum Allowable Concentration AO = Aesthetic Objective OG= Operational Guideline
Shaded cell indicates an exceedance of the ODWS limit

Table 7 – Test Well Geochemistry - Onsite Wells - General

The total coliform level in TW3 was 1 count/100 ml which exceeds the MAC of 0 counts/100 mL in the sample taken at the end of the six hour pumping test. Please note that the total coliform count was zero in the sample that was collected from TW3 after three hours of pumping. The result for the six hour sample is considered to be anomalous and is probably due to sample contamination at the time of sampling. MOE Guideline D-5-5 notes that total coliform counts of less than 6 counts/100 ml shall be considered as acceptable (MOE, 1996).

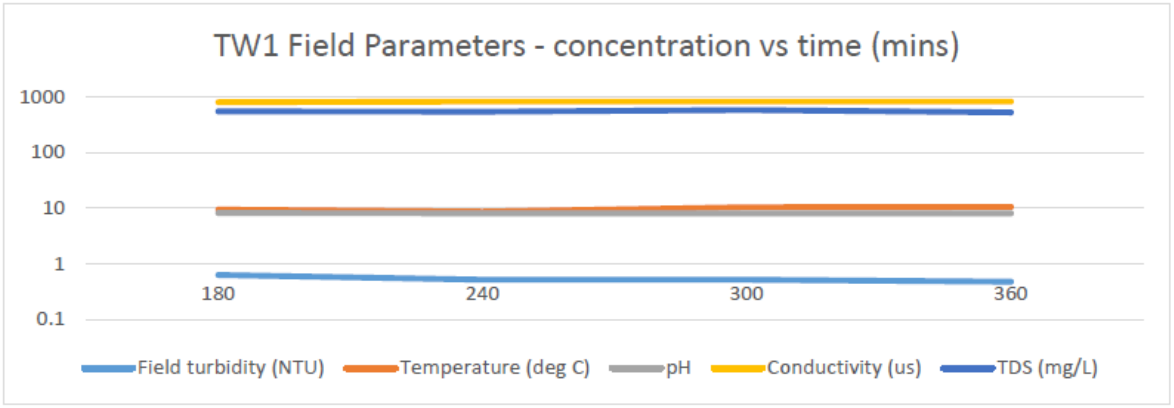
All test wells were purged and resampled on June 23, 24 2016, at which point Colour and DOC were below the Procedure D-5-5 Guideline limits.

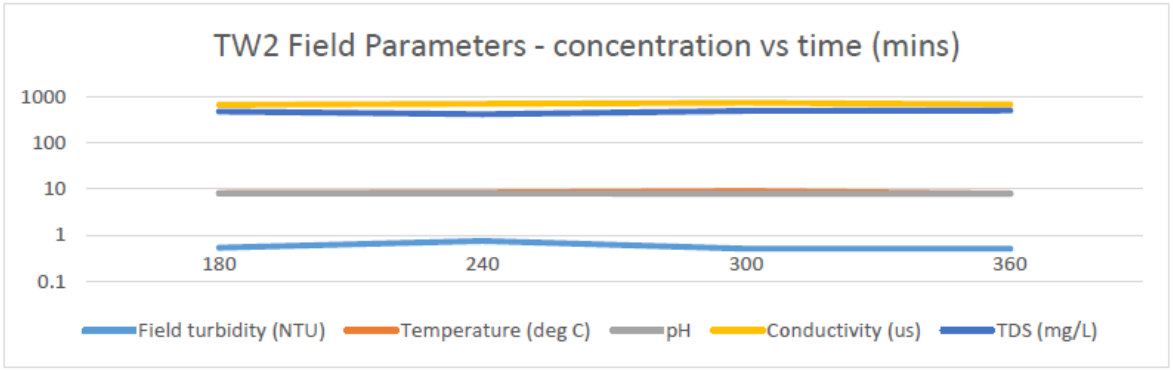
With respect to aesthetic objectives and operational guidelines, the analytical results indicate some minor exceedances of the non-health related guidelines and objectives as follows:

- Hardness (operation guideline) at TW1, TW2 and TW3.
- Total Dissolved Solids (aesthetic objective) at TW1 and TW3.

Laboratory determined turbidity levels were elevated at TW1 and TW2 after 3 hours of pumping at each location. The field turbidity measurement results were below Maximum Acceptable Concentration (MAC) limit, however, as were the 6 hour sample results (lab and field results). Turbidity results for the site are therefore considered to be acceptable.

Field parameter results for the final 3.5 hours of each test are shown graphically below:





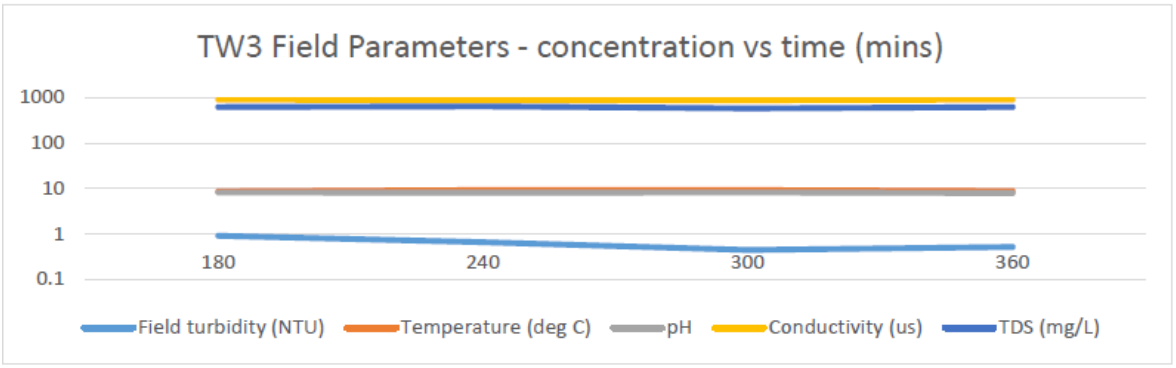


Figure 1 – Test Well Field Parameters

Hardness, an operational guideline, does not appear in the ODWS. Rather it appears in the Technical Support Documents for Drinking Water Standards, Objectives and Guidelines (Technical Support Documents) as a parameter with an operational guideline of 100 mg/L. At the measured concentrations, the water is considered to be moderately hard, which is typical of wells drilled throughout eastern Ontario.

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. There are various levels of the constituents at a low level and it is not

anticipated that they will cause an issue with taste. A point of use reverse osmosis unit may be installed if a homeowner desires for drinking purposes. As such, no taste problems will occur when the system is used.

The Langelier Saturation Index (Langelier, 1936) is used to predict the calcium carbonate stability of water. It indicates whether the water will precipitate, dissolve, or be in equilibrium with calcium carbonate. The results of the Langelier calculation indicate the water is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive). See Appendix 4 for calculation details.

The Ryznar Stability Index (Ryznar, 1944) uses a database of scale thickness measurements in municipal water systems to predict the effect of water chemistry. The RSI was developed from empirical observations of corrosion rates and film formation in steel water mains. The results of the RSI calculation indicates that scale will form. See Appendix 4 for calculation details.

Water quality analysis data for metals and VOC testing is summarized in Table 8 and Table 9 below.

TEST WELL GEOCHEMISTRY - ONSITE WELLS - METALS										
		ODWS		TW1		TW2		TW 3		
		LIMIT	TYPE	23-Jun-16	07-Dec-21	24-Jun-16	08-Dec-21	10-Jul-15	23-Jun-16	08-Dec-21
METALS										
Antimony	mg/L	0.006	IMAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	mg/L	0.025	IMAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	1	MAC	0.22	0.21	0.27	0.24	0.21	0.24	0.23
Beryllium	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	5	IMAC	0.15	0.15	0.14	0.13	0.14	0.15	0.13
Cadmuim	mg/L	0.005	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium VI	mg/L			<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010
Copper	mg/L	1	AO	<0.001	0.002	<0.001	0.002	<0.001	<0.001	0.002
lead	mg/L	0.01	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	mg/L	0.001	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Selemium	mg/L	0.01	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L			2.33	-	2.33	-	2.40	2.36	-
Titanium	mg/L			<0.0001	-	<0.0001	-	<0.0001	<0.0001	-
Uranium	mg/L	0.02	MAC	0.003	0.002	0.002	0.002	0.002	0.003	0.003
Zinc	mg/L	5.0	AO	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

MAC=Maximum Allowable Concentration
AO = Aesthetic Objective
Shaded cell indicates an exceedance of the ODWS limit

Table 8 – Test Well Geochemistry – Onsite Wells – Metals

TEST WELL GEOCHEMISTRY - ONSITE WELLS - VOCs								
PARAMETER	UNITS	TW1		TW2		TW3		ODWS LIMIT
		23-Jun-16	07-Dec-21	24-Jun-16	08-Dec-21	23-Jun-16	08-Dec-21	
Volatile Organic Compounds								
1,1,1,2-tetrachloroethane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
1,1,1-trichloroethane	ug/L	<0.4	-	<0.4	-	<0.4	-	-
1,1,2,2-tetrachloroethane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
1,1,2-trichloroethane	ug/L	<0.4	-	<0.4	-	<0.4	-	-
1,1-dichloroethane	ug/L	<0.4	-	<0.4	-	<0.4	-	-
1,1-dichloroethylene	ug/L	<0.5	-	<0.5	-	<0.5	-	14^{MAC}
1,2-dichlorobenzene	ug/L	<0.4	-	<0.4	-	<0.4	-	200^{MAC} / 3^{AO}
1,2-dichloroethane	ug/L	<0.2	-	<0.2	-	<0.2	-	5^{MAC}
1,2-dichloropropane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
1,3-dichlorobenzene	ug/L	<0.4	-	<0.4	-	<0.4	-	-
1,4-dichlorobenzene	ug/L	<0.4	-	<0.4	-	<0.4	-	5^{MAC} / 1^{AO}
Benzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5^{MAC}
Bromodichloromethane	ug/L	<0.3	-	<0.3	-	<0.3	-	-
Bromoform	ug/L	<0.4	-	<0.4	-	<0.4	-	-
Bromomethane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
c-1,2-Dichloroethylene	ug/L	<0.4	-	<0.4	-	<0.4	-	-
c-1,3-Dichloropropylene	ug/L	<0.2	-	<0.2	-	<0.2	-	-
Carbon Tetrachloride	ug/L	<0.2	-	<0.2	-	<0.2	-	5^{MAC}
Chloroform	ug/L	<0.5	-	<0.5	-	<0.5	-	-
Dibromochloromethane	ug/L	<0.3	-	<0.3	-	<0.3	-	-
Dichlorodifluoromethane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
Dichloromethane	ug/L	<4.0	-	<4.0	-	<4.0	-	50^{MAC}
Ethylbenzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.4^{AO}
m/p-xylene	ug/L	<0.4	-	<0.4	-	<0.4	-	-
Methyl Ethyl Ketone (MEK)	ug/L	<10	-	<10	-	<10	-	
Methyl Isobutyl Ketone (MIBK)	ug/L	<10	-	<10	-	<10	-	
Methyl Tert Butyl Ether (MTBE)	ug/L	<2	-	<2	-	<2	-	
Monochlorobenzene	ug/L	<0.2	-	<0.2	-	<0.2	-	80^{MAC} / 30^{AO}
o-xylene	ug/L	<0.4	-	<0.4	-	<0.4	-	-
Styrene	ug/L	<0.5	-	<0.5	-	<0.5	-	-
t-1,2-Dichloroethylene	ug/L	<0.4	-	<0.4	-	<0.4	-	-
t-1,3-Dichloropropylene	ug/L	<0.2	-	<0.2	-	<0.2	-	-
Tetrachloroethylene	ug/L	<0.3	-	<0.3	-	<0.3	-	30^{MAC}
Toluene	ug/L	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	24^{AO}
Trichloroethylene	ug/L	<0.3	-	<0.3	-	<0.3	-	5^{MAC}
Trichlorofluoromethane	ug/L	<0.5	-	<0.5	-	<0.5	-	-
Vinyl Chloride	ug/L	<0.2	-	<0.2	-	<0.2	-	2^{MAC}
Xylene; total	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	300^{AO}

Table 9 – Test Well Geochemistry – Onsite Wells – VOCs

5.4 Water Quantity Assessment

An analysis of the suitability of the aquifer to supply the proposed development was carried out using the method summarized in Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (MOE 1996).

5.4.1 Peak Demand Water Usage

Procedure D-5-5 indicates that a per-person water requirement of 450 L/day is to be used. The peak demand, which is determined as occurring over a 120 minute period each day, results in a peak demand rate of 3.75 L/min per person.

Procedure D-5-5 suggests the utilization of the number of bedrooms plus one, to determine the minimum number of people per house. It is anticipated that each lot will have one single family home with approximately four bedrooms per home. Using the Procedure D-5-5 methodology, the number of persons per home is determined to be five (5), so the total peak demand rate per home is 18.75 L/min. The pumping rates chosen for each of the pumping tests (114 L/min at each test well location) is well above the average peak demand value, so the current and future wells in the proposed subdivision will be sufficient to handle peak demand loadings.

5.4.2 Long Term Safe Yield

A determination of the long term safe yield (i.e. Q20 pumping rate) of each well was calculated using the method described by Maathius & van der Kamp (2006). For comparison purposes safe yield was also calculated using the Fervolden method (Fervolden, 1959) as described in Maathius & van der Kamp, 2006. The inputs and results of the calculation are presented in Table 10 (below).

20 Year Safe Yield			
Transmissivity Calculated Using	**TW1**	**TW2**	**TW3**
Theis	358	205	220
Theis	365	208	222
Theis Jacob	121	205	209
Theis Jacob	545	177	279
Cooper Jacob I	412	153	285
Cooper Jacob I	365	280	159
Theis Recovery	181	118	198
Theis Recovery	278	192	229
Average Transmissivity (m2/d)	328	192	225
Average Test Pumping Rate (L/min)	113.6	113.6	113.6
Average Test Pumping Rate (m^3/day)	164	164	164
Available Drawdown (m)	11.12	15.97	11.97
Drawdown at 100 mins (m)	0.41	0.41	0.74
Maximum Test Drawdown (m)	0.57	0.44	0.77
Drawdown at 20 years (extrapolated)	2.1	1.59	1.83
% of available drawdown	18.9%	2.8%	6.4%
Specific Capacity (L/min/m)	199	258	148
Q20 safe well yield (m^3/day)$_{Farvolden}$	1744	1468	1288
Q20 safe well yield (m^3/day)$_{Maarthius\ \&\ van\ der\ Kamp}$	606	1150	749
Q20 safe well yield (L/min)$_{Maarthius\ \&\ van\ der\ Kamp}$	421	799	520

Farvolden, 1959
Maathius & van der Kamp, 2006

Table 10 – 20 Year Safe Yield

The results of the 20 year safe yield analysis indicate that the test wells could be pumped at much higher rates than what is required for normal domestic use. The lowest sustainable yield (Q20 = 421 L/min at TW1) is 3.6 times greater than the test pumping rate, and 22.5 times more than the peak demand rate of 18.75 L/min.

It is anticipated that the homes in the proposed subdivision will require a maximum water requirement of 2,250 L/day for all uses. As such, the installation of 14 more domestic water supply wells on the 6.99 ha subdivision will be sustainable.

5.4.3 Potential Well Interference

Results from the pumping test program show that drawdown was observed at the observation wells during each test. Measured drawdowns and distances from each pumping well are included in Table 5: Summary of Pumping Tests (above).

It is anticipated that a total of 14 individual water supply wells (including the three existing test wells) will be used at the proposed subdivision. The lot sizes vary from approx. 0.40 to 0.57 ha. The well spacing will vary according to lot size and the locations of wells on each lot. There will be no clustering of wells as there will be one well on each lot. Considering the inherent intermittent nature of pumping, potential well interference is anticipated to be negligible.

A potential well interference model was used to reflect a hypothetical stress test scenario for drawdown at the site. The model assumes a series of 28 wells arranged in a concentric circular array. Each well is pumping continuously at a rate of 3,000 L/day, over a period of 20 years.

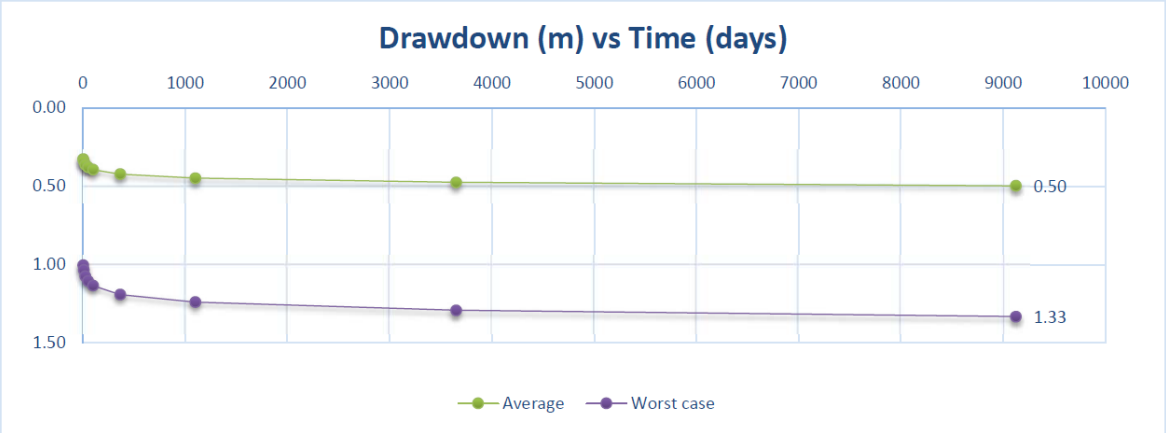


Figure 2 - Maximum Anticipated Drawdown

Analytical model worksheets are presented in Appendix 4. Calculations were based on average and worst case values for Transmissivity and Storativity (as presented in Table 6).

When average values of Transmissivity and Storativity are used the maximum anticipated drawdown based on a total of 28 wells pumping continuously for 20 years at 3,000 L/day, is 0.50 m.

When worst case values of Transmissivity and Storativity are used the maximum anticipated drawdown for 28 wells pumping continuously for 20 years at 3,000 L/day, is 1.33 m.

Available drawdown at the test wells varies from 11.12 to 15.97 m (average = 13.02 m). The worst case maximum drawdown after 20 years of pumping represents a removal of approximately 10% of the available drawdown. The conclusions reached using this model are consistent with the 20 year safe yield values in Table 8: Aquifer Characteristics (above).

Based on this analysis, the proposed use of well water in the subdivision will not result in unacceptable water quantity interference conflicts between onsite and offsite well users.

6.0 DEVELOPMENT CONSIDERATIONS

6.1 Site Development

An adequate water supply aquifer of sufficient quality and quantity is located beneath the subject property and can be intercepted by private wells drilled in accordance with Ontario Regulation 903.

6.2 Future Water Well Construction

Drilled wells completed in the bedrock aquifer should be used for water supply in the proposed development. The wells should be drilled by a suitable experienced, MECP licensed well contractor. All wells must be completed in accordance with O.Reg. 903. Due to the hydrogeologically sensitive nature of the site, a separation distance of 30 m between any proposed well location and the septic bed components, possible stormwater management ponds, and any other sources of contamination is recommended.

Future well design recommendations are based on potential hydrogeological sensitivities, potential connections to the river and the water table depths.

Future wells should be drilled to depths of between 20 m and 25 m. This will ensure that the wells are completed in the same aquifer and will eliminate any potential for cross contamination between aquifers. The casing hole should extend into sound bedrock at least 0.3 m as per O.Reg. 903, and a minimum casing length of 6.7 meters below grade should be installed.

The minimum depth for future wells is 10 m. A minimum well depth is specified in order to ensure new wells that encounter water bearing fractures at shallow depths are drilled deep enough to accommodate long term potentiometric fluctuations in the ‘shallow bedrock aquifer zone’.

The measured yields of future wells will probably be in excess of 100 L/min. If any future well at the proposed subdivision is found to have a yield of less than 22 L/min consideration should be given to extending the well a further 10 m in order to providing additional storage.

At each well location the casing should be installed and grouted in place utilizing either a neat cement grout or sodium bentonite grout slurry pumped from the bottom of the annular space to the ground surface in accordance with O.Reg. 903. The creation of the casing hole, the installation of the casing and the grouting of the annular space should be inspected by a qualified Professional Engineer or Professional Geoscientist.

Each well should be developed by surging or pumping until the water is developed to a sand free state at the time of construction in accordance with O.Reg. 903. If the water is observed to be cloudy at the completion of the prescribed well development, extended well development should be performed until all visible turbidity is removed.

Chlorine should be introduced at the completion of well development in sufficient quantity to produce a free chlorine residual of at least 50 mg/L (ppm). The chlorine should be mixed with the standing water in the casing using a procedure that will result in complete mixing of the chlorine over the entire depth of the well.

Each well should be completed with a submersible pump, pitless adaptor and vermin proof well cap. All such mechanical work connected to the well is to be completed by a qualified well contractor possessing a valid Class 4 pump installer's license. After completion of the mechanical work in the well, the well should be disinfected as described above.

The grading around each well casing should be slightly elevated within 3 m in all directions from the casing to direct surface runoff away from the well. Each well casing should project a minimum of 400 mm above the mounded soil.

Due to the hydrogeologically sensitive nature of the site, a separation distance of 30 m between any proposed well location and the septic bed components and any other potential sources of contamination is recommended. New wells should be accessible for future repair and replacement and as such have been located in front and side yards. This has been shown on Paterson drawing PH4398-1 – Lot Development Plan, attached in appendix 5.

There are currently no concerns regarding connectivity between wells and the river. Further groundwater sampling has demonstrated that DOC does not occur at elevated concentrations in the onsite wells, so there is no evidence to suggest connectivity with the river.

6.3 Water Treatment

The water within the bedrock aquifer displays elevated hardness which can be readily and suitably conditioned to reduce this aesthetic parameter. A standard residential grade water softener can be installed to remove the hardness in the raw water. Conventional water softeners will introduce sodium into the water supply, and it may be appropriate to bypass the water softener with a separate tap for drinking water.

The Langelier Saturation Index (LSI) and Ryznar Stability Index (RSI) were calculated for the three test wells (Appendix 4). The results indicate that scale formation should be minimal.

TDS is primarily comprised of the inorganic substances dissolved in water including chloride, sulphates, calcium, magnesium and bicarbonates. The palatability of drinking water with TDS above 500 mg/L may be unacceptable. Reverse osmosis treatment or Distillation Treatment can be used to remove TDS if raw water is considered to be unpalatable by the end user. Point of use systems (at kitchen sink) are recommended due to the relatively high cost of whole house reverse osmosis treatment, if desired by the user.

The elevated DOC noted at TW1 and TW2 (2015 results) is considered to be a laboratory error. Further development of the wells were completed and an additional sample in 2016 provided results below the aesthetic objective of 5 mg/L.

Elevated color analysis results from the pumping test at TW3 are slightly above the treatment limit indicated in MOE Guideline D-5-5. A resample was taken and was found to be below the treatment limits of D-5-5. Color in groundwater is usually associated with the mineral content of the bedrock aquifer material, but could also be associated with an organic source. Health Canada (2015) notes that color is primarily an aesthetic concern and indicates that a suitable aesthetic limit of 15 TCU should be used. Carbon filter treatment may be sufficient to reduce color to an acceptable level. Other effective methods for treating color include coagulation, distillation, and settling. Previous results indicating elevated color at TW2 are considered to be anomalous. Further development of the wells resulted in significant improvements in the color concentration.

6.4 Predictive Impact Assessment for Nitrates

The groundwater within the bedrock aquifer should be protected from sewage system effluent by the available overburden and the massive layer of Oxford Formation dolomite above the shallowest point of groundwater interception.

The general overburden groundwater flow direction will be controlled by the site topography, and will mostly flow to the north and northwest, towards the Appleton Swamp.

Procedure D-5-4: Three - Step Assessment Process

MECP procedure D-5-4 stipulates the use of a three-step assessment process which is outlined in the MECP document “D-5-4 Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment”. The three-step assessment process looks at Lot Size Considerations, System Isolation Characteristics, and Contaminant Attenuation Considerations.

Step 1 - Lot Size Considerations

As the proposed lot severance will create 14 lots of varying size (0.40 ha to 0.57 ha) with the average lot size of approximately 0.43 ha, which is less than the one hectare, the proposed lot severance does not meet this consideration.

Step 2 - System Isolation Characteristics

Where lot sizes are less than one hectare in size, the consultant is responsible for assessing the potential risk to the groundwater. The guideline asks that the consultant demonstrate system isolation using multiple lines of evidence.

As the overburden was determined to be less than 2 m during the subsurface investigations, it was determined that the residential development does not meet the requirements for system isolation.

Due to the general groundwater flow direction of north and northwest, the contaminant attenuation zone for the proposed residential development would extend off-site towards the Appleton Swamp. The effluent would be naturally attenuated within the adjacent properties without negative impacts on the present or potential reasonable use (residential buildings) of the area properties.

Step 3 – Contaminant Attenuation Considerations

In order to demonstrate that private services would adequately support the proposed residential development, a predictive nitrate impact assessment for the subject site was completed. The values shown in the Predictive Nitrate Impact Assessment attached to this report are summarized below.

- ❑ Site area — 19.61 ha
- ❑ Impervious area % — 7.0 %
- ❑ Daily sewage flow — 1.0 m^3
- ❑ Concentration of nitrate in effluent — 40 mg/L
  (Value based on typical effluent concentration)
- ❑ Surplus Water — 342 mm/year
  (The surplus water value was estimated based on Environment Canada Climate Office values with a soil type comprised of clay loam (Urban Lawns) and anthropogenic sources.)
- ❑ Combined infiltration factor based on: — 0.70
  - Topography infiltration factor 0.25

- Soil texture infiltration factor 0.30
- Cover infiltration factor 0.15

The topography infiltration factor of 0.25 is based upon an average of rolling land with average slope of 2.8 to 3.8 m/km for the proposed development and flat land with a average slope of less than 0.6 m/km.

The soil texture infiltration factor was based upon an average of “medium combinations of clay and loam” with a value of 0.2 and “Open Sandy Loam” with a value of 0.4, which is a reasonable generalization based upon the site investigations and available geological mapping.

The “vegetative cover infiltration factor” was calculated as 0.15 based upon an average of the value for cultivated land (0.1) and the value for Woodland (0.2).

The calculation for a standard septic system results in a predicted nitrate concentration of 4.2 mg/L nitrate concentration for the subject site, using a value of 40 mg/L nitrate concentration within the effluent. This value was based upon using a standard septic flow value of 1,000 L/day for the daily sewage flow.

Nitrate concentrations in the onsite wells are recorded to be below 1.4 mg/L. As such, additional loading will be well below the provincially mandated limit of 10 mg/L. It is Paterson`s opinion that the proposed development will meet the regulatory requirements for nitrate dilution. The detailed analyses for these sections appears in Appendix 4.

Groundwater within the bedrock aquifer should be protected from sewage system effluent by the available overburden and the massive nature of the upper bedrock units.

The cumulative nitrate impact for this subdivision has been calculated to be 4.2 mg/L. Nitrate concentrations in onsite and offsite wells are typically non-detectible or below 1.2 mg/L, so the additional loading will be well below the provincially mandated limit of 10 mg/L. As such, it is Paterson`s opinion that the proposed development will meet the regulatory requirements.

Groundwater samples were collected at three offsite well locations (see table below) in June 2016. Since the direction of groundwater flow in the bedrock aquifer is probably towards the north (based on the relative locations of the Mississippi and Ottawa Rivers) the concentration of nitrates in 139 Apple Street can be considered to be representative of the receiving aquifer (i.e. nitrates = 0 mg/L).

POTABLE SUPPLY WELL GEOCHEMISTRY - OFFSITE WELLS - NITRATE SPECIES					
PARAMETER	UNITS	ODWS LIMIT	OFFSITE WELL LOCATION		
			128 Apple	139 Apple	140 Wilson
			24-Jun-16	24-Jun-16	24-Jun-16
General Chemistry Parameters					
DOC	mg/L	5[AO]	1.7	2	1.9
Nitrite	mg/L	1.0[MAC]	<0.025	<0.025	<0.025
Nitrate	mg/L	10[MAC]	<0.10	<0.10	<0.10
Nitrite + Nitrate (as N)	mg/L	10[MAC]	0.2	<0.10	2.52
Nutrients					
Ammonia	mg/L	-	0.2	<0.10	2.52
Organic Nitrogen	mg/L	0.15[OG]	0.23	0.12	0.23
TKN	mg/L	-	0.23	0.12	0.23
MAC=Maximum Allowable Concentration		AO = Aesthetic Objective			
Shaded cell indicates an exceedance of the ODWS limit		OG = Operational Guideline			

Table 11 - Potable Supply Well Geochemistry - Offsite Wells - Nitrate Species

6.5 Wastewater Treatment and Disposal Options

Onsite sewage disposal needs can be accommodated with a combination of conventional absorption style and conventional filter media style Class 4 sewage systems. Standard class 4 systems consist of a septic tank and in-ground, partially or fully raised leaching beds, as per Part 8 of the Ontario Building Code. Class 4 systems with tertiary treatment are available for use, and often provide a reduced footprint, however, were not used in support of this study.

In order to minimize the impact of sewage systems on the environment the following design principals should be adhered to:

- Surface grades should promote drainage away from sewage systems such that surface water accumulation is prevented.
- Water supply wells should be properly constructed.
- Sewage systems should be properly constructed.
- The layout of each lot should maximize the separation between wells and sewage systems to ensure a minimum separation of 15 m for fully-raised sewage systems.

The proposed Lot Development Plan (Drawing No. PH4398-1 Lot Development Plan) in Appendix 5 shows details of the proposed layout at each lot. The purpose of this drawing is

to show that a typical home and private services will fit onto the proposed lot, and can meet all pertinent regulations without causing environmental constraints. The houses shown on Drawing No. PH4398-1 cover a plan area of 300 m^2 (four bedroom single family home). Each home is serviced by a sewage system with the capacity of 3,000 L/day.

In all instances, site specific analysis of the soil morphology in the area of each proposed leaching bed is required during the design stages of the leaching bed in order to determine if sufficient soil exists to facilitate the use of native soil for subgrade preparation. Detailed soil morphology should only be determined by a qualified geotechnical specialist.

It is not the intent of the Lot Development Plan (Drawing No. PH4398-1) to restrict placement of a dwelling on each lot. While the actual configuration and position of the home may change, the relative position of the home, sewage system and well should be maintained. In all cases, the separation criteria for the immediate and neighbouring lots should be followed. Sewage systems must be designed according to Part 8 of the Ontario Building Code (OBC). The OBC sets out minimum design and construction standards for all approved classes of sewage systems.

OBC requirements state that there must be a minimum of 900 mm of suitable soil or leaching bed fill present between the base of the absorption trenches and the high groundwater table, bedrock or soil with a percolation rate greater than 50 min/cm. Although it is not expected that groundwater conditions will affect the design of the systems, there is a potential for shallow bedrock conditions to govern the siting of leaching beds on individual lots.

6.6 Phosphorous Impact Assessment

Individual onsite wastewater treatment systems are not usually a significant source of phosphorus impacts to surface water because the phosphorus rapidly binds to soil particles immediately below the leaching bed. The only concern is at locations where surface water is in close proximity to onsite wastewater treatment systems, and where soils are thin, sandy, and calcareous.

The science regarding phosphorus soil retention is complex and varies with different soil types. As effluent is dispersed to the unsaturated soil beneath the leaching bed, phosphorus is retained due to processes of precipitation and adsorption.

Precipitation occurs when negatively charged phosphate anions react with positively charged cations (e.g. iron, aluminum, and calcium). The amount of precipitation depends on pH, redox potential, and the availability of cations. Calcareous soils tend to be alkaline. Iron and aluminum cations are generally more available in acidic non-calcareous soils. Although

phosphate reacts with calcium in calcareous soils, it is more effectively immobilized by iron and aluminum in non-calcareous soils.

Adsorption occurs when phosphate anions are attracted to and bind to positively charged mineral particle surfaces. Binding by adsorption is not as strong as binding by precipitation and is reversible. Adsorption is also limited by the number of adsorption sites available.

All onsite wastewater treatment systems will be located more than 30 m away from the Mississippi River.

Soils conditions at the site are characterized by variable combinations of silt/sand/gravel. Existing soils are thin with the maximum thickness of approximately 4.6 m based on the available borehole and test pit logs.

The Mississippi River is 200 km long and drains an area of 4,450 km^2. Canadian Hydro Developers Inc. operates an electrical power generation plant in Appleton, and routinely reports information about water depth and flow to the Mississippi Valley Conservation Authority (MVCA). The average flow measured at Appleton Hydro Dam is approximately 9 m^3/second. This is equivalent to approximately 778 million L/day.

Ontario Ministry of the Environment, Conservation and Parks (MECP) Procedure D-5-4 indicates that the concentration of phosphate used in assessing the potential impact of sewage effluent should be 15 mg/L, at an effluent flow rate of 1,000 L/day per lot.

The MECP Ontario Provincial Water Quality Objectives (PWQO) indicate that phosphorus in lakes should not exceed 20 ug/L, and that “excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L”. The United States Environmental Protection Authority (USEPA) limit is 50 ug/L if streams discharge into lakes or reservoirs. The ‘Canadian Water Quality Guidelines for the Protection of Aquatic Life’ (CCME, 2004), indicates that most uncontaminated freshwaters contain between 10 and 50 ug/L of total phosphorus.

Although the soils at the site are relatively coarse grained and calcareous (due to the underlying limestone bedrock), there will still be a lot of precipitation and adsorption of phosphorus immediately below each wastewater treatment system bed. Depending on the soil thickness and the relative elevation of the overburden water table, each location will have a variable amount of soil material available for binding of phosphorus beneath the wastewater treatment system, and between the wastewater treatment system and the Mississippi River. Breakout to the river will not occur for many years but can be expected to occur eventually as all of the available soil becomes saturated with phosphorus. Preferential

pathways for groundwater flow (sandy lenses, soil fractures) could also result in the transportation of some phosphorus impacted shallow groundwater to the river.

The following calculation assumes a worst case scenario where ALL of the phosphorus from 14 lots reaches the river on any given day:

- 14 lots x 1000 litres effluent /day x 15 mg/L phosphorus = 210 g phosphorus/day
- Flow rate in the Mississippi River = 778 million litres/day
- 210 grams phosphorus dissolved into 778 million litres water = 0.00000027 grams/L

The resultant phosphorus concentration is equal to 0.27 micrograms/litre (ug/L). This value is two orders of magnitude less than the interim PWQO limit of 30 ug/L. If all of the phosphorus from the proposed subdivision flowed straight into the Mississippi River, there would be no significant impact. Most of the phosphorus will be retained onsite however due to precipitation and adsorption of phosphorus within the overburden soil unit, so there will be no adverse effects to the river. There are no significant concerns regarding potential phosphorus impacts to the Mississippi River that could be associated with the proposed subdivision.

7.0 CONCLUSIONS

The following statements and conclusions are based on the investigation and analysis contained within this report:

- The test wells in the proposed subdivision have demonstrated that the underlying aquifer is capable of providing water that is safe and suitable for human consumption.
- The test wells in the proposed subdivision have demonstrated that the underlying aquifer is capable of providing a sufficient quantity of water for normal domestic purposes.
- Adverse effects on well water in the proposed subdivision from potential onsite and offsite sources are considered to be minimal/insignificant. Previous contamination issues at the site have been addressed and are fully remediated (Paterson, 2010). No potential offsite sources of contamination were identified.
- In Paterson's professional opinion the probable well yields determined on the basis of this investigation are representative of the yields which residents of the proposed subdivision are likely to obtain from their wells in the long term.
- Groundwater withdrawals in the proposed subdivision and at neighbouring properties should not exceed the long term safe yield of the aquifer, or significantly decrease base flow to sensitive water courses. Long term safe yield calculations indicate that the groundwater use in the area will be well below the long term safe yield of the aquifer.
- Potential well interference with neighboring offsite wells is considered to be minimal and based on the aquifer parameters determined by this study, the anticipated water demand from this subdivision should have minimal impact on the safe yield of the main water supply aquifer in the area.
- The subject property is suitable for development as a residential subdivision at the proposed density. Impacts to the neighbouring low density residential development area is expected to be negligible.

8.0 RECOMMENDATIONS

8.1 Water Supply

- All new wells should be constructed such that the casing hole extends into sound bedrock at least 0.3 m as per O.Reg. 903, with a minimum casing length of 6.7 meters below grade and extend to a minimum depth of at least 10 m below grade.
- Existing wells at the site which are not to be utilized for water supply wells, should be decommissioned according to the requirements of O.Reg. 903.
- Due to the hydrogeologically sensitive nature of the site, a separation distance of 30 m between any proposed well location and the septic bed components, possible stormwater management ponds, and any other sources of contamination is recommended.
- New wells should be accessible for future repair and replacement and as such have been located in front and side yards.
- The creation of the casing hole, installation of the casing, and grouting of the annular space, should be inspected by a qualified Professional Engineer or Professional Geoscientist. All well construction must be carried out by a licensed and experienced well technician.
- Wells should be developed to a sand free state in order to ensure that the residual turbidity created by the well drilling activities is completely purged from the well. Additional well development, prior to placing the well into use, is strongly recommended in order to provide adequate development of the formation and remove extraneous rock debris from the aquifer pathways. It is likely that future wells at this site will require additional well development. The additional well development should take place during well construction, or alternatively, take place during the mandatory pumping test set forth by O.Reg. 903.
- All future water wells be completed such that the top of well casing is a minimum of 400 mm above the finished grade within a 3 m radius of the wellhead. The grade should slope away from the wellhead in all directions for a distance of at least 3 m.
- Any remaining monitoring wells at the site should be abandoned in accordance with O.Reg. 903 requirements.
- Individual future well owners should carry out semi-annual verification of potability of the raw water supply, specifically bacteriological analyses (E.coli, and total

coliforms). The well owner should ensure that the wellhead and surrounding area are maintained in accordance with the requirements of O.Reg. 903. Future well owners should refer to the MOECC Water Supply Wells Requirements and Best Management Practices, (Revised April 2015) website at:

https://dr6j45jk9xcmk.cloudfront.net/documents/4410/a-wwbmp-title-master-table-of-contents-chapter-1.pdf

- ❑ A warning clause addressed to people on low sodium diets should be registered on title regarding the elevated concentration of sodium (> 20 mg/L) identified at TW1 and potentially at other future wells at the site. The warning should also address the potential use of water softeners to reduce hardness, which was elevated at all of the test wells.
- ❑ The raw water found in the water supply aquifer system is considered to be hard. Residential grade water softeners are recommended where water hardness is deemed unsuitable to the future homeowner.
- ❑ Additional treatment to address TDS and color may be required at each location depending on the specific findings of analytical testing. Additional treatments methods may include reverse osmosis, coagulation/flocculation processes, biological filtration, and/or granulated activated charcoal filtration.

8.2 Wastewater Treatment

- In the proposed areas for septic systems, the water table and bedrock surface may be less than 0.9 m below the ground surface and therefore imported material may be required.
- A site specific investigation should be carried out for the detailed sewage system design at each lot, as part of the building permit application process.
- The septic systems should be constructed with all appropriate setbacks as per Ontario Building Code requirements.
- Some native material is relatively permeable for septic systems; the native soils should be assessed at the proposed septic location and imported fill be used, if necessary.
- Proposed well, septic, and building locations are noted on Drawing No. PH4398-1 Lot Development Plan (Appendix 5).

- Future owners of individual onsite wastewater treatment systems should familiarize themselves with basic safety and maintenance information which is available at: http://www.omafra.gov.on.ca/english/environment/facts/sep_smart.htm

In summary, it is Paterson`s professional opinion that this site is suitable for development as a residential subdivision at the proposed lot density. The hydrogeological recommendations contained within this report, if followed, should ensure that the development takes place in an effective manner, with a minimal impact on the natural environment.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Erik Ardley, P.Geo

Michael S. Killam, P.Eng.

9.0 STATEMENT OF LIMITATIONS

This Hydrogeology and Terrain Analysis report has been prepared in general accordance with the agreed scope-of-work and the requirements of MECP Guideline D-5: Planning for Sewage and Water Services (August 1996), Procedure D-5-4: Technical Guideline for Individual Onsite Sewage Systems: Water Quality Impact Risk Assessment (August 1996), and Procedure D-5-5: Technical Guideline for Private Wells: Water Supply Assessment (August 1996).

The conclusions presented herein are based on information gathered from a limited historical review along with limited field inspection and testing programs. The findings of this investigation are based on a review of readily available geological, historical, and regulatory information and a cursory review made at the time of the field assessment. The historical research relies on information supplied by provincial agencies and was limited within the scope-of-work, time, and budget of the project herein.

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only and test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those described by the test holes themselves.

This report was prepared for the sole use of Southwell Homes LTD. Permission from the above noted party and our firm will be required to release this report to any other party.

10.0 REFERENCES

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Appendix 1

- **Soil Profile and Test Data Sheets**
- **Symbols and Terms**
- **Grain Size Distribution Curves**

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP 1

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	124.90		
25mm Topsoil over brown **SILTY SAND** with some clay and gravel		G	1						
0.48									
End of Test Pit TP terminated on bedrock surface @ 0.48m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
△

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP 2

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.28		
TOPSOIL 0.10									
FILL: Brown silty sand with cinder blocks 0.53		G	1						
Brown **SILTY SAND** 0.81		G	2						
End of Test Pit									
TP terminated on bedrock surface @ 0.81m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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Appleton, Ontario

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REMARKS

HOLE NO. TP 3

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.94		
FILL: Dark brown silty clay with gravel and brick pieces		G	1			1	126.94		▽
1.62									
Grey-brown **SILTY CLAY** with sand		G	2			2	125.94		
2.34									
End of Test Pit TP terminated on bedrock surface @ 2.34m depth (GWL @ 1.6m depth)									

Photo Ionization Detector: ○ Lower Explosive Limit % — 20 40 60 80

RKI Eagle Rdg. (ppm) — 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
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FILE NO. PE1114

REMARKS

HOLE NO. TP 4

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.92		
FILL: Brown sand and gravel with rubble		G	1						
0.97						1	127.92		
GLACIAL TILL: Brown silty sand with clay, gravel and cobbles		G	2						
2.67						2	126.92		
End of Test Pit TP terminated on bedrock surface @ 2.67m depth									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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REMARKS

HOLE NO. TP 5

BORINGS BY Backhoe **DATE** August 26, 2005

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.72		
FILL: Brown silty sand with gravel and clay		G	1			1	127.72		
						1.30			
GLACIAL TILL: Brown silty clay with sand and gravel		G	2						
						1.83			
End of Test Pit TP terminated on bedrock surface @ 1.83m depth									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP 6

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.70		
FILL: Dark brown silty sand with topsoil		G	1						
0.53									
Brown **SILTY SAND**, some clay		G	2						
0.99						1	126.70		
GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles		G	3						
1.20									
End of Test Pit									
TP terminated on bedrock surface @ 1.20m depth									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP 7

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.63		
FILL: Brown silty sand with gravel		G	1						
0.48									
FILL: Dark brown silty sand with clay and concrete pieces		G	2						
0.84									
FILL: Brown silty sand with gravel		G	3			1	127.63		
1.22									
		G	4						
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles						2	126.63		
2.34									
End of Test Pit									
TP terminated on bedrock surface @ 2.34m depth									

Photo Ionization Detector: ○ Lower Explosive Limit % (20, 40, 60, 80)

RKI Eagle Rdg. (ppm): 100, 200, 300, 400, 500

▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP 8

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.92		
FILL: Brown silty sand with clay, cobbles, steel and topsoil		G	1			1	127.92		
		G	2						
1.78									
End of Test Pit TP terminated on bedrock surface @ 1.78m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
△
△
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP 9

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.84		
FILL: Sand and gravel with concrete and steel pieces		G	1			1	127.84	△	
1.47									
End of Test Pit TP terminated on bedrock surface @ 1.47m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP10

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.73		
TOPSOIL		G	1						
0.23									
Brown **SILTY SAND**, trace clay		G	2						
0.48									
GLACIAL TILL: Grey-brown silty clay with sand, gravel and cobbles		G	3						
0.99									
End of Test Pit									
TP terminated on bedrock surface @ 0.99m depth									

Lower Explosive Limit % scale: 20 40 60 80

RKI Eagle Rdg. (ppm) scale: 100 200 300 400 500

▲ Full Gas Resp. △ Methane Elim.

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REMARKS

HOLE NO. TP11

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.34		
FILL: Silty sand with gravel, concrete, metal and slag pieces		G	1						
0.60									
		G	2						
Brown **SILTY CLAY** with sand						1	127.34		
1.83									
End of Test Pit									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP12

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.16		
FILL: Brown sand with gravel									
0.15									
TOPSOIL		G	2						
0.33									
Brown **SILTY CLAY** with sand		G	1						
0.53		G	3						
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	4			1	127.16		
1.37									
End of Test Pit									
TP terminated on bedrock surface @ 1.37m depth									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
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REMARKS

HOLE NO. TP13

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.85		
FILL: Sand and gravel with topsoil		G	1						
1.12						1	127.85		
Brown **SILTY SAND**, some clay		G	2						
1.73									
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	3			2	126.85		
3.05						3	125.85		
End of Test Pit TP terminated on bedrock surface @ 3.05m depth									

Photo Ionization Detector: ● Volatile Organic Rdg. (ppm); ○ Lower Explosive Limit %

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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REMARKS

HOLE NO. TP14

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.82		
FILL: Brown silty sand with clay, concrete and steel		G	1			1	127.82		
						1.30			
GLACIAL TILL: Light brown silty sand with clay, gravel and cobbles		G	2			1.42			
End of Test Pit									
TP terminated on bedrock surface @ 1.42m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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FILE NO. PE1114

REMARKS

HOLE NO. TP15

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.04		
FILL: Mixture of topsoil, sand, silty clay, gravel and wood		G	1						
0.51									
End of Test Pit TP terminated on bedrock surface @ 0.51m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
△

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP16

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.95		
FILL: Sand and gravel with clay, wood and slag		G	1						
		G	2						
0.91									
End of Test Pit TP terminated on bedrock surface @ 0.91m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP17

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	127.85		
FILL: Sand, gravel, wood and slag		G	1						
						0.66			
End of Test Pit TP terminated on bedrock surface @ 0.66m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
△

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP18

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	125.97		
FILL: Silty sand with clay, topsoil, wood and slag		G	1						
0.63									
End of Test Pit TP terminated on bedrock surface @ 0.63m depth									

Photo Ionization Detector
○ Lower Explosive Limit %
20 40 60 80
△

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP19

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0			
TOPSOIL 0.03									
End of Test Pit									
TP terminated on bedrock surface @ 0.03m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP20

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0			
FILL: Brown silty sand with clay, rubber, steel, plastic and fabric		G	1						
0.25									
End of Test Pit TP terminated on bedrock surface @ 0.25m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
△
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. TP21

BORINGS BY Backhoe **DATE** August 26, 2008

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0	128.19		
FILL: Brown silty sand with clay and gravel		G	1						
0.20									
TOPSOIL		G	2						
0.63									
GLACIAL TILL: Brown silty clay with sand, gravel and cobbles		G	3						
1.12						1	127.19		
End of Test Pit									
TP terminated on bedrock surface @ 1.12m depth									

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ Lower Explosive Limit %
20 40 60 80
100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. MW 1-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	127.46
FILL: Silty sand with gravel		AU	1				
0.86		RC	1	91	0	1	126.46
		RC	2	90	60	2	125.46
		RC	3	88	82	3	124.46
		RC	4	100	44	4	123.46
BEDROCK: Limestone		RC	5	90	73	5	122.46
		RC	6	95	92	6	121.46
		RC	7	100	78	7	120.46
		RC	8	97	80	8	119.46
		RC	9	100	100	9	118.46
12.19						10	117.46
End of Monitoring Well (GWL @ 9.86m-Sept. 2/08)						11	116.46
						12	115.46

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
Gastech 1314 Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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Consulting Engineers

28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. MW 2-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	128.08
FILL: Silty sand with gravel and concrete pieces						1	127.08
1.90						2	126.08
		RC	1	85	73	3	125.08
		RC	2	93	60	4	124.08
		RC	3	100	100	5	123.08
		RC	4	97	87	6	122.08
BEDROCK: LImestone						7	121.08
		RC	5	92	82	8	120.08
		RC	6	100	93	9	119.08
		RC	7	93	88	10	118.08
		RC	8	100	100	11	117.08
12.19						12	116.08
End of Monitoring Well							
(GWL @ 7.30m-Sept. 2/08)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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28 Concourse Gate, Unit 1, Ottawa, ON K2E 7T7

SOIL PROFILE AND TEST DATA

Phase II-Environmental Site Assessment
Former Appletex Mill
Appleton, Ontario

DATUM Ground surface elevations provided by G. A. Smith Surveying Ltd.

FILE NO. PE1114

REMARKS

HOLE NO. MW 3-08

BORINGS BY CME 55 Power Auger **DATE** 26 Aug 08

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	121.79
TOPSOIL 0.05		SS	1	33	2		
FILL: Brown silty sand with clay and gravel		SS	2	17	12	1	120.79
		SS	3	4	4		
2.21		AU	5			2	119.79
		SS	4	17	2		
FILL: Grey to black silty clay with gravel		SS	6	17	3	3	118.79
3.73							
GLACIAL TILL		SS	7	29	74	4	117.79
4.62		SS	8	55	33		
		RC	1	96	83	5	116.79
BEDROCK: Limestone						6	115.79
		RC	2	95	90		
						7	114.79
7.62		RC	3	90	70		
End of Monitoring Well							
(GWL @ 2.70m-Sept. 2/08)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone

○ Lower Explosive Limit %

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

Gastech 1314 Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

REMARKS

FILE NO. PH2723

HOLE NO. TH 1

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	126.0		
FILL: Dark brown silty sand with gravel		G	1			1	125.0		
1.55									
End of Test Hole									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

REMARKS

FILE NO. PH2723

HOLE NO. TH 2

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.3		
FILL: Dark brown silty sand with gravel		G	1			1	127.3		
End of Test Hole						1.55			

Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

FILE NO. PH2723

REMARKS

HOLE NO. TH 3

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	126.0		
FILL: Dark brown silty sand with gravel		G	1			1	125.0		
1.55									
End of Test Hole									

Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

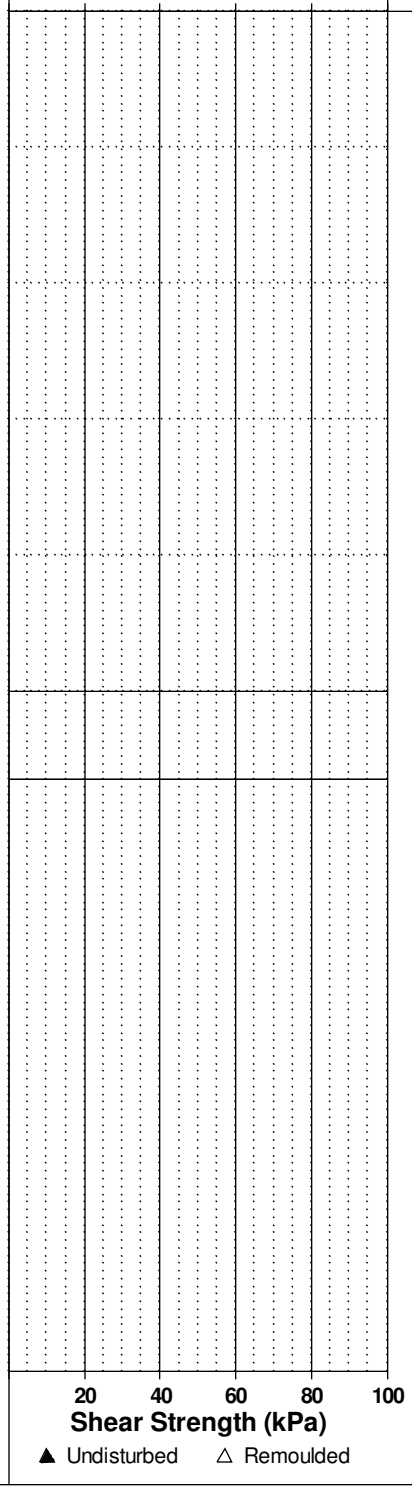
FILE NO. PH2723

REMARKS

HOLE NO. TH 4

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.05						0	127.9		
FILL: Dark brown silty sand with some gravel and cobbles to sand-gravel, trace silt and clay		G	1			1	126.9		
1.13									
End of Test Pit Practical refusal to augering on inferred bedrock surface at 1.13m depth									



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

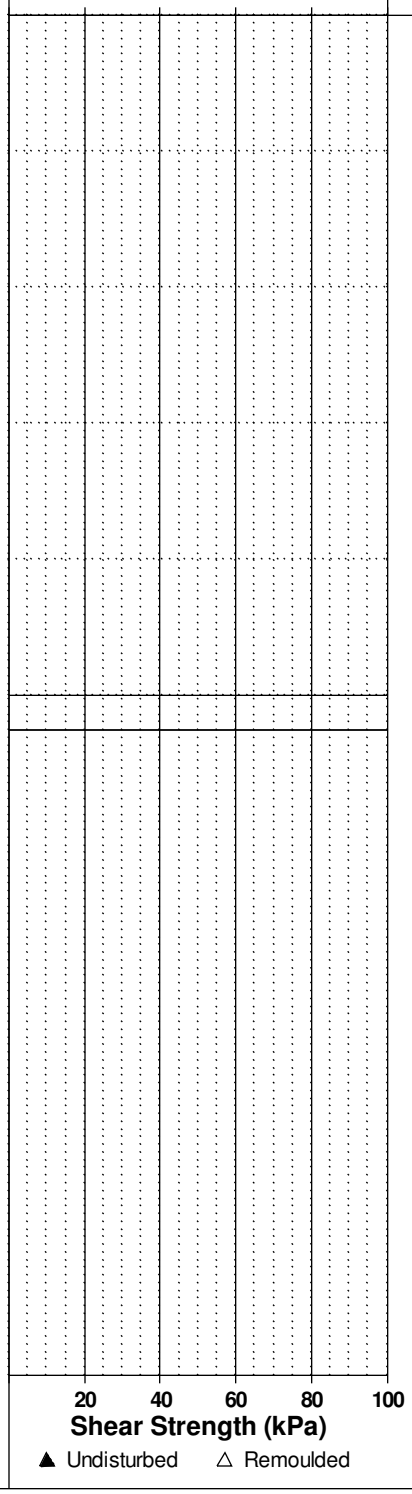
FILE NO. PH2723

REMARKS

HOLE NO. TH 5

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.9		
FILL: Light brown silty sand		G	1						
0.59									
Very stiff, brown **SILTY CLAY,** trace gravel		G	2						
1.05						1	126.9		
End of Test Hole Practical refusal to augering on inferred bedrock surface at 1.05m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

REMARKS

FILE NO. PH2723

HOLE NO. TH 6

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
TOPSOIL 0.06						0	128.6		
FILL: Brown silty sand with clay 0.35									
End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.35m depth									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

REMARKS

FILE NO. PH2723

HOLE NO. TH 7

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	123.9		
TOPSOIL 0.04									
FILL: Brown silty sand with clay									
0.65									
End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.65m depth									

Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

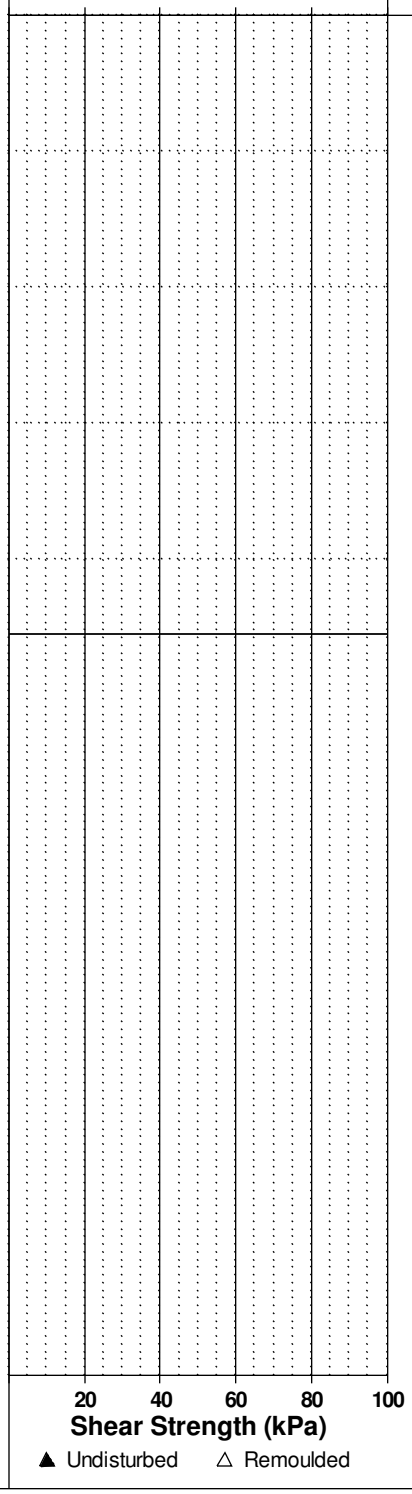
FILE NO. PH2723

REMARKS

HOLE NO. TH 8

BORINGS BY Hand Auger **DATE** August 28, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	124.7		
TOPSOIL 0.04									
FILL: Brown silty sand with clay									
0.91									
End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.91m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

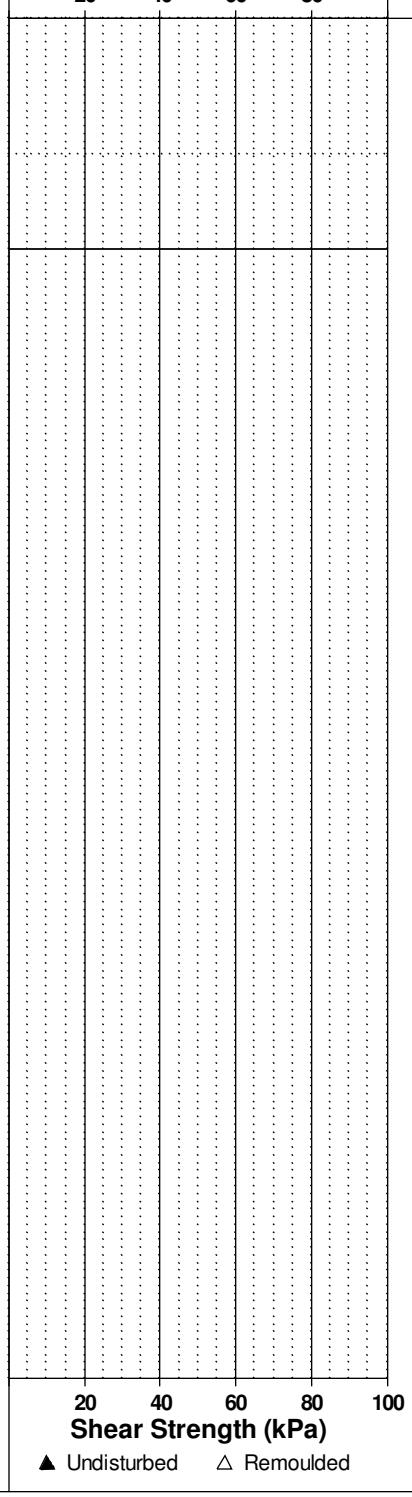
FILE NO. PH2723

REMARKS

HOLE NO. TH 9

BORINGS BY Hand Auger **DATE** September 9, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	124.5		
TOPSOIL 0.03									
SILTY SAND with clay		G	1						
0.34									
End of Test Hole									
Practical refusal to augering on inferred bedrock surface at 0.34m depth									



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

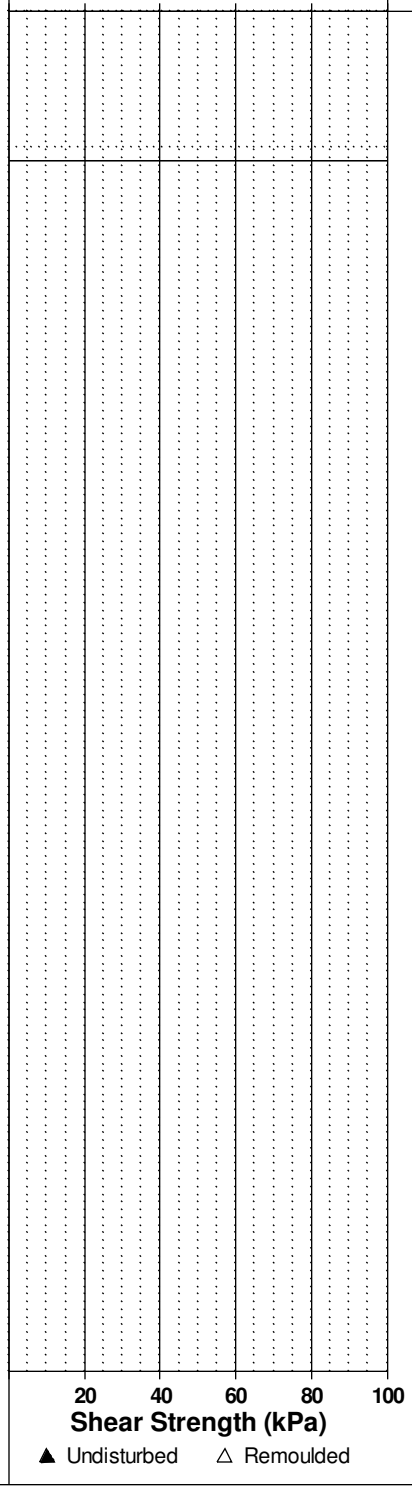
FILE NO. PH2723

REMARKS

HOLE NO. TH10

BORINGS BY Hand Auger **DATE** September 9, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	123.7		
SILTY SAND		G	1						
0.22									
End of Test Hole Practical refusal to augering on inferred bedrock surface at 0.22m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Ground surface elevations interpolated from topo plan prepared by G.A. Smith Surveying Limited and, as such, are approximate only.

