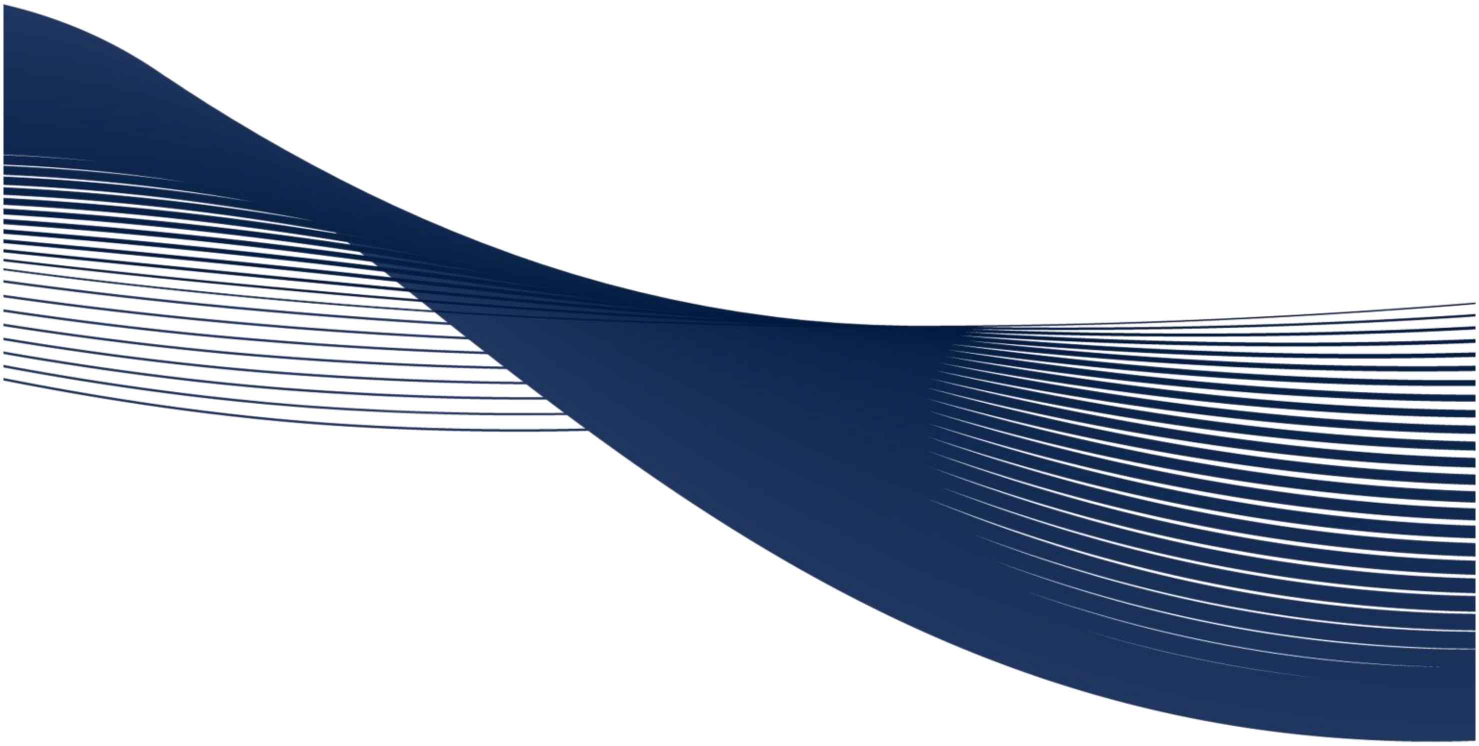
MANORS OF BELFOUNTAIN CORP

HYDROGEOLOGICAL INVESTIGATION REPORT

Manors of Belfountain, Caledon, ON

COLE Reference No. 2017-0646



FEBRUARY 2018

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February 13, 2018
Reference No. 2017-0646

Manors of Belfountain Corp
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Attention: **John Spina**

Re: **Manors of Belfountain, Caledon, ON**
Hydrogeological Investigation Report

Dear Mr. Spina,

Cole Engineering Group Ltd. (COLE) is pleased to submit the enclosed hydrogeological investigation report for the development Lot 9, Concession 5 in Caledon, ON. The investigation includes a review of existing hydrogeological information for the study area, characterization of the geological and hydrogeological setting, an assessment of potential impacts due to development, and potential mitigation measures. The findings of our study are summarized in the following report.

Should you have any questions or comments, please do not hesitate to contact the undersigned.

Best Regards,
COLE ENGINEERING GROUP LTD.

Steve Davies, M.Sc., P.Geo.
Senior Hydrogeologist

/th/cc

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Issues and Revisions Registry

Identification	Date	Description of issued and/or revision
Draft Report	December 22, 2017	For client review
Revision of Draft Report	January 23, 2018	
Final Report	February 13, 2018	

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Executive Summary

Cole Engineering Group Ltd. (COLE) was retained by Manors of Belfountain Corporation (Manors of Belfountain) to undertake a hydrogeological study at part of Lot 9, Concession 5 in Caledon, ON (the “Site”). The Site is approximately 70.28 hectares (ha) in area and is currently used for agricultural purposes. It is generally bounded by Bush Street to the north, Shaws Creek Road to the west, Mississauga Road to the east, and vacant lands to the south. The Belfountain Public School and several existing residential properties are located northwest of the Site. The Site is located within the jurisdiction of the Credit Valley Conservation Authority and partially within a regulated area. Based on the Draft Plan of Subdivision 21T-91015C dated December 5, 2017, prepared by Glen Schnarr & Associates Inc., the development will include 67 rural estate lots with an average lot size of 0.63 ha. Water supply will be provided by private wells and waste water servicing will be provided by individual septic systems with tertiary (Level IV) treatment. The stormwater management plan for the Site will rely on retention and infiltration to closely match existing conditions.

Previous Site investigations date back to 1988 and include work done by Terraprobe, W.B. Beatty & Associates Limited, and R.J. Burnside. These investigations include drilling of monitoring wells, pumping tests, a water supply and wastewater servicing review, groundwater level monitoring and sampling, infiltration tests, and a well survey of nearby properties. Since October 2017, COLE conducted a hydrogeological investigation consisting of groundwater level measurements, groundwater sampling, water balance analysis, nitrate loading assessment, and the assessment of water taking rates and analysis of pumping tests.

The Site is located within the West Credit River Subwatershed and is considered to be within the Horseshoe Moraine physiographic region due to the sand content and hummocky nature of the topography. Geology at the Site consists of approximately 10 meters (m) to 20 m of sandy overburden overlying the Guelph / Amabel dolostone aquifer, which overlies the Cabot Head shale aquitard. Hydraulic conductivity estimates of the dolostone bedrock aquifer range from 4.7×10^{-6} m/s to 2.9×10^{-4} m/s with an average of 3.6×10^{-5} m/s. Based on testing completed at the Site by R.J. Burnside, infiltration rates for the overburden range from 29 mm/hr to 420 mm/hr with an average of approximately 152 mm/hr.

Water levels measured in October 2017 indicate that groundwater across the Site is typically 10 to 20 m below ground surface (mbgs) with the exception of the on-Site wetland features (SWT3-2 and MAS3-1) where groundwater is typically between 0 to 1 mbgs. Seasonal groundwater fluctuations across the Site are typically not greater than 3 m, with decreasing water levels in the summer and fall months. In general, groundwater elevations are higher in the south and groundwater movement is approximately south to north across the Site.

Groundwater discharge is expected to occur at the West Credit River and the off-Site wetland features (SWM1-1 and MAM3-1). However, no on-Site water courses or wetland features (SWT3-2 and MAS3-1) were interpreted to receive groundwater discharge.

A pre-development Site water balance analysis was completed and results indicate that infiltration comprises approximately 32% of the total precipitation across the Site, runoff comprises approximately 9% of total precipitation, and evapotranspiration comprises more than half (59%) of total precipitation. The water balance analysis shows a significant amount of infiltration, which is to be expected due to the closed depressions within the hummocky topography and sandy overburden materials. It is understood that infiltration measures will be utilized to maintain pre-development infiltration on-Site in post-development conditions, with essentially no runoff leaving the Site up to the 100 year storm capacity.

Groundwater quality analysis was conducted at twelve (12) on-Site wells and results indicate no exceedances of health-related Ontario Drinking Water Standards (ODWS), while there were some exceedances in total hardness, total dissolved solids, sulphate, turbidity, and iron. These parameters, with the exception of hardness, are considered aesthetic parameters that affect the taste, odour or colour of water but do not directly affect the safety of the water supply. Water hardness at the Site and aesthetic parameters can be controlled with water treatment systems for each property.

Nitrate concentrations in groundwater at the Site meet the ODWS of 10 mg/L. Nitrate concentrations generally increase from south to north across the Site, with the existing nitrate concentrations likely due to agricultural activities both on and off-Site. Development of the Site will result in a reduction of the agricultural areas suspected of contributing to the on-Site nitrate concentrations by approximately 67%. Thus, development of the Site is expected to lead to a long-term decrease in nitrate concentrations.

A nitrate loading analysis was completed in compliance with MOECC Procedure D-5-4 in order to evaluate the potential impact of the individual on-Site septic systems. Results indicate that a nitrate loading concentration of approximately 2.17 mg/L is expected at the Site boundary. This concentration is lower than the CCME guideline for NO_3-as-N of 3 mg/L for protection of sensitive surface water habitat, which has also been adopted by CVC. As on-Site wetland features (SWT3-2 and MAS3-1) are essentially at the Site boundary, and any groundwater seepage locations appear to be beyond the Site boundary, the CCME / CVC guideline is therefore met at all downgradient natural features that may receive even minimal groundwater discharge.

Although existing on-Site nitrate concentrations in groundwater are consistently below the ODWS, as a precautionary approach it is recommended that supply wells should not be installed in the northernmost portion of the Site where the highest on-Site nitrate concentration were identified. It is therefore recommended that supply wells not be placed north of an identified line of higher nitrate concentrations (i.e., > 7 mg/L) and that any wells be located a minimum of 7 m south (upgradient) of this line, based on a zone of contribution analysis. Review of the Draft Plan for the Site confirms that there is sufficient room to locate supply wells on every lot in compliance with this recommendation.

Pumping tests to assess the supply of groundwater available at the Site were completed at the Site by R.J. Burnside and are considered to demonstrate water supply compliance with MOECC Procedure D-5-5. Water supply analysis based on the pumping test results indicate that all tested wells can sustainably support continuous pumping at the expected average pumping rate of 1.56 L/min/house for a duration of 50 years. In addition, a more conservative analysis indicates that most tested wells can sustainably support continuous pumping at the peak pumping rate of 18.75 L/min/house for a duration of 50 years. The total water takings expected at the Site, based on an average pumping rate of 1.56 L/min/house and 67 houses, is 150,750 L/day, which is a small portion of the estimated recharge across the Site (549,474 L/day).

Based on the estimated long term average pumping rate of 1.56 L/min/house and the effect of recharge on groundwater quantity, the expected radius of influence for each well is estimated to be approximately 30 m (or 0.27 ha in area). As the average lot size is approximately 0.63 ha in area, minimal supply interference is expected between lots.

On-Site wells be placed a minimum of 30 m apart. Since the radius of influence of each well is expected to be 30 m, if wells are placed 30 m apart minor superposition of drawdown may occur where the radii intersect. The maximum superposition of drawdown is expected to occur at the midpoint between wells (15 m). However, interference between supply wells spaced 30 m apart will be negligible.

Potential long-term impacts to the closest groundwater users are expected to be minimal as nitrate loading at the Site boundary is low, the radius of influence of individual supply wells is not expected to extend beyond the Site, and total water takings are small compared to total input of horizontal groundwater flux and recharge at the Site.

Potential long-term impacts to natural features are also expected to be minimal as on-Site features do not rely on groundwater contributions. For off-Site features that do rely on groundwater contributions, impacts are also expected to be minimal as total nitrate loadings at the property boundary are expected to be lower than the CCME and CVC guideline for NO_3-as-N of 3 mg/L, infiltration is expected to be maintained post-development, and total groundwater taking on-Site are small. Therefore, feature based water balance analysis for on-Site and off-Site wetland features is not recommended.

Based on the results of the various groundwater investigations completed at the Site and the review of groundwater receptors and potential impacts from development of the Site from changes to groundwater quality and quantity, there does not appear to be a significant potential for impacts to groundwater users or natural features from the proposed development of the Site. This assessment assumes that mitigation measures, such as maintain infiltration and implementation of tertiary (Level IV) septic systems will be implemented across the proposed development.

1 Introduction

Cole Engineering Group Ltd. (COLE) was retained by Manors of Belfountain Corporation (Manors of Belfountain) to undertake a hydrogeological study at part of Lot 9, Concession 5 in Caledon, ON (the “Site”). The Site is located near the intersection of Bush Street and Mississauga Road in Caledon, Ontario. The location of the Site is shown on **Figure 1**.

1.1 Project Description

The Site is approximately 70.28 hectares (ha) in area and is currently used for agricultural purposes. It is approximately bounded by Bush Street to the north, Shaws Creek Road to the west, Mississauga Road to the east, and vacant lands to the south. Belfountain Public School and several existing residential properties are located northwest of the Site. The Site is located within the jurisdiction of the Credit Valley Conservation (CVC) and partially within a regulated area. Based on the Draft Plan of Subdivision 21T-91015C dated December 5, 2017, prepared by Glen Schnarr & Associates Inc., the proposed development will include 67 rural estate lots with an average lot size of 0.63 ha. Water supply will be provided by private wells and waste water servicing will be provided by individual septic systems with tertiary (Level IV) treatment. The stormwater management plan for the Site will rely on retention and infiltration to closely match existing conditions. Site servicing is described in detail in the functional servicing report prepared by COLE and submitted under separate cover.

The Draft Plan of Subdivision is included as **Appendix A**.

1.2 Objectives

The objectives of this hydrogeological investigation are:

- Characterize the existing geological and hydrogeological setting;
- Identify environmentally sensitive features and groundwater receptors on or near the Site;
- Estimate the water balance parameters for the Site, particularly groundwater recharge;
- Estimate the potential water supply demand for the development and assess the results of pumping tests completed at on-Site test wells;
- Review groundwater quality results for the Site and compare to Ontario Drinking Water Quality Standards;
- Estimate the potential nitrate loading to the groundwater system from the private septic systems;
- Assess the potential impacts to the natural environment and other groundwater users as a result of the development, including the planned private wells and septic systems; and
- Provide recommendations on management and mitigation measures.

1.3 Applicable Regulations and Agencies

Environmental regulations and policies that may be relevant for this hydrogeological investigation are briefly discussed below.

Provincial Policy Statement (2014)

The Provincial Policy Statement provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and water resources. According to the Provincial Policy Statement, development and Site alteration shall not be permitted in:

- Significant habitat of endangered species or threatened species;
- Significant wetlands within specific Ecoregions (as per schedule in the Provincial Policy Statement);
- Significant coastal wetlands (as per schedule in the Provincial Policy Statement);
- Significant woodlands and valleylands within specific Ecoregions (as per schedule in the Provincial Policy Statement);
- Significant areas of natural and scientific interest;
- Within or near sensitive surface water and sensitive groundwater features; and
- Fish habitat except in accordance with provincial and federal requirements.

Similarly, for lands adjacent to the natural heritage features as defined above, it needs to be demonstrated that the development will not result in negative impacts on natural features or ecological functions. Typically, significant natural features are identified through an Environmental Impact Study (EIS) and significant wetlands are identified by the Ministry of Natural Resources and Forestry (MNRF). Endangered or threatened species habitat is identified through ecological studies, such as an EIS, and regulated by the MNRF. Fish habitat is under the jurisdiction of Fisheries and Oceans Canada (DFO) with support from Conservation Authorities. Identification and regulation of woodlands, valleylands, Areas of Natural and Scientific Interest (ANSI), and wildlife habitats are typically the responsibility of the municipality or other planning authority.

Restrictions to development and alterations should be implemented to protect all municipal drinking water supplies and designated vulnerable areas. Development and alterations are to be restricted in or near sensitive surface water features and sensitive groundwater features such that their hydrologic function will be protected, restored, or improved.

Niagara Escarpment Plan (2017)

The Niagara Escarpment Plan (NEP), last amended in 2017, seeks to protect the geologic feature of the Niagara Escarpment and lands within the vicinity by allowing only developments compatible with the natural environment. The objectives of the NEP are:

- To protect unique ecologic and historic areas;
- To maintain and enhance the quality and character of natural streams and water supplies;
- To provide adequate opportunities for outdoor recreation;
- To maintain and enhance the open landscape character of the Niagara Escarpment in so far as possible, by such means as compatible farming or forestry and by preserving the natural scenery;
- To ensure that all new development is compatible with the purpose of the Plan;
- To provide for adequate public access to the Niagara Escarpment; and
- To support municipalities within the Niagara Escarpment Plan Area in their exercise of the planning functions conferred upon them by the Planning Act.

Based on the NEP, the Site is located within the Minor Urban centre of Belfountain and is designated “Escarpment Rural Area”, “Escarpment Protection Area” and “Escarpment Natural Area”.

Region of Peel Official Plan (2016)

The Region of Peel Official Plan is a public document that outlines the long-term policy framework for decision making related to protection of the environment, management of resources, directing growth and sets the basis for providing Regional services. The Region of Peel recognizes the importance of preserving and protecting natural environment and ecosystems. The Site is within the Region's "Rural System" and the northeastern portion is within the Core Areas of the Greenlands System.

Town of Caledon Official Plan (2016)

The Town of Caledon Official Plan is a document that outlines the principles, goals, objectives, and policies intended to guide future land use, physical development, effects on the social, economic, and natural environment within the Town of Caledon. It was initially adopted in 1979 but has been consolidated in 2016. According to the Town of Caledon Official Plan, the Site is situated within the settlement area (Hamlet) of Belfountain.

Permit to Take Water – Section 34 of the Ontario Water Resources Act (1990)

Based on recent regulatory changes, a Permit to Take Water (PTTW) is required under Section 34 of the Ontario Water Resources Act (OWRA) for water takings greater than 50,000 L/day, and for construction water takings greater than 400,000 L/day. Construction water takings between 50,000 L/day and 400,000 L/day require registration on the Environmental Activity and Sector Registry (EASR). Water taking permit applications are not anticipated for either construction dewatering or for water supply purposes.

Credit Valley Conservation Authority (O.Reg. 160/06)

Under Section 28 of the Conservation Authorities Act, the local Conservation Authorities are mandated to protect the health and integrity of the regional greenspace system and to maintain or improve the hydrological and ecological functions performed by valley and stream corridors. CVC, through its regulatory mandate, is responsible for issuing permits under O.Reg. 160/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses for development applications or Site alteration works within regulated areas.

The Endangered Species Act – Ministry of Natural Resources and Forestry

The MNRF has jurisdiction to administer the Endangered Species Act (2007) to protect species at risk (SAR) and their habitat. Where works may occur in or near a protected habitat, SAR are on or near the Site, and/or the works may harm / harass the species or damage / destroy the protected habitat, a confirmation of notice of activity, a permit or a Letter of Authorization or Advice will be required.

The Clean Water Act, 2006 – Ontario Ministry of the Environment and Climate Change

The Ministry of the Environment and Climate Change (MOECC) mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), significant groundwater recharge areas (SGRAs) and Highly Vulnerable Aquifers (HVAs) as well as the assessment of drinking water quality and quantity threats within Source Protection Regions. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs. Based on mapping completed by the CVC, the Site appears to border a WHPA-E of Peel Region's Inglewood Well 2.

2 Regional Geological and Hydrogeological Understanding

A conceptual understanding of the geological and hydrogeological system was developed through review of existing reports and available geological information. This included:

- Chapman, L.J. and Putnam, D.F. (1984) The Physiography of Southern Ontario, 3rd Edition. Ontario Geologic Survey, Special Volume 2, 270 p.;
- Cowan, W.R. (1976) Quaternary Geology of the Orangeville Area Southern Ontario. Ontario Division of Mines, Report 141, 98 p.;
- Credit Valley Conservation (1998) West Credit Subwatershed Study: Characterization Report.
- Davies, S. and Holysh, S. (2007) Groundwater Resources Study of the Credit River Watershed. Ontario Geological Survey; and,
- AquaResources Inc. (2009) Integrated Water Budget Report – Tier 2: Credit Valley Source Protection Area. Credit Valley Conservation Authority.

2.1 Topography and Drainage

The Site lies within the West Credit River Subwatershed under the jurisdiction of the CVC. The West Credit River drains into the main branch of the Credit River east of Belfountain, below the Niagara Escarpment at the Forks of the Credit. The West Credit Subwatershed is an important groundwater recharge area due to the local presence of coarse-grained soils and hummocky topography. Significant groundwater discharge occurs along the West Credit River and, as a result, it is mapped as coldwater fish habitat. The West Credit Subwatershed includes the Town of Erin, the Town of Caledon, and the community of Belfountain.

Topography of the West Credit River Subwatershed varies from between approximately 375 m above sea level (masl) to approximately 475 masl. Topography within this area reflects glacial processes that deposited landforms such as streamlined hills (drumlins), topographic ridges (moraines), and high-relief hummocky topography with closed depressions. As noted above, recharge within the subwatershed is relatively high, due to extensive high permeable sediments, and is amplified in areas with hummocky topography compared to areas covered by relatively flat till plains.

Regional topography is shown on **Figure 2**.

2.2 Physiography

Several physiographic regions have been mapped (Chapman and Putnam, 1984) within the West Credit River Subwatershed as follows:

- Niagara Escarpment;
- Horseshoe Moraine;
- Guelph Drumlin Field; and,
- Hillsburgh Sandhills (Orangeville Moraine)

The majority of the subwatershed is comprised of the Guelph Drumlin Field and the Horseshoe Moraines regions.

A summary of each physiographic region is provided below.

Niagara Escarpment: The Niagara Escarpment is a major topographic change in the bedrock of Southern Ontario that results from differential weathering of the underlying dolostone and shale. Bedrock only outcrops within the West Credit River Subwatershed at the Niagara Escarpment and within river valleys.

The vast majority of the subwatershed is above the Escarpment where ground surface elevations are higher.

Horseshoe Moraine: The Horseshoe moraine includes the Paris, Galt, and Singhampton moraines and is described as a kame moraine deposited by ice-contact processes.

Within the subwatershed, the Paris Moraine is the dominant moraine feature and occurs in the southern portion of the study area. The Horseshoe moraine is considered a hummocky deposit primarily composed of sand to sandy silt till that is commonly referred to as the Wentworth Till. The sandy silt till results in lower infiltration rates that may be increased by the hummocky topography and closed depressions of the moraine. Sandy interbeds may be found within the Horseshoe moraine and where present may also increase permeability.

Guelph Drumlin Field: The drumlins of the Guelph drumlin field are typically composed of sandy silt till commonly referred to as the Port Stanley Till. The sandy silt till results in lower infiltration rates and do not likely contain sand and gravel interbeds. Between the streamlined drumlin hills are relatively flat meltwater channels composed of glaciofluvial sand and gravel that may extend to bedrock. Significant outwash deposits associated with the Caledon Meltwater channel occur in the subwatershed from the Niagara Escarpment west towards Erin.

Hillsburgh Sandhills (Orangeville Moraine): The Hillsburgh Sandhills / Orangeville Moraine are primarily ice contact sand and gravel. In addition to the sandy nature of this deposit, the high-relief and hummocky topography promotes increased recharge in the area. As a result, the Hillsburgh Sandhills are an important recharge area within the West Credit River Subwatershed.

Bedrock topography of the area is gently sloping towards the south / southwest and is relatively flat with local relief commonly ranging from 2 m to 6 m. An exception to the relatively flat bedrock topography is the existence of buried bedrock valleys and the steep change in elevation at the Niagara Escarpment. Specifically, within the West Credit River Subwatershed, there is a buried valley that follows the current West Credit River from Erin to Belfountain. In this location overburden materials are thicker and top of bedrock elevations are lower. In general, the bedrock surface represents a regional unconformity affected by erosion from glacial and fluvial processes.

A map of the regional physiography is shown on **Figure 3**.

2.3 Regional Geology and Hydrogeology

A conceptual understanding of the geological and hydrogeological system was developed through review of existing reports and available geological information primarily from work conducted by the Ontario Geological Survey (OGS) and reports completed for the CVC. From these resources, the West Credit River Subwatershed stratigraphy was interpreted to consist of the following units (youngest to oldest):

- Recent deposits (Overburden);
- Wentworth Till (Overburden);
- Glaciofluvial deposits / Orangeville Moraine (Overburden);
- Port Stanley Till (Overburden);
- Guelph Formation Dolostone (Bedrock);
- Amabel Formation Dolostone (a.k.a., Gasport Formation; Bedrock);
- Fossil Hill Formation Dolostone (Bedrock);
- Cabot Head Formation Shale (Bedrock);
- Manitoulin Formation Dolostone (Bedrock);

- Whirlpool Formation Sandstone (Bedrock); and,
- Queenston Formation Shale (Bedrock).

The following section provides a detailed summary of each overburden and bedrock unit.

Overburden Units

Recent Deposits: The most recent deposits consist of a mixture of gravel, sand, silt, and clay that commonly occurs along streams. Recent deposits in the area also consist of organic deposits in areas with poor drainage.

Wentworth Till: The Wentworth Till is described predominantly as a sandy silt to silty sand till and displays variable thickness, with its thickest portion found within the Paris Moraine of the Horseshoe Moraine physiographic element. The sandy silt till results in lower infiltration rates that may be increased due to the hummocky topography and closed depressions common in the Horseshoe Moraine physiographic element.

Glaciofluvial/Orangeville Moraine: The glaciofluvial / Orangeville Moraine sediments are dominated by sand and gravel. Specifically, the Orangeville Moraine is considered an ice contact kame moraine dominated by sand and gravel sediments. The coarse sediments result in higher infiltration but may be locally absent between local till units.

Port Stanley Till: The Port Stanley till is a stoney sandy silt till with low plasticity that is commonly considered the basal till unit existing above bedrock. This till is texturally similar to the Wentworth Till although it may have a greater total carbonate content. Similar to the Wentworth Till, the sandy silt till of the Port Stanley Till results in lower infiltration rates and may act as a confining unit.

Overburden geology is shown on **Figure 4**.

Bedrock Units

Guelph Formation: The Guelph Formation is a light brown crystalline dolostone similar to the Amabel Formation. This Formation acts as an aquifer, but is only found in the western parts of the Credit River Watershed and where found it is commonly thin and difficult to distinguish from the Amabel Formation.

Amabel Formation (a.k.a. Gasport Formation): The Amabel Formation is a light grey, crystalline dolostone with thick beds and abundant fossils and reefal structures. The Amabel Formation is regionally extensive and is considered a significant aquifer due to its high primary and secondary porosity, common fractures, and possible karstic features. Above the Niagara Escarpment the Amabel Formation is the primary surficial bedrock unit and is considered the cap rock of the escarpment.

Fossil Hill Formation: The Fossil Hill Formation of the Clinton group is a fossiliferous dolostone. This unit is commonly thin within the Credit River Watershed, with maximum thickness of approximately 3 m.

Cabot Head Formation: The Cabot Head Formation is described as a greenish grey and red silty shale that is considered a regional aquitard. This formation contains thin sandstone and limestone interbeds and abundant fossils (fossiliferous).

Manitoulin Formation: The Manitoulin Formation is a thin to medium bedded dolostone with abundant fossils and shale beds.

Whirlpool Formation: The Whirlpool Formation is a grey to reddish grey / brown fine grained quartzose sandstone.

Queenston Formation: The Queenston Formation consists of thin to thick beds of red shale and may contain interbeds of grey-green shale, limestone, or siltstone. Although the Queenston Formation is commonly considered an aquitard, when weathered its aquitard characteristics are diminished.

Bedrock geology is shown on **Figure 5**.

2.3.1 Groundwater Takings

In the upper Credit River Watershed, most municipal water supplies are sourced from groundwater and several municipal wells take significant amounts of water from the Guelph-Amabel regional bedrock aquifer, which also is the main aquifer underlying the Site.

The following tables summarize the details of the municipal supply wells in the upper Credit River Watershed, including the well depth below ground surface, permitted rate of water taking and average rate of water taking in 2016 as reported by the municipalities. The municipal groundwater takings indicate that the Guelph-Amabel bedrock aquifer is generally capable of supporting large groundwater takings for drinking water systems.

The closest municipal takings to this Site are the Erin municipal wells, which are approximately 4.3 Km away from the Site. The cumulative total of the Erin municipal takings were 768,031 L/day in 2016. **Table 2.1** to **Table 2.6** demonstrates that the Guelph-Amabel formations are regionally very transmissive aquifers.

Table 2.1 Orangeville Groundwater Takings (Town of Orangeville, 2016)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
2A	Guelph-Amabel	38.7	1,309,000	435,156
5/5A	Overburden	17.7	5,282,000	2,259,976
6	Guelph-Amabel	48.8	3,600,000	2,183,077
7	Guelph-Amabel	47.2	1,310,000	950,991
8C, 8C	Guelph-Amabel	79.2 76.2	654,000	311,145
9A/9B	Guelph-Amabel	17.4 17.4	878,000	679,890
10	Overburden	60.9	1,245,000	957,830
11	Guelph-Amabel	54.8	1,309,000	837,862
12	Guelph-Amabel	49.4	1,309,000	25,677

Table 2.2 Mono Groundwater Takings (Town of Orangeville, 2017)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
MW-1	Guelph-Amabel	60	820,000	20,252

Table 2.2 Mono Groundwater Takings (Town of Orangeville, 2017)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
MW-3	Guelph-Amabel	55	1,571,000	322,158
MW-4	Guelph-Amabel	36	751,000	21,238
Island Lake TW1	Overburden	57.3	3,932,640	300,986
Island Lake PW1	Overburden	58.8		
Island PW2-06	Overburden	50.3		
PW1	Guelph-Amabel	25.1	655,200	150,214
PW2	Guelph-Amabel	25.1		

Table 2.3 Erin Groundwater Takings (Town of Erin, 2017)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
E7	Guelph-Amabel	42	2,159,998	335,342
E8	Guelph-Amabel	46	1,967,998	432,689

Table 2.4 Hillsburgh Groundwater Takings (Town of Erin, 2017)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
H2	Guelph-Amabel	88	454,000	76,149
H3	Guelph-Amabel	58	682,000	

Table 2.5 Caledon Village Groundwater Takings (Regional Municipality of Peel, 2015)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
Caledon Village 3	Overburden	36.1	1,964,000	-
Caledon Village 3B	Overburden	34.7	1,309,000	-
Caledon Village 4	Overburden	75.9	3,273,000	-

Table 2.6 Alton Groundwater Takings (Regional Municipality of Peel, 2015)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
Alton 3	Guelph-Amabel	22	1,047,398	-

Table 2.6 Alton Groundwater Takings (Regional Municipality of Peel, 2015)

Supply Well	Screened Layer	Depth (mbgs)	Permitted Water Taking Rate (L/day)	2016 Average Water Taking Rate (L/day)
Alton 4	Guelph-Amabel	25	1,047,398	-

2.4 Source Protection Plan Considerations

As per the Clean Water Act, delineation of Wellhead Protection Areas (WHPA), Significant Groundwater Recharge Areas (SGRA) and Highly Vulnerable Aquifers (HVA) must be completed for the protection of existing and future drinking water sources.

Based on the Credit Valley Source Protection Area Assessment Report, the Site is located within a SGRA and partially within a HVA. The Site also borders a WHPA-E of Peel Region's Inglewood Well 2. The WHPA-E is an area associated with wells that may be Groundwater Under Direct Influence (GUDI) of surface water.

The portion of the Site that borders the WHPA-E and is within the HVA is an open space feature that will continue to be open space post-development. Therefore, no influence or impact within the WHPA-E or HVA from development of the Site is anticipated. As discussed later in this report, groundwater recharge will be maintained post-development, which fulfills the requirement for development within a SGRA.

3 Natural Heritage

3.1 Water Courses

The West Credit River is managed as a cold-water fish habitat. In the main and middle tributaries, it is home to cold-water fish such as brook trout and brown trout. The lower portion of the West Credit River supports a migratory cold water fishery, including Chinook salmon, rainbow trout and brown trout (CVC, 2009). The cold-water habitat is supported by groundwater discharge, which supports baseflow. Baseflow within the West Credit River has been estimated to be approximately 330 L/s (Davies and Holysh 2007). By comparison, an assumed groundwater taking of approximately 1.7 L/s is expected at the Site (150,750 L/day) (~ 0.5% of the total baseflow of the West Credit River). There are no other watercourses that traverse the Site. There is an intermittent drainage feature that flows onto the Site from the property to the south, and the source of the flow is considered to be wetland drainage. The drainage feature was observed to be dry during COLE site visits in fall 2017, and it appears that any flow in this feature infiltrates into the overburden in a depression and provides recharge to the groundwater system.