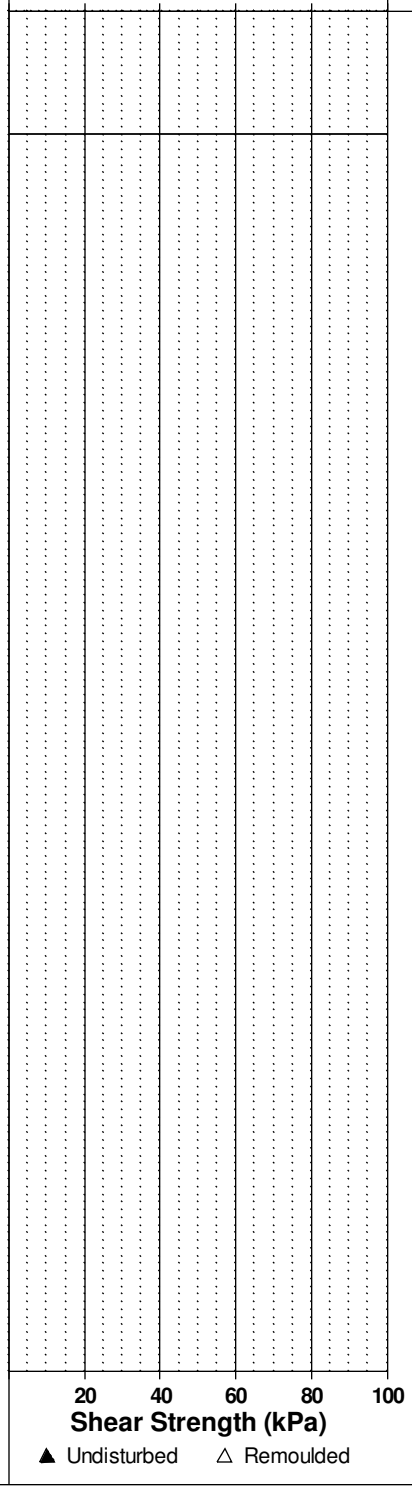
FILE NO. PH2723

REMARKS

HOLE NO. TH11

BORINGS BY Hand Auger **DATE** September 9, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	124.6		
TOPSOIL 0.02									
SILTY SAND, some clay 0.18									
End of Test Hole									
Practical refusal to augering on inferred bedrock surface at 0.18m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Geodetic

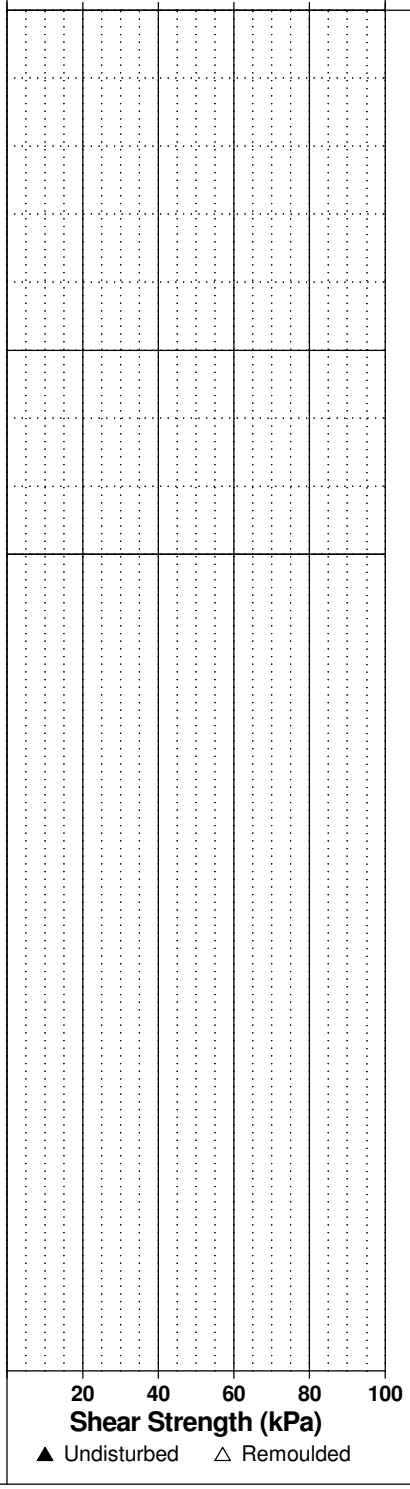
FILE NO. PH2723

REMARKS

HOLE NO. TP1

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	126.25		
FILL: Brown sand, silt, clay, rock and burnt wood debris. Slightly moist.		G	1						
0.70									
FILL: Brown sand, silt and broken stone. Dry.		G	2			1	125.25		
1.10									
FILL: Gravel, old wires, black plastic pieces. Drainage tile (pea stone) at 1.3m depth.		G	3						
1.30									
FILL: Brown sand, silt and fabric debris									
1.60									
End of Test Pit									
Refusal on bedrock at 1.60 m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Geodetic

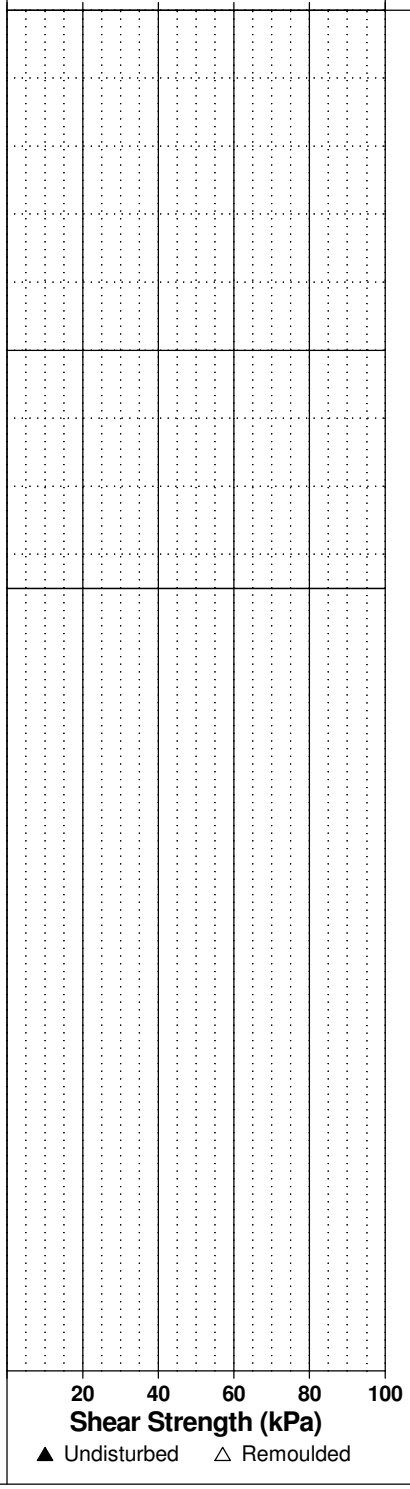
FILE NO. PH2723

REMARKS

HOLE NO. TP2

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.17		
FILL: Brown silt, sand and clay with gravel. Slightly moist. 0.20		G	4						
FILL: Light brown silt, sand, some gravel. Slightly moist. 0.40		G	5						
FILL: Black sand and silt, trace clay and charcoal. Slightly moist. 0.70		G	6						
FILL: Light brown coarse sand, silt, gravel. Moist.		G	8			1	127.17		
		G	7						
1.70									
End of Test Pit									
Refusal on bedrock at 1.70 m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
Old Mill Lane
Appleton, Ontario

DATUM Geodetic

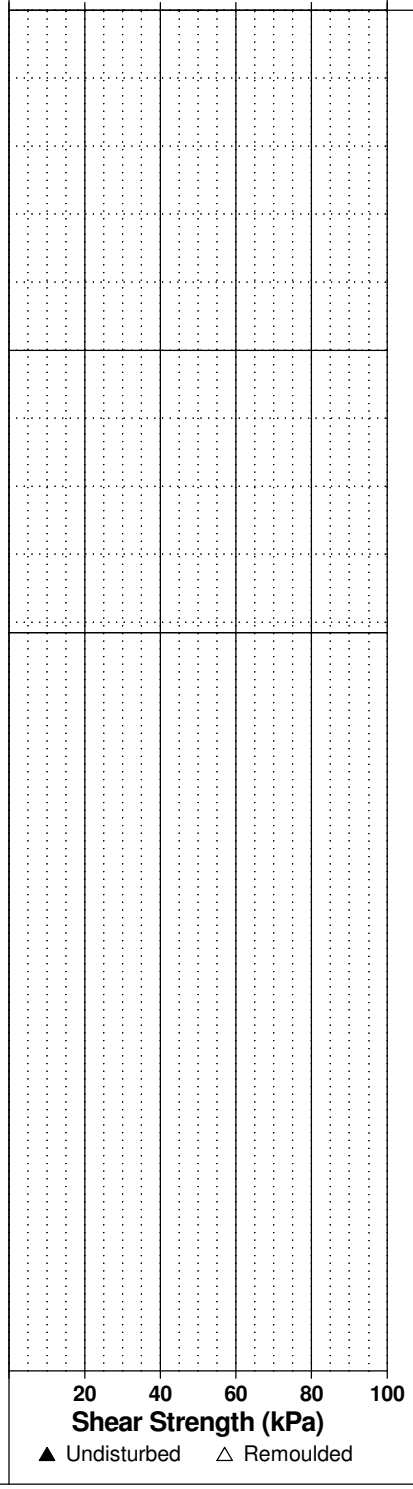
FILE NO. PH2723

REMARKS

HOLE NO. TP3

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.60		
FILL: Dark brown sand, silt, clay topsoil. Moist 0.10									
FILL: Light brown sand, silt, clay and gravel. Slightly moist.		G	8			1	127.60		
1.83									
End of Test Pit									
Refusal on bedrock at 1.83 m depth									



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SOIL PROFILE AND TEST DATA

Proposed Residential Subdivision
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Appleton, Ontario

DATUM Geodetic

FILE NO. PH2723

REMARKS

HOLE NO. TP4

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.95	20 40 60 80	
FILL: Brown sandy silt, trace clay topsoil. Slightly moist. 0.09									
FILL: Light brown sand, silt, clay, gravel with debris (wood and plastic). Slightly moist.		G	9			1	126.95		
1.92									
End of Test Pit									
Refusal on bedrock at 1.92 m depth									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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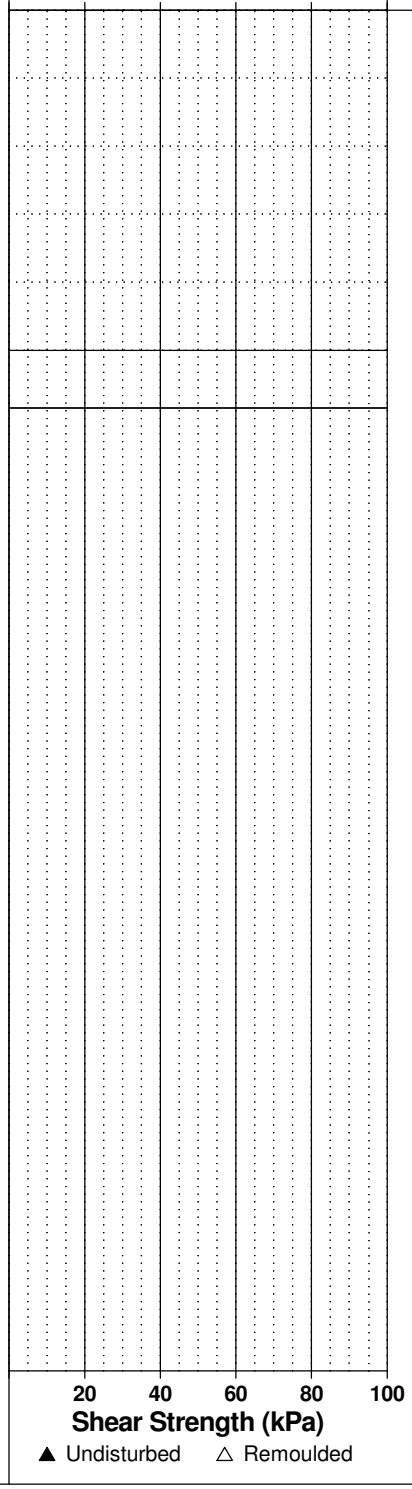
FILE NO. PH2723

REMARKS

HOLE NO. TP5

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
FILL: Brown sandy silt with roots topsoil. Moist. 0.11						0	128.78		
FILL: Light brown fine sand, silt, some clay and gravel. Slight moist.		G	10						
1.17						1	127.78		
End of Test Pit									
Refusal on bedrock at 1.17 m depth									



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DATUM Geodetic

FILE NO. PH2723

REMARKS

HOLE NO. TP6

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.88		
FILL: Brown sandy silt topsoil. Slightly moist.									
0.41									
FILL: Light brown sandy silt, some clay and gravel. Moist.		G	11			1	126.88		
1.51									
End of Test Pit									
Refusal on bedrock at 1.51 m depth									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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FILE NO. PH2723

REMARKS

HOLE NO. TP7

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.42	20 40 60 80	
FILL: Brown sandy silt topsoil. Dry.									
0.38									
FILL: Light brown sandy silt, trace clay, debris. Dry.		G	12			1	127.42		
1.17									
End of Test Pit									
Refusal on bedrock at 1.17 m depth									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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FILE NO. PH2723

REMARKS

HOLE NO. TP8

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
FILL: Brown to light brown sandy silt. Dry.		G	13			1			
1.76 End of Test Pit									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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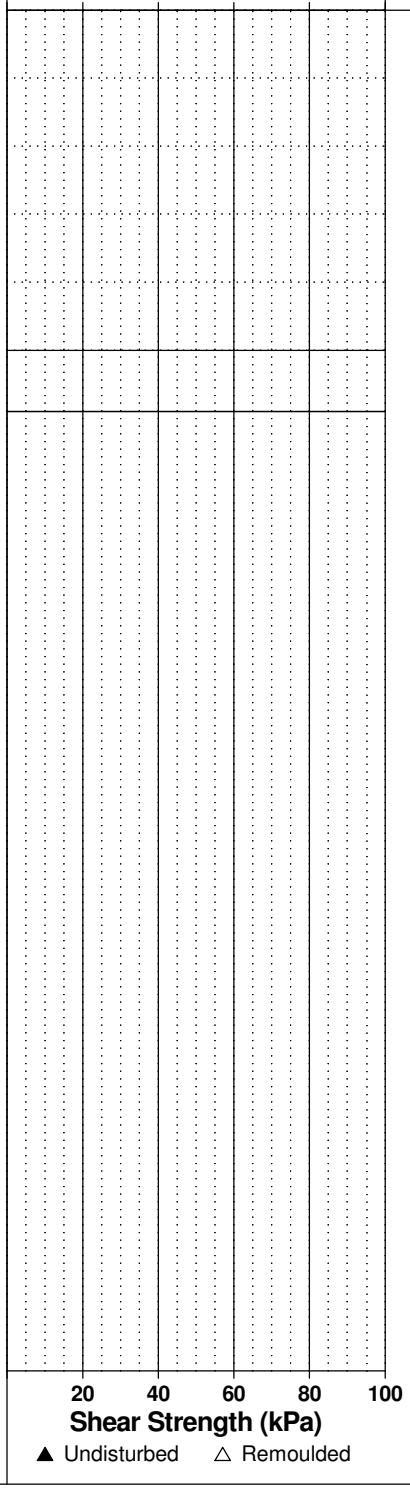
FILE NO. PH2723

REMARKS

HOLE NO. TP9

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.31		
FILL: Brown sandy silt topsoil. Slightly moist.									
0.56									
FILL: Light brown to grey sandy silt, gravel and wood debris. Slightly moist.		G	14			1	127.31		
1.18									
End of Test Pit									
Refusal on bedrock at 1.18 m depth									



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SOIL PROFILE AND TEST DATA

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Appleton, Ontario

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FILE NO. PH2723

REMARKS

HOLE NO. TP10

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.85		
FILL: Brown topsoil. Slightly moist.									
0.31									
FILL: Brown sandy silt, some clay. Slightly moist.		G	15						
0.55									
End of Test Pit									
Refusal on bedrock at 0.55 m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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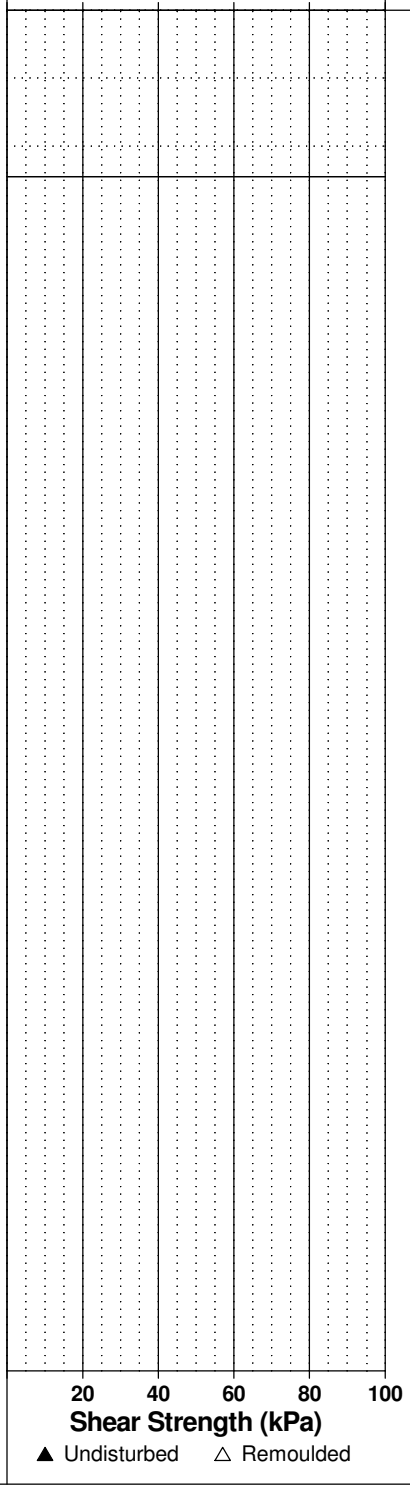
REMARKS

HOLE NO. TP11

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.55		
FILL: Dark brown sandy topsoil. Dry.									
0.32									
FILL: Brown sandy silt, clay and gravel. Dry.		G	16						
0.49									
End of Test Pit									
Refusal on bedrock at 0.49 m depth									



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Appleton, Ontario

DATUM Geodetic

FILE NO. PH2723

REMARKS

HOLE NO. TP12

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.85		
FILL: Dark brown sandy silt topsoil. Slightly moist.									
0.49									
FILL: Light brown fine sand, silt, trace clay. Dry.		G	17						
0.88									
End of Test Pit									
Refusal on bedrock at 0.88 m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

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FILE NO. PH2723

REMARKS

HOLE NO. TP13

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	128.03	20 40 60 80	
FILL: Brown mixture of sand, silt, clay and gravel. Dry.		G	18						
						1	127.03		
1.27									
End of Test Pit									
Refusal on bedrock at 1.27 m depth									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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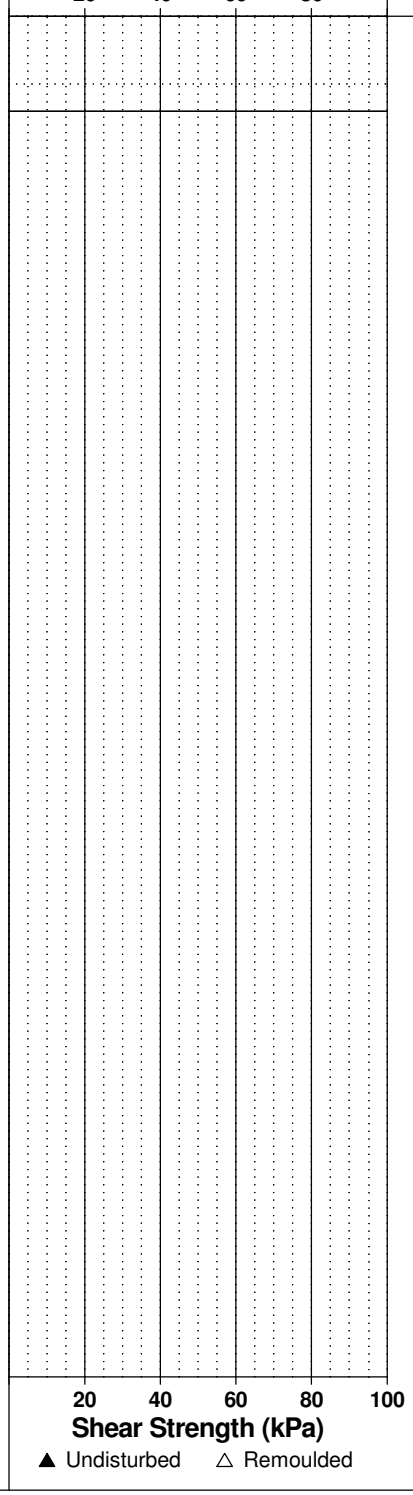
REMARKS

HOLE NO. TP14

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
FILL: Brown sandy silt, gravel. Slightly moist.		G	19			0	126.89		
0.28									
End of Test Pit									
Refusal on bedrock at 0.28 m depth									



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SOIL PROFILE AND TEST DATA

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FILE NO. PH2723

REMARKS

HOLE NO. TP15

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	121.62		
FILL: Brown sandy silt, clay, boulders, concrete, asphalt, plastic and stell debris. Slightly moist.		G	20			1	120.62		
1.98		G	21			2	119.62		
FILL: Grey/black clay, sand, gravel and organics. Very moist.									
3.00						3	118.62		
End of Test Pit Test pit terminated due to maximum reach of backhoe.									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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FILE NO. PH2723

REMARKS

HOLE NO. TP16

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	121.06
FILL: Brown sandy silt, clay and cobbles/boulders. Moist.		G	24			1	120.06
1.48							
FILL: Grey clay, sand		G	22			2	119.06
2.58							
Black organics, cat tails. Very wet.		G	23			3	118.06
3.00							
End of Test Pit							
Test pit terminated due to maximum reach of backhoe.							
(GWL @ 1.57 m depth)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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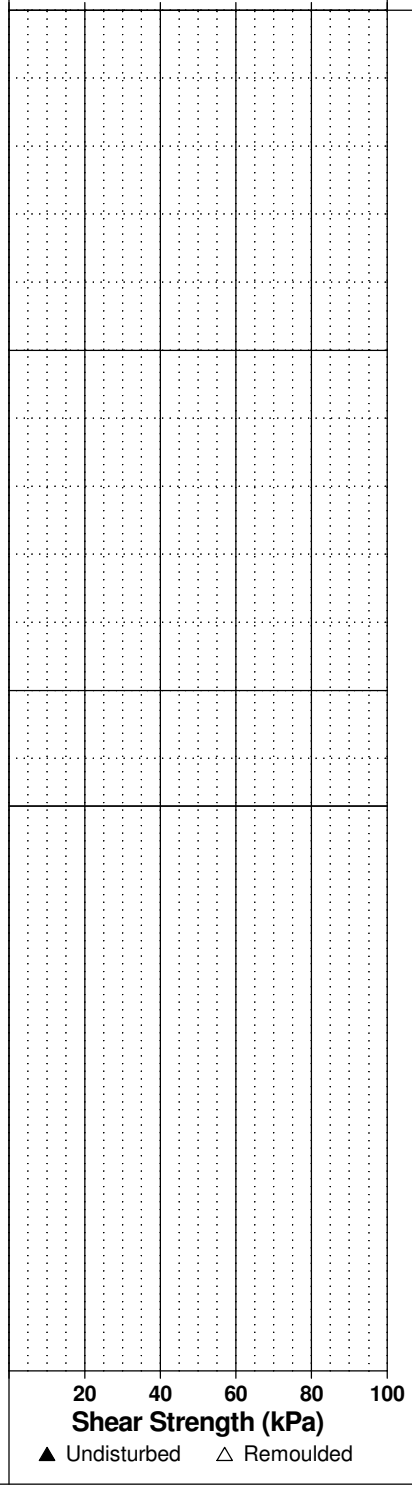
REMARKS

HOLE NO. TP17

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	120.63		
FILL: Brown sandy silt topsoil. Slightly moist. 0.13									
FILL: Brown to dark brown sandy silt, clay, gravel, brick, plastic and concrete debris. Moist.		G	27			1	119.63		
1.92									
FILL: Grey clay, sand. Very wet.		G	26			2	118.63		
2.34									
End of Test Pit									
Test pit terminated due to inflow of groundwater.									
(GWL @ 1.78 m depth)									



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SOIL PROFILE AND TEST DATA

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FILE NO. PH2723

REMARKS

HOLE NO. TP18

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	121.74		
FILL: Brown silty sand, some clay, gravel. Dry		G	29			1	120.74		
2.05						2	119.74		
FILL: Black to grey clay, sand, fabric, garbage bag. Slightly wet.		G	28						
3.00						3	118.74		
End of Test Pit Test pit terminated due to maximum reach of backhoe.									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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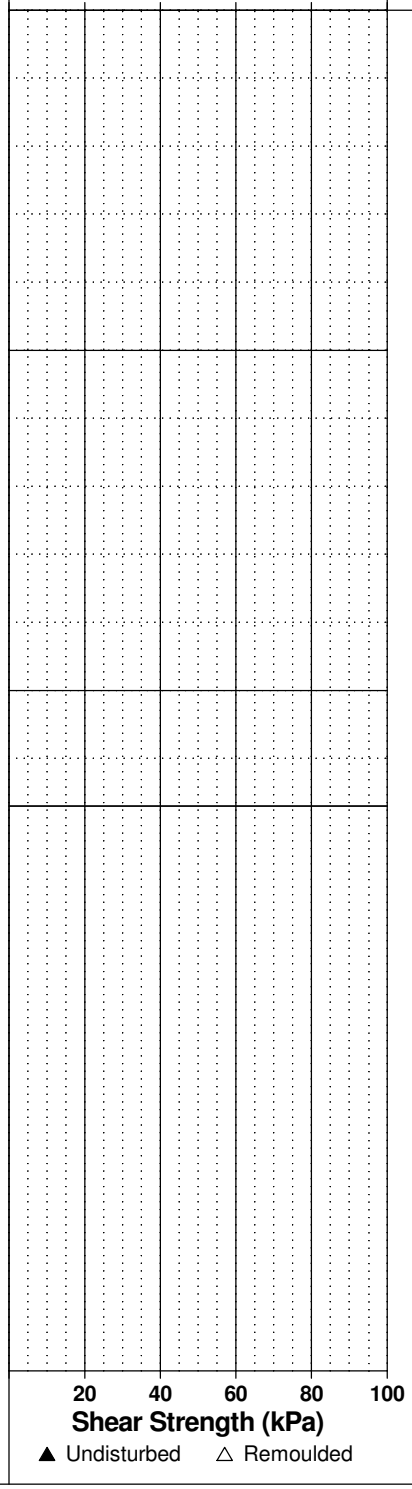
REMARKS

HOLE NO. TP19

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	120.63		
FILL: Brown sandy silt topsoil. Slightly moist. 0.13									
FILL: Brown to dark brown sandy silt, clay, gravel, brick, plastic and concrete debris. Moist.						1	119.63		
1.92									
FILL: Grey clay, sand. Very wet.						2	118.63		
2.34									
End of Test Pit									
Test pit terminated due to inflow of groundwater.									
(GWL @ 1.78 m depth)									



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REMARKS

HOLE NO. TP20

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	127.07		
FILL: Dark brown sandy silt. Slightly moist.									
0.44									
FILL: Light brown sand, silt, clay, gravel, wood debris. Slightly moist.		G	30						
0.68									
End of Test Pit									
Refusal on bedrock at 0.68 m depth									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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REMARKS

HOLE NO. TP21

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0		20 40 60 80	
FILL: Brown sand, silt, clay, stone, wood and fabric debris		G	31			1			
1.88									
End of Test Pit									

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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FILE NO. PH2723

REMARKS

HOLE NO. TP22

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone / ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	123.68		
FILL: Dark brown sand, silt, gravel, wood, fabrick, concrete, glass, metal and plastic debris. Dry.		G	33			1	122.68		
1.48									
FILL: Brown sand, silt, metal, glass, wood and plastic debris. gravel. Dry.		G	34						
1.82									
End of Test Pit									
Refusal on bedrock at 1.82 m depth									

20 40 60 80

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

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SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	123.42		
FILL: Dark brown sandy silt. Dry.									
0.53									
FILL: Light brown sandy silt, some clay, gravel. Dry.		G	35			1	122.42		
1.74									
FILL: Brown clay, some sand, silt and gravel		G	36			2	121.42		
2.17									
End of Test Pit									
Refusal on bedrock at 2.17 m depth									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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HOLE NO. TP24

BORINGS BY Backhoe **DATE** August 18, 2016

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	123.16		
FILL: Dark brown sandy silt, some clay. Slightly moist.		G	39						
0.25									
FILL: Light brown sandy silt, some clay and gravel. Dry.		G	38			1	122.16		
1.67									
FILL: Dark grey clay with sand and boulders. Wet.		G	37			2	121.16		
2.23									
End of Test Pit									
Refusal on large boulders at 2.23 m depth.									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Groundwater Sampling Program
Former Appletex Mill
Appleton, Ontario

DATUM

REMARKS

FILE NO. PE1114

HOLE NO. BH 1-18

BORINGS BY CME 55 Power Auger **DATE** March 16, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
TOPSOIL 0.10		SS	1	42	15	0	
		SS	2	50	13	1	
		RC	1	86			
		RC	2	10		2	
FILL: Brown silty sand, some gravel, cobbles and boulders, trace concrete		RC	3	10		3	
7.01						4	
		RC	4	100	48	5	
		RC	5	100	52	6	
BEDROCK: Grey limestone						7	
		RC	6	100	72	8	
10.64						9	
End of Borehole						10	
(GWL @ 8.46m - June 7, 2018)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Groundwater Sampling Program
Former Appletex Mill
Appleton, Ontario

DATUM

REMARKS

FILE NO. PE1114

HOLE NO. BH 2-18

BORINGS BY CME 55 Power Auger **DATE** March 16, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	
FILL: Topsoil with organics, trace gravel, cobbles and boulders		RC	1	100	52	1	
1.83		RC	2	100	94	2	
		RC	3	100	68	3	
BEDROCK: Grey limestone		RC	4	100	93	4	
		RC	5	100	92	5	
						6	
7.11						7	
End of Borehole							
(GWL @ 3.35m - June 7, 2018)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

Monitoring Well Construction

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

SYMBOLS AND TERMS

SOIL DESCRIPTION

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

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

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

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

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

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

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

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

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

ROCK DESCRIPTION

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

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

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

SAMPLE TYPES

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

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic limit, % (water content above which soil behaves plastically)
PI	-	Plasticity index, % (difference between LL and PL)
Dxx	-	Grain size which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2 / (D10 \times D60)$
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.
Cc and Cu are not applicable for the description of soils with more than 10% silt and clay
(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

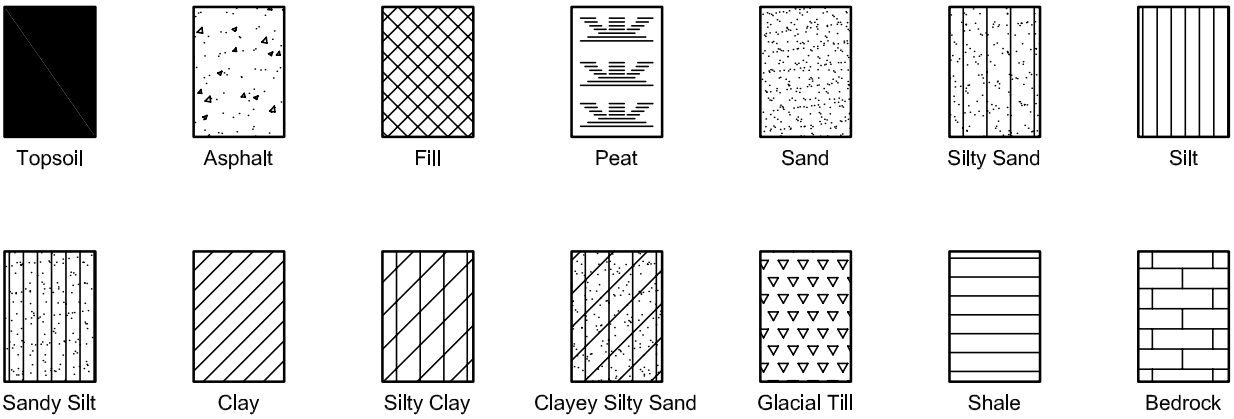
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

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

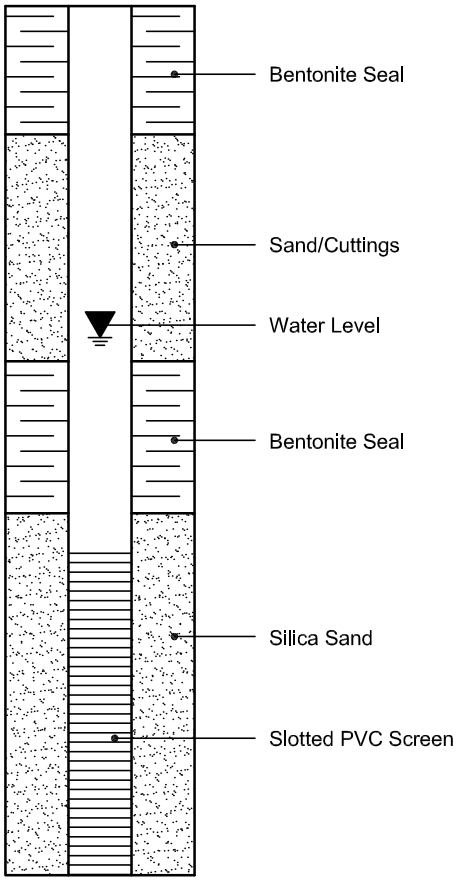
SYMBOLS AND TERMS (continued)

STRATA PLOT

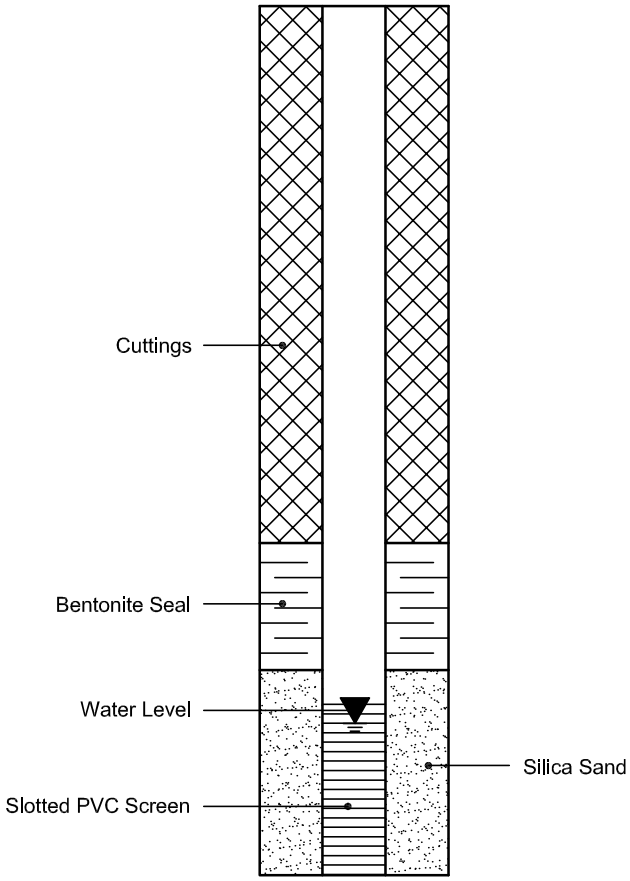


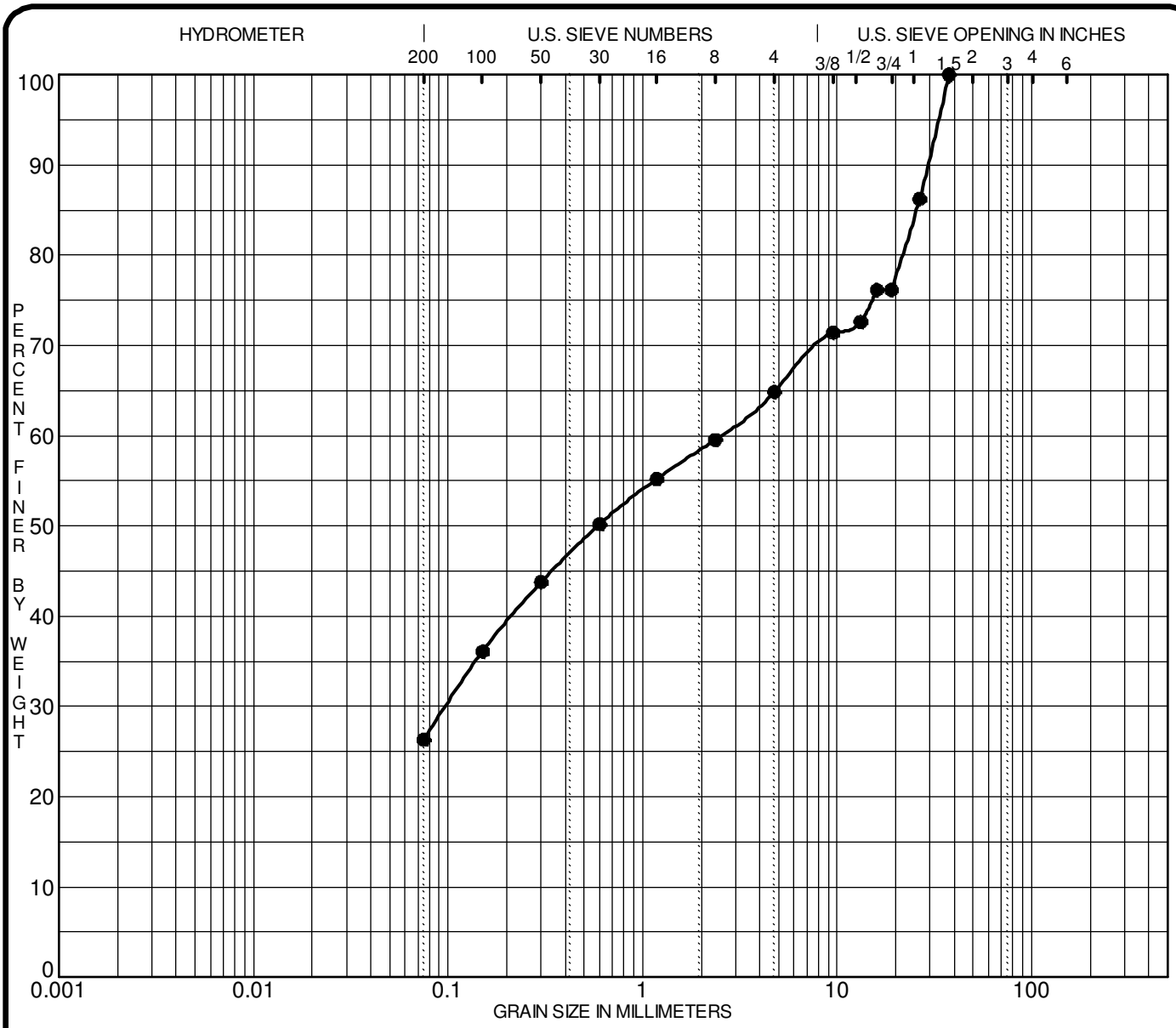
MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION





SILT OR CLAY	SAND			GRAVEL		COBBLES
	fine	medium	coarse	fine	coarse	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● TH 1	G 1	**FILL: Silty sand with gravel**						

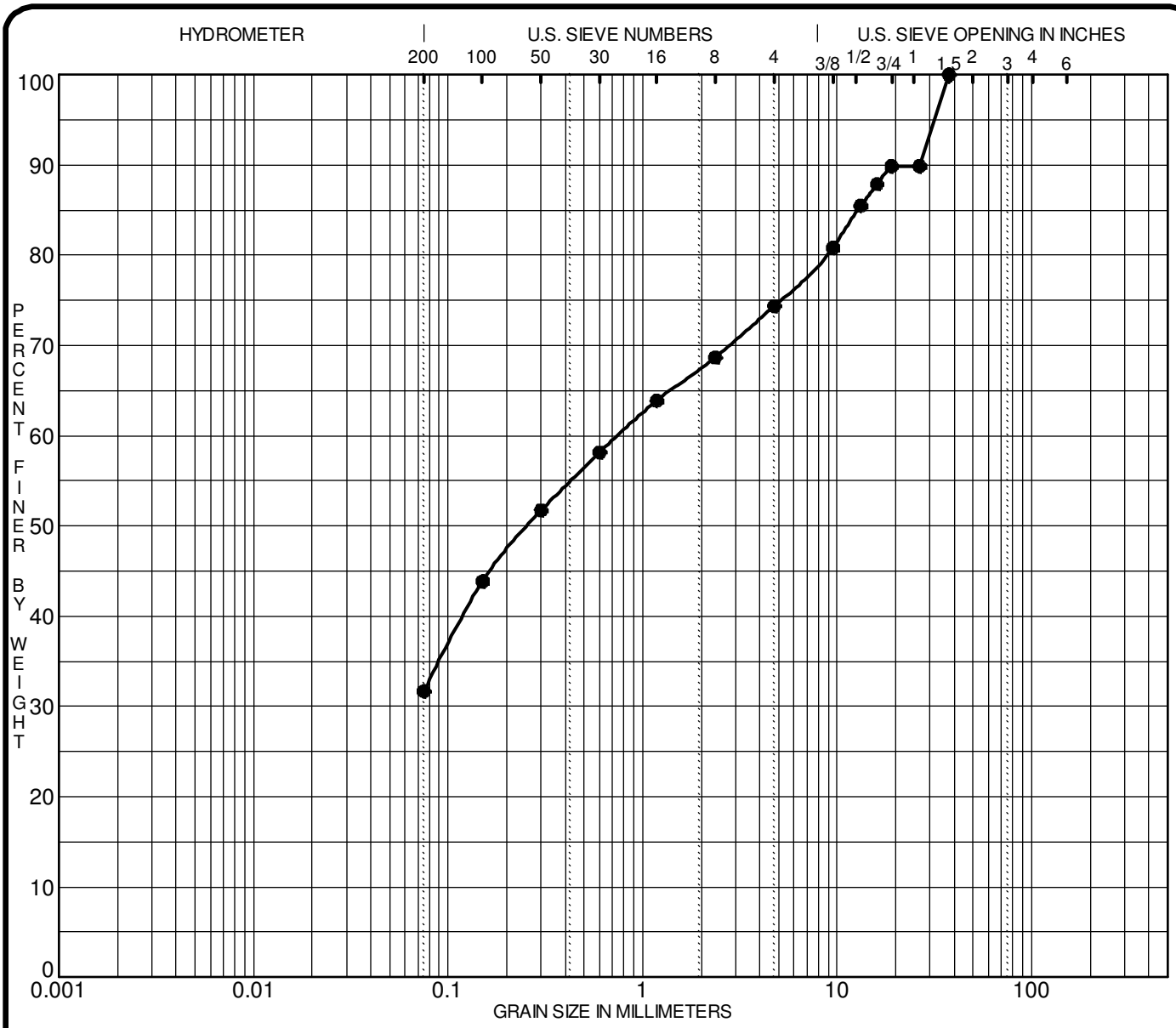
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TH 1**	**G 1**	**37.50**	**2.51**	**0.097**		**35.2**	**38.5**	**26.3**	

CLIENT **Carlgate Development Inc.** FILE NO. **PH2723**

PROJECT **Proposed Residential Subdivision - Old Mill Lane, Appleton, Ontario** DATE **28 Aug 15**

patersongroup Consulting Engineers
154 Colonnade Road South, Ottawa, Ontario K2E 7J5

GRAIN SIZE DISTRIBUTION



SILT OR CLAY	SAND			GRAVEL		COBBLES
	fine	medium	coarse	fine	coarse	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● TH 3	G 1	**FILL: Silty sand with gravel**						

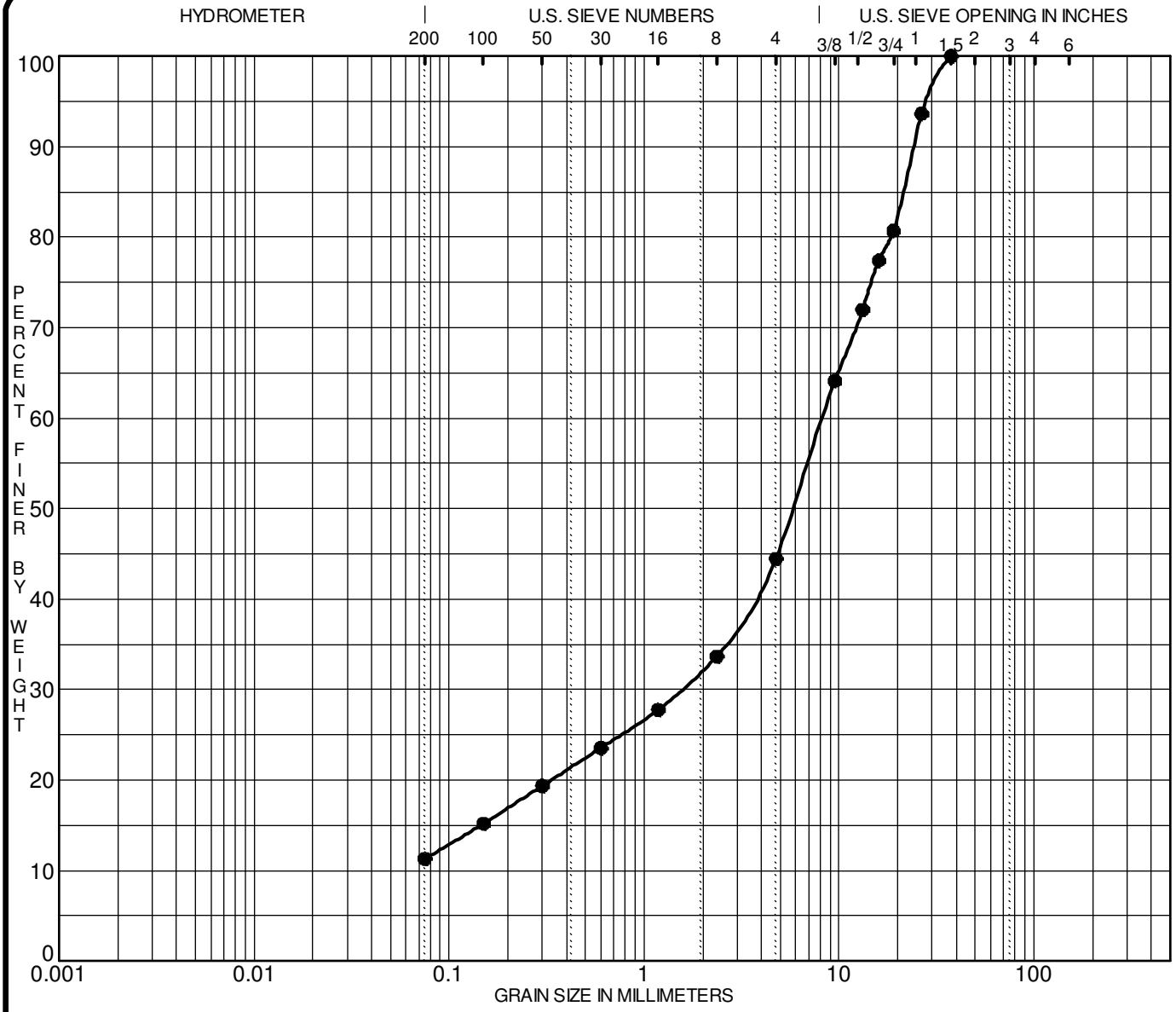
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TH 3**	**G 1**	**37.50**	**0.75**			**25.6**	**42.7**	**31.7**	

CLIENT **Carlgate Development Inc.** FILE NO. **PH2723**

PROJECT **Proposed Residential Subdivision - Old Mill Lane, Appleton, Ontario** DATE **28 Aug 15**

patersongroup Consulting Engineers
154 Colonnade Road South, Ottawa, Ontario K2E 7J5

GRAIN SIZE DISTRIBUTION



SILT OR CLAY	SAND			GRAVEL		COBBLES
	fine	medium	coarse	fine	coarse	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● **TH 4**	**G 1**	**FILL: Sand-gravel, trace silt and clay**					**4.83**	**138.0**

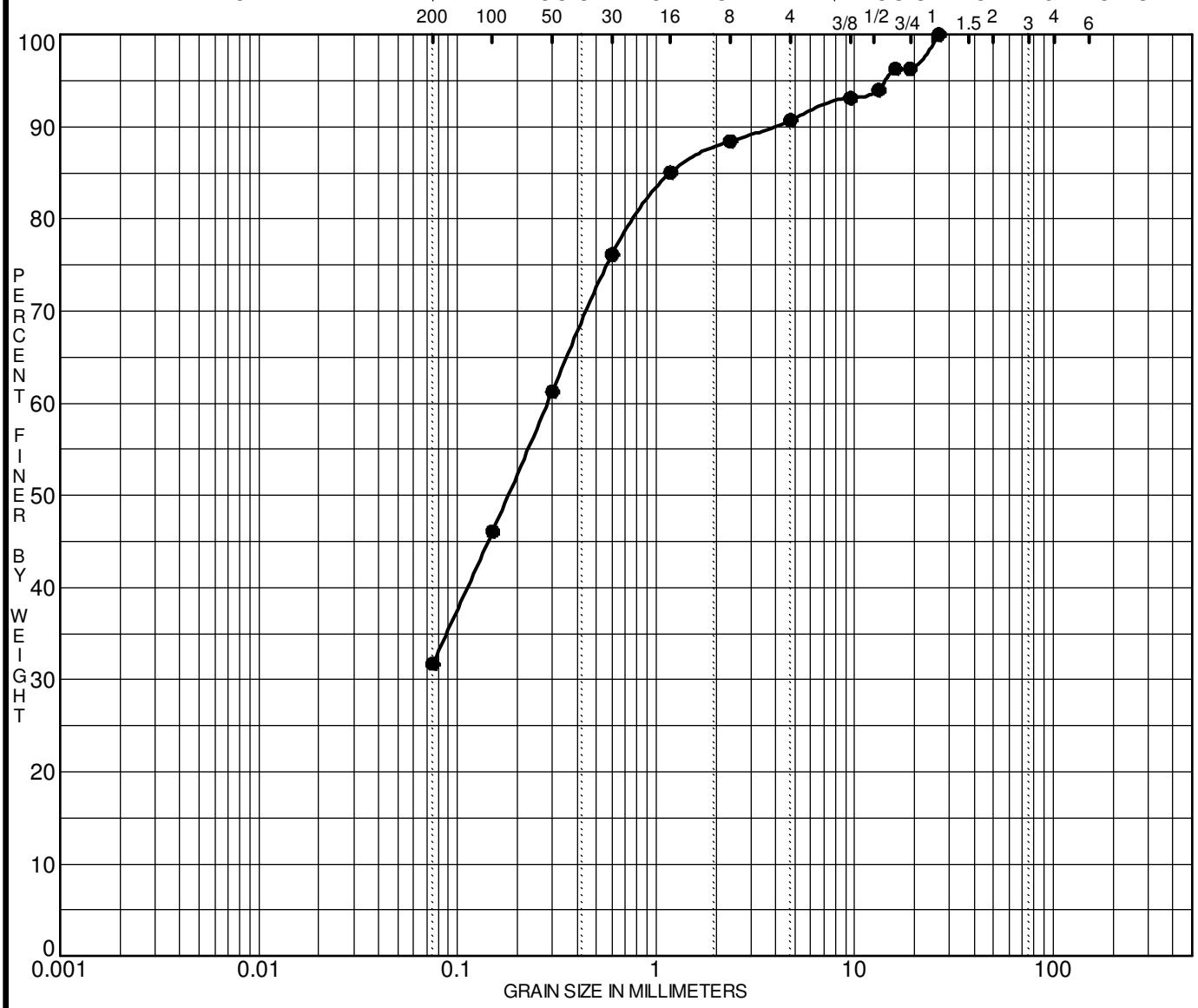
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TH 4**	**G 1**	**37.50**	**8.22**	**1.537**		**55.5**	**33.2**	**11.3**	

CLIENT **Carlgate Development Inc.** FILE NO. **PH2723**

PROJECT **Proposed Residential Subdivision - Old Mill Lane, Appleton, Ontario** DATE **28 Aug 15**

patersongroup Consulting Engineers
154 Colonnade Road South, Ottawa, Ontario K2E 7J5

GRAIN SIZE DISTRIBUTION



SILT OR CLAY	SAND			GRAVEL		COBBLES
	fine	medium	coarse	fine	coarse	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● TH 5	G 1	**FILL: Silty sand**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TH 5**	**G 1**	**26.50**	**0.28**			**9.3**	**59.0**	**31.7**	

CLIENT **Carlgate Development Inc.** FILE NO. **PH2723**

PROJECT **Proposed Residential Subdivision - Old Mill Lane, Appleton, Ontario** DATE **28 Aug 15**

patersongroup Consulting Engineers
154 Colonnade Road South, Ottawa, Ontario K2E 7J5

GRAIN SIZE DISTRIBUTION

Appendix 2

- **MECP Water Well Records for Test Wells TW 1 to TW 3**
- **MECP Water Well Records for Existing Neighbouring Wells**

TW 1

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A187038 (Barcode Below)

A187038

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Carlgate Development Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 44	Carleton Place	ON	K7C 3P3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#116-#122 Old Mill Lane	Ramsay/Mississippi Mills	Pt. 4	10

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411380	5003662	Plan 288	Lot 7

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
	Sand			0'	4'
Grey & Brown	Limestone			4'	65'
Grey & Brown	Limestone			65'	71'

RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28

TEST WELL #1 OF 3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/Imp gal)
20'	0'	Neat cement	10.9

Method of Construction

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

Well Use

☐ Public ☒ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, specify
☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling & Air Conditioning
☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6¼"	Steel	188"	+2'	20'
6"	Open Hole		20'	71'

Status of Well

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

Construction Record - Screen

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

Water Details

Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify
65	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	20'	9¾"
20'	71'	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs 0 min

Final water level end of pumping (m/ft): 37.5

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

Recommended pump depth (m/ft): 60

Recommended pump rate (l/min / GPM): 20

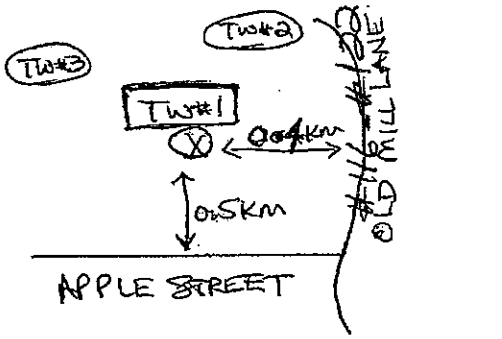
Well production (l/min / GPM): 20 F

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level		36.0'	0"	37.5'
1		36.5	1	36.8
2		36.7	2	36.5
3		36.9	3	36.2
4		37	4	36.2
5		37	5	36.2
10		37.2	10	36.2
15		37.5	15	36.2
20		37.5	20	36.2
25		37.5	25	36.2
30		37.5	30	36.2
40		37.5	40	36.2
50		37.5	50	36.2
60		37.5	60	36.2

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2 HP - 10 GPM SET @ 60 FT.
TEST WELL #1 OF 3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6650 Frankford Road, RR#1	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T13632		2015 06 30

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2015 06 24	Audit No. Z191501
	Date Work Completed: 2015 06 22	Received

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Minister's Copy

CERTIFICATE OF WELL COMPLIANCE

AIR ROCK DRILLING CO. LTD. DO HEREBY CERTIFIY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of (Name of Landowner) CARLGATE DEVELOPMENT INC.

#116 – #122 OLD MILL LANE, APPLETON (Legal Description, Lot, Conc, Plan No.) in the Geographical Township of MISSISSIPPI MILLS (CRAMSAY) in the County of LANARK

PIL #4 CON 10 PLAN 288 LOT 7

CERTIFY FURTHER that, I am aware of the well drilling requirements, the guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to this site and City Standards.

RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28

AND DO HEREBY CERTIFIY THAT the said well has been drilled, cased, grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.

Signed this 22ND day of JUNE, 2015

(Well Driller/Company) Air Rock Drilling Co. Ltd.

Kenny Desaulniers

The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg 903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this _____ day of _____, _____

(Engineer)

Please fax – 613-838-3277

TEST WELL # 1 OF 3
TAG # A187038
2015232

TW2

Ontario — Ministry of the Environment

Tag#: A187039 (Write in Box Below) A187039

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Carrigate Development Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 44	Carleton Place	ON	K7C 3P3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#116 #122 Old Mill Lane	Ramsay/Mississippi Mills	P/L 4	10

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411380	5003798	Plan 288	Lot 7

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	& Stones		0	3
Grey & Brown	Limestone			3	60
Grey & Brown	Limestone			60	64
Grey & Brown	Limestone			64	70

RP27R9884 parts 1 to 4 / RP26R2678 parts 4, 9, 17, 18 & 28

TEST WELL #2 OF 3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/yd³)
20	0	Neat cement	10.0

Method of Construction

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

Well Use

☐ Public ☒ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, specify

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

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	188"	+2'	20'
6"	Open Hole		20'	70'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas
60	☐ Fresh ☒ Untested	☐ Gas
64	☐ Fresh ☒ Untested	☐ Gas
	☐ Fresh ☐ Untested	☐ Gas

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	20'	9¾"
20'	70'	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs 0 min

Final water level end of pumping (m/ft): 30.5'

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

Recommended pump depth (m/ft): 60

Recommended pump rate (l/min / GPM): 20

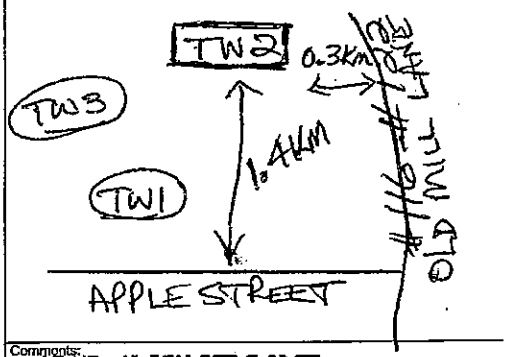
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	21.5'		30.5'
1	29.8	1	30
2	29.8	2	29.8
3	30	3	29.6
4	30	4	29.5
5	30.4	5	29.5
10	30.4	10	29.5
15	30.5	15	29.5
20	30.5	20	29.5
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1/2 HP - 10 GPM SET @ 60 FT.

TEST WELL # 2 OF 3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6650 Franktown Road, RR#1	Richmond	ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
6138821710	Hanna, Jeremy	T3632		2015 6 30

Well owner's Information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☐ Yes ☐ No	2015 6 24	Audit No. Z191503
	Date Work Completed: 2015 6 23	Received

CERTIFICATE OF WELL COMPLIANCE

AIR ROCK DRILLING CO. LTD. DO HEREBY CERTIFIY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of (Name of Landowner)

CARLGATE DEVELOPMENT INC.

#116 – #122 OLD MILL LANE, APPLETON

(Legal Description, Lot, Conc, Plan No.) in the Geographical Township of MISSISSIPPI MILLS (RAMSAY)

in the County of LANARK

PIL #4 CON 10 PLAN 288 LOT 7

CERTIFY FURTHER that, I am aware of the well drilling requirements, the guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to this site and City Standards.

RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28

AND DO HEREBY CERTIFIY THAT the said well has been drilled, cased, grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.

Signed this 23RD day of JUNE, 2015

(Well Driller/Company) Air Rock Drilling Co. Ltd.

Kenny Desaulniers

The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg 903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this _____ day of _____, _____

(Engineer)

Please fax – 613-838-3277

TEST WELL # 2 OF 3
TAG # A187039
2015233

TW3

Ontario — Ministry of the Environment

Tag#: A187040 (Yellow Tag Below)

A187040

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Cardgate Development Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 44	Carleton Place	ON	K7C 3P3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#116 #122 Old Mill Lane	Ramsay/Mississippi Mills	P/L 4	10

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	411297	5003615	Plan 288	Lot 7

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	+ Backfill		0	12
Grey & Brown	Limestone			12	39
Grey & Brown	Limestone			39	60
Grey & Brown	Limestone			60	67

*RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28 *

TEST WELL # 3 OF 3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
21	0	Neat cement	10.9

Method of Construction

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

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	188"	+2	21
6"	Open Hole		21	67

Status of Well

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

Construction Record - Screen

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

Water Details

Water found at Depth (m/ft)	Kind of Water	Water found at Depth (m/ft)	Kind of Water
39	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	60	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify		

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	21	9 3/4"
21	67	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 50

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs 0 min

Final water level end of pumping (m/ft): 22

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

Recommended pump depth (m/ft): 50

Recommended pump rate (l/min / GPM): 20

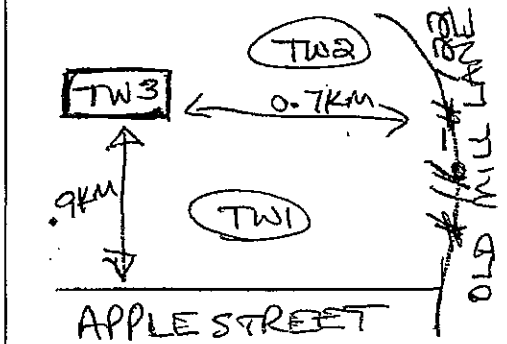
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		19.4		22
1		21.2	1	20.1
2		21.4	2	19.8
3		21.4	3	19.5
4		21.5	4	19.4
5		21.8	5	19.4
10		21.8	10	19.4
15		22	15	19.4
20		22	20	19.4
25		22	25	19.4
30		22	30	19.4
40		22	40	19.4
50		22	50	19.4
60		22	60	19.4

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1/2 HP - 10 GPM SET @ 50 FT.
TEST WELL #3 OF 3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6059 Frankford Road, RR#1	Richmond	ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
6138382170	Hanna, Jeremy	T3632		2015 06 30

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2015 06 24	2015 06 23

Ministry Use Only

Audit No: Z 191490

Received

0506E (2007/12) © Queen's Printer for Ontario, 2007

Ministry's Copy

CERTIFICATE OF WELL COMPLIANCE

AIR ROCK DRILLING CO LTD. DO HEREBY CERTIFIY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of (Name of Landowner)

CARLGATE DEVELOPMENT INC.

#116 – #122 OLD MILL LANE, APPLETON

(Legal Description, Lot, Conc, Plan No.) in the Geographical Township of MISSISSIPPI MILLS (RAMSAY)

in the County of LANARK

PIL #4 CON 10 PLAN 288 LOT 7

CERTIFY FURTHER that, I am aware of the well drilling requirements, the guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to this site and City Standards.

RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28

AND DO HEREBY CERTIFIY THAT the said well has been drilled, cased, grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.

Signed this 23RD day of JUNE, 2015

(Well Driller/Company) Air Rock Drilling Co. Ltd.

Kenny Desaulniers

The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg 903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this _____ day of _____, _____

(Engineer)

Please fax – 613-838-3277

TEST WELL #3 OF 3
TAG # A187040
2015234

#31 7/1 ext

UTM 18 E 411661 0
5 R 5010291 5 N
Elev. 5 R 0425
Basin 25

ONTARIO

RECEIVED 35 No. 2099
MAR - 8 53
GEOLOGICAL BRANCH
DEPARTMENT of MINES

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

[redacted], Village, Town or City (Appleton) RAMSAY

[redacted] own or City) Appleton Ont

Date Completed 9 (day) April (month) 53 (year) Cost of Well (excluding pump)

Pipe and Casing Record

Casing diameter(s) 6 ¼
Length(s) of casing(s) 14 ft.
Type of screen
Length of screen
Distance from top of screen to ground level
Is well a gravel-wall type?

Pumping Test

Date april 9
Static level overflowing casing
Pumping level 1½ feet above ground level
Pumping rate 1200 gal per hr (20 gpm)
Duration of test 30 min
Distance from cylinder or bowls to ground level

Water Record

Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur, etc.) rather soft
Appearance (clear, cloudy, coloured) clear
For what purpose(s) is the water to be used? Domestic
How far is well from possible source of contamination?
What is the source of contamination?
Enclose a copy of any mineral analysis that has been made of water

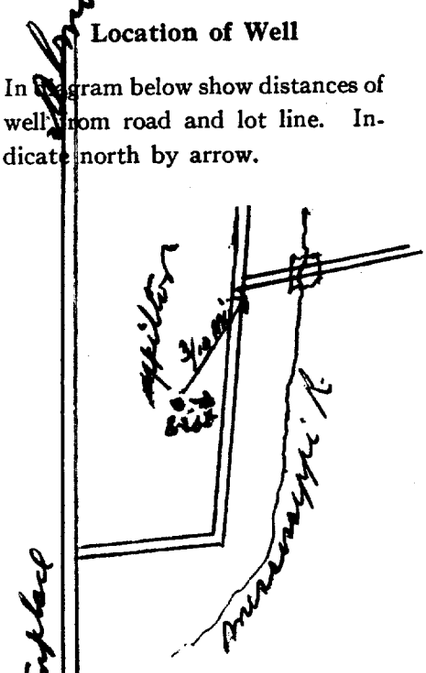
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
43 ft		

Well Log

Overburden and Bedrock Record	From	To
Soft brown limestone shale	0 ft.	10 ft.
hard brown limestone	10	43
very soft sticky limestone	43	44
hard sandstone	44	47

Location of Well

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



Situation: Is well on upland, in valley or on hillside? upland
Drilling Firm W. J. Nugent
Address Newboro Ont
Name of Driller James Crathie Address Lanark
Date April 9th Licence Number 473
James Crathie
Signature of Licensee

FORM 5

3171/1 east

UTM 18 411650E
9 5013210N
Elev. 9 0390
Basin 2 5
Lot - 3

ONTARIO

The Well Drillers Act
Department of Mines, Province of Ontario

35 No 2100

RECEIVED
AUG 11 1952
GEOLOGICAL BRANCH
DEPARTMENT of MINES

Water Well Record

[redacted]

Township, ~~Village, Town or City~~ Ramsay (RAMSAY)

~~Town or City~~ Appleton

Date Completed ... (day) ... (month) ... (year) ... Cost of Well (excluding pump) 301.50

Pipe and Casing Record

Casing diameter(s) 6 1/4
Length(s) of casing(s) 60
Type of screen
Length of screen
Distance from top of screen to ground level
Is well a gravel-wall type?

Pumping Test

Date May 6
Static level 15 ft
Pumping level 25 ft
Pumping rate 900 gal per hr
Duration of test 30 min
Distance from cylinder or bowls to ground level

Water Record

Kind (fresh or mineral) Fresh
Quality (hard, soft, contains iron, sulphur, etc.) Not too hard
Appearance (clear, cloudy, coloured) Clear
For what purpose(s) is the water to be used? House

How far is well from possible source of contamination?
What is the source of contamination? Almonte
Enclose a copy of any mineral analysis that has been made of water

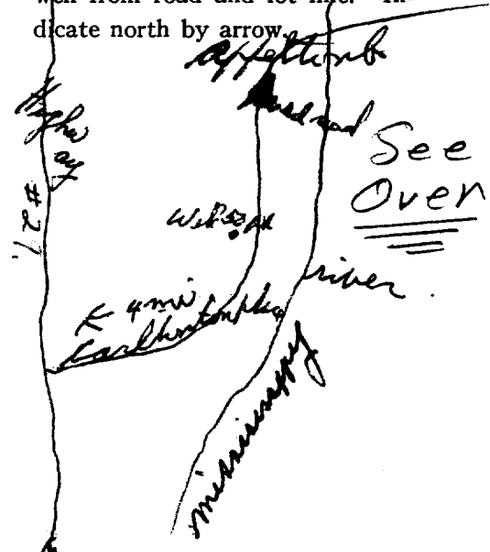
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
61 ft		46 ft

Well Log

Overburden and Bedrock Record	From	To
Sandy loam	0 ft.	2 ft.
Shale	2	5
Brown Sandstone	5	67

Location of Well

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



Situation: Is well on upland, in valley, or on hillside? upland
Drilling Firm W. V. Mugan
Address New Boyne Ont
Name of Driller James Crosbie Address Lanark
Date Licence Number 473

Carleton Place

James Crosbie
Signature of Licensee

FORM 5

CSS.58

UTM 18 E 411521 5
C 9 R 5 0 1 3 3 1 0 0 N
Elev. 9 R 3 0 3 9 5
Basin 25

317/1 east

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

GROUND WATER BRANCH
35 14 No. 2101
1958
ONTARIO WATER RESOURCES COMMISSION

Water-Well Record

County or Territorial District Lanark Township, Village, Town or City Ramsay
[redacted] in Village, Town or City)
Address Appleton

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 5"
Length(s) 23'
Type of screen No
Length of screen No

Pumping Test

Static level 9
Pumping rate 750 gall per hr.
Pumping level dry
Duration of test 1½ hr.

Well Log

Overburden and Bedrock Record	From ft.	To ft.
Sand loam	0	4'
Hard limestone	4'	20'
Hard limestone	20'	50'

Water Record

Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
46'	3'	fresh

For what purpose(s) is the water to be used?
House
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside?
upland
Drilling firm W. J. Nugent
Address Lanark

Name of Driller Earl Nugent
Address Lanark

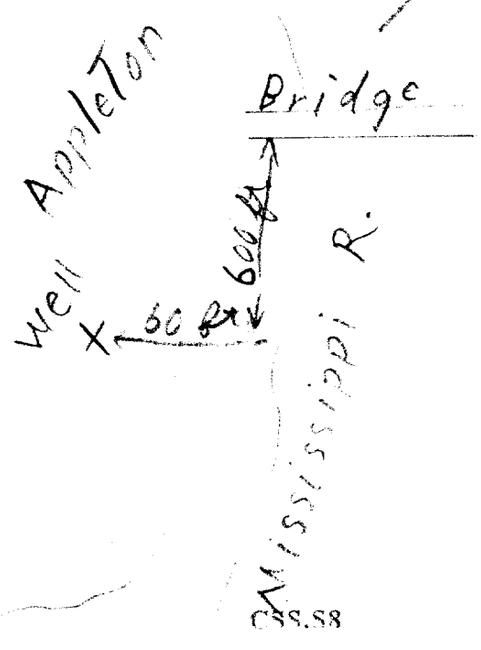
Licence Number 1677

I certify that the foregoing statements of fact are true.

Date 26 May Earl Nugent
Signature of Licensee

Location of Well

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



Form 5

C88.88

2 317½ east

UTM 18 411510 E
18 5010340 N
Elev. 18 04017
Basin 25

ONTARIO

35 No 2129

RECEIVED
DEC 21 1949
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

[redacted] Con. 10 Lot ..... Pt. Lot 3 .....

Appleton ..... Acres .....

Date completed [illegible], Cost of well (not including pump) .....

Pipe and Casing Record	Pumping Test
Casing diameter(s) 4	Date
Length(s) of casing(s)	Developed Capacity
Length of screen	Duration of Test
Type of screen	Pumping Rate
Type of pump	Drawdown
Capacity of pump	Static level of completed well
Depth of pump setting	Is well a gravel-wall type?

Water Record

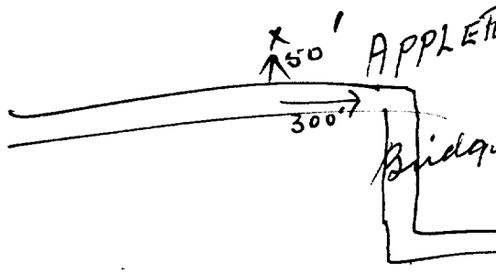
	Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
Kind (fresh or mineral) fresh.			
Quality (hard, soft, contains iron, sulphur etc.)			
Appearance (clear, cloudy, coloured) clear	12		37
For what purpose(s) is the water to be used? household			
How far is well from possible source of contamination?			
What is source of contamination?			
Enclose a copy of any mineral analysis that has been made of water			

Well Log

Drift and Bedrock Record	From	To
	0 ft.	..... ft.
loam	6'	
limestone	53'	

Location of Well

In diagram below show distances of well from road and **lot** line



Situation: Is well on upland, in valley, or on hillside? upland

Drilling Firm C. Crowdbury

Address Verona

Recorded by C. C. Address

Date Oct. 11/49 Licence Number

CSS.S8

UTM 18 | 411400 E
9 R | 5003415 N
Elev. 9 R | 0405
Basin 25

317/1 east

ONTARIO

DEPARTMENT OF MINES
OCT - 2 1951
TO

No. 2139

The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

[redacted] Township, ~~Village, Town or City~~ Ramsay
[redacted] Town or City) Appleton
[redacted] s. Appleton
Date Completed .... (day) (month) (year) Cost of Well (excluding pump) ....

Pipe and Casing Record	Pumping Test
Casing diameter(s) 5	Date Sept 3 1951
Length(s) of casing(s) 10½	Static level 29'
Type of screen	Pumping level
Length of screen	Pumping rate 10 gal per min
Distance from top of screen to ground level	Duration of test ½ hour
Is well a gravel-wall type? no	Distance from cylinder or bowls to ground level

Water Record

Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur, etc.) hard
Appearance (clear, cloudy, coloured) clear
For what purpose(s) is the water to be used? house

How far is well from possible source of contamination? 50'
What is the source of contamination? privies
Enclose a copy of any mineral analysis that has been made of water

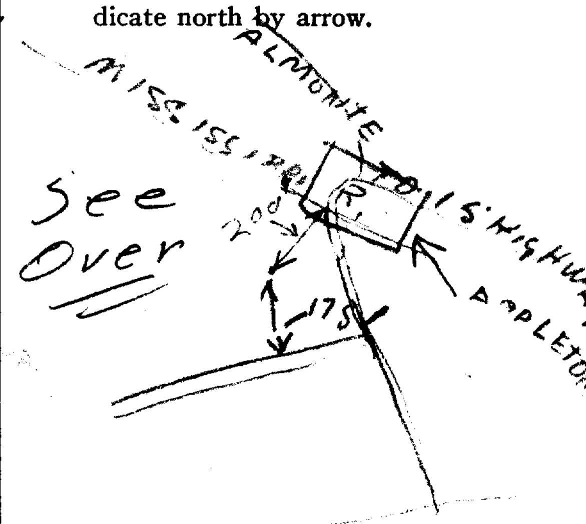
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
62'	fresh	~~44~~

Well Log

Overburden and Bedrock Record	From	To
	0 ft.	....ft.
Clay	0	8
Limestone	8	64'

Location of Well

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



Situation: Is well on upland, in valley, or on hillside? upland
Drilling Firm C. Goodberry
Address Nepean
Name of Driller B. Ruttan Address Nepean
Date Sept 3 1951 Licence Number 8

B. Ruttan
Signature of Licensee

Form 5

3171/ east

JTM 18 4 471610 E
CON X
5 R 503205 N
Elev. 405 3 R 0415
Basin 25 N

GROUND WATER BRANCH
35 No. 2135
MAR 9 1959
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

RAMSAY

County or District Lanark W. 1/2 of [redacted] Township, Village, Town or City ~~Appleton~~ Ramsay Township

Date completed 4 (day) MAR (month) 59 (year)

Address Appleton

Casing and Screen Record

Inside diameter of casing 5"
Total length of casing 10'
Type of screen nil
Length of screen
Depth to top of screen
Diameter of finished hole 5"

Pumping Test

Static level 12'
Test-pumping rate ~~200~~ 10 G.P.M.
Pumping level 12'
Duration of test pumping 10 Minutes
Water clear or cloudy at end of test cloudy
installed hand pump
Recommended pumping rate 3 G.P.M.
with pumping level of 12'

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Overburden	0'	6"			
Limestone	6"	64'	50'	38'	fresh

Water Record

For what purpose(s) is the water to be used?
domestic

Is well on upland, in valley, or on hillside?
upland

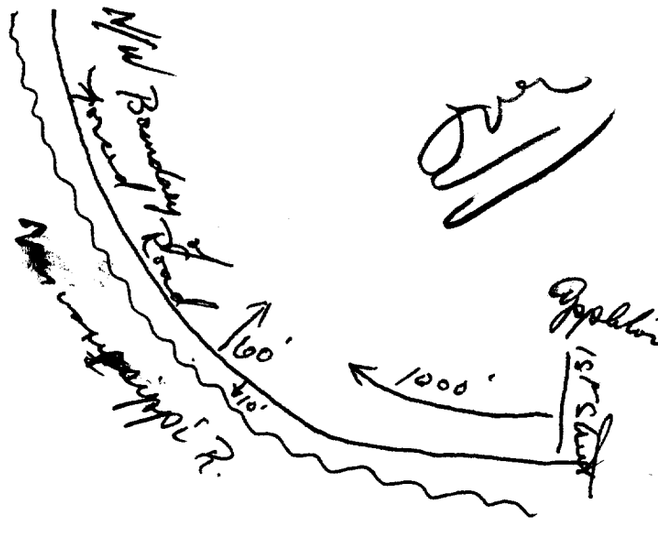
Drilling Firm BLAIR PHILLIPS DRILLING CO. LTD.,
Address 1119 Falaise Road, Ottawa 5, Ont.

Licence Number 190
Name of Driller M. Sztepa
Address 90 Grove Ave., Ottawa
Date 4 March 1959

(Signature of Licensed Drilling Contractor)

Location of Well

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



Form 5
15M-58-4149

3171/1 east

UTM 18 4115010 E
5 5010340 10 N

Elev. 5 0405

Basin 25

County or District LANARK

Township, Village, Town or City RAMSEY

Con. X Lot ~~20~~ 3

Date completed 24 Apr 1963
(day) (month) (year)

Address Appleton Ont

GROUND WATER BRANCH
MAR 357 No. 2152
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

Casing and Screen Record

Inside diameter of casing 7"
Total length of casing 12'
Type of screen mill
Length of screen [illegible]
Depth to top of screen 2:6
Diameter of finished hole 7

Pumping Test

Static level 22'
Test-pumping rate 10 G.P.M.
Pumping level 22'
Duration of test pumping 1 hr
Water clear or cloudy at end of test cloudy
Recommended pumping rate 10 G.P.M.
with pump setting of 25' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Clay	0'	5'		
Limestone	5'	70'	70'	fresh

For what purpose(s) is the water to be used?
Old House

Is well on upland, in valley, or on hillside? Upland

Drilling or Boring Firm Clair Philp Well Co

Address [illegible]

Licence Number 1018

Name of Driller or Borer [illegible]

Address [illegible]

Date 24 Apr 1963

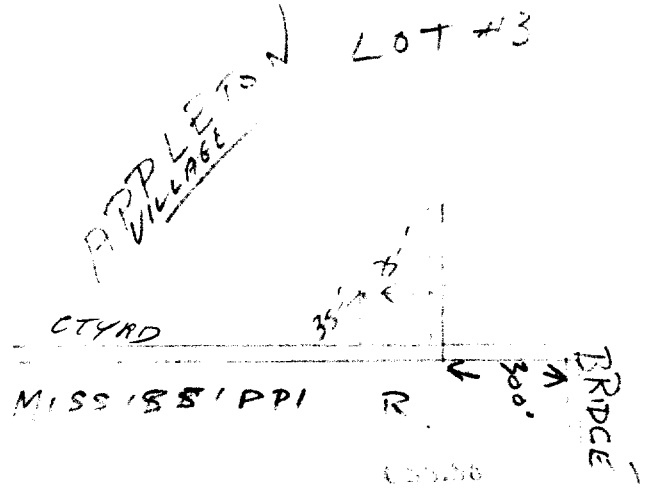
[illegible]
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

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



ONTARIO

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

31FIE

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

11 | 3503276 | MUNICIP. 3501/2 | CON. GAN | 10

COUNTY OR DISTRICT: Lanark | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay | CON., BLOCK, TRACT, SURVEY, ETC.: 10 X | LOT: 24

[redacted] | Appleton Ont. | DATE COMPLETED: DAY 27 MO. 09 YR. 72

WATER: 0035 50 | RC: 4 | ELEVATION: 0400 | RC: 5 | BASIN CODE: 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Fill			0	2
brown	Limestone			2	12
Gray	"			12	103

31 0002 01 | 0012 61 ST | 0193 21 ST

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0098	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0025 ~~25~~
~~6~~ 4				
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0103
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	15	cuttings
15	23	cement

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER | PUMPING RATE: 0015 GPM | DURATION OF PUMPING: 00 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
015 FEET	~~35~~ 035 FEET	035 FEET	035 FEET	FEET	FEET

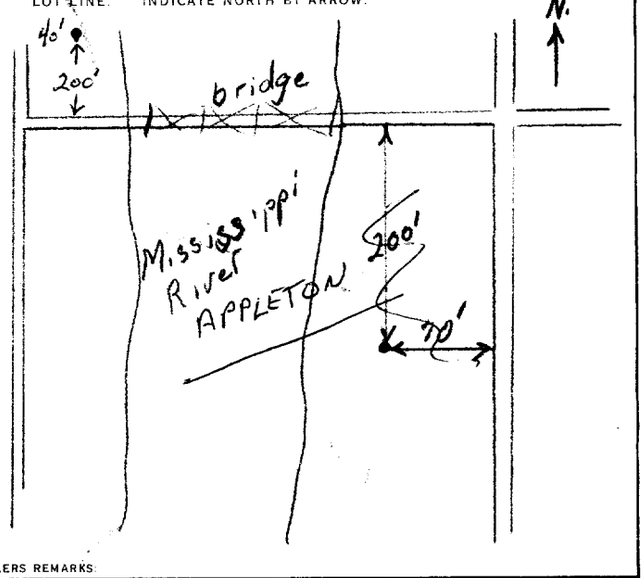
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: 50 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 050 FEET | RECOMMENDED PUMPING RATE: 0015 GPM

000.8 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL (54): 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE (55-56) 01: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING (57): 1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☒ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co. | LICENCE NUMBER:

ADDRESS: R.R.#2 Jasper Ont.

NAME OF DRILLER OR BORER: Wallace Desaulniers | LICENCE NUMBER: 1739

SIGNATURE OF CONTRACTOR: Wallace Desaulniers | SUBMISSION DATE: DAY 9 MO. 2 YR. 93

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 1119 | DATE RECEIVED (63-68): 010373

DATE OF INSPECTION: | INSPECTOR: K.

REMARKS: P K WI

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FORM 7 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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

1 2	3503339	MUNICIP. 10	350.12 14	CON. 15 C&N 22 23 24

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT 25-27
Lanark	Ramsey	10 A	X 003

[redacted] 28 Grandeur Ave., Ottawa, Ontario. DATE COMPLETED 48-53: DAY 08 MO. 05 YR. 73

	RC.	ELEVATION	RC.	BASIN CODE	II	III	IV
0031/120 24	25 4	26 0420	30 ST	31 2ST			47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	sand	gravel	packed	0	1
grey	limestone		hard	1	65

31 0010/2228 0016/5721/5

32 1 2 10 14 15 21 32 43 54 65 75 80

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
00 27 10-13	1 ☒ FRESH 3 ☐ SULPHUR 14 / 2 ☐ SALTY 4 ☐ MINERAL
00 64 15-18	1 ☒ FRESH 3 ☐ SULPHUR 19 / 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24 / 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29 / 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34 80 / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 10-11	1 ☒ STEEL 12 / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☒ OPEN HOLE	188	0	0025 13-16
06 6			25	65
17-18	1 ☐ STEEL 19 / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☐ OPEN HOLE			20-23
24-25	1 ☐ STEEL 26 / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (e.g. CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33 80	

OWRC P.8

71 PUMPING TEST

PUMPING TEST METHOD 10	PUMPING RATE 11-14	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0012 GPM	01 15-16 HOURS 00 17-18 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	25 WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
19-21	22-24	1 ☒ PUMPING 2 ☐ RECOVERY	26-28	29-31	32-34	35-37
015 FEET	045 FEET		045 FEET	045 FEET	045 FEET	045 FEET

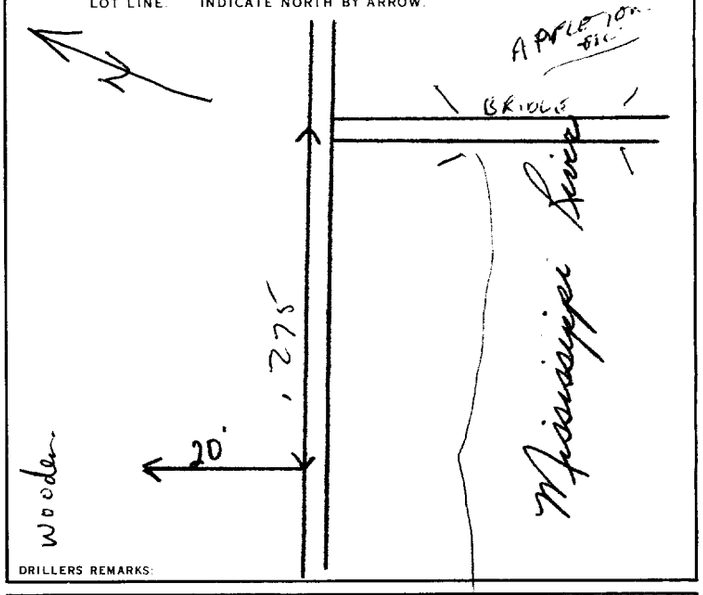
IF FLOWING, GIVE RATE 38-41 GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST 42
		1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING 43-45 FEET	RECOMMENDED PUMPING RATE 46-49 GPM
☐ SHALLOW ☒ DEEP	050	0005

50-53 000.4

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54

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

WATER USE 55-56 01

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

METHOD OF DRILLING 57

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. LICENCE NUMBER: 1558

ADDRESS: Box 490, Stittsville, Ontario.

NAME OF DRILLER OR BORER: Lenny Drynan LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kawanagh SUBMISSION DATE: DAY 10 MO. 5 YR. 73

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OFFICE USE ONLY

DATA SOURCE 58: 1 CONTRACTOR 59-62: 1558 DATE RECEIVED 63-68: 140673 80

DATE OF INSPECTION: INSPECTOR: K.

REMARKS:

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

31 F/1 E

ONTARIO

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2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 3503366 | MUNICIP. 35012 | CON. C.G.N. 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Lanark	Ramsay	I	003

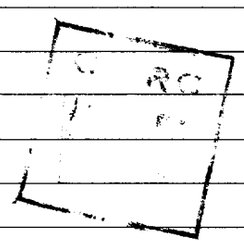
[redacted] Appleton Ont.

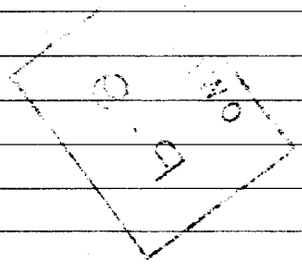
DATE COMPLETED: DAY 02 MO. 05 YR. 23

ELEVATION THING 0003467 | RC. 4 | ELEVATION 0395 | RC. 5 | BASIN CODE 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Fill			0	2
Gray	Limestone			2	64





31 | 0002 01 | 0064215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

PUMPING TEST

71

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0020 GPM. | DURATION OF PUMPING: 00 HOURS 30 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	030 FEET	030 FEET	030 FEET	FEET	FEET

IF FLOWING GIVE RATE: GPM.

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

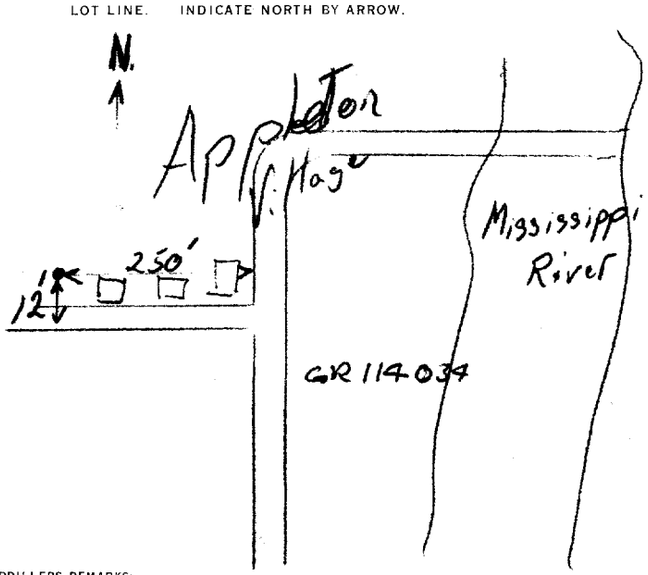
RECOMMENDED PUMP SETTING: 045 FEET

RECOMMENDED PUMPING RATE: 0020 GPM.

50-53: 002.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL

54

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

WATER USE 01

55-56

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

METHOD OF DRILLING

57

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co | LICENCE NUMBER: 1119

ADDRESS: R.R.#2 Jasper Ont

NAME OF DRILLER OR BORER: Wallace Desaulniers | LICENCE NUMBER: 1119

SIGNATURE OF CONTRACTOR: Wallace Desaulniers | SUBMISSION DATE: DAY 8 MO. 8 YR. 23

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68
1	1119	150873

DATE OF INSPECTION: 13 Nov 74 | INSPECTOR: R.W. Doyle

REMARKS:

P

WI

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FORM 7 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

1. PRINT ONLY IN SPACES PROVIDED
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11 | 3503546 | MUNICIP. 35012 | CON. CON | LOT 003

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT	DATE COMPLETED
Lanark	Ramsay	1F X	003	DAY 21 MO. 09 YR. 23

[redacted] pleton Box 1839 Carleton Place

UTM ZONE	EASTING	RC	NORTHING	RC	ELEVATION	RC	BASIN CODE
18	0333167	4	0319 5	5			25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	clay			0	3
Gray	Limestone			3	64

31 | 0003 bs | 0064 2 1 S

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0 0025	
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0030 GPM	00 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
018 FEET	035 FEET	035 FEET	035 FEET	FEET	FEET

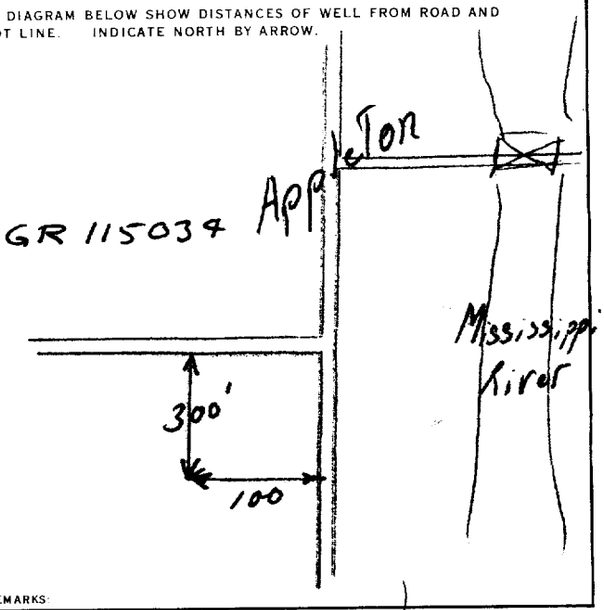
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☐ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	040 FEET	0030 GPM

50-53 001.8

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL (54): 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE (55-56) 01: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING (57): 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co. LTD. — LICENCE NUMBER: 1119

ADDRESS: R.R. # 2 Jasper Ont.

NAME OF DRILLER OR BORER: C. F. Morrison — LICENCE NUMBER: 1119

SIGNATURE OF CONTRACTOR: Wallace Mawhinney — SUBMISSION DATE: DAY 10 MO. 12 YR. 23

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1119 — DATE RECEIVED 63-68: 13 12 73 — 80

DATE OF INSPECTION: 28 OCT 74. — INSPECTOR: R.W. DOYLE

REMARKS:

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Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31F1

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11 — 3504685 — MUNICIP 35012 — LOT CON # C — 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Lanark.	Ramsay.	~~X~~ 9	003

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
D & V Construction	Carp ON	DAY 12 MO 07 YR 77

21 — UTM ZONE 18 — NORTHING 4711610 — EASTING 5003000 S — ELEVATION 0400 — 5 — SIG CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loam			0	3
Brown	Limestone			3	75

31 — 0003602 — 0075615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
065	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	22
6				0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

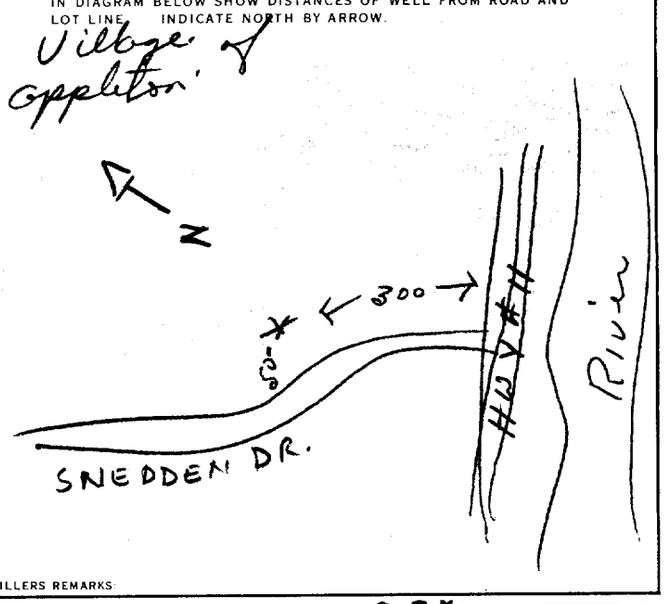
PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS / MINS
1 ☐ PUMP 2 ☐ BAILER		

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	065 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	040 FEET	063 FEET	065 FEET	065 FEET

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
—	—	1 ☒ CLEAR 2 ☐ CLOUDY	☐ SHALLOW ☒ DEEP	065	0006

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED POOR QUALITY 7 ☐ UNFINISHED
WATER USE 55-56 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 57 4	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Saunders Well Drilling	4767
ADDRESS: RR# 2 Carp ON	
NAME OF DRILLER OR BORER: G. Bouteri	LICENCE NUMBER: —
SIGNATURE OF CONTRACTOR: R. Saunders	SUBMISSION DATE: DAY 14 MO. 7 YR. 77

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68
1	4767	2 20 77
DATE OF INSPECTION: JUNE 13 78	INSPECTOR: DN	
REMARKS: PLOTTED		

FORM NO. 0506—4—77

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 3504686 | MUNICIP 35012 | CON. ~~CON~~ 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Lanark.	Ramsay.	~~CON~~ 9	303

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
D & V Construction	Arnprior	DAY 12 MO. 07 YR. 77

UTM 18 411490 5003020 | EASTING | NORTHING | ELEVATION 0390 | SITE CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loom.			0	4
Brown	Limestone			4	75

31 0004602 0075615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
069	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 5/8 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☐ BAILER	0006 GPM	01 HOURS 00 MINS

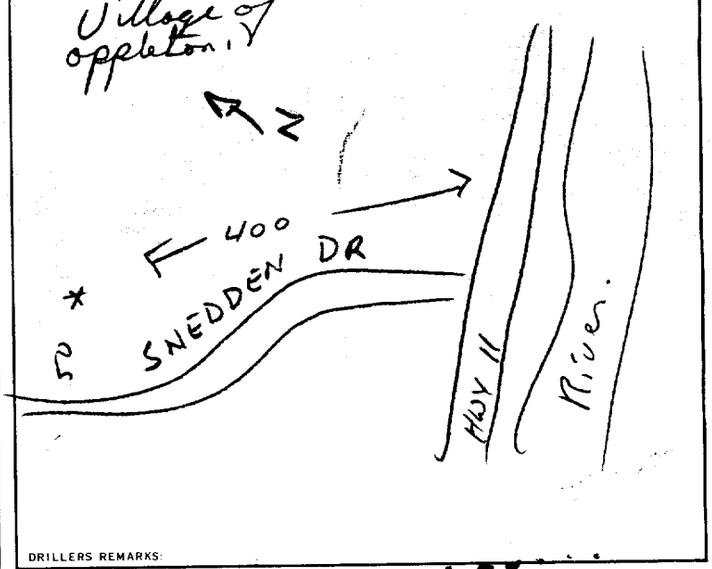
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
011 FEET	065 FEET	040 FEET	065 FEET	065 FEET	065 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☐ DEEP	065 FEET	0006 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54	1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED
WATER USE 55-56 01	1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED
METHOD OF DRILLING 57 4	1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☒ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Saunders Well Drilling	4767

ADDRESS: RR # 2 Arnprior.

NAME OF DRILLER OR BORER	LICENCE NUMBER
G. Boutin	—

SIGNATURE OF CONTRACTOR	SUBMISSION DATE
Robert Saunders	DAY 14 MO. 7 YR. 77

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68
1	4767	220777

DATE OF INSPECTION	INSPECTOR
JUNE 13/78	Ken DN

REMARKS: PLOTTED

CSS.SS

FORM NO. 0506—4—77

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 3504687 | MUNICIPALITY 35012 | CON 8 CON | 09

COUNTY OR DISTRICT: Lanark. | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay. | CON., BLOCK, TRACT, SURVEY, ETC.: Lot 9 | LOT: S. 003

OWNER (SURNAME FIRST): Do V. Construction | ADDRESS: Arnprior | DATE COMPLETED: DAY 12 MO 07 YR 77

21 | UTM ZONE 18 | NORTHING 4751510 | EASTING 5002990 | ELEVATION S 0395 | SOURCE 5 | GIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loam			0	4
Brown	Limestone			4	100

31 | 3004602 | 0100615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0092	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD (1 ☐ PUMP 2 ☐ BAILER)	PUMPING RATE GPM	DURATION OF PUMPING HOURS / MINS
	0006	01 / 00

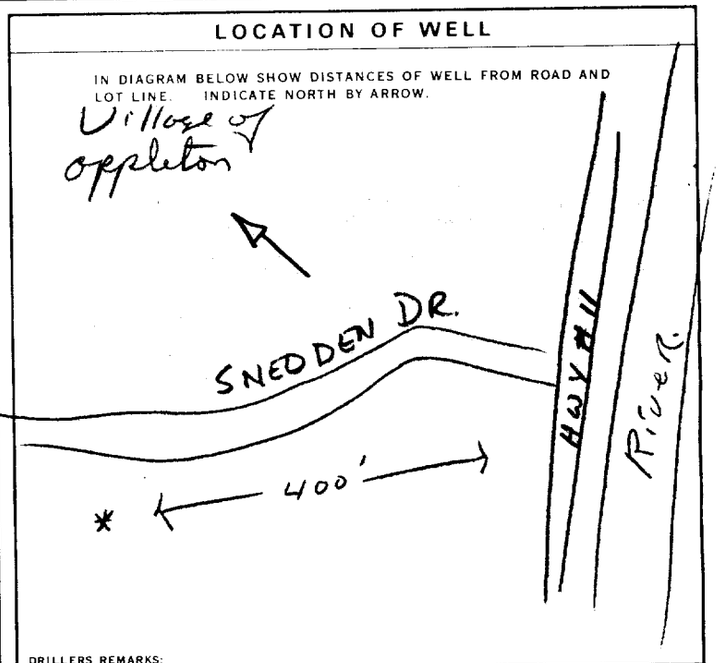
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	065 FEET	040 FEET	065 FEET	065 FEET	065 FEET

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

RECOMMENDED PUMP TYPE (☐ SHALLOW ☒ DEEP)	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
	065	0006

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 01 — 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 4 — 1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☒ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Saunders Well Drilling | LICENCE NUMBER: 4767

ADDRESS: RR#2 Arnprior

NAME OF DRILLER OR BORER: B Saunders | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Robert Saunders | SUBMISSION DATE: DAY 14 MO 7 YR 77

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 4767 | DATE RECEIVED 63-68: 220777

DATE OF INSPECTION: June 13/78 | INSPECTOR: KM. DN

REMARKS: PLOTTED

CSS.S8

FORM NO. 0506—4—77

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The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 3504689 | MUNICIP 35012 | LOT | CON. I | 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Renfrew	Ramsay	~~Tp~~ 9	003

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
D & V Construction	Carp ON	DAY 14 MO. 07 YR. 77

21 | UTM ZONE 18 | EASTING 411600 | NORTHING 5002930 | ELEVATION S 0400 S | 26 | I II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loam			0	2
Brown	Limestone			2	71

31 | 0002602 | 0075615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0068	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 7/8 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	~~22~~ 0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER

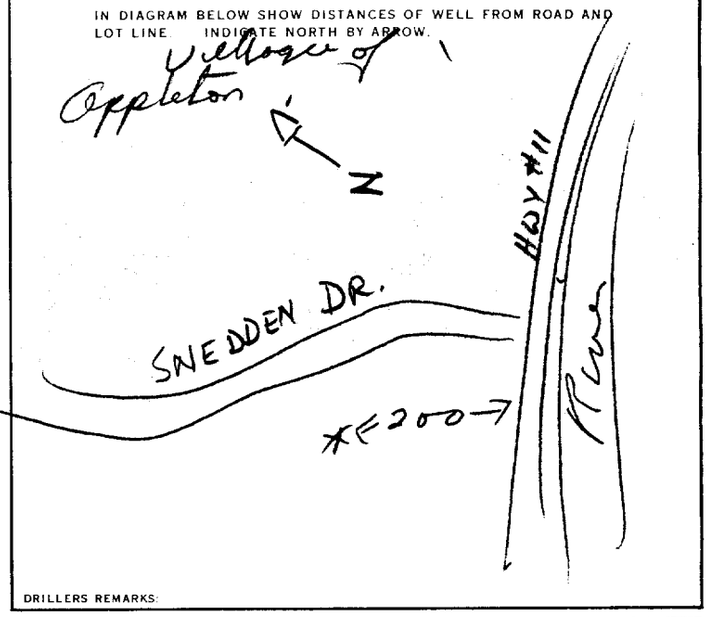
PUMPING RATE GPM	DURATION OF PUMPING HOURS	MINS
0006	01	00

STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
009	065	15 MINUTES 040 FEET	30 MINUTES 065 FEET	45 MINUTES 065 FEET	60 MINUTES 065 FEET

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 065 FEET	RECOMMENDED PUMPING RATE 0006 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED
METHOD OF DRILLING 4	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Saunders Well Drilling	4767
ADDRESS: RR # 2 Carp ON	
NAME OF DRILLER OR BORER: G. Boutin	LICENCE NUMBER
SIGNATURE OF CONTRACTOR: K. Saunders	SUBMISSION DATE: DAY 14 MO. 7 YR. 77

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	4767.	? 20777

DATE OF INSPECTION: JUNE 13/78 INSPECTOR: KM DN

REMARKS: PLOTTED

CSS.58

FORM NO. 0506—4—77

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31F1

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

11 | 3504691 | MUNICIP 35012 | CON. CON - 4 | 09

COUNTY OR DISTRICT: Lanark. | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay | CON., BLOCK, TRACT, SURVEY, ETC.: 9 | LOT: 003

OWNER (SURNAME FIRST): D+V Construction | ADDRESS: Arnprior | DATE COMPLETED: DAY 11 MO 07 YR 77

21 | UTM 18 411540 5002940 | ELEVATION 5 0400 | SURFACE CODE 5 | BEDROCK CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loam			0	3
Brown	Limestone			3	75

31 | 00036 02 | 00756 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0069 / 69	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 / 4 / 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	22 / 0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER | PUMPING RATE: 0007 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

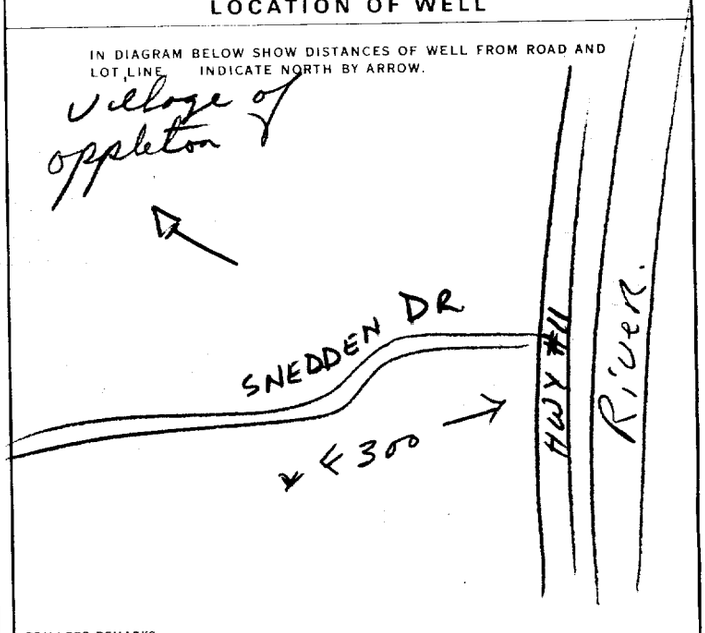
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
009 FEET	065 FEET	040 FEET	065 FEET	065 FEET	065 FEET

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 065 / 65 FEET | RECOMMENDED PUMPING RATE: 0007 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY | 2 ☐ OBSERVATION WELL | 3 ☐ TEST HOLE | 4 ☐ RECHARGE WELL | 5 ☐ ABANDONED, INSUFFICIENT SUPPLY | 6 ☐ ABANDONED, POOR QUALITY | 7 ☐ UNFINISHED

WATER USE 55-56: 01 — 1 ☒ DOMESTIC | 2 ☐ STOCK | 3 ☐ IRRIGATION | 4 ☐ INDUSTRIAL | 5 ☐ COMMERCIAL | 6 ☐ MUNICIPAL | 7 ☐ PUBLIC SUPPLY | 8 ☐ COOLING OR AIR CONDITIONING | ☐ OTHER | 9 ☐ NOT USED

METHOD OF DRILLING 57: 4 — 1 ☐ CABLE TOOL | 2 ☐ ROTARY (CONVENTIONAL) | 3 ☐ ROTARY (REVERSE) | 4 ☒ ROTARY (AIR) | 5 ☐ AIR PERCUSSION | 6 ☐ BORING | 7 ☐ DIAMOND | 8 ☐ JETTING | 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Saunders Well Drilling | LICENCE NUMBER: 4767

ADDRESS: RR#2 Arnprior

NAME OF DRILLER OR BOREMAN: D. Saunders | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: R. Saunders | SUBMISSION DATE: DAY 14 MO 7 YR 77

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 4767 | DATE RECEIVED 63-68: 220777

DATE OF INSPECTION: JUNE 13/78 | INSPECTOR: K. DN

REMARKS: PLOTTED

FORM NO. 050

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Ontario

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WATER WELL RECORD

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

11 | 3504813 | MUNICIP 35012 | CON. CON 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 003
[redacted]	Ramsay	9	

384 Lake Ave. W. Carleton Place — DATE COMPLETED DAY 08 MO 11 YR 22

UTM ZONE 18 | 0343 0 S | 0390 S | SAND CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Soil			0	2
grey	Limestone			2	124

31 | 0002 02 | 01242215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0117	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0009 GPM	00 HOURS 30 MINS

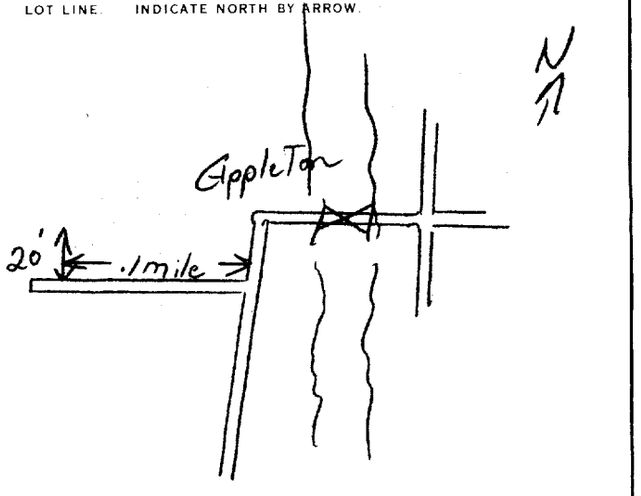
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
025 FEET	070 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	070 FEET	070 FEET	FEET	FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	080 FEET	0009 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co. LTD. — LICENCE NUMBER: 1119

ADDRESS: RR # 2 Jasper Ont.

NAME OF DRILLER OR BORER: Wallace Desaulniers — LICENCE NUMBER: 1119

SIGNATURE OF CONTRACTOR: [signature] — SUBMISSION DATE DAY 7 MO 12 YR 22

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1119 | DATE RECEIVED 51277

DATE OF INSPECTION: JUNE 13/78 | INSPECTOR: DN

REMARKS: OLD LOG HOUSE WITH NEW EXTENSION — PLOTTED

FORM NO. 0506—4—77

MINISTRY OF THE ENVIRONMENT COPY

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3505232

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

11 | 3505232 | MUNICIP 35012 | CON. CON 7 | 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Lanark.	Ramsay	~~Co~~ 9	003

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
D & V. Construction	Arnprior	DAY 13 MO. ~~04~~ 07 YR. 77

21 | ZONE 18 | EASTING 411610 | NORTHING 5002990 | ELEVATION S 0400 | SURFACE CODE S 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Loam			0	4
Brown	Limestone			4	75

31 | 0004602 | 0075615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0068	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 4 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	~~22~~ 0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☐ BAILER	0020 GPM	01 HOURS 00 MINS

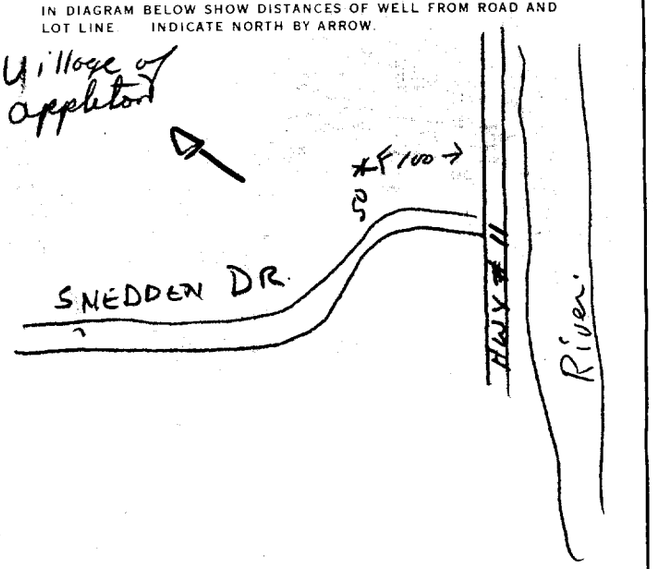
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	065 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	040 FEET	065 FEET	065 FEET	065 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☐ DEEP	FEET	GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 4	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Saunders Well Drilling	4767
ADDRESS: RR # 2 Arnprior	
NAME OF DRILLER OR BORER: L. Boulter	LICENCE NUMBER: —
SIGNATURE OF CONTRACTOR: R. Saunders	SUBMISSION DATE: DAY 14 MO. 7 YR. 77

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	4767	2 07 77

DATE OF INSPECTION: JUNE 13/78 INSPECTOR: DM

REMARKS: Was 3504688 PLOTTED

CSS.SS

FORM NO. 0506—4—77

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 3505550 MUNICIP 3501 2 CON CON LOT 10

31 F/1

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	RAMSAY	10	003

[redacted] R.R. 3 ALMONTE — DATE COMPLETED DAY 16 MO 08 YR 79

0032.00 RC 5 ELEVATION 0400 RC 5 BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Sand		Fine	0	7
Brown	Shale		Hard	7	68

31 0002608 0068617173

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0052 SJ-GS	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 6	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	002.9
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET	MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☒ BAILER
PUMPING RATE: 002.5 GPM
DURATION OF PUMPING: 02 HOURS 30 MINS

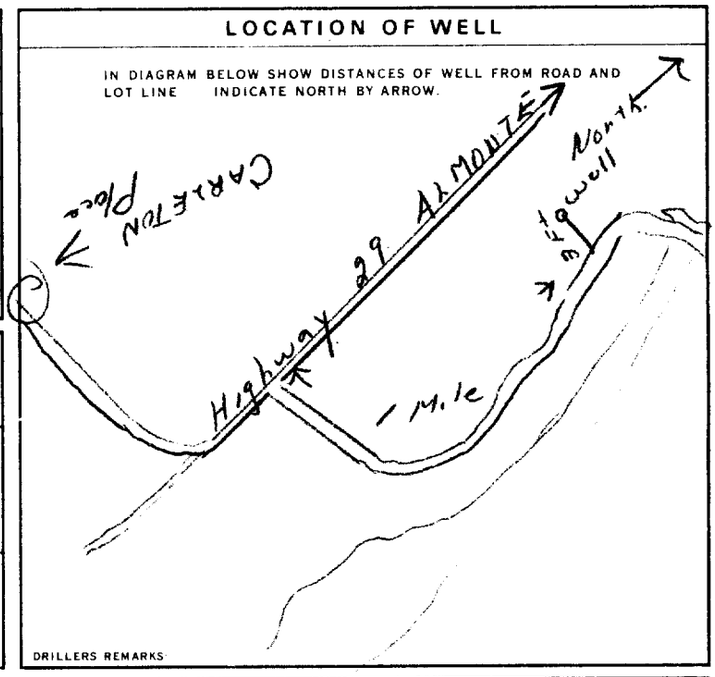
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
02.2 FEET	02.9 FEET	02.2 FEET	FEET	FEET	FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 FEET	002.5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 01 — 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 1 — 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: BOYD CAMERON — LICENCE NUMBER: 1567
ADDRESS: R.R. 2 CLAYTON
NAME OF DRILLER OR BORER — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: Boyd Cameron — SUBMISSION DATE: DAY 18 MO 8 YR 79

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1567 — DATE RECEIVED 65-70: 011079 80
DATE OF INSPECTION — INSPECTOR
REMARKS: 70

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

31F1

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 3507000 MUNICIP. 3501 2 CON. C9N 09

COUNTY OR DISTRICT: Lanark
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: [redacted] Ramsay Estate Appleton Ont.
CON. BLOCK, TRACT, SURVEY, ETC.: 9 IX
LOT: 003
DATE COMPLETED: DAY 28 MO 11 YR 84
ELEVATION: 0425
BASIN CODE: 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Soil	Stones		0	3
grey	Limestone.			3	65

MAY 28 1985

31 0003 0212 0065215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0020
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0015 GPM	00 HOURS 30 MINS

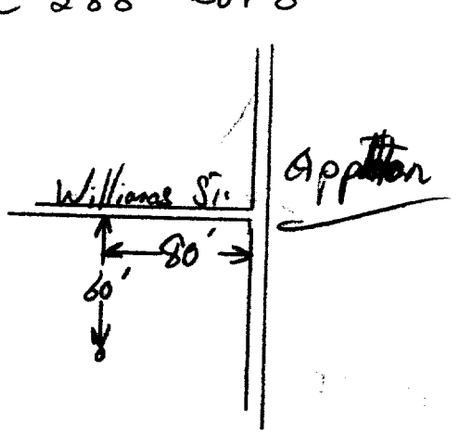
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
030 FEET	045 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	045 FEET	045 FEET		

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 050 FEET
RECOMMENDED PUMPING RATE: 0015 GPM

LOCATION OF WELL

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

Plan 288 Lot 8.



DRILLERS REMARKS

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 01 — 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 2 — 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co Ltd — LICENCE NUMBER: 1119
ADDRESS: RR#2 Jasper Ont
NAME OF DRILLER OR BORER: Wallace Desaulniers — LICENCE NUMBER: 1119
SIGNATURE OF CONTRACTOR: Wallace Desaulniers — SUBMISSION DATE: 27 MO 2 YR 85

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1119 — DATE RECEIVED 63-68: 060385 — 80
DATE OF INSPECTION — INSPECTOR
REMARKS: CSS FS

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 3507253 | MUNICIP. 3512 | CON. CON 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
LANARK	RAMSAY	10	3

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
HALLIDAY HOMES	P.O. BOX 340 CARLETON PLACE	DAY 4 MO. 12 YR. 84

21 | UTM ZONE | EASTING | NORTHING | RC | ELEVATION | RC | BASIN CODE I II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	SAND	GRAVEL STONE'S		0'	10'
GREY	LIMESTONE			10'	65'

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
63	1 ☑ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1.88	0'	20'
6"			20'	65'
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☑ BAILER	20 GPM	1 HOURS ___ MINS

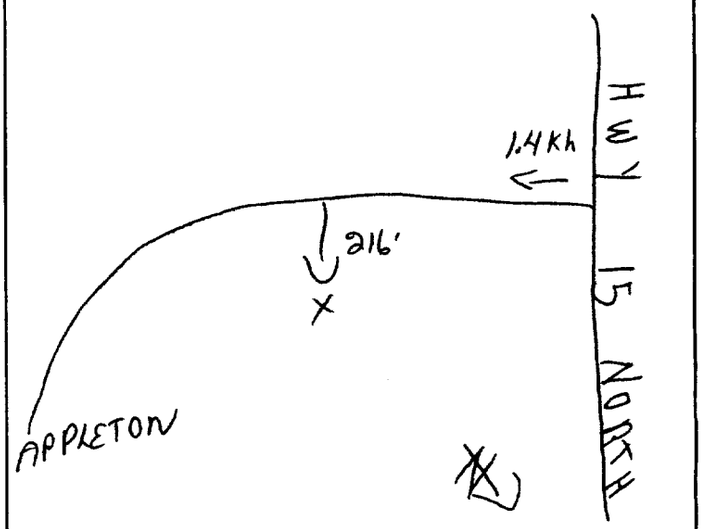
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
28 FEET	40 FEET		40 FEET	40 FEET	40 FEET	40 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☑ DEEP	50 FEET	7 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL	1 ☑ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED
WATER USE	1 ☑ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED
METHOD OF DRILLING	1 ☑ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
M. KAVANAGH & SON WELL DRILLING	3142

ADDRESS
R R 2 CARLETON PLACE

NAME OF DRILLER OR BORER	LICENCE NUMBER
MIKE KAVANAGH	3142

SIGNATURE OF CONTRACTOR	SUBMISSION DATE
M Kavanagh	DAY 5 MO. 12 YR. 85

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
	3142	311285

DATE OF INSPECTION	INSPECTOR

REMARKS: WDE CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ontario — Ministry of the Environment

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: NO TAG FOUND

2

Well Record

Regulation 903 Ontario Water Resources Act

S-16427 Page ____ of ____

[redacted]

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

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411641	5003300		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	.31	Topsoil	
.31	1.22	Benseal	
1.22	~~3.66~~	Grout slurry	

Method of Construction

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

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* ____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
3.45	PVC	.356		

Construction Record - Screen

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

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☑ Abandoned, other, *specify* not needed
☐ Other, *specify*

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

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

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

Recommended pump depth *(m/ft)*

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

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

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

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	1.5	4.21

Map of Well Location

Please provide a map below following instructions on the back.

See map

Work #12

BH-12

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Strata Drilling Group	7141

Business Address (Street Number/Name)	Municipality
165 Shields Crt	Markham

Province	Postal Code	Business E-mail Address
ON	L3R8V2	wrecords@stratasoil.com

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3616		2014/12/12

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☐ No		Audit No. Z 198167
	Date Work Completed: 2014/12/09	Received

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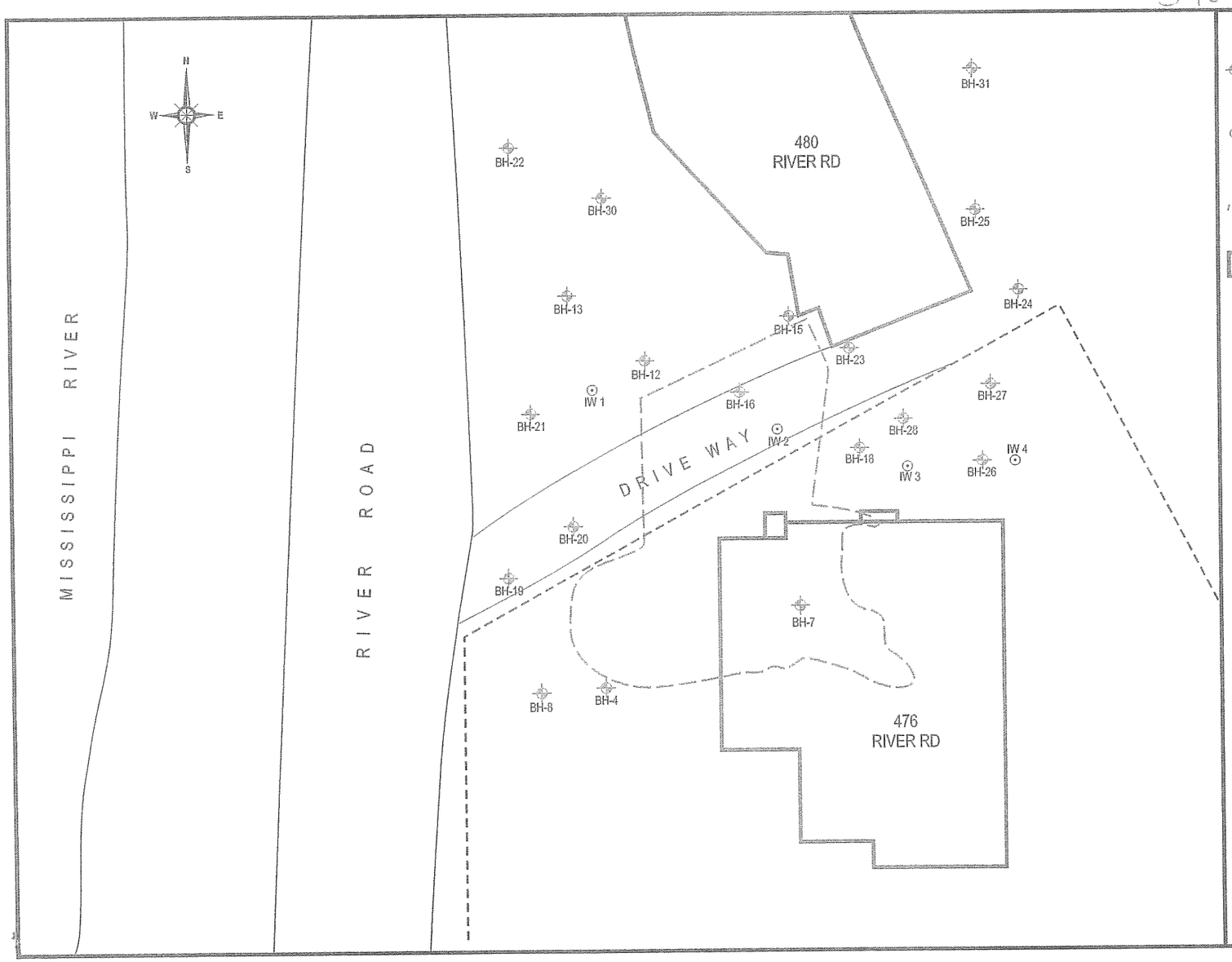
Ministry's Copy

S-16427



LEGEND:

- APPROXIMATE LOCATION OF MONITORING WELL
- APPROXIMATE LOCATION OF INJECTION WELL
- APPROXIMATE AREA OF REMEDIAL EXCAVATIONS
- BUILDING

CONCENTRIC ASSOCIATES INTERNATIONAL INCORPORATED

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CLIENT NAME:
AVIVIA CANADA

PROJECT ADDRESS:
476/480 RIVER ROAD
APPLETON, ONTARIO

PROJECT NAME:
476 RIVER ROAD HEATING OIL SPILL

DRAWING TITLE:
SITE PLAN

DESIGN:	KS	SCALE:	NTS
DRAWN:	KS	DATE:	MAR/2014
APPV'D:	CH	FILE No:	06-1478-E

SHEET No.

FIG 2

C-7241 22816

Ontario — Ministry of the Environment

W Tag#: A187038 ....t Below)
A187038

Well Record
Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Carlgate Development Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 44	Carleton Place	ON	K7C 3P3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#116-#122 Old Mill Lane	Ramsay/Mississippi Mills	P/L 4	10

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411380	5003662	Plan 288	Lot 7

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand			0'	4'
Grey & Brown	Limestone			4'	65'
Grey & Brown	Limestone			65'	71'

RP27R9884 Parts 1 to 4 / RP26R2678 Parts 4, 9, 17, 18 & 28

TEST WELL #1 OF 3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/Imp gal)
20'	0'	Neat cement	10.9

Method of Construction

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

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	.188"	+2'	20'
6"	Open Hole		20'	71'

Construction Record - Screen

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

Status of Well

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

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	20'	9¾"
20'	71'	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 37.5'

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

Recommended pump depth (m/ft): 60'

Recommended pump rate (l/min / GPM): 20

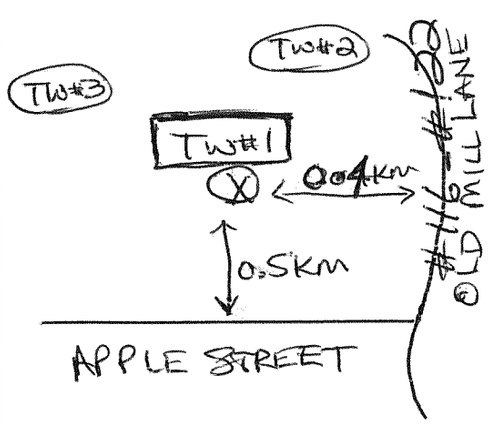
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		36.2"		37.5'
1	36.5	1	36.8	
2	36.7	2	36.5	
3	36.9	3	36.2	
4	37	4	36.2	
5	37	5	36.2	
10	37.2	10	36.2	
15	37.5	15	36.2	
20	37.5	20	36.2	
25	37.5	25	36.2	
30	37.5	30	36.2	
40	37.5	40	36.2	
50	37.5	50	36.2	
60	37.5'	60	36.2'	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2 HP - 10 GPM SET @ 60 FT
TEST WELL #1 OF 3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Flanktown Road, RR#1	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T 3632		2015 06 30

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Date Work Completed (Y Y Y Y M M D D)
☒ Yes ☐ No	2015 06 24	2015 06 22

Ministry Use Only
Audit No Z 191501
Received JUL 21 2015

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A187040 (t Below)

A187040

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Carlgate Development Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 44	Carleton Place	ON	K7C 3P3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#116-#122 Old Mill Lane	Ramsay/Mississippi Mills	P/L 4	10

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411297	5003615	Plan 288	Lot 7

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	+ Backfill		0′	12′
Grey & Brown	Limestone			12′	39′
Grey & Brown	Limestone			39′	60′
Grey & Brown	Limestone			60′	67′

*Rp27R9884 Parts 1 to 4 / Rp26R2678 Parts 4, 9, 17, 18 & 28 *

TEST WELL # 3 OF 3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
21′	0′	Neat cement	10.9

Method of Construction

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

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	.188"	+2′	21′
6"	Open Hole		21′	67′

Construction Record - Screen

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

Status of Well

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

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0′	21′	9¾"
21′	67′	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 50

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 22′

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

Recommended pump depth (m/ft): 50

Recommended pump rate (l/min / GPM): 20

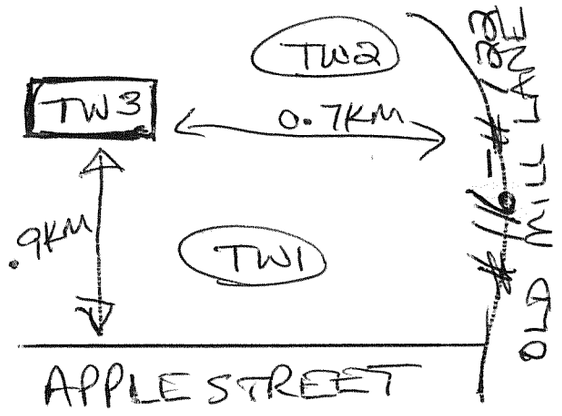
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		19′	4′	22′
1	21.2	1	20.1	
2	21.4	2	19.8	
3	21.4	3	19.5	
4	21.5	4	19.4	
5	21.6	5	19.4	
10	21.8	10	19.4	
15	22	15	19.4	
20	22	20	19.4	
25	22	25	19.4	
30	22	30	19.4	
40	22	40	19.4	
50	22	50	19.4	
60	22′	60	19.4′	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2 HP - 10 GPM SET @ 50 FT
TEST WELL #3 OF 3

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6059 Franktown Road, RR#1	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T 3632		2015 06 30

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Date Work Completed (Y Y Y Y M M D D)
☒ Yes ☐ No	2015 06 24	2015 06 23

Ministry Use Only

Audit No. Z 191490

Received JUL 21 2015

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317/1 east

UTM 18 | 411600 E

9 R 5003575 N

Elev. 9 R 0403

Basin 25

Con X
lot 3

35 № 2131

The Water-well Drillers Act, 1954

Department of Mines

Water-Well Record

County or Territorial District Lanark Township, Village, Town or City Ramsay

[redacted] in Village, Town or City)

Address Appelton

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 5"

Length(s) 22'

Type of screen

Length of screen

Pumping Test

Static level 25'

Pumping rate 1000 gall per hr.

Pumping level 40'

Duration of test 1 hr.

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
sandy loam	0	10'	60'	35'	fresh
hard limestone	10'	67'			

For what purpose(s) is the water to be used? house

Is water clear or cloudy? Clear

Is well on upland, in valley, or on hillside? hillside

Drilling firm W. V. Nugent

Address Lanark

Name of Driller Cecil Munro

Address Lanark

Licence Number 1077

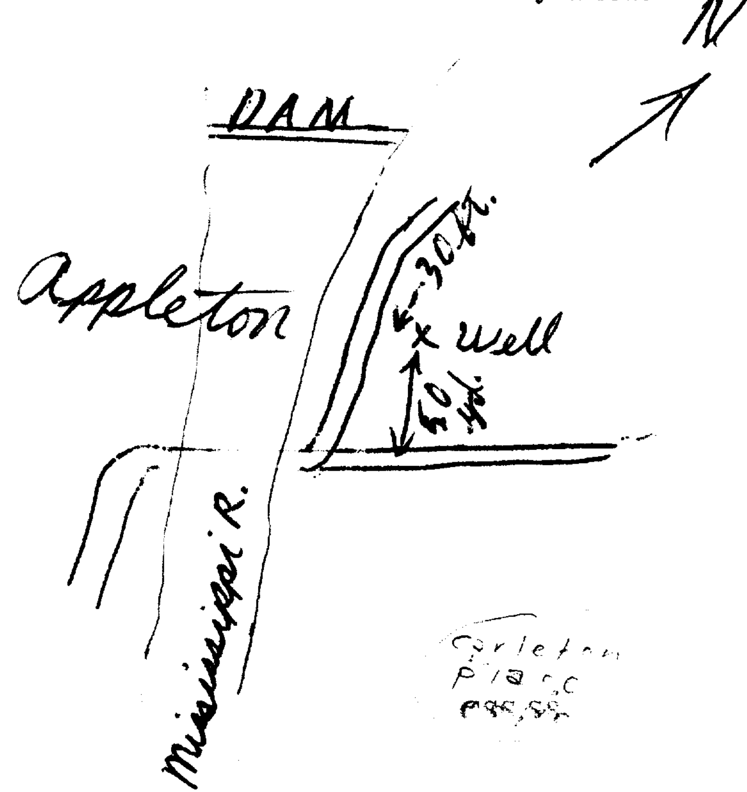
I certify that the foregoing statements of fact are true.

Date Sept 30 Cecil Munro

Signature of Licensee

Location of Well

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



Carleton

5

UTM 18 4116010 E
9 5003725 N
Elev. 9 04010
Basin 25

317/1 east

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

Water-Well Record

County or Territorial District ... Township, Village, Town or City ... Pembroke
[redacted] in Village, Town or City) ...
Address ... Appleton

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 6½
Length(s) 18
Type of screen N/A
Length of screen

Pumping Test

Static level 25'
Pumping rate 8 gal. per hr.
Pumping level 50'
Duration of test 1 hr.

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Sandy loam	0	4'	65'	45'	fresh
Shaly limestone	4	15'			
Solid limestone	15'	71'			

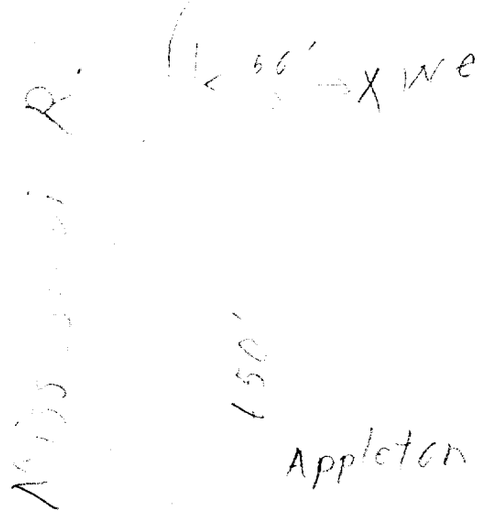
For what purpose(s) is the water to be used?
Domestic
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside? Upland
Drilling firm W. K. Dymond
Address Renfrew
Name of Driller Gerald Dymond
Address Renfrew
Licence Number 1077

I certify that the foregoing statements of fact are true.

Date July 8 Gerald Dymond
Signature of Licensee

Location of Well

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



Form 5

UTM 18 | 4111610 E
9 | 5003450 N
Elev. 9 | 0410
Basin 25

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

Water-Well Record

County or Territorial District ..... Township, Village, Town or City .....