3.2 Wetlands

The on-Site wetlands (SWT3-2 and MAS3-1), located in the northern area of the Site, are a diverse habitat consisting of at least two organic soil vegetation types; Cattail Marsh (MAS3-1) and Willow Thicket Swamp (SWT3-2) (Savanta 2018). The Cattail Marsh is classified as a shallow marsh with the tall herb layer formed of broad-leaved cattail, blue-joint grass and reed-canary grass, while the medium layer is dominated by beaked sedge. The marsh has been confirmed as a breeding habitat for the endangered Jefferson Salamander, and is dominated by Broad-leaved Cattail (*Typha latifolia*), Reed-canary Grass (*Phalaris arundinacea*) and Blue-joint Grass (*Calamagrostis canadensis; Savanta 2018*). The Willow Thicket Swamp occurs in shallow water on an almost floating organic mat. The willow is accompanied by red-osier dogwood and bitter nightshade. Beneath the canopy of shrubs grow tall grasses – blue joint and reed canary. The swamp is dominated by the locally rare (CVC) plant species Autumn Willow *(Salix serissima)*, and is accompanied by Red-Osier Dogwood (*Cornus sericea*) and Bitter Nightshade (*Solanum dulcamara; Savanta 2018*).

The off-Site wetlands (SWM1-1 and MAM3-1), located just north of the Site, consist of a White Cedar-Hardwood Mineral Mixed Treed Swamp (SWM1-1) and a Blue-Joint Organic Meadow Marsh (MAM3-1). The EIS determined that there is no significant amphibian breeding habitat on the Site or the off-Site wetlands (Savanta 2018).

The wetland locations identified above can be seen on **Figure 6**.

4 Site Investigations

4.1 Previous Investigations

The following are summaries of previous hydrogeological investigations at the Site conducted by other consultants.

4.1.1 Terraprobe

Terraprobe conducted a hydrogeological investigation at the Site between 1988 and 1989. There were a total of 30 boreholes completed with standpipes drilled to approximately three (3) mbgs and an additional nine (9) boreholes completed with standpipes ranging between 3.6 mbgs to 18.7 mbgs in 1989. A layer of fine sand to silt material was noted at depths of up to approximately 1.4 mbgs at locations 88-2, 88-4, 88-6, 88-7, 88-13, 88-14, 88-17 and 88-18. Outwash materials were encountered at depths of approximately 2.1 mbgs at the northeast portion of the Site in the vicinity of OW-1 and approximately 15 mbgs in the vicinity of OW-2 south of the Site. Glacial till extended from close to ground surface to the base of boreholes at 88-13, 88-21 to 88-30 and OW-2.

Aquifer performance tests were conducted during the hydrogeological investigation. In 1988, a step-drawdown test was conducted at PW-1 at rates of 1 gpm (0.08 L/s), 2.5 gpm (0.18 L/s) and 4 gpm (0.30 L/s). At PW-2, the pumping rates were set to 10 gpm (0.76 L/s), 20 gpm (1.52 L/s), 30 gpm (2.27 L/s) and 35 gpm (2.65 L/s). In 1989, a 24 hour pumping test was conducted at PW-3 at a rate of 25 gpm (1.89 L/s). Two pumping tests were performed at PW-4 at a rate of 1 gpm (0.08 L/s). Based on Terraprobe's report, the test results demonstrated that there is sufficient water supply for the proposed development at the Site.

Terraprobe conducted a private residential well survey at 63 residences in the Belfountain area in 1988 and contact was made with 13 residents. An additional private well survey was conducted by Terraprobe in 1989 at 81 residences and 31 responses were received. A third survey was conducted at select residences in 1990 in the Caledon Mountain Estates. Based on the findings from the private well surveys, Terraprobe identified that water supply from shallow dug wells had generally poor quality and quantity in contrast to drilled wells.

Based on the completed investigation, Terraprobe concluded that the proposed development of 73 lots (at that time) could be supported by groundwater supply and that conventional septic systems would be appropriate for the development. Terraprobe concluded that the development could proceed with minimal potential for impact to natural features or groundwater users.

4.1.2 W.B. Beatty & Associates

In June 2002, W.B. Beatty & Associates Limited (W.B. Beatty) conducted an assessment of water supply and wastewater servicing at the Site through a review of previously completed reports, including hydrogeological studies by Terraprobe from 1988 to 1992. W.B. Beatty commented that the sand and gravel aquifer and dolostone aquifer along the western boundary of the Site would be the most promising areas for water quantity and that water supply wells located within this area would also minimize potential interference with nearby wetlands and ponds. It was suggested that average day water supply demand could be met by a single well in the dolostone aquifer.

4.1.3 R.J. Burnside

Between June 2014 and June 2017, R.J. Burnside monitored groundwater elevations in 29 wells which included four (4) piezometers on-site and three (3) nearby residential wells. Groundwater samples were collected from monitoring wells TW1 to TW12 for water quality analysis and comparison to ODWS between December 2014 and May 2017.

R.J. Burnside completed five (5) infiltration tests at five (5) separate locations using a Turf-Tec Infiltrometer. The analyses from these infiltration tests are provided in **Section 5.4**.

Six (6) pumping tests were conducted between June 2014 and August 2014 and two (2) additional pumping tests were conducted between March 2016 and April 2016. The results are presented in **Section 5.4.** R.J. Burnside provided the data, analyses and drawings from their investigation to Manors of Belfountain for use by COLE.

4.1.4 Geotechnical Investigations

In June 2014, *exp* conducted a geotechnical investigation that involved drilling four (4) boreholes at the Site to depths ranging from 4.9 mbgs to 12 mbgs. From Boreholes 1 to 3, sand and gravel to sand and silt were found beneath a thin layer of ploughed material. A very dense sandy silt layer was encountered approximately 7 mbgs at Borehole 3 towards the southeast of the Site. It was suspected that the dolostone bedrock was found at approximately 3.2 mbgs at Borehole 4 located near the north boundary of the Site.

An additional seven (7) boreholes were drilled at the Site in August 2017 ranging from 4.6 mbgs to 8.2 mbgs. A topsoil layer approximately 20 cm to 50 cm in thickness was encountered during drilling at all boreholes. Below the layer of topsoil was a layer of reworked materials consisting of dark brown to brown silty sand mixed with trace clay to clayey, trace to some gravel, trace rootlets, and occasional boulder fragments at all boreholes from approximately 0.6 mbgs to 1.4 mbgs. Sand and gravel were encountered until termination at 8.2 mbgs.

4.2 COLE Investigations

Starting in October 2017, COLE conducted a hydrogeological investigation consisting of the following:

- Groundwater level measurements;
- Groundwater sampling;
- Review of existing geologic and hydrogeological information;
- Water balance analysis;
- Nitrate loading assessment; and
- Assessment of water taking rates and analysis of pumping test results.

Findings from the investigation are discussed further below. Boreholes, wells, and other monitoring locations shown on **Figure 6**. Monitoring wells used in the current hydrogeological investigation are outlined in **Table 4.1**. Borehole logs for monitoring wells are included as **Appendix B**.

Table 4.1 Monitoring Well Details

Well ID	Easting	Northing	Ground Elevation (masl)	Consultant	Well Stick up (m)	Well Elevation Top of Pipe (masl)	Screen Material	Depth to Bottom (mbtop)	Depth to Bottom (masl)	Depth to Bedrock (mbtop)
TW1	579485	4848275	412.7	R.J. Burnside	1.1	413.8	limestone and shale	55	54	29
TW1-09	579078	4848671	403.0	Beatty	0.69	403.7	limestone	35	34	22
TW2	579799	4848770	402.1	R.J. Burnside	0.60	402.7	limestone and shale	21	20	12
TW3	579615	4848765	402.3		0.55	402.9	limestone and shale	37	36	19
TW4	579633	4849059	404.5		0.60	405.1	limestone and shale	26	36	17
TW5	579982	4849204	405.1		0.54	405.7	limestone and shale	33	32	13
TW6	580018	4849204	405.9		0.52	406.4	limestone and shale	32	31	13
TW7	580089	4849093	405.0		0.58	405.6	limestone	23	23	7.9
TW8	579760	4849152	405.9		0.66	406.5	limestone and shale	35	35	19
TW9	579973	4848950	404.7		0.59	405.3	limestone and shale	36	35	9.8
TW10	579766	4848879	402.6		0.80	403.4	limestone	31	30	15
TW11	579655	4849078	406.1		0.70	406.8	limestone	32	37	15
TW12	579433	4848647	402.1		0.73	402.9	limestone and shale	37	37	23

Table 4.1 Monitoring Well Details

Well ID	Easting	Northing	Ground Elevation (masl)	Consultant	Well Stick up (m)	Well Elevation Top of Pipe (masl)	Screen Material	Depth to Bottom (mbtop)	Depth to Bottom (masl)	Depth to Bedrock (mbtop)
MW1-14D	579813	4848758	400.6	R.J. Burnside	0.70	401.3	clay and stones	12	12	N/A
MW1-14S	579812.90	4848758.30	400.6		0.70	401.3	clay and stones	8.2	7.5	N/A
OW1	579792.70	4849322.10	390.0		0.77	390.8	dolostone	5.9	5.1	2.1
PW3	579257.58	4848934.12	401.3		0.44	401.8	dolostone and shale	35	35	24
PW4	579547.70	4849264.70	383.9		1.2	385.1	shale	27	26	-
PZ2-14	579557.10	4849228.50	389.5	-	0.87	390.3	-	1.7	0.80	-
BH 105	579640.16	4849029.99	405.0	exp	0.85	405.8	-	-	-	-
BH 107	579996.10	4849206.50	405.3	exp	-	-	-	-	-	-

Note:

- Indicates unavailable data

5 Local Geological and Hydrogeological Conditions

5.1 Topography and Physiography

Topography at the Site is predominantly hummocky with closed depressions allowing for increased groundwater recharge. The Site is considered to be primarily within the Horseshoe Moraine physiographic region due to the sand content and hummocky nature of the topography. Specifically, the Site is in close proximity to Paris Moraine sediments but overlies meltwater channel glaciofluvial sediments. In the north / northeast portion of the Site there is a steep slope towards the West Credit River that likely represents the proximity of the Niagara Escarpment physiographic region.

5.2 Geology

In order to characterize the hydrogeological setting on Site, COLE developed two geologic cross-sections. The cross-sections were developed based on Site logs for boreholes completed during previous hydrogeological studies. **Figure 7** presents a plan view of the Site and location of the cross-sections. **Figure 8** and **Figure 9** present a cross-section geological understanding of the Site.

Table 5.1 Summary of Geologic Units at the Site

Formation	Geology	Material
Recent Deposits	Overburden	Mix of gravel, sand, silt and clay along streams and organic deposits in wetlands
Wentworth Till (aquitard)	Overburden	Sandy silt to silty sand till
Glaciofluvial / Orangeville Moraine (aquifer)	Overburden	Sand and gravel sediments
Port Stanley Till (aquitard)	Overburden	Stoney sandy silt till
Guelph Formation (aquifer)	Bedrock	Light brown crystalline dolostone
Amabel Formation (aquifer)	Bedrock	Light grey, crystalline, fossiliferous dolostone
Cabot Head Formation (aquitard)	Bedrock	Greenish grey and red silty shale
Manitoulin / Whirlpool Formation (confined aquifer)	Bedrock	Medium bedded dolostone with shaley interbeds; Grey to reddish quartzose sandstone
Queenston Formation (aquitard)	Bedrock	Red shale

5.2.1 Overburden Geology

Recent deposits at the Site are primarily located within the wetlands to the north of the Site (SWT3-1 and MAS3-1). Based on borehole logs, the overburden materials within the Site are dominated by sand and gravel deposits interpreted to be glaciofluvial deposits. As a result of the prevalence of sand and gravel encountered at surface, it is interpreted that the Wentworth Till is limited in extent across the Site. The glaciofluvial sand and gravel deposits are sometimes found underlying the Wentworth Till, where the till is present.

Based on the regional stratigraphy, Port Stanley Till is expected to be the basal till occurring above bedrock at the Site. Although, based on borehole logs, a sandy silt till is not defined above bedrock across the entire Site, it is possible that the clay materials above bedrock and possibly some of the sandy silt / silty sand described above bedrock may be the Port Stanley Till.

5.2.2 Bedrock Geology

Based on borehole logs at the Site, bedrock is dominated by limestone and dolostone deposits. Although borehole logs do not differentiate the limestone and dolostone bedrock units, it is likely that they are primarily composed of the Guelph-Amabel Formation dolostone aquifer and possibly contain a thin unit of the Fossil Hill Formation.

Based on available OGS mapping, there is the potential for karst in the Belfountain area (Brunton and Dodge, 2008). Karst expressions at the surface may act as points of focused recharge. However, identifying Karst within the area is difficult as the significant overburden thickness reduces the ability to identify individual karst features. Focused recharge within thick overburden deposits may be a result of other features within the sediment, such as closed depressions, or a buried tile bed. Due to the relatively thick overburden at the Site, it will be difficult to confirm the presence of any potential karst features.

The limestone and dolostone deposits of the Guelph and Amabel Formations are underlain by shale interpreted to be the Cabot Head Formation, which acts as a regional aquitard. Borehole logs on Site do not extend deep enough to characterize the lower bedrock units and the presence / absence and thickness of the Manitoulin / Whirlpool and Queenston formations. However, off-Site boreholes and MOECC water well records indicate that the Cabot Head Formation shales are underlain by the Manitoulin / Whirlpool Formation Aquifer, followed by the Queenston Formation shale aquitard.

5.3 Hydraulic Conductivity

Six (6) different 6-hour pumping tests were conducted by R.J. Burnside in select wells (TW1 to TW6) in order to obtain an understanding of the in-situ hydraulic properties of the dolostone unit across the Site. Tests were conducted in late spring or summer month when generally drier conditions would be expected, including on June 11, 2014, July 8, 2014, July 15, 2014, August 26, 2014, and August 28, 2014.

For each test, a known pumping rate was used and drawdown and recovery were measured manually and/or with a data logger until a minimum of 95% recovery was achieved. Transmissivity estimates were subsequently obtained from the Cooper-Jacob non-equilibrium equation below.

$$T = \frac{0.183Q}{\Delta s}$$

Where,

T transmissivity (m^2/day)
Q pumping rate (m^3/day)
Δs Slope of the time-drawdown graph expressed as a change in drawdown between any two times on the log scale whose ratio is 10 (one log cycle).

Hydraulic conductivity was then calculated using the equation below.

$$K = \frac{T}{b}$$

Where,

K hydraulic conductivity (m/day)
B thickness of saturated aquifer (m)

Distance-time curves used to estimate Δs for the above equation are shown in **Appendix C. Table 5.2** summarizes the transmissivity and hydraulic conductivity estimates obtained by R.J. Burnside using the Cooper-Jacob method. Further discussion of the pumping test results are presented in **Section 6**.

Table 5.2 Estimated Transmissivity and Hydraulic Conductivity

Well ID	Pumping Rate (L/min)	Aquifer Thickness (m)	Transmissivity (m^2/day)	Hydraulic Conductivity (m/s)
TW1	45	23.2	9.37	4.7×10^{-6}
TW2	11.34	6.04	14.94	2.86×10^{-5}
TW3	96.6	16.12	84.85	6.1×10^{-5}
TW4	30.6	16.12	403.19	2.9×10^{-4}
TW5	75.6	16.88	26.60	1.83×10^{-5}
TW6	68.4	17.18	72.10	4.86×10^{-5}

5.4 Infiltration Rates

R.J. Burnside completed five (5) infiltration tests using a Turf-Tec Infiltrometer and two (2) infiltration tests were completed using test pits. The test results are summarized in the following table. The location of infiltration tests are shown on **Figure 6**.

Review of the infiltration test results by COLE indicates that the results seem reasonable and accurate with the exception of the some of the surface material descriptions. Surface materials at the Site are expected to be primarily sandy with some till. The higher infiltration rates seen in **Table 5.3** agree with the expected sandy sediments on Site. Raw data and graphs by R.J. Burnside are provided in **Appendix D**.

Table 5.3 Infiltration Test Results

Location	Depth (m)	Materials	Stable Infiltration Rate (mm/hr)
IT1	0.33	Silt, some sand, trace clay	171
IT2	0.32	Sandy silt, firm, moist, trace clay, bobbles	29
IT4	0.36	Silty clay, some sand, cobbles	327
IT5	0.33	Clayey silt, till, soft, wet, some sand, cobbles, boulders	90
IP1	0.50	Silt, dark brown, some sand, trace clay	200
IP2	0.50	clay silt, soft with coarse gravel	420

The infiltration rate values estimated by R.J. Burnside are generally quite high and reflect the high content of sand and gravel in the shallow deposits at the Site. As described in **Section 6**, the water balance for the Site indicates that groundwater recharge is generally high, reflecting the coarse grained soils and hummocky topography at the Site. As noted in the discussion of groundwater levels below, the overburden is largely unsaturated across most of the Site, which further enhances groundwater recharge.

5.5 Groundwater Levels

Historical groundwater level monitoring on Site was completed by R.J. Burnside between June 2014 and June 2017. COLE began monitoring in October 2017. Water levels from October 2017 for on-Site wells are provided in **Table 5.4** and hydrographs for wells historically monitored by R.J. Burnside are provided in **Appendix E**.

Table 5.4 Groundwater Level Measurements (October 2017)

Well ID	Monitoring Point Elevation (masl)	Ground Elevation (masl)	Water Level (mbgs)	Water Level (masl)
TW1	413.80	412.74	18.16	394.59
TW1-09	403.69	403.00	15.63	387.37
TW2	402.67	402.07	11.53	390.54
TW3	402.87	402.32	16.15	386.17
TW4	405.11	404.51	19.01	385.50
TW5	405.67	405.13	16.02	389.11
TW6	406.52	405.90	14.56	391.34
TW7	405.55	404.97	12.79	392.17
TW8	406.54	405.88	20.41	385.47
TW9	405.29	404.70	14.17	390.53
TW10	403.38	402.58	15.03	387.54
TW11	406.77	406.07	20.50	385.57
TW12	402.78	402.05	14.09	387.96
MW1-14S	401.33	400.63	Dry	Dry
MW1-14D	401.33	400.63	11.26	389.37
OW1	390.78	390.01	Dry	Dry
PW3	401.77	401.33	16.12	385.22
PZ2-14	390.33	389.46	0.83	388.60

Most wells on Site are screened within limestone and shale bedrock units (Amabel and Cabot Head Formations) and thus are considered to be representative of the bedrock groundwater flow system. A depth to groundwater map based on on-Site wells is illustrated on **Figure 10**.

Groundwater across the Site is typically 10 to 20 m below ground surface (mbgs). Near the on-Site wetland features (SWT3-2 and MAS3-1), groundwater is typically between 0 to 1 mbgs. Groundwater near the off-Site wetland features (SWM1-1 and MAM3-1) is also expected to be near ground surface; although, contours on **Figure 10** suggest that groundwater may be deeper near the off-Site wetland features. The deeper groundwater levels shown on **Figure 10** may be due to the lack of available data to constrain the contours in the vicinity of the off-Site wetland features.

In general, groundwater elevations mirrors the ground surface topography. Groundwater is typically found at greater depths in topographic highs and closer to surface in topographic lows. As a result, the depth to groundwater in the west of the Site generally decreases from south to north, with water levels closest to the surface near the wetlands in the North of the Site. In the east of the Site the depth to groundwater increases from south to north before decreasing again where elevation changes sharply.

Seasonal groundwater fluctuations are seen in the hydrographs (**Appendix E**) and indicate a general trend of decreasing water levels in the summer and fall and increasing water levels in the winter and spring. On average across the Site, seasonal water level changes are not greater than 3 m, with the exception of TW2 which seems to experience larger seasonal groundwater changes up to approximately 6 m.

5.6 Groundwater Flow and Hydraulic Gradients

Groundwater elevation contours based on on-Site wells and topographic elevations at the West Credit River can be seen on **Figure 11**.

Groundwater elevations on-Site range from approximately 385 masl to approximately 395 masl, with the water table found typically close to the bedrock / overburden interface. In general, groundwater elevations are higher in the south and lower in the north of the Site, mimicking the Site topography. Groundwater contours indicate horizontal groundwater flow within the bedrock is approximately south to north on Site, towards the West Credit River.

There have been anecdotal references to a “disappearing stream” and “underground stream” at the Site and, based on available mapping, there is the potential for karst in the Belfountain area. However, the significant overburden thickness at the Site suggests that the headwater drainage feature is a losing reach and is unlikely to be the result of local karst features. The loss of flow in the headwater drainage feature is interpreted to be the result of a losing reach once the stream crosses onto the highly permeable outwash deposits from the lower permeability Wentworth Till units to the south.

Vertical hydraulic gradients were not determined since nested monitoring wells were not installed on the Site. Regardless, based on regional mapping (Davies and Holysh, 2007), downward gradients are expected across the site. Upward gradients associated with groundwater discharge to surface is expected to occur in the West Credit River valley.

5.7 Groundwater Quality

Groundwater quality samples were collected by R.J. Burnside from twelve (12) on-Site wells between 2015 and 2017 and two (2) off-Site wells in 2015. The collected groundwater samples were sent to AGAT Laboratories for analysis of general inorganics, metals and total suspended solids to characterize the baseline groundwater quality at the Site. Results were compared to the Ontario Drinking Water Standards (ODWS) to identify potential exceedances of water quality parameters. Results for select parameters from the twelve (12) on-Site wells from March 3, 2017 are outlined in **Table 5.5** and **Table 5.6**. For full analytical results and certificates of analysis, please refer to **Appendices F** and **G**.

Review of the water quality results indicate that there were no exceedances of health-related ODWS. Results of the analysis do show exceedances of some aesthetic and operational ODWS for some samples (**Table 5.5** and **Table 5.6**). Parameters with exceedances of ODWS include total hardness, total dissolved solids, sulphate, turbidity, and iron. These parameters, with the exception of hardness, are considered aesthetic guidelines that are established for parameters that impair the taste, odour or colour of water but do not directly affect the safety of the water supply.

The water hardness at the Site and other aesthetic parameters (turbidity, sulphate, total dissolved solids, and iron) can be improved with water treatment systems for each property, including a water softener.

Information about a commonly employed residential water quality treatment unit is provided in **Appendix M** as an example for reference purposes. This example and many other residential water quality treatment systems are also capable of reducing concentrations of health-related parameters (such as nitrate); although, as noted above, there have been no exceedances of health-related ODWS from water quality results from the Site.

Table 5.5 Select Groundwater Quality Results from March 10, 2017

Water Quality Parameter	Units	ODWS		RDL	TW1	TW2	TW3	TW4	TW5	TW6
		OG	AG							
Total Hardness (as CaCO3)	mg/L	80-100	-	0.5	361	181	433	275	288	288
Total Dissolved Solids	mg/L	-	500	20	396	198	484	284	306	308
Nitrate as N	mg/L	10	-	0.1	<0.05	1.16	0.62	3.43	6.76	8.52
Nitrite as N	mg/L	1	-	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	-	500	0.2	105.0	13.8	193.0	18.9	14.1	13.5
Turbidity	NTU	-	5	0.5	135.0	3.3	15.3	0.6	1.9	<0.5
Iron	mg/L	-	0.3	0.01	0.167	<0.010	0.032	<0.010	<0.010	<0.010

1.7	Sample exceeded ODWS OG or AG
RDL	Reportable Detection Limit
-	No value available
ODWS	Ontario Drinking Water Standard
OG	Operational Guideline
AG	Aesthetic Guideline

Table 5.6 Select Groundwater Quality Results from March 10, 2017 Continued

Water Quality Parameter	Units	ODWS		RDL	TW7	TW8	TW9	TW10	TW11	TW12
		OG	AG							
Total Hardness (as CaCO3)	mg/L	80-100	-	0.5	291	301	310	202	278	1020

Table 5.6 Select Groundwater Quality Results from March 10, 2017 Continued

Water Quality Parameter	Units	ODWS		RDL	TW7	TW8	TW9	TW10	TW11	TW12
		OG	AG							
Total Dissolved Solids	mg/L	-	500	20	306	312	326	216	286	1400
Nitrate as N	mg/L	10	-	0.1	5.77	6.68	2.68	1.68	3.94	<0.25
Nitrite as N	mg/L	1	-	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25
Sulphate	mg/L	-	500	0.2	14.4	31.1	50.1	14.3	19.1	896
Turbidity	NTU	-	5	0.5	1.8	113	2.0	64.8	7.4	8.6
Iron	mg/L	-	0.3	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	0.665

1.7	Sample exceeded ODWS OG or AG
RDL	Reportable Detection Limit
-	No value available
ODWS	Ontario Drinking Water Standard
OG	Operational Guideline
AG	Aesthetic Guideline

In addition to the general groundwater quality results discussed above, groundwater samples were collected from twelve (12) on Site wells (TW1 to TW12) by R.J. Burnside between July 2014 and May 2017 and by COLE in October 2017 and analyzed for nitrate and nitrite. Nitrate concentration results are provided in in **Table 5.7**.

Water samples obtained by COLE were collected using a submersible pump. Prior to collecting samples, the monitoring wells were purged by removing three (3) well volumes from each well. The purging process removes stagnant water from the well, thereby ensuring the groundwater samples are representative of the groundwater in the formation adjacent to the screen. In addition, groundwater parameters including pH, temperature, conductivity, and turbidity were monitored and samples were collected after all parameters had stabilized.

The collected groundwater samples went to Maxxam Analytics Inc. Mississauga, for laboratory analysis of nitrate and nitrite. Results were compared to ODWS for nitrate-nitrogen, 10 mg/L, to identify potential exceedances. Results of the analysis showed no exceedances of the ODWS for nitrate for any samples. Higher concentrations (>5 mg/L) were observed within the northern portion of the Site in five (5) wells (TW5, TW6, TW7, TW8 and TW11). Average nitrate concentrations across the Site from all sampling results can be seen in **Figure 12**.

The on-Site areas with higher nitrate concentrations are likely a result of the historical and current agricultural activities occurring both on-Site and up gradient of the Site. Development of the Site will result in a reduction of the agricultural areas suspected of contributing to the on-Site nitrate concentrations by approximately 67%. Thus, development of the Site is expected to lead to a long term decrease in nitrate concentration on-Site.

Table 5.7 Nitrate Concentrations on Site

Nitrate Concentrations (mg/L)													
Well ID	**Apr 2015**	**Jun 2015**	**Sept 2015**	**Nov 2015**	**Feb 2016**	**Mar 2016**	**Apr 2016**	**June 2016**	**Sept 2016**	**Dec 2016**	**Mar 2017**	**May 2017**	**Oct 2017**
TW1	-	-	-		-	-	-	-	-	-	<0.05	<0.05	<0.10
TW2	0.84	0.70	1.00	0.62	-	0.58	-	1.18	0.82	0.67	1.16	1.90	1.01
TW3	-	-	-	-	-	0.54	-	-	-	-	0.62	0.58	0.21
TW4	-	-	-	-	-	3.0	-	-	-	-	3.43	3.22	1.95
TW5	6.31	8.28	7.77	7.09	-	7.80	-	6.72	7.18	6.34	6.76	7.99	8.41
TW6	7.80	8.20	7.30	-	-	-	8.23	-	-	-	8.52	9.08	7.87
TW7	-	-	-	-	8.52	7.27	-	6.32	6.97	5.97	5.77	6.87	8.13
TW8	-	-	-	-	8.25	7.76	-	5.35	7.85	7.41	6.68	5.15	6.47
TW9	-	-	-	-	3.65	3.41	-	2.99	2.17	1.51	2.68	3.02	2.81
TW10	-	-	-	-	2.41	-	-	-	-	-	1.68	0.85	1.63
TW11	-	-	-	-	4.61	5.03	-	3.00	4.08	3.58	3.94	3.00	3.41
TW12	-	-	-	-	-	<0.25	-	-	-	-	<0.25	<0.10	<0.10

Note:

\- Indicates no sample collected

5.8 Groundwater – Surface Water Interactions

5.8.1 Water Courses

A small headwater drainage feature flows from off-Site near PZ1-14 onto the Site from the south near TW2 and MW1-14, where it appears to infiltrate through a depression into the thick coarse-grained (outwash) overburden. Although this feature has been anecdotally referred to as a “disappearing stream” or “underground stream” associated with karst, the relatively thick overburden at the Site reduces the possibility of this feature being a result of local karst features. This feature is interpreted to lose flow and infiltrate as it moves from less permeable Wentworth Till in the south onto the more permeable sandy outwash sediments on-Site. Water that infiltrates across the Site is interpreted to infiltrate vertically through the coarse-grained unsaturated zone to the water table where horizontal groundwater flow is generally towards the north. The on-Site portion of the small headwater drainage feature was observed by COLE staff to be dry during a Site visit in October 2017. Therefore, this feature is interpreted to be an ephemeral feature contributing groundwater recharge after precipitation, snowmelt and freshet events.

Groundwater levels at PZ1-14, near the headwater drainage feature, are consistently below ground surface by approximately 1 m. Similarly, groundwater levels at TW2 and MW1-14 are consistently below ground surface during all times of year when data was collected indicating that this feature is not supported locally by groundwater discharge but provides a groundwater recharge function (i.e., is a losing reach). Due to the higher water table at PZ1-14 compared to TW2, MW1-14, and the rest of the Site, it is interpreted that this high water table represents a local perched water table system. The hydrograph for PZ1-14, which is provided in **Appendix E**, shows that this piezometer frequently goes dry further supporting the interpretation of a localized perched system.

No other water courses are seen on Site. Off-Site, the West Credit River likely receives groundwater contributions that maintain the base flow of this cold water fish habitat.

5.8.2 Wetlands

One piezometer, PZ2-14, was installed to a depth of approximately 1 mbgs in one of the on-Site wetland units (SWT3-2). A hydrograph illustrating water level fluctuations relative to ground surface for PZ2-14 is provided in **Appendix E**.

Examination of the water levels in PZ2-14 shows variable groundwater levels that are consistently below ground surface with the exception of very wet spring conditions when groundwater levels are only slightly above ground surface (maximum of 4 cm above ground surface). As a result, groundwater contributions to SWT3-2 are estimated to be negligible.

Although, there is no direct groundwater monitoring data for wetland unit MAS3-1 on Site, the ground elevation (as indicated by cross-section A-A’ on **Figure 8**) is very similar to SWT3-2 and thus groundwater is expected to be at a similar elevation as STW3-2, or slightly deeper, as it declines towards the West Credit River. Observations made during a Site visit on November 8, 2017 confirm that groundwater is approximately 0.86 mbgs within SWT3-2 and no standing water was visible within MAS3-1.

The two off-Site wetland units (SWM1-1 / MAM3-1) do not have groundwater level monitoring data, thus, groundwater contributions cannot be accurately quantified. Based on a Site visit on November 8, 2017, SWM1-1 was observed to have standing water and wet soils. Therefore, groundwater contributions to SWM1-1 appear to be present. Although groundwater contributions to the off-Site wetlands are not quantified, they are not within the radius of influence or the radius of contribution of the closest potential on-Site supply well and the proposed development will maintain pre-development infiltration rates thus, no groundwater impacts to the off-Site wetlands are anticipated. Additional discussion of the potential impacts to the off-Site wetland features are described in **Section 7.2.2**.

5.9 MOECC Well Records

A MOECC well records search was conducted for a 500 m radius around the Site. A total of 145 wells were identified within a 500 m radius of the Site. Based on the MOECC well records, the majority (81%) of the nearby wells were identified as water supply wells. The search results are provided in **Appendix H** and are summarized in **Table 5.8** below. The locations of nearby MOECC well records are shown on **Figure 13**.

Table 5.8 Summary of MOECC Well Records within a 500 m Radius Around the Site

Well Use	Number of Wells	Percent of Wells
Water Supply	118	81.38
Abandoned	11	7.59
Monitoring/Test Hole	8	5.52
Observation	7	4.82
Unfinished	1	0.69
Total	**145**	**100**

A search of permitted water takers within a 500 m radius around the Site was conducted in December 2017 through the MOECC digital data request process. No active permitted groundwater takers were identified.

As noted in **Section 4.1**, a private residential well survey at 63 residences in the Belfountain area was conducted by Terraprobe in 1988 and contact was made with 13 residents. An additional private well survey was conducted by Terraprobe in 1989 at 81 residences and 31 responses were received. A third survey was conducted at select residences in 1990 in the Caledon Mountain Estates. Based on the findings from the private well surveys, Terraprobe found that water supply from shallow dug wells had generally poor quality and quantity in contrast to drilled wells.

It should be noted that results from these surveys may now be outdated, and an updated well survey for the area surrounding the Site would be helpful towards understanding current groundwater usage and quality in the area.

6 Impact Assessment

6.1 Water Balance

As part of the hydrogeological investigation a water balance analysis was completed to determine pre-development recharge and runoff conditions at the Site.

6.1.1 Background

For any system with defined boundaries, a water balance can be used to estimate the individual components of the hydrologic cycle. This exercise consists of an accounting of the transfer of water across the system's boundaries over a certain period of time whereby any difference between inflows to the system and outflows from the system is balanced by a change of storage within the system.