[redacted] in Village, Town or City) .....

.....Address .....

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) .....
Length(s) .....
Type of screen .....
Length of screen .....

Pumping Test

Static level 20'
Pumping rate ..... gpm
Pumping level 45'
Duration of test 1 hr.

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
[illegible]	0	5'	55'	35'	fresh
[illegible]	5	15			
[illegible]	15	60'			

Water Record

For what purpose(s) is the water to be used?
.....

Is water clear or cloudy? .....
Is well on upland, in valley, or on hillside? .....
.....

Drilling firm ..... W. J. Sargent
Address ..... Lanark
.....

Name of Driller ..... Cecil Warren
Address ..... Lanark
.....

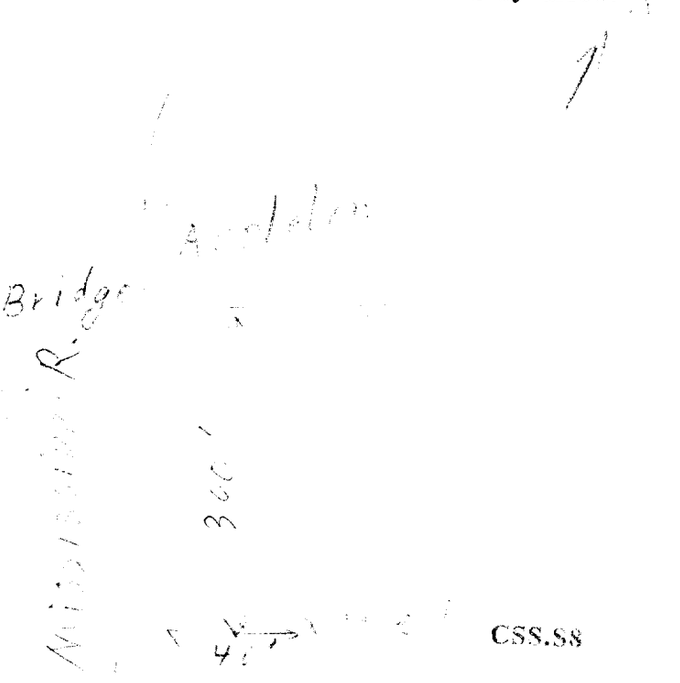
Licence Number .....

I certify that the foregoing statements of fact are true.

Date ....
Signature of Licensee

Location of Well

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



Form 5

CSS.58

317/1 west

UTM 18 | 4116510 E
9 | 5010315 N
Elev. 9 | 01018
Basin 25 | 3

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

GROUND WATER BRANCH
No. 35 21 4
SEP 5 1958
ONTARIO WATER RESOURCES COMMISSION

Water-Well Record

County or Territorial District Lanark Township, Village, Town or City Ramsay
[redacted] in Village, Town or City)
Address Appleton

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 6 1/2"
Length(s) 16'
Type of screen No
Length of screen No

Pumping Test

Static level 30'
Pumping rate 20 gall per hr
Pumping level 40'
Duration of test 1 hr

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
sand clay	0	2'	58'	28'	fresh
shelly blue limestone	2'	12'			
hard brown limestone	12'	64'			

Water Record

For what purpose(s) is the water to be used?
House
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside?
hillside
Drilling firm W. H. Bryant
Address Lanark

Name of Driller Cecil Bryant
Address Lanark

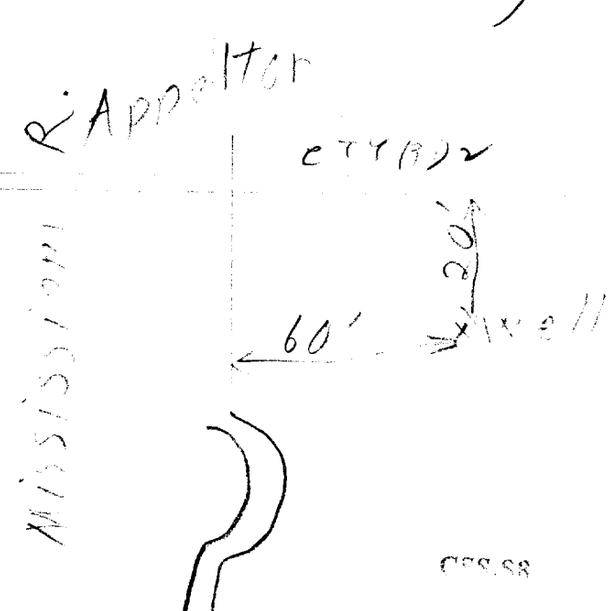
Licence Number 1077

I certify that the foregoing statements of fact are true.

Date July 16 Cecil Bryant
Signature of Licensee

Location of Well

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



Form 5

CSS.58

3171 east

C

UTM 18 411640 E
15 5013550 N
Elev 5 04016
Basin 25

35 No 2136
GROUND WATER BRANCH
D 1 1 1970
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County or District Lanark Township, Village, Town or City Ramsay

Date completed 4 (day) Nov (month) 59 (year)

Address Appleton Ont

[redacted]

Casing and Screen Record

Inside diameter of casing 6 4
Total length of casing 9
Type of screen X
Length of screen X
Depth to top of screen X
Diameter of finished hole 6

Pumping Test

Static level 29
Test-pumping rate 1 G.P.M.
Pumping level 45
Duration of test pumping 1 hr.
Water clear or cloudy at end of test clear
Recommended pumping rate 1 G.P.M.
with pumping level of 45

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Sand.	0	2	65.	36	Fresh.
shale	2	7			
Sandstone	7	69			

Water Record

For what purpose(s) is the water to be used?
House.

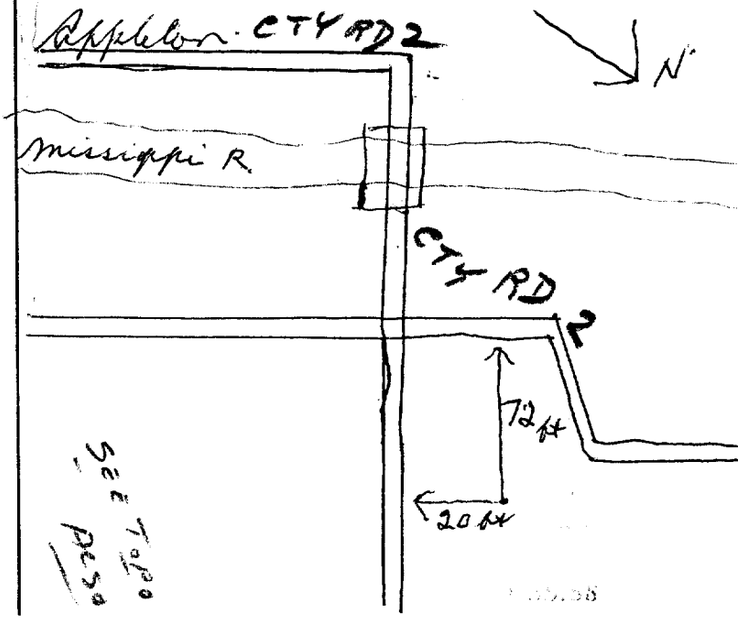
Is well on upland, in valley, or on hillside?
Hillside

Drilling Firm W. V. Nugent
Address Lanark

Licence Number 104
Name of Driller Stewart Woods
Address Lanark
Date Nov. 24
W. V. Nugent
(Signature of Licensed Drilling Contractor)

Location of Well

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



Form 5
15M-58-4149

317/1 east

35 No. 2140

UTM 18 | 4 1 1 6 0 0 | E
15 | 5 0 0 3 7 5 0 | N
Elev. 15 | 0 4 0 0 |

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 25 | County or District LANARK. | Township, Village, Town or City Ramsay.

Con. 10 | Lot 7 | Date completed 26th (day) October (month) 1966 (year)

[redacted] | Address APPLETON ONT

Casing and Screen Record

Inside diameter of casing 6¼"
Total length of casing 21'
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 6"

Pumping Test

Static level 25'
Test-pumping rate 35' G.P.M.
Pumping level 35'
Duration of test pumping 30 min
Water clear or cloudy at end of test clear
Recommended pumping rate 5' G.P.M.
with pump setting of 65' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
sand loam & stones	0	2		
broken layers of sandstone	2	6		
sandstone rock	6	25'		
limestone rock	25'	85'	70.	fresh.

For what purpose(s) is the water to be used? house

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm Mel M° Laughlin

Address Carleton Pl Ont

Licence Number 1637.

Name of Driller or Borer Melville M° Laughlin

Address Carleton Ont.

Date October 27 1966

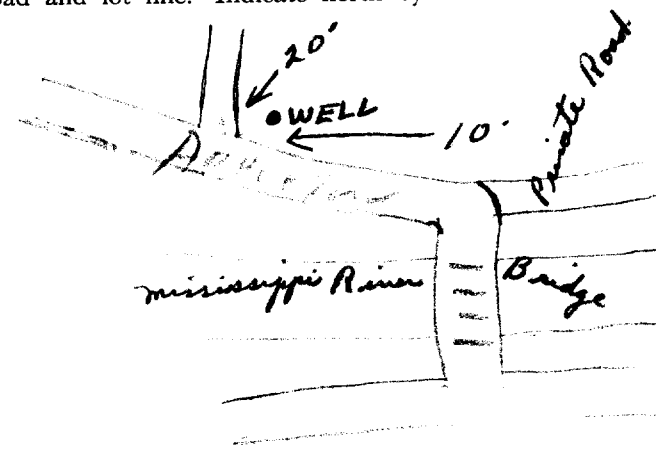
Melville M° Laughlin
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

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



The Ontario Water Resources Commission Act

WATER WELL RECORD

31F/1K

Water management in Ontario

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

11 | 3502471 | MUNICIP. 35012 | CON. C/N 10

COUNTY OR DISTRICT: Lanark | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay Appleton | CON., BLOCK, TRACT, SURVEY, ETC.: 10 X | LOT: B 003

OWNER (SURNAME FIRST) [redacted] | ADDRESS: Appleton Ont | DATE COMPLETED: DAY 22 MO. 08 YR. 69

G: 03460 | RC. | ELEVATION: 0350 | RC. | BASIN CODE: 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FROM	DEPTH TO
grey			clay	0	2
		occasional shallow layer of sand.	limestone	2	80

31 0003205 | 0080 | 115

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0065	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FROM	DEPTH TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	~~30~~ 0030
~~06~~	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		30	~~30~~ 0080
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 0015 GPM. | DURATION OF PUMPING: 01 HOURS 30 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
023 FEET	030 FEET	030 FEET	030 FEET	030 FEET	030 FEET

1 ☒ PUMPING 2 ☐ RECOVERY

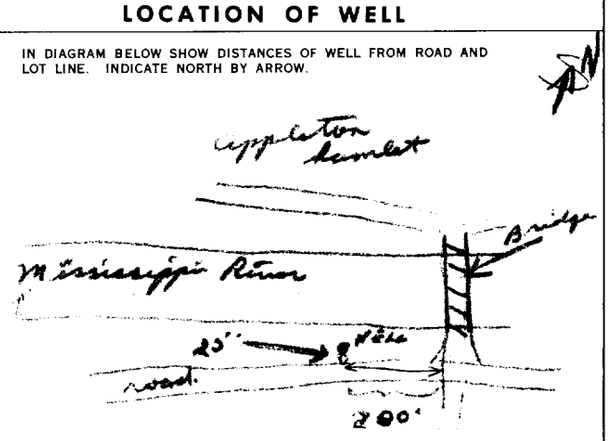
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: FEET | RECOMMENDED PUMPING RATE: GPM.

50-53 002.1 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE (55-56) 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING (57)
1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Mel McLaughlin | LICENCE NUMBER: 3339

ADDRESS: Alston Ont.

NAME OF DRILLER OR BORER: Melville McLaughlin | LICENCE NUMBER: 3339

SIGNATURE OF CONTRACTOR: Melville McLaughlin | SUBMISSION DATE: DAY 30 MO. Aug. YR. 69

OWRC COPY

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 3503 | DATE RECEIVED (63-68): 260969

DATE OF INSPECTION: 11/1/71 | INSPECTOR: P/A

REMARKS:

The Ontario Water Resources Commission Act

WATER WELL RECORD

3:SE

Water management in Ontario

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

11 (1 2) | 3503278 (3 9) | MUNICIP. 3501/12 (10 14) | CON. GOW (15 22 23 24) | 10

COUNTY OR DISTRICT: Lanark | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay | CON., BLOCK, TRACT, SURVEY, ETC.: 10 X | LOT (25-27): 003

OWNER (SURNAME FIRST) (39-47): [redacted] | ADDRESS: RR#3 Almonte Ont. | DATE COMPLETED (48-53): DAY 23 MO. 10 YR. 72

PRINTING (24): 0031560 | RC. (25): 4 | ELEVATION (26): 0410 | RC. (30): 5 | BASIN CODE (31): 25 | (ii) (iii) (iv) (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
fill	fill			0	3
Gray	Limestone			3	54

31 | 0003 | all | 0084 2/15

32 (1 2 10 14 15 21 32 43 54 65 75 80)

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0080 (10-13)	1 ☒ FRESH 3 ☐ SULPHUR (14) / 2 ☐ SALTY 4 ☐ MINERAL
(15-18)	1 ☐ FRESH 3 ☐ SULPHUR (19) / 2 ☐ SALTY 4 ☐ MINERAL
(20-23)	1 ☐ FRESH 3 ☐ SULPHUR (24) / 2 ☐ SALTY 4 ☐ MINERAL
(25-28)	1 ☐ FRESH 3 ☐ SULPHUR (29) / 2 ☐ SALTY 4 ☐ MINERAL
(30-33)	1 ☐ FRESH 3 ☐ SULPHUR (34) (80) / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM., INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
06 (11)	1 ☒ STEEL (12) / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☐ OPEN HOLE	188	0	0025 (13-16) ~~25~~
6L				
(17-18)	1 ☐ STEEL (19) / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☒ OPEN HOLE			0084 (20-23)
(24-25)	1 ☐ STEEL (26) / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☐ OPEN HOLE			(27-30)

SCREEN

SIZE(S) OF OPENING (SLOT NO.) (31-33)	DIAMETER (34-38) INCHES	LENGTH (39-40) FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN (41-44) FEET	(80)

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING (15-16 HOURS / 17-18 MINS.)
1 ☒ PUMP 2 ☐ BAILER	0012 GPM.	00 HOURS 30 MINS.

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)	WATER LEVELS DURING (25) 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
040 FEET	055 FEET		055 FEET	055 FEET	FEET	FEET

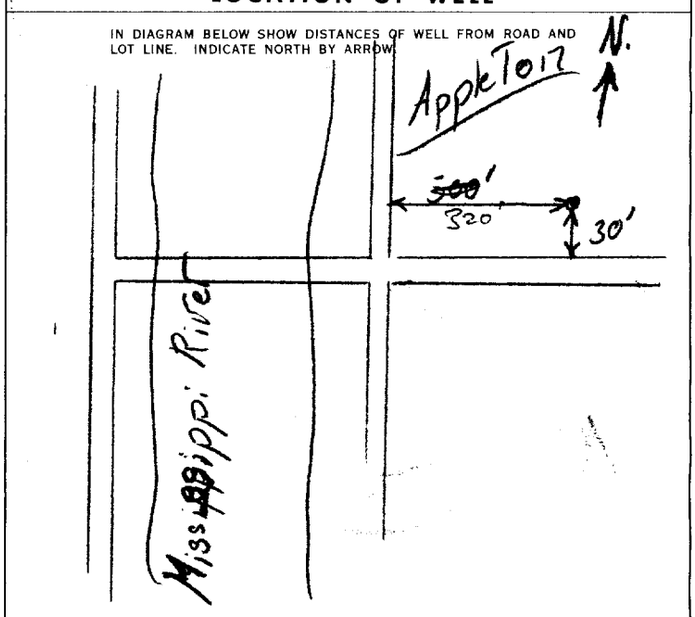
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM.	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☒ DEEP	070 FEET	0012 GPM.

(50-53) 0008 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS' REMARKS:

FINAL STATUS OF WELL (54)

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

WATER USE (55-56) 01

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

METHOD OF DRILLING (57)

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Co. | LICENCE NUMBER:

ADDRESS: R.R #2 Jasper Ont.

NAME OF DRILLER OR BORER: Wallace Desaulniers | LICENCE NUMBER: 1739

SIGNATURE OF CONTRACTOR: Wallace Desaulniers | SUBMISSION DATE: DAY 7 MO. 2 YR. 73

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 1119 | DATE RECEIVED (63-68): 010373 (80)

DATE OF INSPECTION | INSPECTOR: K.

REMARKS:

P K.

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

ONTARIO

31 F/1 E

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11 | 3503311 | MUNICIP. 35012 | CON. CON | 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Lanark	Ramsay	10	003

[redacted] 10 Dorland Crescent, Ottawa 6, Ontario

DATE COMPLETED: DAY 27 MO. 02 YR. 73

HING	RC.	ELEVATION	RC.	BASIN CODE
003293	4	0420	5	25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	sand	clay	packed	0	2
brown&red	sand	bpulders	loose	2	8
grey	limestone		soft	8	105
grey	sandstone			105	150

31 | 0002628 05 | 0008628 13 | 0105215 | 0150218

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0092	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0149	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
~~6 1~~ 06 ~~5 7/8~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	188	0 ~~25~~	~~25~~ 0025 ~~150~~
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		25	0150
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0010 GPM.	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	040 FEET	040 FEET	040 FEET	040 FEET	040 FEET

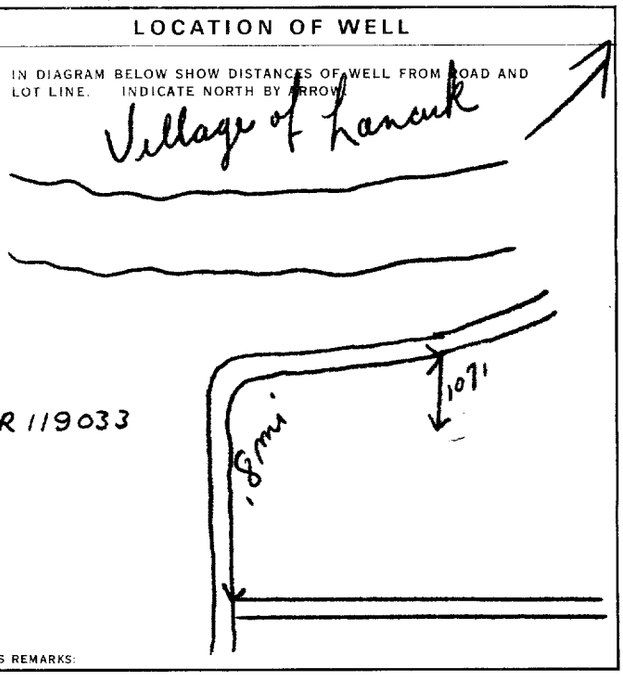
IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	060 FEET	0005 GPM.

50-53: 0003 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. | LICENCE NUMBER: 1558

ADDRESS: Box 490, Stittsville, Ontario.

NAME OF DRILLER OR BORER: Walter Kavanagh | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY 28 MO. 2 YR. 73

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	1558	24 Oct 73

DATE OF INSPECTION: 28 Oct 74. | INSPECTOR: R.W. Doyle

REMARKS:

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FORM 7 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31F/1E

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11 | 3503555

MUNICIP. 35012 CON. CON LD

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Lanark	Ramsay	10	003

[redacted]

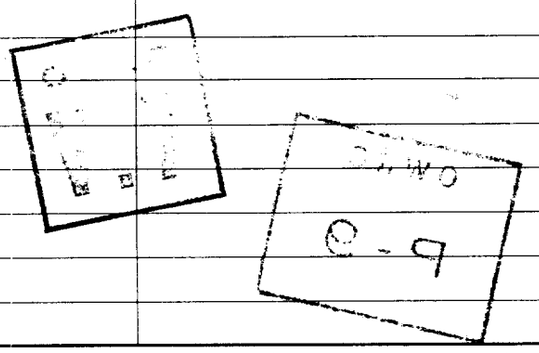
Appleton, Ontario

DATE COMPLETED: DAY 20 MO. 12 YR. 73

HING 003400 | RC. 4 | ELEVATION 0420 | RC. 5 | BASIN CODE 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	clay	sand & stones	packed=	0	6
grey	limestone		medium	6	100
grey	sandstone		hard	100	134



31 | 0006205281 2 | 0100215 | 0134218

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0133	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
~~133~~	1 ☐ ~~FRESH~~ 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
~~6~~ 6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 ☐ OPEN HOLE~~	188	0	0025
06			~~25~~	~~134~~
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		25	0134
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0015 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
006 FEET	025 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	025 FEET	025 FEET	025 FEET	025 FEET

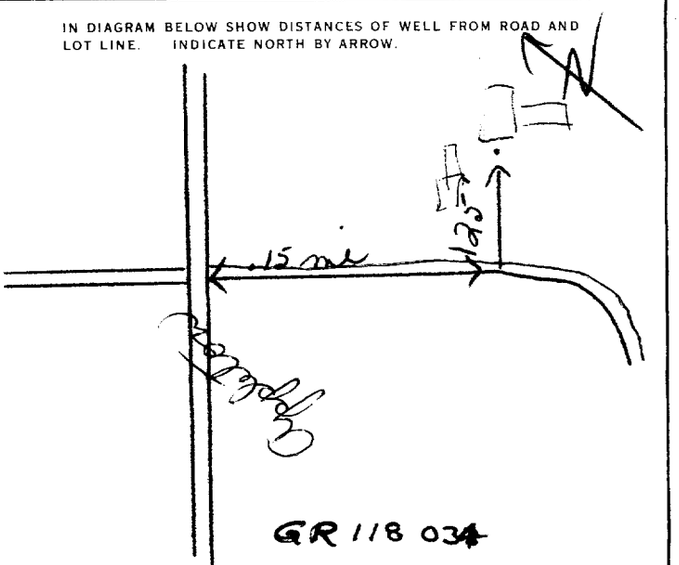
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 FEET	0005 GPM

000.8 GPM./FT. SPECIFIC CAPACITY ~~0.8~~

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL

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

WATER USE 02

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. | LICENCE NUMBER: 1558

ADDRESS: Box 490 Stittsville, Ont.

NAME OF DRILLER OR BORER: M. Hamilton | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY 8 MO. ~~12~~ 1 YR. 74

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1558 | DATE RECEIVED 14 01 74 (JAN 14 1974)

DATE OF INSPECTION 28 Oct 74 | INSPECTOR R. W. DOYLE

REMARKS:

P

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31FIE

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11 — 3505276 — MUNICIP. 35012 — CON. CON 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	Ramsay	10	007

DATE COMPLETED: DAY 24 MO 11 YR 78

[redacted] Appleton Ont

UTM NORTHING 4803450 — RC 5 — ELEVATION 0445 — RC 5 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay			0	1
Brown	Wood			1	4
Grey	Sandstone		layered	4	17
Grey	Sandstone			17	65

31 — 0001605 — 0004635 — 00172 1874 — 0065218

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	22
06				0022
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		22	0065
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0025 GPM	01 HOURS 00 MINS

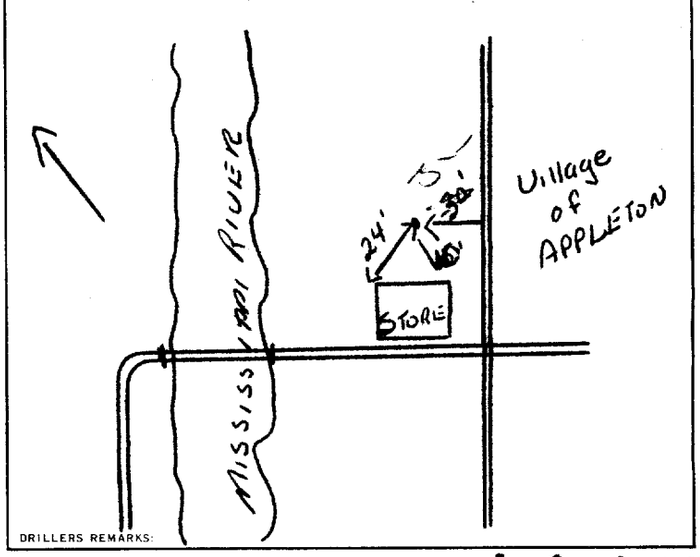
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	030 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	030 FEET	030 FEET	030 FEET	030 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☒ SHALLOW ☐ DEEP	035 FEET	0005 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54

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

WATER USE 55-56 — 01

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

METHOD OF DRILLING 57 — 5

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

CONTRACTOR

NAME OF WELL CONTRACTOR: CAPITAL WATER SUPPLY LTD — LICENCE NUMBER: 1558

ADDRESS: Box 490 STITTSVILLE ONT.

NAME OF DRILLER OR BORER: S. Miller — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: H Kawanagh — SUBMISSION DATE: DAY 27 MO 11 YR 78

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1558 — DATE RECEIVED 63-68: 181278

DATE OF INSPECTION: 25/05/79 — INSPECTOR: K H

REMARKS:

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31F1

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

(11) 3505558 MUNICIP 3512 CON. CON 10

COUNTY OR DISTRICT [redacted] | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Ramsay | CON. BLOCK, TRACT, SURVEY 10 X | LOT 003

[redacted] Appleton Ont. | DATE COMPLETED DAY 15 MO 08 YR 79

003399 5 0400 5 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	broken rock			0	5
grey	Limestone			5	64

(31) 0005 1271 0064215

(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0056	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0020
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

(61) PLUGGING & SEALING RECORD

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

(71) PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0015 GPM

DURATION OF PUMPING: 00 HOURS 30 MINS

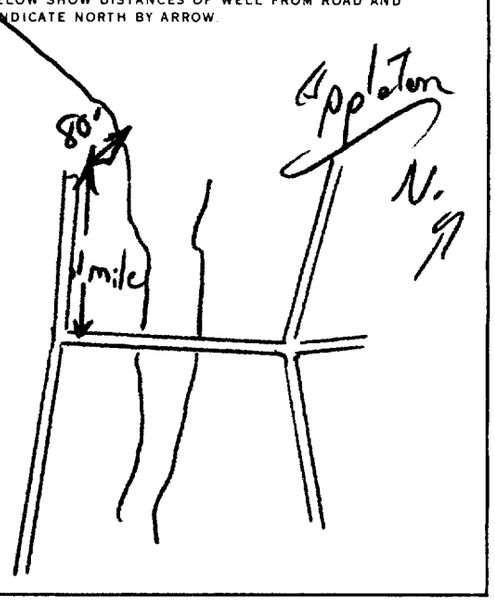
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
025 FEET	040 FEET	040 FEET	040 FEET	FEET	FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 FEET	0015 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

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

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Air Rock Drilling Ltd. | LICENCE NUMBER: 1119

ADDRESS: R.R. #2 Jasper Ont.

NAME OF WELLER OR BORER: Wallace Desaulniers | LICENCE NUMBER: 1119

SIGNATURE OF CONTRACTOR: Wallace Desaulniers | SUBMISSION DATE: DAY 28 MO 9 YR 79

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1119 | DATE RECEIVED: 09 10 79

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31FIE

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

11 — 3506135 — MUNICIP 35012 — CON. CON — 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
LANARK	APPLETON, KAMSAY TWNSP	10	003

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
[redacted]	RR#3 ALMONTE	DAY 16 MO 10 YR 81

G 03299 — RC 5 — ELEVATION 0425 — RC 5 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Shale			0	7
Brown	Limestone			7	63

VE-17

31 — 0997617 — 0063615

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
059	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	002
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE — DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

PUMPING TEST

71

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0009 GPM	01 HOURS 00 MINS

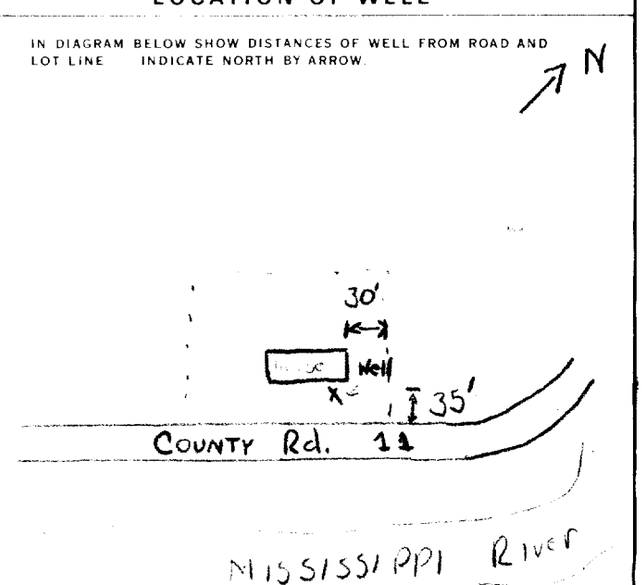
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	050 FEET		050 FEET	050 FEET	050 FEET	050 FEET

IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	60 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 FEET	0009 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL 1

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

WATER USE 01

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

METHOD OF DRILLING 4

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

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Saunders well Drilling	4767

ADDRESS: RR#2 Arnprior

NAME OF DRILLER OR BORER	LICENCE NUMBER
T Saunders	

SIGNATURE OF CONTRACTOR: R Saunders

SUBMISSION DATE: DAY 6 MO OCT YR 81

OFFICE USE ONLY

DATA SOURCE 1 — CONTRACTOR 4767 — DATE RECEIVED 17 1181

DATE OF INSPECTION — INSPECTOR op/cm

REMARKS

CSS.ES

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31 F, E

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

11 — 3506487 — MUNICIP 35012 — CON. Con 10

COUNTY OR DISTRICT [redacted] — TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Ramsay — CON, BLOCK, TRACT, SURVEY, ETC. Con 10 — LOT 004

[redacted] Box 122 Munster, KOA 3P0 — DATE COMPLETED DAY 16 MO 02 YR 83

UTM 03799 — ELEVATION 0400 — BC 5 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
grey	clay	gravel		0	3
grey red	shale rock			3	35
grey	limestone			35	104

31 — 00032051 11 — 00352 17 12 — 0104 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0/100	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
06 04	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	20
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		20	104
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE — DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	20	cement grouted

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER — PUMPING RATE: 005 GPM — DURATION OF PUMPING: 01 HOURS 00 MINS

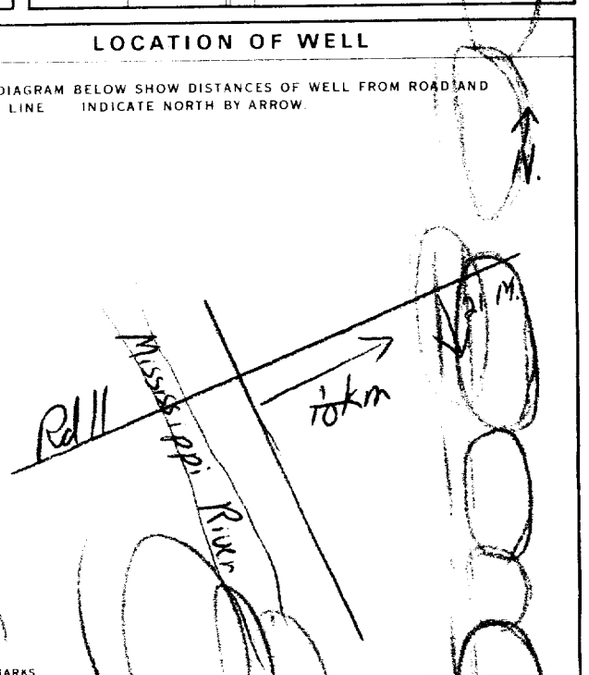
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
030 FEET	080 FEET		080 FEET	080 FEET	080 FEET	080 FEET

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP — RECOMMENDED PUMP SETTING 080 FEET — RECOMMENDED PUMPING RATE 0010 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED POOR QUALITY 7 ☐ UNFINISHED — 1

WATER USE 55-56: 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED — 01

METHOD OF DRILLING 57: 1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING — 5

CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mains Well Drilling — LICENCE NUMBER: 3644

ADDRESS: RR 4 326 Richmond Ont

NAME OF DRILLER OR BORER: [redacted] Mains — LICENCE NUMBER

SIGNATURE OF CONTRACTOR — SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3644 — DATE RECEIVED 63-68: 06 05 83

DATE OF INSPECTION — INSPECTOR

REMARKS: CSSES

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FORM NO. 0506- 4—77 FORM 7

Ministry of the Environment
Ontario

Same as 6487

The Ontario Water Resources Act

WATER WELL RECORD

31 F 16

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

11 — 3506488 — TOWNSHIP 35012 — CON CON — LOT 10

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay
CON BLOCK TRACT SURVEY ETC: 10
LOT: 4
[redacted] Box 122 Munster KOA 3P0
DATE COMPLETED: DAY 16 MO 2 YR 83
RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	clay	gravel		0	3
grey red	shale rock			3	35
grey	limestone			35	104

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
100	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	20
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		20	104
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
0	20	cement grouted

71 PUMPING TEST

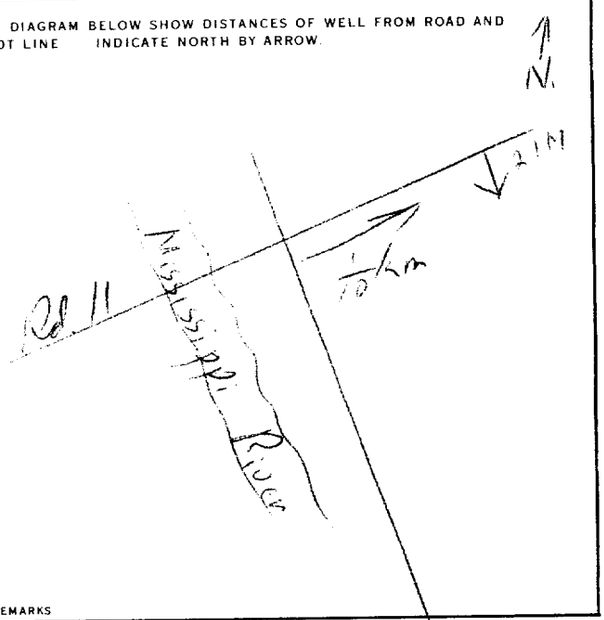
PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER
PUMPING RATE: 15 GPM
DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
30 FEET	80 FEET		80 FEET	80 FEET	80 FEET	80 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 80 FEET
RECOMMENDED PUMPING RATE: 10 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mains Well Drilling — LICENCE NUMBER: 3644
ADDRESS: Box 326 Richmond Ont
NAME OF DRILLER OR BORER: Henry Mains — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR:
SUBMISSION DATE: DAY 16 MO 2 YR 83

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 3644 | DATE RECEIVED 06 05 83
DATE OF INSPECTION | INSPECTOR
REMARKS: WDE CSS.ES

FORM NO. 0506—4—77 FORM 7

MINISTRY OF THE ENVIRONMENT COPY

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3506488

1 PRINT ONLY IN SPACES PROVIDED

[redacted]

LOT

DATE COMPLETED DAY 26 MO 5 YR 83

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	TO
brn	clay	gravel		0	5
grey	soft rock			5	35
brn	sandstone			35	104

WATER RECORD

WATER FOUND AT FEET	KIND OF WATER
20	1 FRESH 2 SULPHUR 3 SALTY 4 MINERAL
	1 FRESH 2 SULPHUR 3 SALTY 4 MINERAL
	1 FRESH 2 SULPHUR 3 SALTY 4 MINERAL
	1 FRESH 2 SULPHUR 3 SALTY 4 MINERAL
	1 FRESH 2 SULPHUR 3 SALTY 4 MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM IN CM	MATERIAL	WALL THICKNESS MM	DEPTH FEET FROM	TO
6¼	1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE	RR	0	20
6	1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE		20	104

SCREEN

SLOT NO. | DIAMETER INCHES | LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	TO	MATERIAL AND TYPE	SEALING PACKER ETC.)
0	20	cement grouted	

PUMPING TEST

METHOD 1 PUMP 2 BAILER

PUMPING RATE 5 GPM

DURATION OF PUMPING 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
30 FEET	40 FEET	40 FEET	40 FEET	40 FEET	40 FEET

1 PUMPING 2 RECOVERY

IF FLOWING GIVE RATE GPM

PUMP INTAKE SET AT FEET

WATER AT END OF TEST 1 CLEAR 2 CLOUDY

RECOMMENDED PUMP TYPE: 1 SHALLOW 2 DEEP

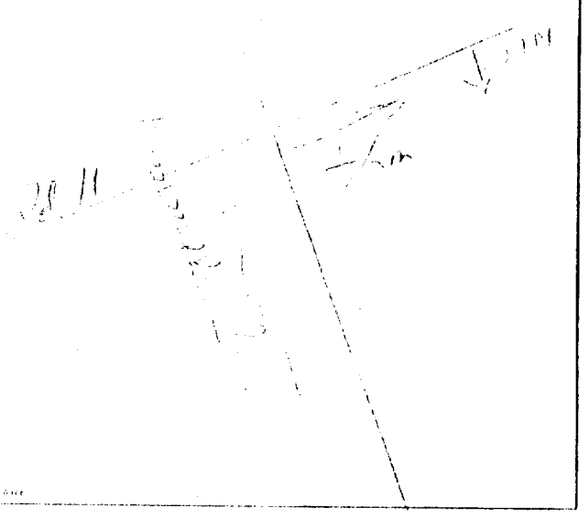
RECOMMENDED PUMP SETTING 20 FEET

RECOMMENDED PUMPING RATE 10 GPM

LOCATION OF WELL

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

N



DRILLER'S REMARKS

FINAL STATUS OF WELL

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

WATER USE

1 DOMESTIC 2 STOCK 3 IRRIGATION 4 INDUSTRIAL 5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY 8 COOLING OR AIR CONDITIONING 9 OTHER 10 NOT USED

METHOD OF DRILLING

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

NAME OF WELL CONTRACTOR: Henry Water Well Drilling Ltd

LICENCE NUMBER: 1604

ADDRESS: RR 2 Elmvale

NAME OF DRILLER OR BORER

SIGNATURE OF CONTRACTOR

SUBMISSION DATE

OFFICE USE ONLY

06 05 83

CSS.ES

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31F1

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

11 3506887 MUNICIP 3501 CON. CON 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON.	BLOCK, TRACT, SURVEY, ETC.	LOT
LANARK	RAMSAY	10	X	003 3

[redacted] R. # 3 Almonte, Ontario

DATE COMPLETED: DAY 06 MO 09 YR 1984

03599 5 0425 5 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	Clay Gravel	Stone's	Packed	0'	4'
grey	Limestone		Hard	4'	105'
grey green	Limestone		Porous	105'	114'

MOE WF-112

31 0004205 1/2 0105215 73 01 1441580

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0112'	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
~~6"~~ 6"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 ☐ OPEN HOLE~~	1.88	0'	0022'
06"	4 ☒ OPEN HOLE		22'	~~114'~~
06	4 ☒ OPEN HOLE			0114
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0030 GPM	01 HOURS 00 MINS

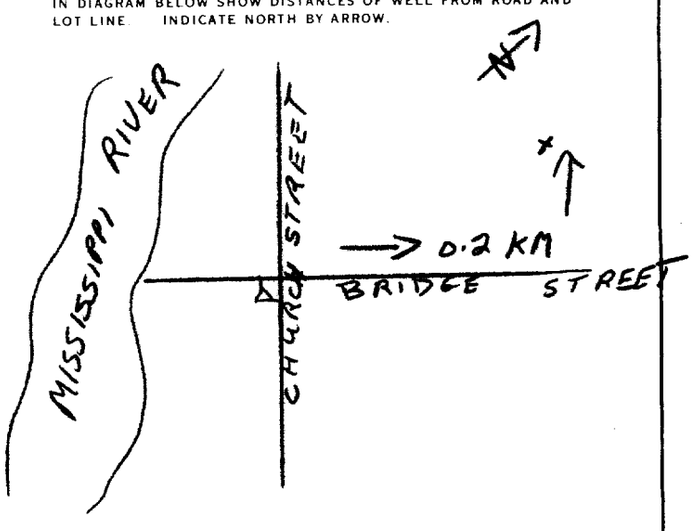
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
057 FEET	057 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	057 FEET	057 FEET	057 FEET	057 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	080 FEET	0009 GPM

1749 LOCATION OF WELL

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



DRILLERS REMARKS

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

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

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

CONTRACTOR

NAME OF WELL CONTRACTOR: M. Kavanagh & Son Well Drilling — LICENCE NUMBER: 3142
ADDRESS: R. R. # 2 Carleton Place, Ont.
NAME OF DRILLER OR BORER: Mike Kavanagh — LICENCE NUMBER: 3142
SIGNATURE OF CONTRACTOR: Michael Kavanagh — SUBMISSION DATE: DAY 06 MO 09 YR 84

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE 1 — CONTRACTOR 3142 — DATE RECEIVED 21 09 84
DATE OF INSPECTION — INSPECTOR
REMARKS

CSS.ES

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment

Ontario

19

The Ontario Water Resources Act

WATER WELL RECORD

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

11 — 3507356 — MUNICIP — CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
[redacted]	Ramsay Carleton Place Ont	10	4

DATE COMPLETED: DAY 14 MO 8 YR 85

NG — RC — ELEVATION — RC — BASIN CODE — II — III — IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	clay			0	10
	Sand			10	18
	clay			18	24
grey	Limestone			24	78

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
73	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
40	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	29
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
5	29	Cement grout.

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	12 GPM	HOURS — MINS 30

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
24 FEET	55 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	55 FEET	55 FEET	FEET	FEET

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

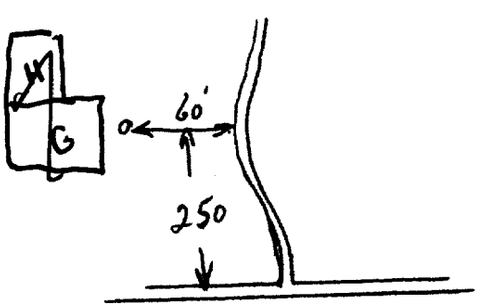
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	65 FEET	12 GPM

8661

LOCATION OF WELL

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

N.



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)
1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE (55-56)
1 ☐ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING (57)
1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Air Rock Drilling Ltd — LICENCE NUMBER: 1119

ADDRESS: RR# 2 Jasper, Ont

NAME OF DRILLER OR BORER: Wallace Desaulniers — LICENCE NUMBER: 1119

SIGNATURE OF CONTRACTOR: Wallace Desaulniers — SUBMISSION DATE: DAY 10 MO. 2 YR 86

OFFICE USE ONLY

DATA SOURCE (58) — CONTRACTOR (59-62) — DATE RECEIVED (63-68): 200286

DATE OF INSPECTION — INSPECTOR

REMARKS: CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 — 3507885 — MUNICIP

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	RAMSAY	10	3

[redacted] R3 ALMONTE ONT K0A 1A0

DATE COMPLETED: DAY 13 MO 5 YR 82

RC — ELEVATION — RC — BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	CLAY	STONE'S		0'	8'
GREY	LIMESTONE			8'	78'
GREY BLACK GREY	LIMESTONE			78	116'

31

32

4 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
114	☐ FRESH ☐ SULPHUR / ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR / ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR / ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR / ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR / ☐ SALTY ☐ MINERAL

5 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 11/16"	☒ STEEL / ☐ GALVANIZED / ☐ CONCRETE / ☒ OPEN HOLE	1.88	0'	22'
6"			22'	116'
	☐ STEEL / ☐ GALVANIZED / ☐ CONCRETE / ☐ OPEN HOLE			
	☐ STEEL / ☐ GALVANIZED / ☐ CONCRETE / ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☒ BAILER	30 GPM	1 HOURS ___ MINS

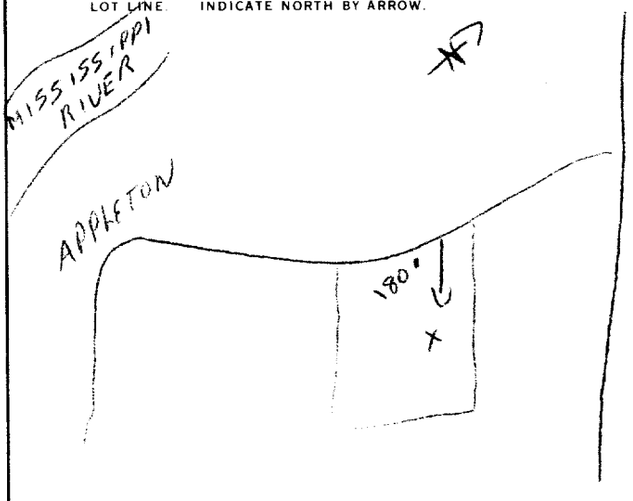
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
27 FEET	35 FEET		35 FEET	35 FEET	35 FEET	35 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	60 FEET	7 GPM

LOCATION OF WELL

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



DRILLERS REMARKS: 07435

FINAL STATUS OF WELL

☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED

WATER USE

☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED

METHOD OF DRILLING

☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

3142

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
M. KAVANAGH & SON WELL DRILLING	3142
ADDRESS: RR 2 CARLETON PLACE	
NAME OF DRILLER OR BORER: MIKE KAVANAGH	LICENCE NUMBER: 3142
SIGNATURE OF CONTRACTOR: Michael Kavanagh	SUBMISSION DATE: DAY 14 MO 5 YR 82

OFFICE USE ONLY

CORE (CORE NUMBER) — CONTRACTOR — DATE RECEIVED 030687

DATE OF INSPECTION — INSPECTOR

REMARKS: CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3508641

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

11

MUNICIP 35012 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
Lanark	Ramsay	10	3

[redacted] 2 Fenerty Court, Kanata, Ontario K2L 3B1

DATE COMPLETED: DAY 28 MO 11 YR 88

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Shale		Soft	0	3
Gray	Limestone		Soft	3	18
Gray	Limestone		Medium Hard	18	99

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
89	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	21
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		21	99
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	30 GPM	1 HOURS ___ MINS

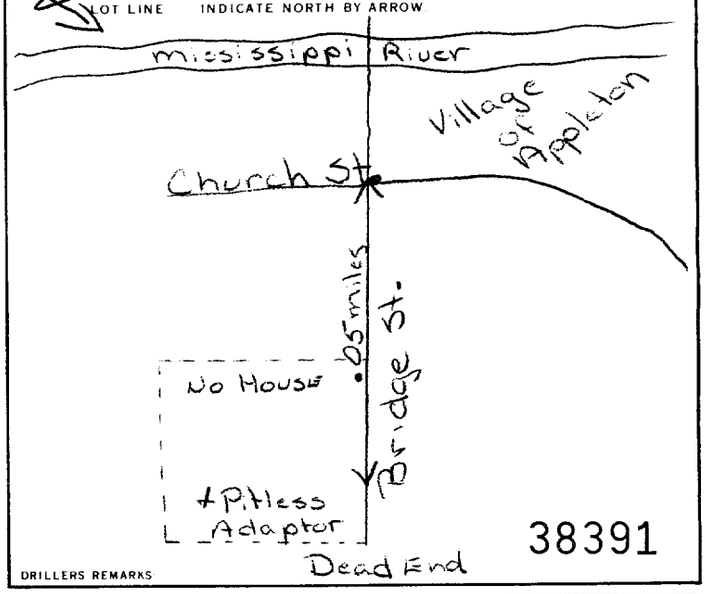
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
50 FEET	65 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	65 FEET	65 FEET	65 FEET	65 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	65 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	80 FEET	5 GPM

LOCATION OF WELL

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



38391

DRILLERS REMARKS

FINAL STATUS OF WELL
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED 9 ☐ DEWATERING

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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 1558
ADDRESS: P.O. Box 490 Stittsville, Ontario K0A 3G0
NAME OF WELL TECHNICIAN: S. Miller
WELL TECHNICIAN'S LICENCE NUMBER: T0097
SIGNATURE OF TECHNICIAN/CONTRACTOR
SUBMISSION DATE: DAY 28 MO 11 YR 88

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 1558 | DATE RECEIVED DEC 21 1988
DATE OF INSPECTION | INSPECTOR
REMARKS: CSS.ES

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 3509661 | MUNICIP. 35012 | CON. CON | LOT 3

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Ramsay / St. Hilaire Ont
CON. BLOCK, TRACT, SURVEY, ETC: 10
LOT: 3
DATE COMPLETED: DAY 25 MO 4 YR 80
ELEVATION:
BASIN CODE:

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	limestone			0	138

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
112	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
132	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	22
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

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

MATERIAL AND TYPE:
DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
2	22	cement grout

71 PUMPING TEST

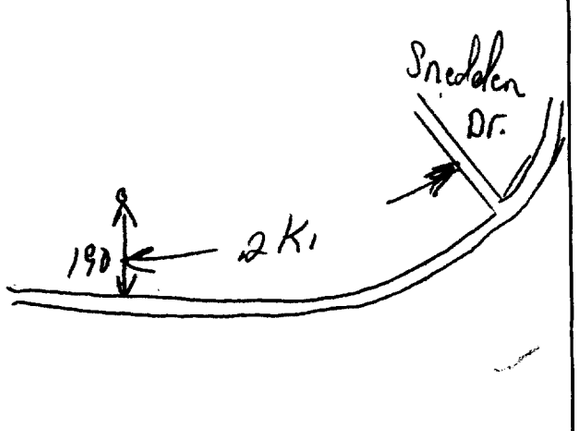
PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER
PUMPING RATE: 10 GPM
DURATION OF PUMPING: 1 HOURS ____ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	70 FEET	70 FEET	70 FEET	70 FEET	70 FEET

IF FLOWING, GIVE RATE: ____ GPM
PUMP INTAKE SET AT: ____ FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 80 FEET
RECOMMENDED PUMPING RATE: 10 GPM

LOCATION OF WELL

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



48216

DRILLERS REMARKS:

FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Air-Rock Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 1119
ADDRESS: R.R. #2 Jasper Ont
NAME OF WELL TECHNICIAN: Randy Kerr
WELL TECHNICIAN'S LICENCE NUMBER: T0288
SIGNATURE OF TECHNICIAN/CONTRACTOR: Wallace Rockburn
SUBMISSION DATE: DAY 20 MO. 12 YR. 90

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE:
CONTRACTOR: 1119
DATE RECEIVED: JAN 18 1991
DATE OF INSPECTION:
INSPECTOR:
REMARKS: CSS.ES

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11

3510252 MUNICIP 3501 2 CON. CON 10

COUNTY OR DISTRICT [redacted]

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE RAMSAY

CON. BLOCK, TRACT, SURVEY, ETC 10 Part of LOT 3

R.3 ALMONTE

DATE COMPLETED DAY 17 MO 3 YR 92

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Sand		Fine	0	1
Brown	limestone		Layered	1	8
Brown	limestone		Hard	8	65-

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
50-60	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	21
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	3	Rock Cuttings
3	21	TYPE 10 Cement

71 PUMPING TEST

PUMPING TEST METHOD 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE 25 GPM

DURATION OF PUMPING 1 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING 1 ☐ PUMPING 2 ☒ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
7 FEET	24 FEET		7 FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE ___ GPM

PUMP INTAKE SET AT ___ FEET

WATER AT END OF TEST 1 ☒ CLEAR 2 ☐ CLOUDY

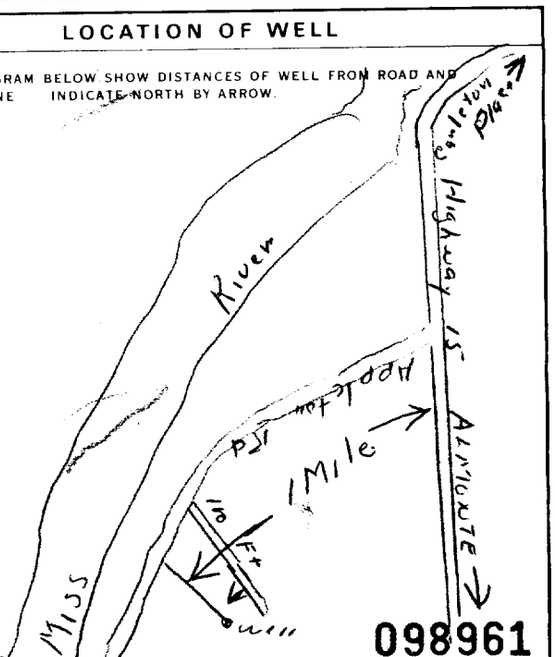
RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING 45 FEET

RECOMMENDED PUMPING RATE 20 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

098961

FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR BOYD CAMERON

WELL CONTRACTOR'S LICENCE NUMBER 1567

ADDRESS RR 2 CLAYTON ONT

NAME OF WELL TECHNICIAN BOYD CAMERON

WELL TECHNICIAN'S LICENCE NUMBER T0088

SIGNATURE OF TECHNICIAN/CONTRACTOR Boyd Cameron

SUBMISSION DATE DAY 20 MO 3 YR 92

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 1567 | DATE RECEIVED APR 22 1992

DATE OF INSPECTION | INSPECTOR

REMARKS CESES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 3512629

Municipality 35012 Con. CON 10

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Lanark	Mississippi Mills - Ramsay	10	3

Address: 135 Willian St. R.R. #3 Almonte, Ontario

Date completed: 8 day 6 month 99 year

Northing | RC | Elevation | RC | Basin Code: KOA 1AO | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth – feet From	Depth – feet To
Brown	Sand	Boulders		0	6
Gray	Limestone			6	75

31

32

41 WATER RECORD

Water found at – feet	Kind of water
59	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas — NOT TESTED
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	22
6 1/8	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		22	75
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type | Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at – feet From	Depth set at – feet To	Material and type (Cement grout, bentonite, etc.)
21	0	Grouted - Hole Plug (4)

PUMPING TEST

71 Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate: 25 GPM

Duration of pumping: 1 Hours ..... Mins

Water levels during: 1 ☐ Pumping 2 ☒ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
23'10 feet	50 feet	32'6 feet	24'5 feet	24 feet	23'10 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☒ Cloudy

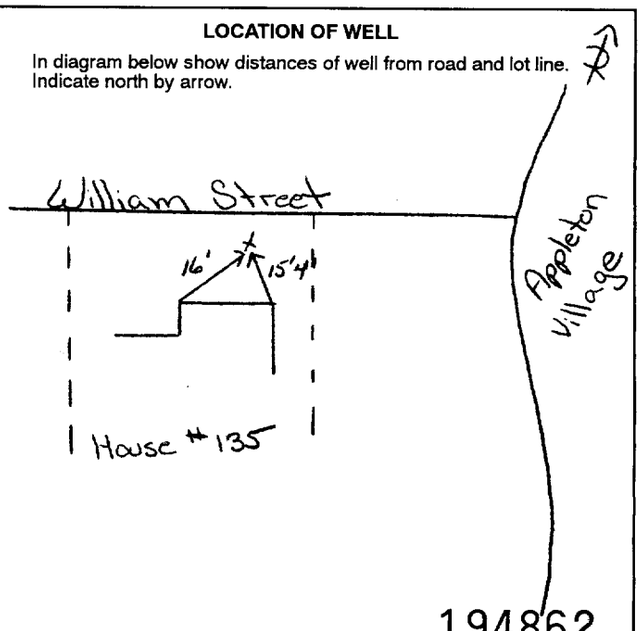
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 55 feet

Recommended pump rate: 5 GPM

LOCATION OF WELL

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



194862

FINAL STATUS OF WELL

1 ☐ Water supply 2 ☒ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☐ Domestic 2 ☒ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not used 10 ☐ Other .....

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☒ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other .....

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558

Address: P.O. Box 490 Stittsville, Ontario K2S 1A6

Name of Well Technician	Well Technician's Licence No.
S. Miller	T0097

Signature of Technician/Contractor

Submission date: day 9 mo 6 yr 99

MINISTRY USE ONLY

Data source	Contractor	Date received
	1558	JUL 09 1999

Date of inspection | Inspector

Remarks: CSS.ES0

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Ontario — Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

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Mark correct box with a checkmark, where applicable.

11 — 3513014 — Municipality 35012 — Con CON 10

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	Ramsay	10	3

Address: Appleton Dist

Date completed: 13 day 06 month 00 year

Northing — UTM — Elevation — RC — Basin Code

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Gray	Limestone			0	42
Gray	Sandstone			42	82

41 WATER RECORD

Water found at - feet	Kind of water
60	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas 6 Other
76	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas 6 Other
	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas 6
	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas 6
	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas 6

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6¼	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic	188	0	22
8¾	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		0	20
6	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		20	82

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type: | Depth at top of screen feet:

61 PLUGGING & SEALING RECORD

Annular space ☑ Abandonment ☐

Depth set - feet From	Depth set - feet To	Material and type (Cement grout, bentonite, etc.)
2	22	Cement grout

PUMPING TEST

71 — Pumping test method: 1 Pump ☑ 2 Bailer ☐ — Pumping rate: 9 GPM — Duration of pumping: 1 Hours ... Mins

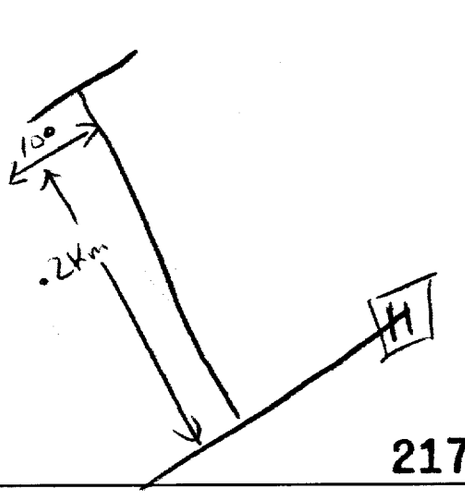
Static level	Water level end of pumping	Water levels during: 1 Pumping ☐ 2 Recovery ☑	15 minutes	30 minutes	45 minutes	60 minutes
18 feet	70 feet		18 feet	18 feet	18 feet	18 feet

If flowing give rate: GPM — Pump intake set at: feet — Water at end of test: Clear ☐ Cloudy ☑

Recommended pump type: Shallow ☐ Deep ☑ — Recommended pump setting: 70 feet — Recommended pump rate: 9 GPM

LOCATION OF WELL

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



217011

FINAL STATUS OF WELL

1 ☑ Water supply; 2 ☐ Observation well; 3 ☐ Test hole; 4 ☐ Recharge well; 5 ☐ Abandoned, insufficient supply; 6 ☐ Abandoned, poor quality; 7 ☐ Abandoned (Other); 8 ☐ Dewatering; 9 ☐ Unfinished; 10 ☐ Replacement well

WATER USE

1 ☑ Domestic; 2 ☐ Stock; 3 ☐ Irrigation; 4 ☐ Industrial; 5 ☐ Commercial; 6 ☐ Municipal; 7 ☐ Public supply; 8 ☐ Cooling & air conditioning; 9 ☐ Not use; 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool; 2 ☐ Rotary (conventional); 3 ☐ Rotary (reverse); 4 ☐ Rotary (air); 5 ☑ Air percussion; 6 ☐ Boring; 7 ☐ Diamond; 8 ☐ Jetting; 9 ☐ Driving; 10 ☐ Digging; 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Air-Rock Drilling Ltd	1119
Address: RR#7 Jasper, Ont	
Name of Well Technician: Shannon Purcell	Well Technician's Licence No.: T2122
Signature of Technician/Contractor	Submission date: 16 day 06 mo 00 yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	1119	JUL 21 2000
Date of inspection	Inspector	
Remarks		CSS.ES0

0506 (11/98) Front Form 9

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

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11 **3513234** Municipality 35012 Con. CON 10

County or District: [redacted]
Township/Borough/City/Town/Village: RAMSAY
Con block tract survey, etc.: 10 Plan 63
Lot: 3
Address: R.R. 2 ALMONTE
Date completed: 14 day 10 month 2000 year

21 UTM Northing RC Elevation RC Basin Code II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	Sand	Clay	Packed	0	6
Black	Limestone		Layered Loose	6	19
Black	Limestone		Hard	19	86

31
32

41 WATER RECORD

Water found at - feet	Kind of water
35-80	1 ☑ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6¼	1 ☑ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	28
6"	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☑ Open hole 5 ☐ Plastic			
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	25	Type 10 Cement

71 PUMPING TEST

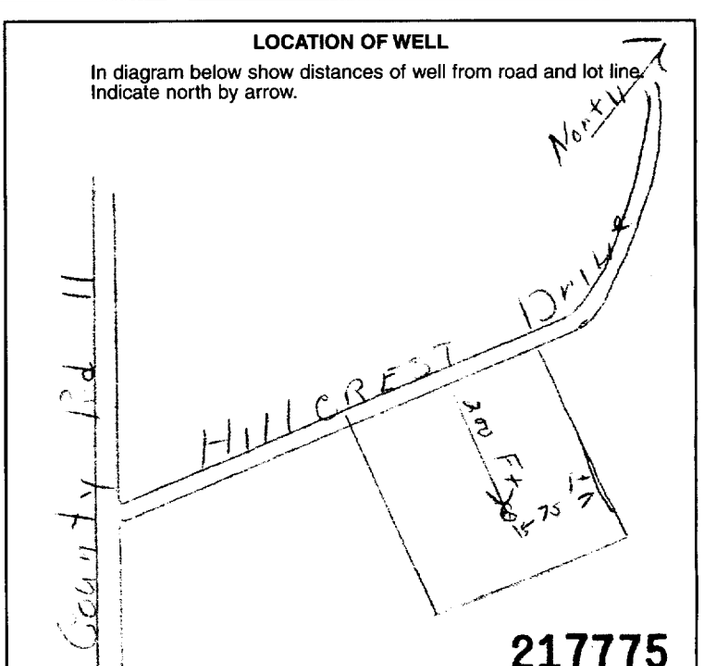
Pumping test method: 1 ☑ Pump 2 ☐ Bailer
Pumping rate: 11 GPM
Duration of pumping: 2 Hours ..... Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☑ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
19 feet	50 feet	35 feet	30 feet	29 feet	feet

If flowing give rate: GPM
Pump intake set at: feet
Water at end of test: ☑ Clear ☐ Cloudy
Recommended pump type: ☐ Shallow ☑ Deep
Recommended pump setting: 75 feet
Recommended pump rate: 11 GPM

LOCATION OF WELL

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



217775

FINAL STATUS OF WELL 54

☑ Water supply ☐ Observation well ☐ Test hole ☐ Recharge well
5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering
9 ☐ Unfinished 10 ☐ Replacement well

WATER USE 55-56

☑ Domestic ☐ Stock ☐ Irrigation ☐ Industrial
5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning
9 ☐ Not use 10 ☐ Other .....

METHOD OF CONSTRUCTION 57

☑ Cable tool ☐ Rotary (conventional) ☐ Rotary (reverse) ☐ Rotary (air)
5 ☐ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting
9 ☐ Driving 10 ☐ Digging 11 ☐ Other .....

Name of Well Contractor: Boyd Cameron
Well Contractor's Licence No.: 1567
Address: R.R. 2 Clayton ONT
Name of Well Technician: Boyd Cameron
Well Technician's Licence No.: 0039
Signature of Technician/Contractor: Boyd Cameron
Submission date: 21 day 10 mo 2000 yr

MINISTRY USE ONLY

Data source 58 | Contractor 59-62: 1567 | Date received 63-68: MAR 16 2001 | 80
Date of inspection | Inspector
Remarks

CSS.ES1

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Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

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Mark correct box with a checkmark, where applicable.

11 (1 2)

3513908

Municipality 35012 (10 14) Con. CON 10 (15 22 23 24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Lanark	Mississippi MIlls - Ramsay	10	4
[redacted]	Address: Box 578 Almonte, Ontario K0A 1A0	Date completed: 10 day 9 month 02 year (48-53)	02

21 (1 2) UTM: Zone (10) Easting (12 17) Northing (18 24) RC (25) Elevation (26) RC (30) Basin Code (31) ii iii iv (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
brown	Clay	Stones		0	16
Green	Shale			16	70
Gray	Limestone			70	75

Note: Casing was left 1.5 feet above ground level at time of drilling.