In order to understand the components of the hydrologic cycle under existing conditions, a water balance analysis was conducted for the Site. The discussion below provides details on the methodology used and the results obtained from the analysis. A summary of the calculations is provided in **Appendix I**.

6.1.2 Methodology

A Site scale water balance analysis was completed in order to estimate the components of the hydrologic cycle for the Site, and was modelled using the following equation:

$$P = \triangle GS + ET + R + I$$

Where:

P = Precipitation, which represents the sum of all rainfall and snowfall
$\triangle GS$ = Change in groundwater storage
ET = Evapotranspiration
R = Runoff
I = Infiltration

The water balance for the Site was developed using the Thornthwaite and Mather (1955) methodology as outlined in Chapter 3 of MOECC's SWM Planning & Design Manual (MOECC, 2003). The methodology roughly estimates yearly evapotranspiration, infiltration and runoff volumes based on soil types, ground cover, topography, and annual precipitation.

Monthly mean temperature and monthly precipitation data were used in the Thornthwaite Equation to estimate the monthly potential evapotranspiration. The estimated monthly potential evapotranspiration was adjusted using a daylight correction factor to account for varying length of daylight throughout the year based on latitude. The actual evapotranspiration was then determined by accounting for a change in soil moisture storage.

The monthly water surplus (amount of water available to infiltrate or runoff) was estimated by calculating the difference between monthly precipitation and actual evapotranspiration. Infiltration was estimated by multiplying a set of infiltration factors (dependent on the topography, soil type, and land cover) to the estimated water surplus. Runoff was considered to be the remainder of the water surplus that was not infiltrated.

6.1.3 Site Water Balance

Site specific parameters used to calculate the Site water balance as described in **Section 6.1.2** were determined as follows.

Precipitation and temperature data were obtained from the Environment Canada Orangeville Weather station (Climate ID: 6155790). Climate normal data (1981-2010) were used in the water balance analysis to provide a general understanding of the climate on Site, while averaging out the effects of wet and dry years.

The Site was divided and classified according to agricultural areas and wooded areas. Infiltration factors were selected for each area from Table 3.1 in the MOECC's Stormwater Management Planning and Design Manual (MOECC, 2003). Ground cover and topography infiltration factors were informed from Site visits and using aerial photographs. Agricultural areas were considered flat lands due to closed depressions whereas wooded areas were considered hilly lands based on topographic slope.

Surficial soil infiltration factors were informed from Site borehole logs and determined to be predominantly sand. Soil moisture capacities were also determined from the MOECC 2003 document and informed by ground cover and soil type. Infiltration factors and soil moisture capacities for the different areas are summarized in **Table 6.1**.

Table 6.1 Summary of Infiltration Factors and Soil Moisture Capacity

Area	Area (ha)	Infiltration Factor (Topography)	Infiltration Factor (Soil)	Infiltration Factor (Cover)	Soil Moisture Capacity (mm)
Agricultural	50.27	0.30	0.40	0.10	75
Wooded	20.01	0.10	0.40	0.20	200

6.1.4 Water Balance Analysis Results

The results of the Site-wide pre-development water balance are summarized in **Table 6.2**. The time period used for the analysis was the 30 year climate normal period from 1981 to 2010 to allow for an understanding of average magnitudes of the components of the hydrologic cycle.

Table 6.2 Results of Water Balance Analysis for 1981 to 2010

	Hydrologic Cycle Component	Agricultural Lands		Wooded Areas	
		(mm/year)	(m^3/year)	(mm/year)	(m^3/year)
Inputs	Precipitation	901.6	453,234	901.6	180,410
	Total inputs		**453,234**		**180,410**
Outputs	Evapotranspiration	526	264,422	548	109,684
	Change in soil storage	0	0	0	0
	Runoff	75	37,762	106	21,218
	Infiltration	300	151,050	247	49,508
	Totals outputs		**453,234**		**180,410**

Based on the water balance analysis for pre-development conditions, infiltration comprises approximately 32% of the total precipitation across the entire Site, runoff comprises approximately 9% of total precipitation, and evapotranspiration comprises more than half (59%) of total precipitation. The water balance analysis shows a significant amount of infiltration on the Site. This is expected due to the closed depressions within the hummocky topography and sandy overburden materials. Details of the water balance analysis are presented in **Appendix I**.

The Thornthwaite and Mather water balance methodology provides a simplified approximation of the water balance for a given Site. The methodology does not account for yearly changes in groundwater elevations. As such, it is important to note that the evapotranspiration, runoff, and infiltration values estimated using the water balance analysis are understood to be approximations. A more detailed analysis of Site grading and potential for runoff is presented in the Functional Servicing Report prepared by COLE and submitted under separate cover.

Potential impacts to the Site water balance from the proposed development are discussed in **Section 7**. It is currently understood that infiltration measures will be utilized to maintain pre-development infiltration on Site in post-development conditions, with essentially no runoff leaving the Site up to the 100-year storm event. The stormwater management approach as well as a detailed discussion of the post-development water balance is described in the Functional Servicing Report, prepared by COLE and submitted under separate cover.

6.2 Nitrate Loading

6.2.1 Calculations

Nitrate loading analysis was completed in order to evaluate the potential impact of individual on-Site septic systems in compliance with MOECC Procedure D-5-4 and as informed through consultation with CVC. This procedure is outlined below, and assumes that every lot will have a tertiary (Level IV) treatment system such as the Waterloo Biofilter Systems Inc. standard system shown in **Appendix M** that successfully reduces total nitrogen concentrations in effluent by 50-65%.

The equation applied to estimate the influence of the septic systems on nitrate concentrations in groundwater is:

$$n_r = \frac{n_w * V_w}{V_T}$$

Where n_r is the resulting nitrate concentration at the property boundary (mg/L), n_w is the nitrate concentration in the effluent (mg/L), V_w is the volume of effluent (m^3/year), and V_T is the total dilution volume (m^3/year), which is a sum of annual recharge volume (as determined from the Site water balance analysis **Section 6**, assuming infiltration post-development is maintained) and effluent volume (V_w).

Nitrate loading calculations for the Site assume an effluent discharge of 1000 L/lot/day from the 67 proposed lots. It was also assumed that implementation of tertiary (Level IV) treatment systems will be applied across all 67 on-Site septic systems, resulting in a nitrate loading of 20 g/lot/day, which is half the expected concentration of 40 g/lot/day from traditional septic systems. In addition, it is understood that the planned septic systems will only produce nitrate and conversion of ammonia to nitrate (nitrification) is assumed to be complete in these systems. Therefore, it is not necessary to estimate groundwater concentrations for nitrite or un-ionized ammonia, which is also consistent with CVC review of potential septic system impacts. The analysis of nitrate loading at the property boundary is shown below and assumes an annual dilution volume from recharge of 200,558 m^3/year as described in **Section 6.1**:

$$n_r = \frac{\left(20\ \frac{g}{lot.day} * 1{,}000\frac{mg}{g} * \frac{1}{1000\frac{L}{lot.day}}\right)\left(1{,}000\frac{L}{lot.day} * 67\ lots * 365\frac{day}{year} * \frac{m^3}{1000\ L}\right)}{\left(1{,}000\frac{L}{lot.day} * 67\ lots * 365\frac{day}{year} * \frac{m^3}{1000\ L}\right) + \left(200{,}558\frac{m^3}{year}\right)}$$

$$n_r = \frac{(20\ mg.L^{-1})(24{,}455\ m^3.year^{-1})}{227{,}564.2\ m^3.year^{-1}} = 2.17\ mg.L^{-1}$$

It is also important to note that the nitrate loading analysis outlined in the MOECC guidance does not consider the complex spatial and temporal variability of nitrate concentrations. Therefore, the nitrate loading concentration determined for the Site is an estimate of the average nitrate concentration expected across the entire Site.

6.2.2 Nitrate Loading Results

From the nitrate loading analysis, which was completed in compliance with MOECC Procedure D-5-4 and consistent with CVC's review approach, a nitrate loading concentration of approximately 2.17 mg/L is estimated at the Site boundary. This concentration is below the ODWS for nitrate of 10 mg/L and also lower than the CCME guideline for NO_3-as-N of 3 mg/L, which has been adopted by CVC. As on-Site wetland features (SWT3-2 and MAS3-1) are essentially at the Site boundary, and any groundwater seepage locations appear to be beyond the Site boundary, the CCME / CVC guideline is met at all downgradient natural features that may receive even minimal groundwater discharge.

The existing nitrate concentrations at the Site (as discussed in **Section 5.7**) are interpreted to reflect nitrate loading from on-Site and adjacent agricultural activities. With development of the Site, the area interpreted to contribute to nitrate loading from agricultural activities will be reduced by approximately 67%. As a result, it is anticipated that long-term background nitrate concentrations will decline over time.

6.2.3 Line of Higher Nitrate Concentrations

All available groundwater quality results for on-Site wells indicate that existing on-Site nitrate concentrations are below the ODWS, and long-term nitrate concentrations are anticipated to decrease due to the reduction in agricultural activity on the site. However, as a precautionary approach it is recommended that supply wells should not be installed in the northernmost portion of the Site where the highest on-Site nitrate concentration are identified. Specifically, it is recommended that supply wells not be placed north of an estimated line of higher nitrate concentrations (i.e., > 7 mg/L). The line of higher nitrate concentrations is shown on **Figure 14** and is located based on the average nitrate concentrations at test wells TW8 and TW7 of slightly less than 7 mg/L.

To identify if any additional setback distance may be required between supply wells and the line of higher nitrate concentrations, a zone of contribution analysis was completed and is discussed in **Section 6.3.4.** As discussed in **Section 6.3.4**, the zone of contribution analysis suggests that an additional setback of 7 m from the line of higher nitrate concentrations, shown as the 7 m setback line in **Figure 14**, is warranted in recognition of the estimated area from which groundwater contributes to the supply wells. Therefore, supply wells located at least 7 m upgradient (south) of the line of higher nitrate concentrations are not expected to draw groundwater from the area with higher nitrate concentrations. Review of the lot locations and dimensions on the Draft Plan indicates that there is a minimum of 9 m between the road right-of-way and the 7 m setback line where wells can be located, or a minimum of 16 m between the road right-of-way and the higher nitrate line. Therefore, supply wells can be located on all proposed lots in compliance with the 7 m setback recommendation. The lot layout, line of higher nitrate concentrations, and the 7 m setback line can be found in **Figure 14**. Well locations in relation to the line of higher nitrate concentrations are provided in the FSR.

6.3 Water Supply

6.3.1 Water Supply Analysis

As noted in **Section 2.3.1**, the main aquifer underlying the Site is the Guelph-Amabel Formation, which provides water sufficient for several large municipal groundwater takings across the Upper Credit River

Watershed. As described below, the aquifer is considered to be capable of providing sufficient water supply for the proposed development based on the analysis completed following the MOECC Procedure D-5-5. An assessment of potential impacts from the water taking is provided in **Section 7.0**. These results are generally consistent with previous assessments of water supply at the Site (Terraprobe 1990).

Peak pumping rates expected per lot at the Site were determined based on the MOECC Procedure D-5-5 with the assumption of a peak pumping rate of 3.75 L/min/person in a four bedroom house (i.e., five people). This results in a peak pumping rate of 18.75 L/min/house. The estimated peak pumping rate is conservative as peak flow rates are only expected to last for only 120 minutes/day. In addition, private wells are typically pumped intermittently, putting less stress and demand on the aquifer. As a result, the expected long-term average pumping rate is estimated to be approximately 1.56 L/min/house (2,250 L/day/house) as outlined in the MOECC Procedure D-5-5.

To investigate the safe well yield on Site, R.J. Burnside conducted six (6) pumping tests between June 11, 2014 and August 29, 2014, which would be expected to generally reflect dry conditions when lower amounts of recharge would occur. The pumping tests lasted for approximately 6 hours with pumping rates ranging from 11.34 L/min to 96.6 L/min and recovery monitored until approximately 95% recovery, as required by the MOECC Procedure D-5-5. Although one of the six pumping tests had a pumping rate less than the maximum rate indicated by MOECC guidelines outlined in Procedure D-5-5, two (2) additional 26 hour pumping tests were conducted in March and April 2016 on TW6 and TW11 at a pumping rate of 60 L/min in compliance with Procedure D-5-5. Raw data for all pumping tests is provided in **Appendix J**.

Transmissivity was estimated from pumping test results using the modified non-equilibrium equation developed by Cooper and Jacob (1946) as outlined in Driscoll (1986) and shown below:

$$T = \frac{0.183Q}{\Delta s}$$

Where,

T = transmissivity (m^2/day)
Q = pumping rate (m^3/day)
Δs = slope of the time-drawdown graph expressed as a change in drawdown between two times on log scale whose ratio is 10 (one log cycle). Time-drawdown curves can be found in **Appendix C**.

Transmissivity was then used to estimate drawdown after 20 years and 50 years based on the Theis (1935) solution.

$$s = \frac{Q}{4\pi T}W(u)$$

Where,

s = drawdown (m)
Q = pumping rate (m^3/day)
T = transmissivity (m^2/day)

And $u = \frac{r^2 S}{4Tt}$, where *r* = distance from centre of pumping well to drawdown location (m), *S* is coefficient of storage (dimensionless), and *t* is time since pumping started (days)

If calculated drawdown after 20 and 50 years is less than the available drawdown within the pumping well then the well is considered to have adequate water supply. The available drawdown is considered to be the distance from the static water level to the middle of the open borehole.

6.3.2 Results

Resulting estimated transmissivity values and calculated 20 year and 50 year drawdowns for the six pumping tests, completed in 2014, are provided in **Table 6.3** and calculations are provided in **Appendix K**.

Table 6.3 Pumping Test Results and Estimated Long Term Drawdown

			Peak Pumping Rate (18.75 L/min/house)		Average Pumping Rate (1.56 L/min/house)
Well ID	Estimated Transmissivity (m^2/day)	Available Drawdown (m)	Calculated Drawdown after 20 years (m)	Calculated Drawdown after 50 years (m)	Calculated Drawdown after 50 years (m)
TW1	9.40	23	3.5	3.8	0.32
TW2	14.9	2.2	2.3	2.4	0.20
TW3	84.9	14	0.40	0.50	0.040
TW4	403	7.1	0.10	0.10	0.010
TW5	26.6	7.5	1.3	1.4	0.12
TW6	72.1	8.2	0.50	0.60	0.050

Based on conservative available drawdown calculations, pumping tests results indicate that most wells can safely support 50 years of continuous pumping at the peak pumping rate of 18.75 L/min/house. This pumping rate exceeds the peak pumping rate likely to be realistically experienced by each well. This peak rate is only expected to occur for a total of 120 min/day and therefore results presented in **Table 6.2** represent a very conservative approximation of the drawdown that would occur after 20 and 50 years of pumping.

Based on the conservative calculations of available drawdown, TW2 was estimated to slightly exceed the available drawdown after 20 years and 50 years. This is not expected to be an issue as continuous pumping at the peak pumping rate is a significant over estimation of a likely pumping rate, which should be closer to 1.56 L/min/house of transient, not continuous, pumping. In addition, the available drawdown within TW2 represents a conservative estimate of the actual water available for drawdown. Given the expected long-term average pumping rate of 1.56 L/min/house, TW2 is only expected to experience 0.2 m of drawdown after 50 years of continuous pumping; significantly less than the available drawdown. Therefore, based on the comparison of predicted versus available drawdown in **Table 6.3**, the completed testing of the on-Site test wells is considered to confirm adequate water supply per MOECC Procedure D-5-5.

The combined water takings expected at the Site, based on an average pumping rate of 2,250 L/day/house and 67 houses, is 150,750 L/day. This is only a portion of the expected recharge which will occur on the Site (549,474 L/day), as calculated from the water balance (**Section 6.1, Appendix I**). In addition, when groundwater flow into the Site is considered (approximately 262,722 L/day), the total water takings at the

Site represent approximately 18% of the total water coming into the Site, much of which will be returned as treated effluent via septic systems.

6.3.3 Radius of Influence

Based on the calculated 50 year drawdown expected within TW1 and observation well PW1 at a pumping rate of 18.75 L/min/house, the radius of influence, beyond which no drawdown is expected to occur, was estimated. The radius of influence was estimated as per Driscoll (1986) using distance-drawdown plots to estimate the distance where zero drawdown would occur and found to be approximately 300 m, not considering recharge. However, given the more realistic pumping rate of 1.56 L/min/house, a radius of influence of approximately 100 m is calculated by this method, which does not consider the effect of recharge.

For comparison, TW4 was also used to estimate the radius of influence based on the drawdown expected after 50 years pumping at 1.56 L/min/house. Results from the analysis with TW4 also indicate a radius of influence of approximately 100 m at the Site. However, the results should be considered approximate as there are no observation wells within the radius of influence to confirm drawdown. The results of this analysis are provided in **Appendix L**. Results from the analysis of TW1 and TW4 were assumed to be representative of the expected radius of influence at the Site as they were calculated to have the largest and smallest transmissivity values (see **Table 6.3**) and therefore bracket the range of transmissivities expected at the Site.

The method described above and shown in **Appendix L** provides a conservative estimate of the radius of influence as it does not consider the influence of recharge on the calculations. Recharge on Site will significantly decrease the radius of influence since the drawdown cone is expected to expand until the recharge rate is equal to the pumping rate. Therefore, an approximate radius of influence can also be estimated from the interpreted recharge rates. Assuming a recharge rate of 300 mm/year (or $8.219x10^{-4}$ m/day; as determined in **Section 6.1**) and an average pumping rate of 1.56 L/min/house, the radius of influence would be approximately 29.5 m, resulting in an area of 2,738 m^2 (or 0.27 ha). Based on this analysis and an average lot size of approximately 0.64 ha, there is expected to be negligible supply interference between lots. Regardless of the calculated radius of influence, drawdown within the wells is estimated to be a maximum of 0.32 m after 50 years of continuous pumping at an average rate of 1.56 L/min/house (see **Table 6.3**). Therefore, drawdown within the radius of influence is expected to be very small.

Based on the FSR, wells on-Site will be placed a minimum of 30 m apart. Since the radius of influence of is conservatively expected to be 30 m at most, if wells are placed 30 m apart minor superposition of drawdown may occur where the radii intersect. The maximum superposition of drawdown is expected to occur at the midpoint between wells (15 m). However, interference between supply wells spaced 30 m apart will be negligible. The maximum drawdown from one well at this intersection point was conservatively calculated to be 0.11 m (**Appendix L**), which is significantly less than the available drawdown (0.5% of the available drawdown at TW1). Locations of wells on-Site are provided in the FSR.

6.3.4 Radius of Contribution

The zone of contribution is different than the zone of influence calculated above. The zone of influence discussed above outlines the distance at which there is nearly zero drawdown and therefore represents the drawdown cone of a supply well. In contrast, the zone of contribution is the area where groundwater and recharge are contributing to the supply well, and this concept is similar to well head protection areas (WHPA). This zone of contribution extends further upgradient than downgradient due to the effect of groundwater flow direction and gradient, unlike the zone of influence, which is typically more simplistically depicted as a uniform radius around the well.

The downgradient distance from the supply well to the edge of the zone of contribution is called the stagnation or null point and can be calculated using the following equation (US EPA 1987; Fileccia 2015).

$$x = \frac{Q}{2\pi Ti}$$

Where x is the distance from the well to the stagnation point (m), *Q* is the pumping rate (m^3/day), *T* is the transmissivity (m^2/day), and *i* is the horizontal hydraulic gradient (dimensionless).

By estimating the downgradient area contributing water to the supply well (distance to the stagnation point), a minimum separation distance can be determined for placing supply wells at the Site an appropriate distance from the approximated line of higher nitrate concentrations (**Figure 14**).

Based on an average pumping rate of 1.56 L/min (2.25 m^3/day), a transmissivity of 9.4 m^2/day, and an estimated minimum hydraulic gradient at the Site of 0.0055, the distance to the stagnation point can be calculated as below.

$$x = \frac{2.25}{2\pi(9.4)(0.0055)} = 6.9\ m$$

Based on this analysis, a separation distance of at least 7 m should be maintained between the supply well and the line of higher nitrate concentrations. As noted above, review of the lot locations and dimensions on the Draft Plan indicates that supply wells can be located on all proposed lots in compliance with this recommendation.

7 Receptors and Impacts

7.1 Surrounding Groundwater Users

Potential long-term impacts to surrounding groundwater users outlined in **Section 5.9** are usually related to changes in groundwater quality and quantity. As the nitrate loading concentration at the Site boundary is only expected to be 2.17 mg/L, which is less than the ODWS of 10 mg/L, negative impacts to groundwater quality for surrounding groundwater users are not anticipated.

Potential long-term impacts to surrounding groundwater users related to groundwater quantity are also expected to be minimal as the radius of influence of on-Site water supply wells is not expected to be larger than 30 m (when recharge is considered), and total groundwater takings are small compared to the total input of groundwater and recharge at the Site. In addition, a large portion of the extracted groundwater will be reintroduced to the groundwater system via septic systems, further reducing impacts to surrounding groundwater users.

Based on the lot configurations shown in **Appendix A**, and the MOECC well record locations shown on **Figure 13**, the closest neighbouring well is approximately 145 m from the closest potential on-Site supply well (**Table 7.1**). As this is considerably larger than the estimated conservative radius of influence of 30 m, when recharge is considered, no significant impacts to water quantity at neighbouring wells are anticipated. In addition, residential wells in Belfountain are commonly completed in the dolostone / sandstone units associated with the Manitoulin and Whirlpool Formations, which underlie the Amabel Formation and Cabot Head Formation shales. Since on-Site supply wells will be screened in the Amabel

Formation, interference between on-Site wells and water supply wells in Belfountain are further reduced since these wells are not interpreted to obtain water from the same aquifer.

Table 7.1 Distance from Receptors to Closest on-Site Supply Well

Receptor	Approximate Minimum Distance to Potential on-Site Supply Well (m)	Zone of Influence of Supply Well (m)	Approximate Separation Between Zone of Influence and Receptor (m)
Surrounding Groundwater Users	145 (lot 21)	30	115
On-Site Wetland Features	185 (lot 20)	30	155
Off-Site Wetland Features	164 (lot 49)	30	134
West Credit River	370 (lot 49)	30	340

7.2 Natural Features

7.2.1 On-Site Wetland Features

Potential long-term impacts to wetland features are usually related to changes in groundwater contributions to the feature and groundwater quality. As existing groundwater contributions to on-Site wetland features (SWT3-2 and MAS3-1) are considered negligible, no long-term impacts to these features are expected. Similarly, as groundwater contributions to these on-Site features are considered negligible, no negative impacts are expected from groundwater quality changes, and groundwater nitrate loadings at the on-Site wetland features are expected to be lower than the CCME / CVC guideline for NO_3-as-N of 3 mg/L.

In addition, based on zone of influence analysis and the lot layout shown in **Appendix A**, the closest potential on-Site supply well is approximately 185 m from the on-Site wetland features (**Table 7.1**). As this is considerably larger than the estimated radius of influence, no significant impacts to water quantity is anticipated.

7.2.2 Off-Site Wetland Features

Potential long-term impacts to off-Site wetland features will also be related to groundwater contributions and groundwater quality. Although, groundwater contributions to off-Site wetland features (SWM1-1 and MAM3-1) are expected, negative impacts are not anticipated as it is understood that infiltration measures will be utilized to maintain that pre-development infiltration on Site will be maintained post-development.

Groundwater takings from on-Site water supply wells are also not expected to have significant impacts on off-Site wetland features as total groundwater takings are small compared to the total input of groundwater and recharge at the Site. In addition, a large portion of the extracted groundwater will be reintroduced to the groundwater system through tertiary treated septic systems, further reducing impacts to natural features.

Similarly, on-Site water supply wells are not expected to directly impact off-Site wetland features as the shortest distance between the closest potential on-Site supply well and the off-Site wetland features is approximately 164 m, which is greater than the radius of influence of approximately 30 m, when recharge is considered (**Table 7.1**). Please refer to **Appendix A** for lot locations.

In addition, supply wells primarily obtain water in the upgradient direction whereas the off-Site wetland features are downgradient of the Site. Based on radius of contribution calculations (**Section 6.3.4**), water supply wells on-Site are interpreted to draw in groundwater from approximately 7 m in the downgradient direction. This is significantly less than the distance between the closest potential on-Site supply well and the off-Site wetland features. As a result, impacts to groundwater contributions to off-Site wetland features are expected to be minimal.

Potential long-term impacts to off-Site natural features from changes in groundwater quality are also expected to be negligible as groundwater nitrate loadings at the property boundary are expected to be lower than the CCME / CVC guideline for NO_3-as-N of 3 mg/L.

7.2.3 Feature Based Water Balance

Based on the potential long-term impacts to on- and off-Site wetland features discussed in **Section 7.2.1** and **Section 7.2.2** above, a feature based water balance is not recommended.

A feature based water balance is not recommended for the on-Site wetland features (SWT3-2 and MAS3-1) as these features receive negligible groundwater contributions; furthermore, groundwater recharge on-Site will be maintained to minimize negative impacts. In addition, based on long-term pumping at the average annual pumping rate, the radius of influence from supply wells are not estimated to reach these features and will not impact the on-Site wetlands.

A feature based water balance is not recommended for the off-Site wetland features (SWM1-1 and MAM3-1) as groundwater recharge on-Site will be maintained with infiltration measures to sustain groundwater contributions to these wetlands. These features will also not be impacted by groundwater takings from on-Site supply wells as they are outside the predicted zone of influence. In addition, nitrate loadings at the Site boundary are below the CCME / CVC guideline and not expected to impact off-Site wetlands. Finally, as outlined in the Functional Service Report (FSR), essentially all runoff from the Site up to the 100 year storm event will be contained to the Site, which is consistent with existing Site conditions, and therefore no change in hydrological conditions at off-Site wetland features from the development is anticipated.

7.2.4 Water Courses

Potential long-term impacts to the West Credit River will be related to groundwater contributions and groundwater quality. As infiltration is expected to be maintained post-development, the West Credit River is outside the zone of influence (approximate minimum distance to potential on-Site supply well is 370 m), and total groundwater takings on-Site are small and only 0.5% of the West Credit River baseflow, no changes to groundwater contributions to the West Credit River are anticipated. Similarly, long-term impacts to the West Credit River from changes in groundwater quality are expected to be minimal as groundwater nitrate loadings at the property boundary are expected to be lower than the CCME / CVC guideline for NO_3-as-N of 3 mg/L.

7.2.5 Karst Features

Karst features have not been identified at the Site; however, the OGS has indicated that there is the potential for karst features in the local area. Potential long-term impacts to karst features will be related to a reduction of recharge to these features or changes to water quality. As infiltration is expected to be maintained post-development, total groundwater takings on-Site are small, and site grading requirements are expected to be kept to a minimum, negative impacts to the function of any karst features that may be present are expected to be negligible. In addition, long-term impacts to karst features from changes in groundwater quality are expected to be minimal as the nitrate loading analysis demonstrates that nitrate loading from the septic systems would be small, and long-term nitrate concentrations at the Site are expected to decrease due the overall decrease in on-Site agricultural activity.

8 Summary

A summary of the hydrogeological investigation is provided below:

- The Site is located within West Credit River Subwatershed and is primarily within the Horseshoe Moraine physiographic region;
- Investigations at the Site have been completed by Terraprobe, Beatty, R.J. Burnside and COLE;
- Based on borehole logs and regional stratigraphy, the Site is generally underlain by Wentworth Till, glaciofluvial sediments, and Port Stanley Till. Bedrock units under the Site are the Guelph Formation and Amabel Formation dolostones, Cabot Head Formation shale, Manitoulin Formation dolostone, Whirlpool Formation sandstone, and Queenston Formation shale;
- Hydraulic conductivity estimates of the dolostone bedrock aquifer range from 4.7×10^{-6} m/s to 2.9×10^{-4} m/s with an average of 3.6×10^{-5} m/s. Infiltration rates of the overburden range from 420 mm/hr to 29 mm/hr with an average of approximately 152 mm/hr;
- Groundwater levels across the Site are typically 10 to 20 mbgs with the exception of shallower groundwater at the on-Site wetland features (SWT3-2 and MAS3-1) where it is typically 0 to 1 mbgs. In general, groundwater flow is primarily horizontal from south to north across the Site towards the West Credit River;
- On-Site groundwater quality meets the health-related ODWS for all tested parameters. Nitrate concentrations are below ODWS and generally increase from south to north across the Site. On-Site nitrate concentrations are attributed to on-Site and nearby agricultural activity;
- General groundwater quality on Site was found to have exceedances in total hardness and occasionally exceedances in turbidity with some occurrences of exceedances of aesthetic parameters such as total dissolved solids, sulphate, and iron. Water treatment systems are recommended to manage hard water and aesthetic water quality parameters;
- The one on-Site headwater drainage feature quickly infiltrates into the sandy overburden in the south of the Site. Groundwater is expected to discharge to the nearby West Credit River in support of base flow to the cold water fish habitat;
- Groundwater contributions to on-Site wetland features (SWT3-2 / MAS3-1) are estimated to be negligible. Qualitative investigations indicate that groundwater contributions to off-Site wetland features (SWM1-1 / MAM3-1) appear to be present;
- Water balance analysis indicates significant amounts of infiltration on the Site, which results from closed depressions within the hummocky topography and sandy overburden materials. Pre-development infiltration rates will be maintained post-development with no water leaving the Site up to the 100-year storm event;
- Nitrate loading analysis was completed in compliance with MOECC Procedure D-5-4. Nitrate loading from the 67 on-Site septic systems is expected to be 2.17 mg/L at the property

boundary, which is less than the CCME / CVC guideline for NO_3-as-N of 3 mg/L. This is provided that tertiary (Level IV) treatment systems such as the Waterloo Biofilter System Inc. standard the system that is able to reduce total nitrogen by 50-65% are installed at each house;

- CCME / CVC guideline for nitrate loading is met at all downgradient natural features that may receive even minimal groundwater discharge, provided tertiary (Level IV) treatment systems are installed at each house;
- Water quality results for the Site indicate nitrate concentrations meet the ODWS; however, it is noted that nitrate concentrations are generally higher in the northern portion of the Site. Although the reduction in agricultural activity with the development of the Site is expected to lead to long-term reductions in nitrate concentrations, it is recommended that future supply wells be located in areas where existing nitrate concentrations are less than 7 mg/L. Therefore, no supply wells will be located north of the line of higher nitrate concentrations, with a setback of at least 7 m of this line, as determined by a zone of contribution analysis. Review of the lot locations and dimensions on the Draft Plan indicates that supply wells can be located on all proposed lots in compliance with this recommendation as there is a minimum of 9 m between the road right-of-way and the 7 m setback line where wells can be located;
- A peak pumping rate of 18.75 L/min/house and average pumping rates of 1.56 L/min/house are expected, based on MOECC procedure D-5-5;
- Completed pumping tests, by R.J. Burnside, adequately demonstrate compliance with MOECC Procedure D-5-5;
- Long-term drawdown over 50 years at the average pumping rate is much less than available drawdown at all wells analyzed;
- The radius of influence of each well, based on average pumping rate, is expected to be approximately 100 m. However, this radius does not consider the influence of recharge. Therefore, the radius of influence of each well, based on average pumping rate and recharge analysis, is expected to be approximately 29.5 m, or a 0.27 ha area, which is less than the expected average lot size. Therefore, minimal supply interference is expected between private wells;
- Supply wells on-Site will be placed a minimum of 30 m apart. Since the radius of influence of each well is expected to be 30 m, if wells are placed 30 m apart minor superposition of drawdown may occur where the radii intersect. The maximum superposition of drawdown is expected to occur at the midpoint between wells (15 m). However, interference between supply wells spaced 30 m apart will be negligible;
- Overall, minimal to negligible long-term impacts are expected to surrounding groundwater users and natural features; and,
- Feature based water balances for on-Site and off-Site wetlands are not recommended, as groundwater and surface water contributions, if any, to natural features will be maintained.

9 Recommendations

Based on the presented hydrogeological investigations, the following recommendations for the development and future work are provided:

- The development can be supported by private wells based on an assessment of groundwater quality and quantity at the Site consistent with MOECC Procedure D-5-4 and D-5-5;
- The Site has appropriate subsurface conditions to support subsurface waste water disposal, and waste water servicing can be provided by private septic systems at each lot provided that tertiary (level IV) treatment systems such as the Waterloo Biofilter System Inc. standard system are installed;
- Based on nitrate concentrations, nitrate loading calculations, and radius of contribution calculations, supply wells within the Site should not be placed north of the line of higher nitrate concentrations, or within 7 m of this line to the south. Review of the lot locations and dimensions on the Draft Plan indicates that supply wells can be located on all proposed lots in compliance with this recommendation;
- The Site stormwater management plan should include implementation of LIDs to promote infiltration and maintain the Site water balance. Additional infiltration tests should be carried out at the Site to further quantify overburden infiltration rates in support of the detailed design of infiltration measures; and,
- An updated survey of private wells within 500 m of the Site may be beneficial to establish baseline conditions at those private wells prior to Site development.