31 (10 14 15 21 32 43 54 65 75 80)

32

41 WATER RECORD

Water found at - feet	Kind of water
10-13: 69	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (14) NOT TESTED
15-18	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (19)
20-23	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (24)
25-28	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (29)
30-33	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (34)

60

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4 (9-12)	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (12)	.188	0	22.5 (13-16)
5 7/8 (17-18)	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic (19)		22.5	75 (20-23)
(24-25)	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (26)			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	30

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
21 (10-13)	0 (14-17)	Grouted - Cement (3)
(18-21)	(22-25)	
(26-29)	(30-33) 80	

PUMPING TEST

71 Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer

Pumping rate (11-14): 15 GPM

Duration of pumping (15-16): 1 Hours (17-18) Mins

25 Water levels during: 1 ☒ Pumping 2 ☐ Recovery

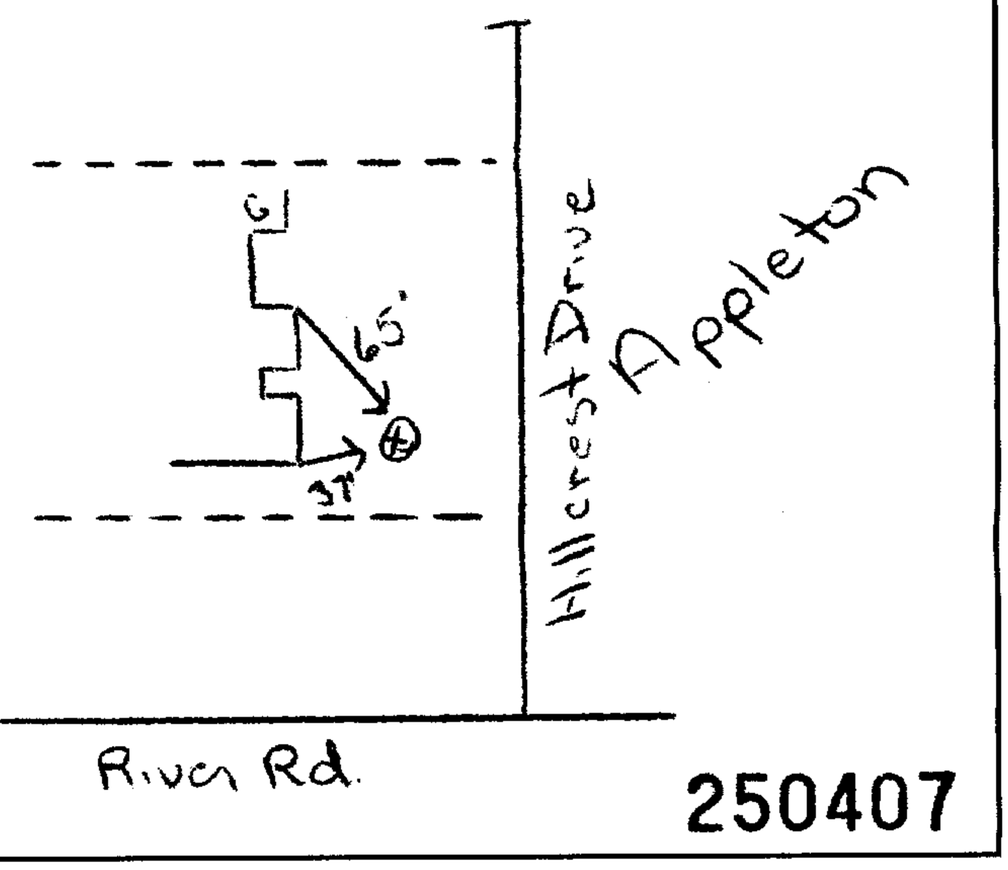
Static level (19-21)	Water level end of pumping (22-24)	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
31'5" feet	40 feet	73 feet	60 feet	50 feet	40 feet

If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☐ Clear ☒ Cloudy
Recommended pump type: ☐ Shallow ☒ Deep	Recommended pump setting (43-45): 50 feet	Recommended pump rate (46-49): 5 GPM

50-53

LOCATION OF WELL

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



250407

FINAL STATUS OF WELL (54)

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE (55-56)

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☒ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address: P.O. Box 490 Stittsville, Ontario K2S 1A6	
Name of Well Technician: S. Miller	Well Technician's Licence No.: T0097
Signature of Technician/Contractor	Submission date: day 10 mo 09 yr 02

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68)	80
	1558	OCT 25 2002	
Date of inspection	Inspector		
Remarks			

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

15-0080-00

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag # : **Tag#: A175285**

A175285

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
480 River Rd.	Ramsay		

County/District/Municipality	City/Town/Village	Province	Postal Code
Lanark	Appleton	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	411646	5003794		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brn	Silt	Sand	loose	0'	5'
Grey	limestone	Shale	Bedrock	5'	72'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0'	20'	Cement grout	1 m3

Method of Construction

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

☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

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

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

☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	1/4"	0'	20'

Construction Record - Screen

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

Status of Well

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

☐ Other, *specify*

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	20'	10"
20'	72'	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at (m/ft): 60

Pumping rate (l/min / GPM): 12

Duration of pumping: ____ hrs + ____ min

Final water level end of pumping (m/ft): 16.6 m

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

Recommended pump depth (m/ft): 60

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

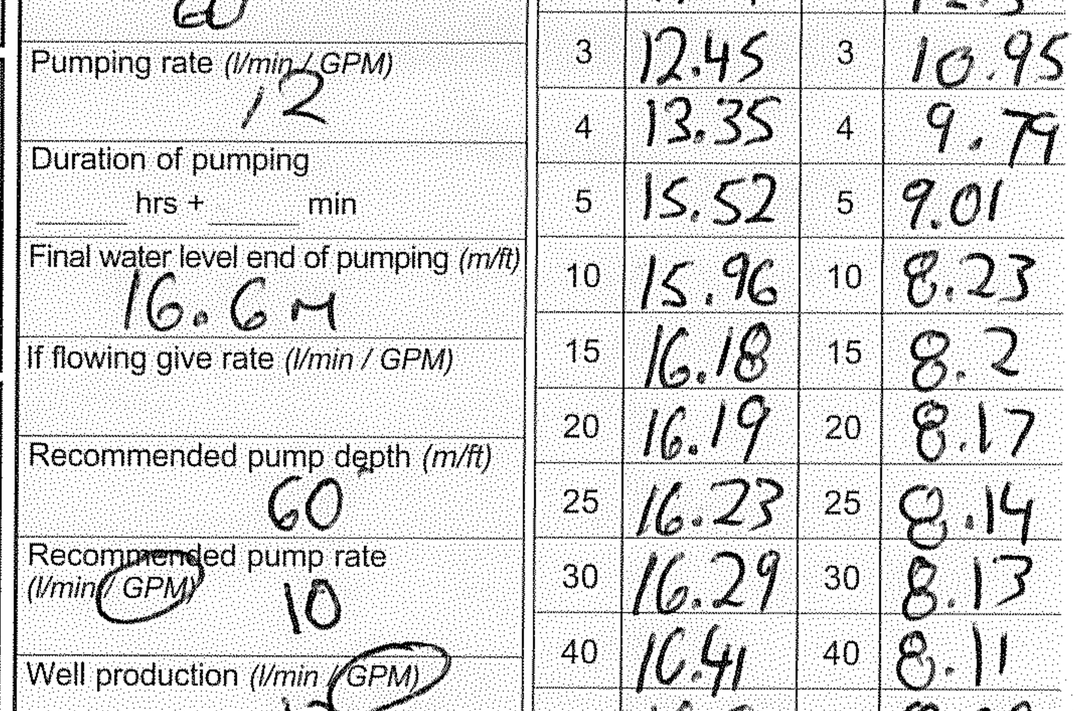
Well production (l/min / GPM): 12

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3.09 m		
1	10.1	1	14.4
2	11.4	2	12.5
3	12.45	3	10.95
4	13.35	4	9.79
5	15.52	5	9.01
10	15.96	10	8.23
15	16.18	15	8.2
20	16.19	20	8.17
25	16.23	25	8.14
30	16.29	30	8.13
40	16.41	40	8.11
50	16.53	50	8.09
60	16.60	60	8.09

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Aardvark Drilling Inc.	7 2 3

Business Address (Street Number/Name)	Municipality
25-C Lewis Road	Guelph

Province	Postal Code	Business E-mail Address
ON	N 1 H 1 E 9	www.aardvarkdrillinginc.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5 1 9 8 2 6 9 3 4 0	Smith, Kyle

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3 5 9 1	[signature]	2015 11 05

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☐ No		Audit No. Z 199779
	Date Work Completed: 2015 10 22	DEC 24 2015 Received

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Ministry's Copy

Appendix 3

- **Certificates of Analysis for Water Samples (TW1 to TW3)**
- **Certificates of Analysis for Water Samples (Offsite Wells)**

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15962
Invoice to: Paterson Group

Report Number: 1513000
Date Submitted: 2015-07-09
Date Reported: 2015-07-17
Project: PH2723
COC #: 52218

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Shyla Monette
Team Leader, Inorganics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

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Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15962
Invoice to: Paterson Group

Report Number: 1513000
Date Submitted: 2015-07-09
Date Reported: 2015-07-17
Project: PH2723
COC #: 52218

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1187383 Water 2015-07-09 TW1 WS1	1187384 Water 2015-07-09 TW1 WS2
Calculations	Hardness as CaCO3	1	mg/L	OG-100	383*	392*
	Ion Balance	0.01			1.02	1.02
	TDS (COND - CALC)	1	mg/L	AO-500	520*	530*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	329	343
	Cl	1	mg/L	AO-250	53	56
	Colour	2	TCU	AO-5	<2	<2
	Conductivity	5	uS/cm		800	815
	F	0.10	mg/L	MAC-1.5	0.39	0.32
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	0.72	0.73
	pH	1.00		6.5-8.5	7.94	7.98
	SO4	1	mg/L	AO-500	40	36
	Turbidity	0.1	NTU	AO-5.0	2.7	0.2
Metals	Ca	1	mg/L		94	96
	Fe	0.03	mg/L	AO-0.3	<0.03	<0.03
	K	1	mg/L		7	7
	Mg	1	mg/L		36	37
	Mn	0.01	mg/L	AO-0.05	<0.01	<0.01
	Na	2	mg/L	AO-200	31	32
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		<0.1	<0.1
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO-5	75.4*	71.2*
	N-NH3	0.01	mg/L		0.02	0.02
	S2-	0.02	mg/L	AO-0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1	<0.1

Guideline = ODWSOG *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15962
Invoice to: Paterson Group

Report Number: 1513000
Date Submitted: 2015-07-09
Date Reported: 2015-07-17
Project: PH2723
COC #: 52218

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290173 **Analysis/Extraction Date** 2015-07-10 **Analyst** K_A			
Method EPA 200.8			
Iron	<0.03 mg/L	95	92-107
Manganese	<0.01 mg/L	100	94-106
Run No 290241 **Analysis/Extraction Date** 2015-07-11 **Analyst** C_F			
Method C SM2130B			
Turbidity	<0.1 NTU	99	73-127
Run No 290251 **Analysis/Extraction Date** 2015-07-11 **Analyst** SKH			
Method M SM3120B-3500C			
Calcium	<1 mg/L	102	90-110
Potassium	<1 mg/L	100	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	109	82-118
Run No 290304 **Analysis/Extraction Date** 2015-07-13 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	107	80-120
N-NO3	<0.10 mg/L	92	80-120
Run No 290342 **Analysis/Extraction Date** 2015-07-13 **Analyst** AET			

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15962
Invoice to: Paterson Group

Report Number: 1513000
Date Submitted: 2015-07-09
Date Reported: 2015-07-17
Project: PH2723
COC #: 52218

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	104	90-110
Conductivity	<5 uS/cm	100	90-110
F	<0.10 mg/L	101	90-110
pH	6.03	100	90-110
Run No 290540 **Analysis/Extraction Date** 2015-07-16 **Analyst** AET			
Method C SM2120C			
Colour	<2 TCU	95	90-110
Run No 290567 **Analysis/Extraction Date** 2015-07-15 **Analyst** NP			
Method SM 4110			
Chloride	<1 mg/L	100	90-110
SO4	<1 mg/L	103	90-110
Run No 290603 **Analysis/Extraction Date** 2015-07-14 **Analyst** AET			
Method SUBCONTRACT P-INORG			
DOC	<0.5 mg/L	99	
N-NH3	<0.01 mg/L	100	
Phenols	<0.001 mg/L	92	69-132
S2-	<0.02 mg/L	104	
Tannin & Lignin	<0.1 mg/L	90	

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15962
Invoice to: Paterson Group

Report Number: 1513000
Date Submitted: 2015-07-09
Date Reported: 2015-07-17
Project: PH2723
COC #: 52218

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Total Kjeldahl Nitrogen	<0.1 mg/L	101	81-126

Guideline = ODWSOG *** = Guideline Exceedence**
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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#:
Invoice to: Paterson Group

Report Number: 1513010
Date Submitted: 2015-07-09
Date Reported: 2015-07-11
Project: PH2723
COC #: 52218

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Krista Quantrill
Laboratory Supervisor, Microbiology

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#:
Invoice to: Paterson Group

Report Number: 1513010
Date Submitted: 2015-07-09
Date Reported: 2015-07-11
Project: PH2723
COC #: 52218

				Lab I.D.	1187401	1187402
				Sample Matrix	Water	Water
				Sample Type		
				Sampling Date	2015-07-09	2015-07-09
				Sample I.D.	TW1 WS1	TW1 WS2
Group	**Analyte**	**MRL**	**Units**	**Guideline**		
Microbiology	Escherichia Coli	0	ct/100mL	MAC-0	0	0
	Total Coliforms	0	ct/100mL	MAC-0	0	0

Guideline = ODWSOG *** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513209
Date Submitted: 2015-07-13
Date Reported: 2015-07-21
Project: PH2723
COC #: 52220

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Shyla Monette
Team Leader, Inorganics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

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Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513209
Date Submitted: 2015-07-13
Date Reported: 2015-07-21
Project: PH2723
COC #: 52220

Group	Analyte	MRL	Units	Guideline	Lab I.D. 1187964 Sample Matrix Water Sample Type Sampling Date 2015-07-13 Sample I.D. TW2 WS1	Lab I.D. 1187965 Sample Matrix Water Sample Type Sampling Date 2015-07-13 Sample I.D. TW2 WS2
Calculations	Hardness as CaCO3	1	mg/L	OG-100	346*	348*
	Ion Balance	0.01			0.96	0.97
	TDS (COND - CALC)	1	mg/L	AO-500	449	460
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	322	316
	Cl	1	mg/L	AO-250	30	34
	Colour	2	TCU	AO-5	11*	11*
	Conductivity	5	uS/cm		691	707
	F	0.10	mg/L	MAC-1.5	0.33	0.31
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	0.16	0.23
	pH	1.00		6.5-8.5	7.98	7.91
	SO4	1	mg/L	AO-500	37	37
	Turbidity	0.1	NTU	AO-5.0	1.0	1.6
Metals	Ca	1	mg/L		89	90
	Fe	0.03	mg/L	AO-0.3	0.18	0.16
	K	1	mg/L		3	3
	Mg	1	mg/L		30	30
	Mn	0.01	mg/L	AO-0.05	<0.01	<0.01
	Na	2	mg/L	AO-200	18	19
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		0.2	0.1
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO-5	70.3*	73.0*
	N-NH3	0.01	mg/L		0.02	0.03
	S2-	0.02	mg/L	AO-0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1	<0.1

Guideline = ODWSOG *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513209
Date Submitted: 2015-07-13
Date Reported: 2015-07-21
Project: PH2723
COC #: 52220

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290480 **Analysis/Extraction Date** 2015-07-15 **Analyst** K_A			
Method EPA 200.8			
Iron	<0.03 mg/L	99	92-107
Manganese	<0.01 mg/L	99	94-106
Run No 290496 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method C SM2130B			
Turbidity	<0.1 NTU	93	73-127
Run No 290517 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	102	90-110
Conductivity	<5 uS/cm	101	90-110
F	<0.10 mg/L	101	90-110
pH	6.11	100	90-110
Run No 290540 **Analysis/Extraction Date** 2015-07-16 **Analyst** AET			
Method C SM2120C			
Colour	<2 TCU	95	90-110
Run No 290561 **Analysis/Extraction Date** 2015-07-16 **Analyst** SKH			
Method M SM3120B-3500C			

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513209
Date Submitted: 2015-07-13
Date Reported: 2015-07-21
Project: PH2723
COC #: 52220

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Calcium	<1 mg/L	102	90-110
Potassium	<1 mg/L	104	87-113
Magnesium	<1 mg/L	99	76-124
Sodium	<2 mg/L	103	82-118
Run No 290572 **Analysis/Extraction Date** 2015-07-16 **Analyst** K_A			
Method EPA 200.8			
Iron	<0.03 mg/L	94	92-107
Manganese	<0.01 mg/L	97	94-106
Run No 290653 **Analysis/Extraction Date** 2015-07-17 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	93	80-120
N-NO3	<0.10 mg/L	93	80-120
Run No 290719 **Analysis/Extraction Date** 2015-07-16 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
N-NH3	<0.01 mg/L	100	
Run No 290720 **Analysis/Extraction Date** 2015-07-16 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
DOC	<0.5 mg/L	105	
Run No 290721 **Analysis/Extraction Date** 2015-07-16 **Analyst** SCM			

Guideline = ODWSOG *** = Guideline Exceedence**

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513209
Date Submitted: 2015-07-13
Date Reported: 2015-07-21
Project: PH2723
COC #: 52220

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method SUBCONTRACT P-INORG			
Phenols	<0.001 mg/L	100	69-132
Run No 290723 **Analysis/Extraction Date** 2015-07-20 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
Tannin & Lignin	<0.1 mg/L	100	
Run No 290724 **Analysis/Extraction Date** 2015-07-17 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
Total Kjeldahl Nitrogen	<0.1 mg/L	105	81-126
Run No 290758 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method SUBCONTRACT P-INORG			
S2-	<0.02 mg/L	104	
Run No 290781 **Analysis/Extraction Date** 2015-07-20 **Analyst** NP			
Method SM 4110			
Chloride	<1 mg/L	103	90-110
SO4	<1 mg/L	106	90-110

Guideline = ODWSOG *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513208
Date Submitted: 2015-07-13
Date Reported: 2015-07-14
Project: PH2723
COC #: 52220

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Krista Quantrill
Laboratory Supervisor, Microbiology

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

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Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15963
Invoice to: Paterson Group

Report Number: 1513208
Date Submitted: 2015-07-13
Date Reported: 2015-07-14
Project: PH2723
COC #: 52220

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	
					1187962 Water 2015-07-13 TW2 WS1	1187963 Water 2015-07-13 TW2 WS2
Microbiology	Escherichia Coli	0	ct/100mL	MAC-0	0	0
	Total Coliforms	0	ct/100mL	MAC-0	0	0

Guideline = ODWSOG *** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15964
Invoice to: Paterson Group

Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____
Shyla Monette
Team Leader, Inorganics

APPROVAL: _____
Tanya Baillargeon
Team Lead, Organics

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15964
Invoice to: Paterson Group

Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1187819 Water 2015-07-10 TW3 WS1	1187820 Water 2015-07-10 TW3 WS2	1187821 Water 2015-07-10 TW3 WS2 - Paterson Package
Calculations	Hardness as CaCO3	1	mg/L	OG-100		414*	419*	
	Ion Balance	0.01				1.04	1.02	
	TDS (COND - CALC)	1	mg/L	AO-500		565*	578*	
Cyanide	Cyanide (free)	0.005	mg/L	MAC-0.2				<0.005
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500		358	369	
	Cl	1	mg/L	AO-250		62	68	
	Colour	2	TCU	AO-5		<2	<2	
	Conductivity	5	uS/cm			869	889	
	DOC	0.5	mg/L	AO-5		2.3	2.1	
	F	0.10	mg/L	MAC-1.5		0.43	0.43	
	N-NO2	0.10	mg/L	MAC-1.0		<0.10	<0.10	
	N-NO3	0.10	mg/L	MAC-10.0		0.93	1.16	
	pH	1.00		6.5-8.5		7.70	7.76	
	SO4	1	mg/L	AO-500		36	35	
	Tannin & Lignin	0.1	mg/L			<0.1	<0.1	
	Turbidity	0.1	NTU	AO-5.0		0.2	0.2	
Mercury	Hg	0.0001	mg/L	MAC-0.001				<0.0001
Metals	Ag	0.0001	mg/L					<0.0001
	As	0.001	mg/L	IMAC-0.025				<0.001
	B	0.01	mg/L	IMAC-5.0				0.14
	Ba	0.01	mg/L	MAC-1.0				0.21
	Be	0.0005	mg/L					<0.0005
	Ca	1	mg/L			100	102	
	Cd	0.0001	mg/L	MAC-0.005				<0.0001
	Co	0.0002	mg/L					<0.0002
	Cr	0.001	mg/L	MAC-0.05				<0.001

Guideline = ODWSOG *** = Guideline Exceedence**
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Certificate of Analysis

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154 Colonnade Rd South
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K2E 7T7
Attention: Mr. Jamie Blakely
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Invoice to: Paterson Group

Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

Group	Analyte	MRL	Units	Guideline	1187819 Water 2015-07-10 TW3 WS1	1187820 Water 2015-07-10 TW3 WS2	1187821 Water 2015-07-10 TW3 WS2 - Paterson Package
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
Metals	Cu	0.001	mg/L	AO-1.0			<0.001
	Fe	0.03	mg/L	AO-0.3	<0.03	<0.03	
	K	1	mg/L		7	7	
	Mg	1	mg/L		40	40	
	Mn	0.01	mg/L	AO-0.05	0.01	0.01	
	Mo	0.005	mg/L				<0.005
	Na	2	mg/L	AO-200	39	42	
	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-0.01			<0.001
	Sr	0.001	mg/L				2.40
	Tl	0.0001	mg/L				<0.0001
	U	0.001	mg/L	MAC-0.02			0.002
	V	0.001	mg/L				<0.001
	Zn	0.01	mg/L	AO-5.0			<0.01
Nutrients	N-NH3	0.05	mg/L		<0.05	<0.05	
	Total Kjeldahl Nitrogen	0.07	mg/L		0.14	0.33	
Phenols-4AAP	Phenols	0.002	mg/L		<0.002	<0.002	
Sulphide	S2-	0.002	mg/L	AO-0.05	<0.002	<0.002	
VOCs	1,4-dichlorobenzene	0.4	ug/L	MAC-5			<0.4
	Benzene	0.5	ug/L	MAC-5			<0.5
	Dichloromethane	4.0	ug/L	MAC-50			<4.0
	Toluene	0.5	ug/L	AO-24			1.3
	Vinyl Chloride	0.2	ug/L	MAC-2			<0.2
VOCs Surrogates (%	1,2-dichloroethane-d4	0	%				103

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1187819 Water 2015-07-10 TW3 WS1	1187820 Water 2015-07-10 TW3 WS2	1187821 Water 2015-07-10 TW3 WS2 - Paterson Package
VOCs Surrogates (%REC)	4-bromofluorobenzene	0	%					106
	Toluene-d8	0	%					100

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Attention: Mr. Jamie Blakely
PO#: 15964
Invoice to: Paterson Group

Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290245 **Analysis/Extraction Date** 2015-07-11 **Analyst** C_F			
Method C SM2130B			
Turbidity	<0.1 NTU	99	73-127
Run No 290251 **Analysis/Extraction Date** 2015-07-11 **Analyst** SKH			
Method M SM3120B-3500C			
Calcium	<1 mg/L	102	90-110
Potassium	<1 mg/L	100	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	109	82-118
Run No 290315 **Analysis/Extraction Date** 2015-07-13 **Analyst** SCM			
Method M SM3112B-3500B			
Mercury	<0.0001 mg/L	100	76-123
Run No 290318 **Analysis/Extraction Date** 2015-07-13 **Analyst** K_A			
Method EPA 200.8			
Iron	<0.03 mg/L	94	92-107
Manganese	<0.01 mg/L	96	94-106
Run No 290480 **Analysis/Extraction Date** 2015-07-15 **Analyst** K_A			
Method EPA 200.8			

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PO#: 15964
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Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Silver	<0.0001 mg/L	95	94-106
Arsenic	<0.001 mg/L	96	93-106
Barium	<0.01 mg/L	100	91-109
Beryllium	<0.0005 mg/L	99	93-107
Cadmium	<0.0001 mg/L	101	93-107
Cobalt	<0.0002 mg/L	97	94-106
Chromium Total	<0.001 mg/L	97	94-106
Copper	<0.001 mg/L	96	93-106
Molybdenum	<0.005 mg/L	98	94-106
Nickel	<0.005 mg/L	97	94-106
Lead	<0.001 mg/L	101	70-130
Antimony	<0.0005 mg/L	96	80-120
Selenium	<0.001 mg/L	101	91-108
Strontium	<0.001 mg/L	101	89-110
Thallium	<0.0001 mg/L	98	95-105
Uranium	<0.001 mg/L	98	94-106
Vanadium	<0.001 mg/L	96	93-107

Run No 290503 **Analysis/Extraction Date** 2015-07-15 **Analyst** SCM

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PO#: 15964
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Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
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COC #: 52219

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method C SM4500-CNC			
Cyanide (CN-)	<0.005 mg/L	103	75-125
Run No 290517 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	102	90-110
Conductivity	<5 uS/cm	101	90-110
F	<0.10 mg/L	101	90-110
pH	6.11	100	90-110
Run No 290540 **Analysis/Extraction Date** 2015-07-16 **Analyst** AET			
Method C SM2120C			
Colour	<2 TCU	95	90-110
Run No 290563 **Analysis/Extraction Date** 2015-07-13 **Analyst** TJB			
Method V 8260B			
Dichlorobenzene, 1,4-	<0.4 ug/L	113	60-130
Benzene	<0.5 ug/L	102	60-130
Methylene Chloride	<4.0 ug/L	89	60-130
Toluene	<0.5 ug/L	110	60-130
Vinyl Chloride	<0.2 ug/L	83	60-130
Run No 290567 **Analysis/Extraction Date** 2015-07-16 **Analyst** NP			

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method SM 4110			
Chloride	<1 mg/L	100	90-110
SO4	<1 mg/L	103	90-110
Run No 290572 **Analysis/Extraction Date** 2015-07-16 **Analyst** K_A			
Method EPA 200.8			
Boron (total)	<0.01 mg/L	101	88-112
Zinc	<0.01 mg/L	98	94-106
Run No 290579 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Edmonton-SM4500-NH3-G			
N-NH3	<0.05 mg/L	102	
Run No 290582 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Edmonton-ISO/TR 11905-2			
Total Kjeldahl Nitrogen	<0.07 mg/L	102	
Run No 290583 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Edmonton-SM5310B			
DOC	<0.5 mg/L	100	
Run No 290588 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Edmonton-SM4500-S2 E			
S2-	<0.002 mg/L	99	

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Report Number: 1513146
Date Submitted: 2015-07-10
Date Reported: 2015-07-20
Project: PH2723
COC #: 52219

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290589 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Surrey-SM5550B			
Tannin & Lignin	<0.1 mg/L	106	
Run No 290591 **Analysis/Extraction Date** 2015-07-15 **Analyst** AET			
Method Exova Edmonton-SM5530D			
Phenols	<0.002 mg/L	100	
Run No 290653 **Analysis/Extraction Date** 2015-07-17 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	93	80-120
N-NO3	<0.10 mg/L	97	80-120

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 15964
Invoice to: Paterson Group

Report Number: 1513145
Date Submitted: 2015-07-10
Date Reported: 2015-07-13
Project: PH2723
COC #: 52219

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Krista Quantrill
Laboratory Supervisor, Microbiology

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Certificate of Analysis

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Attention: Mr. Jamie Blakely
PO#: 15964
Invoice to: Paterson Group

Report Number: 1513145
Date Submitted: 2015-07-10
Date Reported: 2015-07-13
Project: PH2723
COC #: 52219

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1187817 Water - 2015-07-10 TW3 WS1	1187818 Water - 2015-07-10 TW3 WS2
Microbiology	Escherichia Coli	0	ct/100mL	MAC-0		0	0
	Total Coliforms	0	ct/100mL	MAC-0		0	1*

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 18622
Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Shyla Monette
Team Leader, Inorganics

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Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

Group	Analyte	MRL	Units	Guideline	1198478 Water 2015-08-28 RW WS1 119 Old Mill Lane	1198479 Water 2015-08-28 RW WS2 110 Apple Street
Calculations	Hardness as CaCO3	1	mg/L	OG-100	370*	430*
	Ion Balance	0.01			1.04	0.98
	TDS (COND - CALC)	1	mg/L	AO-500	506*	611*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	319	352
	Cl	1	mg/L	AO-250	50	84
	Colour	2	TCU	AO-5	18*	16*
	Conductivity	5	uS/cm		779	940
	F	0.10	mg/L	MAC-1.5	0.32	0.43
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	<0.10	1.23
	pH	1.00		6.5-8.5	8.16	8.27
	SO4	1	mg/L	AO-500	38	39
	Turbidity	0.1	NTU	AO-5.0	0.6	0.1
Metals	Ca	1	mg/L		92	98
	Fe	0.03	mg/L	AO-0.3	<0.03	<0.03
	K	1	mg/L		4	9
	Mg	1	mg/L		34	45
	Mn	0.01	mg/L	AO-0.05	<0.01	<0.01
	Na	2	mg/L	AO-200	33	30
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		<0.1	<0.1
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO-5	63.9*	65.1*
	N-NH3	0.01	mg/L		0.02	0.02
	S2-	0.02	mg/L	AO-0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		0.2	<0.1

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Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 293561 **Analysis/Extraction Date** 2015-08-31 **Analyst** AET			
Method C SM2130B			
Turbidity	<0.1 NTU	93	73-127
Run No 293760 **Analysis/Extraction Date** 2015-09-01 **Analyst** K_A			
Method EPA 200.8			
Iron	<0.03 mg/L	97	92-107
Manganese	<0.01 mg/L	98	94-106
Run No 293762 **Analysis/Extraction Date** 2015-09-01 **Analyst** K_A			
Method M SM3120B-3500C			
Calcium	<1 mg/L	105	90-110
Potassium	<1 mg/L	100	87-113
Magnesium	<1 mg/L	100	76-124
Sodium	<2 mg/L	85	82-118
Run No 293798 **Analysis/Extraction Date** 2015-09-01 **Analyst** AET			
Method C SM4500-H+B			
Conductivity	<5 uS/cm	101	90-110
Run No 293840 **Analysis/Extraction Date** 2015-09-02 **Analyst** AET			
Method C SM2120C			

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 18622
Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Colour	<2 TCU	95	90-110
Run No 293894 **Analysis/Extraction Date** 2015-09-02 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	110	80-120
N-NO3	<0.10 mg/L	83	80-120
Run No 293919 **Analysis/Extraction Date** 2015-09-02 **Analyst** AET			
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	100	90-110
F	<0.10 mg/L	98	90-110
pH	5.89	100	90-110
Run No 294103 **Analysis/Extraction Date** 2015-09-01 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
N-NH3	<0.01 mg/L	102	
Run No 294105 **Analysis/Extraction Date** 2015-09-02 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
DOC	<0.5 mg/L	107	
Run No 294108 **Analysis/Extraction Date** 2015-09-02 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
Total Kjeldahl Nitrogen	<0.1 mg/L	102	81-126

Guideline = ODWSOG *** = Guideline Exceedence**
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 18622
Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 294110 **Analysis/Extraction Date** 2015-09-01 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
Phenols	<0.001 mg/L	89	69-132
Run No 294111 **Analysis/Extraction Date** 2015-09-02 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
Tannin & Lignin	<0.1 mg/L	94	
Run No 294112 **Analysis/Extraction Date** 2015-09-01 **Analyst** SCM			
Method SUBCONTRACT P-INORG			
S2-	<0.02 mg/L	105	
Run No 294146 **Analysis/Extraction Date** 2015-09-03 **Analyst** NP			
Method SM 4110			
Chloride	<1 mg/L	101	90-110
SO4	<1 mg/L	106	90-110
Run No 294166 **Analysis/Extraction Date** 2015-09-08 **Analyst** SCM			
Method C SM2340B			
Hardness as CaCO3			
Run No 294167 **Analysis/Extraction Date** 2015-09-08 **Analyst** SCM			
Method C Ion Balance			
Ion Balance			

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 18622
Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method C SM2540			
TDS (COND - CALC)			
Run No 294168 **Analysis/Extraction Date** 2015-09-08 **Analyst** SCM			
Method C SM2340B			
Hardness as CaCO3			
Run No 294169 **Analysis/Extraction Date** 2015-09-08 **Analyst** SCM			
Method C Ion Balance			
Ion Balance			
Method C SM2540			
TDS (COND - CALC)			

Guideline = ODWSOG *** = Guideline Exceedence**
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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#:
Invoice to: Paterson Group

Report Number: 1517089
Date Submitted: 2015-08-28
Date Reported: 2015-08-31
Project: PH2723
COC #: 58211

Dear Jamie Blakely:

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

Report Comments:

APPROVAL: _____

Krista Quantrill
Laboratory Supervisor, Microbiology

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Exova (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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. Exova recommends consulting the official provincial or federal guideline as required.

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#:
Invoice to: Paterson Group

Report Number: 1517089
Date Submitted: 2015-08-28
Date Reported: 2015-08-31
Project: PH2723
COC #: 58211

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1198465 / Water / 2015-08-28 / RW WS1 / 119 Old Mill Lane	1198466 / Water / 2015-08-28 / RW WS2 / 110 Apple Street
Microbiology	Escherichia Coli	0	ct/100mL	MAC-0	0	0
	Total Coliforms	0	ct/100mL	MAC-0	0	0

Guideline = ODWSOG *** = Guideline Exceedence**

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EXOVA ACCUTEST

REPORT OF ANALYSIS

Exova Accutest

Client: **Paterson Group**
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: **Ms. Stephanie Marriott**

INVOICE: Paterson Group Inc.
Chain of Custody Number: **108559**

Report Number: 2930580
Date: 2009-12-17
Date Submitted: 2009-12-15

Project: PE1114

P.O. Number:
Matrix: Water

								GUIDELINE		
			LAB ID:	767030						
			Sample Date:	2009-12-15						
			Sample ID:	104 Old Mill Lane WS1				ODWSOG		
PARAMETER	**UNITS**	**MRL**						**TYPE**	**LIMIT**	**UNITS**
Total Coliforms	CFU/100mL		0					MAC	0	CFU/100mL
Escherichia Coli	CFU/100mL		0					MAC	0	CFU/100mL
Heterotrophic Plate Count	CFU/1mL		0							
Faecal Coliforms	CFU/100mL		0							
Faecal Streptococcus	CFU/100mL		0							

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL: _____
Dragana Dzeletovic
Microbiology Analyst

REPORT OF ANALYSIS

Exova Accutest

Client: **Paterson Group**
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: **Ms. Stephanie Marriott**

Report Number: 2930624
Date: 2009-12-23
Date Submitted: 2009-12-15
Project: PE1114

INVOICE: Paterson Group Inc.
Chain of Custody Number: 108559
P.O. Number: 8478
Matrix: Water

								GUIDELINE		
		LAB ID:	767111							
		Sample Date:	2009-12-15							
		Sample ID:	104 Old Mill Lane-WS1					ODWSOG		
PARAMETER	**UNITS**	**MRL**						**TYPE**	**LIMIT**	**UNITS**
Alkalinity as CaCO3	mg/L	5	279					OG	500	mg/L
Chloride	mg/L	1	19					AO	250	mg/L
Colour	TCU	2	4					AO	5	TCU
Conductivity	uS/cm	5	641							
Dissolved Organic Carbon	mg/L	0.5	2.2					AO	5	mg/L
Fluoride	mg/L	0.1	0.26					MAC	1.5	mg/L
Hydrogen Sulphide	mg/L	0.01	<0.01					AO	0.05	mg/L
N-NH3 (Ammonia)	mg/L	0.02	<0.02							
N-NO2 (Nitrite)	mg/L	0.1	<0.10					MAC	1.0	mg/L
N-NO3 (Nitrate)	mg/L	0.1	0.60					MAC	10.0	mg/L
pH			7.86						6.5-8.5	
Phenols	mg/L	0.001	<0.001							
Sulphate	mg/L	1	39					AO	500	mg/L
Tannin & Lignin	mg/L	0.1	<0.1							
Total Dissolved Solids (COND - CALC)	mg/L	5	417					AO	500	mg/L
Total Kjeldahl Nitrogen	mg/L	0.1	<0.10							
Turbidity	NTU	0.1	0.2					MAC	1.0	NTU
Hardness as CaCO3	mg/L	1	322					OG	100	mg/L
Ion Balance		0.01	1.04							
Calcium	mg/L	1	86							
Magnesium	mg/L	1	26							
Potassium	mg/L	1	3							
Sodium	mg/L	2	17					AO	200	mg/L
Iron	mg/L	0.03	<0.03					AO	0.3	mg/L
Manganese	mg/L	0.01	<0.01					AO	0.05	mg/L

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration
Comment:

APPROVAL:
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Exova Accutest

Client: **Paterson Group**
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: **Ms. Stephanie Marriott**

INVOICE: Paterson Group Inc.
Chain of Custody Number: **108560**

Report Number: 1001900
Date: 2010-02-03
Date Submitted: 2010-02-01

Project: PE1114

P.O. Number: 8489
Matrix: Water

			LAB ID:	774157					**GUIDELINE**		
			Sample Date:	2010-01-30							
			Sample ID:	116 Old Mill Lane WS 1					ODWSOG		
PARAMETER	**UNITS**	**MRL**							**TYPE**	**LIMIT**	**UNITS**
Total Coliforms	CFU/100mL		0						MAC	0	CFU/100mL
Escherichia Coli	CFU/100mL		0						MAC	0	CFU/100mL
Heterotrophic Plate Count	CFU/1mL		0								
Faecal Coliforms	CFU/100mL		0								
Faecal Streptococcus	CFU/100mL		0								

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration
Comment:

APPROVAL:
Krista Quantrill
Drinking Water Coordinator

REPORT OF ANALYSIS

Client: **Paterson Group**
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: **Ms. Stephanie Marriott**

Report Number: 1001909
Date: 2010-02-09
Date Submitted: 2010-02-01

Project: PE1114

INVOICE: Paterson Group Inc.
Chain of Custody Number: **108560**

P.O. Number:
Matrix: Water

			LAB ID:	774170					**GUIDELINE**	
			Sample Date:	2010-01-30						
			Sample ID:	116 Old Mill Lane WS 1					ODWSOG	
PARAMETER	**UNITS**	**MRL**						**TYPE**	**LIMIT**	**UNITS**
Alkalinity as CaCO3	mg/L	5	339					OG	500	mg/L
Chloride	mg/L	1	32					AO	250	mg/L
Colour	TCU	2	<2					AO	5	TCU
Conductivity	uS/cm	5	749							
Dissolved Organic Carbon	mg/L	0.5	1.8					AO	5	mg/L
Fluoride	mg/L	0.1	0.31					MAC	1.5	mg/L
Hydrogen Sulphide	mg/L	0.01	<0.01					AO	0.05	mg/L
N-NH3 (Ammonia)	mg/L	0.02	<0.02							
N-NO2 (Nitrite)	mg/L	0.1	<0.10					MAC	1.0	mg/L
N-NO3 (Nitrate)	mg/L	0.1	0.41					MAC	10.0	mg/L
pH			7.70						6.5-8.5	
Phenols	mg/L	0.001	<0.001							
Sulphate	mg/L	1	33					AO	500	mg/L
Tannin & Lignin	mg/L	0.1	<0.1							
Total Dissolved Solids (COND - CALC)	mg/L	5	487					AO	500	mg/L
Total Kjeldahl Nitrogen	mg/L	0.1	<0.10							
Turbidity	NTU	0.1	0.3					MAC	1.0	NTU
Hardness as CaCO3	mg/L	1	376					OG	100	mg/L
Ion Balance		0.01	1.01							
Calcium	mg/L	1	98							
Magnesium	mg/L	1	32							
Potassium	mg/L	1	5							
Sodium	mg/L	2	20					AO	200	mg/L
Iron	mg/L	0.03	<0.03					AO	0.3	mg/L
Manganese	mg/L	0.01	<0.01					AO	0.05	mg/L

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration
Comment:

APPROVAL: _____
Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Exova Accutest

Client: Paterson Group
28 Concourse Gate, Unit 1
Nepean, ON
K2E 7T7
Attention: Ms. Stephanie Marriott

INVOICE: Paterson Group Inc.
Chain of Custody Number: 108988

Report Number: 2931218
Date: 2009-12-30
Date Submitted: 2009-12-23

Project: PE1114

P.O. Number:
Matrix: Water

			LAB ID:					GUIDELINE		
			Sample Date:							
			Sample ID:					ODWSOG		
PARAMETER	UNITS	MRL						TYPE	LIMIT	UNITS
Alkalinity as CaCO3	mg/L	5	339					OG	500	mg/L
Chloride	mg/L	1	177					AO	250	mg/L
Colour	TCU	2	3					AO	5	TCU
Conductivity	uS/cm	5	1280							
Fluoride	mg/L	0.1	0.32					MAC	1.5	mg/L
N-NO2 (Nitrite)	mg/L	0.1	<0.10					MAC	1.0	mg/L
N-NO3 (Nitrate)	mg/L	0.1	5.30					MAC	10.0	mg/L
pH			7.67						6.5-8.5	
Sulphate	mg/L	1	40					AO	500	mg/L
Tannin & Lignin	mg/L	0.1	<0.1							
Total Dissolved Solids (COND - CALC)	mg/L	5	832					AO	500	mg/L
Turbidity	NTU	0.1	0.1					MAC	1.0	NTU

MRL = Method Reporting Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration
Comment:

APPROVAL: _____
Ewan McRobbie
Inorganic Lab Supervisor

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Exova

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#:
Invoice to: Paterson Group

Report Number: 1517089
Date Submitted: 2015-08-28
Date Reported: 2015-08-31
Project: PH2723
COC #: 58211

Group	Analyte	MRL	Units	Guideline	Lab I.D. 1198465 Sample Matrix Water Sample Type Sampling Date 2015-08-28 Sample I.D. RW WS1 119 OLD MILL LANE	Lab I.D. 1198466 Sample Matrix Water Sample Type Sampling Date 2015-08-28 Sample I.D. RW WS2 110 APPLE ST.
Microbiology	Escherichia Coli	0	ct/100mL	MAC-0	0	0
	Total Coliforms	0	ct/100mL	MAC-0	0	0

Guideline = ODWSOG *** = Guideline Exceedence**

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Jamie Blakely
PO#: 18622
Invoice to: Paterson Group

Report Number: 1517097
Date Submitted: 2015-08-28
Date Reported: 2015-09-08
Project: PH2723
COC #: 58211

Group	Analyte	MRL	Units	Guideline	1198478 Water 2015-08-28 RW WS1 119 OLD MILL LANE	1198479 Water 2015-08-28 RW WS2 110 APPLE ST.
	Lab I.D.				1198478	1198479
	Sample Matrix				Water	Water
	Sample Type					
	Sampling Date				2015-08-28	2015-08-28
	Sample I.D.				RW WS1	RW WS2
Calculations	Hardness as CaCO3	1	mg/L	OG-100	370*	430*
	Ion Balance	0.01			1.04	0.98
	TDS (COND - CALC)	1	mg/L	AO-500	506*	611*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	319	352
	Cl	1	mg/L	AO-250	50	84
	Colour	2	TCU	AO-5	18*	16*
	Conductivity	5	uS/cm		779	940
	F	0.10	mg/L	MAC-1.5	0.32	0.43
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	<0.10	1.23
	pH	1.00		6.5-8.5	8.16	8.27
	SO4	1	mg/L	AO-500	38	39
	Turbidity	0.1	NTU	AO-5.0	0.6	0.1
Metals	Ca	1	mg/L		92	98
	Fe	0.03	mg/L	AO-0.3	<0.03	<0.03
	K	1	mg/L		4	9
	Mg	1	mg/L		34	45
	Mn	0.01	mg/L	AO-0.05	<0.01	<0.01
	Na	2	mg/L	AO-200	33	30
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		<0.1	<0.1
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO-5	63.9*	65.1*
	N-NH3	0.01	mg/L		0.02	0.02
	S2-	0.02	mg/L	AO-0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		0.2	<0.1

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610507
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56555

Dear Russell Chown:

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

Report Comments:

APPROVAL: _____
Nadine Pinsonneault
Team Leader, Inorganics

APPROVAL: _____
Charlie (Long) Qu
Laboratory Supervisor, Organics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

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Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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. Exova recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610507
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56555

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1247167 Water 2016-06-23 TW1	1247168 Water 2016-06-23 TW3
Calculations	Hardness as CaCO3	1	mg/L	OG-100	394*	409*
	Ion Balance	0.01			0.98	1.01
	TDS (COND - CALC)	1	mg/L	AO-500	544*	621*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	358	439
	Cl	1	mg/L	AO-250	60	57
	Colour	2	TCU	AO-5	<2	2
	Conductivity	5	uS/cm		837	955
	DOC	0.5	mg/L	AO-5	1.6	3.5
	F	0.10	mg/L	MAC-1.5	0.41	0.40
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	1.36	0.48
	pH	1.00		6.5-8.5	8.19	8.04
	SO4	1	mg/L	AO-500	40	34
	Turbidity	0.1	NTU	AO-5.0	0.1	0.3
Mercury	Hg	0.0001	mg/L	MAC-0.001	<0.0001	<0.0001
Metals	Ag	0.0001	mg/L		<0.0001	<0.0001
	Al	0.01	mg/L	OG-0.1	<0.01	<0.01
	As	0.001	mg/L	IMAC-0.025	<0.001	<0.001
	B	0.01	mg/L	IMAC-5.0	0.15	0.15
	Ba	0.01	mg/L	MAC-1.0	0.22	0.24
	Be	0.0005	mg/L		<0.0005	<0.0005
	Ca	1	mg/L		95	98
	Cd	0.0001	mg/L	MAC-0.005	<0.0001	<0.0001
	Cr	0.001	mg/L	MAC-0.05	<0.001	<0.001
	Cr(VI)	0.010	mg/L		<0.010	<0.010
	Cu	0.001	mg/L	AO-1.0	<0.001	<0.001

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610507
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56555

Group	Analyte	MRL	Units	Guideline	1247167 Water 2016-06-23 TW1	1247168 Water 2016-06-23 TW3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.					
Metals	Fe	0.03	mg/L	AO-0.3	<0.03	<0.03
	K	1	mg/L		7	7
	Mg	1	mg/L		38	40
	Mn	0.01	mg/L	AO-0.05	<0.01	0.02
	Mo	0.005	mg/L		<0.005	<0.005
	Na	2	mg/L	AO-200	36	66
	Ni	0.005	mg/L		<0.005	<0.005
	Pb	0.001	mg/L	MAC-0.010	<0.001	<0.001
	Sb	0.0005	mg/L	IMAC-0.006	<0.0005	<0.0005
	Se	0.001	mg/L	MAC-0.01	<0.001	<0.001
	Sr	0.001	mg/L		2.33	2.36
	Tl	0.0001	mg/L		<0.0001	<0.0001
	U	0.001	mg/L	MAC-0.02	0.003	0.003
	Zn	0.01	mg/L	AO-5.0	<0.01	<0.01
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		0.2	0.3
Others	Alpha-androstrane	0	%		108	120
	F1 (C6-C10)	20	ug/L		<20	<20
	F2 (C10-C16)	20	ug/L		<20	<20
	F3 (C16-C34)	50	ug/L		<50	<50
	F4 (C34-C50)	50	ug/L		<50	<50
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Semi-Volatiles	1-methylnaphthalene	0.1	ug/L		<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1	<0.1
	Acenaphthene	0.1	ug/L		<0.1	<0.1
	Acenaphthylene	0.1	ug/L		<0.1	<0.1
	Anthracene	0.1	ug/L		<0.1	<0.1

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Certificate of Analysis

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Project: PH2723
COC #: 56555

Group	Analyte	MRL	Units	Guideline	1247167 Water 2016-06-23 TW1	1247168 Water 2016-06-23 TW3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.					
Semi-Volatiles	Benzo(a)anthracene	0.1	ug/L		<0.1	<0.1
	Benzo(a)pyrene	0.01	ug/L	MAC-0.01	<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05	<0.05
	Chrysene	0.05	ug/L		<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1	<0.1
	Fluoranthene	0.1	ug/L		<0.1	<0.1
	Fluorene	0.1	ug/L		<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1	<0.1
	Naphthalene	0.1	ug/L		<0.1	<0.1
	Phenanthrene	0.1	ug/L		<0.1	<0.1
	Pyrene	0.1	ug/L		<0.1	<0.1
Subcontract	N-NH3	0.01	mg/L		0.01	0.10
	S2-	0.02	mg/L	AO-0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1	0.2
VOCs	1,1,1,2-tetrachloroethane	0.5	ug/L		<0.5	<0.5
	1,1,1-trichloroethane	0.4	ug/L		<0.4	<0.4
	1,1,2,2-tetrachloroethane	0.5	ug/L		<0.5	<0.5
	1,1,2-trichloroethane	0.4	ug/L		<0.4	<0.4
	1,1-dichloroethane	0.4	ug/L		<0.4	<0.4
	1,1-dichloroethylene	0.5	ug/L	MAC-14	<0.5	<0.5
	1,2-dichlorobenzene	0.4	ug/L	MAC-200	<0.4	<0.4
	1,2-dichloroethane	0.2	ug/L	IMAC-5	<0.2	<0.2
	1,2-dichloropropane	0.5	ug/L		<0.5	<0.5
	1,3-dichlorobenzene	0.4	ug/L		<0.4	<0.4

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Group	Analyte	MRL	Units	Guideline	1247167 Water 2016-06-23 TW1	1247168 Water 2016-06-23 TW3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.					
VOCs	1,3-Dichloropropylene (cis+trans)	0.2	ug/L		<0.2	<0.2
	1,4-dichlorobenzene	0.4	ug/L	MAC-5	<0.4	<0.4
	Acetone	30	ug/L		<30	<30
	Benzene	0.5	ug/L	MAC-5	<0.5	<0.5
	Bromodichloromethane	0.3	ug/L		<0.3	<0.3
	Bromoform	0.4	ug/L		<0.4	<0.4
	Bromomethane	0.5	ug/L		<0.5	<0.5
	c-1,2-Dichloroethylene	0.4	ug/L		<0.4	<0.4
	c-1,3-Dichloropropylene	0.2	ug/L		<0.2	<0.2
	Carbon Tetrachloride	0.2	ug/L	MAC-5	<0.2	<0.2
	Chloroform	0.5	ug/L		<0.5	<0.5
	Dibromochloromethane	0.3	ug/L		<0.3	<0.3
	Dichlorodifluoromethane	0.5	ug/L		<0.5	<0.5
	Dichloromethane	4.0	ug/L	MAC-50	<4.0	<4.0
	Ethylbenzene	0.5	ug/L	AO-2.4	<0.5	<0.5
	Ethylene Dibromide	0.2	ug/L		<0.2	<0.2
	Hexane	5	ug/L		<5	<5
	m/p-xylene	0.4	ug/L		<0.4	<0.4
	Methyl Ethyl Ketone (MEK)	10	ug/L		<10	<10
	Methyl Isobutyl Ketone (MIBK)	10	ug/L		<10	<10
	Methyl Tert Butyl Ether (MTBE)	2	ug/L		<2	<2
	Monochlorobenzene	0.2	ug/L	MAC-80	<0.2	<0.2
	o-xylene	0.4	ug/L		<0.4	<0.4
	Styrene	0.5	ug/L		<0.5	<0.5
	t-1,2-Dichloroethylene	0.4	ug/L		<0.4	<0.4
	t-1,3-Dichloropropylene	0.2	ug/L		<0.2	<0.2

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Group	Analyte	MRL	Units	Guideline	1247167 Water 2016-06-23 TW1	1247168 Water 2016-06-23 TW3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.					
VOCs	Tetrachloroethylene	0.3	ug/L	MAC-30	<0.3	<0.3
	Toluene	0.5	ug/L	AO-24	<0.5	<0.5
	Trichloroethylene	0.3	ug/L	MAC-5	<0.3	<0.3
	Trichlorofluoromethane	0.5	ug/L		<0.5	<0.5
	Vinyl Chloride	0.2	ug/L	MAC-2	<0.2	<0.2
	Xylene; total	0.5	ug/L	AO-300	<0.5	<0.5
VOCs Surrogates (%REC)	1,2-dichloroethane-d4	0	%		102	102
	4-bromofluorobenzene	0	%		120	125
	Toluene-d8	0	%		95	95

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290004 **Analysis/Extraction Date** 2016-06-30 **Analyst** TJB			
Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L	98	60-140
Method V 8260B			
Dichloropropene,1,3-			
Acetone	<30 ug/L	94	60-130
Methyl Ethyl Ketone	<10 ug/L	87	60-130
Methyl Isobutyl Ketone	<10 ug/L	83	60-130
Methyl tert-Butyl Ether (MTBE)	<2 ug/L	80	60-130
Run No 310325 **Analysis/Extraction Date** 2016-06-24 **Analyst** K A			
Method C SM2130B			
Turbidity	<0.1 NTU	101	70-130
Run No 310384 **Analysis/Extraction Date** 2016-06-27 **Analyst** C_N			
Method M SM3112B-3500B			
Mercury	<0.0001 mg/L	98	76-123
Run No 310385 **Analysis/Extraction Date** 2016-06-27 **Analyst** AET			
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	99	90-110
Conductivity	<5 uS/cm	99	90-110

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
F	<0.10 mg/L	101	90-110
pH	5.86	99	90-110
Run No 310387 **Analysis/Extraction Date** 2016-06-28 **Analyst** JLD			
Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	110	60-140
Petroleum Hydrocarbons F3	<50 ug/L	110	60-140
Petroleum Hydrocarbons F4	<50 ug/L	110	60-140
Run No 310389 **Analysis/Extraction Date** 2016-06-27 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	103	80-120
N-NO3	<0.10 mg/L	95	80-120
Run No 310391 **Analysis/Extraction Date** 2016-06-28 **Analyst** AET			
Method C SM2120C			
Colour	<2 TCU	100	90-110
Run No 310396 **Analysis/Extraction Date** 2016-06-27 **Analyst** NP			
Method SM 4110			
Chloride	<1 mg/L	102	90-110
SO4	<1 mg/L	104	90-110
Run No 310410 **Analysis/Extraction Date** 2016-06-28 **Analyst** SKH			

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method M SM3120B-3500C			
Calcium	<1 mg/L	98	90-110
Potassium	<1 mg/L	102	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	101	82-118
Run No 310438 **Analysis/Extraction Date** 2016-06-28 **Analyst** JLD			
Method P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	60	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	68	50-140
Acenaphthylene	<0.1 ug/L	68	50-140
Anthracene	<0.1 ug/L	80	50-140
Benz[a]anthracene	<0.1 ug/L	80	50-140
Benzo[a]pyrene	<0.01 ug/L	90	50-140
Benzo[b]fluoranthene	<0.05 ug/L	80	50-140
Benzo[ghi]perylene	<0.1 ug/L	88	50-140
Benzo[k]fluoranthene	<0.05 ug/L	119	50-140
Chrysene	<0.05 ug/L	84	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Dibenz[a h]anthracene	<0.1 ug/L	88	50-140
Fluoranthene	<0.1 ug/L	84	50-140
Fluorene	<0.1 ug/L	76	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	82	50-140
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	78	50-140
Pyrene	<0.1 ug/L	86	50-140
Run No 310442 **Analysis/Extraction Date** 2016-06-28 **Analyst** K_A			
Method EPA 200.8			
Silver	<0.0001 mg/L	105	94-106
Aluminum	<0.01 mg/L	104	89-111
Arsenic	<0.001 mg/L	103	93-106
Boron (total)	<0.01 mg/L	102	88-112
Barium	<0.01 mg/L	106	91-109
Beryllium	<0.0005 mg/L	100	93-107
Cadmium	<0.0001 mg/L	104	93-107
Chromium Total	<0.001 mg/L	100	94-106
Copper	<0.001 mg/L	99	93-106

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Iron	<0.03 mg/L	104	92-107
Manganese	<0.01 mg/L	100	94-106
Molybdenum	<0.005 mg/L	104	94-106
Nickel	<0.005 mg/L	99	94-106
Lead	<0.001 mg/L	103	70-130
Antimony	<0.0005 mg/L	100	80-120
Selenium	<0.001 mg/L	101	91-108
Strontium	<0.001 mg/L	101	89-110
Thallium	<0.0001 mg/L	101	95-105
Uranium	<0.001 mg/L	101	94-106
Zinc	<0.01 mg/L	105	94-106
Run No 310601 **Analysis/Extraction Date** 2016-06-27 **Analyst** R_K			
Method SUBCONTRACT P			
Chromium VI	<0.01 mg/L	104	
N-NH3	<0.01 mg/L	106	
Phenols	<0.001 mg/L	92	
S2-	<0.02 mg/L	104	
Tannin & Lignin	<0.1 mg/L	100	

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Total Kjeldahl Nitrogen	<0.1 mg/L	99	
Run No 310640 **Analysis/Extraction Date** 2016-07-04 **Analyst** NP			
Method C Ion Balance			
Ion Balance			
Method C SM2340B			
Hardness as CaCO3			
Method C SM2540			
TDS (COND - CALC)			
Run No 310645 **Analysis/Extraction Date** 2016-06-30 **Analyst** TJB			
Method V 8260B			
Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	117	60-130
Trichloroethane, 1,1,1-	<0.4 ug/L	100	60-130
Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	111	60-130
Trichloroethane, 1,1,2-	<0.4 ug/L	107	60-130
Dichloroethane, 1,1-	<0.4 ug/L	106	60-130
Dichloroethylene, 1,1-	<0.5 ug/L	92	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	110	60-130
Dichloroethane, 1,2-	<0.2 ug/L	100	60-130
Dichloropropane, 1,2-	<0.5 ug/L	104	60-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Dichlorobenzene, 1,3-	<0.4 ug/L	107	60-130
Dichlorobenzene, 1,4-	<0.4 ug/L	98	60-130
Benzene	<0.5 ug/L	98	60-130
Bromodichloromethane	<0.3 ug/L	101	60-130
Bromoform	<0.4 ug/L	111	60-130
Bromomethane	<0.5 ug/L	87	60-130
Dichloroethylene, 1,2-cis-	<0.4 ug/L	103	60-130
Dichloropropene,1,3-cis-	<0.2 ug/L	104	60-130
Carbon Tetrachloride	<0.2 ug/L	95	60-130
Chloroform	<0.5 ug/L	100	60-130
Dibromochloromethane	<0.3 ug/L	102	60-130
Dichlorodifluoromethane	<0.5 ug/L	103	60-130
Methylene Chloride	<4.0 ug/L	82	60-130
Ethylbenzene	<0.5 ug/L	98	60-130
Ethylene dibromide	<0.2 ug/L	107	60-130
Hexane (n)	<5 ug/L	80	60-130
m/p-xylene	<0.4 ug/L	97	60-130
Chlorobenzene	<0.2 ug/L	93	60-130

Guideline = ODWSOG *** = Guideline Exceedence**
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Methods references and/or additional QA/QC information available on request.