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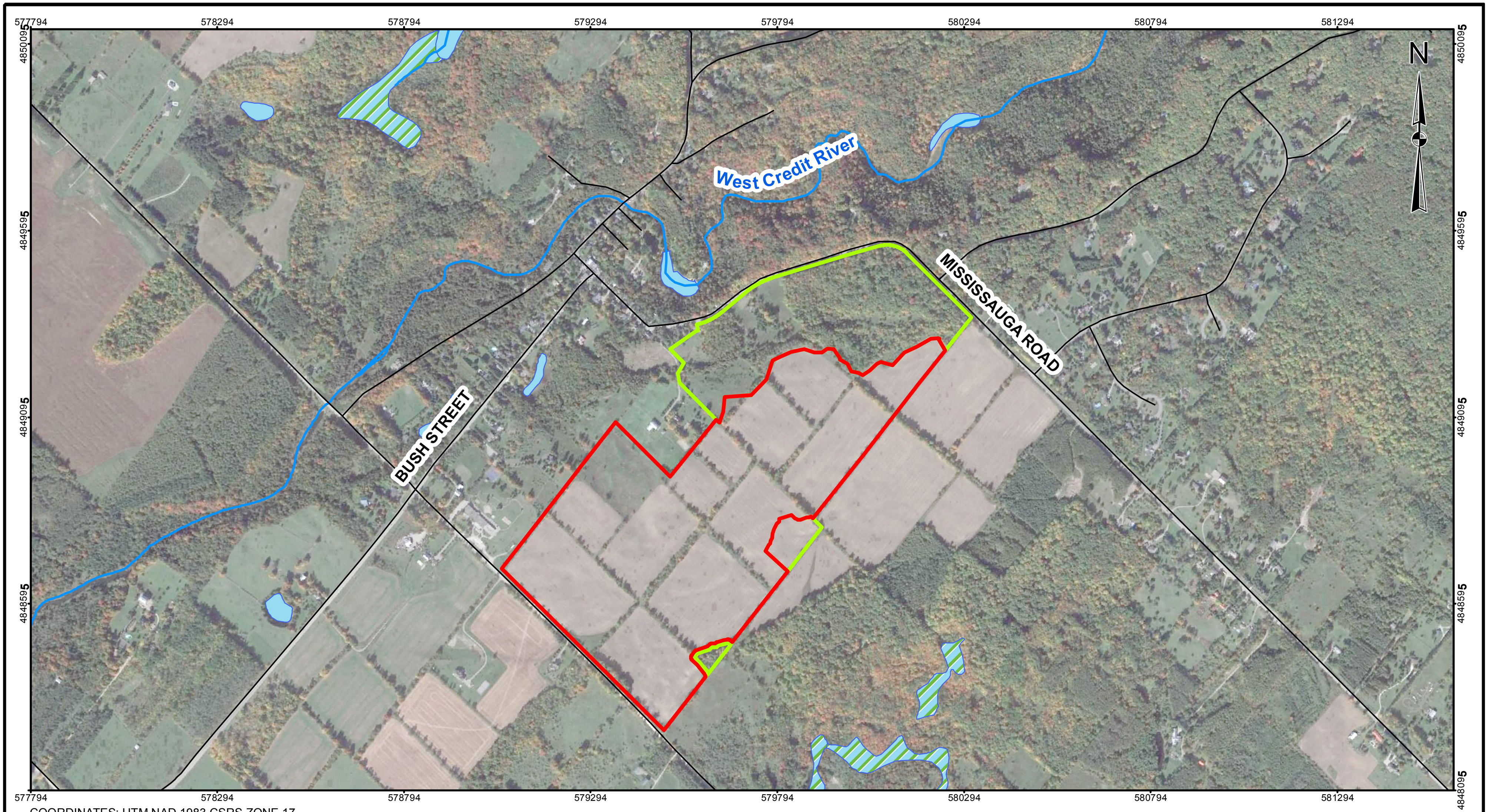
Figures



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

🟥 Site - Development Area
🟩 Site - Open Space Area
— Roads
〰 Watercourses
▨ Waterbody
▨ Wetlands

REFERENCE

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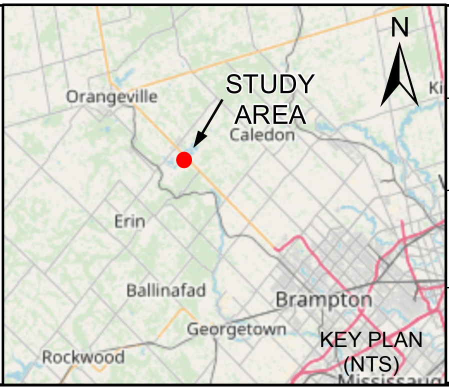

KEY PLAN (NTS)

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Site Location

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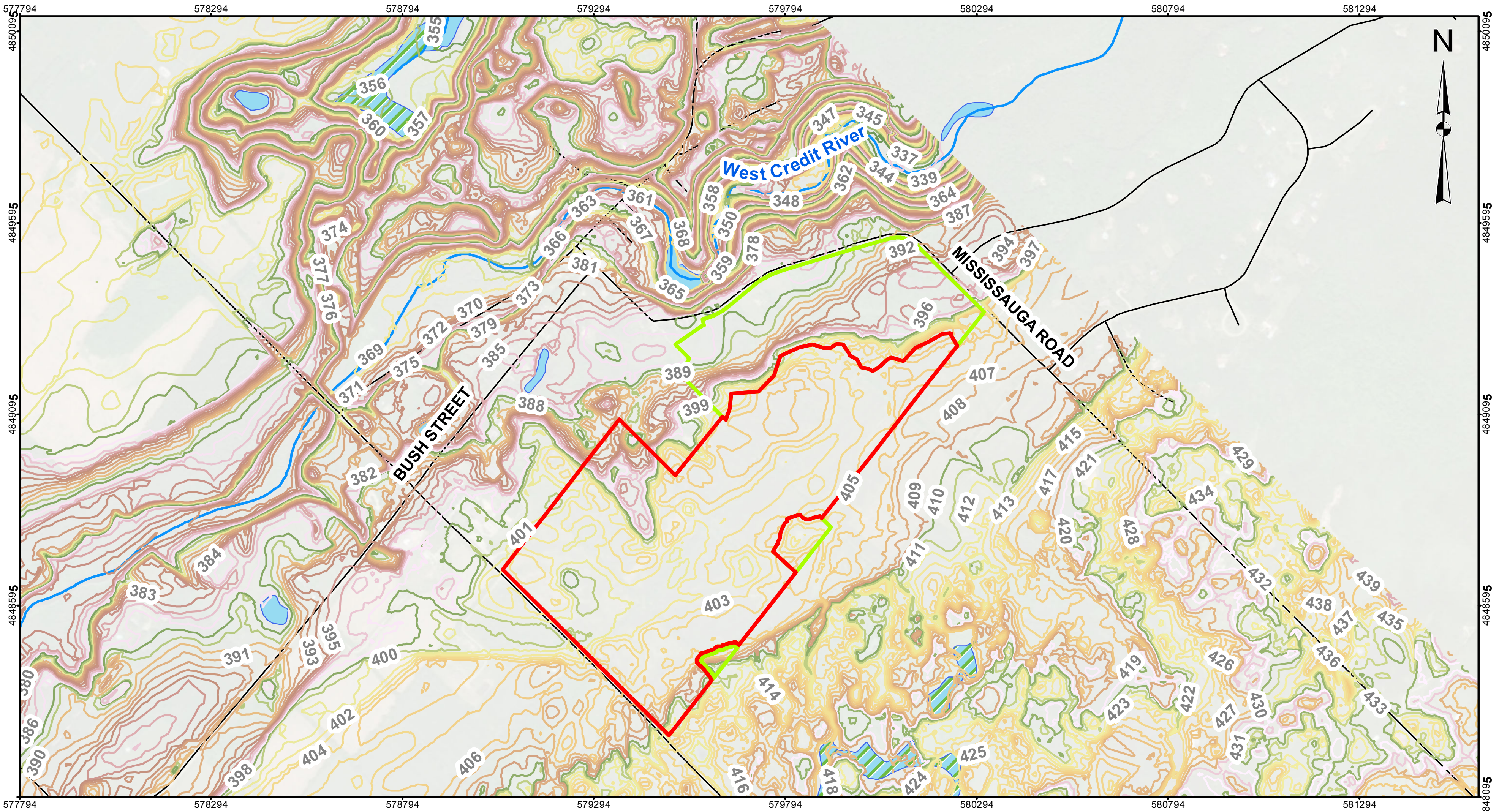
DATE:	10/18/2017		PROJECT: 2017-0646
GIS	C.C.	10/18/2017	REV. 0.0
DESIGN			**FIGURE 1**
CHECK	D.B.	10/18/2017	



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

🟥	Site - Development Area
🟩	Site - Open Space Area
—	Roads
〰	Watercourses
▨	Waterbody
▨	Wetlands

REFERENCE

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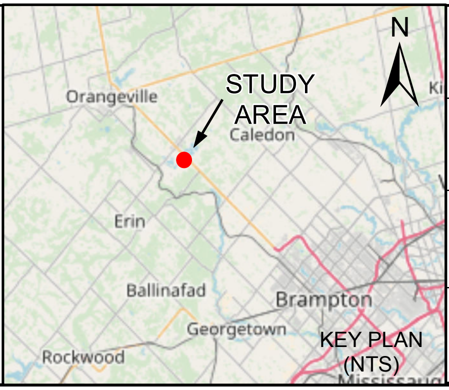

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Regional Topography

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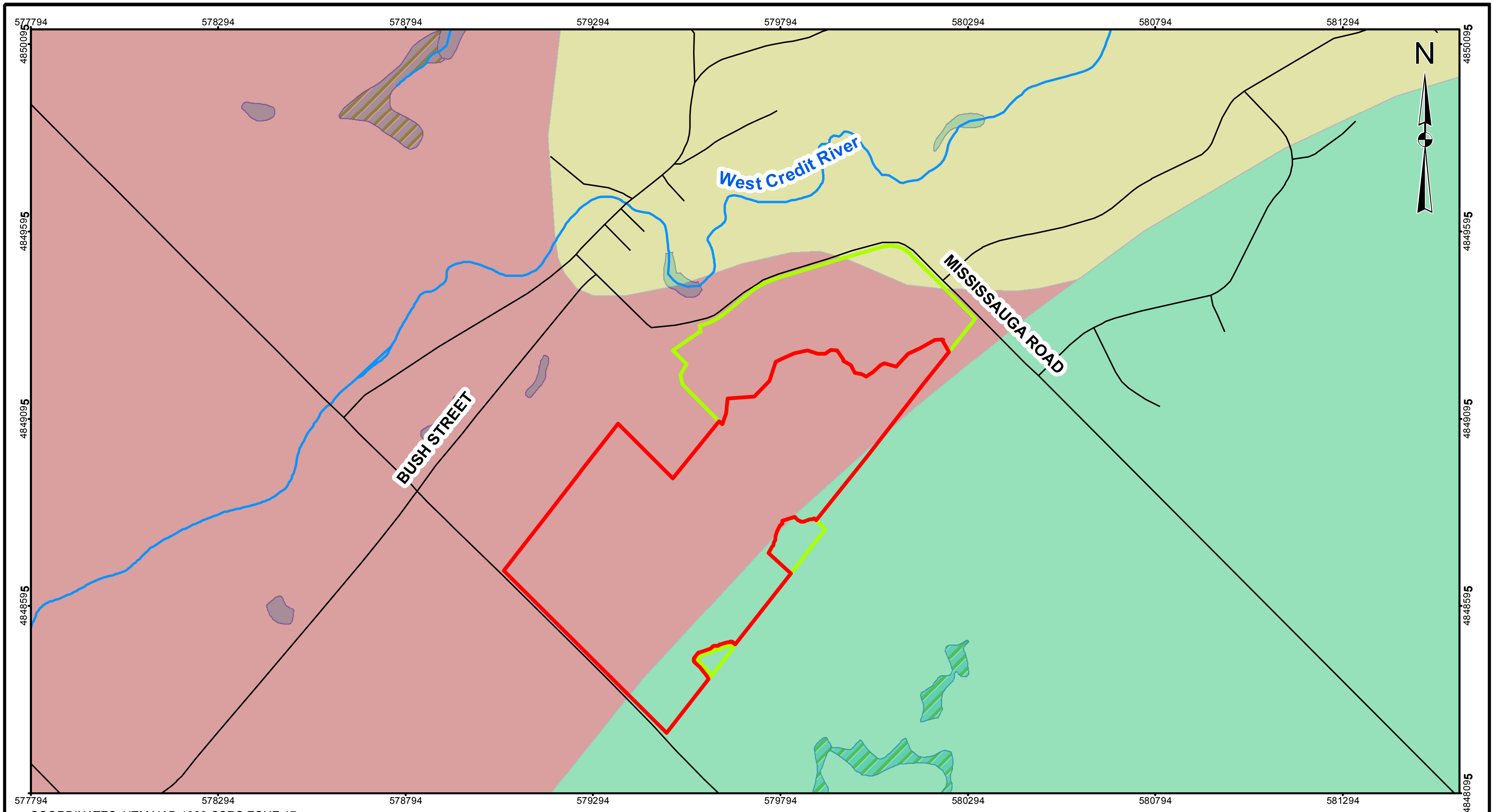
GIS	C.C.	10/18/2017	REV. 0.0
DESIGN			
CHECK	D.B.	10/18/2017	FIGURE 2



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- 🟥 Site - Development Area
- 🟩 Site - Open Space Area
- — Roads
- 〰 Watercourses
- ● Waterbody
- ▨ Wetlands

REGION

- 🟥 Guelph Drumlin Field
- 🟩 Horseshoe Moraines
- 🟨 Niagara Escarpment

REFERENCE

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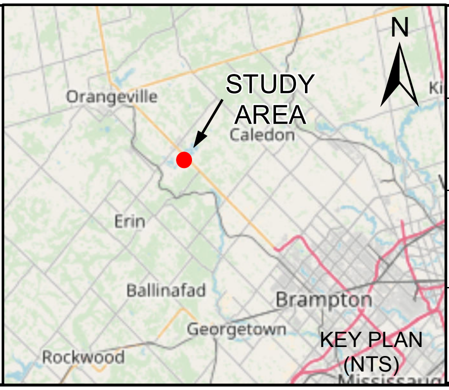

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Regional Physiography

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DATE:	10/18/2017		PROJECT: 2017-0646
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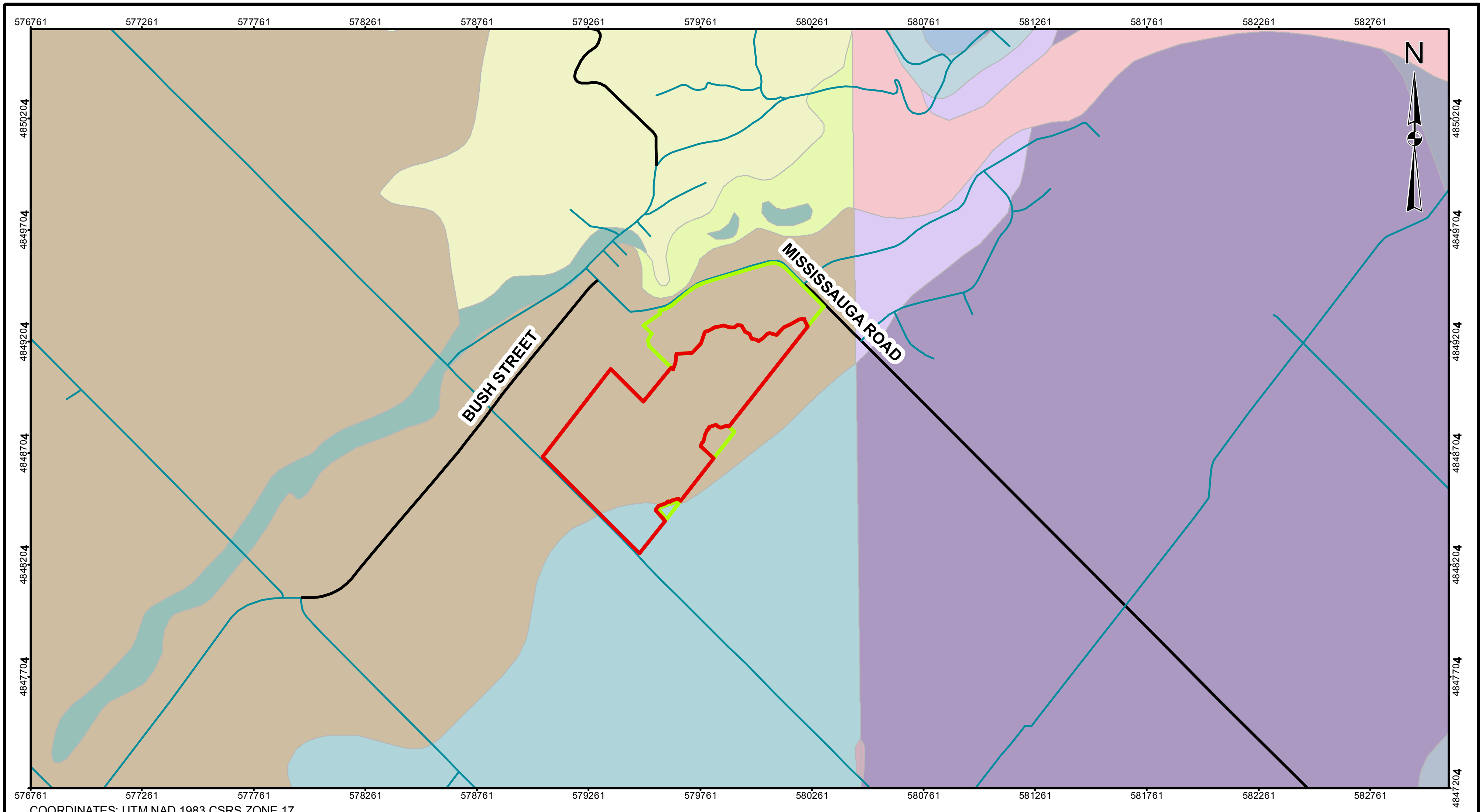

COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- ▬ Site - Development Area
- ▬ Site - Open Space

Material Description

- ▬ Bedrock
- ▬ Bedrock-drift complex
- ▬ Brown loam to silt loam till
- ▬ Clinton and Cataract Groups
- ▬ Gravel and gravelly sand, frequently overlain by several feet of sand or silt
- ▬ Light brown, gravelly sandy loam and loam till. Considerable stratified material
- ▬ Outwash gravel, usually covered by several feet of sand
- ▬ Peat, muck, marl
- ▬ Sand and gravel including some till or silt
- ▬ Sandstone, dolostone, shale
- ▬ Silt, sand, gravel
- ▬ Stoney, sandy silt till
- ▬ Unsubdivided silt, sand, gravel

REFERENCE

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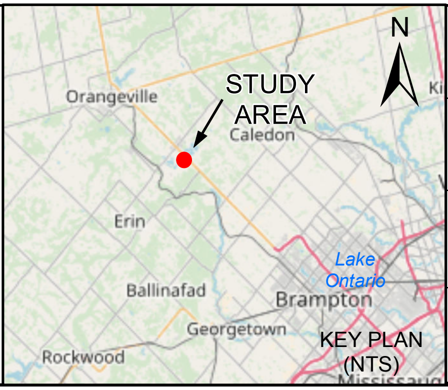

KEY PLAN (NTS)

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Surficial Geology

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Experience Enhancing Excellence

DATE: 10/18/2017		
GIS	C.C.	10/18/2017
DESIGN		
CHECK	D.B.	10/18/2017

PROJECT: 2017-0646

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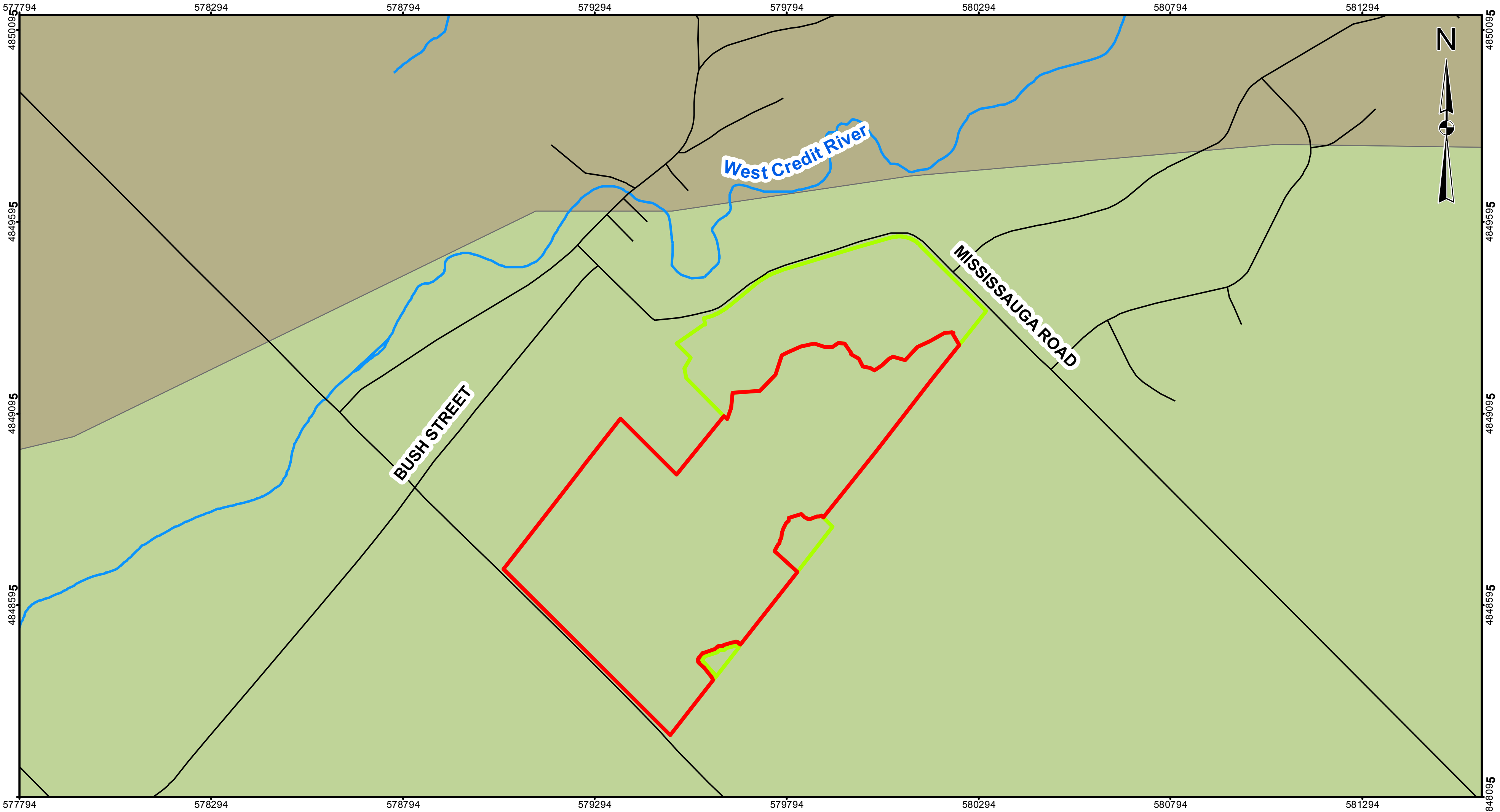
FIGURE 4



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- 🟥 Site - Development Area
- 🟩 Site - Open Space Area
- — Roads
- 〰 Watercourses

Bedrock Geology

- 🟩 Amabel Fm.
- ▨ Clinton Gp.; Cataract Gp.
- Waterbody
- Wetlands

REFERENCE

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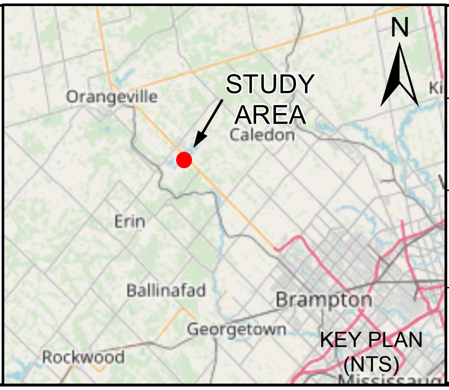

KEY PLAN (NTS)

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Bedrock Geology

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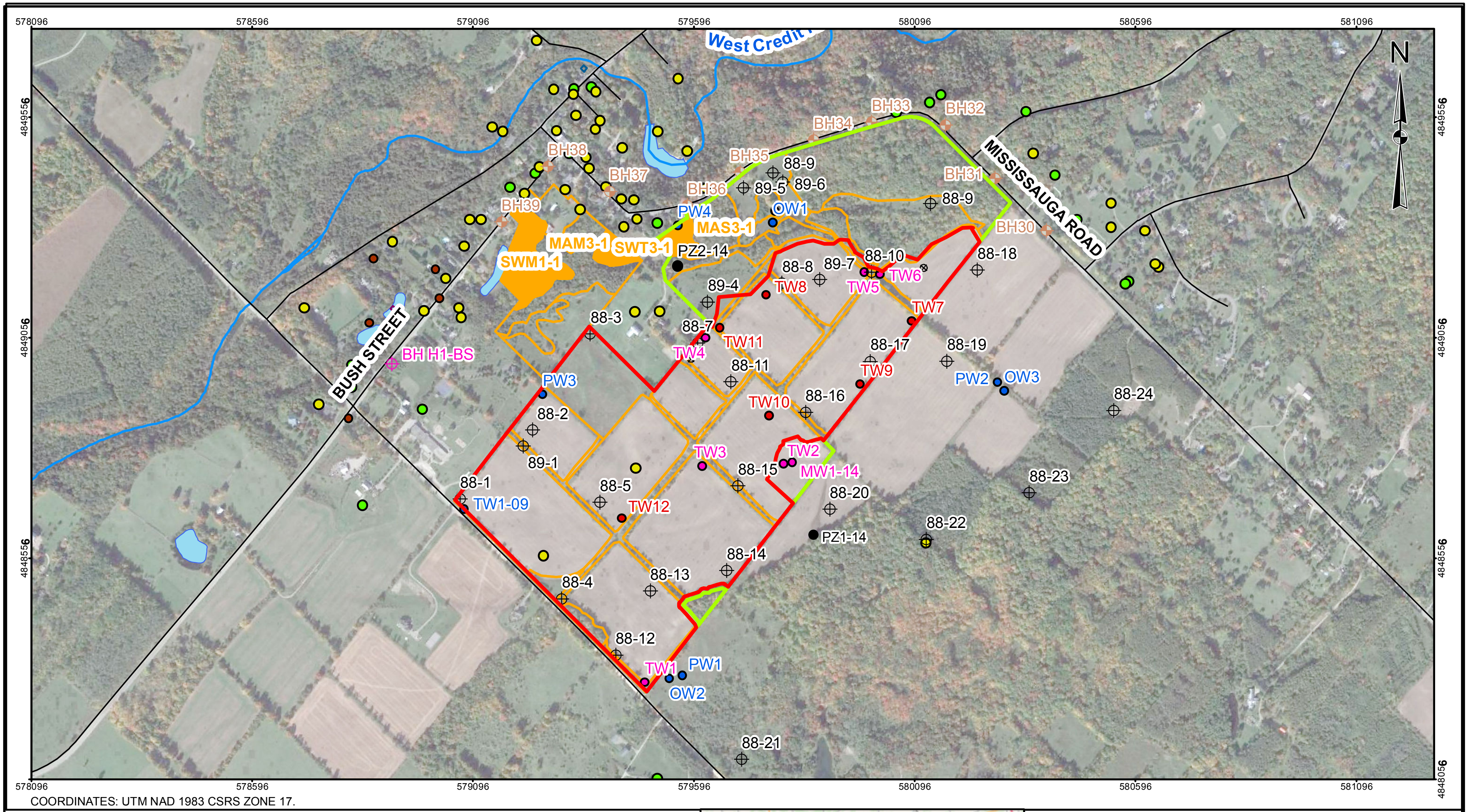

COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

▬	Site - Development Area	⊕	Terraprobe Standpipes	〰	Watercourses
▬	Site - Open Space Area	●	Burnside Wells (2016)	▨	Waterbody
●	PZ2-14	●	Burnside Wells (2014)	☐	Ecological Land Classification
—	Roads	●	Beatty Wells	▬	ELC marshes and swamps
⊕	Coffey (2013)	●	MOECC Records (Shale)	■	MOECC Records (Dug Overburden)
⊕	Terraprobe (2013)	●	MOECC Records (Limestone)	■	MOECC Records (Dug Shale)
		●	MOECC Records (Overburden)		

REFERENCE

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Boreholes, Wells, and Other Monitoring Locations

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GIS	C.C.	10/18/2017
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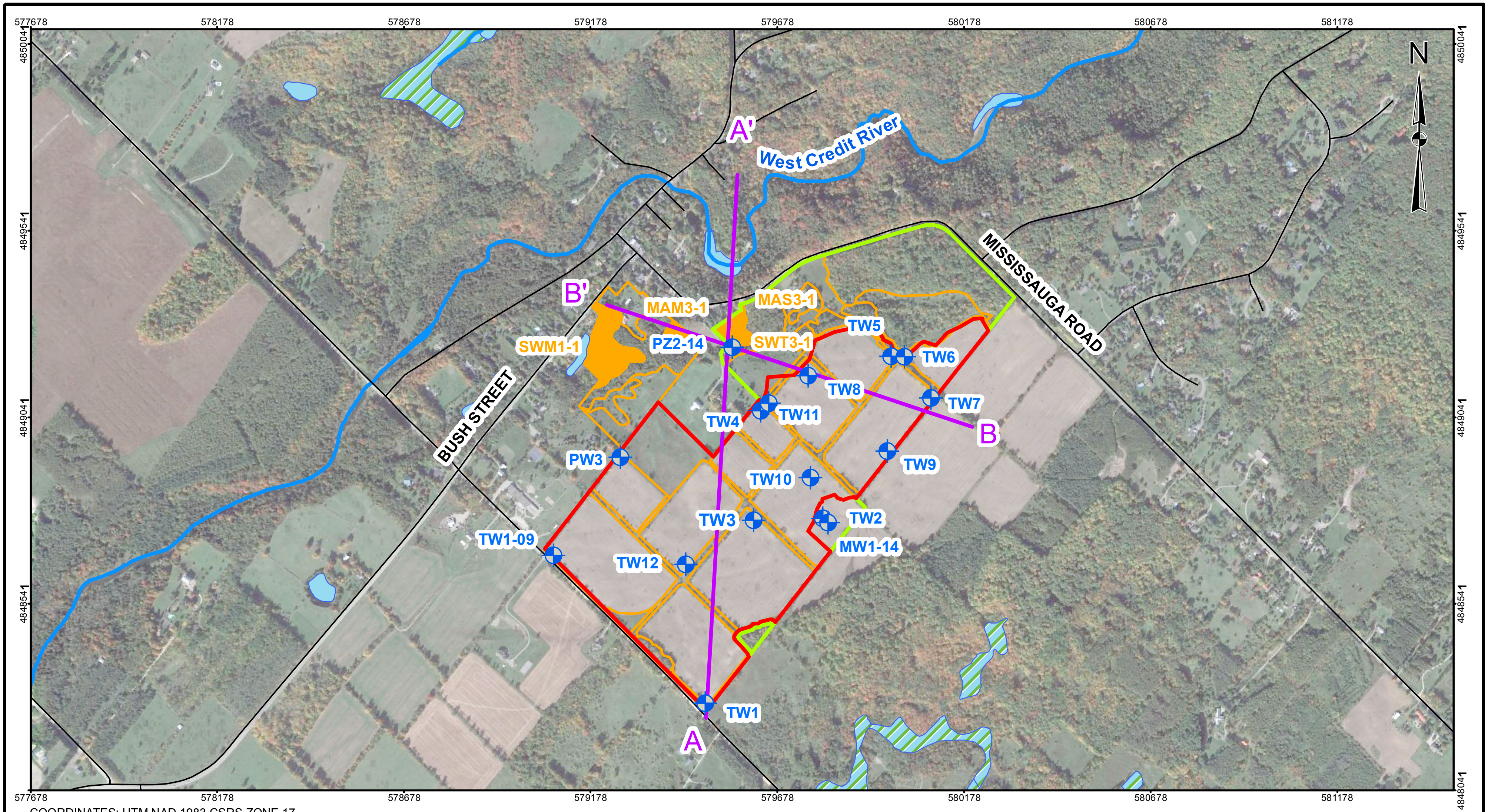
FIGURE 6



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

⊕ Monitoring Well	▨ Wetlands
🟥 Site - Development Area	☐ Ecological land Classification (ELC)
🟩 Site - Open Space Area	🟧 ELC marshes and swamps
— Roads	
~ Watercourses	
● Waterbody	

REFERENCE

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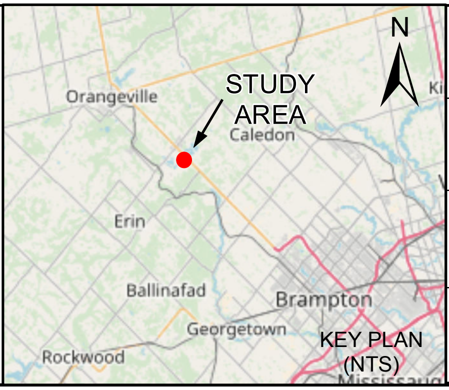

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PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Cross-Section Plan

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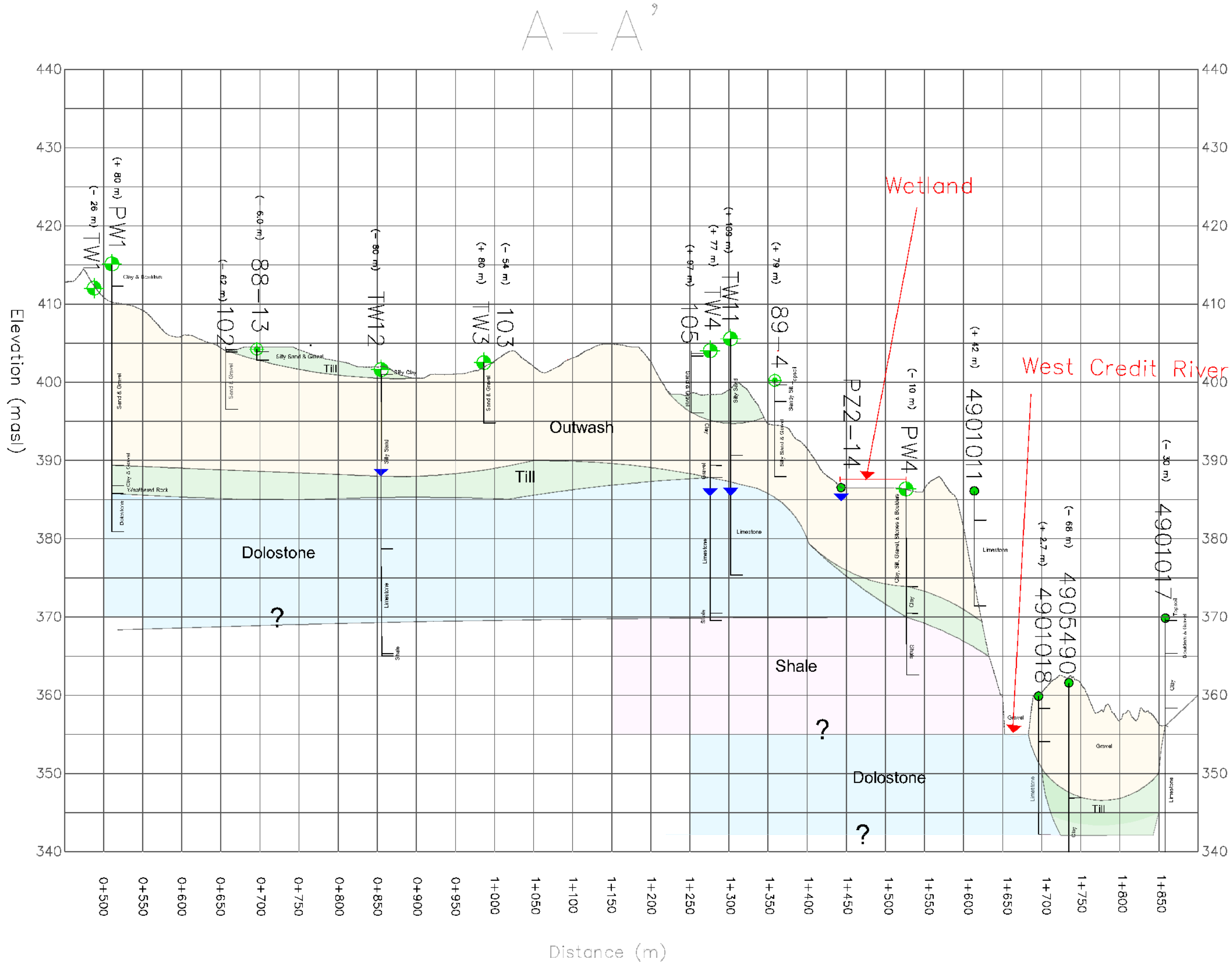
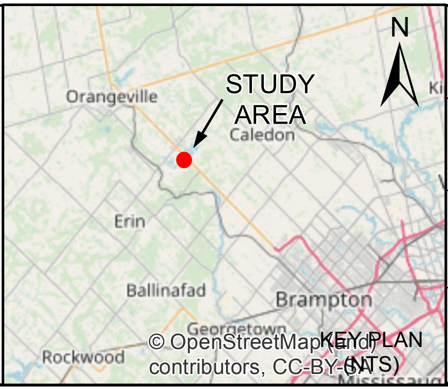


LEGEND

🟨 Outwash

🟦 Dolostone

🟪 Shale



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SCALE

NTS

PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Cross-Section A-A'

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Experience Enhancing Excellence

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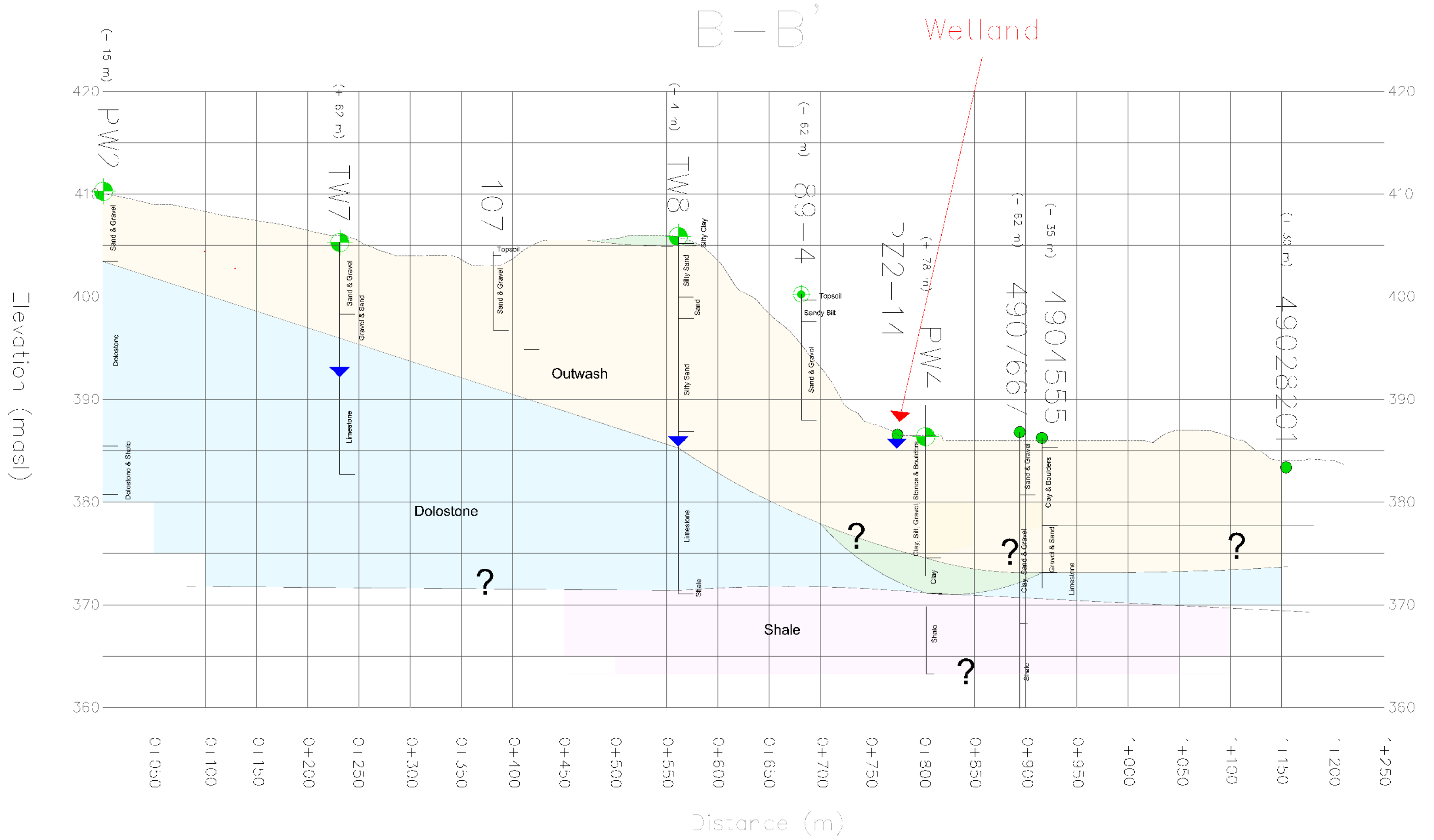
FIGURE 8

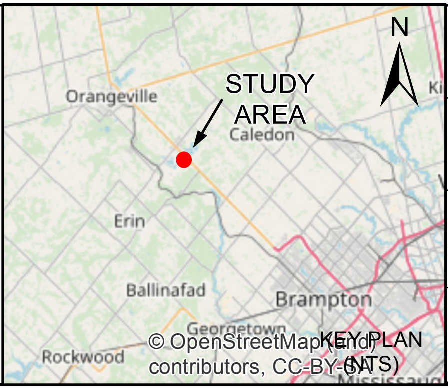


LEGEND

🟨 Outwash

🟦 Dolostone

🟪 Shale



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NTS

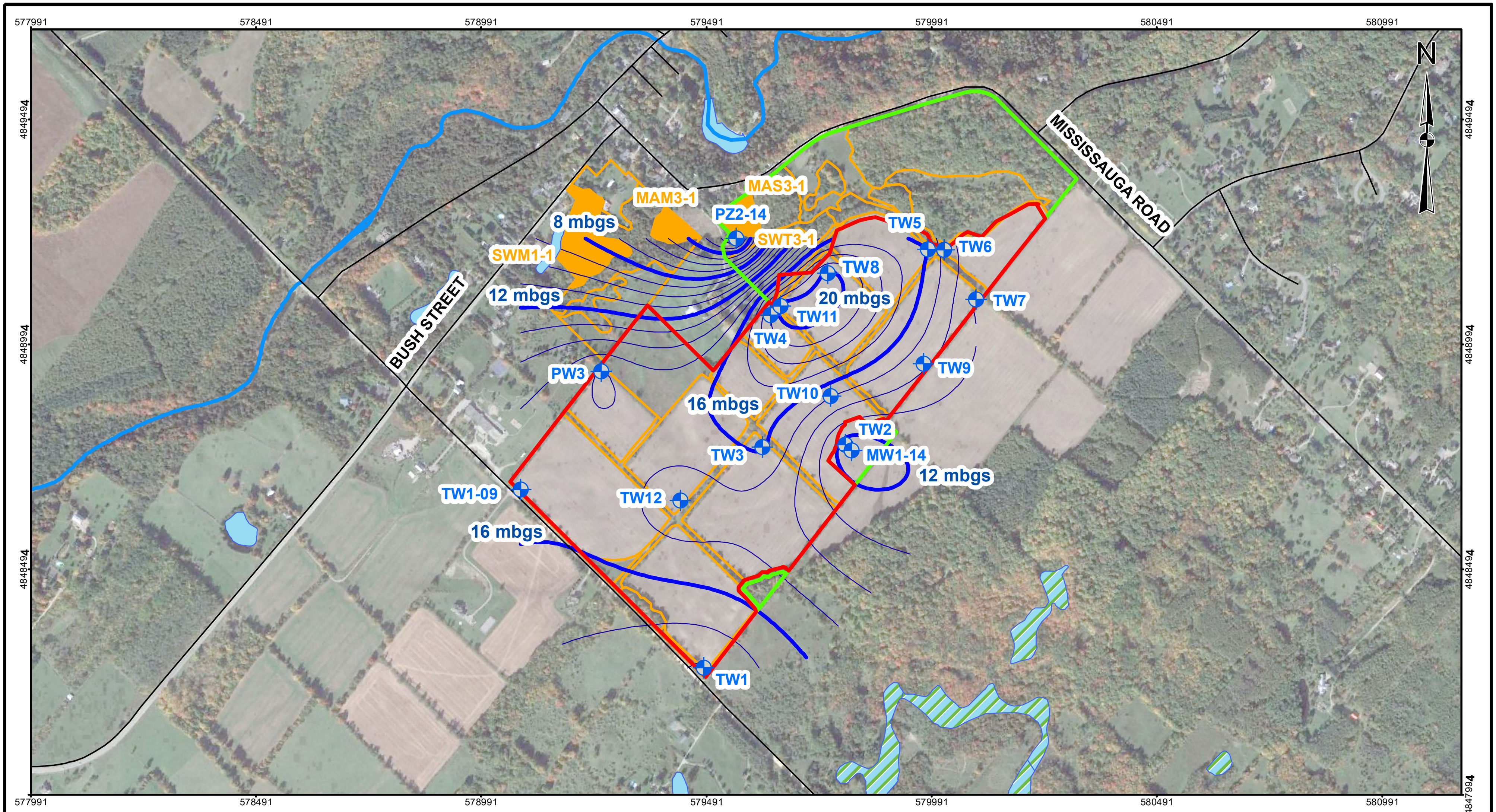
PROJECT
Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE
Cross-Section B-B'

COLE ENGINEERING
Experience Enhancing Excellence

DATE:	10/18/2017	
GIS	C.C.	10/18/2017
DESIGN		
CHECK	D.B.	10/18/2017

PROJECT: 2017-0646
REV. 0.0
FIGURE 9



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- ⊕ GW depth on sitePnts
- 🟥 Site - Development Area
- 🟩 Site - Open Space Area
- — Roads
- ~ Watercourses
- Waterbody
- ▨ Wetlands
- — Groundwater Depth (4m)
- — Groundwater Depth (1m)
- ☐ Ecological Land Classification (ELC)
- ■ ELC marshes and swamps

REFERENCE

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

KEY PLAN (NTS)

SCALE 1:12,500

125 0 125 250 375 500 Meters

PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Depth to Groundwater

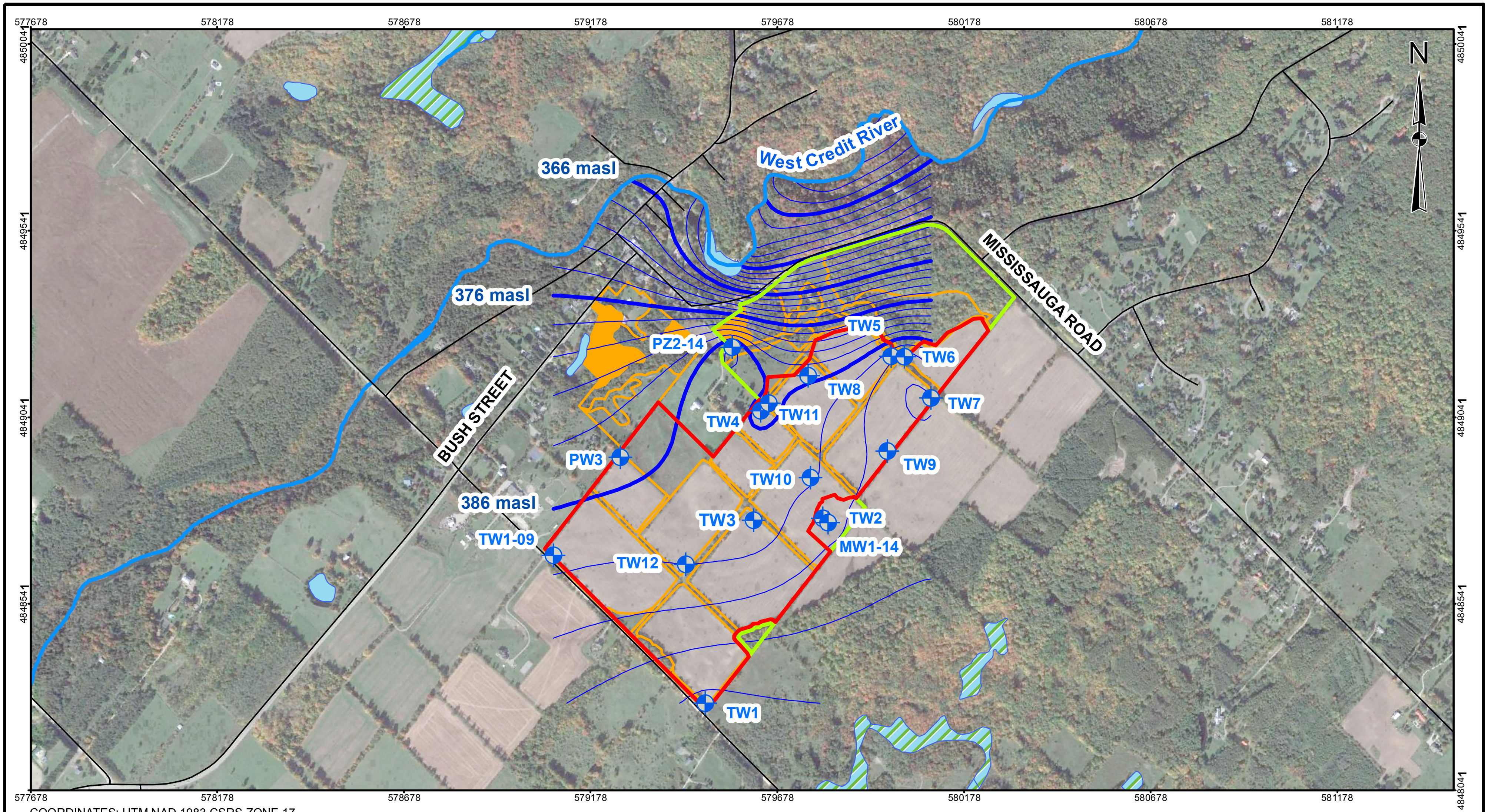
COLE ENGINEERING
Experience Enhancing Excellence

DATE: 10/18/2017		
GIS	C.C.	10/18/2017
DESIGN		
CHECK	D.B.	10/18/2017

PROJECT: 2017-0646

REV. 0.0

FIGURE 10



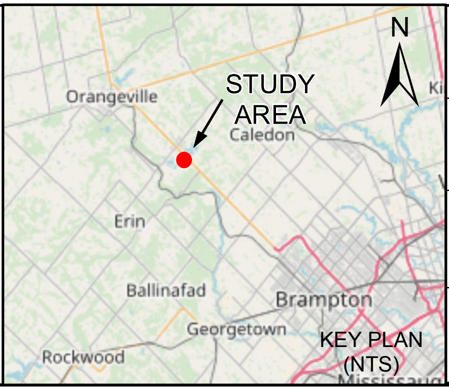
COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

⊕	Monitoring Well
🟥	Site - Development Area
🟩	Site - Open Space Area
—	Roads
~	Watercourses
▨	Waterbody
▨	Wetlands
—	Groundwater Contours (10m)
—	Groundwater Contours (2m)
☐	Ecological land Classification (ELC)
■	ELC marshes and swamps

REFERENCE

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA



SCALE 1:15,000

PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Groundwater Elevation Contours

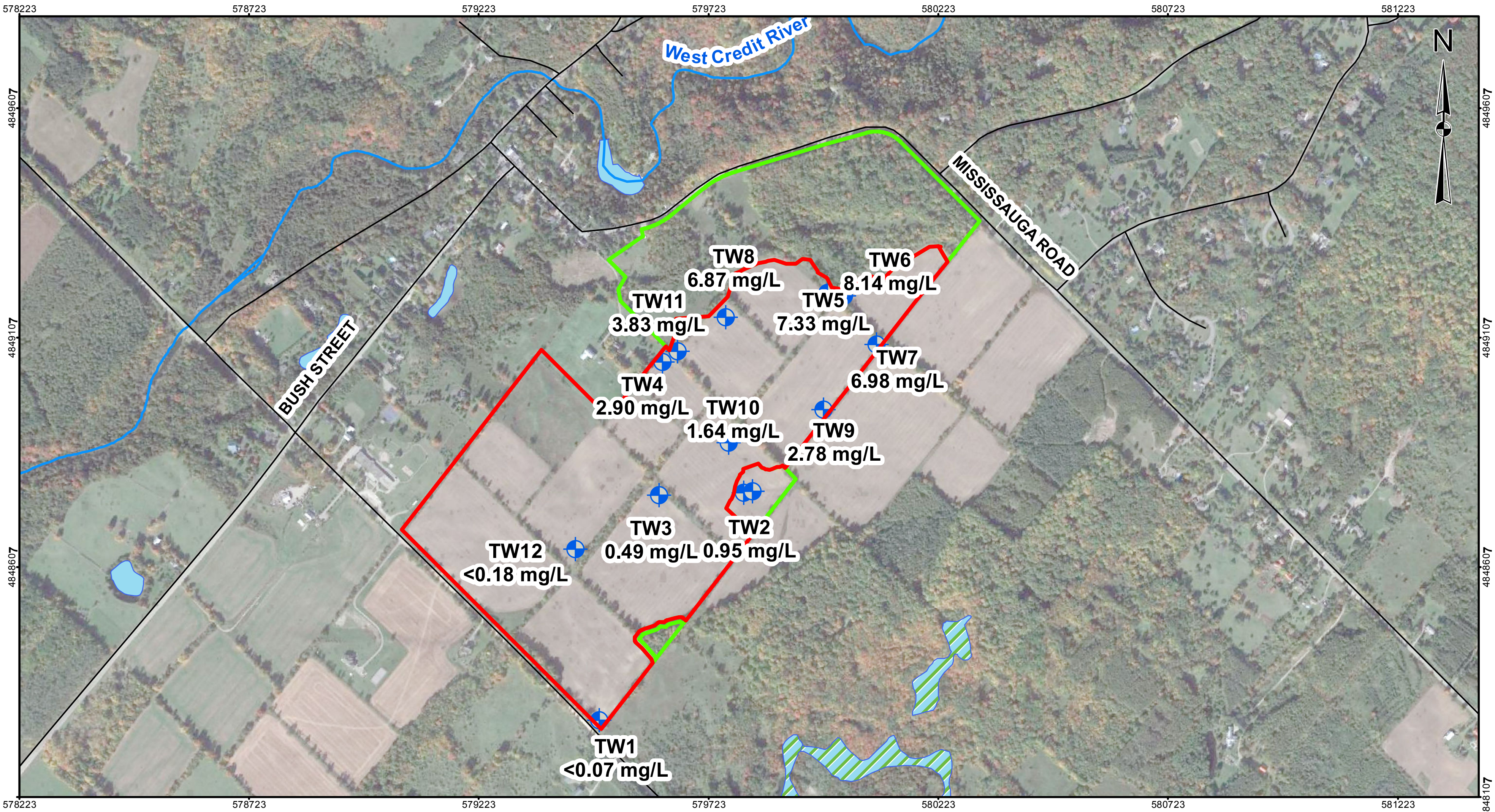
COLE ENGINEERING
Experience Enhancing Excellence

DATE:	10/18/2017	
GIS	C.C.	10/18/2017
DESIGN		
CHECK	D.B.	10/18/2017

PROJECT: 2017-0646

REV. 0.0

FIGURE 11



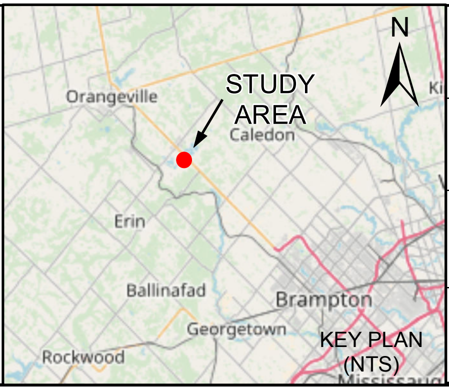
COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- 🟥 Site - Development Area
- 🟩 Site - Open Space Area
- — Roads
- ⊕ Monitoring Wells
- ~ Watercourses
- Waterbody
- ▨ Wetlands

REFERENCE

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA



SCALE 1:12,500

125 0 125 250 375 500 Meters

PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Average 2017 Nitrate Concentrations

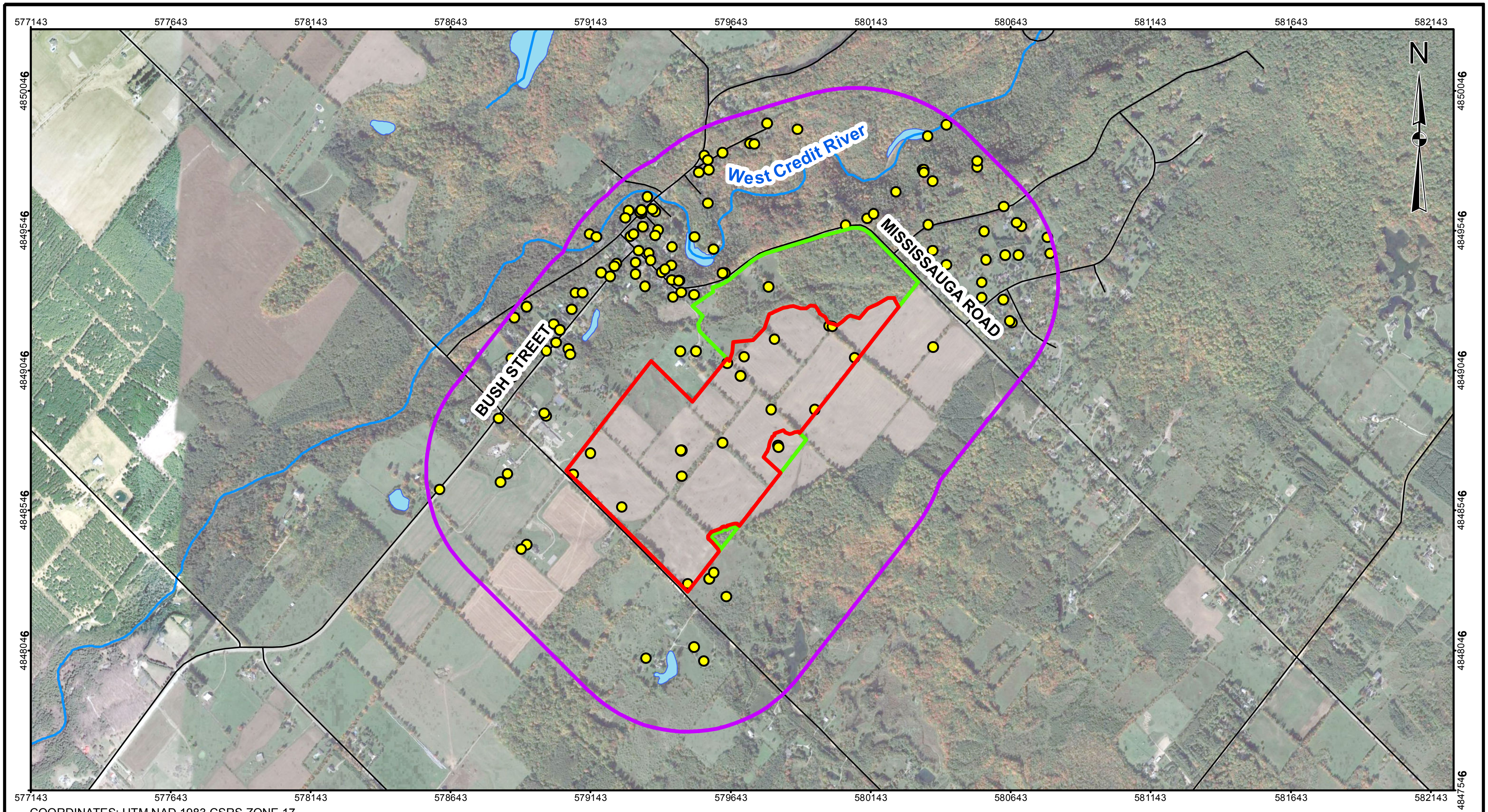
COLE ENGINEERING
Experience Enhancing Excellence

DATE: 10/18/2017		
GIS	C.C.	12/14/2017
DESIGN		
CHECK	D.B.	12/14/2017

PROJECT: 2017-0646

REV. 0.0

FIGURE 12



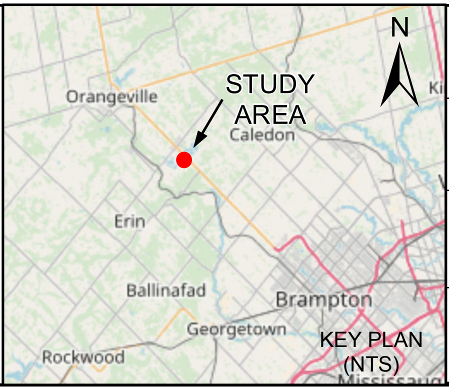
COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

- 🟥 Site - Development Area
- 🟩 Site - Open Space Area
- ▭ 500 m Buffer of Site
- ● MOECC Well Records
- — Roads
- 〰 Watercourses
- Waterbody

REFERENCE

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA



KEY PLAN (NTS)

SCALE 1:20,000

200 0 200 400 600 800 Meters

PROJECT

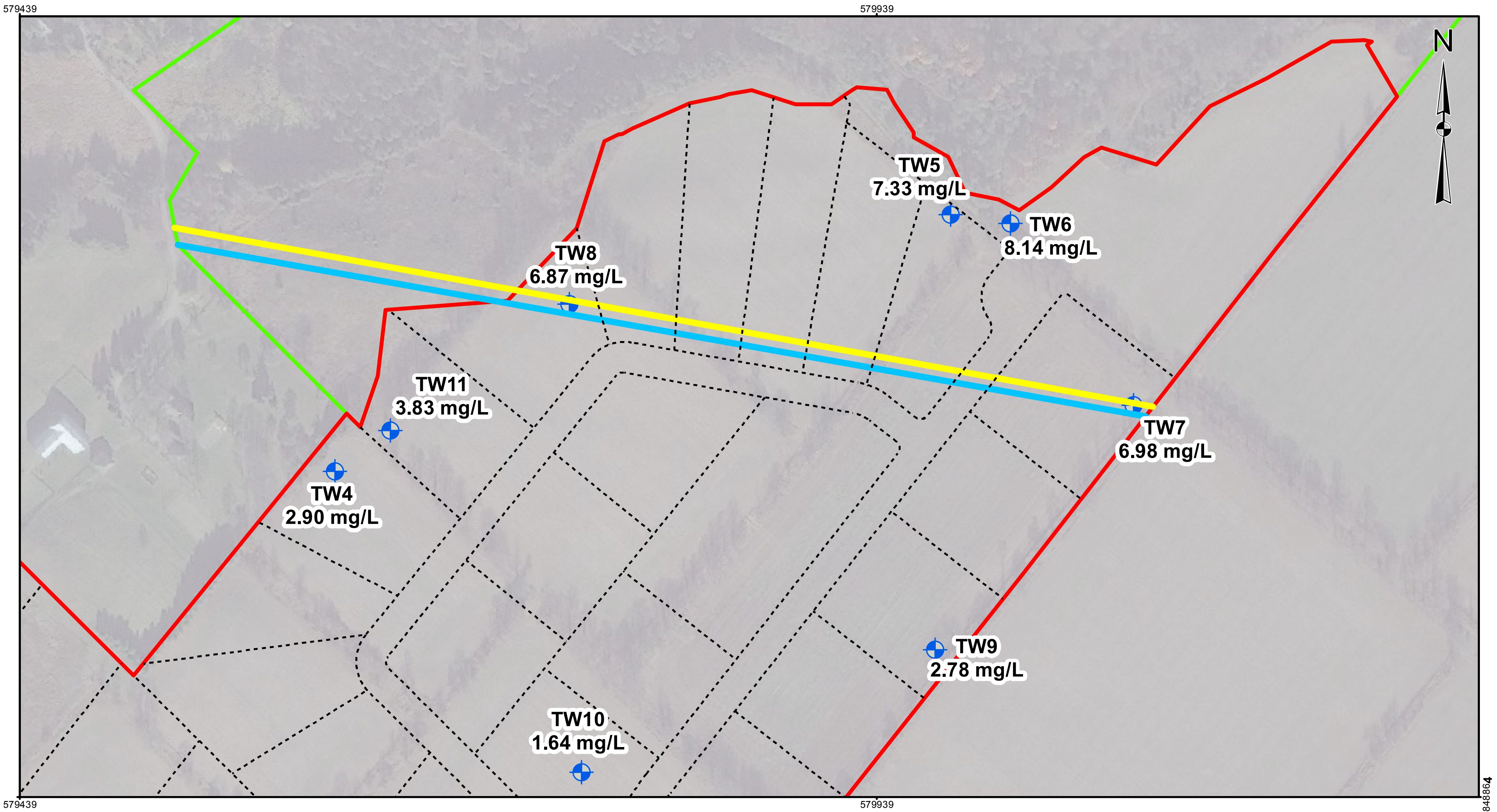
Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

MOECC Well Records

COLE ENGINEERING
Experience Enhancing Excellence

DATE: 10/18/2017			PROJECT: 2017-0646
GIS	C.C.	10/18/2017	REV. 0.0
DESIGN			FIGURE 13
CHECK	D.B.	10/18/2017	



COORDINATES: UTM NAD 1983 CSRS ZONE 17.