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610507
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56555

QC Summary

Analyte	Blank	QC % Rec	QC Limits
o-xylene	<0.4 ug/L	101	60-130
Styrene	<0.5 ug/L	98	60-130
Dichloroethylene, 1,2-trans-	<0.4 ug/L	95	60-130
Dichloropropene,1,3-trans-	<0.2 ug/L	108	60-130
Tetrachloroethylene	<0.3 ug/L	98	60-130
Toluene	<0.5 ug/L	101	60-130
Trichloroethylene	<0.3 ug/L	95	60-130
Trichlorofluoromethane	<0.5 ug/L	99	60-130
Vinyl Chloride	<0.2 ug/L	93	60-130
Run No 310647 **Analysis/Extraction Date** 2016-07-04 **Analyst** TJB			
Method V 8260B			
Xylene Mixture			
Run No 310666 **Analysis/Extraction Date** 2016-07-04 **Analyst** AET			
Method C SM5310C			
DOC	<0.5 mg/L	104	84-116

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1611394
Date Submitted: 2016-07-06
Date Reported: 2016-07-13
Project: PH 2723
COC #: 183211

Dear Russell Chown:

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

Report Comments:

APPROVAL:

Tanya Baillargeon
Team Lead, Organics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Exova (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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. Exova recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1611394
Date Submitted: 2016-07-06
Date Reported: 2016-07-13
Project: PH 2723
COC #: 183211

				Lab I.D.	1249217	1249218
				Sample Matrix	Water	Water
				Sample Type		
				Sampling Date	2016-06-23	2016-06-23
				Sample I.D.	TW1	TW3
Group	**Analyte**	**MRL**	**Units**	**Guideline**		
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1	<0.1

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1611394
Date Submitted: 2016-07-06
Date Reported: 2016-07-13
Project: PH 2723
COC #: 183211

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2016-07-08 **Analyst** C_M			
Method P 8081A			
Polychlorinated Biphenyls	<0.1 ug/L	103	60-140

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Dear Russell Chown:

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

Report Comments:

APPROVAL: _____
Nadine Pinsonneault
Team Leader, Inorganics

APPROVAL: _____
Charlie (Long) Qu
Laboratory Supervisor, Organics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Group	Analyte	MRL	Units	Guideline	Lab I.D. 1247172 Sample Matrix Water Sample Type Sampling Date 2016-06-24 Sample I.D. TW2
Calculations	Hardness as CaCO3	1	mg/L	OG-100	368*
	Ion Balance	0.01			0.99
	TDS (COND - CALC)	1	mg/L	AO-500	526*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG-500	327
	Cl	1	mg/L	AO-250	60
	Colour	2	TCU	AO-5	4
	Conductivity	5	uS/cm		810
	DOC	0.5	mg/L	AO-5	2.4
	F	0.10	mg/L	MAC-1.5	0.33
	N-NO2	0.10	mg/L	MAC-1.0	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	0.70
	pH	1.00		6.5-8.5	8.10
	SO4	1	mg/L	AO-500	41
	Turbidity	0.1	NTU	AO-5.0	0.5
Mercury	Hg	0.0001	mg/L	MAC-0.001	<0.0001
Metals	Ag	0.0001	mg/L		<0.0001
	Al	0.01	mg/L	OG-0.1	<0.01
	As	0.001	mg/L	IMAC-0.025	<0.001
	B	0.01	mg/L	IMAC-5.0	0.14
	Ba	0.01	mg/L	MAC-1.0	0.27
	Be	0.0005	mg/L		<0.0005
	Ca	1	mg/L		93
	Cd	0.0001	mg/L	MAC-0.005	<0.0001
	Cr	0.001	mg/L	MAC-0.05	<0.001
	Cr(VI)	0.010	mg/L		<0.010
	Cu	0.001	mg/L	AO-1.0	<0.001

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1247172 Water 2016-06-24 TW2
Metals	Fe	0.03	mg/L	AO-0.3	0.10
	K	1	mg/L		3
	Mg	1	mg/L		33
	Mn	0.01	mg/L	AO-0.05	0.01
	Mo	0.005	mg/L		<0.005
	Na	2	mg/L	AO-200	38
	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-0.01	<0.001
	Sr	0.001	mg/L		2.33
	Tl	0.0001	mg/L		<0.0001
	U	0.001	mg/L	MAC-0.02	0.002
	Zn	0.01	mg/L	AO-5.0	<0.01
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		0.2
Others	Alpha-androstrane	0	%		110
	F1 (C6-C10)	20	ug/L		<20
	F2 (C10-C16)	20	ug/L		<20
	F3 (C16-C34)	50	ug/L		<50
	F4 (C34-C50)	50	ug/L		<50
Phenols	Phenols	0.001	mg/L		<0.001
Semi-Volatiles	1-methylnaphthalene	0.1	ug/L		<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1
	Acenaphthene	0.1	ug/L		<0.1
	Acenaphthylene	0.1	ug/L		<0.1
	Anthracene	0.1	ug/L		<0.1

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Group	Analyte	MRL	Units	Guideline	1247172 Water 2016-06-24 TW2
	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.				
Semi-Volatiles	Benzo(a)anthracene	0.1	ug/L		<0.1
	Benzo(a)pyrene	0.01	ug/L	MAC-0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05
	Chrysene	0.05	ug/L		<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1
	Fluoranthene	0.1	ug/L		<0.1
	Fluorene	0.1	ug/L		<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1
	Naphthalene	0.1	ug/L		<0.1
	Phenanthrene	0.1	ug/L		<0.1
	Pyrene	0.1	ug/L		<0.1
Subcontract	N-NH3	0.01	mg/L		0.03
	S2-	0.02	mg/L	AO-0.05	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1
VOCs	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	0.2	ug/L	IMAC-5	<0.2
	1,2-dichloropropane	0.5	ug/L		<0.5
	1,3-dichlorobenzene	0.4	ug/L		<0.4

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1247172 Water 2016-06-24 TW2
VOCs	1,3-Dichloropropylene (cis+trans)	0.2	ug/L		<0.2
	1,4-dichlorobenzene	0.4	ug/L	MAC-5	<0.4
	Acetone	30	ug/L		<30
	Benzene	0.5	ug/L	MAC-5	<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
	c-1,3-Dichloropropylene	0.2	ug/L		<0.2
	Carbon Tetrachloride	0.2	ug/L	MAC-5	<0.2
	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	AO-2.4	<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		<2
	Monochlorobenzene	0.2	ug/L	MAC-80	<0.2
	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	0.2	ug/L		<0.2

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1247172 / Water / / 2016-06-24 / TW2
VOCs	Tetrachloroethylene	0.3	ug/L	MAC-30	<0.3
	Toluene	0.5	ug/L	AO-24	0.6
	Trichloroethylene	0.3	ug/L	MAC-5	<0.3
	Trichlorofluoromethane	0.5	ug/L		<0.5
	Vinyl Chloride	0.2	ug/L	MAC-2	<0.2
	Xylene; total	0.5	ug/L	AO-300	<0.5
VOCs Surrogates (%REC)	1,2-dichloroethane-d4	0	%		105
	4-bromofluorobenzene	0	%		120
	Toluene-d8	0	%		96

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 290004 **Analysis/Extraction Date** 2016-07-04 **Analyst** TJB			
Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L	103	60-140
Method V 8260B			
Dichloropropene,1,3-			
Acetone	<30 ug/L	94	60-130
Methyl Ethyl Ketone	<10 ug/L	87	60-130
Methyl Isobutyl Ketone	<10 ug/L	83	60-130
Methyl tert-Butyl Ether (MTBE)	<2 ug/L	80	60-130
Run No 310325 **Analysis/Extraction Date** 2016-06-24 **Analyst** K A			
Method C SM2130B			
Turbidity	<0.1 NTU	101	70-130
Run No 310354 **Analysis/Extraction Date** 2016-06-27 **Analyst** JLD			
Method P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	64	50-140
Methlynaphthalene, 2-	<0.1 ug/L	62	50-140
Acenaphthene	<0.1 ug/L	64	50-140
Acenaphthylene	<0.1 ug/L	64	50-140

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Anthracene	<0.1 ug/L	68	50-140
Benz[a]anthracene	<0.1 ug/L	68	50-140
Benzo[a]pyrene	<0.01 ug/L	68	50-140
Benzo[b]fluoranthene	<0.05 ug/L	63	50-140
Benzo[ghi]perylene	<0.1 ug/L	72	50-140
Benzo[k]fluoranthene	<0.05 ug/L	77	50-140
Chrysene	<0.05 ug/L	74	50-140
Dibenz[a h]anthracene	<0.1 ug/L	68	50-140
Fluoranthene	<0.1 ug/L	68	50-140
Fluorene	<0.1 ug/L	64	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	68	50-140
Naphthalene	<0.1 ug/L	62	50-140
Phenanthrene	<0.1 ug/L	64	50-140
Pyrene	<0.1 ug/L	68	50-140
Run No 310384 **Analysis/Extraction Date** 2016-06-27 **Analyst** C_N			
Method M SM3112B-3500B			
Mercury	<0.0001 mg/L	98	76-123
Run No 310385 **Analysis/Extraction Date** 2016-06-27 **Analyst** AET			

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	99	90-110
Conductivity	<5 uS/cm	99	90-110
F	<0.10 mg/L	101	90-110
pH	5.86	99	90-110
Run No 310387 **Analysis/Extraction Date** 2016-06-28 **Analyst** JLD			
Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	110	60-140
Petroleum Hydrocarbons F3	<50 ug/L	110	60-140
Petroleum Hydrocarbons F4	<50 ug/L	110	60-140
Run No 310389 **Analysis/Extraction Date** 2016-06-27 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	103	80-120
N-NO3	<0.10 mg/L	95	80-120
Run No 310391 **Analysis/Extraction Date** 2016-06-28 **Analyst** AET			
Method C SM2120C			
Colour	<2 TCU	100	90-110
Run No 310396 **Analysis/Extraction Date** 2016-06-27 **Analyst** NP			
Method SM 4110			

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chloride	<1 mg/L	102	90-110
SO4	<1 mg/L	104	90-110
Run No 310410 **Analysis/Extraction Date** 2016-06-28 **Analyst** SKH			
Method M SM3120B-3500C			
Calcium	<1 mg/L	98	90-110
Potassium	<1 mg/L	102	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	101	82-118
Run No 310442 **Analysis/Extraction Date** 2016-06-28 **Analyst** K_A			
Method EPA 200.8			
Silver	<0.0001 mg/L	105	94-106
Aluminum	<0.01 mg/L	104	89-111
Arsenic	<0.001 mg/L	103	93-106
Boron (total)	<0.01 mg/L	102	88-112
Barium	<0.01 mg/L	106	91-109
Beryllium	<0.0005 mg/L	100	93-107
Cadmium	<0.0001 mg/L	104	93-107
Chromium Total	<0.001 mg/L	100	94-106

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Copper	<0.001 mg/L	99	93-106
Iron	<0.03 mg/L	104	92-107
Manganese	<0.01 mg/L	100	94-106
Molybdenum	<0.005 mg/L	104	94-106
Nickel	<0.005 mg/L	99	94-106
Lead	<0.001 mg/L	103	70-130
Antimony	<0.0005 mg/L	100	80-120
Selenium	<0.001 mg/L	101	91-108
Strontium	<0.001 mg/L	101	89-110
Thallium	<0.0001 mg/L	101	95-105
Uranium	<0.001 mg/L	101	94-106
Zinc	<0.01 mg/L	105	94-106
Run No 310600 **Analysis/Extraction Date** 2016-06-27 **Analyst** R_K			
Method SUBCONTRACT P			
Chromium VI	<0.01 mg/L	104	
N-NH3	<0.01 mg/L	106	
Phenols	<0.001 mg/L	96	
S2-	<0.02 mg/L	104	

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Tannin & Lignin	<0.1 mg/L	100	
Total Kjeldahl Nitrogen	<0.1 mg/L	99	
Run No 310645 **Analysis/Extraction Date** 2016-06-30 **Analyst** TJB			
Method V 8260B			
Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	117	60-130
Trichloroethane, 1,1,1-	<0.4 ug/L	100	60-130
Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	111	60-130
Trichloroethane, 1,1,2-	<0.4 ug/L	107	60-130
Dichloroethane, 1,1-	<0.4 ug/L	106	60-130
Dichloroethylene, 1,1-	<0.5 ug/L	92	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	110	60-130
Dichloroethane, 1,2-	<0.2 ug/L	100	60-130
Dichloropropane, 1,2-	<0.5 ug/L	104	60-130
Dichlorobenzene, 1,3-	<0.4 ug/L	107	60-130
Dichlorobenzene, 1,4-	<0.4 ug/L	98	60-130
Benzene	<0.5 ug/L	98	60-130
Bromodichloromethane	<0.3 ug/L	101	60-130
Bromoform	<0.4 ug/L	111	60-130

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Bromomethane	<0.5 ug/L	87	60-130
Dichloroethylene, 1,2-cis-	<0.4 ug/L	103	60-130
Dichloropropene,1,3-cis-	<0.2 ug/L	104	60-130
Carbon Tetrachloride	<0.2 ug/L	95	60-130
Chloroform	<0.5 ug/L	100	60-130
Dibromochloromethane	<0.3 ug/L	102	60-130
Dichlorodifluoromethane	<0.5 ug/L	103	60-130
Methylene Chloride	<4.0 ug/L	82	60-130
Ethylbenzene	<0.5 ug/L	98	60-130
Ethylene dibromide	<0.2 ug/L	107	60-130
Hexane (n)	<5 ug/L	80	60-130
m/p-xylene	<0.4 ug/L	97	60-130
Chlorobenzene	<0.2 ug/L	93	60-130
o-xylene	<0.4 ug/L	101	60-130
Styrene	<0.5 ug/L	98	60-130
Dichloroethylene, 1,2-trans-	<0.4 ug/L	95	60-130
Dichloropropene,1,3-trans-	<0.2 ug/L	108	60-130
Tetrachloroethylene	<0.3 ug/L	98	60-130

Guideline = ODWSOG *** = Guideline Exceedence**

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610511
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH 2723
COC #: 56556

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Toluene	<0.5 ug/L	101	60-130
Trichloroethylene	<0.3 ug/L	95	60-130
Trichlorofluoromethane	<0.5 ug/L	99	60-130
Vinyl Chloride	<0.2 ug/L	93	60-130
Run No 310647 **Analysis/Extraction Date** 2016-07-04 **Analyst** TJB			
Method V 8260B			
Xylene Mixture			
Run No 310657 **Analysis/Extraction Date** 2016-07-04 **Analyst** NP			
Method C Ion Balance			
Ion Balance			
Method C SM2340B			
Hardness as CaCO3			
Method C SM2540			
TDS (COND - CALC)			
Run No 310666 **Analysis/Extraction Date** 2016-07-04 **Analyst** AET			
Method C SM5310C			
DOC	<0.5 mg/L	104	84-116

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610522
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56557

Dear Russell Chown:

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

Report Comments:

APPROVAL: _____

Nadine Pinsonneault
Team Leader, Inorganics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Exova (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

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. Exova recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610522
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56557

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1247195 Water 2016-06-24 128 Apple	1247196 Water 2016-06-24 139 Apple	1247197 Water 2016-06-24 140 Wilson
General Chemistry	DOC	0.5	mg/L	AO-5	1.7	2.0	1.9
	N-NO2	0.10	mg/L	MAC-1.0	<0.10	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC-10.0	0.20	<0.10	2.52
	NO2 + NO3 as N	0.10	mg/L	MAC-10.0	0.20	<0.10	2.52
Nutrients	N-NH3	0.025	mg/L		<0.025	<0.025	<0.025
	Organic Nitrogen	0.08	mg/L	OG-0.15	0.23*	0.12	0.23*
	Total Kjeldahl Nitrogen	0.07	mg/L		0.23	0.12	0.23

Guideline = ODWSOG *** = Guideline Exceedence**
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#:
Invoice to: Paterson Group

Report Number: 1610522
Date Submitted: 2016-06-24
Date Reported: 2016-07-04
Project: PH2723
COC #: 56557

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 310389 **Analysis/Extraction Date** 2016-06-27 **Analyst** NP			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	103	80-120
N-NO3	<0.10 mg/L	97	80-120
NO2 + NO3 as N	<0.10 mg/L	98	80-120
Run No 310632 **Analysis/Extraction Date** 2016-06-29 **Analyst** AET			
Method Exova Edmonton-SM4500-NH3-G			
N-NH3	<0.025 mg/L	99	80-120
Run No 310634 **Analysis/Extraction Date** 2016-06-28 **Analyst** AET			
Method Exova Edmonton-ISO/TR 11905-2			
Total Kjeldahl Nitrogen	<0.07 mg/L	93	
Run No 310640 **Analysis/Extraction Date** 2016-07-04 **Analyst** NP			
Method C SM4500-Norg-C			
Organic Nitrogen			
Run No 310666 **Analysis/Extraction Date** 2016-07-04 **Analyst** AET			
Method C SM5310C			
DOC	<0.5 mg/L	104	84-116

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

Dear Kirby Magee-Dittburner:

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

Report Comments:

APPROVAL: _____
Long Qu, Organics Supervisor

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

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

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

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

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

				Lab I.D.	1600428
				Sample Matrix	GW
				Sample Type	
				Sampling Date	2021-12-07
				Sample I.D.	TW1
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Metals	Ag	0.0001	mg/L		<0.0001
	As	0.001	mg/L		<0.001
	B	0.01	mg/L		0.15
	Ba	0.01	mg/L		0.21
	Be	0.0005	mg/L		<0.0005
	Cd	0.0001	mg/L		<0.0001
	Co	0.0002	mg/L		0.0002
	Cr	0.001	mg/L		<0.001
	Cr(VI)	0.01	mg/L		<0.01
	Cu	0.001	mg/L		0.002
	Hg	0.0001	mg/L		<0.0001
	Mo	0.005	mg/L		<0.005
	Na	2	mg/L		27
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		<0.001
	Sb	0.0005	mg/L		<0.0005
	Se	0.001	mg/L		<0.001
	Tl	0.0001	mg/L		<0.0001
	U	0.001	mg/L		0.002
	V	0.001	mg/L		<0.001
	Zn	0.01	mg/L		<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1
	1-methylnaphthalene	0.1	ug/L		<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1
	Acenaphthene	0.1	ug/L		<0.1

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Certificate of Analysis

eurofins | Environment Testing

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
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Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

				Lab I.D.	1600428
				Sample Matrix	GW
				Sample Type	
				Sampling Date	2021-12-07
				Sample I.D.	TW1
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
PAH	Acenaphthylene	0.1	ug/L		<0.1
	Anthracene	0.1	ug/L		<0.1
	Benzo(a)anthracene	0.1	ug/L		<0.1
	Benzo(a)pyrene	0.01	ug/L		<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05
	Chrysene	0.05	ug/L		<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1
	Fluoranthene	0.1	ug/L		<0.1
	Fluorene	0.1	ug/L		<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1
	Naphthalene	0.1	ug/L		<0.1
	Phenanthrene	0.1	ug/L		<0.1
	Pyrene	0.1	ug/L		<0.1
PCB Surrogate	Decachlorobiphenyl	0	%		90
PCBs	Aroclor 1016	0.1	ug/L		<0.1
	Aroclor 1242	0.1	ug/L		<0.1
	Aroclor 1248	0.1	ug/L		<0.1
	Aroclor 1254	0.1	ug/L		<0.1
	Aroclor 1260	0.1	ug/L		<0.1
	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1
VOCs Surrogates	Toluene-d8	0	%		100
Volatiles	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. 1600428 GW 2021-12-07 TW1
Volatiles	m/p-xylene	0.4	ug/L		<0.4
	o-xylene	0.4	ug/L		<0.4
	Toluene	0.5	ug/L		<0.5
	Xylene; total	0.5	ug/L		<0.5

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Certificate of Analysis

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K2E 7T7
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Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 413207 **Analysis/Extraction Date** 2021-12-10 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	100	50-140
Methlynaphthalene, 2-	<0.1 ug/L	100	50-140
Acenaphthene	<0.1 ug/L	102	50-140
Acenaphthylene	<0.1 ug/L	100	50-140
Anthracene	<0.1 ug/L	100	50-140
Benz[a]anthracene	<0.1 ug/L	84	50-140
Benzo[a]pyrene	<0.01 ug/L	95	50-140
Benzo[b]fluoranthene	<0.05 ug/L	99	50-140
Benzo[ghi]perylene	<0.1 ug/L	100	50-140
Benzo[k]fluoranthene	<0.05 ug/L	104	50-140
Chrysene	<0.05 ug/L	111	50-140
Dibenz[a h]anthracene	<0.1 ug/L	82	50-140
Fluoranthene	<0.1 ug/L	94	50-140
Fluorene	<0.1 ug/L	96	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	92	50-140
Naphthalene	<0.1 ug/L	104	50-140

Guideline = *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Phenanthrene	<0.1 ug/L	102	50-140
Pyrene	<0.1 ug/L	94	50-140
Run No 413771 **Analysis/Extraction Date** 2021-12-09 **Analyst** SD **Method** EPA 200.8			
Silver	<0.0001 mg/L	114	80-120
Arsenic	<0.001 mg/L	102	80-120
Boron (total)	<0.01 mg/L	113	80-120
Barium	<0.01 mg/L	101	80-120
Beryllium	<0.0005 mg/L	116	80-120
Cadmium	<0.0001 mg/L	107	80-120
Cobalt	<0.0002 mg/L	106	80-120
Chromium Total	<0.001 mg/L	106	80-120
Copper	<0.001 mg/L	111	80-120
Mercury	<0.0001 mg/L	90	80-120
Molybdenum	<0.005 mg/L	100	80-120
Nickel	<0.005 mg/L	110	80-120
Lead	<0.001 mg/L	103	80-120
Antimony	<0.0005 mg/L	79	80-120

Guideline = *** = Guideline Exceedence**

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

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Selenium	<0.001 mg/L	108	80-120
Thallium	<0.0001 mg/L	102	80-120
Uranium	<0.001 mg/L	98	80-120
Vanadium	<0.001 mg/L	104	80-120
Zinc	<0.01 mg/L	114	80-120
Run No 413825 **Analysis/Extraction Date** 2021-12-10 **Analyst** YH **Method** EPA 8260			
Benzene	<0.5 ug/L	88	60-130
Ethylbenzene	<0.5 ug/L	82	60-130
m/p-xylene	<0.4 ug/L	84	60-130
o-xylene	<0.4 ug/L	91	60-130
Toluene	<0.5 ug/L	88	60-130
Run No 413834 **Analysis/Extraction Date** 2021-12-10 **Analyst** YH **Method** EPA 8260			
Xylene Mixture			
Run No 413856 **Analysis/Extraction Date** 2021-12-10 **Analyst** Z S **Method** M SM3120B-3500C			
Sodium	<2 mg/L	103	82-118

Guideline = *** = Guideline Exceedence**

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

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#:
Invoice to: Paterson Group

Report Number: 1968225
Date Submitted: 2021-12-07
Date Reported: 2021-12-21
Project: PH4398
COC #: 883921

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 413883 **Analysis/Extraction Date** 2021-12-10 **Analyst** SKH **Method** SM 3500-Cr B			
Chromium VI	<0.01 mg/L	94	80-120
Run No 413950 **Analysis/Extraction Date** 2021-12-10 **Analyst** R G **Method** EPA 8081B			
Aroclor 1016	<0.1 ug/L	120	
Aroclor 1242	<0.1 ug/L	120	60-140
Aroclor 1248	<0.1 ug/L	120	60-140
Aroclor 1254	<0.1 ug/L	120	60-140
Aroclor 1260	<0.1 ug/L	120	60-140
Polychlorinated Biphenyls	<0.1 ug/L	120	60-140
Run No 413968 **Analysis/Extraction Date** 2021-12-13 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			

Guideline = *** = Guideline Exceedence**

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

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-66404-1
Client Project/Site: 1968225-PH4398

For:
Eurofins Environment Testing Canada
146 Colonnade Road, No. 8
Ottawa, Ontario K2E 7Y1

Attn: Rebecca Koshy

Marrissa Williams

Authorized for release by:
12/15/2021 5:59:21 PM

Marrissa Williams, Project Manager
(717)556-7246
Marrissa.Williams@eurofinset.com

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Marrissa Williams

Marrissa Williams
Project Manager
12/15/2021 5:59:21 PM

Job ID: 410-66404-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-66404-1

Receipt
The sample was received on 12/10/2021 9:56 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 11.6°C

Receipt Exceptions
The following sample was received at the laboratory outside the required temperature criteria: 1600428-TW1 (410-66404-1). The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

Dioxin
Method 1613B: Any peak area that is the result of interferences from poly-chlorinated diphenyl ethers observed in the sample has been removed from the calculated results prior to reporting the data for totals. 1600428-TW1 (410-66404-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-66404-1	1600428-TW1	Water	12/07/21 00:00	12/10/21 09:56

Client Sample ID: 1600428-TW1

Date Collected: 12/07/21 00:00
Date Received: 12/10/21 09:56

Lab Sample ID: 410-66404-1

Matrix: Water

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND	cn	27	3.3	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,4,6,7,8-HpCDF	ND	cn	27	0.068	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,4,7,8-HxCDD	ND	cn	27	0.12	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,4,7,8-HxCDF	ND	cn	27	0.69	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,4,7,8,9-HpCDF	**0.31**	**J I cn**	27	0.096	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,6,7,8-HxCDD	ND	cn	27	0.12	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,6,7,8-HxCDF	ND	cn	27	0.70	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,7,8-PeCDD	ND	cn	27	0.19	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,7,8-PeCDF	ND	cn	27	0.14	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,7,8,9-HxCDD	ND	cn	27	0.12	pg/L		12/13/21 16:35	12/14/21 13:50	1
1,2,3,7,8,9-HxCDF	ND	cn	27	0.85	pg/L		12/13/21 16:35	12/14/21 13:50	1
2,3,4,6,7,8-HxCDF	ND	cn	27	0.69	pg/L		12/13/21 16:35	12/14/21 13:50	1
2,3,4,7,8-PeCDF	ND	cn	27	0.11	pg/L		12/13/21 16:35	12/14/21 13:50	1
2,3,7,8-TCDD	ND	cn	4.3	0.20	pg/L		12/13/21 16:35	12/14/21 13:50	1
2,3,7,8-TCDF	ND	cn	5.4	0.14	pg/L		12/13/21 16:35	12/14/21 13:50	1
OCDD	**0.75**	**J I cn**	120	0.17	pg/L		12/13/21 16:35	12/14/21 13:50	1
OCDF	ND	cn	54	0.15	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total HpCDD	ND	cn	27	3.3	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total HpCDF	**0.31**	**J I B cn**	27	0.082	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total HxCDD	**0.61**	**J I B cn**	27	0.12	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total HxCDF	ND	cn	27	0.85	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total PeCDD	ND	cn	27	0.19	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total PeCDF	**0.89**	**J I B cn**	27	0.12	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total TCDD	ND	cn	5.4	0.20	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total TCDF	**0.60**	**J I cn**	5.4	0.14	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total PCDD	**1.4**	**J I B cn**	5.4	0.79	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total PCDF	**1.8**	**J I B cn**	5.4	0.27	pg/L		12/13/21 16:35	12/14/21 13:50	1
Total PCDD/PCDF	**3.2**	**J I B cn**	5.4	0.53	pg/L		12/13/21 16:35	12/14/21 13:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*81*	*cn*	*23 - 140*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*94*	*cn*	*28 - 143*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,4,7,8-HxCDD	*84*	*cn*	*32 - 141*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,4,7,8-HxCDF	*92*	*cn*	*26 - 152*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*92*	*cn*	*26 - 138*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,6,7,8-HxCDD	*86*	*cn*	*28 - 130*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,6,7,8-HxCDF	*93*	*cn*	*26 - 123*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,7,8-PeCDD	*61*	*cn*	*25 - 181*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,7,8-PeCDF	*65*	*cn*	*24 - 185*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,7,8,9-HxCDD	*82*	*cn*	*28 - 130*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-1,2,3,7,8,9-HxCDF	*85*	*cn*	*29 - 147*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-2,3,4,6,7,8-HxCDF	*85*	*cn*	*28 - 136*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-2,3,4,7,8-PeCDF	*66*	*cn*	*21 - 178*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-2,3,7,8-TCDD	*70*	*cn*	*25 - 164*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-2,3,7,8-TCDF	*70*	*cn*	*24 - 169*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-OCDD	*87*	*cn*	*17 - 157*	*12/13/21 16:35*	*12/14/21 13:50*	*1*
13C-OCDF	*89*	*cn*	*17 - 157*	*12/13/21 16:35*	*12/14/21 13:50*	*1*

Toxicity Summary

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Client Sample ID: 1600428-TW1

Lab Sample ID: 410-66404-1

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
1,2,3,4,6,7,8-HpCDD	ND	cn	27	3.3	pg/L	0.01	0.00	1613B
1,2,3,4,6,7,8-HpCDF	ND	cn	27	0.068	pg/L	0.01	0.00	1613B
1,2,3,4,7,8-HxCDD	ND	cn	27	0.12	pg/L	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	ND	cn	27	0.69	pg/L	0.1	0.00	1613B
1,2,3,4,7,8,9-HpCDF	**0.31**	**J I cn**	27	0.096	pg/L	0.01	**0.0031**	1613B
1,2,3,6,7,8-HxCDD	ND	cn	27	0.12	pg/L	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	ND	cn	27	0.70	pg/L	0.1	0.00	1613B
1,2,3,7,8-PeCDD	ND	cn	27	0.19	pg/L	1	0.00	1613B
1,2,3,7,8-PeCDF	ND	cn	27	0.14	pg/L	0.03	0.00	1613B
1,2,3,7,8,9-HxCDD	ND	cn	27	0.12	pg/L	0.1	0.00	1613B
1,2,3,7,8,9-HxCDF	ND	cn	27	0.85	pg/L	0.1	0.00	1613B
2,3,4,6,7,8-HxCDF	ND	cn	27	0.69	pg/L	0.1	0.00	1613B
2,3,4,7,8-PeCDF	ND	cn	27	0.11	pg/L	0.3	0.00	1613B
2,3,7,8-TCDD	ND	cn	4.3	0.20	pg/L	1	0.00	1613B
2,3,7,8-TCDF	ND	cn	5.4	0.14	pg/L	0.1	0.00	1613B
OCDD	**0.75**	**J I cn**	120	0.17	pg/L	0.0003	**0.00023**	1613B
OCDF	ND	cn	54	0.15	pg/L	0.0003	0.00	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
Total Toxic Dioxins and Furans					pg/L		0.0033	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Lab Sample ID: MB 410-204823/1-A
Matrix: Water
Analysis Batch: 205076

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 204823

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		25	0.80	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,4,6,7,8-HpCDF	0.563	J I	25	0.079	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,4,7,8-HxCDD	ND		25	0.14	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,4,7,8-HxCDF	ND		25	0.47	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,4,7,8,9-HpCDF	ND		25	0.11	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,6,7,8-HxCDD	ND		25	0.14	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,6,7,8-HxCDF	2.57	J I	25	0.43	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,7,8-PeCDD	0.623	J I	25	0.21	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,7,8-PeCDF	ND		25	0.15	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,7,8,9-HxCDD	ND		25	0.15	pg/L		12/13/21 16:35	12/14/21 13:01	1
1,2,3,7,8,9-HxCDF	ND		25	0.58	pg/L		12/13/21 16:35	12/14/21 13:01	1
2,3,4,6,7,8-HxCDF	ND		25	0.47	pg/L		12/13/21 16:35	12/14/21 13:01	1
2,3,4,7,8-PeCDF	ND		25	0.13	pg/L		12/13/21 16:35	12/14/21 13:01	1
2,3,7,8-TCDD	ND		4.0	0.22	pg/L		12/13/21 16:35	12/14/21 13:01	1
2,3,7,8-TCDF	ND		5.0	0.18	pg/L		12/13/21 16:35	12/14/21 13:01	1
OCDD	ND		110	0.19	pg/L		12/13/21 16:35	12/14/21 13:01	1
OCDF	ND		50	0.16	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total HpCDD	ND		25	0.80	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total HpCDF	0.563	J I	25	0.094	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total HxCDD	1.28	J I	25	0.14	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total HxCDF	2.57	J I	25	0.49	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total PeCDD	0.623	J I	25	0.21	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total PeCDF	1.19	J I	25	0.14	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total TCDD	ND		5.0	0.22	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total TCDF	ND		5.0	0.18	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total PCDD	1.90	J I	5.0	0.31	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total PCDF	4.32	J I	5.0	0.21	pg/L		12/13/21 16:35	12/14/21 13:01	1
Total PCDD/PCDF	6.22	I	5.0	0.26	pg/L		12/13/21 16:35	12/14/21 13:01	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*23 - 140*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*86*		*28 - 143*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,4,7,8-HxCDF	*79*		*26 - 152*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*81*		*26 - 138*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,6,7,8-HxCDD	*77*		*28 - 130*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,6,7,8-HxCDF	*87*		*26 - 123*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,7,8-PeCDD	*54*		*25 - 181*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,7,8,9-HxCDD	*70*		*28 - 130*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-1,2,3,7,8,9-HxCDF	*74*		*29 - 147*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-2,3,4,6,7,8-HxCDF	*73*		*28 - 136*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-OCDD	*79*		*17 - 157*	*12/13/21 16:35*	*12/14/21 13:01*	*1*
13C-OCDF	*83*		*17 - 157*	*12/13/21 16:35*	*12/14/21 13:01*	*1*

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters) (Continued)

Lab Sample ID: LCS 410-204823/2-A
Matrix: Water
Analysis Batch: 205076

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 204823

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	1000	970		pg/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	991		pg/L		99	82 - 122
1,2,3,4,7,8-HxCDD	1000	1040		pg/L		104	70 - 164
1,2,3,4,7,8-HxCDF	1000	1040		pg/L		104	72 - 134
1,2,3,4,7,8,9-HpCDF	1000	967		pg/L		97	78 - 138
1,2,3,6,7,8-HxCDD	1000	1020		pg/L		102	76 - 134
1,2,3,6,7,8-HxCDF	1000	1000		pg/L		100	84 - 130
1,2,3,7,8-PeCDD	1000	1060		pg/L		106	70 - 142
1,2,3,7,8-PeCDF	1000	1040		pg/L		104	80 - 134
1,2,3,7,8,9-HxCDD	1000	1070		pg/L		107	64 - 162
1,2,3,7,8,9-HxCDF	1000	1010		pg/L		101	78 - 130
2,3,4,6,7,8-HxCDF	1000	996		pg/L		100	70 - 156
2,3,4,7,8-PeCDF	1000	1040		pg/L		104	68 - 160
2,3,7,8-TCDD	200	199		pg/L		100	67 - 158
2,3,7,8-TCDF	200	208		pg/L		104	75 - 158
OCDD	2000	1950		pg/L		97	78 - 144
OCDF	2000	2060		pg/L		103	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*67*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*77*		*21 - 158*
13C-1,2,3,4,7,8-HxCDD	*69*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*75*		*19 - 202*
13C-1,2,3,4,7,8,9-HpCDF	*75*		*20 - 186*
13C-1,2,3,6,7,8-HxCDD	*74*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*79*		*21 - 159*
13C-1,2,3,7,8-PeCDD	*53*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*58*		*21 - 192*
13C-1,2,3,7,8,9-HxCDD	*66*		*25 - 163*
13C-1,2,3,7,8,9-HxCDF	*71*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*71*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*60*		*13 - 328*
13C-2,3,7,8-TCDD	*64*		*20 - 175*
13C-2,3,7,8-TCDF	*62*		*22 - 152*
13C-OCDD	*74*		*13 - 199*
13C-OCDF	*75*		*13 - 199*

QC Association Summary

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Specialty Organics

Prep Batch: 204823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-66404-1	1600428-TW1	Total/NA	Water	1613B	
MB 410-204823/1-A	Method Blank	Total/NA	Water	1613B	
LCS 410-204823/2-A	Lab Control Sample	Total/NA	Water	1613B	

Analysis Batch: 205076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-66404-1	1600428-TW1	Total/NA	Water	1613B	204823
MB 410-204823/1-A	Method Blank	Total/NA	Water	1613B	204823
LCS 410-204823/2-A	Lab Control Sample	Total/NA	Water	1613B	204823

Lab Chronicle

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Client Sample ID: 1600428-TW1

Date Collected: 12/07/21 00:00
Date Received: 12/10/21 09:56

Lab Sample ID: 410-66404-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			204823	12/13/21 16:35	X5YV	ELLE
Total/NA	Analysis	1613B		1	205076	12/14/21 13:50	RGA5	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Isotope Dilution Summary

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HxCDD (32-141)	HxCDF (26-152)	HpCDF2 (26-138)	HxDD (28-130)	HxDF (26-123)	PeCDD (25-181)
410-66404-1	1600428-TW1	81 cn	94 cn	84 cn	92 cn	92 cn	86 cn	93 cn	61 cn
MB 410-204823/1-A	Method Blank	73	86	72	79	81	77	87	54

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (24-185)	13CHxCD (28-130)	HxCF (29-147)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
410-66404-1	1600428-TW1	65 cn	82 cn	85 cn	85 cn	66 cn	70 cn	70 cn	87 cn
MB 410-204823/1-A	Method Blank	60	70	74	73	57	65	59	79

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OCDF (17-157)							
410-66404-1	1600428-TW1	89 cn							
MB 410-204823/1-A	Method Blank	83							

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCD = 13C-1,2,3,7,8,9-HxCDD
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD
OCDF = 13C-OCDF

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HxCDD (21-193)	HxCDF (19-202)	HpCDF2 (20-186)	HxDD (25-163)	HxDF (21-159)	PeCDD (21-227)
LCS 410-204823/2-A	Lab Control Sample	67	77	69	75	75	74	79	53

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (21-192)	13CHxCD (25-163)	HxCF (17-205)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 410-204823/2-A	Lab Control Sample	58	66	71	71	60	64	62	74

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OCDF (13-199)							
LCS 410-204823/2-A	Lab Control Sample	75							

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

Isotope Dilution Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-66404-1
Project/Site: 1968225-PH4398

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCD = 13C-1,2,3,7,8,9-HxCDD
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD
OCDF = 13C-OCDF

Accreditation/Certification Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-66404-1
Project/Site: 1968225-PH4398

Laboratory: Eurofins Lancaster Laboratories Env, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	1.01	11-30-22
A2LA	ISO/IEC 17025	0001.01	11-30-22
Alaska	State	PA00009	06-30-22
Alaska (UST)	State	17-027	02-28-22
Arizona	State	AZ0780	03-12-22
Arkansas DEQ	State	88-0660	08-10-22
California	State	2792	02-02-22
Colorado	State	PA00009	06-30-22
Connecticut	State	PH-0746	06-30-23
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-22
Delaware (DW)	State	N/A	02-01-22
Florida	NELAP	E87997	06-30-22
Georgia (DW)	State	C048	01-31-22
Hawaii	State	N/A	01-31-22
Illinois	NELAP	200027	01-31-23
Iowa	State	361	03-02-22
Kansas	NELAP	E-10151	10-31-22
Kentucky (DW)	State	KY90088	01-01-22
Kentucky (UST)	State	1.01	11-30-22
Kentucky (WW)	State	KY90088	12-31-21
Louisiana	NELAP	02055	06-30-22
Maine	State	2019012	03-12-22
Maryland	State	100	06-30-22
Massachusetts	State	M-PA009	06-30-22
Michigan	State	9930	01-31-22
Minnesota	NELAP	042-999-487	12-31-22
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-22
Nebraska	State	NE-OS-32-17	01-31-22
New Hampshire	NELAP	2730	01-10-22
New Jersey	NELAP	PA011	06-30-22
New York	NELAP	10670	04-01-22
North Carolina (DW)	State	42705	07-31-22
North Carolina (WW/SW)	State	521	12-31-21
North Dakota	State	R-205	01-31-22
Oklahoma	NELAP	R-205	08-31-22
Oregon	NELAP	PA200001	09-11-22
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-22
Rhode Island	State	LAO00338	01-31-22
South Carolina	State	89002002	01-31-22
Tennessee	State	02838	01-31-22
Texas	NELAP	T104704194-21-40	08-31-22
Utah	NELAP	PA000092019-16	03-01-22
Vermont	State	VT - 36037	10-28-22
Virginia	NELAP	460182	06-14-22
Washington	State	C457	04-12-22
West Virginia (DW)	State	9906 C	12-31-21
West Virginia DEP	State	055	12-31-21
Wyoming	State	8TMS-L	01-31-22

Accreditation/Certification Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-66404-1
Project/Site: 1968225-PH4398

Laboratory: Eurofins Lancaster Laboratories Env, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wyoming (UST)	A2LA	1.01	11-30-22

eurofins 216338

STANDARD CHAIN-OF-CUSTODY

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

410-66404 Chain of Custody

CLIENT INFORMATION

Company: Eurofins Ottawa
Contact: Rebecca Roshy
Address:
Telephone: Cell:
Email: #1:
Email: #2:
Project: 1968225-PH4398 Quote #:

INVOICE INFORM

Company:
Contact: Email:
Address: Email: #2:
Telephone: PO #:

YES ☐ NO ☐)

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☐ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ ODWSOG (Use DW CoC if analyzing drinking water)
☐ PWQO
☐ O.Reg 347
☐ Other:

☐ O. Reg 153

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04. Analysis of full paramter list only Yes ☐ No ☐

Table # ____, Coarse / Fine, Surface / subsurface
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment

☐ O. Reg 406 Excess Soils

Table # _____Full depth/Strat/Ceiling/mSPLP Leachate
Type: Com-Ind /Res-Park /Agri/All Other
Category: Surface /Subsurface

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	O.Reg.153 parameters: PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	Dioxins Furans	RN# (Lab Use Only)
1600428 -TW1	7/12/2021	W	2								✓	

PRINT / SIGN / DATE/TIME / TEMP (°C)

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:				
Relinquished By:	Rebecca Leah Foreman	RF	8/12/21 12/10/21 0956	8°
Received By:				

COMMENTS:

CUSTODY SEAL: ☐ YES ☑ NO Ice packs submit ☐ Yes ☑ No

Login Sample Receipt Checklist

Client: Eurofins Environment Testing Canada

Job Number: 410-66404-1

Login Number: 66404
List Number: 1
Creator: Bryan, Debra A

List Source: Eurofins Lancaster Laboratories Env, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	No ice present, no attempt to chill
Cooler Temperature is acceptable (</=6C, not frozen).	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	True	
WV: Container Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	

Definitions/Glossary

Client: Eurofins Environment Testing Canada
Project/Site: 1968225-PH4398

Job ID: 410-66404-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
cn	Refer to Case Narrative for further detail
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Certificate of Analysis

Environment Testing

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
Invoice to: Paterson Group
PO#: 33461

Report Number:	1968398
Date Submitted:	2021-12-09
Date Reported:	2021-12-21
Project:	PH4398
COC #:	884073
Temperature (C):	19
Custody Seal:	

Dear Kirby Magee-Dittburner:

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:

Long Qu, Organics Supervisor

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 accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

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.

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#: 33461
Invoice to: Paterson Group

Report Number: 1968398
Date Submitted: 2021-12-09
Date Reported: 2021-12-21
Project: PH4398
COC #: 884073

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria

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

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#: 33461
Invoice to: Paterson Group

Report Number: 1968398
Date Submitted: 2021-12-09
Date Reported: 2021-12-21
Project: PH4398
COC #: 884073

Guideline = O.Reg 153-T1-Groundwater

Metals

Lab I.D.	1600846	1600847	1600848	1600849
Sample Matrix	GW153	GW153	GW153	GW153
Sample Type				
Sample Date	2021-12-08	2021-12-08	2021-12-08	2021-12-08
Sampling Time				
Sample I.D.	TW2	TW3	BH1	BH2

Analyte	Batch No	MRL	Units	Guideline				
Antimony	413977	0.5	ug/L	STD 1.5	<0.5	<0.5	<0.5	<0.5
Arsenic	413977	1	ug/L	STD 13	<1	<1	<1	<1
Barium	413977	10	ug/L	STD 610	240	230	250	220
Beryllium	413977	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Boron (total)	413977	10	ug/L	STD 1700	130	130	70	50
Cadmium	413977	0.1	ug/L	STD 0.5	<0.1	<0.1	<0.1	<0.1
Chromium Total	413977	1	ug/L	STD 11	<1	<1	<1	<1
Chromium VI	413883	10	ug/L	STD 25	<10	<10	<10	<10
Cobalt	413977	0.2	ug/L	STD 3.8	<0.2	<0.2	0.2	<0.2
Copper	413977	1	ug/L	STD 5	2	2	<1	<1
Lead	413977	1	ug/L	STD 1.9	<1	<1	<1	<1
Mercury	414089	0.1	ug/L	STD 0.1	<0.1	<0.1	<0.1	
	414172	0.1	ug/L	STD 0.1				<0.1
Molybdenum	413977	5	ug/L	STD 23	<5	<5	<5	<5
Nickel	413977	5	ug/L	STD 14	<5	<5	<5	<5
Selenium	413977	1	ug/L	STD 5	<1	<1	<1	<1
Silver	413977	0.1	ug/L	STD 0.3	<0.1	<0.1	<0.1	<0.1
Sodium	413967	2000	ug/L	STD 490000	22000	28000	12000	8000
Thallium	413977	0.1	ug/L	STD 0.5	<0.1	<0.1	<0.1	<0.1
Uranium	413977	1	ug/L	STD 8.9	2	3	2	2
Vanadium	413977	1	ug/L	STD 3.9	<1	<1	2	<1
Zinc	413977	10	ug/L	STD 160	<10	<10	<10	<10

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Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#: 33461
Invoice to: Paterson Group

Report Number: 1968398
Date Submitted: 2021-12-09
Date Reported: 2021-12-21
Project: PH4398
COC #: 884073

Guideline = O.Reg 153-T1-Groundwater

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.			
					1600846 GW153 2021-12-08 TW2	1600847 GW153 2021-12-08 TW3	1600848 GW153 2021-12-08 BH1	1600849 GW153 2021-12-08 BH2
1+2-methylnaphthalene	414118	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Acenaphthene	413207	0.1	ug/L	STD 4.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	413207	0.1	ug/L	STD 1	<0.1	<0.1	<0.1	<0.1
Anthracene	413207	0.1	ug/L	STD 0.1	<0.1	<0.1	<0.1	<0.1
Benz[a]anthracene	413207	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1
Benzo[a]pyrene	413207	0.01	ug/L	STD 0.01	<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	413207	0.05	ug/L	STD 0.1	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	413207	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	413207	0.05	ug/L	STD 0.1	<0.05	<0.05	<0.05	<0.05
Chrysene	413207	0.05	ug/L	STD 0.1	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	413207	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1
Fluoranthene	413207	0.1	ug/L	STD 0.4	<0.1	<0.1	<0.1	<0.1
Fluorene	413207	0.1	ug/L	STD 120	<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	413207	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 1-	413207	0.1	ug/L	STD 2	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 2-	413207	0.1	ug/L	STD 2	<0.1	<0.1	<0.1	<0.1
Naphthalene	413207	0.1	ug/L	STD 7	<0.1	<0.1	<0.1	<0.1
Phenanthrene	413207	0.1	ug/L	STD 0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	413207	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1

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Certificate of Analysis

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	1600846 GW153 2021-12-08 TW2	1600847 GW153 2021-12-08 TW3	1600848 GW153 2021-12-08 BH1	1600849 GW153 2021-12-08 BH2
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.								
Benzene	413921	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	413921	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Toluene	413921	0.5	ug/L	STD 0.8	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	413921	0.5	ug/L	STD 72	<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	413921	0.4	ug/L		<0.4	<0.4	<0.4	<0.4
Xylene, o-	413921	0.4	ug/L		<0.4	<0.4	<0.4	<0.4

PCBs

Analyte	Batch No	MRL	Units	Guideline	1600846 GW153 2021-12-08 TW2	1600847 GW153 2021-12-08 TW3	1600848 GW153 2021-12-08 BH1	1600849 GW153 2021-12-08 BH2
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.								
Aroclor 1016	414140	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Aroclor 1242	414140	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Aroclor 1248	414140	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Aroclor 1254	414140	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Aroclor 1260	414140	0.1	ug/L		<0.1	<0.1	<0.1	<0.1
Polychlorinated Biphenyls	414140	0.1	ug/L	STD 0.2	<0.1	<0.1	<0.1	<0.1

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Guideline = O.Reg 153-T1-Groundwater

PCB Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1600846	1600847	1600848	1600849
					Sample Matrix GW153	GW153	GW153	GW153
					Sample Type			
					Sample Date 2021-12-08	2021-12-08	2021-12-08	2021-12-08
					Sampling Time			
					Sample I.D. TW2	TW3	BH1	BH2
Decachlorobiphenyl	414143	0	%		69	117	69	62

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1600846	1600847	1600848	1600849
					Sample Matrix GW153	GW153	GW153	GW153
					Sample Type			
					Sample Date 2021-12-08	2021-12-08	2021-12-08	2021-12-08
					Sampling Time			
					Sample I.D. TW2	TW3	BH1	BH2
Toluene-d8	413921	0	%		98	97	100	99

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COC #: 884073

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
413207	Methlynaphthalene, 1-	<0.1 ug/L	100	50-140		50-140		0-30
413207	Methlynaphthalene, 2-	<0.1 ug/L	100	50-140		50-140		0-30
413207	Acenaphthene	<0.1 ug/L	102	50-140		50-140		0-30
413207	Acenaphthylene	<0.1 ug/L	100	50-140		50-140		0-30
413207	Anthracene	<0.1 ug/L	100	50-140		50-140		0-30
413207	Benz[a]anthracene	<0.1 ug/L	84	50-140		50-140		0-30
413207	Benzo[a]pyrene	<0.01 ug/L	95	50-140		50-140		0-30
413207	Benzo[b]fluoranthene	<0.05 ug/L	99	50-140		50-140		0-30
413207	Benzo[ghi]perylene	<0.1 ug/L	100	50-140		50-140		0-30
413207	Benzo[k]fluoranthene	<0.05 ug/L	104	50-140		50-140		0-30
413207	Chrysene	<0.05 ug/L	111	50-140		50-140		0-30
413207	Dibenz[a h]anthracene	<0.1 ug/L	82	50-140		50-140		0-30
413207	Fluoranthene	<0.1 ug/L	94	50-140		50-140		0-30
413207	Fluorene	<0.1 ug/L	96	50-140		50-140		0-30
413207	Indeno[1 2 3-cd]pyrene	<0.1 ug/L	92	50-140		50-140		0-30
413207	Naphthalene	<0.1 ug/L	104	50-140		50-140		0-30
413207	Phenanthrene	<0.1 ug/L	102	50-140		50-140		0-30
413207	Pyrene	<0.1 ug/L	94	50-140		50-140		0-30
413883	Chromium VI	<10 ug/L	94	80-120	88	70-130	0	0-35
413921	Benzene	<0.5 ug/L	88	60-130	101	50-140	0	0-30
413921	Ethylbenzene	<0.5 ug/L	82	60-130	90	50-140	0	0-30
413921	Xylene, m/p-	<0.4 ug/L	84	60-130	97	50-140	0	0-30
413921	Xylene, o-	<0.4 ug/L	91	60-130	97	50-140	0	0-30
413921	Toluene	<0.5 ug/L	88	60-130	102	50-140	0	0-30
413921	Xylene Mixture	<0.5 ug/L						
413967	Sodium	<2000 ug/L	108	82-118	80	80-120	0	0-20
413977	Silver	<0.1 ug/L	111	80-120	124	70-130	17	0-20
413977	Arsenic	<1 ug/L	101	80-120	116	70-130	0	0-20
413977	Boron (total)	<10 ug/L	110	80-120		80-120	0	0-20
413977	Barium	<10 ug/L	90	80-120	13	70-130	0	0-20
413977	Beryllium	<0.5 ug/L	116	80-120	120	70-130	0	0-20
413977	Cadmium	<0.1 ug/L	105	80-120	122	70-130	0	0-20
413977	Cobalt	<0.2 ug/L	97	80-120	97	70-130	0	0-20

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Nepean, ON
K2E 7T7
Attention: Mr. Kirby Magee-Dittburner
PO#: 33461
Invoice to: Paterson Group

Report Number: 1968398
Date Submitted: 2021-12-09
Date Reported: 2021-12-21
Project: PH4398
COC #: 884073

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
413977	Chromium Total	<1 ug/L	96	80-120	103	70-130	0	0-20
413977	Copper	<1 ug/L	102	80-120	92	70-130	2	0-20
413977	Molybdenum	<5 ug/L	94	80-120	103	70-130	0	0-20
413977	Nickel	<5 ug/L	106	80-120	100	70-130	0	0-20
413977	Lead	<1 ug/L	89	80-120	93	70-130	0	0-20
413977	Antimony	<0.5 ug/L	107	80-120	111	70-130	0	0-20
413977	Selenium	<1 ug/L	114	80-120	142	70-130	0	0-20
413977	Thallium	<0.1 ug/L	91	80-120	96	70-130	0	0-20
413977	Uranium	<1 ug/L	92	80-120	107	70-130	0	0-20
413977	Vanadium	<1 ug/L	98	80-120	107	70-130	0	0-20
413977	Zinc	<10 ug/L	113	80-120	137	70-130	0	0-20
414089	Mercury	<0.1 ug/L	98	76-123	96	70-130	0	0-20
414118	1+2-methylnaphthalene							
414140	Aroclor 1016	<0.1 ug/L	120		N/A		N/A	
414140	Aroclor 1242	<0.1 ug/L	120	60-140	N/A	60-140	N/A	0-30
414140	Aroclor 1248	<0.1 ug/L	120	60-140	N/A	60-140	N/A	0-30
414140	Aroclor 1254	<0.1 ug/L	120	60-140	N/A	60-140	N/A	0-30
414140	Aroclor 1260	<0.1 ug/L	120	60-140	N/A	60-140	N/A	0-30
414140	Polychlorinated Biphenyls	<0.1 ug/L	120	60-140		60-140		0-30
414172	Mercury	<0.1 ug/L	118	76-123	91	70-130	0	0-20

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Report Number: 1968398
Date Submitted: 2021-12-09
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Project: PH4398
COC #: 884073

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
413207	Methlynaphthalene, 1-	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Methlynaphthalene, 2-	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Acenaphthene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Acenaphthylene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Anthracene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Benz[a]anthracene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Benzo[a]pyrene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Benzo[b]fluoranthene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Benzo[ghi]perylene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Benzo[k]fluoranthene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Chrysene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Dibenz[a h]anthracene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Fluoranthene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Fluorene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Indeno[1 2 3-cd]pyrene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Naphthalene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Phenanthrene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413207	Pyrene	GC-MS	2021-12-14	2021-12-14	C_M	P 8270
413883	Chromium VI		2021-12-10	2021-12-10	SKH	SM 3500-Cr B
413921	Benzene	GC-MS	2021-12-03	2021-12-11	YH	EPA 8260
413921	Ethylbenzene	GC-MS	2021-12-03	2021-12-11	YH	EPA 8260
413921	Xylene, m/p-	GC-MS	2021-12-03	2021-12-11	YH	EPA 8260
413921	Xylene, o-	GC-MS	2021-12-03	2021-12-11	YH	EPA 8260
413921	Toluene	GC-MS	2021-12-03	2021-12-11	YH	EPA 8260
413921	Xylene Mixture	GC-MS	2021-12-13	2021-12-13	YH	EPA 8260
413967	Sodium	ICP-OES	2021-12-13	2021-12-13	Z_S	M SM3120B-3500C
413977	Silver	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Arsenic	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Boron (total)	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Barium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Beryllium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Cadmium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Cobalt	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8

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Report Number: 1968398
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COC #: 884073

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
413977	Chromium Total	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Copper	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Molybdenum	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Nickel	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Lead	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Antimony	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Selenium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Thallium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Uranium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Vanadium	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
413977	Zinc	ICAPQ-MS	2021-12-13	2021-12-13	SD	EPA 200.8
414089	Mercury	CV AA	2021-12-14	2021-12-14	AaN	M SM3112B-3500B
414118	1+2-methylnaphthalene	GC-MS	2021-12-15	2021-12-15	C_M	P 8270
414140	Aroclor 1016	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414140	Aroclor 1242	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414140	Aroclor 1248	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414140	Aroclor 1254	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414140	Aroclor 1260	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414140	Polychlorinated Biphenyls	GC/ECD	2021-12-14	2021-12-15	ZoB	EPA 8081B
414172	Mercury	CV AA	2021-12-15	2021-12-15	AaN	M SM3112B-3500B

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CWS for Petroleum Hydrocarbons in Soil - Tier 1

Notes:

1. The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
2. Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
3. Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
4. Where the F3 fraction (C16 to C34) and PAHs* are both measured, F3-PAH is reported.
5. F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
6. Unless otherwise stated in the sample comments, the following criteria have been met where applicable:

   - nC6 and nC10 response factors within 30% of response factor for toluene;
   - nC10, nC16, and nC34 response factors within 10% of each other;
   - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
   - Linearity is within 15%.

7. Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
8. Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
9. *PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

884073

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STANDARD CHAIN-OF-CUSTODY

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

Eurofins Workorder #: 1968398

CLIENT INFORMATION

Company:	Paterson Group
Contact:	Kirby Magee-Dittburner
Address:	154 Colonnade Road South
Telephone:	613-218-3444
Cell:	
Email: #1:	eardley@patersongroup.ca, mlaflamme@patersongroup.ca
Email: #2:	kmageedittburner@patersongroup.ca
Project:	PH4398
Quote #:	

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☑ NO ☐)

Company:		Fax:	
Contact:		Email: #1:	
Address:		Email: #2:	
Telephone:		PO #:	33461

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☑ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: Ottawa
☐ Storm Sewer, City: Ottawa
☐ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☐ Other: ____
☐ None

☑ O. Reg 153
Table # ___, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: ____ Type: ____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required (O.Reg.153 parameters: PHC F1 - F4, BTEX, VOCs, PAHs, PCBs, Metals + Inorganics, Metals only)

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	See attached paper	Subdivision Supply Bacti 2 (Ec/TC only)	TSS	pH	Total Metals	Hg	Chromium 6	Dioxins & Furans		RN# (Lab Use Only)
Field Filtered -->																				
TW2	December 8, 2021	GW	1		✓		✓	✓							✓	✓	✓	✓		1600846
TW3	December 8, 2021	GW	1		✓		✓	✓							✓	✓	✓	✓		47
BH1	December 8, 2021	GW	1		✓		✓	✓							✓	✓	✓	✓		48
BH2	December 8, 2021	GW	1		✓		✓	✓							✓	✓	✓	✓		49

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	Kirby Magee-Dittburner	[signatures]	December 8, 2021	
Relinquished By:	Kirby Magee-Dittburner		December 9, 2021	19.3
Received By:			12/09/21 1513	

COMMENTS:

CUSTODY SEAL: ☐ YES ☐ NO   Ice packs submitted: ☐ Yes ☐ No

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ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-67026-1
Client Project/Site: P968398-PH9398

For:
Eurofins Environment Testing Canada
146 Colonnade Road, No. 8
Ottawa, Ontario K2E 7Y1

Attn: Rebecca Koshy

Marrissa Williams

Authorized for release by:
12/21/2021 8:12:57 AM

Marrissa Williams, Project Manager
(717)556-7246
Marrissa.Williams@eurofinset.com

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Marrissa Williams
Project Manager
12/21/2021 8:12:57 AM

Job ID: 410-67026-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-67026-1

Receipt
The samples were received on 12/15/2021 9:37 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 13.8°C

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria: P968398-PH9398 1600846-tw2 (410-67026-1), P968398-PH9398 1600847-tw3 (410-67026-2), P968398-PH9398 1600848-BH1 (410-67026-3) and P968398-PH9398 1600848-BH2 (410-67026-4). The laboratory was instructed to proceed with analysis.

Any peak area that is the result of interferences from poly-chlorinated diphenyl ethers observed in the sample has been removed from the calculated results prior to reporting the data for totals.

Dioxin
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-67026-1	P968398-PH9398 1600846-tw2	Water	12/08/21 00:00	12/15/21 09:37
410-67026-2	P968398-PH9398 1600847-tw3	Water	12/08/21 00:00	12/15/21 09:37
410-67026-3	P968398-PH9398 1600848-BH1	Water	12/08/21 00:00	12/15/21 09:37
410-67026-4	P968398-PH9398 1600848-BH2	Water	12/08/21 00:00	12/15/21 09:37

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600846-tw2
Date Collected: 12/08/21 00:00
Date Received: 12/15/21 09:37

Lab Sample ID: 410-67026-1
Matrix: Water

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		31	0.31	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,4,6,7,8-HpCDF	**0.37**	**J I**	31	0.029	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,4,7,8-HxCDD	ND		31	0.048	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,4,7,8-HxCDF	**0.48**	**J I B**	31	0.16	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,4,7,8,9-HpCDF	ND		31	0.043	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,6,7,8-HxCDD	**0.23**	**J I B**	31	0.046	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,6,7,8-HxCDF	ND		31	0.15	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,7,8-PeCDD	ND		31	0.075	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,7,8-PeCDF	**0.56**	**J I B**	31	0.10	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,7,8,9-HxCDD	**0.26**	**J I**	31	0.043	pg/L		12/16/21 15:00	12/17/21 14:59	1
1,2,3,7,8,9-HxCDF	**0.54**	**J I B**	31	0.18	pg/L		12/16/21 15:00	12/17/21 14:59	1
2,3,4,6,7,8-HxCDF	ND		31	0.14	pg/L		12/16/21 15:00	12/17/21 14:59	1
2,3,4,7,8-PeCDF	ND		31	0.083	pg/L		12/16/21 15:00	12/17/21 14:59	1
2,3,7,8-TCDD	**0.19**	**J I**	5.0	0.10	pg/L		12/16/21 15:00	12/17/21 14:59	1
2,3,7,8-TCDF	ND		6.2	0.051	pg/L		12/16/21 15:00	12/17/21 14:59	1
OCDD	**2.5**	**J I B**	140	0.075	pg/L		12/16/21 15:00	12/17/21 14:59	1
OCDF	ND		62	0.071	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total HpCDD	ND		31	0.31	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total HpCDF	**0.37**	**J I B**	31	0.036	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total HxCDD	**1.2**	**J I B**	31	0.046	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total HxCDF	**1.0**	**J I B**	31	0.16	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total PeCDD	**0.64**	**J B**	31	0.075	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total PeCDF	**0.91**	**J I B**	31	0.091	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total TCDD	**0.19**	**J I B**	6.2	0.10	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total TCDF	**0.59**	**J I B**	6.2	0.051	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total PCDD	**4.5**	**J I B**	6.2	0.12	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total PCDF	**2.9**	**J I B**	6.2	0.082	pg/L		12/16/21 15:00	12/17/21 14:59	1
Total PCDD/PCDF	**7.4**	**I**	6.2	0.10	pg/L		12/16/21 15:00	12/17/21 14:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*23 - 140*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*71*		*26 - 152*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*71*		*28 - 130*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,6,7,8-HxCDF	*72*		*26 - 123*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,7,8,9-HxCDD	*71*		*28 - 130*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-2,3,4,6,7,8-HxCDF	*68*		*28 - 136*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-OCDD	*69*		*17 - 157*	*12/16/21 15:00*	*12/17/21 14:59*	*1*
13C-OCDF	*59*		*17 - 157*	*12/16/21 15:00*	*12/17/21 14:59*	*1*

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600847-tw3
Date Collected: 12/08/21 00:00
Date Received: 12/15/21 09:37

Lab Sample ID: 410-67026-2
Matrix: Water

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	**1.3**	**J I B**	26	0.060	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,4,6,7,8-HpCDF	ND		26	0.025	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,4,7,8-HxCDD	ND		26	0.042	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,4,7,8-HxCDF	ND		26	0.026	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,4,7,8,9-HpCDF	ND		26	0.036	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,6,7,8-HxCDD	ND		26	0.038	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,6,7,8-HxCDF	ND		26	0.027	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,7,8-PeCDD	ND		26	0.092	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,7,8-PeCDF	**0.51**	**J I B**	26	0.049	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,7,8,9-HxCDD	ND		26	0.037	pg/L		12/16/21 15:00	12/17/21 15:51	1
1,2,3,7,8,9-HxCDF	ND		26	0.033	pg/L		12/16/21 15:00	12/17/21 15:51	1
2,3,4,6,7,8-HxCDF	ND		26	0.026	pg/L		12/16/21 15:00	12/17/21 15:51	1
2,3,4,7,8-PeCDF	ND		26	0.037	pg/L		12/16/21 15:00	12/17/21 15:51	1
2,3,7,8-TCDD	**0.13**	**J I**	4.1	0.078	pg/L		12/16/21 15:00	12/17/21 15:51	1
2,3,7,8-TCDF	ND		5.2	0.054	pg/L		12/16/21 15:00	12/17/21 15:51	1
OCDD	ND		110	0.060	pg/L		12/16/21 15:00	12/17/21 15:51	1
OCDF	**0.087**	**J I B**	52	0.057	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total HpCDD	**1.3**	**J I B**	26	0.060	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total HpCDF	ND		26	0.036	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total HxCDD	**1.8**	**J I B**	26	0.039	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total HxCDF	ND		26	0.033	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total PeCDD	**0.93**	**J I B**	26	0.092	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total PeCDF	**0.51**	**J I B**	26	0.043	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total TCDD	**1.3**	**J I B**	5.2	0.078	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total TCDF	**0.17**	**J I B**	5.2	0.054	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total PCDD	**5.3**	**I B**	5.2	0.066	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total PCDF	**0.77**	**J I B**	5.2	0.044	pg/L		12/16/21 15:00	12/17/21 15:51	1
Total PCDD/PCDF	**6.1**	**I**	5.2	0.055	pg/L		12/16/21 15:00	12/17/21 15:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*23 - 140*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,4,7,8-HxCDD	*70*		*32 - 141*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,6,7,8-HxCDD	*74*		*28 - 130*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,6,7,8-HxCDF	*72*		*26 - 123*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,7,8-PeCDD	*60*		*25 - 181*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,7,8,9-HxCDD	*70*		*28 - 130*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-2,3,4,6,7,8-HxCDF	*68*		*28 - 136*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-2,3,4,7,8-PeCDF	*62*		*21 - 178*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-OCDD	*75*		*17 - 157*	*12/16/21 15:00*	*12/17/21 15:51*	*1*
13C-OCDF	*64*		*17 - 157*	*12/16/21 15:00*	*12/17/21 15:51*	*1*

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600848-BH1
Date Collected: 12/08/21 00:00
Date Received: 12/15/21 09:37

Lab Sample ID: 410-67026-3
Matrix: Water

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.9	J I B	32	0.31	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,4,6,7,8-HpCDF	0.25	J I	32	0.034	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,4,7,8-HxCDD	0.66	J I	32	0.052	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,4,7,8-HxCDF	ND		32	0.12	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,4,7,8,9-HpCDF	ND		32	0.050	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,6,7,8-HxCDD	ND		32	0.053	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,6,7,8-HxCDF	0.41	J I B	32	0.12	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,7,8-PeCDD	ND		32	0.087	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,7,8-PeCDF	0.34	J I B	32	0.062	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,7,8,9-HxCDD	ND		32	0.052	pg/L		12/16/21 15:00	12/17/21 16:40	1
1,2,3,7,8,9-HxCDF	0.42	J I B	32	0.13	pg/L		12/16/21 15:00	12/17/21 16:40	1
2,3,4,6,7,8-HxCDF	ND		32	0.12	pg/L		12/16/21 15:00	12/17/21 16:40	1
2,3,4,7,8-PeCDF	ND		32	0.050	pg/L		12/16/21 15:00	12/17/21 16:40	1
2,3,7,8-TCDD	ND		5.1	0.10	pg/L		12/16/21 15:00	12/17/21 16:40	1
2,3,7,8-TCDF	ND		6.4	0.070	pg/L		12/16/21 15:00	12/17/21 16:40	1
OCDD	14	J B	140	0.086	pg/L		12/16/21 15:00	12/17/21 16:40	1
OCDF	0.82	J I B	64	0.078	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total HpCDD	1.9	J I B	32	0.31	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total HpCDF	0.42	J I B	32	0.042	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total HxCDD	3.8	J I B	32	0.052	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total HxCDF	0.83	J I B	32	0.12	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total PeCDD	0.38	J B	32	0.087	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total PeCDF	0.34	J I B	32	0.056	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total TCDD	0.13	J I B	6.4	0.10	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total TCDF	ND		6.4	0.070	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total PCDD	20	I B	6.4	0.13	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total PCDF	2.4	J I B	6.4	0.074	pg/L		12/16/21 15:00	12/17/21 16:40	1
Total PCDD/PCDF	22	I	6.4	0.10	pg/L		12/16/21 15:00	12/17/21 16:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*23 - 140*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*56*		*28 - 143*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,4,7,8-HxCDF	*60*		*26 - 152*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*51*		*26 - 138*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,6,7,8-HxCDD	*64*		*28 - 130*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,6,7,8-HxCDF	*61*		*26 - 123*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,7,8-PeCDF	*53*		*24 - 185*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,7,8,9-HxCDD	*61*		*28 - 130*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-1,2,3,7,8,9-HxCDF	*55*		*29 - 147*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-2,3,4,6,7,8-HxCDF	*59*		*28 - 136*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-2,3,7,8-TCDF	*52*		*24 - 169*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-OCDD	*59*		*17 - 157*	*12/16/21 15:00*	*12/17/21 16:40*	*1*
13C-OCDF	*52*		*17 - 157*	*12/16/21 15:00*	*12/17/21 16:40*	*1*

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600848-BH2
Date Collected: 12/08/21 00:00
Date Received: 12/15/21 09:37

Lab Sample ID: 410-67026-4
Matrix: Water

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.8	J I B	26	0.21	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,4,6,7,8-HpCDF	0.24	J I	26	0.028	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,4,7,8-HxCDD	ND		26	0.046	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,4,7,8-HxCDF	ND		26	0.12	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,4,7,8,9-HpCDF	ND		26	0.037	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,6,7,8-HxCDD	ND		26	0.041	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,6,7,8-HxCDF	0.27	J I B	26	0.12	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,7,8-PeCDD	ND		26	0.11	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,7,8-PeCDF	0.40	J I B	26	0.050	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,7,8,9-HxCDD	0.38	J I	26	0.043	pg/L		12/16/21 15:00	12/17/21 17:29	1
1,2,3,7,8,9-HxCDF	0.54	J I B	26	0.14	pg/L		12/16/21 15:00	12/17/21 17:29	1
2,3,4,6,7,8-HxCDF	ND		26	0.11	pg/L		12/16/21 15:00	12/17/21 17:29	1
2,3,4,7,8-PeCDF	0.37	J I B	26	0.042	pg/L		12/16/21 15:00	12/17/21 17:29	1
2,3,7,8-TCDD	ND		4.2	0.086	pg/L		12/16/21 15:00	12/17/21 17:29	1
2,3,7,8-TCDF	ND		5.3	0.055	pg/L		12/16/21 15:00	12/17/21 17:29	1
OCDD	1.4	J I B	120	0.090	pg/L		12/16/21 15:00	12/17/21 17:29	1
OCDF	ND		53	0.082	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total HpCDD	1.8	J I B	26	0.21	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total HpCDF	0.47	J I B	26	0.033	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total HxCDD	0.88	J I B	26	0.044	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total HxCDF	0.82	J I B	26	0.12	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total PeCDD	0.65	J I B	26	0.11	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total PeCDF	0.77	J I B	26	0.046	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total TCDD	1.1	J I B	5.3	0.086	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total TCDF	0.14	J I B	5.3	0.055	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total PCDD	5.8	I B	5.3	0.11	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total PCDF	2.2	J I B	5.3	0.067	pg/L		12/16/21 15:00	12/17/21 17:29	1
Total PCDD/PCDF	8.0	I	5.3	0.087	pg/L		12/16/21 15:00	12/17/21 17:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*52*		*23 - 140*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*28 - 143*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,4,7,8-HxCDD	*54*		*32 - 141*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*26 - 152*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,7,8-PeCDD	*45*		*25 - 181*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,7,8-PeCDF	*52*		*24 - 185*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,7,8,9-HxCDD	*53*		*28 - 130*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-1,2,3,7,8,9-HxCDF	*49*		*29 - 147*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-2,3,4,6,7,8-HxCDF	*51*		*28 - 136*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-2,3,7,8-TCDD	*50*		*25 - 164*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-2,3,7,8-TCDF	*51*		*24 - 169*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-OCDD	*60*		*17 - 157*	*12/16/21 15:00*	*12/17/21 17:29*	*1*
13C-OCDF	*52*		*17 - 157*	*12/16/21 15:00*	*12/17/21 17:29*	*1*