LEGEND

🟥 Site - Development Area

🟩 Site - Open Space Area

- - - Lot Layouts

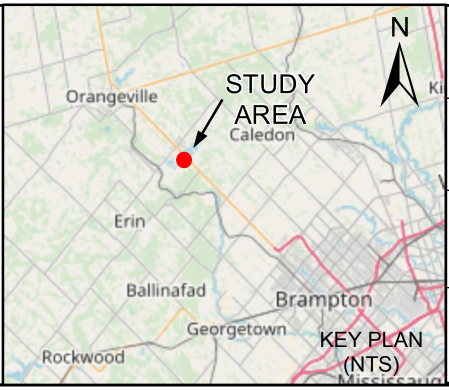
⊕ Monitoring Wells

🟨 Line of Higher Nitrate Concentrations

🟦 7 m Setback Line

REFERENCE

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA



KEY PLAN (NTS)

SCALE 1:3,350

30 0 30 60 90 120 Meters

PROJECT

Hydrogeological Investigation
Manors of Belfountain
Caledon, ON

TITLE

Line of Higher Nitrate Concentrations

COLE ENGINEERING
Experience Enhancing Excellence

DATE:	10/18/2017		PROJECT: 2017-0646
GIS	C.C.	12/14/2017	REV. 0.0
DESIGN			FIGURE 14
CHECK	D.B.	12/14/2017	

Appendix A

Draft Plan of Subdivision

X:\Drawings\1136-001\2017 12 December\DP Dec 6 17.dwg

DRAFT PLAN OF SUBDIVISION
MANORS OF BELFOUNTAIN CORP.

FILE # 21T-91015C

PART OF EAST HALF AND WEST HALF LOT 9,
CONCESSION 5, W.H.S.
(HAMLET OF BELFOUNTAIN),
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

OWNERS CERTIFICATE

I HEREBY AUTHORIZE GLEN SCHNARR & ASSOCIATES INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF CALEDON FOR APPROVAL.

SIGNED ____________________ DATE: ____________

JOHN SPINA, ASO
MANORS OF BELFOUNTAIN CORP.

SURVEYORS CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED ____________________ DATE: ____________

ALISTER SANKEY, OLS
DAVID B. SEARLES SURVEYING LTD.
4255 SHERWOODTOWNE BLVD. SUITE 206
MISSISSAUGA, ON, L4Z 1Y5
PHONE: 905-273-6840
EMAIL: info@dbsearles.ca

ADDITIONAL INFORMATION

(UNDER SECTION 51(17) OF THE PLANNING ACT) INFORMATION REQUIRED BY CLAUSES A,B,C,D,E,F,G, & J ARE SHOWN ON THE DRAFT AND KEY PLANS.

H) MUNICIPAL AND PIPED WATER TO BE PROVIDED
I) SANDY LOAM AND CLAY LOAM
K) SANITARY AND STORM SEWERS TO BE PROVIDED

NOTES

- Local to local radii - 5.0
- Streets 'A' & 'C' to Shaws Creek Rd. daylight triangles - 15.0 x 15.0
- Pavement illustration is diagrammatic only

LAND USE SCHEDULE

LAND USE	LOTS / BLOCKS	AREA (ha)	AREA (ac)	UNITS
ESTATE RESIDENTIAL	1-67	42.24	104.38	**67**
PARK	68-72	2.60	6.42	
OPEN SPACE	73-75	18.92	46.75	
10m BUFFER	76, 77	1.02	2.52	
ROAD WIDENING	78	0.18	0.44	
18.0m ROW - (2,886m LENGTH)		5.32	13.15	
TOTAL	**78**	**70.28**	**173.67**	**67**

Scale 1:2000
(24 x 36)
December 5, 2017

GLEN SCHNARR & ASSOCIATES INC.
URBAN & REGIONAL PLANNERS, LAND DEVELOPMENT CONSULTANTS
SUITE 700 10 KINGSBRIDGE GARDEN CIRCLE,
MISSISSAUGA, ONTARIO, L5R 3K6
TEL (905) 568-8888 FAX (905) 568-8894 www.gsai.ca

Appendix B

Borehole Logs

Ontario Ministry of the Environment

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

Tag #: A165388

TW1

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Measurements recorded in: ☒ Metric ☐ Imperial

Well Owner's Information

First Name: Orb | Last Name / Organization: Property Corporation | E-mail Address: | ☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 2121 Olde Baseline Road | Municipality: Caledon | Province: ON | Postal Code: L7K0K7 | Telephone No. *(inc. area code)*:

Well Location

Address of Well Location (Street Number/Name): | Township: Town of Caledon | Lot: Pt 9 | Concession: 5 WHS

County/District/Municipality: Peel | City/Town/Village: Belfountain | Province: **Ontario** | Postal Code:

UTM Coordinates NAD 8 3 | Zone 17 | Easting 579491 | Northing 4848283 | Municipal Plan and Sublot Number: | Other:

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
Gray	Clay & stones			0	8.53
Brown	Clay & stones			8.53	29.87
Brown	limestone			29.87	39.62
Gray	Limestone			39.62	53.03
Blue	shale			53.03	53.94

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	10	Bentonite Grout	.73

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
15.9	steel	.48	+.85	30.78
15.4	open hole		30.78	53.94

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 44 (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*

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

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	30.78	22.8
30.78	53.94	15.6

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): 42.6

Pumping rate (l/min / GPM): 45

Duration of pumping: 6 hrs + 0 min

Final water level end of pumping (m/ft): 34.76

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

Recommended pump depth (m/ft): 42.6

Recommended pump rate (l/min / GPM): 45

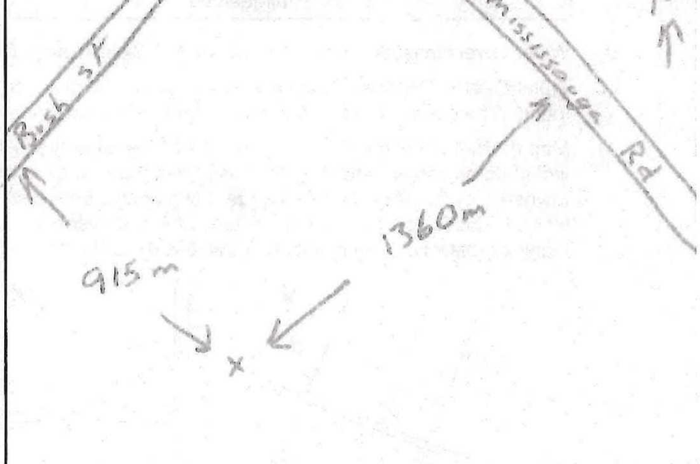
Well production (l/min / GPM):

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	19.19		34.76
1	23.47	1	32.68
2	26.44	2	30.74
3	28.25	3	29.10
4	30.29	4	27.68
5	31.87	5	26.46
10	33.89	10	22.70
15	34.23	15	21.25
20	34.27	20	20.73
25	34.22	25	20.50
30	34.43	30	20.36
40	34.53	40	20.30
50	34.56	50	20.19
60	34.60	60	20.09

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 Initiatives Ltd. | Well Contractor's Licence No.: 7211

Business Address (Street Number/Name): 15 Townline Rd. Orangeville | Municipality:

Province: Ont | Postal Code: L9W3R4 | Business E-mail Address: info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*: 5198468289 | Name of Well Technician (Last Name, First Name): Losch Kim

Well Technician's Licence No.: T927 | Signature of Technician and/or Contractor: Losch | Date Submitted: 20[illegible]28

Well owner's information package delivered ☐ Yes ☐ No | Date Package Delivered: | Date Work Completed: 201407[illegible]5

Ministry Use Only

Audit No. Z 188877

Received

0506E (2007/12)

Well Owner's Copy

TW2

Ontario Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

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

Tag #: A165390

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name / Last Name / Organization: Orb Property Corporation	E-mail Address:	☐ Well Constructed by Well Owner	
Mailing Address (Street Number/Name): 2121 Olde Base Line Road	Municipality: Caledon	Province: ON	Postal Code: L7C0K7
Telephone No. *(inc. area code)*:			

Well Location

Address of Well Location (Street Number/Name):	Township: Town of Caledon	Lot: Pt 9	Concession: 5 WHS
County/District/Municipality: Peel	City/Town/Village: Belfountain	Province: **Ontario**	Postal Code:
UTM Coordinates NAD 8 3 — Zone: 17 — Easting: 579813 — Northing: 4848777	Municipal Plan and Sublot Number:	Other:	

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
Brn	clay			0	2.74
Grey	clay & boulders			2.74	7.62
Gry	clay & silt			7.62	8.22
Gray	clay & stones			8.22	11.88
white	limestone			11.88	12.19
Gray	limestone			12.19	13.10
Brown	limestone			13.10	17.06
Gry	limestone			17.06	20.11

Annular Space

Depth Set at *(m/ft)* From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	0	Bentonite Grout	.25

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

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

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

Recommended pump depth *(m/ft)*

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

Well production *(l/min / GPM)*

Disinfected? ☒ Yes ☐ No

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

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
15.9	steel	.48	+.61	12.49
15.9	open hole		12.49	20.11

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth 20.11 *(m/ft)* ☐ Gas — Kind of Water: ☐ Fresh ☑ Untested ☐ Other, *specify*

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

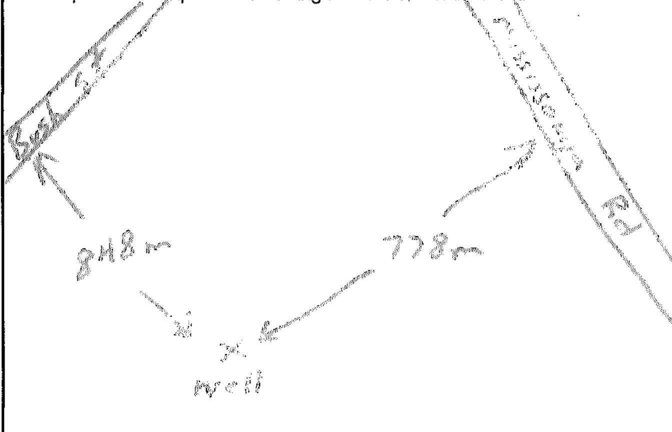
Water found at Depth ____ *(m/ft)* ☐ Gas — Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth *(m/ft)* From	To	Diameter *(cm/in)*
0	12.49	22.8
12.49	20.11	15.9

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 Initiatives Ltd

Well Contractor's Licence No.: 7221

Business Address (Street Number/Name): 15 Townline Rd. Orangeville

Municipality:

Province: Ont

Postal Code: L9W3R4

Business E-mail Address: info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*: 5198468289

Name of Well Technician (Last Name, First Name): Loeb Kim

Well Technician's Licence No.: 1927

Signature of Technician and/or Contractor:

Date Submitted: [illegible]

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: [illegible]

Ministry Use Only

Audit No. Z 188872

Received

0506E (2007/12)

Well Owner's Copy

Ontario Ministry of the Environment

TW3 30K-7N3

Well Record

Regulation 903 Ontario Water Resources Act

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

Tag #: A165393

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Orb Property Corporation		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 Olde Baseline Road		ON	L7C0K7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
	Town of Caledon	Pt 9	5 WHS

County/District/Municipality	City/Town/Village	Province	Postal Code
Peel	Bolton(?)	**Ontario**	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579995	4849204		

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
Red	Clay + stones			0	10.97
Gray	Clay + stones			10.97	18.89
Brown	limestone			18.89	26.21
Gray	limestone			26.21	32.61
Dark Brown	limestone			32.61	35.35
Blue	shale			35.35	35.96

Annular Space

Depth Set at *(m/ft)* From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	10	Bentonite Grout	.75

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)*: 31.1

Pumping rate *(l/min / GPM)*: 94

Duration of pumping: 6 hrs + 0 min

Final water level end of pumping *(m/ft)*: 23.62

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

Recommended pump depth *(m/ft)*: 31.1

Recommended pump rate *(l/min / GPM)*: 90

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

Disinfected? ☒ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/ft)*	Recovery Time *(min)*	Water Level *(m/ft)*
Static Level	15.80		23.62
1	19.01	1	20.01
2	20.77	2	18.43
3	21.42	3	17.55
4	21.84	4	17.09
5	22.22	5	16.86
10	22.76	10	16.51
15	23.08	15	16.38
20	23.22	20	16.28
25	23.32	25	16.22
30	23.38	30	16.16
40	23.46	40	16.07
50	23.52	50	16.02
60	23.53	60	15.99

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
15.9	Steel	.48	.48	22.8
15.4	open hole		22.8	35.96

Construction Record - Screen

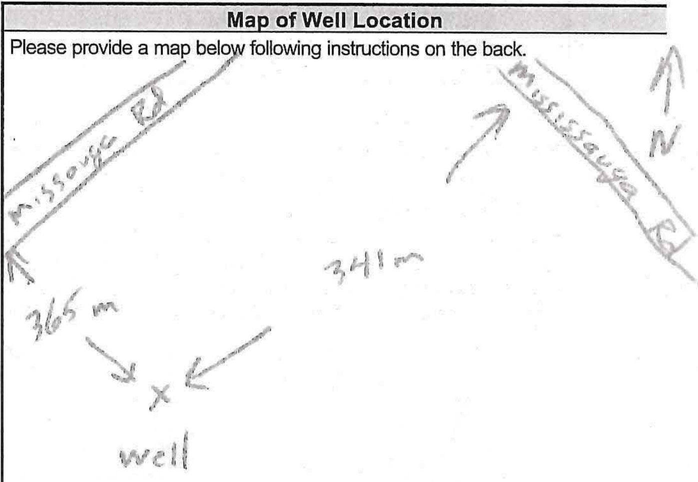
Outside Diameter *(cm/in)*	Material (Plastic, Galvanized, Steel)	Slot No.	Depth *(m/ft)* From	To

Status of Well

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

Map of Well Location

Please provide a map below following instructions on the back.



Water Details

Water found at Depth 33 *(m/ft)* ☐ Gas | Kind of Water: ☐ Fresh ☑ Untested ☐ Other, *specify*

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

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

Hole Diameter

Depth *(m/ft)* From	To	Diameter *(cm/in)*
0	19.81	22.8
19.81	35.96	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Well Initiatives Ltd	7221

Business Address (Street Number/Name)	Municipality
15 Townline Rd. Orangeville	

Province	Postal Code	Business E-mail Address
Ont	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	Losch Kim

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T927	Kim Losch	2014 0[illegible] [illegible]9

Comments:

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed 2014 0[illegible] [illegible]7

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Audit No. Z188876

Received

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Well Owner's Copy

Ontario Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

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

Tag #: A165392

TW4 SOK 1N4

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Orb Property Corporation			

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
21 21 Olde Baseline Road	Caledon	ON	L7C0K7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
	Town of Caledon	Pt 9	5 WHS

County/District/Municipality	City/Town/Village	Province	Postal Code
Peel	Belfountain	**Ontario**	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579631	4849072		

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
Gray	Clay & stones			0	14.63
Brown	clay			14.63	15.84
	Gravel			15.84	17.37
Brown	limestone			17.37	34.74
Blue	shale			34.74	35.66

Annular Space

Depth Set at *(m/ft)* From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	10	Bentonite Grout	.75

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter *(cm/in)*	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness *(cm/in)*	Depth *(m/ft)* From	To
15.9	steel	.48	+.60	17.67
15.4	open hole		17.67	35.66

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 32 *(m/ft)* ☐ Gas — Kind of Water: ☐ Fresh ☑ Untested ☐ Other, *specify*

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

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

Hole Diameter

Depth *(m/ft)* From	To	Diameter *(cm/in)*
0	17.67	22.8
17.67	35.66	15.6

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)* 30

Pumping rate *(l/min / GPM)* 30.3

Duration of pumping 6 hrs + 0 min

Final water level end of pumping *(m/ft)* 19.71

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

Recommended pump depth *(m/ft)* 30

Recommended pump rate *(l/min / GPM)* 30.3

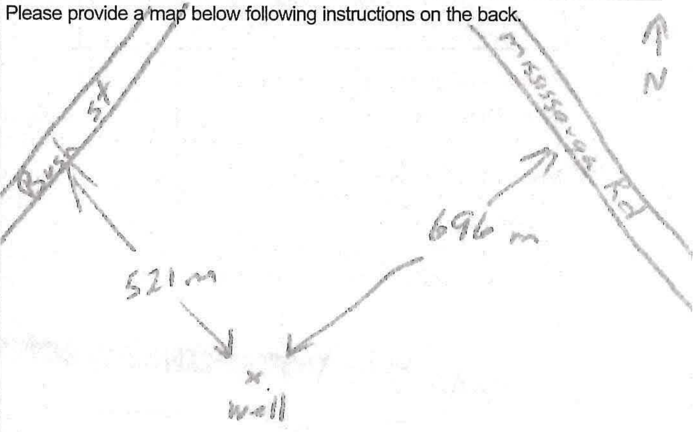
Well production *(l/min / GPM)*

Disinfected? ☑ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/ft)*	Recovery Time *(min)*	Water Level *(m/ft)*
Static Level	19.56		19.71
1	19.68	1	19.59
2	19.69	2	19.58
3	19.69	3	19.58
4	19.69	4	19.58
5	19.69	5	19.58
10	19.69	10	19.575
15	19.69	15	19.575
20	19.69	20	19.575
25	19.695	25	19.575
30	19.695	30	19.575
40	19.695	40	19.575
50	19.70	50	19.57
60	19.70	60	19.57

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.
Well Initiatives Ltd	7211

Business Address (Street Number/Name)	Municipality
15 Townline Rd Orangeville	

Province	Postal Code	Business E-mail Address
Ont	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	Losch Kim

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T927		YYYYMMDD

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered YYYYMMDD

Date Work Completed 20YYMMDD

Ministry Use Only

Audit No. Z188874

Received

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Well Owner's Copy

Ontario Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

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

Tag #: A165391

TW5

50R - 1NS

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Orb Property Corporation		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 Olde Baseline Road	Caledon	ON	L7C0K7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
	Town of Caledon	Pt 9	5 WHS

County/District/Municipality	City/Town/Village	Province	Postal Code
Peel	Belfountain	**Ontario**	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579614	4848788		

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
Red	Clay & stones			0	5.48
Gray	Clay & stones			5.48	12.80
Brown	Limestone			12.80	31.39
Blue	Shale			31.39	32.30

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	10	Bentonite Grout	.95

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
15.9	steel	.48	+.60	13.41
15.4	open hole		13.41	32.30

Construction Record - Screen

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

Status of Well

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

Water Details

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

Hole Diameter

Depth *(m/ft)* From	To	Diameter *(cm/in)*
0	13.41	22.8
13.41	32.30	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Well Initiatives Ltd.	7221

Business Address (Street Number/Name)	Municipality
15 Townline Rd. Orangeville	

Province	Postal Code	Business E-mail Address
Ont.	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	Losch Kim

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T927	Kim Losch	20140727

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): 27.5

Pumping rate *(l/min / GPM)*: 20

Duration of pumping: 6 hrs + 0 min

Final water level end of pumping *(m/ft)*: 27.12

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

Recommended pump depth (m/ft): 27

Recommended pump rate *(l/min / GPM)*: ~~20~~ 18

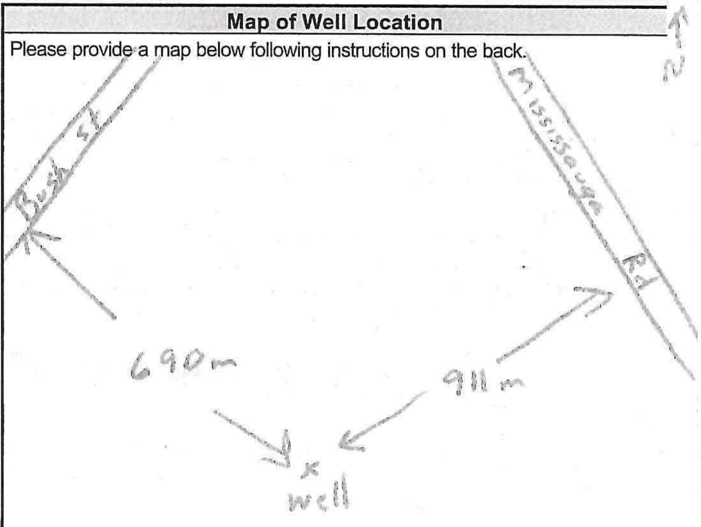
Well production *(l/min / GPM)*:

Disinfected? ☒ Yes ☐ No

Draw Down Time *(min)*	Draw Down Water Level *(m/ft)*	Recovery Time *(min)*	Recovery Water Level *(m/ft)*
Static Level	15.34	0	27.12
1	16.97	1	22.01
2	18.73	2	21.33
3	20.25	3	19.76
4	22.89	4	18.67
5	22.89	5	18.13
10	22.00	10	~~17.80~~
15	22.22	15	17.19 16.89
20	22.38	20	16.81
25	22.56	25	16.76
30	22.65	30	16.70
40	22.81	40	16.66
50	22.99	50	16.63
60	23.06	60	16.61

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☐ No	YYYYMMDD Date Work Completed 20140704	Audit No. Z188875 Received

0506E (2007/12)

Well Owner's Copy

TW6 30K-TW6

Ontario Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*
A121594

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Orb	Property Corporation		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 Olde Baseline Road	Caledon	ON	L7C0K7	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
	Town of Caledon	Pt lot 9	5 WHS

County/District/Municipality	City/Town/Village	Province	Postal Code
Peel	Belfountain	**Ontario**	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	580008	4849203		

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
Red	Clay + stones			0	6.09
Gray	Clay + stones			6.09	12.49
White	limestone			12.49	27.12
Brown	limestone			27.12	29.26
Gray	limestone			29.26	31.08
Blue	Shale			31.08	32.30

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	10	Bentonite Grout	.75

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
15.9	steel	.48	+.48	13.41
15.4	open hole		13.41	32.30

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth 29 (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☑ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter *(cm/in)*
0	13.41	22.8
13.41	32.30	15.4

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): 26.2

Pumping rate (l/min / GPM): 18

Duration of pumping: 6 hrs + 0 min

Final water level end of pumping (m/ft): 20.57

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

Recommended pump depth (m/ft): 26

Recommended pump rate (l/min / GPM): 18

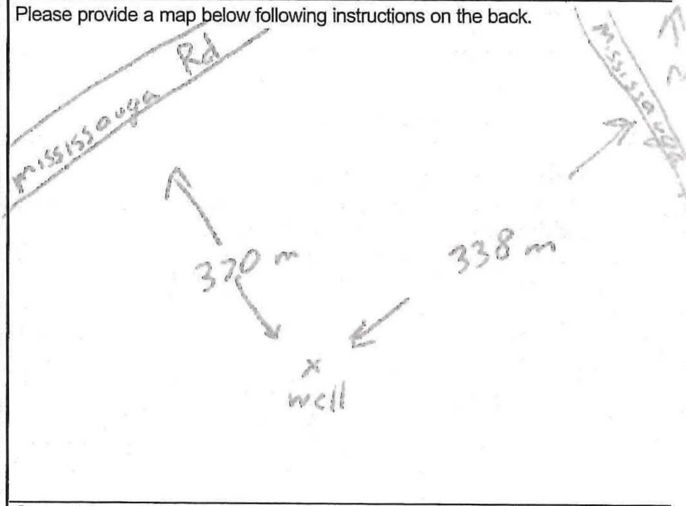
Well production (l/min / GPM):

Disinfected? ☒ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/ft)*	Recovery Time *(min)*	Water Level *(m/ft)*
Static Level	14.85	0	20.57
1	17.02	1	18.65
2	18.00	2	17.35
3	18.65	3	16.54
4		4	16.17
5	19.96	5	15.98
10	20.52	10	15.81
15	19.92	15	15.76
20	19.84	20	15.74
25	19.84	25	15.71
30	19.86	30	15.69
40	19.91	40	15.66
50	19.95	50	15.62
60	19.99	60	15.58

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 Initiatives Ltd.
Well Contractor's Licence No.: 7221
Business Address (Street Number/Name): 15 Townline Rd. Orangeville
Municipality:
Province: Ont
Postal Code: L9W3R4
Business E-mail Address: info@wellinitiatives.com
Bus.Telephone No. *(inc. area code)*: 5198468269
Name of Well Technician (Last Name, First Name): Losch Kim
Well Technician's Licence No.: T927
Signature of Technician and/or Contractor: Kim Losch
Date Submitted: 20140728

Well owner's information package delivered: ☐ Yes ☐ No
Date Package Delivered: Y Y Y Y M M D D
Date Work Completed: 20140702

Ministry Use Only
Audit No. Z188873
Received

0506E (2007/12)

Well Owner's Copy

MW1-14

Ontario Ministry of the Environment

Measurements recorded in: ☒ Metric ☐ Imperial

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

Tag #: A165389

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization: Orb Property Corporation	E-mail Address	☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 2121 Olde Baseline Road	Municipality: Caledon	Province: ON	Postal Code: L7C0K7	Telephone No. *(inc. area code)*

Well Location

Address of Well Location (Street Number/Name)	Township: Town of Caledon	Lot: Pt 9	Concession: 5 WHS
County/District/Municipality: Peel	City/Town/Village: Belfountain	Province: **Ontario**	Postal Code

UTM Coordinates NAD 83	Zone: 17	Easting: 578814	Northing: 4848771	Municipal Plan and Sublot Number	Other

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

General Colour	Most Common Material	Other Materials	General Description	Depth *(m/ft)* From	To
Brown	Clay			0	2.74
Grey	Clay & stones			2.74	7.62
Grey	Clay & silt			7.62	8.22
Grey	Clay & stones			8.22	11.88
				11.88	12.19

Annular Space

Depth Set at *(m/ft)* From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
12.19	9.75	sand	0.041.5
9.75	7.92	Bentonite	0.03
7.92	5.48	sand	0.03
5.48	0	Bentonite	0.093

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
3.5	plastic	.40	+.61	6.09
3.5	Plastic	.40	+.61	10.36

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
4.1	plastic	10	6.09	7.62
4.1	Plastic	10	10.36	11.88

Water Details

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

Hole Diameter

Depth *(m/ft)* From	To	Diameter *(cm/in)*
0	12.19	15.4

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)*

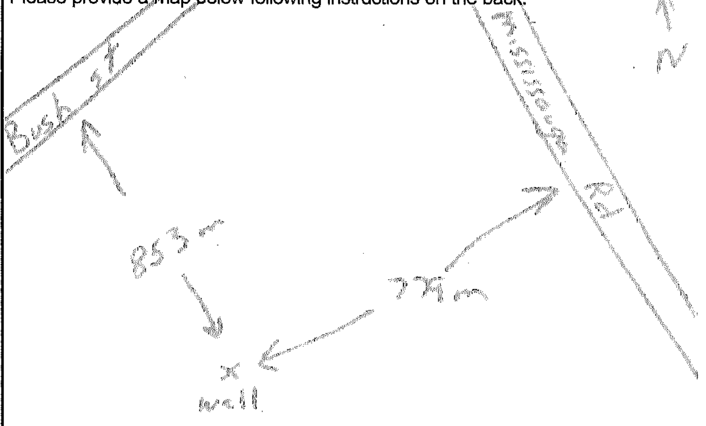
Well production *(l/min / GPM)*

Disinfected? ☒ Yes ☐ No

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Well Initiatives Ltd.	Well Contractor's Licence No.: 7221
Business Address (Street Number/Name): 15 Townline Rd. Orangeville	Municipality

Province: Ont	Postal Code: L9W3R4	Business E-mail Address: info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*: 5198466289	Name of Well Technician (Last Name, First Name): Losch Kim

Well Technician's Licence No.: T 9 2 7	Signature of Technician and/or Contractor	Date Submitted: 2 0 1 4 0 3 2 [illegible]

Well owner's information package delivered
☐ Yes
☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2 0 1 4 M M D D

Ministry Use Only

Audit No. Z 188871

Received

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Well Owner's Copy

Ontario Ministry of the Environment and Climate Change

TW 7-16

Measurements recorded in: ☒ Metric ☐ ~~Imperial~~

Well Tag#: A201495 (ow)

A201495

TW7

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
ORA	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
2121 OLDE BASELINE ROAD	CALEDON	ON	L7C0K7	9058380200

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	580076	4849091		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/~~ft~~) From	To
BROWN	SAND	GRAVEL, SILT + ROCKS		0	7.0
BROWN	GRAVEL	SAND		7.0	7.9
GREY	LIMESTONE			7.9	22.6
			TOTAL DEPTH - 74 FEET		

Annular Space

Depth Set at (m/~~ft~~) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/~~ft³~~)
0	9.8	BENTONITE HOLE PLUG	.03

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): 18.3m / 60'

Pumping rate (l/min / GPM): 68.1LPM / 18USGPM

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/ft): 14.28m / 46' 10"

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

Recommended pump depth (m/ft): 18.3m / 60'

Recommended pump rate (l/min / GPM): 45.4LPM / 12USGPM

Well production (l/min / GPM):

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/~~ft~~)	Recovery Time (min)	Water Level (m/~~ft~~)
Static Level	13.30		14.24
1	13.84	1	13.64
2	13.94	2	13.50
3	14.04	3	13.46
4	14.07	4	13.44
5	14.07	5	13.42
10	14.14	10	13.36
15	14.17	15	13.33
20	14.17	20	13.30
25	14.20	25	13.30
30	14.20	30	
40	14.20	40	
50	14.24	50	
60	14.24	60	

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
16.0	STEEL	.5	+.6	9.8
15.6	OPEN HOLE		9.8	22.6

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 17.4 (m/~~ft~~) ☐ Gas — Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify
Water found at Depth 21.3 (m/~~ft~~) ☐ Gas — Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify
Water found at Depth (m/ft) ☐ Gas — Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/~~ft~~) From	To	Diameter (cm/in)
0	6.1	25.0
6.1	9.8	22.2
9.8	22.6	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

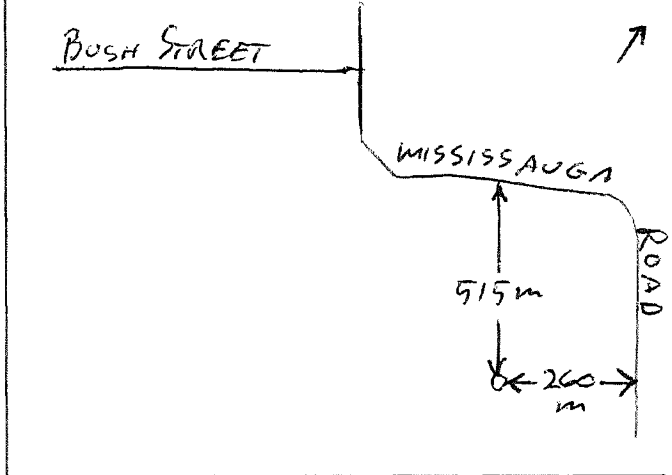
Bus.Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5198467289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

0506E (2014/11)

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered

Date Work Completed 20160219

Ministry Use Only

Audit No. Z221731

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Ministry's Copy

Ontario Ministry of the Environment and Climate Change

TW8-16

Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag#: A201497 (…low)

A201497

TW8

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
CRB	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 OLDE BASELINE ROAD	CALEDON	ON	L7C0K7	9058380200

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579801	4849157		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/~~ft~~) From	To
BROWN	SILTY CLAY	STONES		0	.6
BROWN	SILTY SAND	GRAVEL		.6	5.8
BROWN	SAND			5.8	7.9
BROWN	SILTY SAND			7.9	10.7
BROWN	SILTY SAND	GRAVEL		10.7	14.9
BROWN	SILTY SAND			14.9	18.9
GREY	LIMESTONE			18.9	34.4
GREEN	SHALE			34.4	34.7
			TOTAL DEPTH - 114 FEET		

Annular Space

Depth Set at (m/~~ft~~) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed (m³/~~ft³~~)
0	15.0	BENTONITE HOLEPLUG	.3
33.7	34.7	BENTONITE HOLEPLUG	.02

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
16.0	STEEL	.5	+.6	19.5
15.6	OPEN HOLE		19.5	34.7

Construction Record - Screen

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

Status of Well

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

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) 30.5m / 100'

Pumping rate (l/min / GPM) 11.4LPM/3USGPM

Duration of pumping 2 hrs + 0 min

Final water level end of pumping (m/ft) 25.73m

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft) 30.5m / 100'

Recommended pump rate (l/min / GPM) 11.4LPM/3USGPM

Well production (l/min / GPM)

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/~~ft~~)	Recovery Time (min)	Water Level (m/~~ft~~)
Static Level	21.08		25.73
1	21.75	1	24.44
2	22.06	2	23.88
3	22.32	3	23.14
4	22.56	4	22.96
5	22.80	5	22.60
10	23.30	10	22.78
15	24.08	15	21.14
20	24.58	20	21.11
25	24.96	25	21.11
30	25.22	30	21.11
40	25.25	40	21.11
50	25.47	50	21.11
60	25.60	60	21.11