Toxicity Summary

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600846-tw2 — Lab Sample ID: 410-67026-1

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
1,2,3,4,6,7,8-HpCDD	ND		31	0.31	pg/L	0.01	0.00	1613B
1,2,3,4,6,7,8-HpCDF	**0.37**	**J I**	31	0.029	pg/L	0.01	**0.0037**	1613B
1,2,3,4,7,8-HxCDD	ND		31	0.048	pg/L	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	**0.48**	**J I B**	31	0.16	pg/L	0.1	**0.048**	1613B
1,2,3,4,7,8,9-HpCDF	ND		31	0.043	pg/L	0.01	0.00	1613B
1,2,3,6,7,8-HxCDD	**0.23**	**J I B**	31	0.046	pg/L	0.1	**0.023**	1613B
1,2,3,6,7,8-HxCDF	ND		31	0.15	pg/L	0.1	0.00	1613B
1,2,3,7,8-PeCDD	ND		31	0.075	pg/L	1	0.00	1613B
1,2,3,7,8-PeCDF	**0.56**	**J I B**	31	0.10	pg/L	0.03	**0.017**	1613B
1,2,3,7,8,9-HxCDD	**0.26**	**J I**	31	0.043	pg/L	0.1	**0.026**	1613B
1,2,3,7,8,9-HxCDF	**0.54**	**J I B**	31	0.18	pg/L	0.1	**0.054**	1613B
2,3,4,6,7,8-HxCDF	ND		31	0.14	pg/L	0.1	0.00	1613B
2,3,4,7,8-PeCDF	ND		31	0.083	pg/L	0.3	0.00	1613B
2,3,7,8-TCDD	**0.19**	**J I**	5.0	0.10	pg/L	1	**0.19**	1613B
2,3,7,8-TCDF	ND		6.2	0.051	pg/L	0.1	0.00	1613B
OCDD	**2.5**	**J I B**	140	0.075	pg/L	0.0003	**0.00075**	1613B
OCDF	ND		62	0.071	pg/L	0.0003	0.00	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
Total Toxic Dioxins and Furans					pg/L		0.36	TEQ

Client Sample ID: P968398-PH9398 1600847-tw3 — Lab Sample ID: 410-67026-2

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
1,2,3,4,6,7,8-HpCDD	**1.3**	**J I B**	26	0.060	pg/L	0.01	**0.013**	1613B
1,2,3,4,6,7,8-HpCDF	ND		26	0.025	pg/L	0.01	0.00	1613B
1,2,3,4,7,8-HxCDD	ND		26	0.042	pg/L	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	ND		26	0.026	pg/L	0.1	0.00	1613B
1,2,3,4,7,8,9-HpCDF	ND		26	0.036	pg/L	0.01	0.00	1613B
1,2,3,6,7,8-HxCDD	ND		26	0.038	pg/L	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	ND		26	0.027	pg/L	0.1	0.00	1613B
1,2,3,7,8-PeCDD	ND		26	0.092	pg/L	1	0.00	1613B
1,2,3,7,8-PeCDF	**0.51**	**J I B**	26	0.049	pg/L	0.03	**0.015**	1613B
1,2,3,7,8,9-HxCDD	ND		26	0.037	pg/L	0.1	0.00	1613B
1,2,3,7,8,9-HxCDF	ND		26	0.033	pg/L	0.1	0.00	1613B
2,3,4,6,7,8-HxCDF	ND		26	0.026	pg/L	0.1	0.00	1613B
2,3,4,7,8-PeCDF	ND		26	0.037	pg/L	0.3	0.00	1613B
2,3,7,8-TCDD	**0.13**	**J I**	4.1	0.078	pg/L	1	**0.13**	1613B
2,3,7,8-TCDF	ND		5.2	0.054	pg/L	0.1	0.00	1613B
OCDD	ND		110	0.060	pg/L	0.0003	0.00	1613B
OCDF	**0.087**	**J I B**	52	0.057	pg/L	0.0003	**0.000026**	1613B

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Eurofins Lancaster Laboratories Env, LLC

Client Sample ID: P968398-PH9398 1600847-tw3 (Continued)

Lab Sample ID: 410-67026-2

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
Total Toxic Dioxins and Furans					pg/L		0.16	TEQ

Client Sample ID: P968398-PH9398 1600848-BH1

Lab Sample ID: 410-67026-3

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
1,2,3,4,6,7,8-HpCDD	**1.9**	**J I B**	32	0.31	pg/L	0.01	**0.019**	1613B
1,2,3,4,6,7,8-HpCDF	**0.25**	**J I**	32	0.034	pg/L	0.01	**0.0025**	1613B
1,2,3,4,7,8-HxCDD	**0.66**	**J I**	32	0.052	pg/L	0.1	**0.066**	1613B
1,2,3,4,7,8-HxCDF	ND		32	0.12	pg/L	0.1	0.00	1613B
1,2,3,4,7,8,9-HpCDF	ND		32	0.050	pg/L	0.01	0.00	1613B
1,2,3,6,7,8-HxCDD	ND		32	0.053	pg/L	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	**0.41**	**J I B**	32	0.12	pg/L	0.1	**0.041**	1613B
1,2,3,7,8-PeCDD	ND		32	0.087	pg/L	1	0.00	1613B
1,2,3,7,8-PeCDF	**0.34**	**J I B**	32	0.062	pg/L	0.03	**0.010**	1613B
1,2,3,7,8,9-HxCDD	ND		32	0.052	pg/L	0.1	0.00	1613B
1,2,3,7,8,9-HxCDF	**0.42**	**J I B**	32	0.13	pg/L	0.1	**0.042**	1613B
2,3,4,6,7,8-HxCDF	ND		32	0.12	pg/L	0.1	0.00	1613B
2,3,4,7,8-PeCDF	ND		32	0.050	pg/L	0.3	0.00	1613B
2,3,7,8-TCDD	ND		5.1	0.10	pg/L	1	0.00	1613B
2,3,7,8-TCDF	ND		6.4	0.070	pg/L	0.1	0.00	1613B
OCDD	**14**	**J B**	140	0.086	pg/L	0.0003	**0.0042**	1613B
OCDF	**0.82**	**J I B**	64	0.078	pg/L	0.0003	**0.00025**	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
Total Toxic Dioxins and Furans					pg/L		0.18	TEQ

Client Sample ID: P968398-PH9398 1600848-BH2

Lab Sample ID: 410-67026-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
1,2,3,4,6,7,8-HpCDD	**1.8**	**J I B**	26	0.21	pg/L	0.01	**0.018**	1613B
1,2,3,4,6,7,8-HpCDF	**0.24**	**J I**	26	0.028	pg/L	0.01	**0.0024**	1613B
1,2,3,4,7,8-HxCDD	ND		26	0.046	pg/L	0.1	0.00	1613B
1,2,3,4,7,8-HxCDF	ND		26	0.12	pg/L	0.1	0.00	1613B
1,2,3,4,7,8,9-HpCDF	ND		26	0.037	pg/L	0.01	0.00	1613B
1,2,3,6,7,8-HxCDD	ND		26	0.041	pg/L	0.1	0.00	1613B
1,2,3,6,7,8-HxCDF	**0.27**	**J I B**	26	0.12	pg/L	0.1	**0.027**	1613B
1,2,3,7,8-PeCDD	ND		26	0.11	pg/L	1	0.00	1613B
1,2,3,7,8-PeCDF	**0.40**	**J I B**	26	0.050	pg/L	0.03	**0.012**	1613B
1,2,3,7,8,9-HxCDD	**0.38**	**J I**	26	0.043	pg/L	0.1	**0.038**	1613B
1,2,3,7,8,9-HxCDF	**0.54**	**J I B**	26	0.14	pg/L	0.1	**0.054**	1613B
2,3,4,6,7,8-HxCDF	ND		26	0.11	pg/L	0.1	0.00	1613B

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Toxicity Summary

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600848-BH2 (Continued)

Lab Sample ID: 410-67026-4

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
2,3,4,7,8-PeCDF	**0.37**	**J I B**	26	0.042	pg/L	0.3	**0.11**	1613B
2,3,7,8-TCDD	ND		4.2	0.086	pg/L	1	0.00	1613B
2,3,7,8-TCDF	ND		5.3	0.055	pg/L	0.1	0.00	1613B
OCDD	**1.4**	**J I B**	120	0.090	pg/L	0.0003	**0.00042**	1613B
OCDF	ND		53	0.082	pg/L	0.0003	0.00	1613B

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	WHO 2005 ND = 0 TEQ	Method
Total Toxic Dioxins and Furans					pg/L		0.26	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Lab Sample ID: MB 410-206460/1-A
Matrix: Water
Analysis Batch: 206661

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 206460

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	2.21	J I	25	0.29	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,4,6,7,8-HpCDF	ND		25	0.028	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,4,7,8-HxCDD	ND		25	0.047	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,4,7,8-HxCDF	0.713	J I	25	0.071	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,4,7,8,9-HpCDF	0.526	J	25	0.040	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,6,7,8-HxCDD	0.388	J I	25	0.044	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,6,7,8-HxCDF	0.267	J I	25	0.073	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,7,8-PeCDD	0.495	J I	25	0.076	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,7,8-PeCDF	0.763	J I	25	0.071	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,7,8,9-HxCDD	ND		25	0.049	pg/L		12/16/21 15:00	12/17/21 14:11	1
1,2,3,7,8,9-HxCDF	0.907	J	25	0.090	pg/L		12/16/21 15:00	12/17/21 14:11	1
2,3,4,6,7,8-HxCDF	0.647	J I	25	0.079	pg/L		12/16/21 15:00	12/17/21 14:11	1
2,3,4,7,8-PeCDF	0.426	J I	25	0.065	pg/L		12/16/21 15:00	12/17/21 14:11	1
2,3,7,8-TCDD	ND		4.0	0.13	pg/L		12/16/21 15:00	12/17/21 14:11	1
2,3,7,8-TCDF	0.138	J I	5.0	0.059	pg/L		12/16/21 15:00	12/17/21 14:11	1
OCDD	1.54	J I	110	0.076	pg/L		12/16/21 15:00	12/17/21 14:11	1
OCDF	0.984	J I	50	0.063	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total HpCDD	2.21	J I	25	0.29	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total HpCDF	0.526	J	25	0.034	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total HxCDD	1.35	J I	25	0.047	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total HxCDF	2.91	J I	25	0.078	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total PeCDD	0.495	J I	25	0.076	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total PeCDF	1.60	J I	25	0.068	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total TCDD	0.923	J I	5.0	0.13	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total TCDF	0.733	J I	5.0	0.059	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total PCDD	6.52	I	5.0	0.12	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total PCDF	6.75	I	5.0	0.060	pg/L		12/16/21 15:00	12/17/21 14:11	1
Total PCDD/PCDF	ND		5.0	0.092	pg/L		12/16/21 15:00	12/17/21 14:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*66*		*28 - 143*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,6,7,8-HxCDF	*70*		*26 - 123*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,7,8-PeCDD	*53*		*25 - 181*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,7,8,9-HxCDD	*59*		*28 - 130*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-2,3,4,6,7,8-HxCDF	*56*		*28 - 136*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-2,3,7,8-TCDF	*55*		*24 - 169*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-OCDD	*67*		*17 - 157*	*12/16/21 15:00*	*12/17/21 14:11*	*1*
13C-OCDF	*60*		*17 - 157*	*12/16/21 15:00*	*12/17/21 14:11*	*1*

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters) (Continued)

Lab Sample ID: LCS 410-206460/2-A
Matrix: Water
Analysis Batch: 206661

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 206460

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3,4,6,7,8-HpCDD			1000	987		pg/L		99	70 - 140		
1,2,3,4,6,7,8-HpCDF			1000	951		pg/L		95	82 - 122		
1,2,3,4,7,8-HxCDD			1000	1000		pg/L		100	70 - 164		
1,2,3,4,7,8-HxCDF			1000	944		pg/L		94	72 - 134		
1,2,3,4,7,8,9-HpCDF			1000	989		pg/L		99	78 - 138		
1,2,3,6,7,8-HxCDD			1000	955		pg/L		96	76 - 134		
1,2,3,6,7,8-HxCDF			1000	954		pg/L		95	84 - 130		
1,2,3,7,8-PeCDD			1000	1080		pg/L		108	70 - 142		
1,2,3,7,8-PeCDF			1000	1050		pg/L		105	80 - 134		
1,2,3,7,8,9-HxCDD			1000	963		pg/L		96	64 - 162		
1,2,3,7,8,9-HxCDF			1000	975		pg/L		97	78 - 130		
2,3,4,6,7,8-HxCDF			1000	956		pg/L		96	70 - 156		
2,3,4,7,8-PeCDF			1000	1030		pg/L		103	68 - 160		
2,3,7,8-TCDD			200	176		pg/L		88	67 - 158		
2,3,7,8-TCDF			200	203		pg/L		101	75 - 158		
OCDD			2000	1950		pg/L		98	78 - 144		
OCDF			2000	1990		pg/L		99	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*70*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*69*		*21 - 158*
13C-1,2,3,4,7,8-HxCDD	*69*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*78*		*19 - 202*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*20 - 186*
13C-1,2,3,6,7,8-HxCDD	*73*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*81*		*21 - 159*
13C-1,2,3,7,8-PeCDD	*64*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*83*		*21 - 192*
13C-1,2,3,7,8,9-HxCDD	*73*		*25 - 163*
13C-1,2,3,7,8,9-HxCDF	*67*		*17 - 205*
13C-2,3,4,6,7,8-HxCDF	*74*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*71*		*13 - 328*
13C-2,3,7,8-TCDD	*71*		*20 - 175*
13C-2,3,7,8-TCDF	*72*		*22 - 152*
13C-OCDD	*76*		*13 - 199*
13C-OCDF	*67*		*13 - 199*

QC Association Summary

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Specialty Organics

Prep Batch: 206460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-67026-1	P968398-PH9398 1600846-tw2	Total/NA	Water	1613B	
410-67026-2	P968398-PH9398 1600847-tw3	Total/NA	Water	1613B	
410-67026-3	P968398-PH9398 1600848-BH1	Total/NA	Water	1613B	
410-67026-4	P968398-PH9398 1600848-BH2	Total/NA	Water	1613B	
MB 410-206460/1-A	Method Blank	Total/NA	Water	1613B	
LCS 410-206460/2-A	Lab Control Sample	Total/NA	Water	1613B	

Analysis Batch: 206661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-67026-1	P968398-PH9398 1600846-tw2	Total/NA	Water	1613B	206460
410-67026-2	P968398-PH9398 1600847-tw3	Total/NA	Water	1613B	206460
410-67026-3	P968398-PH9398 1600848-BH1	Total/NA	Water	1613B	206460
410-67026-4	P968398-PH9398 1600848-BH2	Total/NA	Water	1613B	206460
MB 410-206460/1-A	Method Blank	Total/NA	Water	1613B	206460
LCS 410-206460/2-A	Lab Control Sample	Total/NA	Water	1613B	206460

Lab Chronicle

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Client Sample ID: P968398-PH9398 1600846-tw2

Lab Sample ID: 410-67026-1

Date Collected: 12/08/21 00:00
Matrix: Water
Date Received: 12/15/21 09:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			206460	12/16/21 15:00	CPV9	ELLE
Total/NA	Analysis	1613B		1	206661	12/17/21 14:59	UA2A	ELLE

Client Sample ID: P968398-PH9398 1600847-tw3

Lab Sample ID: 410-67026-2

Date Collected: 12/08/21 00:00
Matrix: Water
Date Received: 12/15/21 09:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			206460	12/16/21 15:00	CPV9	ELLE
Total/NA	Analysis	1613B		1	206661	12/17/21 15:51	UA2A	ELLE

Client Sample ID: P968398-PH9398 1600848-BH1

Lab Sample ID: 410-67026-3

Date Collected: 12/08/21 00:00
Matrix: Water
Date Received: 12/15/21 09:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			206460	12/16/21 15:00	CPV9	ELLE
Total/NA	Analysis	1613B		1	206661	12/17/21 16:40	UA2A	ELLE

Client Sample ID: P968398-PH9398 1600848-BH2

Lab Sample ID: 410-67026-4

Date Collected: 12/08/21 00:00
Matrix: Water
Date Received: 12/15/21 09:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			206460	12/16/21 15:00	CPV9	ELLE
Total/NA	Analysis	1613B		1	206661	12/17/21 17:29	UA2A	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Isotope Dilution Summary

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HxCDD (32-141)	HxCDF (26-152)	HpCDF2 (26-138)	HxDD (28-130)	HxDF (26-123)	PeCDD (25-181)
410-67026-1	P968398-PH9398 1600846-tw2	68	64	70	71	57	71	72	59
410-67026-2	P968398-PH9398 1600847-tw3	68	67	70	68	61	74	72	60
410-67026-3	P968398-PH9398 1600848-BH1	58	56	60	60	51	64	61	51
410-67026-4	P968398-PH9398 1600848-BH2	52	50	54	54	48	57	54	45
MB 410-206460/1-A	Method Blank	62	66	65	67	59	68	70	53

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (24-185)	13CHxCD (28-130)	HxCF (29-147)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
410-67026-1	P968398-PH9398 1600846-tw2	64	71	63	68	63	67	64	69
410-67026-2	P968398-PH9398 1600847-tw3	62	70	63	68	62	64	59	75
410-67026-3	P968398-PH9398 1600848-BH1	53	61	55	59	54	54	52	59
410-67026-4	P968398-PH9398 1600848-BH2	52	53	49	51	49	50	51	60
MB 410-206460/1-A	Method Blank	62	59	57	56	54	56	55	67

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OCDF (17-157)
410-67026-1	P968398-PH9398 1600846-tw2	59
410-67026-2	P968398-PH9398 1600847-tw3	64
410-67026-3	P968398-PH9398 1600848-BH1	52
410-67026-4	P968398-PH9398 1600848-BH2	52
MB 410-206460/1-A	Method Blank	60

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCD = 13C-1,2,3,7,8,9-HxCDD
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD
OCDF = 13C-OCDF

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HxCDD (21-193)	HxCDF (19-202)	HpCDF2 (20-186)	HxDD (25-163)	HxDF (21-159)	PeCDD (21-227)
LCS 410-206460/2-A	Lab Control Sample	70	69	69	78	63	73	81	64

Isotope Dilution Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-67026-1
Project/Site: P968398-PH9398

Method: 1613B - 2,3,7,8-TCDD Only (Drinking Waters) (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (21-192)	13CHxCD (25-163)	HxCF (17-205)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 410-206460/2-A	Lab Control Sample	83	73	67	74	71	71	72	76

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OCDF (13-199)
LCS 410-206460/2-A	Lab Control Sample	67

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCD = 13C-1,2,3,7,8,9-HxCDD
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD
OCDF = 13C-OCDF

Accreditation/Certification Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-67026-1
Project/Site: P968398-PH9398

Laboratory: Eurofins Lancaster Laboratories Env, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	1.01	11-30-22
A2LA	ISO/IEC 17025	0001.01	11-30-22
Alaska	State	PA00009	06-30-22
Alaska (UST)	State	17-027	02-28-22
Arizona	State	AZ0780	03-12-22
Arkansas DEQ	State	88-0660	08-10-22
California	State	2792	02-02-22
Colorado	State	PA00009	06-30-22
Connecticut	State	PH-0746	06-30-23
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-22
Delaware (DW)	State	N/A	02-01-22
Florida	NELAP	E87997	06-30-22
Georgia (DW)	State	C048	01-31-22
Hawaii	State	N/A	01-31-22
Illinois	NELAP	200027	01-31-23
Iowa	State	361	03-02-22
Kansas	NELAP	E-10151	10-31-22
Kentucky (DW)	State	KY90088	01-01-22
Kentucky (UST)	State	1.01	11-30-22
Kentucky (WW)	State	KY90088	12-31-21
Louisiana	NELAP	02055	06-30-22
Maine	State	2019012	03-12-22
Maryland	State	100	06-30-22
Massachusetts	State	M-PA009	06-30-22
Michigan	State	9930	01-31-22
Minnesota	NELAP	042-999-487	12-31-22
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-22
Nebraska	State	NE-OS-32-17	01-31-22
New Hampshire	NELAP	2730	01-10-22
New Jersey	NELAP	PA011	06-30-22
New York	NELAP	10670	04-01-22
North Carolina (DW)	State	42705	07-31-22
North Carolina (WW/SW)	State	521	12-31-21
North Dakota	State	R-205	01-31-22
Oklahoma	NELAP	R-205	08-31-22
Oregon	NELAP	PA200001	09-11-22
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-22
Rhode Island	State	LAO00338	01-31-22
South Carolina	State	89002002	01-31-22
Tennessee	State	02838	01-31-22
Texas	NELAP	T104704194-21-40	08-31-22
Utah	NELAP	PA000092019-16	03-01-22
Vermont	State	VT - 36037	10-28-22
Virginia	NELAP	460182	06-14-22
Washington	State	C457	04-12-22
West Virginia (DW)	State	9906 C	12-31-21
West Virginia DEP	State	055	12-31-21
Wyoming	State	8TMS-L	01-31-22

Accreditation/Certification Summary

Client: Eurofins Environment Testing Canada
Job ID: 410-67026-1
Project/Site: P968398-PH9398

Laboratory: Eurofins Lancaster Laboratories Env, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wyoming (UST)	A2LA	1.01	11-30-22

eurofins 216339

STANDARD CHAIN-OF-CUSTODY

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

410-67026 Chain of Custody

CLIENT INFORMATION

Company: Eurofins Ottawa

Contact:

Address:

Telephone: Cell:

Email: #1:

Email: #2:

Project: 1968398 - PH4398 Quote #:

INVOICE INFORMATION (SAME AS CLIENT

Company: Fax:

Contact: Email: #1:

Address: Email: #2:

Telephone: PO #:

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☐ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City:_____

☐ Storm Sewer, City:_____

☐ ODWSOG (Use DW CoC if analyzing drinking water)

☐ PWQO

☐ O.Reg 347

☐ Other:_____

☐ O. Reg 153

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04. Analysis of full paramter list only Yes ☐ No ☐

Table # ____, Coarse / Fine, Surface / subsurface

Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment

☐ O. Reg 406 Excess Soils

Table # _____Full depth/Strat/Ceiling/mSPLP Leachate

Type: Com-Ind /Res-Park /Agri/All Other

Category: Surface /Subsurface

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	O.Reg.153 parameters: PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganic	Metals only	Dioxins & Furans	RN# (Lab Use Only)
1600846 - TW2	08/12/2021	W	2								/	
1600847 - TW3											/	
1600848 - BH1											/	
1600849 - BH2											/	

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By:				
Relinquished By: Renata Secades		13/12/2021	10°	
Received By: Leah Foreman		12/15/21 0937		CUSTODY SEAL: ☐ YES ☐ NO Ice packs submit ☐ Yes ☐ No

401 Magnetic Drive, Unit #1, North York, ON, M3J 3H9 - Telephone: 416-661-5287 • 380 Vansickle Road, Unit #630, St. Catharines, ON, L2R 0B5 - Telephone: 905-680-8887 • 608 Norris Court, Kingston, ON, K7P 2R9 - Telephone: 613-634-9307

Login Sample Receipt Checklist

Client: Eurofins Environment Testing Canada

Job Number: 410-67026-1

Login Number: 67026

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Dawodu, Habibah

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	No ice present, no attempt to chill
Cooler Temperature is acceptable (</=6C, not frozen).	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	No time on COC or sample containers.
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	

Client: Eurofins Environment Testing Canada
Project/Site: P968398-PH9398

Job ID: 410-67026-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Appendix 4

- **Pumping Test Field Data Sheets**
- **Aquifer Analysis Data For Test Wells**
- **Determination of Potential Well Interference**
- **Predictive Impact Assessment for Nitrates**
- **Langlier and Ryzner Index Calculations**

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Well Tag = A187038

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PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	July 9th	Test Well No:	TW 1
Client:	Cortage Developments	Field Supervisor:	AYO
Project No.:	112723	Page:	1 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:	11.17m	Pump Rate:	25 l/min	Logger Serial No.:	93092
Stick-up:	0.49m	Depth of Pump:	70ft	Logger Depth:	15m

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
8:05a	0	11.17						
	1	11.26						
	2	11.29						
	3	11.33						
	4	11.35						
	5	11.36						
	6	11.38						
	7	11.39						
	8	11.40						
	9	11.41						• Tested for Chlorine & no Chlorine was present on the well
8:15	10	11.42						
8:20	15	11.49						
8:25	20	11.52						
8:30	25	11.53						
8:35 8:40	30	~~11.58~~						
8:45 8:50	40	11.58						
8:55 9:00	50	11.58						
9:05 9:10	60	11.58						
9:20 9:25	75	11.58						TW3 Static = 6.48m
9:35 9:40	90	11.58						TW2 Static = 9.40m
9:05 9:50 10:05 10:10	120	11.58						
10:35 10:40	150	11.62						
10:45 11:05 11:10	180	11.64	0.62	9.4°C	8.15	803	549	
11:35 11:40	210	11.64		~~8.6°C~~				
12:05 12:10	240	11.65	0.51	8.6°C	8.08	817	542	
12:35 13:40	270	11.65						TW 3 Static = 6.48 m
13:05 14:10	300	11.66	0.51	10.3°C	8.07	812	674	TW 2 Static = 9.40 m
13:35	330	11.68						
14:05	360	11.70	0.47	10.5°C	7.98	818	522	

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PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	July 9, 2015	Test Well No:	TW1
Client:	~~PH2725~~	Field Supervisor:	
Project No.:	PH1723 Carlaw dev.	Page:	2 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:		Pump Rate:		Logger Serial No.:	
Stick-up:		Depth of Pump:		Logger Depth:	

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
	0	11:10						
	1	11:56						
	2							
	3							
	4							
	5	11:40						
	6							
	7							
	8	11:42						
	9	+						
	10	11:40						
	15	11:34						
	20	11:29						
	25							
	30							
	40							
	50							
	60							
	75							
	90							
	120							
	150							
	180							
	210							
	240							
	270							
	300							
	330							
	360							

0.53 DD
0.41 Rec.

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well tag A197029

PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	13 July, 2015	Test Well No:	TW2
Client:	Calgary Dev.	Field Supervisor:	AJ°
Project No.:	PH	Page:	1 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:	9.23	Pump Rate:	25 gpm	Logger Serial No.:	SN 51744
Stick-up:	0.53	Depth of Pump:		Logger Depth:	

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
7:57	0	9.23						
	1	9.28						
	2	9.34						
	3	9.35						
	4	9.38						
	5	9.40						
	6	9.45						
	7	9.46						
	8	9.47						Tested for Chlorine, no Chlorine was present in the well.
	9	9.48						
8:07	10	9.49						
8.12	15	9.52						
8:17	20	9.55						
8:22	25	9.58						
8:27	30	9.58						
8:37	40	9.60						
8:47	50	9.62						
8:57	60	9.64						
9:12	75	9.64						
9:27	90	9.64						
9:57	120	9.64						Tw1 Static = 9.64
10:27	150	9.64	0.54	8.2	8.15	677	489	Tw3 Static = 6.46
10:57	180	9.64						
11:27	210	9.64	0.76	8.5°C	8.09	716	426	
11:57	240	9.66						
12:27	270	9.66	0.52	9.2°C	7.98	782	501	Tw1 Static = 11.63
12:57	300	9.70						Tw3 Static = 6.46
1:27	330	9.65	0.52	8.1°C	8.02	703	560	
1:57	360	9.67						

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PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	July 13, 2015	Test Well No:	TW 2
Client:	Caldate dev.	Field Supervisor:	Ayo
Project No.:	- PG7723	Page:	2 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:	9.23	Pump Rate:	25 gpm	Logger Serial No.:	
Stick-up:	0.53	Depth of Pump:		Logger Depth:	15m

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
	0	9.67						
	1	9.63						
	2	9.58						
	3	9.54						
	4	9.51						
	5	9.48						
	6	9.46						
	7	9.43						
	8	9.42						
	9							
	10	9.40						
	15	9.36						
	20	9.30						
	25							
	30							
	40							
	50							
	60							
	75							
	90							
	120							
	150							
	180							
	210							
	240							
	270							
	300							
	330							
	360							

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well key A187040 ~~A187039~~

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PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	10, July 2015	Test Well No:	TW3
Client:	Canyon dental	Field Supervisor:	Ayo
Project No.:	PH2723	Page:	1 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:	6.07	Pump Rate:	25 ~~GPM~~	Logger Serial No.:	~~15m~~ S1040
Stick-up:	0.40	Depth of Pump:	67ft 18.24m	Logger Depth:	15m

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
8:55 8:10	0	6.07						
	1							
	2							
	3	6.40						
	4	6.44						
	5	6.46						
	6	6.47						
	7	6.50						
	8	6.51						
	9	6.52						
9:05	10	6.54						* Tested for Chloride, no Chloride was present in the well.
9:10	15	6.59						
9:15	20	6.54						
9:20	25	6.58						
9:25	30	6.59						
9:35	40	6.72						
9:45	50	6.74						
9:55	60	6.76						
10:10	75	6.81						
10:25	90	6.81						
10:55	120	6.84						TW1 Static : 11.69m
11:25	150	6.82	0.90	8.5°C	8.05	905	618	TW3 Static = 9.60m
11:55	180	6.82						
12:25	210	6.83	0.65	9.1°C	7.98	872	642	
12:55	240	6.83						TW1 Static = 11.64
1:25	270	6.83	0.44	9.2°C	8.08	870	580	TW3 Static = 9.57
1:55	300	6.82						
2:25	330	6.84	0.51	8.8°C	7.90	897	610	
2:55	360	6.83						

12 ~~50~~ / 15 = ~~60~~ 0

10 = 1005 / 15 = 2

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PUMP TEST AND DRAWDOWN / RECOVERY MEASUREMENT DATA

Date:	July 10 2015	Test Well No:	TW3
Client:	Carpgate	Field Supervisor:	Ayo Dun
Project No.:	PH2723	Page:	2 of 2

Water Level Data		Discharge Data		Logger Data	
Static Level:	6.07	Pump Rate:	N/A	Logger Serial No.:	
Stick-up:	0.40	Depth of Pump:	18.24m	Logger Depth:	15m

Drawdown Data			Field Measurements					
Clock Time	Time (Min.)	Drawdown (m)	Turbidity (NTU)	Temp (°C)	pH	Conductivity (us)	TDS (mg/L)	Comments
	0	6.84						
	1	6.40						
	2	6.35						
	3	6.35						
	4	6.35						
	5	6.34						
	6	6.33						
	7							
	8	6.29						
	9	6.28						
	10	6.27						
	15	6.22						
	20	6.18						
	25							
	30							
	40							
	50							
	60							
	75							
	90							
	120							
	150							
	180							
	210							
	240							
	270							
	300							
	330							
	360							

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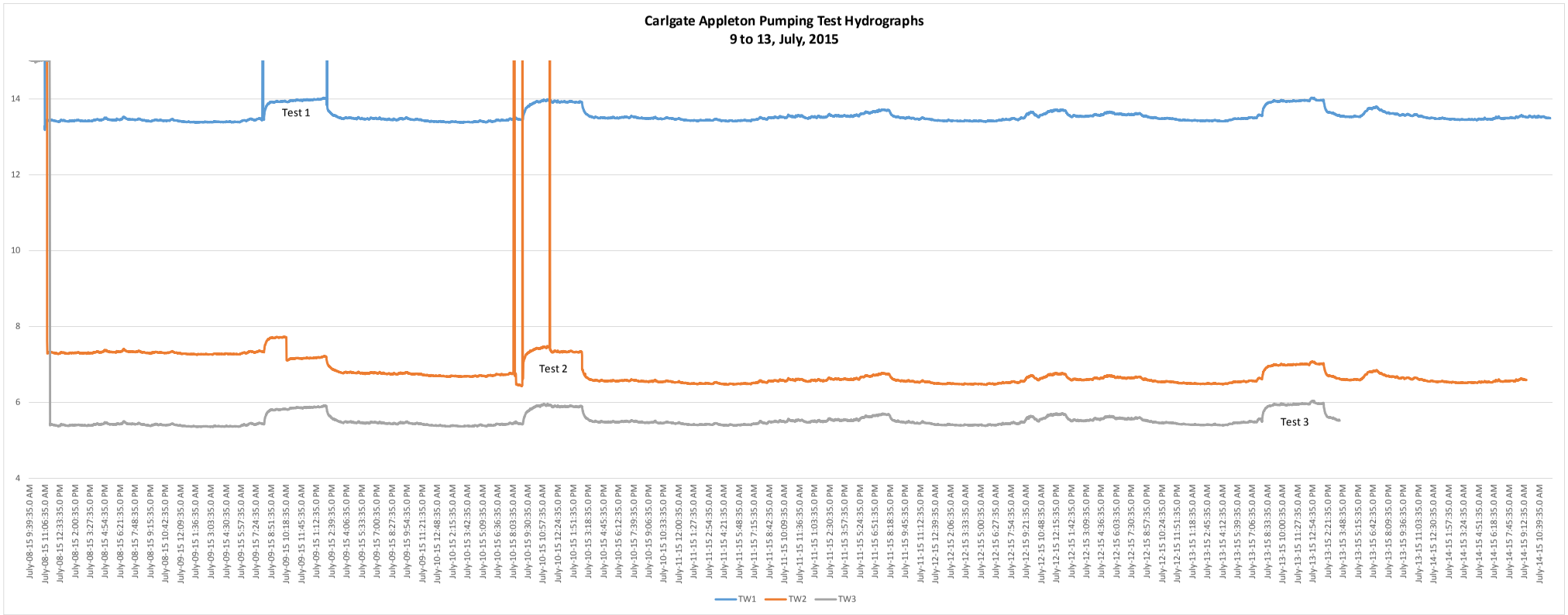
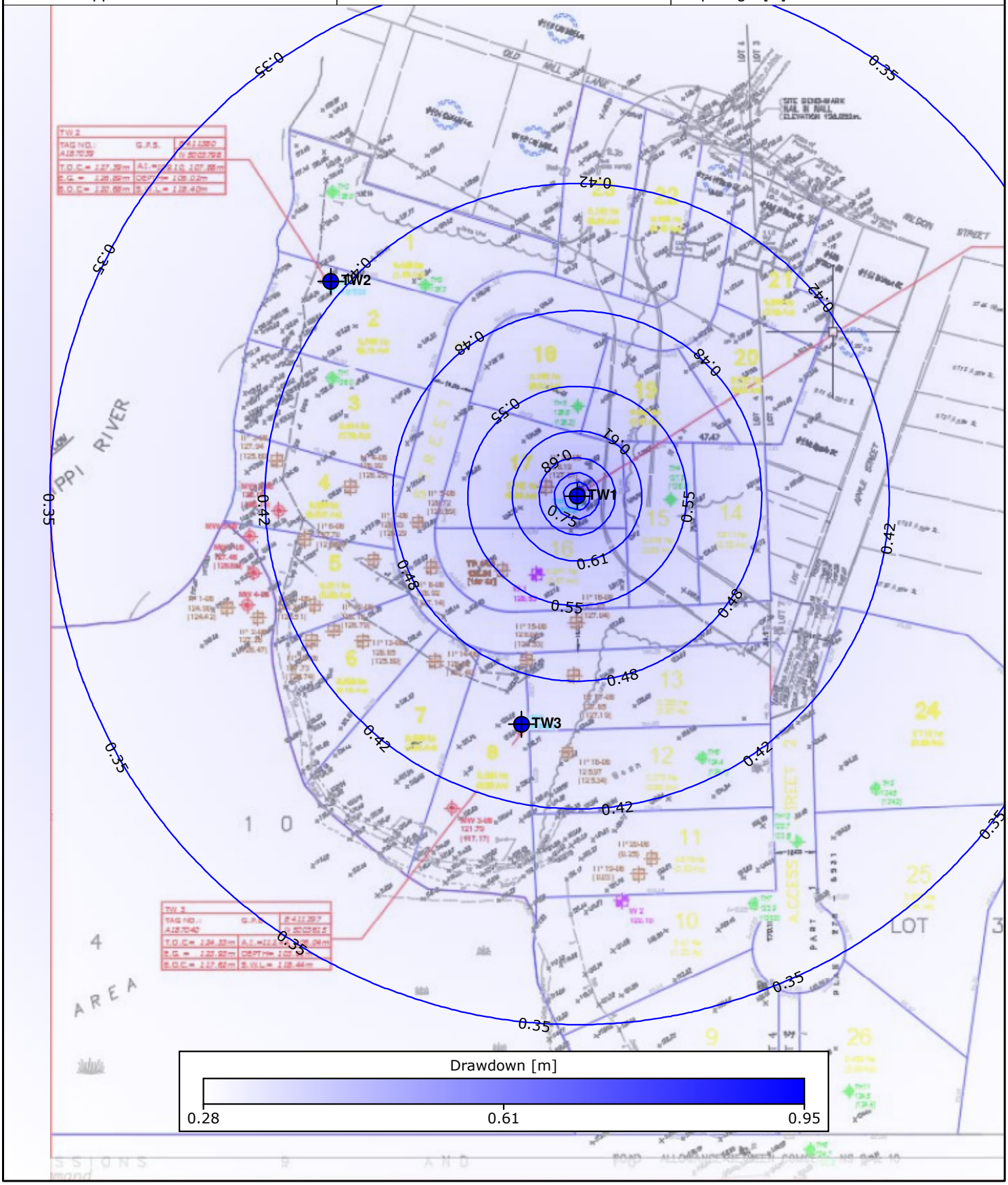

Carlgate Appleton Pumping Test Hydrographs
9 to 13, July, 2015
Test 1
Test 2
Test 3
14
12
10
8
6
4
TW1
TW2
TW3

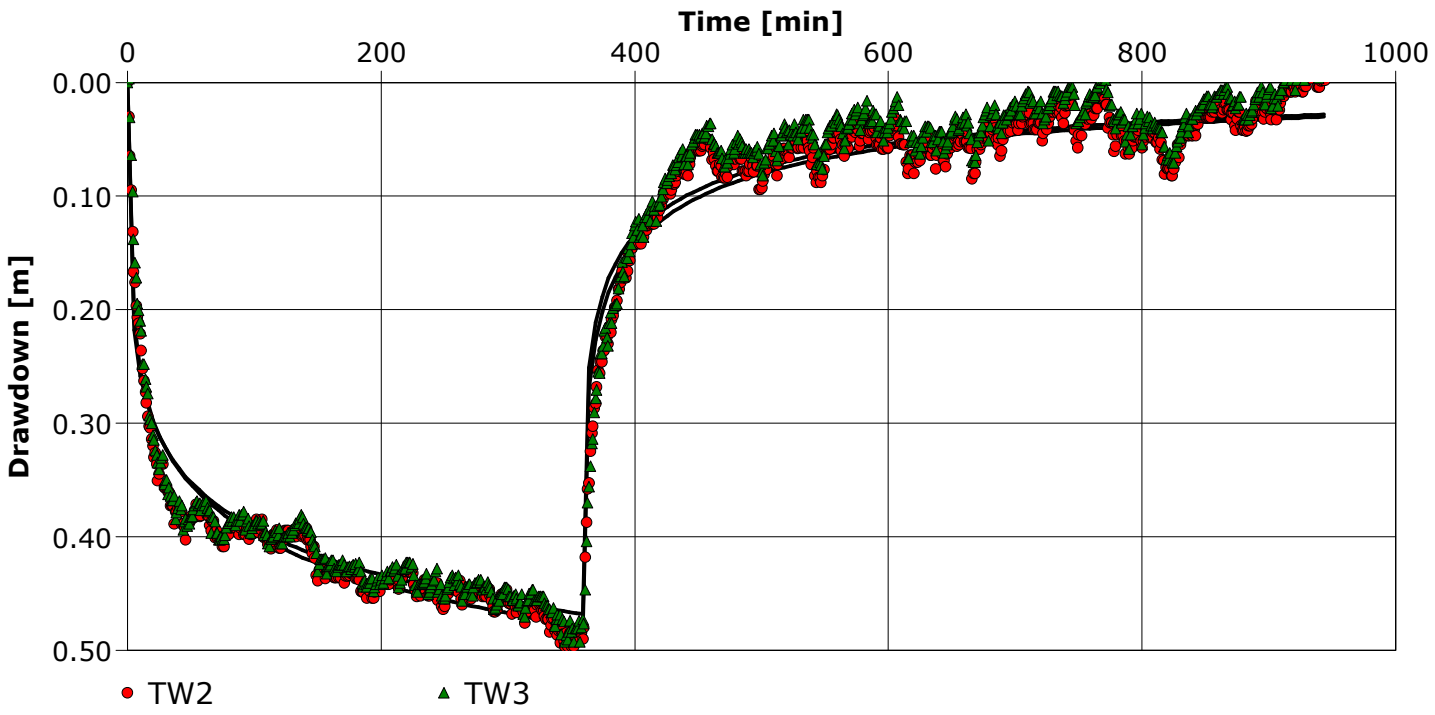
Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	Site Plan
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Scale 1:2200	Map Origin [m] X: -20 Y: 0



Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 1	Pumping Well: TW1
Test Conducted by: AO		Test Date: 09/07/2015
Analysis Performed by:	Theis	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

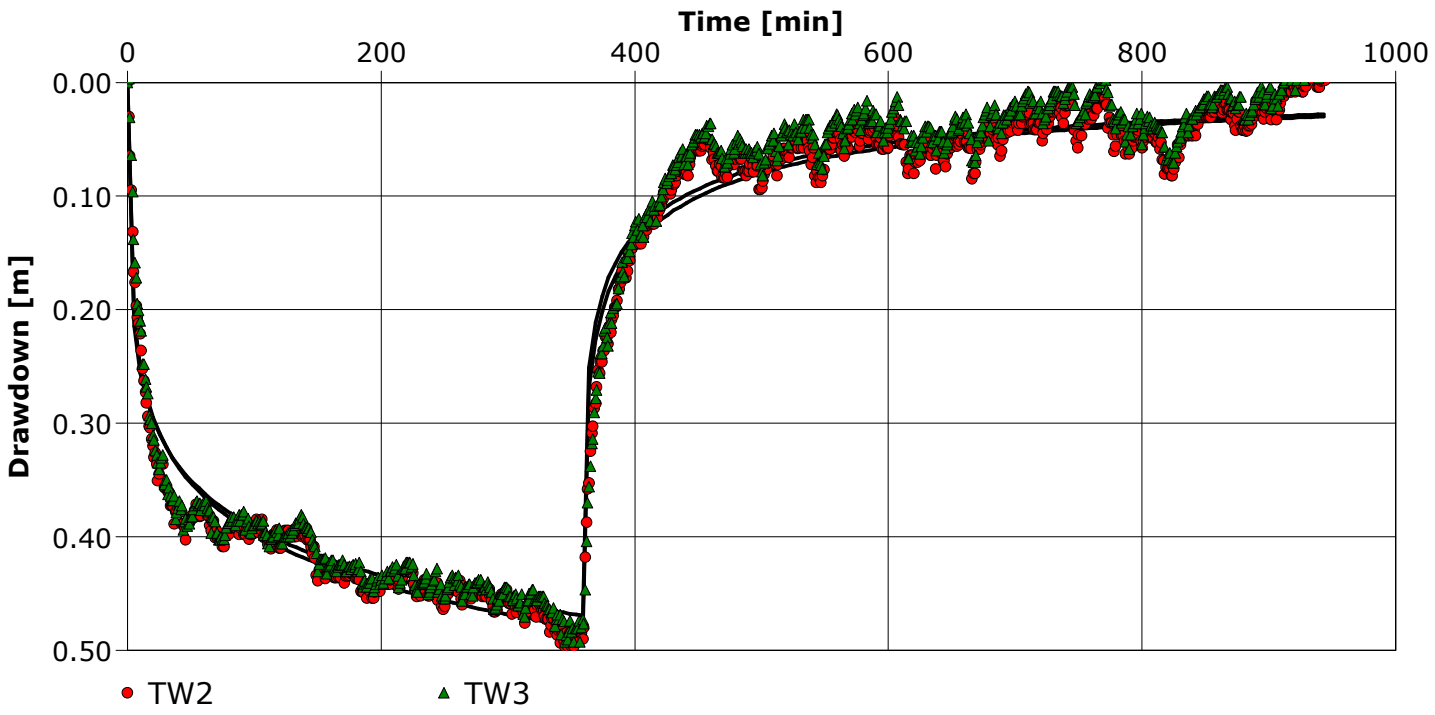


Calculation using Theis

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW2	2.05×10^{2}	1.71×10^{1}	3.05×10^{-6}	140.36	
TW3	2.20×10^{2}	1.83×10^{1}	4.39×10^{-6}	100.9	
Average	2.12×10^{2}	1.77×10^{1}	3.72×10^{-6}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 1	Pumping Well: TW1
Test Conducted by: AO		Test Date: 09/07/2015
Analysis Performed by:	Theis Jacob	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

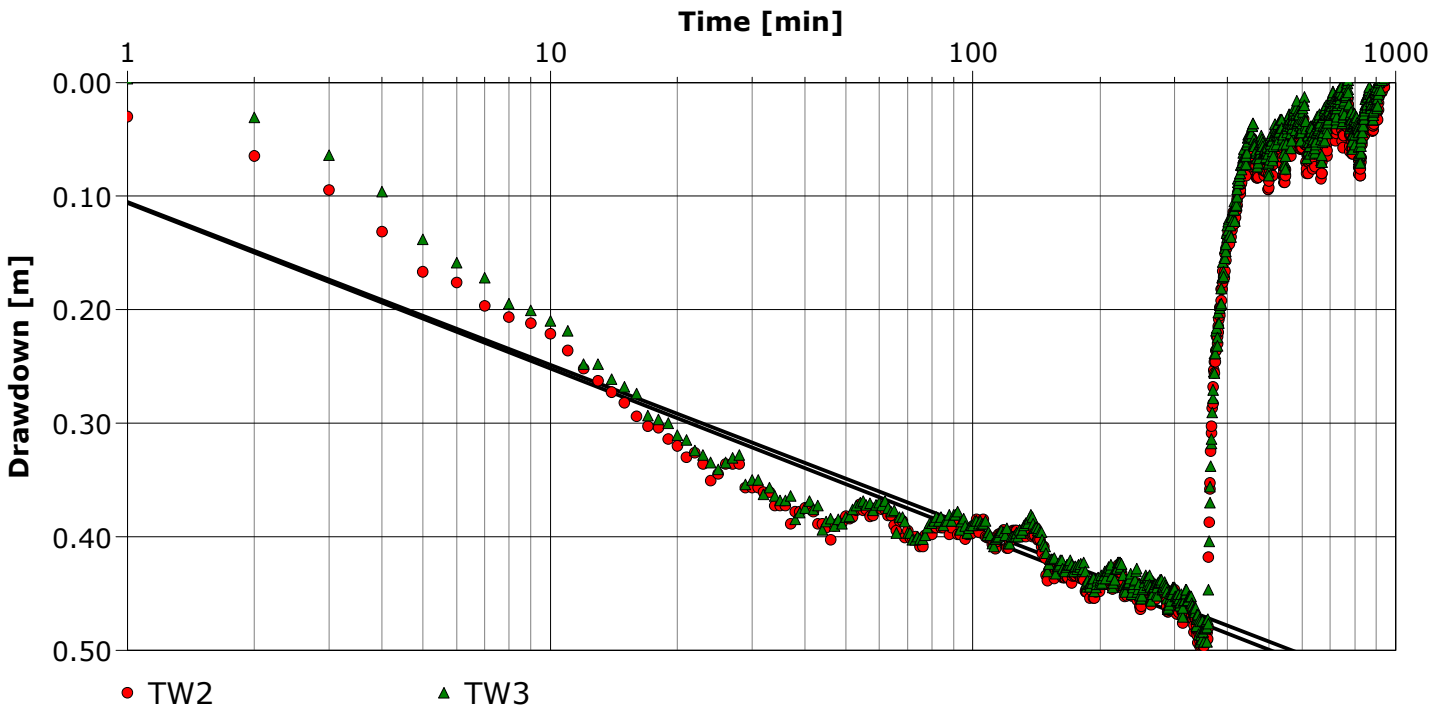


Calculation using Theis with Jacob Correction

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW2	2.08×10^{2}	1.73×10^{1}	3.20×10^{-6}	140.36	
TW3	2.22×10^{2}	1.85×10^{1}	4.64×10^{-6}	100.9	
Average	2.15×10^{2}	1.79×10^{1}	3.92×10^{-6}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 1	Pumping Well: TW1
Test Conducted by: AO		Test Date: 09/07/2015
Analysis Performed by:	Cooper Jacob I	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

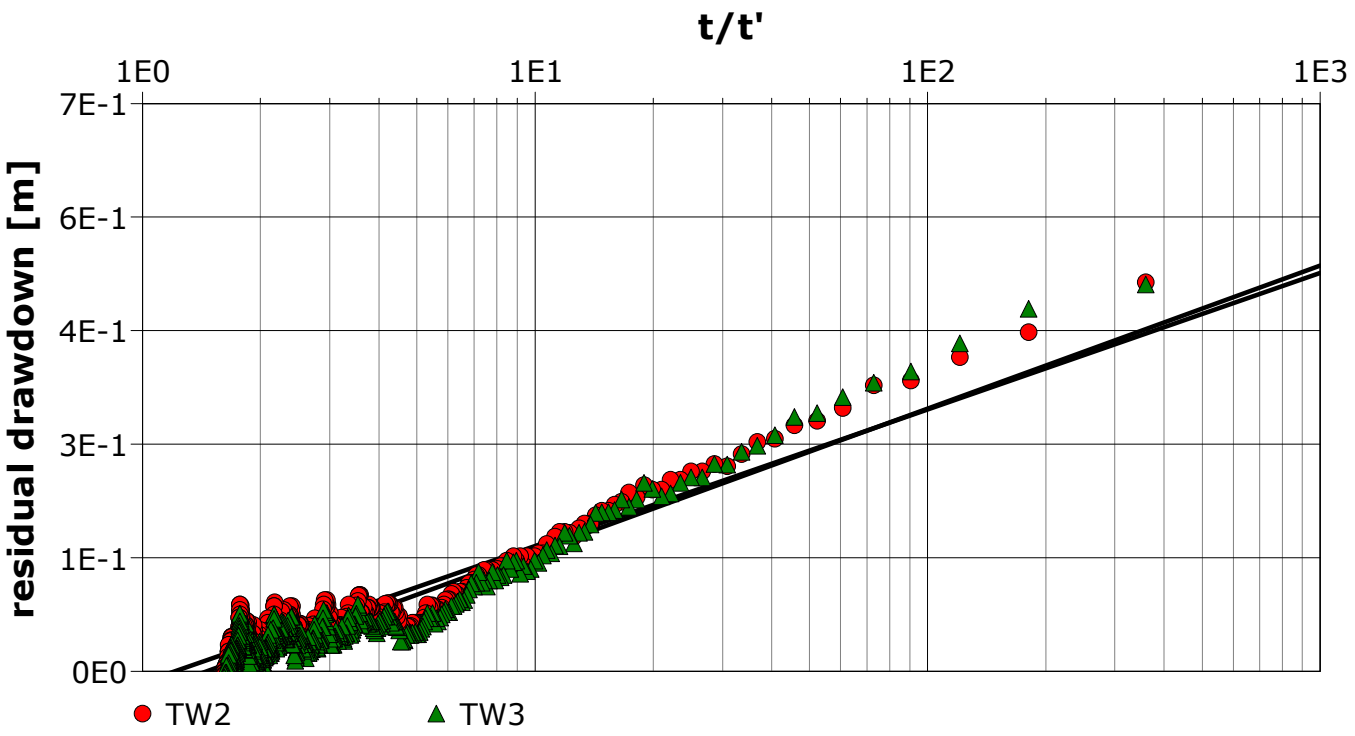


Calculation using COOPER & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW2	2.05×10^{2}	1.71×10^{1}	3.05×10^{-6}	140.36	
TW3	2.09×10^{2}	1.74×10^{1}	5.87×10^{-6}	100.9	
Average	2.07×10^{2}	1.72×10^{1}	4.46×10^{-6}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 1	Pumping Well: TW1
Test Conducted by: AO		Test Date: 09/07/2015
Analysis Performed by:	Theis Recovery	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial Distance to PW [m]	
TW2	1.77×10^{2}	1.48×10^{1}	140.36	
TW3	1.70×10^{2}	1.41×10^{1}	100.9	
Average	1.73×10^{2}	1.45×10^{1}		

Paterson Group
Consulting Engineers
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5

Pumping Test Analysis Report

Project: CARLGATE

Number: PH2723

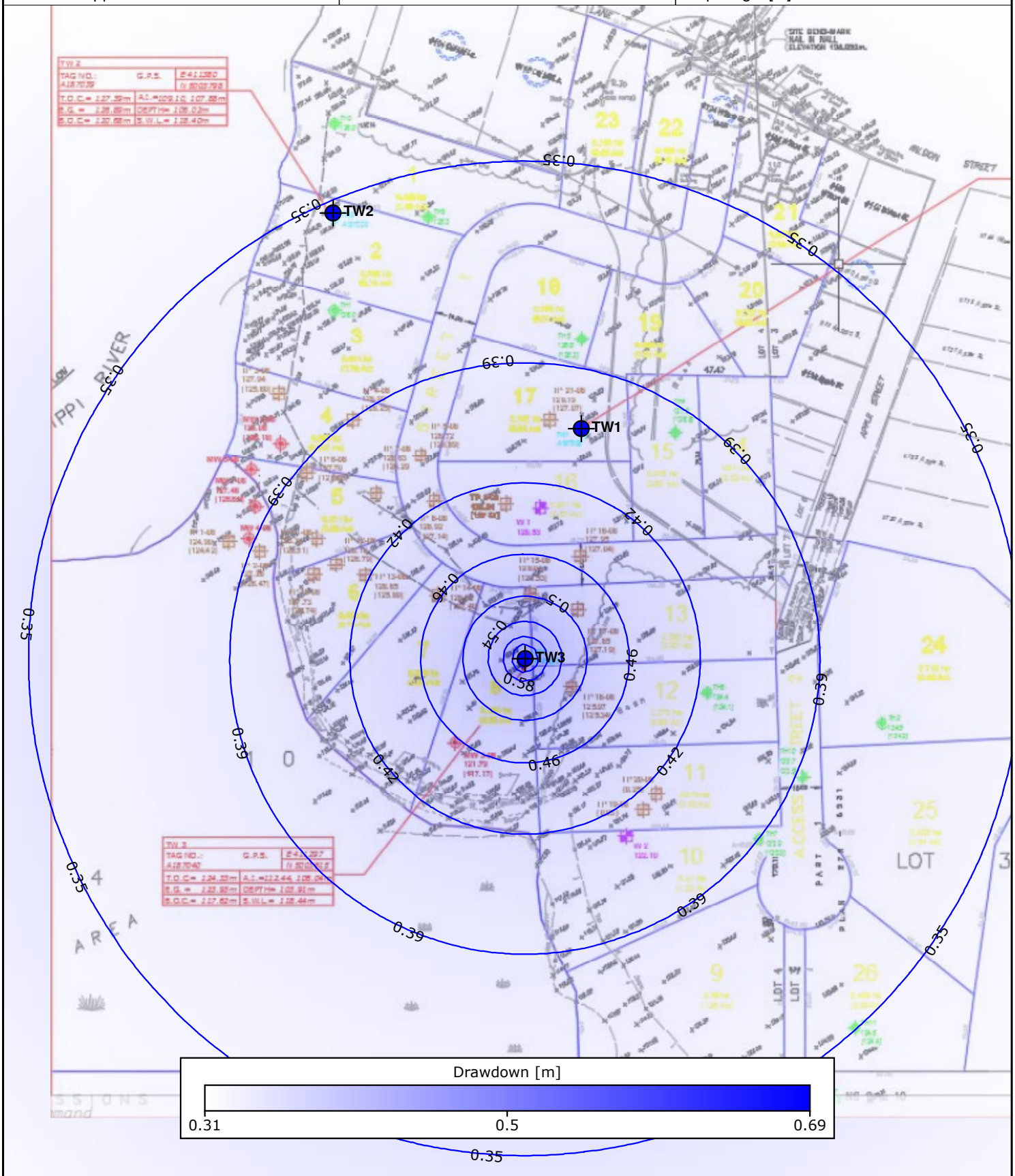
Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 1	Pumping Well: TW1
Test Conducted by: AO		Test Date: 09/07/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

	Analysis Name	Analysis Performed by	Analysis Date	Method name	Well	T [m²/d]	K [m/d]	S
1	Theis		30/10/2015	Theis	TW2	2.05×10^{2}	1.71×10^{1}	3.05×10^{-6}
2	Theis		30/10/2015	Theis	TW3	2.20×10^{2}	1.83×10^{1}	4.39×10^{-6}
3	Theis Jacob		30/10/2015	Theis with Jacob Corre	TW2	2.08×10^{2}	1.73×10^{1}	3.20×10^{-6}
4	Theis Jacob		30/10/2015	Theis with Jacob Corre	TW3	2.22×10^{2}	1.85×10^{1}	4.64×10^{-6}
5	Cooper Jacob I		30/10/2015	Cooper & Jacob I	TW2	2.05×10^{2}	1.71×10^{1}	3.05×10^{-6}
6	Cooper Jacob I		30/10/2015	Cooper & Jacob I	TW3	2.09×10^{2}	1.74×10^{1}	5.87×10^{-6}
7	Theis Recovery		30/10/2015	Theis Recovery	TW2	1.77×10^{2}	1.48×10^{1}	NAN
8	Theis Recovery		30/10/2015	Theis Recovery	TW3	1.70×10^{2}	1.41×10^{1}	NAN
					Average	2.02×10^{2}	1.68×10^{1}	NAN

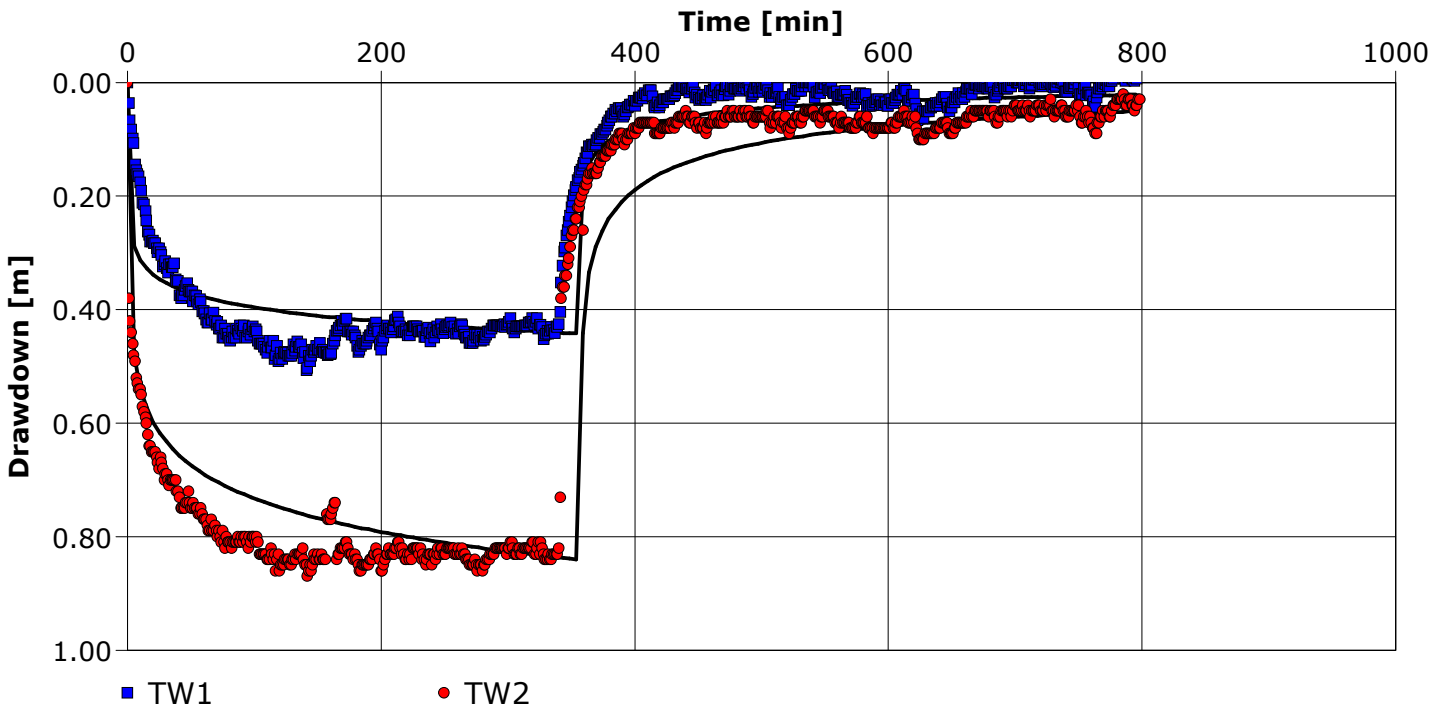
Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	Site Plan
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Scale 1:2200	Map Origin [m] X: -20 Y: -30



Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 2	Pumping Well: TW3
Test Conducted by: AO		Test Date: 10/07/2015
Analysis Performed by:	Theis	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

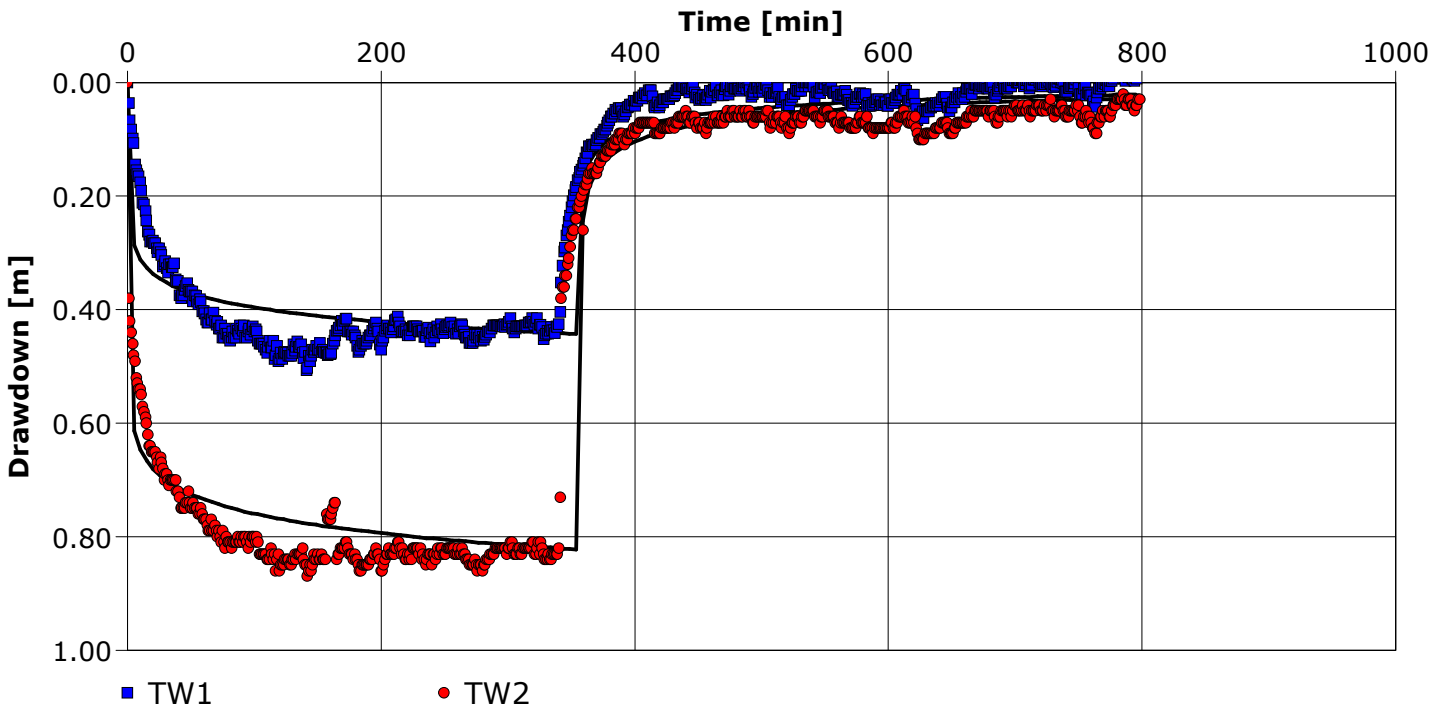


Calculation using Theis

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	3.58×10^{2}	2.98×10^{1}	1.00×10^{-7}	100.9	
TW2	1.53×10^{2}	1.27×10^{1}	1.00×10^{-7}	206.94	
Average	2.56×10^{2}	2.13×10^{1}	1.00×10^{-7}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 2	Pumping Well: TW3
Test Conducted by: AO		Test Date: 10/07/2015
Analysis Performed by:	Theis Jacob	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