Water Details

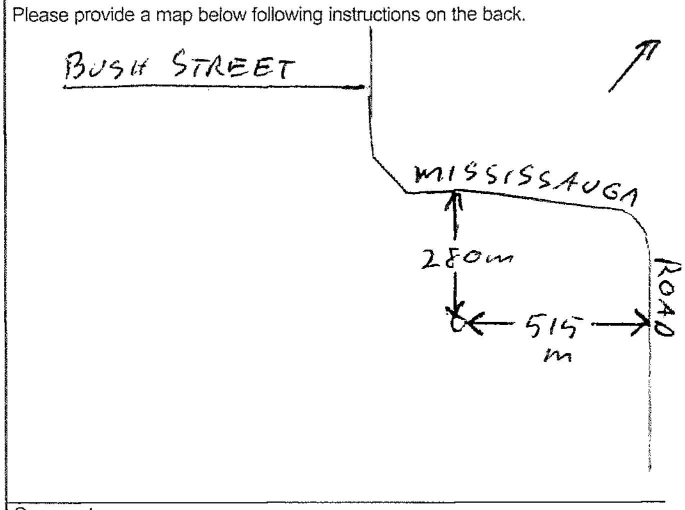
Water found at Depth 33 (m/~~ft~~) ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/~~ft~~) From	To	Diameter (cm/~~in~~)
0	6.4	25.0
6.4	19.5	22.2
19.5	34.7	15.6

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.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered

Date Work Completed 20160223

Ministry Use Only

Audit No. Z 221732

Received

0506E (2014/11)

Ministry's Copy

Ontario
Ministry of the Environment
and Climate Change

Well Tag#: A201496 (ow)
A201496

TW 9

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

TW9-16
Measurements recorded in: ☒ Metric ☐ ~~Imperial~~

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
GRB	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 OLDE BASELINE ROAD	CALEDON	ON	L7C0K7	9058380200

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	549945	4848906		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/~~ft~~) From	To
BROWN	SILTY CLAY	STONES		0	.6
BROWN	SILTY SAND			.6	3.7
BROWN	GRAVEL	SAND & SILT		3.7	9.8
GREY	LIMESTONE			9.8	35.1
GREEN	SHALE			35.1	35.4

TOTAL DEPTH - 116 FEET

Annular Space

Depth Set at (m/~~ft~~) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/~~ft³~~)*
0	11.0	BENTONITE HOLEPLUG	.24
34.1	35.4	CUTTING'S	

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
16.0	STEEL	.5	+.6	11.6
12.8	PERFORATED PLASTIC	.6	10.1	34.1
15.6	OPEN HOLE		34.1	35.4

Status of Well

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

Construction Record - Screen

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

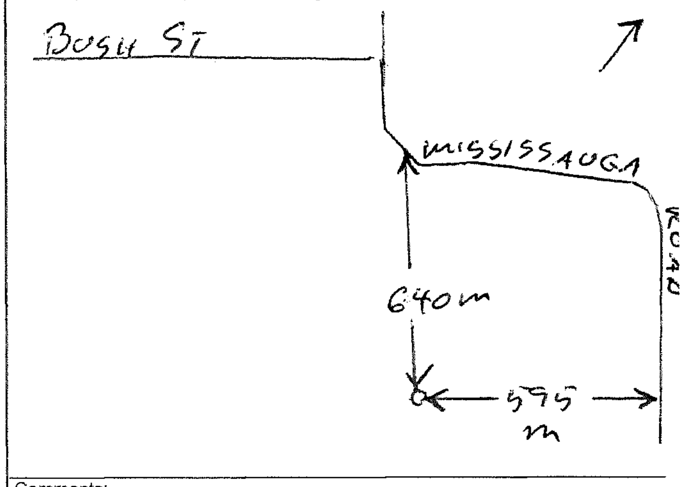
Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, *specify*
If pumping discontinued, give reason:
Pump intake set at *(m/ft)*: 22.9m/75'
Pumping rate *(l/min / GPM)*: 56.8LPM/15USGPM
Duration of pumping: 2 hrs + 0 min
Final water level end of pumping *(m/ft)*: 16.84m
If flowing give rate *(l/min / GPM)*:
Recommended pump depth *(m/ft)*: 22.9m/75'
Recommended pump rate *(l/min / GPM)*: 45.4LPM/12USGPM
Well production *(l/min / GPM)*:
Disinfected? ☒ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/~~ft~~)*	Recovery Time *(min)*	Water Level *(m/~~ft~~)*
Static Level	14.70		16.84
1	15.38	1	15.91
2	15.60	2	15.71
3	15.86	3	15.56
4	15.98	4	15.47
5	16.06	5	15.40
10	16.31	10	15.23
15	16.42	15	15.16
20	16.49	20	15.12
25	16.53	25	15.09
30	16.57	30	15.07
40	16.62	40	15.03
50	16.66	50	15.00
60	16.70	60	14.98

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
VOID FROM 12.8M TO 14.0M
PLASTIC LINER INSTALLED

Water Details

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

Hole Diameter

Depth (m/~~ft~~) From	To	Diameter *(cm/~~in~~)*
0	6.4	25.0
6.4	11.6	22.2
11.6	35.4	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

Well owner's information package delivered: ☐ Yes ☒ No
Date Package Delivered:
Date Work Completed: 20160225

Ministry Use Only
Audit No. Z221733
Received

0506E (2014/11)
Ministry's Copy

Ontario Ministry of the Environment and Climate Change

TW 10-16

Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag#: A201493 (low)

A201493

TW 10

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
ORB	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
2121 OLDE BASELINE ROAD	CALEDON	ON	L7C0K7	9058380200

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579789	4848906		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
BROWN	SILTY SAND	STONES		0	.6
BROWN	SILTY SAND			.6	3.7
BROWN	GRAVEL+SAND	SILT		3.7	9.4
BROWN	SILTY SAND			9.4	12.8
BROWN	SAND			12.8	14.9
GREY	LIMESTONE			14.9	30.2
		TOTAL	DEPTH - 99 FEET		

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	11.0	BENTONITE HOLEPLUG	.24

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): 22.9m/75'

Pumping rate (l/min / GPM): 113.6LPM/30USGPM

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/ft): 16.54

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

Recommended pump depth (m/ft): 22.9m/75'

Recommended pump rate (l/min / GPM): 45.4LPM/12USGPM

Well production (l/min / GPM):

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	15.07		16.54
1	15.50	1	15.17
2	15.84	2	15.14
3	15.99	3	15.13
4	16.10	4	15.13
5	16.15	5	15.13
10	16.26	10	15.12
15	16.33	15	15.12
20	16.38	20	15.12
25	16.40	25	15.12
30	16.42	30	15.11
40	16.44	40	15.11
50	16.45	50	15.10
60	16.46	60	15.10

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
16.0	STEEL	.5	+.78	16.8
15.6	OPEN HOLE		16.8	30.2

Construction Record - Screen

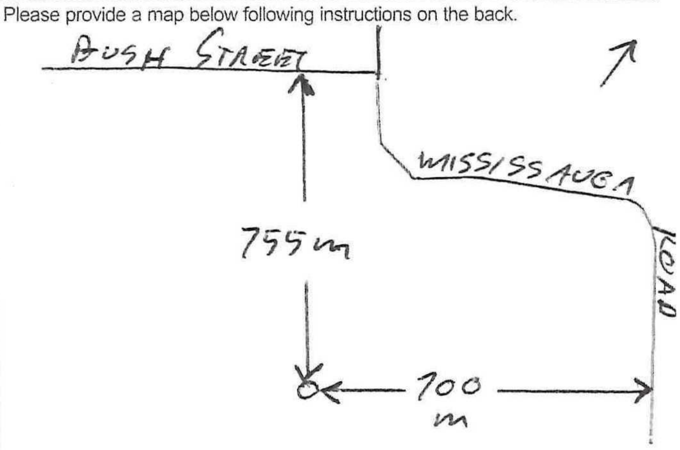
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
			+	

Status of Well

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

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

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	25.0
6.4	16.8	22.2
16.8	30.2	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT Jim

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed 20160225

Ministry Use Only

Audit No. Z221734

Received

0506E (2014/11)

Ministry's Copy

Ontario
Ministry of the Environment and Climate Change

TW11-16

Measurements recorded in: ☒ Metric ☐ ~~Imperial~~

Well Tag#: A201494 ow)
A201494

TW 11
Well Record
Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
ORB	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
2121 OLDE BASELINE ROAD	CALEDON	ON	L7C0K7	9058380200

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579692	4849093		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/~~ft~~) From	To
BROWN	SILTY SAND	STONES		0	.6
BROWN	SILTY SAND			.6	3.7
BROWN	GRAVEL	SAND	SILT	3.7	9.4
BROWN	SILTY SAND			9.4	12.8
BROWN	SAND			12.8	14.9
GREY	LIMESTONE			14.9	30.2

TOTAL DEPTH - 104 FEET

Annular Space

Depth Set at (m/~~ft~~) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/~~ft³~~)*
0	11.0	BENTONITE HOLEPLUG	.24

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)*: 22.9m / 75'

Pumping rate *(l/min / GPM)*: 56.8LPM / 15USGPM

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/~~ft~~): 21.25

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

Recommended pump depth *(m/ft)*: 22.9m / 75'

Recommended pump rate *(l/min / GPM)*: 45.4LPM / 12USGPM

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

Disinfected? ☒ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/~~ft~~)*	Recovery Time *(min)*	Water Level *(m/~~ft~~)*
Static Level	20.88		21.25
1	21.21	1	20.86
2	21.23	2	20.89
3	21.24	3	20.89
4	21.24	4	20.89
5	21.24	5	20.89
10	21.24	10	20.88
15	21.25	15	20.87
20	21.25	20	20.87
25	21.25	25	20.87
30	21.25	30	20.87
40	21.25	40	20.87
50	21.25	50	20.87
60	21.25	60	20.87

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
16.0	STEEL	.5	+.8	20.7
15.6	OPENHOLE		20.7	30.2

Status of Well

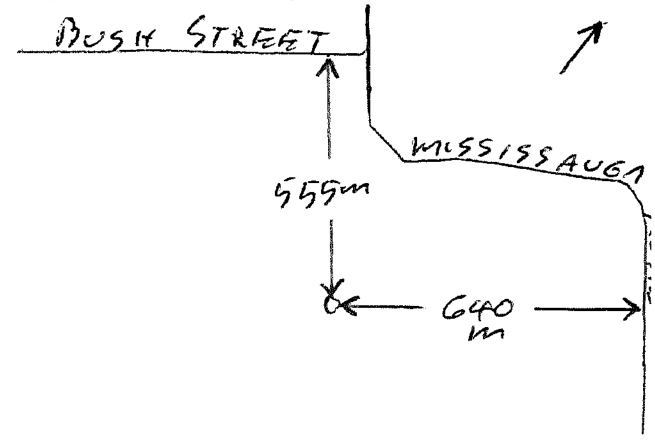
☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Construction Record - Screen

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

Water found at Depth 24-30 (m/~~ft~~) ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/~~ft~~) From	To	Diameter *(cm/in)*
0	6.4	25.0
6.4	20.7	22.2
20.7	30.2	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered

Date Work Completed 20160226

Ministry Use Only
Audit No. Z221735
Received

0506E (2014/11)

Ministry's Copy

Ontario
Ministry of the Environment and Climate Change

TW12-16

Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag#: A201492 ow)
A201492

TW12

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
ORB	PROPERTY CORP		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (*inc. area code*)
2121 OLD BASELINE ROAD	CALEDON	ON	L7C0K7	9058380206

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
16800 SHAWS CREEK ROAD	TOWN OF CALEDON	9	5W

County/District/Municipality	City/Town/Village	Province	Postal Code
PEEL	BELFOUNTAIN	Ontario	L7K0E8

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579469	4848667		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/~~ft~~) From	To
BROWN	SILTY CLAY			0	.6
BROWN	SILTY SAND	GRAVEL		.6	2.7
BROWN	SAND	GRAVEL		2.7	7.6
BROWN	SILTY SAND			7.6	11.6
BROWN	SILTY SAND	GRAVEL		11.6	17.4
BROWN	SILTY SAND	GREY CLAY		17.4	22.9
BROWN GREY	LIMESTONE		INTERMIXED	22.9	36.3
GRY	SHALE LIMESTONE			36.3	36.6
		TOTAL DEPTH - 120 FEET			

Annular Space

Depth Set at (m/~~ft~~) From	To	Type of Sealant Used (*Material and Type*)	Volume Placed (m³/~~ft³~~)
0	11	BENTONITE HOLEPLUG	.24

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*): 30.5m/100'

Pumping rate (*l/min / GPM*): 45.4LPM/12USGPM

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/~~ft~~): 27.72

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

Recommended pump depth (*m/ft*): 30.5m/100'

Recommended pump rate (*l/min / GPM*): 45.4LPM/12USGPM

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

Disinfected? ☒ Yes ☐ No

Draw Down Time (*min*)	Water Level (m/~~ft~~)	Recovery Time (*min*)	Water Level (m/~~ft~~)
Static Level	14.90		27.72
1	17.70	1	23.70
2	19.28	2	21.67
3	19.86	3	20.23
4	20.08	4	19.56
5	20.27	5	19.03
10	20.52	10	17.47
15	26.91	15	16.70
20	27.20	20	16.25
25	27.25	25	15.99
30	27.40	30	15.79
40	27.52	40	15.47
50	27.56	50	15.21
60	27.58	60	15.08

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
16.0	STEEL	.5	+.8	23.6
15.6	OPEN HOLE		23.6	36.6

Status of Well

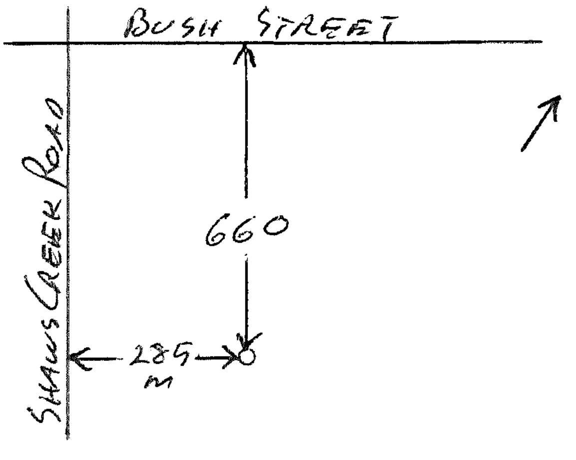
☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Construction Record - Screen

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

Water found at Depth 33.0 (m/~~ft~~) ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*

Water found at Depth 35.4 (m/~~ft~~) ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*

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

Hole Diameter

Depth (m/~~ft~~) From	To	Diameter (cm/~~in~~)
0	6.4	25.0
6.4	23.6	22.2
23.6	36.6	15.6

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ON	L9W3R4	info@wellinitiatives.com

Bus.Telephone No. (*inc. area code*)	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	20160305

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered:

Date Work Completed: 20160301

Ministry Use Only

Audit No. Z221736

Received

0506E (2014/11)

Ministry's Copy

Ontario Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well [illegible] it Below)
A 075156

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Orb	Properties Corp		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Shaws Creek Rd	Caledon	9	5 HSW

County/District/Municipality	City/Town/Village	Province	Postal Code
Peel	Belfountain	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	579080	4848673		

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

General Colour	Most Common Material	Other Materials	General Description	Depth *(m/ft)* From	Depth *(m/ft)* To
Brown	Topsoil			0	1
Brown	Sand	gravel Stones		1	43
Brown	fine Sand			43	59
Brown	Sand	gravel		59	65
Brown	clay	gravel		65	72
Grey	Limstone			72	112

Annular Space

Depth Set at *(m/ft)* From	Depth Set at *(m/ft)* To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	73	Bentonite Grout	

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)* 100

Pumping rate *(l/min / GPM)* 45

Duration of pumping 2 hrs + 0 min

Final water level end of pumping *(m/ft)* 92.3

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

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)* 40

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	52.8		92.3
1	64.8	1	82.4
2	68.7	2	78.8
3	71.6	3	75.9
4	73.8	4	73.6
5	75.6	5	71.7
10	81.4	10	65.3
15	84.6	15	61.8
20	86.4	20	59.6
25	87.7	25	58.2
30	88.4	30	57.2
40	89.4	40	55.8
50	91.1	50	55.0
60	91.6	60	54.4

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 1/4	Steel	.188	0	73

Status of Well

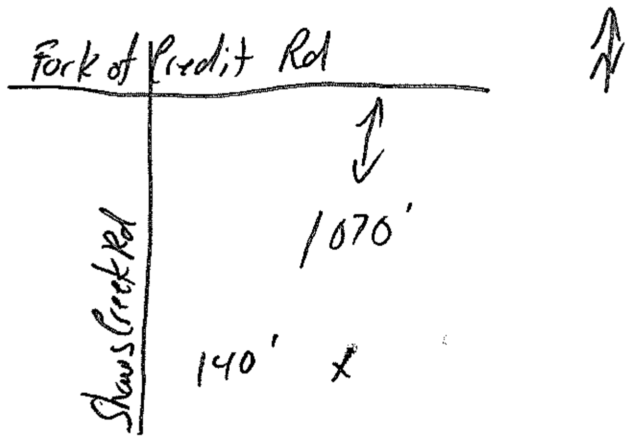
☐ Water Supply
☐ Replacement Well
☒ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Construction Record - Screen

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

Water found at Depth 93 *(m/ft)* ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*
Water found at Depth 97 *(m/ft)* ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*
Water found at Depth 102 *(m/ft)* ☐ Gas | Kind of Water: ☐ Fresh ☒ Untested ☐ Other, *specify*

Hole Diameter

Depth *(m/ft)* From	Depth *(m/ft)* To	Diameter *(cm/in)*
0	73	8 1/2
73	112	6 1/8

Well Contractor and Well Technician Information

Business Name of Well Contractor: FRED CONSTABLE & SON LTD
Well Contractor's Licence No.: 1663
Business Address (Street Number/Name): 3519 5TH LINE
Municipality: BRADFORD
Province: ON.
Postal Code: L3Z 2A4
Business E-mail Address:
Bus.Telephone No. *(inc. area code)*:
Name of Well Technician (Last Name, First Name): Thompson Steve
Well Technician's Licence No.: 2120
Signature of Technician and/or Contractor:
Date Submitted: 20091125

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 20091020

Ministry Use Only

Audit No. Z 94130

MAR 01 2010
Received

Terraprobe

LOG OF BOREHOLE PW-1

PROJECT: Proposed Subdivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: May 27 to June 2, 1988
EQUIPMENT: -
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY		DETAILS OF INSTALLATION
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY	K., CM/SEC 1x10 1x10 1x10 1x10 WATER CONTENT PERCENT 10 20 30 40	ELEV. DEPTH	PW-1
415.0	GROUND SURFACE								
	CLAY AND BOULDERS								
412.3 2.7	SAND AND GRAVEL, some boulders (OUTWASH)							410 405	
403.8 11.2	SAND, GRAVEL, BOULDERS							400	
397.6 17.4	SAND AND GRAVEL							395 390	
389.4 25.6	CLAY AND GRAVEL (TILL)								
386.8 28.2	Continued......							385	

NOTES:

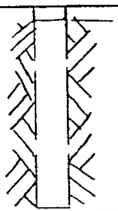
Field Supervisor: ________
Drawn by: ________
Checked by: ________

Terraprobe

LOG OF BOREHOLE PW-1
CON'T

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: May 27 to June 2, 1988
EQUIPMENT: -
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC 1x10 1x10 1x10 1x10 / WATER CONTENT PERCENT 10 20 30 40	ELEV. DEPTH	DETAILS OF INSTALLATION
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY			
385.8	**WEATHERED ROCK**								
29.2	**DOLOSTONE**								
380.9 34.1	End of Borehole							380	

NOTES: Water found at 29.2m

Field Supervisor: ______
Drawn by: ______
Checked by: ______

Terraprobe

LOG OF BOREHOLE PW-2

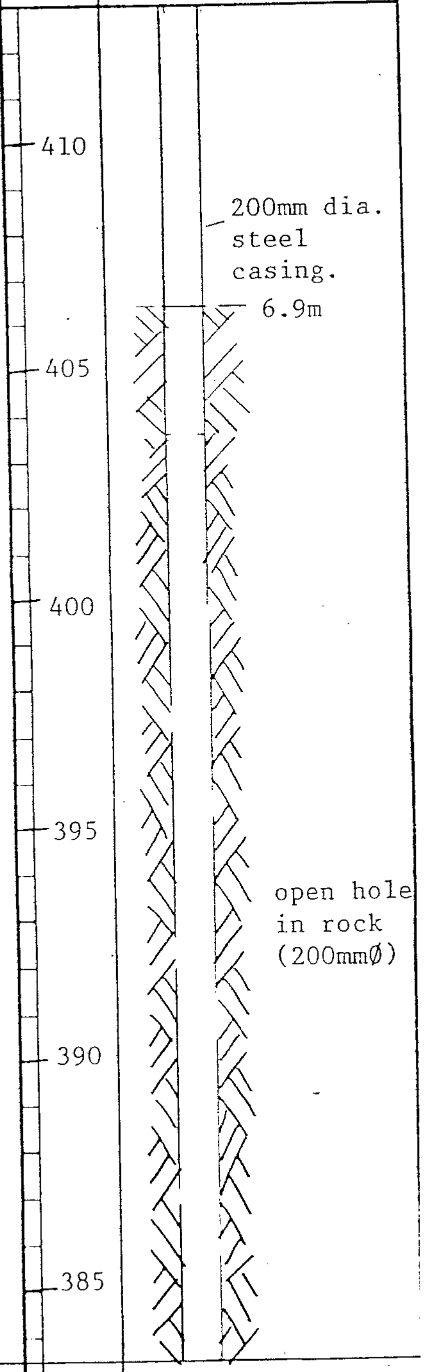
PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: June 3 to June 10, 1988
EQUIPMENT: -
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC 1x10 1x10 1x10 1x10 / WATER CONTENT PERCENT 10 20 30 40
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY	
413.0							
	SAND AND GRAVEL (not Logged)						
406.1 6.9	**DOLOSTONE** (Amabel Formation)						
388.1 24.9	**DOLOSTONE AND SHALE** (Manitoulin formation)						
383.4 29.6	End of Borehole						

ELEV. DEPTH

DETAILS OF INSTALLATION



NOTES:

Field Supervisor: ___
Drawn by: ___
Checked by: ___

Terraprobe

LOG OF BOREHOLE PW–3

PROJECT: Enterac Belfountain
LOCATION: Belfountain
CLIENT: Enterac

DATE: July 2, 1989
EQUIPMENT:
ELEVATION DATUM: Geodetic
FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
402.4	Ground Surface								
402.1	TOPSOIL								
0.3	Brown SAND AND GRAVEL AND STONES (logged by Well Drillers)						402 401 400 399 398 397 396 395 394 393 392		
391.7 10.7	Brown CLAY, GRAVEL AND SILT						391		
390.2 12.2	Continued ...						390		

NOTES:

1) Water encountered at 24.4 m and 33.5 m depth.
2) Water level at 385.5 m (elevation) on September 10, 1989.
3) Hole logged by well driller.

Terraprobe

LOG OF BOREHOLE PW—3

PROJECT: Enterac Belfountain

LOCATION: Belfountain

CLIENT: Enterac

DATE: July 2, 1989

EQUIPMENT:

ELEVATION DATUM: Geodetic

FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m × 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
402.4	Ground Surface								
402.1	TOPSOIL								
0.3	Brown SAND AND GRAVEL AND STONES (logged by Well Drillers)						402 401 400 399 398 397 396 395 394 393 392		
391.7 10.7	Brown CLAY, GRAVEL AND SILT						391		
390.2 12.2	Continued ...						390		

NOTES:

1) Water encountered at 24.4 m and 33.5 m depth.
2) Water level at 385.5 m (elevation) on September 10, 1989.

Terraprobe

LOG OF BOREHOLE PW-3

CONT...

PROJECT: Enterac Belfountain

LOCATION: Belfountain

CLIENT: Enterac

DATE: July 2, 1989

EQUIPMENT:

ELEVATION DATUM: Geodetic

FILE: 88164

STRATIGRAPHY: ELEV. DEPTH m.	STRATIGRAPHY: DESCRIPTION	STRAT. PLOT	GROUND WATER	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 'N' VALUES	m. ELEVATION SCALE	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
390.2									
	brown CLAY, GRAVEL & SILT						390		
							389		
							388		
							387		
							386		
			▽						
							385		
							384		
							383		
							382		
							381		
							380		
							379		
378.3 24.1	grey-brown DOLOSTONE								
378.0 24.4	Continued ...						378		
							377		

NOTES:

Terraprobe

LOG OF BOREHOLE PW–3

CONT...

PROJECT: Enterac Belfountain
LOCATION: Belfountain
CLIENT: Enterac

DATE: July 2, 1989
EQUIPMENT:
ELEVATION DATUM: Geodetic
FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
378.0									
	grey brown DOLOSTONE						377		
							376		
							375		
							374		
							373		
							372		
371.0 31.4	grey DOLOSTONE						371		
							370		
369.5 32.9	brown DOLOSTONE						369		
							368		
367.0 35.4	blue SHALE						367		
366.1 36.3	End of Borehole						366		

NOTES:

Terraprobe

LOG OF BOREHOLE PW–4

PROJECT: Enterac - Belfountain
LOCATION: Belfountain
CLIENT: Enterac

DATE: July 4, 1989
EQUIPMENT:
ELEVATION DATUM: Geodetic
FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
386.2	Ground Surface								
385.9	TOPSOIL						386		
0.3	brown CLAY, SILT, GRAVEL, STONES & BOULDERS (logged by well driller)						385		
							384		
							383		
							382		
							381		
							380		
							379		
							378		
							377		
							376		
							375		
			▼						
374.0							374		
12.2	Continued ...								
							373		

NOTES:
1) Water encountered at 26.2 m depth.
2) Water level at 374.5 m (elevation) on September 10, 1989.
3) Hole logged by well driller.

Terraprobe

LOG OF BOREHOLE PW—4
CONT...

PROJECT: Enterac - Belfountain
LOCATION: Belfountain
CLIENT: Enterac

DATE: July 4, 1989
EQUIPMENT:
ELEVATION DATUM: Geodetic
FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40	WATER CONTENT PERCENT ○
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE	SHEAR STRENGTH, kPa	Wp Wl 10 20 30
374.0	brown CLAY, SILT, GRAVEL STONES & BOULDERS						373 372		
371.3 14.9	blue CLAY						371 370 369		
367.9 18.3	red SHALE						368		
367.0 19.2	blue SHALE						367 366		
364.9 21.3	Continued ...						365		

NOTES:

Terraprobe

LOG OF BOREHOLE PW-4

CONT...

PROJECT: Enterac - Belfountain

LOCATION: Belfountain

CLIENT: Enterac

DATE: July 4, 1989

EQUIPMENT:

ELEVATION DATUM: Geodetic

FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
364.9									
	red SHALE						364		
363.3 22.9	Blue SHALE						363 362 361		
360.0 26.2	End of Borehole						360 359		

NOTES:

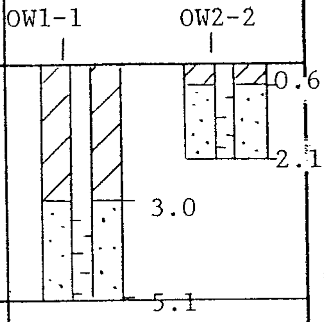
Terraprobe

LOG OF BOREHOLE OW-1

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: April 24 - 25, 1988
EQUIPMENT: Mobile B-61 - rotary
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC 1×10 1×10 1×10 1×10 WATER CONTENT PERCENT 10 20 30 40	ELEV. DEPTH	DETAILS OF INSTALLATION
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY			
390.0	**GROUND SURFACE**								OW1-1 OW2-2
387.9	Dense **SAND AND GRAVEL**, numerous boulders **(OUTWASH)**		1	AS	-				
2.1 284.9	Grey **DOLOSTONE**, weakly fractured (Amabel Formation)		2 3	AS CS	- -			285	
5.1	End of Borehole							280	



NOTES: Concrete seal and protective pipe at grade.
Installations in separate holes.

Field Supervisor:
Drawn by:
Checked by:

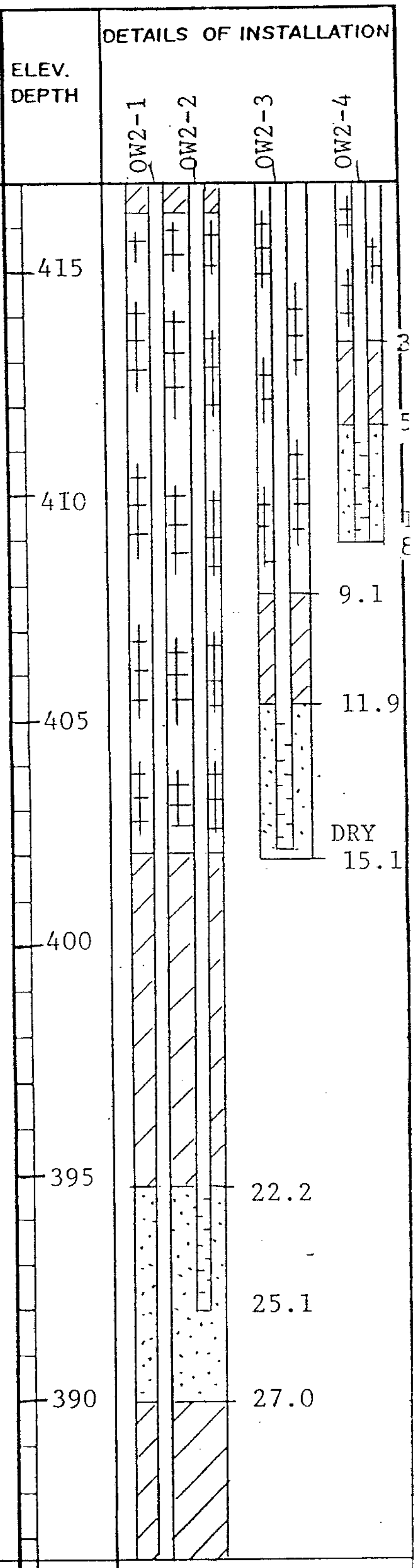
Terraprobe

LOG OF BOREHOLE OW-2

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: March 24 - April 7, 1988
EQUIPMENT: Mobile B-G1 - rotary
ELEVATION DATUM: Geodetic

STRATIGRAPHY		SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC / WATER CONTENT PERCENT
ELEV. DEPTH	DESCRIPTION	NUMBER	TYPE	'N' VALUES	RECOVERY	
417.0	**GROUND SURFACE**					
	Brown Dense **SAND AND GRAVEL,** **(OUTWASH)** numerous cobbles and boulders. Very difficult drilling. 6.8 to 8.8m 12.1 to 14.0m loss of mud circulation at 8.0 to 9.5m and 12.1 to 15m.	1 2	CS CS			
402.0 15.0	Grey-Brown Damp **SAND, SILT,** some gravel and cobbles **(TILL)** water encountered at 25m.	3 4	CS CS			
391.0 26.0	**SAND AND GRAVEL,** loss of mud circulation 27 to 29m.	5 6	CS CS			
386.7 30.3	Continued					



NOTES: OW2 - 1 and 2-2 in same hole.
OQ2 - 3 and 2-4 in separate holes.

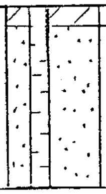
Field Supervisor: ______
Drawn by: ______
Checked by: ______

Terraprobe

LOG OF BOREHOLE OW-2
CON'T

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: March 24 - April 7, 1988
EQUIPMENT: Mobile B-G1 - rotary
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY	ELEV. DEPTH	DETAILS OF INSTALLATION
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY	K., CM/SEC 1x10 1x10 1x10 1x10 WATER CONTENT PERCENT 10 20 30 40		
386.7	Continued ...								
30.3	Grey **DOLOSTONE** (Amabel Formation) loss of mud circulation							385	 31.0 34.0
383.0 34.0	End of Borehole								

NOTES: OW2 - 1 and 2-2 in same hole.
OW2 - 3 and 2-4 in separate holes.