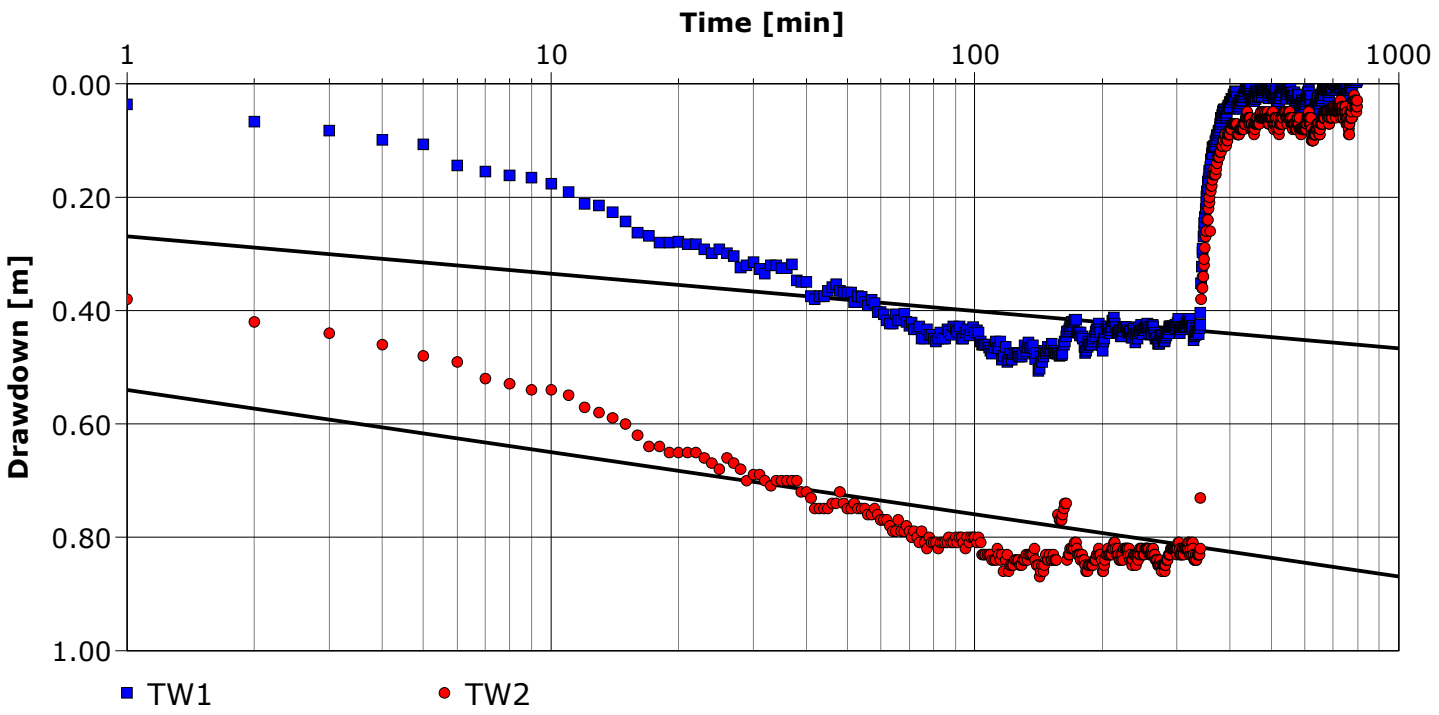


Calculation using Theis with Jacob Correction

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	3.65×10^{2}	3.04×10^{1}	1.00×10^{-7}	100.9	
TW2	2.80×10^{2}	2.33×10^{1}	1.37×10^{-10}	206.94	
Average	3.22×10^{2}	2.68×10^{1}	5.01×10^{-8}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 2	Pumping Well: TW3
Test Conducted by: AO		Test Date: 10/07/2015
Analysis Performed by:	Cooper Jacob I	Analysis Date: 16/11/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

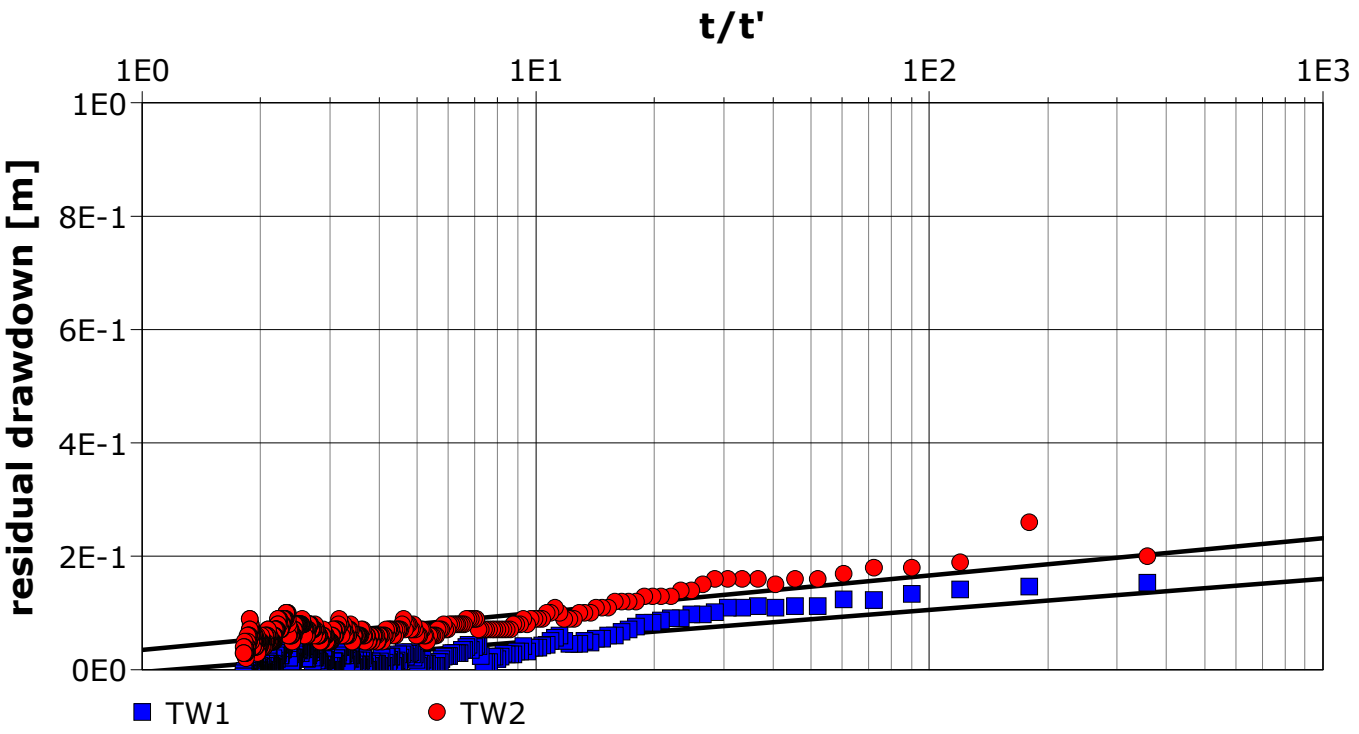


Calculation using COOPER & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	4.56×10^{2}	3.80×10^{1}	5.39×10^{-9}	100.9	
TW2	2.73×10^{2}	2.27×10^{1}	1.17×10^{-10}	206.94	
Average	3.65×10^{2}	3.04×10^{1}	2.75×10^{-9}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 2	Pumping Well: TW3
Test Conducted by: AO		Test Date: 10/07/2015
Analysis Performed by:	Theis RECOVERY	Analysis Date: 16/11/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial Distance to PW [m]	
TW1	5.45×10^{2}	4.54×10^{1}	100.9	
TW2	4.52×10^{2}	3.77×10^{1}	206.94	
Average	4.98×10^{2}	4.15×10^{1}		

Paterson Group
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Pumping Test Analysis Report

Project: CARLGATE

Number: PH2723

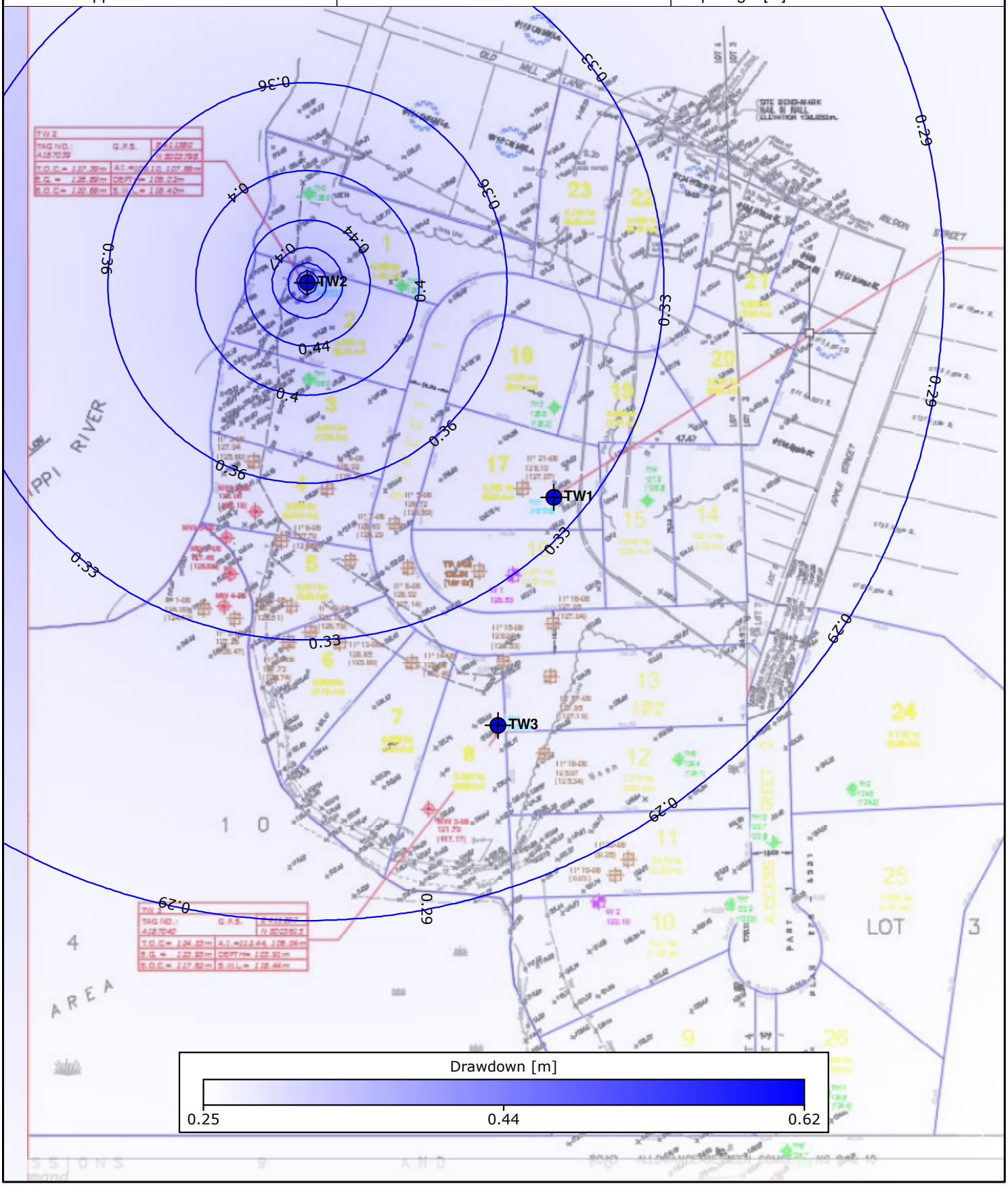
Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 2	Pumping Well: TW3
Test Conducted by: AO		Test Date: 10/07/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

	Analysis Name	Analysis Performed by	Analysis Date	Method name	Well	T [m²/d]	K [m/d]	S
1	Theis		30/10/2015	Theis	TW1	3.58×10^{2}	2.98×10^{1}	1.00×10^{-7}
2	Theis		30/10/2015	Theis	TW2	1.53×10^{2}	1.27×10^{1}	1.00×10^{-7}
3	Theis Jacob		30/10/2015	Theis with Jacob Correc	TW1	3.65×10^{2}	3.04×10^{1}	1.00×10^{-7}
4	Theis Jacob		30/10/2015	Theis with Jacob Correc	TW2	2.80×10^{2}	2.33×10^{1}	1.37×10^{-10}
5	Cooper Jacob I		16/11/2015	Cooper & Jacob I	TW1	4.56×10^{2}	3.80×10^{1}	5.39×10^{-9}
6	Cooper Jacob I		16/11/2015	Cooper & Jacob I	TW2	2.73×10^{2}	2.27×10^{1}	1.17×10^{-10}
7	Theis RECOVERY		16/11/2015	Theis Recovery	TW1	5.45×10^{2}	4.54×10^{1}	NAN
8	Theis RECOVERY		16/11/2015	Theis Recovery	TW2	4.52×10^{2}	3.77×10^{1}	NAN
					Average	3.60×10^{2}	3.00×10^{1}	NAN

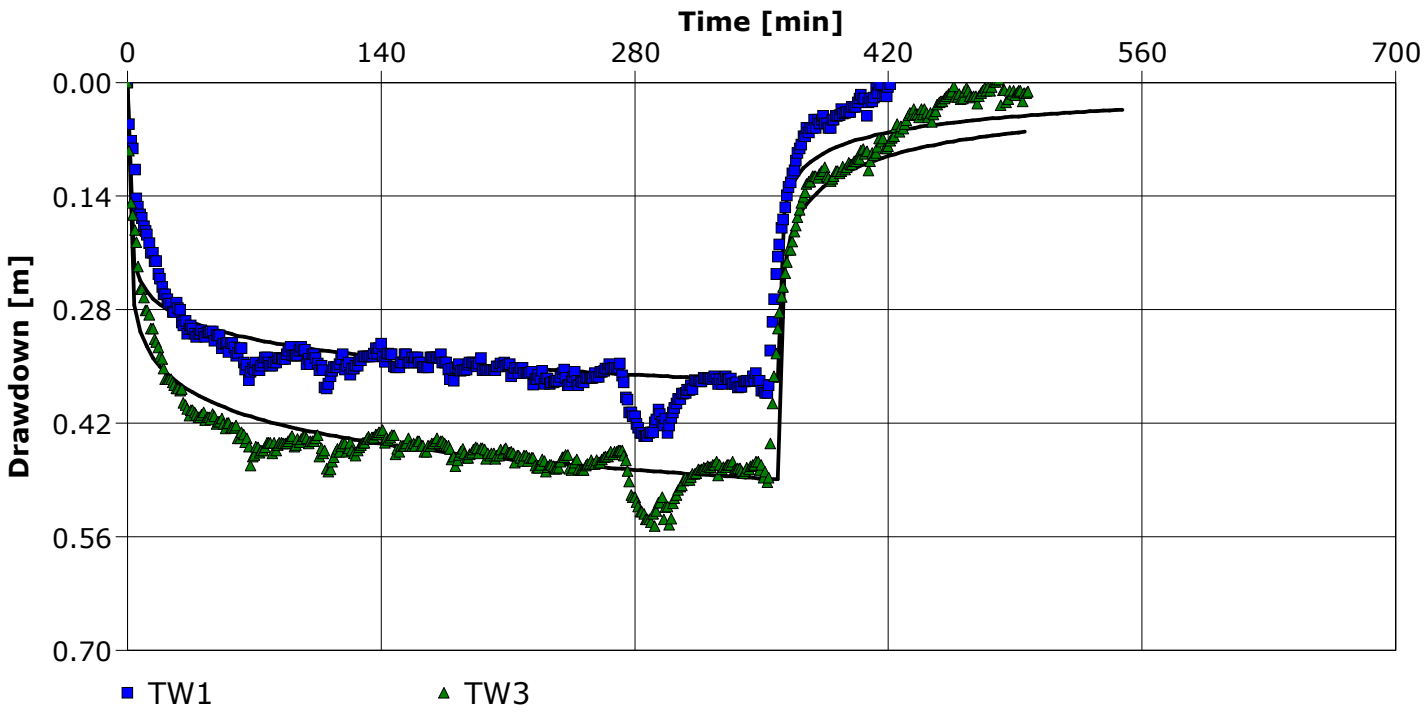
Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	Site Plan
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Scale 1:2200	Map Origin [m] X: -10 Y: 0



Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 3	Pumping Well: TW2
Test Conducted by: AO		Test Date: 13/07/2015
Analysis Performed by:	Theis	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

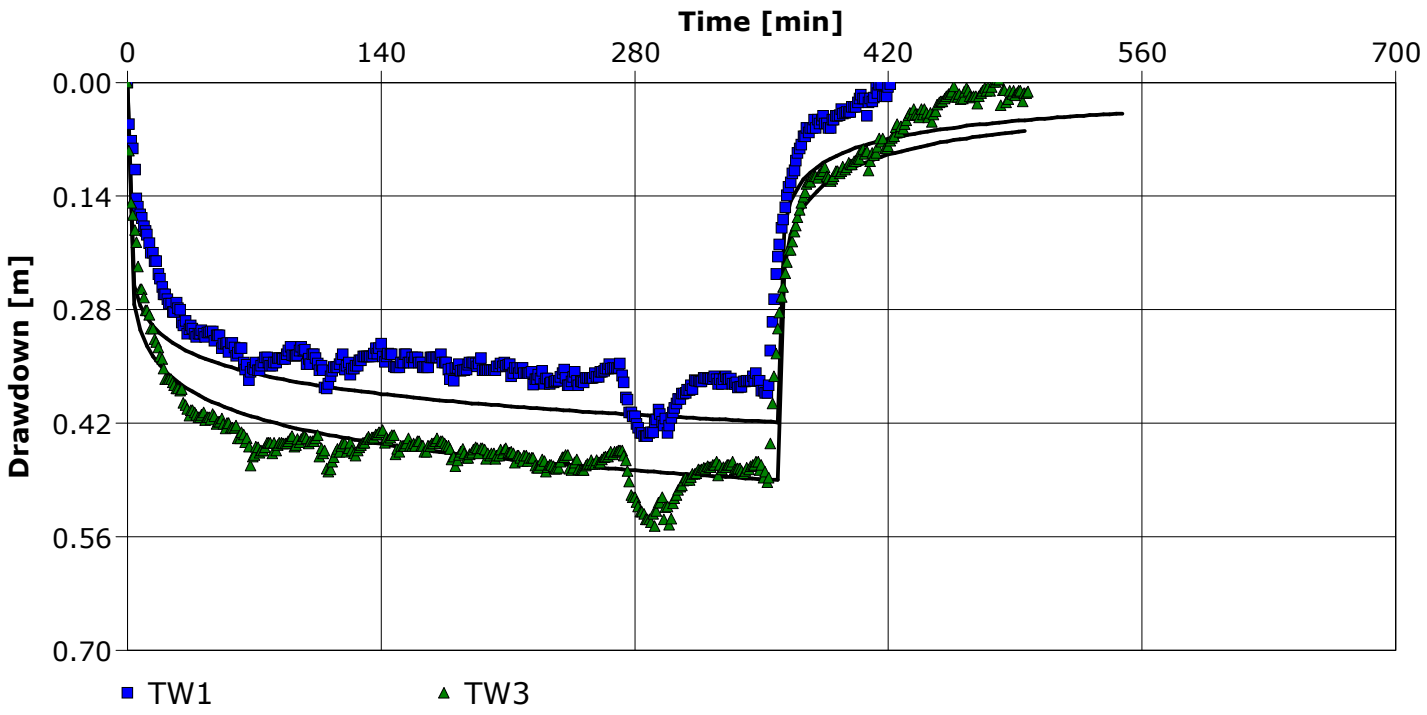


Calculation using Theis

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	4.12×10^{2}	3.43×10^{1}	1.00×10^{-7}	140.36	
TW3	2.79×10^{2}	2.33×10^{1}	1.00×10^{-7}	206.94	
Average	3.46×10^{2}	2.88×10^{1}	1.00×10^{-7}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 3	Pumping Well: TW2
Test Conducted by: AO		Test Date: 13/07/2015
Analysis Performed by:	Theis Jacob	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

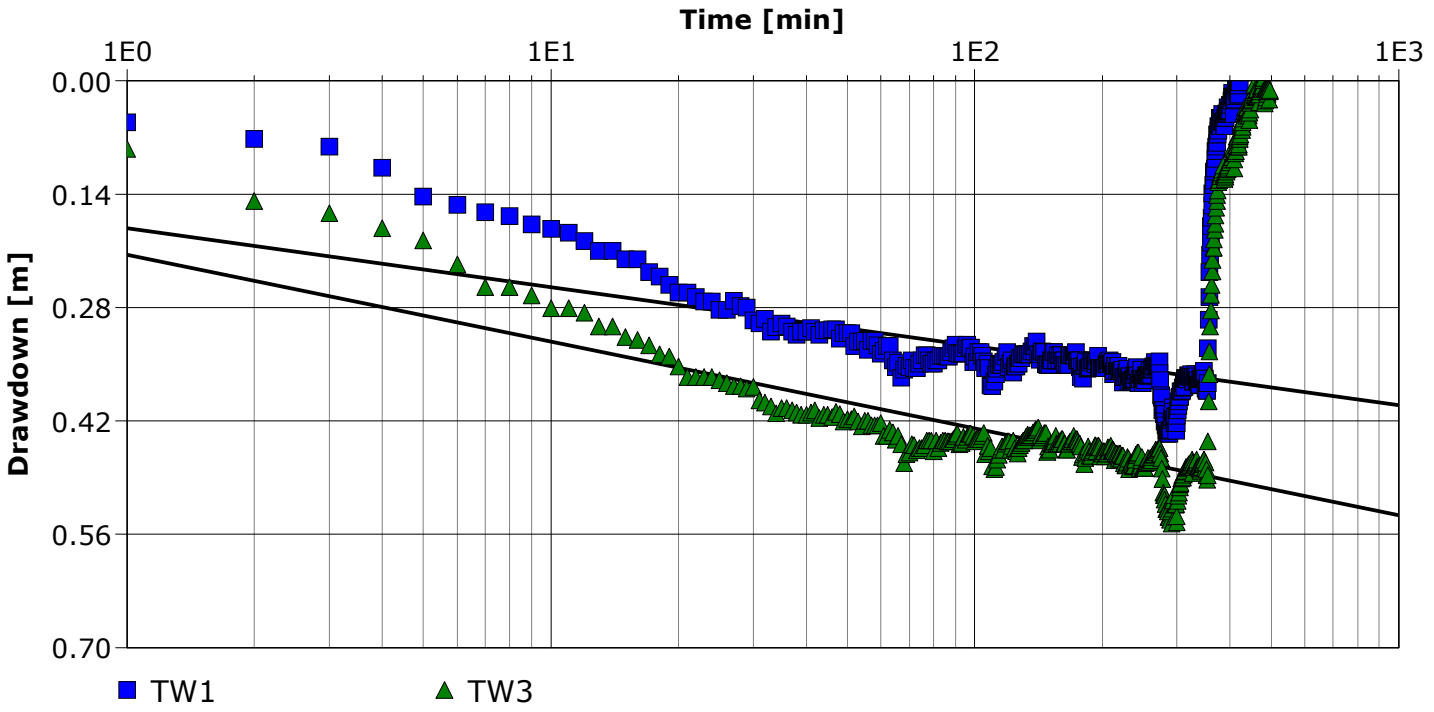


Calculation using Theis with Jacob Correction

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	3.65×10^{2}	3.04×10^{1}	1.00×10^{-7}	140.36	
TW3	2.85×10^{2}	2.37×10^{1}	1.00×10^{-7}	206.94	
Average	3.25×10^{2}	2.71×10^{1}	1.00×10^{-7}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 3	Pumping Well: TW2
Test Conducted by: AO		Test Date: 13/07/2015
Analysis Performed by:	Cooper Jacob I	Analysis Date: 16/11/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

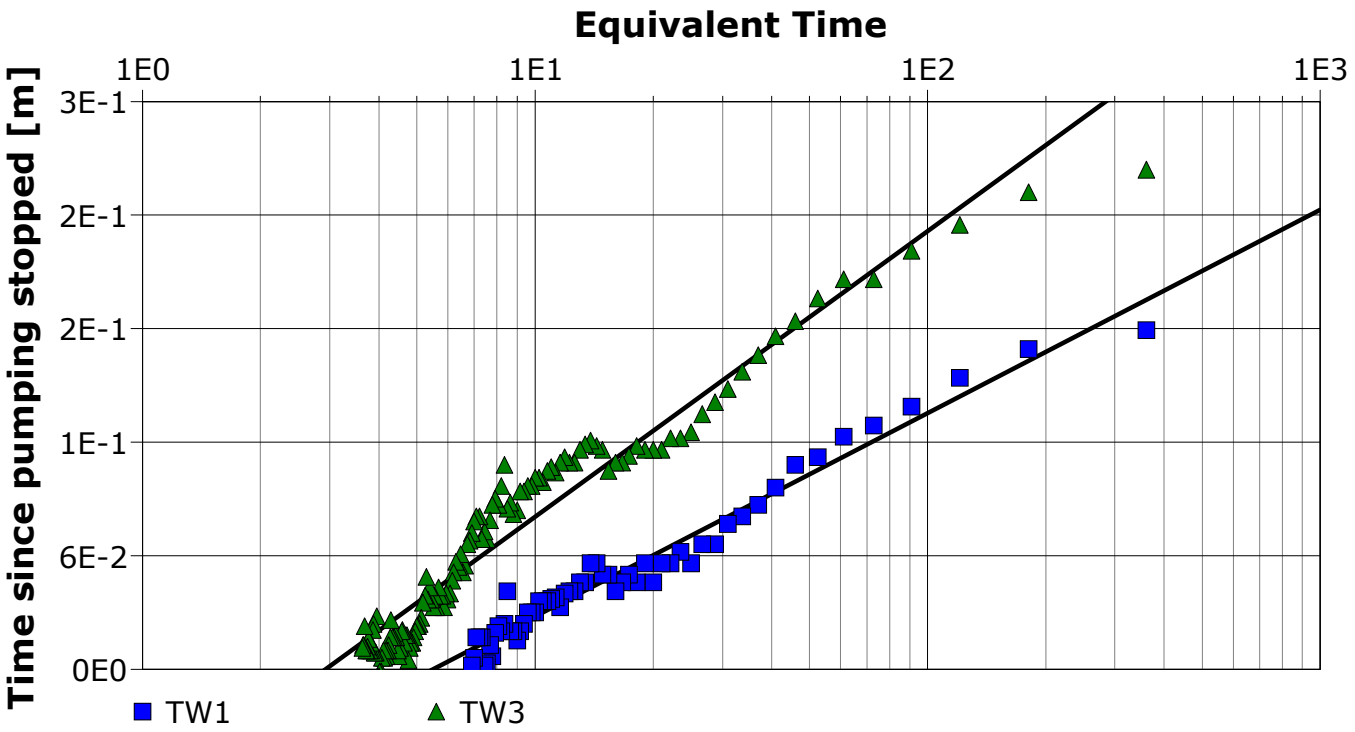


Calculation using COOPER & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial Distance to PW [m]	
TW1	4.12×10^{2}	3.43×10^{1}	1.00×10^{-7}	140.36	
TW3	2.79×10^{2}	2.33×10^{1}	1.00×10^{-7}	206.94	
Average	3.46×10^{2}	2.88×10^{1}	1.00×10^{-7}		

Paterson Group Consulting Engineers 154 Colonnade Road South Ottawa - Ontario - K2E 7J5	**Pumping Test Analysis Report**
	Project: CARLGATE
	Number: PH2723
	Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 3	Pumping Well: TW2
Test Conducted by: AO		Test Date: 13/07/2015
Analysis Performed by:	Theis Recovery	Analysis Date: 30/10/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial Distance to PW [m]	
TW1	2.78×10^{2}	2.32×10^{1}	140.36	
TW3	1.98×10^{2}	1.65×10^{1}	206.94	
Average	2.38×10^{2}	1.98×10^{1}		

Paterson Group
Consulting Engineers
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5

Pumping Test Analysis Report

Project: CARLGATE

Number: PH2723

Client: John Southwell

Location: Appleton ON	Pumping Test: Pumping Test 3	Pumping Well: TW2
Test Conducted by: AO		Test Date: 13/07/2015
Aquifer Thickness: 12.00 m	Discharge: variable, average rate 1.89 [l/s]	

	Analysis Name	Analysis Performed by	Analysis Date	Method name	Well	T [m²/d]	K [m/d]	S
1	Theis		30/10/2015	Theis	TW1	4.12×10^{2}	3.43×10^{1}	1.00×10^{-7}
2	Theis		30/10/2015	Theis	TW3	2.79×10^{2}	2.33×10^{1}	1.00×10^{-7}
3	Theis Jacob		30/10/2015	Theis with Jacob Correc	TW1	3.65×10^{2}	3.04×10^{1}	1.00×10^{-7}
4	Theis Jacob		30/10/2015	Theis with Jacob Correc	TW3	2.85×10^{2}	2.37×10^{1}	1.00×10^{-7}
5	Theis Recovery		30/10/2015	Theis Recovery	TW1	2.78×10^{2}	2.32×10^{1}	NAN
6	Theis Recovery		30/10/2015	Theis Recovery	TW3	1.98×10^{2}	1.65×10^{1}	NAN
7	Cooper Jacob I		16/11/2015	Cooper & Jacob I	TW1	4.12×10^{2}	3.43×10^{1}	1.00×10^{-7}
8	Cooper Jacob I		16/11/2015	Cooper & Jacob I	TW3	2.79×10^{2}	2.33×10^{1}	1.00×10^{-7}
					Average	3.13×10^{2}	2.61×10^{1}	NAN

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Carlgate Development Inc.

Determination of Potential Well Interference

Based on Average Values of Transmissivity and Storativity

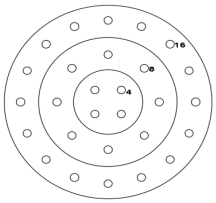
Pumping Rate (Q) m3/day	3
Transmissivity (T) m2/day	291.9166667
Average Well Spacing (m) r	30
Coefficient of Storage S	1.39E-06
Pi	3.14E+00

Thies (1935) nonequilibrium equation

u=r2S/4Tt

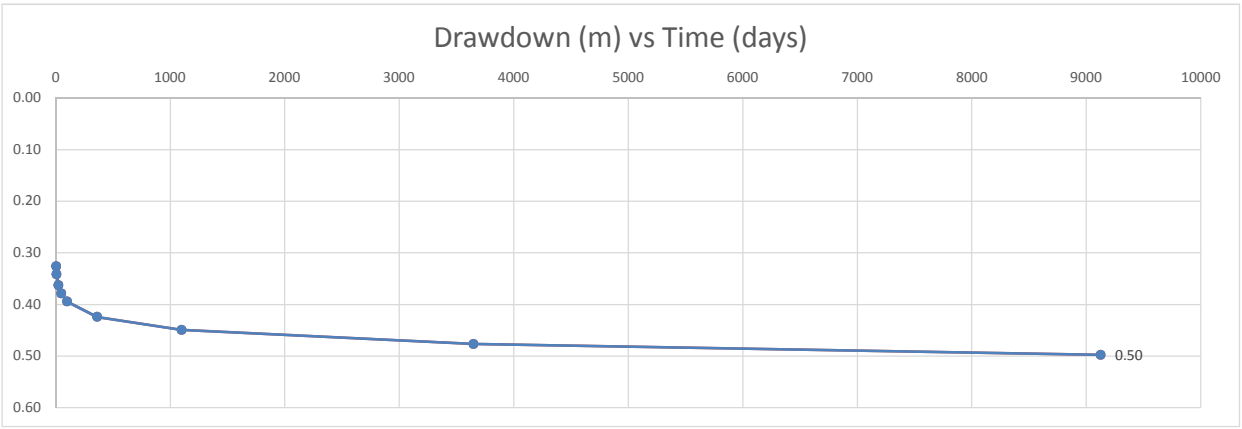
W(u) = exponential integral (of u)

Geometry



Analysis Assumes Continuous Pumping of 28 Wells

	1st Well Grouping	4	2nd Well Grouping	8	3rd Well Grouping	16	
Time (days)	u	W(u)	u	W(u)	u	W(u)	Drawdown
5	1.1E-07	15.47	3.2E-07	14.37	5.4E-07	13.86	0.33
10	5.4E-08	16.16	1.6E-07	15.06	2.7E-07	14.55	0.34
25	2.2E-08	17.08	6.5E-08	15.98	1.1E-07	15.47	0.36
50	1.1E-08	17.77	3.2E-08	16.67	5.4E-08	16.16	0.38
100	5.4E-09	18.46	1.6E-08	17.37	2.7E-08	16.85	0.39
365	1.5E-09	19.76	4.4E-09	18.66	7.4E-09	18.15	0.42
1100	4.9E-10	20.86	1.5E-09	19.76	2.4E-09	19.25	0.45
3650	1.5E-10	22.06	4.4E-10	20.96	7.4E-10	20.45	0.48
9125	5.9E-11	22.98	1.8E-10	21.88	2.9E-10	21.37	0.50



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Carlgate Development Inc.

Determination of Potential Well Interference

Based on Worst Case Values of Transmissivity and Storativity

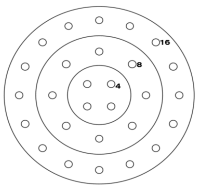
Pumping Rate (Q) m3/day	3
Transmissivity (T) m2/day	**1.53E+02**
Average Well Spacing (m) r	30
Coefficient of Storage S	**1.17E-10**
Pi	3.14E+00

Thies (1935) nonequilibrium equation

u=r2S/4Tt

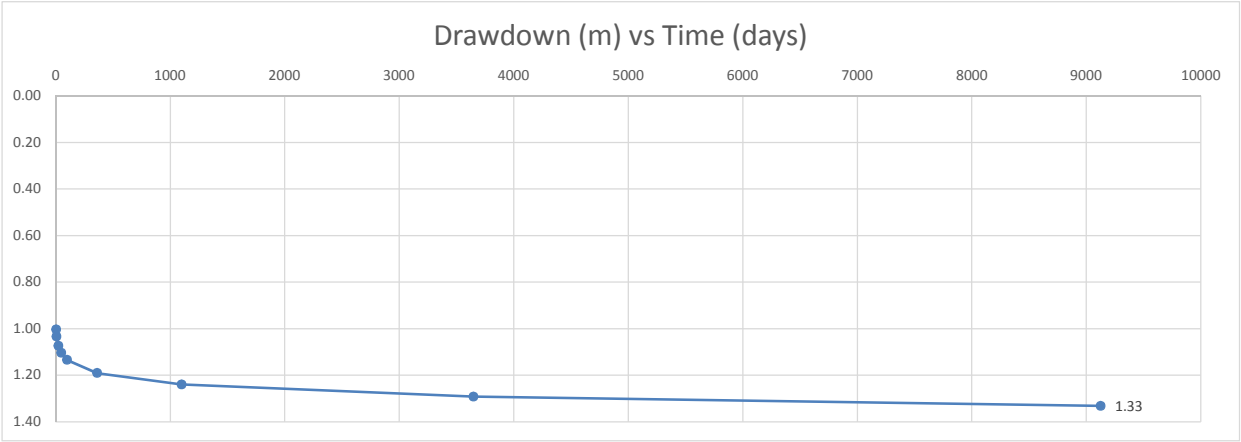
W(u) = exponential integral (of u)

Geometry



Analysis Assumes Continuous Pumping of 28 Wells

	1st Well Grouping	4	2nd Well Grouping	8	3rd Well Grouping	16	
Time (days)	u	W(u)	u	W(u)	u	W(u)	Drawdown
5	1.7E-11	24.21	5.2E-11	23.11	8.6E-11	22.60	1.00
10	8.6E-12	24.90	2.6E-11	23.80	4.3E-11	23.29	1.03
25	3.4E-12	25.82	1.0E-11	24.72	1.7E-11	24.21	1.07
50	1.7E-12	26.51	5.2E-12	25.41	8.6E-12	24.90	1.10
100	8.6E-13	27.20	2.6E-12	26.11	4.3E-12	25.59	1.13
365	2.4E-13	28.50	7.1E-13	27.40	1.2E-12	26.89	1.19
1100	7.8E-14	29.60	2.3E-13	28.50	3.9E-13	27.99	1.24
3650	2.4E-14	30.80	7.1E-14	29.70	1.2E-13	29.19	1.29
9125	9.4E-15	31.72	2.8E-14	30.62	4.7E-14	30.11	1.33



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122 Old Mill Lane, Appleton

PREDICTIVE NITRATE IMPACT ASSESSEMENT

Infiltration Factors		
Topography	0.25	
Soil	0.30	
Cover	0.15	
Total	**0.70**	
Site Characteristics		
Area of Site :	196100	m^2
Area of Subdivision:	69900	m^2
Proposed subdivision as % of subject property:	36	%
Area of each roof:	300	m^2
Total of roof areas:	4200	m^2
Area of each paved driveway:	200	m^2
Total area of paved driveway areas:	2800	m^2
Roof + paved driveway areas + paved roadway	13300	m^2
Length of paved roadways:	2100	m
Width of paved roadways:	3	m
Total area of paved roadways:	6300	m^2
Impervious Area	13300	m^2
Percent Impervious Area =	7	%
Infiltration Area =	182800	m^2
Septic Effluent		
Concentration of Effluent (Cs) =	40	mg/L
Daily Sewage Flow (Qs)=	1	m^3
See Notes below.		
Infiltration Calculation		
Nitrate concentration in precipitation (C_i) =	0	mg/L
Surplus Water (Environment Canada)	342	mm/yr
Factored Water Surplus =	239	mm/yr
Infiltration % due to stormwater management measures	-	
Infiltration rate from stormwater management measures =	0	mm/yr
Infiltration Flow Entering the System (Q_i) =	120	m^3/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	m^3/day
C_b = background nitrate concentration	1.4	mg/L
Q_e = flow entering the system from the septic drainfield	14	m^3/day
C_e = concentration of nitrates in the septic effluent	40	mg/L
Q_i = flow entering the system from infiltration	120	m^3/day
C_i = Concentration of nitrates in the infiltrate	0	mg/L
C_T =	**4.18**	**mg/L**
Estimate Number of Lots	**14**	**lots**

Notes: Site characteristic values were measured as approximate values from the available site plan. Daily Sewage Flow volume provided by Novatech as a preliminary design flow.

Appleton WATER BUDGET MEANS FOR THE PERIOD 1992-2021 DC20492

LAT.... 45.18 WATER HOLDING CAPACITY...100 MM HEAT INDEX... 37.24
LONG... 76.12 LOWER ZONE..... 60 MM A..... 1.088

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-9.5	62	16	22	1	1	0	35	55	99	285
28- 2	-8.1	50	14	23	1	1	0	35	68	99	334
31- 3	-2.3	58	27	72	7	7	0	91	26	100	391
30- 4	5.8	75	69	32	31	31	0	70	0	100	467
31- 5	13.2	71	71	0	81	81	0	12	0	78	537
30- 6	18.3	98	98	0	116	112	-4	8	0	56	636
31- 7	20.7	95	95	0	134	114	-20	4	0	32	730
31- 8	19.7	89	89	0	117	91	-26	1	0	28	816
30- 9	15.4	86	86	0	78	72	-7	1	0	41	903
31-10	8.6	84	82	1	38	38	0	14	0	73	85
30-11	1.7	72	57	11	11	11	0	35	5	94	157
31-12	-5.2	67	27	14	2	2	0	36	31	98	224
AVE	6.6 TTL	905	731	175	617	561	-57	342			

Appleton STANDARD DEVIATIONS FOR THE PERIOD 1992-2021 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.1	27	19	22	1	1	0	38	35	6	51
28- 2	2.8	21	15	20	1	1	0	29	40	4	55
31- 3	2.6	25	19	33	6	6	0	36	48	0	62
30- 4	1.5	39	38	47	7	7	0	59	0	1	79
31- 5	1.6	36	36	0	11	11	0	22	0	25	95
30- 6	1.2	38	38	0	8	11	11	13	0	39	109
31- 7	1.4	53	53	0	10	31	35	24	0	35	135
31- 8	1.2	45	45	0	8	28	32	7	0	34	140
30- 9	1.5	36	36	0	8	13	15	3	0	37	131
31-10	1.6	34	35	4	7	7	1	24	2	30	34
30-11	2.0	24	24	9	5	5	0	34	12	14	46
31-12	2.7	25	19	15	2	2	0	28	30	7	51

Appendix 5

- **Figure-1 - Site Location Plan**
- **Figure-2 – Overburden Geology**
- **Figure-3 – Bedrock Geology**
- **Figure-4 – MECP Water Well Location Plan**
- **Figure-5 - Generalized North - South Site Cross-Section**
- **Drawing PH4398-1- Lot Development Plan**
- **Drawing PH4398-2 - Test Hole Location Plan**

LEGEND:

- Property Boundary
- Site Boundary

- N -

REFERENCE:

Information reproduced from Google Earth 2015

20/10/2015	ISSUED WITH REPORT PH2723-REP-01	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

patersongroup
consulting engineers

Client:

SOUTHWELL HOMES LTD.

Project:

PROPOSED RESIDENTIAL SUBDIVISION

OLD MILL LANE
APPLETON, ONTARIO

Drawing:

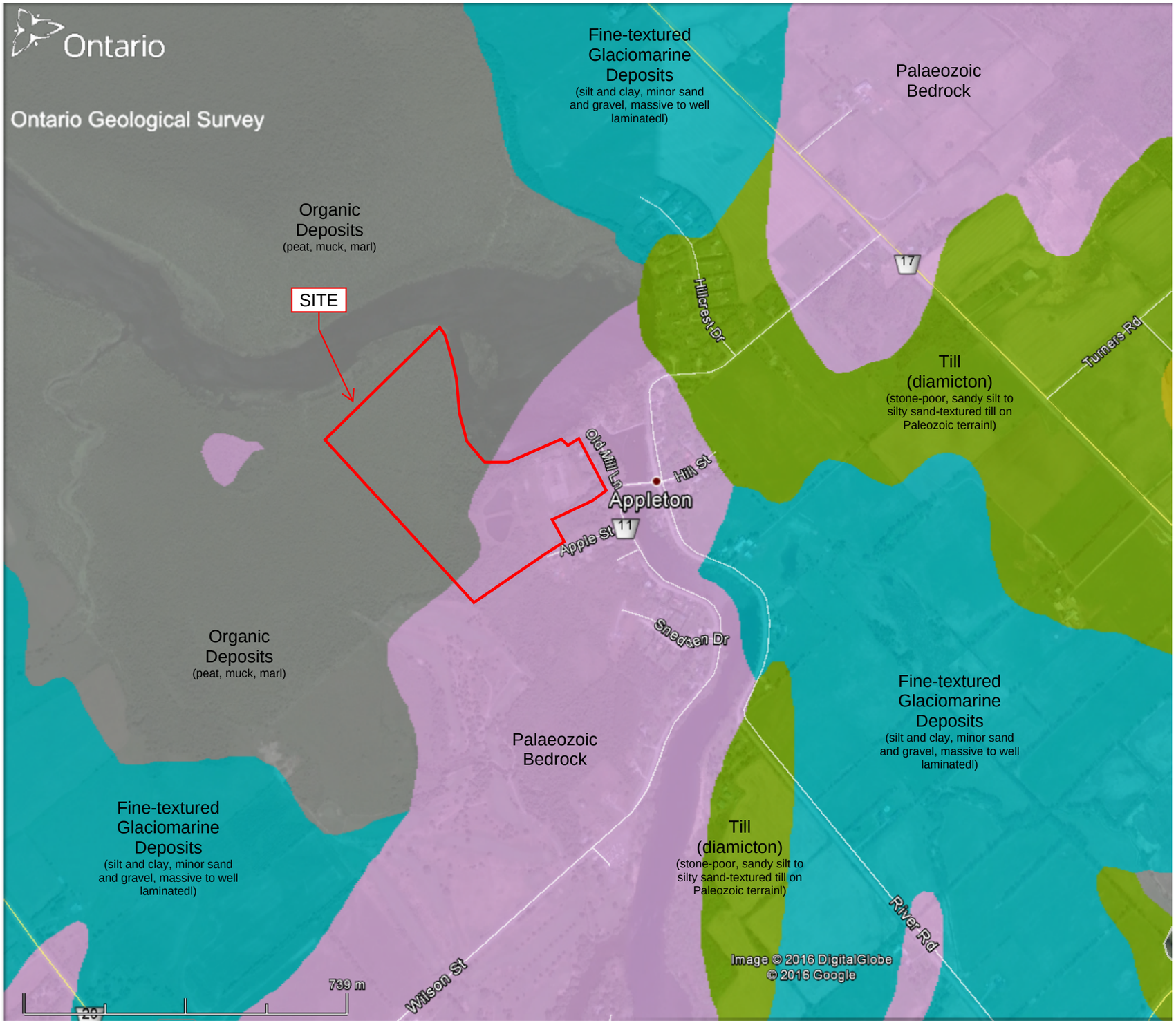
SITE LOCATION PLAN

Scale: 1:20000	Drawn by: AO
File: PH2723	Checked by: RLC

Drawing No.:

FIGURE-1

p:\autocad drawings\hydrogeology\ph27xx\ph2723-appleton\ph2723-figures.dwg



REF:The Ontario Geological Survey. 2003. Surficial Geology of Southern Ontario.

LEGEND

- Fill
- **Organic Deposits:** peat, muck and marl
- Silt
- Clay
- Sand
- Gravel
- Till (Diamicton)
- Sedimentary (Paleozoic) bedrock
- Precambrian bedrock

DD/MM/YY	DESCRIPTION	REV.
22-AUG-16	PH2723-REP.01R1	

Consultant:
patersongroup
consulting engineers

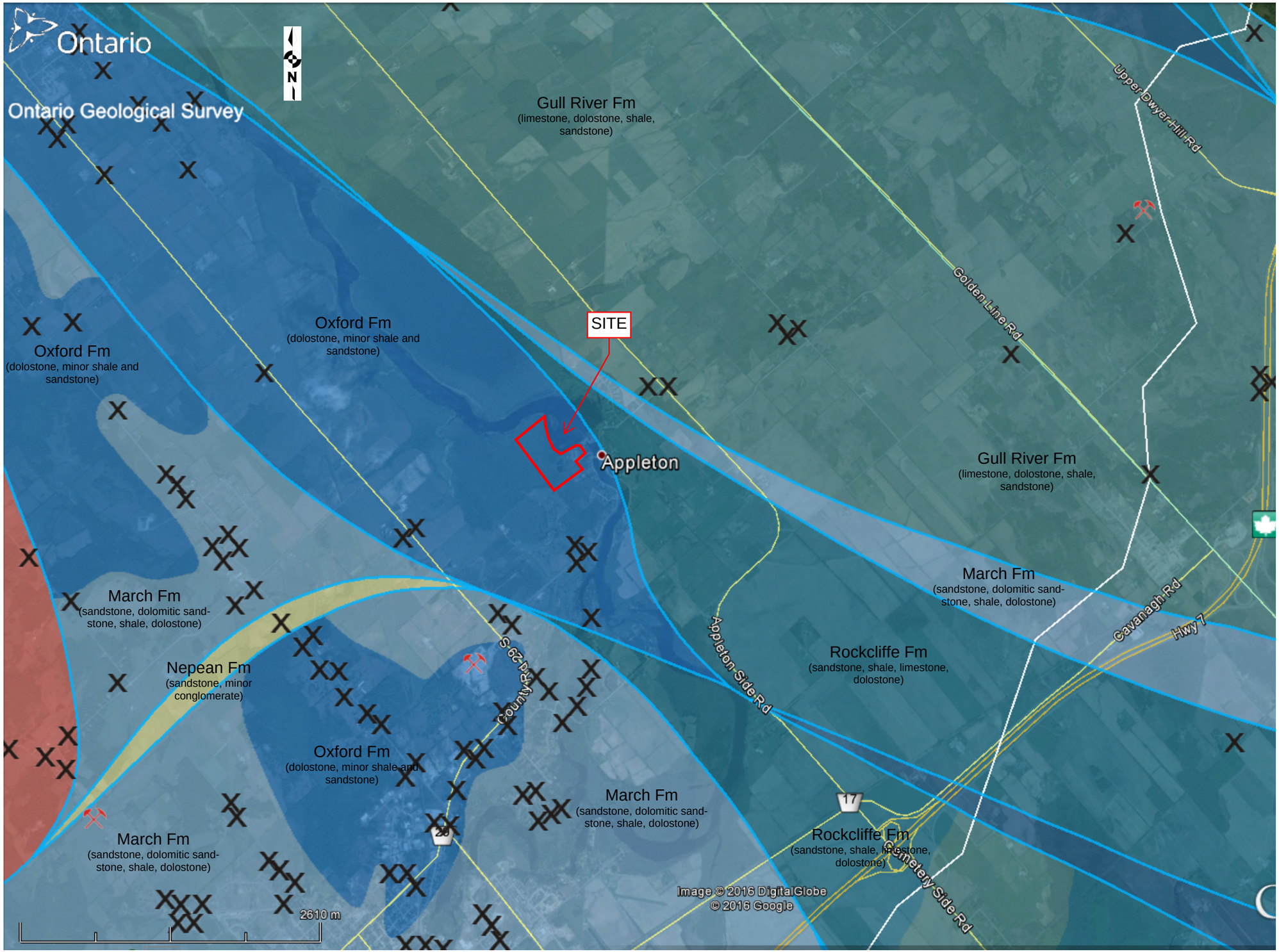
Client:
SOUTHWELL HOMES LTD.

Project:
OLD MILL LANE
APPLETON, ONTARIO

Drawing:
OVERBURDEN GEOLOGY

Scale:	Drawn by:
see Figure	RLC
File: PH2723	Checked by: AVS

FIGURE 2



REF: Armstrong, D.K. and Dodge, J.E.P. Paleozoic Geology Map of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 219

Middle Ordovician

Simcoe Group

11 **Lindsay Formation**: limestone; nodular to black laminated (=Collingwood Member or Eastview Member in eastern Ontario)

10 **Verulam Formation**: limestone and shale

9 **Bobcaygeon Formation**: limestone, with minor shales in upper part

8 **Gull River Formation**: limestone, with dolostone beds towards base

7 **Shadow Lake Formation**: shale, argillaceous sandstone, silty dolostone

6 **Rockcliffe Formation**: sandstone, shale, limestone, dolostone

Lower Ordovician

Beckmantown Group

5 **Oxford Formation**: dolostone, minor shale and sandstone

4 **March Formation**: sandstone, dolomitic sandstone, dolostone

Cambrian

Potsdam Group

3 **Nepean Formation**: sandstone, minor conglomerate

2 **Covey Hill Formation**: feldspathic conglomerate, impure sandstone

22-AUG-16	PH2723-REP.01R1	
DD/MM/YY	DESCRIPTION	REV.

Consultant:

patersongroup
consulting engineers

Client:

SOUTHWELL HOMES LTD.

Project:

OLD MILL LANE
APPLETON, ONTARIO

Drawing:

BEDROCK GEOLOGY

Scale: see Figure	Drawn by: RLC
File: PH2723	Checked by: AVS

FIGURE 3

REF: https://www.ontario.ca/environment-and-energy/map-well-records

N

DD/MM/YY	DESCRIPTION	REV.
22-AUG-16	PH2723-REP.01R1	

Consultant:

patersongroup
consulting engineers

Client:

SOUTHWELL HOMES LTD.

Project:

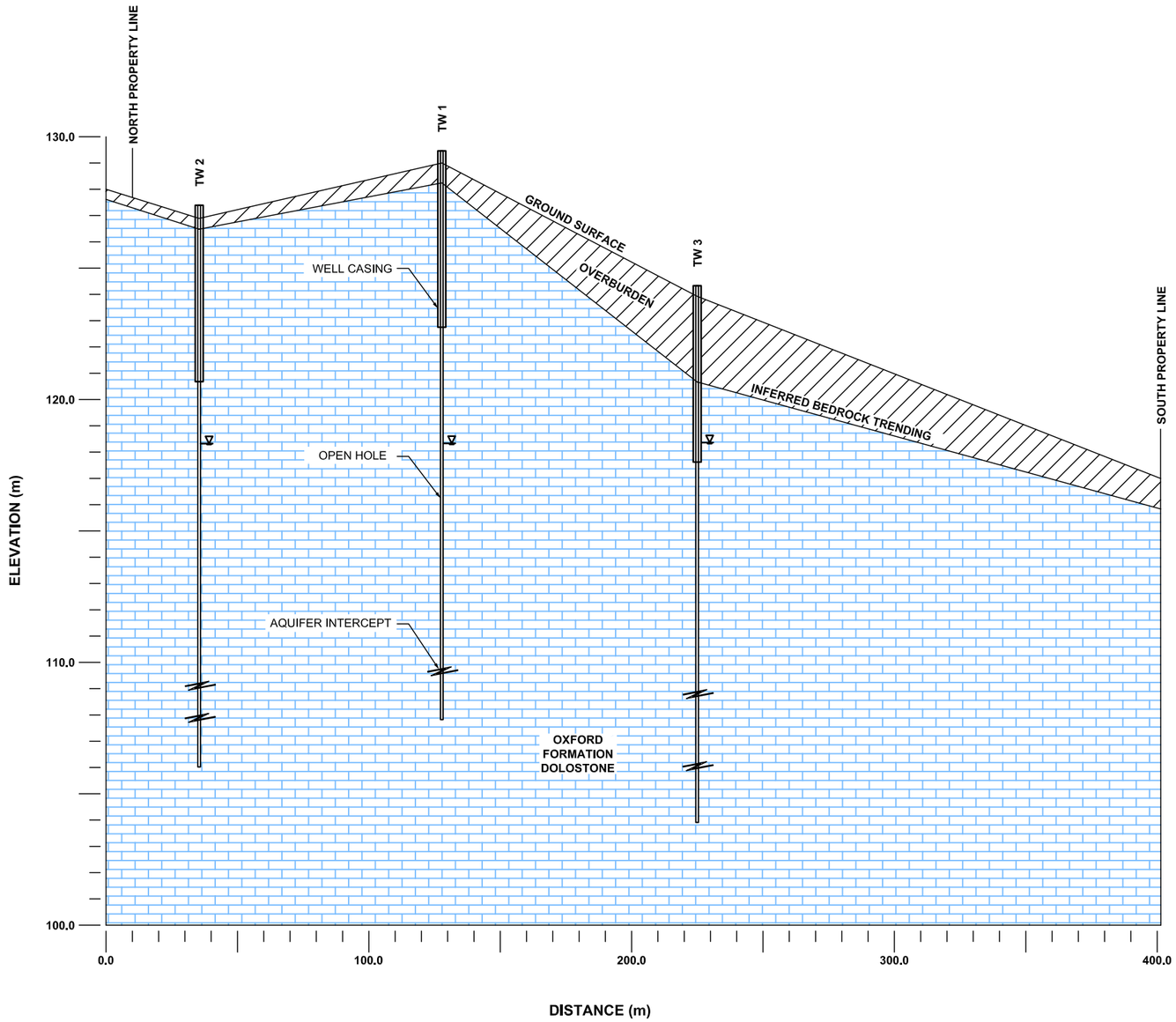
OLD MILL LANE
APPLETON, ONTARIO

Drawing:

WATER WELL RECORDS

Scale: see Figure	Drawn by: RLC
File: PH2723	Checked by: AVS

FIGURE 4



LEGEND:

- Overburden
- Oxford Bedrock Formation
- Static Water Level at Prior to Pumping Test (July 8, 2015)
- Depth Water Found

20/10/2015	ISSUED WITH REPORT PH2723-REP-01	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

patersongroup
consulting engineers

Client:

SOUTHWELL HOMES LTD.

Project:

PROPOSED RESIDENTIAL SUBDIVISION

OLD MILL LANE
APPLETON, ONTARIO

Drawing:

GENERALIZED NORTH-SOUTH SITE CROSS-SECTION

Scale: 1:2000 H 1:200 V	Drawn by: JB
File: PH2723	Checked by: RLC

Drawing No.:

FIGURE-5

p:\autocad drawings\hydrogeology\ph27xx\ph2723-appleton\ph2723-figures.5.cross section.dwg

PATERSON GROUP

9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

DD/MM/YY	Description	Rev.
06/02/24	Updated New Lot Layout	3
08/04/22	Revised as per Slope Stability Setback	1
02/02/22	Issued with Report No. PH4398-REP.01	0

Client
SOUTHWELL HOMES LTD.

Scale: 1:2000 | Drawn by: JM
Date: 08/2022 | Checked by: EA

Project
PROPOSED RESIDENTIAL SUBDIVISION
OLD MILL LANE
APPLETON, ONTARIO

Drawing no.:
PH4398-1(rev.3)

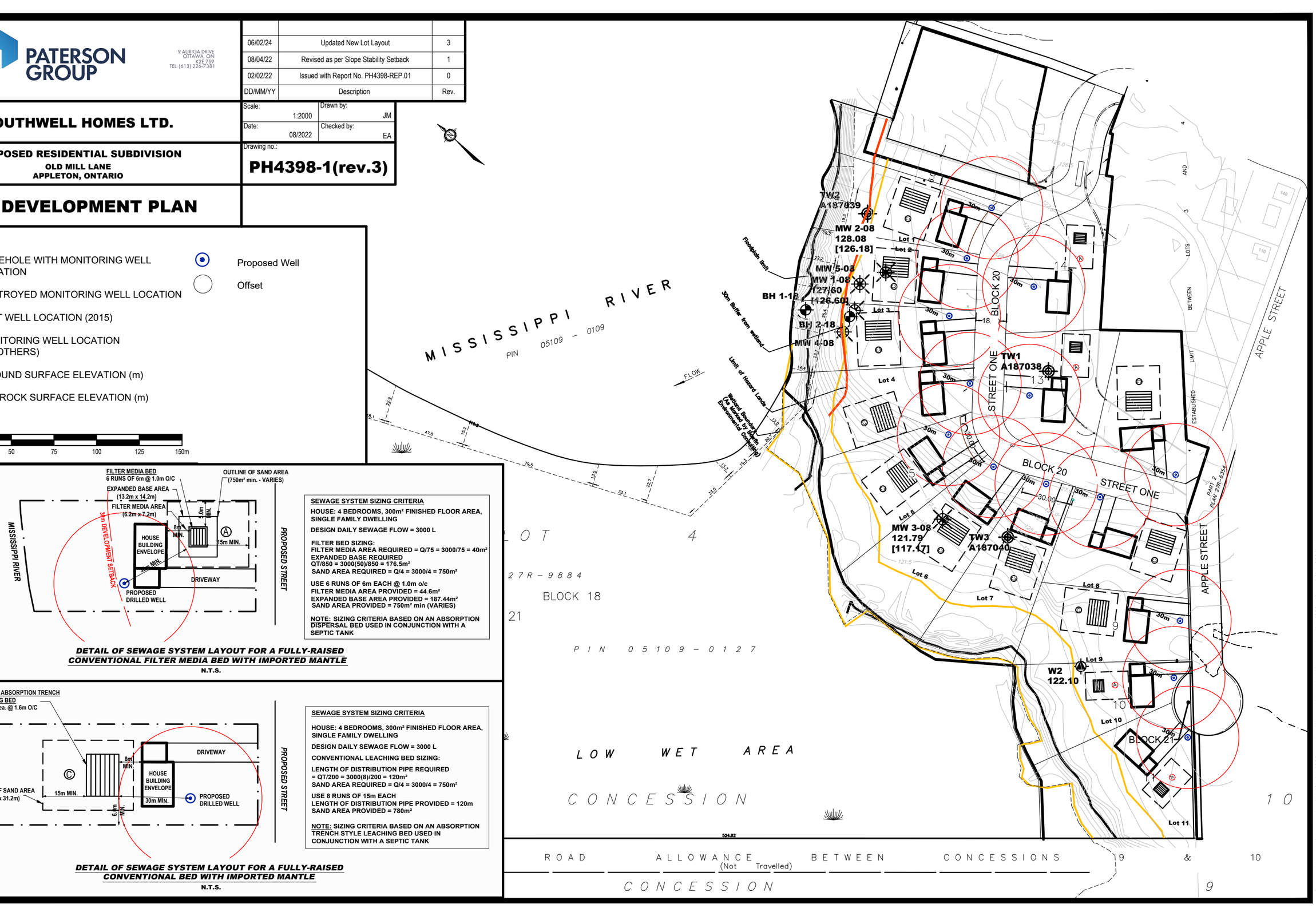
Drawing
LOT DEVELOPMENT PLAN

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- TEST WELL LOCATION (2015)
- MONITORING WELL LOCATION (BY OTHERS)
- Proposed Well
- Offset
- 121.79 GROUND SURFACE ELEVATION (m)
- [117.17] BEDROCK SURFACE ELEVATION (m)

SCALE: 1:2000

0 25 50 75 100 125 150m



SEWAGE SYSTEM SIZING CRITERIA

HOUSE: 4 BEDROOMS, 300m² FINISHED FLOOR AREA, SINGLE FAMILY DWELLING

DESIGN DAILY SEWAGE FLOW = 3000 L

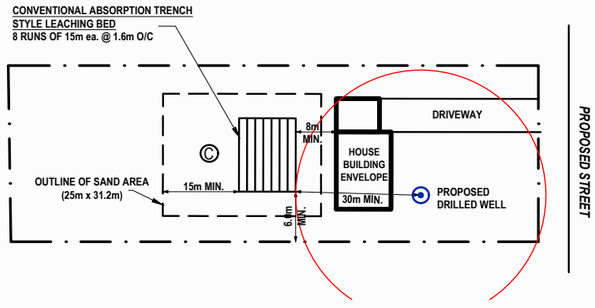
FILTER BED SIZING:
FILTER MEDIA AREA REQUIRED = Q/75 = 3000/75 = 40m²
EXPANDED BASE REQUIRED
QT/850 = 3000(50)/850 = 176.5m²
SAND AREA REQUIRED = Q/4 = 3000/4 = 750m²

USE 6 RUNS OF 6m EACH @ 1.0m o/c
FILTER MEDIA AREA PROVIDED = 44.6m²
EXPANDED BASE AREA PROVIDED = 187.44m²
SAND AREA PROVIDED = 750m² min (VARIES)

NOTE: SIZING CRITERIA BASED ON AN ABSORPTION DISPERSAL BED USED IN CONJUNCTION WITH A SEPTIC TANK

DETAIL OF SEWAGE SYSTEM LAYOUT FOR A FULLY-RAISED CONVENTIONAL FILTER MEDIA BED WITH IMPORTED MANTLE

N.T.S.



SEWAGE SYSTEM SIZING CRITERIA

HOUSE: 4 BEDROOMS, 300m² FINISHED FLOOR AREA, SINGLE FAMILY DWELLING

DESIGN DAILY SEWAGE FLOW = 3000 L

CONVENTIONAL LEACHING BED SIZING:

LENGTH OF DISTRIBUTION PIPE REQUIRED
= QT/200 = 3000(8)/200 = 120m²
SAND AREA REQUIRED = Q/4 = 3000/4 = 750m²

USE 8 RUNS OF 15m EACH
LENGTH OF DISTRIBUTION PIPE PROVIDED = 120m
SAND AREA PROVIDED = 780m²

NOTE: SIZING CRITERIA BASED ON AN ABSORPTION TRENCH STYLE LEACHING BED USED IN CONJUNCTION WITH A SEPTIC TANK

DETAIL OF SEWAGE SYSTEM LAYOUT FOR A FULLY-RAISED CONVENTIONAL BED WITH IMPORTED MANTLE

N.T.S.

11x17

p:\autocad drawings\hydrogeology\ph4xx\ph4398 - southwell homes ltd - old mill lane, appleton\ph4398 - 1(rev.7) (feb 2024).dwg

PART OF LOT 4 CONCESSION 10,
TOWNSHIP OF RAMSAY
TOWNSHIP OF MISSISSIPPI MILL
COUNTY OF LANARK

BASE PLAN AND TOPOGRAPHIC INFORMATION PROVIDED BY G.A. SMITH SURVEY LTD, REFERENCE No. 14-4119TOPO

LEGEND:

- 2008 TEST PIT LOCATION
- DESTROYED 2008 MONITORING WELL LOCATION
- MONITORING WELL LOCATION, BY OTHERS.
- BOREHOLE WITH MONITORING WELL LOCATION
- 2015 TEST WELL LOCATION
- x 121.72 GROUND SURFACE ELEVATION (m)
- [117.17] INFERRED BEDROCK ELEVATION (m)
- {0.25} DEPTH TO BEDROCK (m)
- 2015 AUGER HOLE LOCATION
- OFFSITE WELL SAMPLING LOCATION

paterson group
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

PROJECT:
PROPOSED RESIDENTIAL SUBDIVISION
OLD MILL LANE
APPLETON, ONTARIO

CLIENT:
SOUTHWELL HOMES LTD.

DRAWING:
TEST HOLE LOCATION PLAN

SCALE: 1:1250
0 5 10 15 20 25 50 75m

DATE	DESCRIPTION	REV.
11/02/2022	ISSUED WITH REPORT PH4398-REP.01	0

Scale: 1:1250
Checked by: EA
Approved by: MK
Drawn by: HV
Date: 02/2022

FILE No.: PH4398
Drawing No.: PH4398-2

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