Field Supervisor: ______
Drawn by: ______
Checked by: ______

Terraprobe

LOG OF BOREHOLE 0W-3

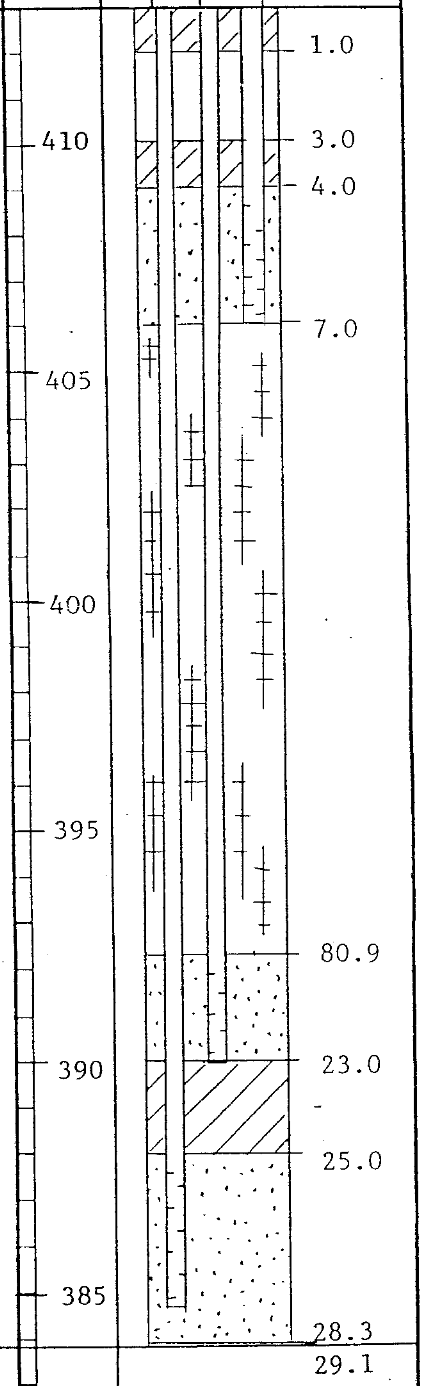
PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: April 7 - 11, 1988
EQUIPMENT: Mobile B-61 - rotary
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC 1x10 1x10 1x10 1x10 / WATER CONTENT PERCENT 10 20 30 40
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY	
413.0	Brown Dense **SAND AND GRAVEL,** numerous boulders **(OUTWASH)**		1 2	CS CS			
406.0 7.0	Grey **DOLOSTONE** (Amabel Formation) loss of mud circulation below 9m; switch to air rotary, appears highly fractured water encountered at 21m.		3 4 5 6	CS CS CS CS			
387.7 25.3	Black to Grey **DOLOSTONE AND SHALE** (Manitoulin Formation)		7	CS			
383.9 29.1	End of Borehole						

ELEV. DEPTH

DETAILS OF INSTALLATION



NOTES: Concrete seal and protective pipe at grade.
All wells installed in same hole.

Field Supervisor: ____
Drawn by: ____
Checked by: ____

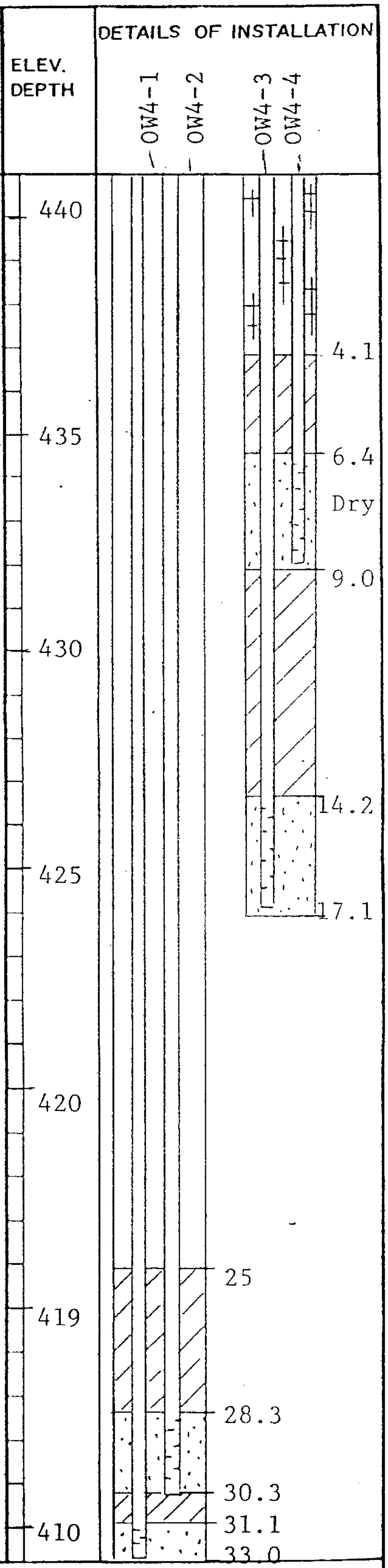
Terraprobe

LOG OF BOREHOLE OW-4

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: April 20 - 24, 1988
EQUIPMENT: Mobile B-61
ELEVATION DATUM: Geodetic

STRATIGRAPHY			SAMPLES				HYDRAULIC CONDUCTIVITY K., CM/SEC 1x10 1x10 1x10 1x10 / WATER CONTENT PERCENT 10 20 30 40
ELEV. DEPTH 441.0	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	RECOVERY	
	Brown Dense **SAND AND GRAVEL,** numerous cobbles and boulders **(OUTWASH)** — — increasing content of fines below 7m. loss of mud circulation at 8-9m, 15.1 to 16.2m 30.1 to base at hole		1 2	CS CS			
426.0 15.0	**SAND AND GRAVEL, SILT,** numerous cobbles and boulders **(TILL)**		3 4 5	CS CS CS			
411.0 30.0	**SAND AND GRAVEL**		6	CS			
409.7	**AMABEL DOLOSTONE**		7	CS			
408.0 33.0	End of Borehole						



NOTES: OW4-1 and 4-2 installed in same hole. OW4-3 and 4-4 installed in same hole. Concrete seal and protective pipe at grade.

Field Supervisor: ________
Drawn by: ________
Checked by: ________

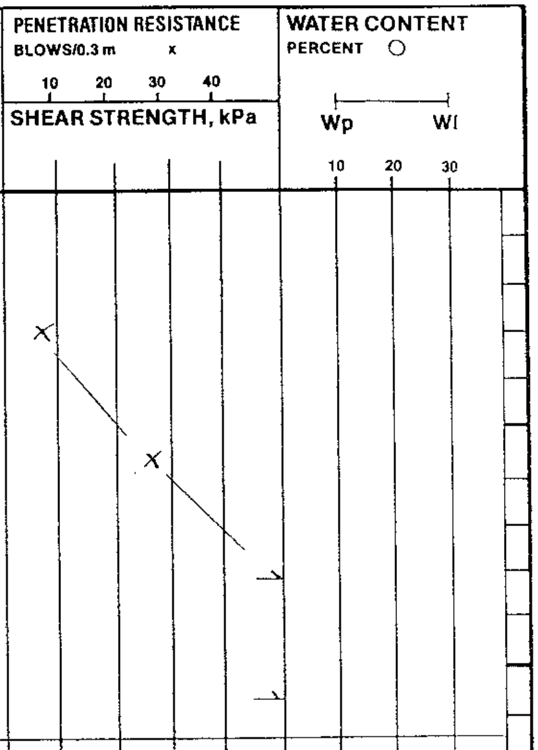
Terraprobe

LOG OF BOREHOLE 88–13

PROJECT: Proposed Sudivision
LOCATION: Belfountain
CLIENT: Enterac

DATE: April 28, 1988
EQUIPMENT: CME 55
ELEVATION DATUM: -
FILE: 88164

STRATIGRAPHY				SAMPLES			m.
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE
	Ground Surface						
	TOPSOIL						
0.3	Brown Loose Damp **SILT,** trace sand			1	SS	8	
1.4	Brown Dense Damp **SILTY SAND AND GRAVEL,** occasional cobbles **(TILL)** — thin layers clean sand			2 3 4	SS SS SS	27 62 82/11"	
3.5	End of Borehole						



NOTES:

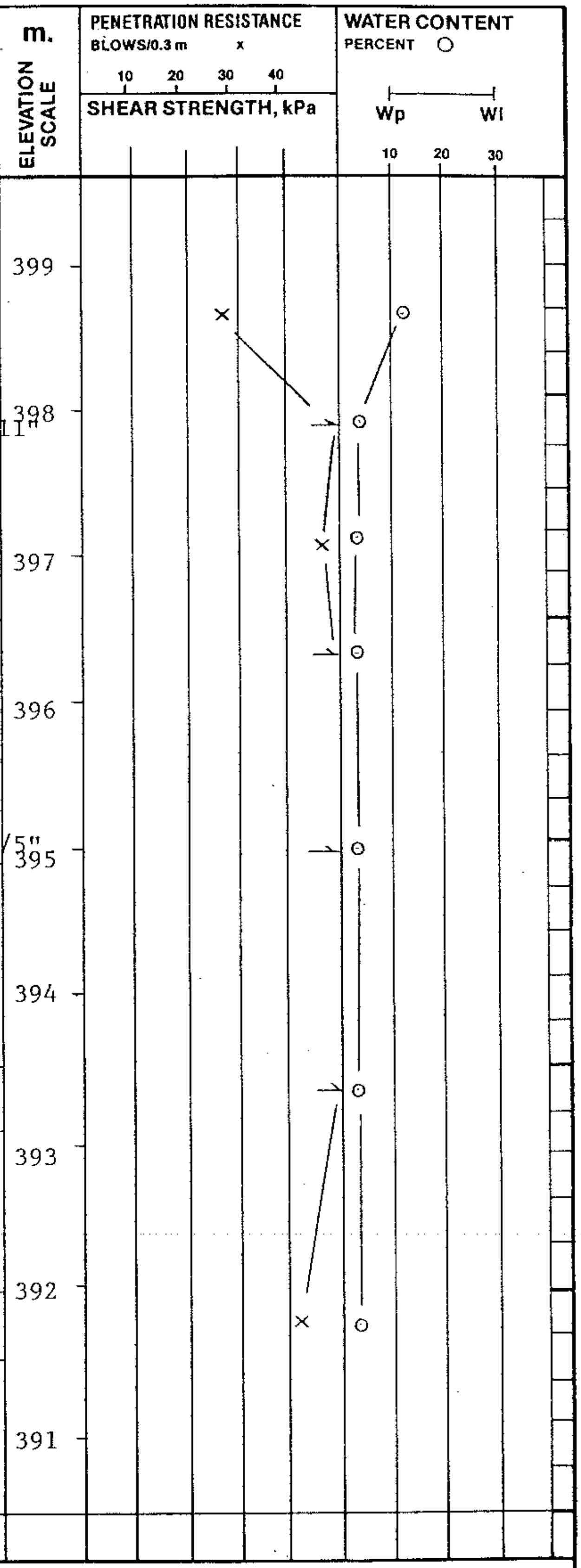
1. Borehole caving at 3.0m depth and dry on completion of drilling.
2. Standpipe dry on May 12, July 7, 1988.

Terraprobe

LOG OF BOREHOLE 89–4

PROJECT: Belfountain Subdivision
LOCATION: Belfountain
CLIENT: Enterac
DATE: August 22, 1989
EQUIPMENT: CME 55
ELEVATION DATUM: Geodetic
FILE: 88164

STRATIGRAPHY				SAMPLES		
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES
399.6	Ground Surface					
	TOPSOIL					
399.0 0.6	Brown Dense to Very Dense Moist SANDY SILT, some clay, trace gravel (TILL)			1	SS	27
				2	SS	68/11"
				3	SS	47
396.9 2.7	Brown Very Dense Moist SAND AND GRAVEL, some silt OUTWASH			4	SS	83
				5	SS	100/5"
				6	SS	85
				7	SS	42
390.5 9.1	Continued.....					



NOTES:
1. Borehole open and dry on completion of drilling.
2. Standpipe dry at a 12.0m depth on September 10, 1989.

Terraprobe

LOG OF BOREHOLE 89–4 CON'T

PROJECT: Belfountain Subdivision

LOCATION: Belfountain

CLIENT: Enterac

DATE: August 22, 1989

EQUIPMENT: CME 55

ELEVATION DATUM: Geodetic

FILE: 88164

STRATIGRAPHY				SAMPLES			m.	PENETRATION RESISTANCE BLOWS/0.3 m x 10 20 30 40 SHEAR STRENGTH, kPa	WATER CONTENT PERCENT ○ Wp Wl 10 20 30
ELEV. DEPTH m.	DESCRIPTION	STRAT. PLOT	GROUND WATER	NUMBER	TYPE	'N' VALUES	ELEVATION SCALE		
390.5	Continued.....								
9.1	Brown Very Dense Moist **SAND AND GRAVEL,** trace to some silt			8	SS	60	390		
				9	SS	65	389		
	OUTWASH						388		
				10	SS	100/5"			
387.3 12.3	End of Borehole Auger Refusal						387		

NOTES:

UTM 17 Z 579290 E

5 R 4849168 N

Elev. 5 R 1260

Basin 24

WATER RESOURCES DIVISION
AUG 49
ONTARIO WATER RESOURCES COMMISSION

№ 1010

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District PEEL Township, Village, Town or City CALEDON

Con. V W.H-ST. Lot 9 Date completed 29 (day) March (month) 1965 (year)

Owner Corner Sandstone Quaries Ltd. (print in block letters) Address Belfountain, Ontario.

Casing and Screen Record

Inside diameter of casing 5"

Total length of casing 38'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 5"

Pumping Test

Static level 20'

Test-pumping rate 5 G.P.M.

Pumping level 90'

Duration of test pumping 2 hrs.

Water clear or cloudy at end of test clear

Recommended pumping rate 4 G.P.M.

with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
Hardpan and boulders	0	25		
Gravel	25	36		
Red and blue shale	36	120	90-115	fresh

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

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

Drilling or Boring Firm Water Well Drilling

Address R. H. GADKE - PHONE 123W1
R. R. 1 - CLIFFORD, ONTARIO

Licence Number

Name of Driller or Borer Donald Goll

Address Harriston, Ont.

Date

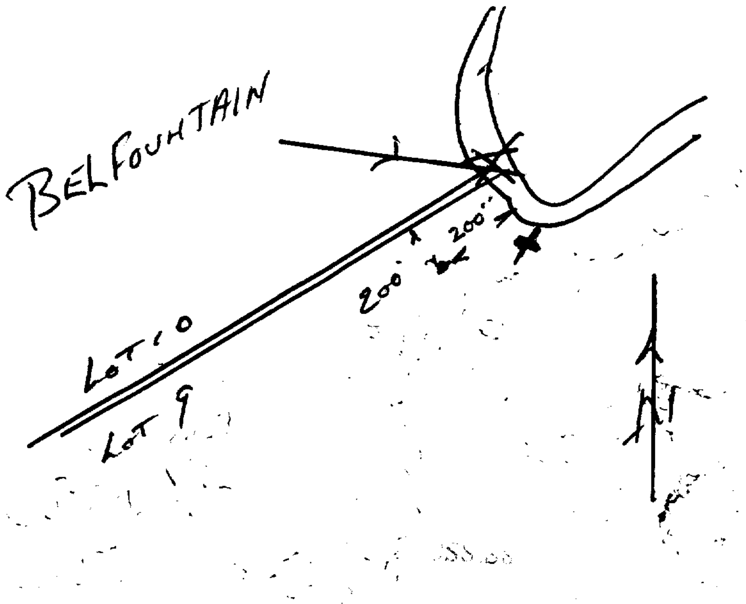
R. H. Gadke
(Signature of Licensed Drilling or Boring Contractor)

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.



CA

UTM 17 Z 579608 E

5 R 4849171 N

Elev. 65 R 11255

Basin 24

49 № 1011

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District ~~CALEDON~~ PEEL

Township, ~~Village, Town or City~~ ~~PEEL~~ CALEDON

Con. V H.ST.W. Lot 9

Date completed 21 (day) JUNE month 1965 year)

[redacted]ress 193 GLASGOW ST NORTH GUELPH

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 14 FT

Type of screen NONE

Length of screen

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 38 FT

Test-pumping rate 3 G.P.M.

Pumping level 42 FT

Duration of test pumping 1 hr

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 3 G.P.M.

with pump setting of 46 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
OLD WELL	0	12		
LIGHT GREY LIMESTONE	12	48	40 FT	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 LADCO DRILLING AND EXPLORATION CO

Address R.R.#1 HILLSBURGH

Licence Number 1874

Name of Driller or Borer THOMAS LANG

Address HILLSBURGH, R.R. 1

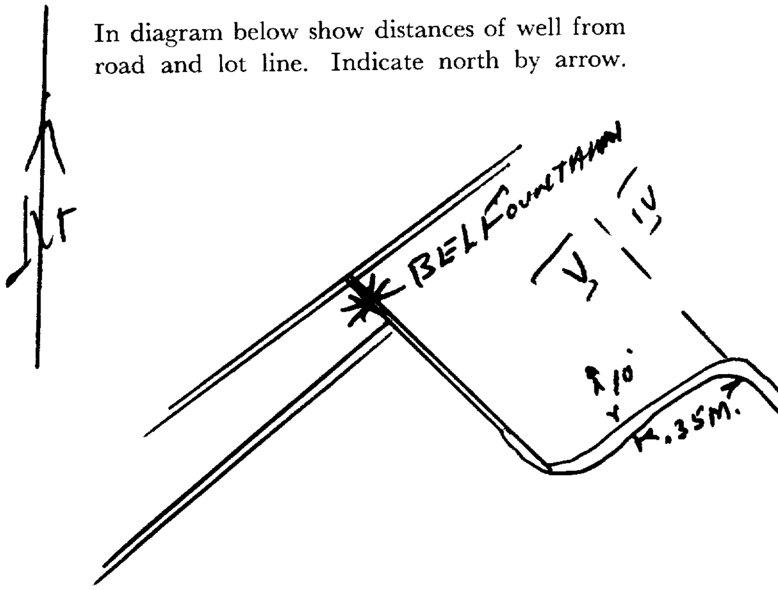
Date June 22/65

T. Lang.

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7 15M-60-4138

CSS.S8

OWRC COPY

GROUND WATER BRANCH
JUL 9 1962 No 1017
ONTARIO WATER RESOURCES COMMISSION

UTM 17 Z 579547 E
5 R 4849420 N
Elev 78 Well # 11245
dry Hole
Basin 24

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Peel Township, Village, Town or City Caledon
Con V W.H.S.T. Lot 10 Date completed 10 (day) May (month) 1962 (year)
[redacted] ress Toronto Ont.

Casing and Screen Record

Inside diameter of casing 6¼ inch
Total length of casing 22 ft
Type of screen none
Length of screen none
Depth to top of screen nil
Diameter of finished hole 6¼ inch

Pumping Test

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

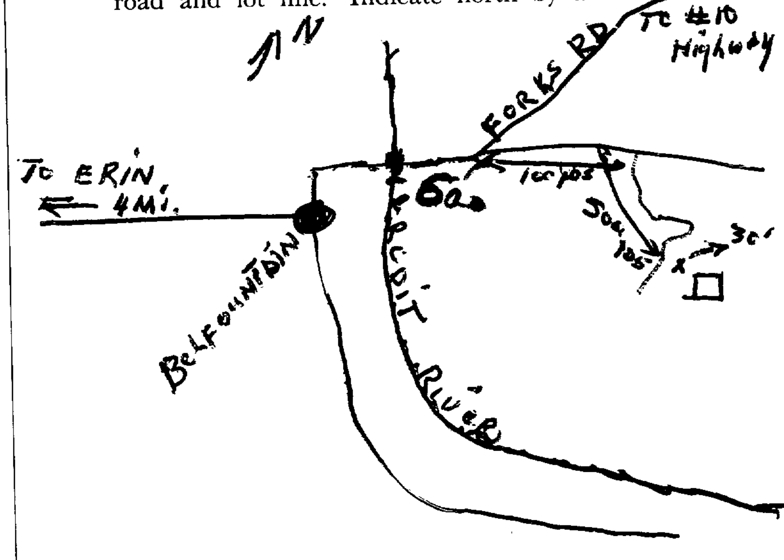
Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
top soil	0	1	dry hole	nil
boulders gravel	1	15		
gray clay, gravel	15	22		
rock lt. gray	22	62		
red shale	62	100		
Total depth - 100 ft.				

For what purpose(s) is the water to be used? domestic
Is well on upland, in valley, or on hillside? hillside
Drilling or Boring Firm J L Graham Drilling Contractor
Address 119 Renfield St. Guelph Ont.
Licence Number 481
Name of Driller or Borer Robert Graham
Address 210 Waverley Street, Guelph Ont.
Date June 12th 1962.
J L Graham per
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7 15M Sets 60-5930

OWRC COPY

GROUND WATER BRANCH
49 JUL No. 1962 4018
ONTARIO WATER RESOURCES COMMISSION

H.S.W.

UTM ~~4~~ 7 Z 5 7 9 5 6 7 E

8 R 4 8 4 9 2 5 6 N

Well # 2.

Elev 9 ~~8~~ R

Basin 2 1

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Peel

Township, Village, Town or City Caledon

Con V W.H.S.T. Lot 10

Date completed 16th (day) May (month) 1962 (year)

[redacted] ress Toronto Ont.

Casing and Screen Record

Inside diameter of casing 6¼ inch

Total length of casing 20 ft

Type of screen nil

Length of screen nil

Depth to top of screen nil

Diameter of finished hole 6¼ inch

Pumping Test

Static level 50 ft

Test-pumping rate 1 G.P.M.

Pumping level 60 ft

Duration of test pumping 2 hrs.

Water clear or cloudy at end of test clear

Recommended pumping rate 1 G.P.M.

with pump setting of 70 ft feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.
gravel and stones	0	5
gravel gray clay	5	19
light gray rock	19	58
red shale	58	75

Water Record

Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
75 ft	fresh

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

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

Drilling or Boring Firm J L Graham Drilling Contractor

Address 119 Renfield St. Guelph Ont.

Licence Number 481

Name of Driller or Borer Robert Graham

Address 210 Waverley Drive Guelph Ont.

Date June 12th 1962

J L Graham per

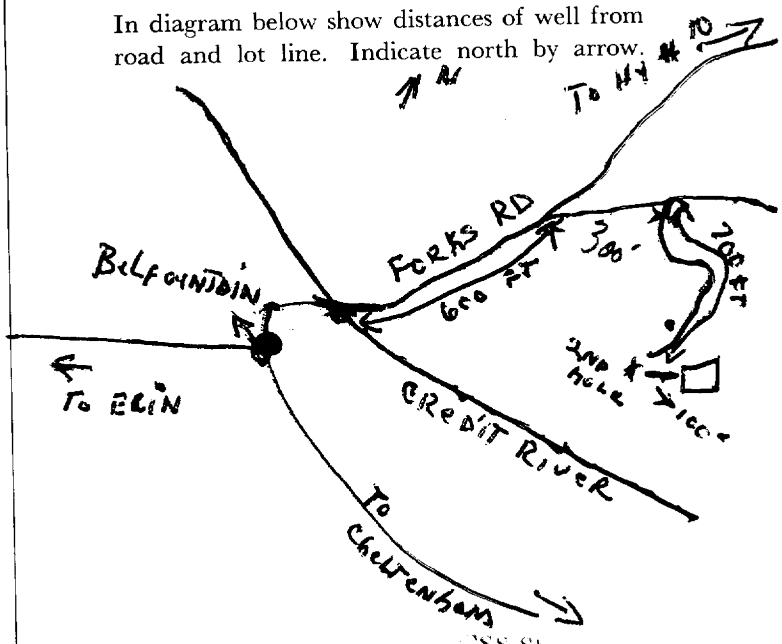
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M Sets 60-5930

OWRC COPY

Location of Well

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



MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

40 P/16E

ONTARIO

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

11 4904555

MUNICIP. 49002 CON. HS W C 05

COUNTY OR DISTRICT [redacted]

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: CALEDON

CON., BLOCK, TRACT, ~~SURVEY, ETC.~~: ~~V~~ V

LOT: 009

ALEDON ONT.

DATE COMPLETED: DAY 09 MO. 04 YR. 74

HING 849084 RC. 4 ELEVATION 1262 RC. 5 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOPSOIL			0	3
BROWN	CLAY +	BOULDERS		3	28
WHITE	GRAVEL + SAND			28	43
WHITE	LIMESTONE	(SOFT)		43	48

OWRC
P-9

31 0003602 0028695 13 0043 11 28 0048 115
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0043 ~~43-48~~	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
5" 05	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188.	0	0044
05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☑ OPEN HOLE		44	0048
	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: 0005 GPM
DURATION OF PUMPING: 02 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
009 FEET	032 FEET	020 FEET	012 FEET	009 FEET	FEET

WATER LEVELS DURING: 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: 045 FEET
RECOMMENDED PUMPING RATE: 0005 GPM.
000.2 GPM./FT. SPECIFIC CAPACITY

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

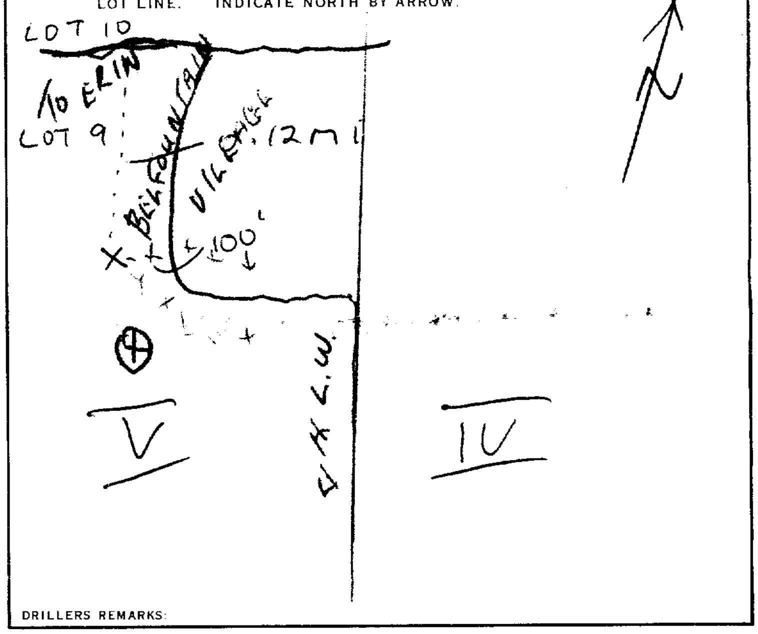
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

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

LOCATION OF WELL

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



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: Keith McClure LICENCE NUMBER ~~35~~3513
ADDRESS: Inglewood Ont.
NAME OF DRILLER OR BORER: Same LICENCE NUMBER 3513
SIGNATURE OF CONTRACTOR: Keith McClure SUBMISSION DATE DAY 9 MO. 4 YR. 72

OFFICE USE ONLY

DATA SOURCE 1 CONTRACTOR 3513 DATE RECEIVED 240173
DATE OF INSPECTION 14/3/75 INSPECTOR J.B.
REMARKS:
CSS.S8
P 10
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Ontario

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

40 P/16 E

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

11 4905490 49002 HS W 05

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
PEEL	CALEDONE	5 WHS	~~009~~

[redacted] USH ST. / BELFOUNTAIN

DATE COMPLETED DAY 18 MO ~~07~~ 10 YR. 77

[redacted] 849300 5 ELEVATION 1175 5 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	(GRAVEL	- STONES - ROCKS		0	48
GREY	CLAY	STONES		48	80
GREY	CLAY		SOFT	80	95
GREY	CLAY	GREY ROCK		95	112
GREY	ROCK	GREY-CLAY RIDGES		112	143
RED	SHALE			143	180

31 0048631112 0080020512 0091520585 0111220526 0143226605 0180717

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0155 ~~180~~	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL — 5
	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
04	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0119
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		119	0180
04	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	0005 GPM	03 HOURS 00 MINS

WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
057 FEET	070 FEET	060 FEET	057 FEET	057 FEET	057 FEET

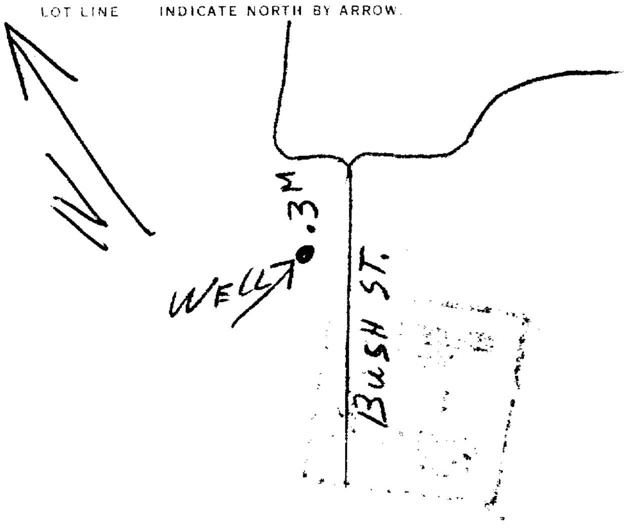
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	90 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	090 FEET	0005 GPM

—— —— · —— 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: SM

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: Rudy WELL DRilling — LICENCE NUMBER: 2332
ADDRESS: RRI Hillsburg
NAME OF DRILLER OR BORER: Rudy GARBOTZ — LICENCE NUMBER: 2332
SIGNATURE OF CONTRACTOR: Rudy Garbotz
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1
CONTRACTOR: 2332
DATE RECEIVED: 210278
DATE OF INSPECTION:
INSPECTOR: Aug 21 78 87
REMARKS: CSS.S8
Changed From 4905294
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FORM 7 MOE 07-091

Ministry of the Environment
Ontario

78/87

The Ontario Water Resources Act

CV

WATER WELL RECORD

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

11 4906673

MUNICIP:

CON: 05

COUNTY OR DISTRICT: Peel	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: CALEDON (CALEDON) -	CON., BLOCK, TRACT, SURVEY ETC: 5 WHS	LOT 25-27: ~~9~~-10
OWNER (SURNAME FIRST) 28-47: BelFounTAIN Church	ADDRESS: C/O [redacted] MAIN ST + 4th Line W Belfountai ~~, RR#1 TERRA COTTA, ONT~~		DATE COMPLETED 48-53: DAY 019 MO 08 YR 87

2 ZONE 17 EASTING 579324 NORTHING 4849123 RC ELEVATION 0384 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	SAND, STONES		0	35
Red	"	GRAVEL		35	45
GRey	"	"		45	60
BLue	Shale			60	85
GRey	Rock			85	105
BLue	Shale			105	120
Red	"			120	130
			TOTAL DepTh	130 ft.	

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
90	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
120	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
5	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	64
5	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		64	130
	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: 1 ☐ PUMP 2 ☒ BAILER	PUMPING RATE: 3 GPM	DURATION OF PUMPING: 3 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY — 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
57 FEET	112 FEET	FEET	57 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: 125 FEET	RECOMMENDED PUMPING RATE: 3 GPM

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

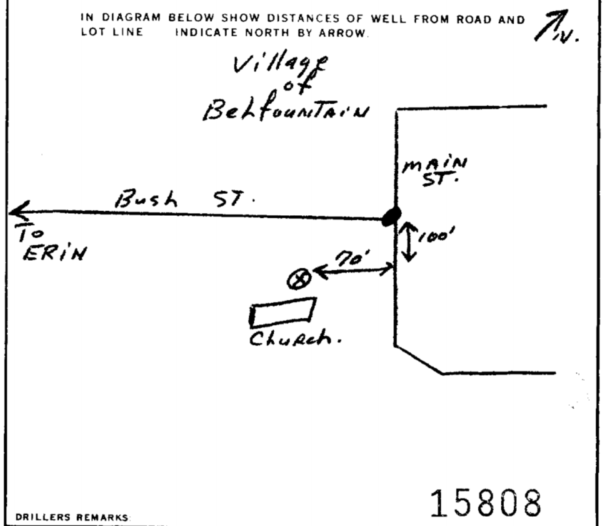
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

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

LOCATION OF WELL

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



DRILLERS REMARKS: 15808

CONTRACTOR

NAME OF WELL CONTRACTOR: GRAHAM Well DRilling LTD
WELL CONTRACTOR'S LICENCE NUMBER: 2336
ADDRESS: Guelph, ONT.
NAME OF WELL TECHNICIAN: J. HAWKINS
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR: R Graham
SUBMISSION DATE: DAY 030 MO 08 YR 87

OFFICE USE ONLY

DATA SOURCE:
CONTRACTOR:
DATE RECEIVED: SEP 14 1987
DATE OF INSPECTION:
INSPECTOR:
REMARKS:

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FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

4907667

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11

MUNICIP 49002 CON. HS W 05

COUNTY OR DISTRICT [redacted]

TOWNSHIP, BOROUGH, CITY, [✓ TOWN], VILLAGE: OF CALEDON

[✓ CON], BLOCK, TRACT, SURVEY, ETC: 5

LOT 25-27: 9

MAIN ERIN N0B 1T0

DATE COMPLETED 48-53: DAY 22 MO 07 YR 92

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	TOP SOIL			0	1
	SAND + GRAVEL	STONES		1	20
BROWN	CLAY	SAND + GRAVEL + STONES		20	61
RED	SHALE			61	66
BLUE	SHALE			66	103
			TOTAL =	103'	
		6" CASING DRIVE SHOE			

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
90	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
103	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 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	62
6"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		62	103
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

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

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
0	10	BENTONITE
		ANNULAR

71 PUMPING TEST

PUMPING TEST METHOD 10: 1 ☐ PUMP 2 ☐ BAILER AIR

PUMPING RATE 11-14: 3 GPM

DURATION OF PUMPING: 1 HOURS MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
53.7 FEET	FEET	53.7 FEET	53.7 FEET	53.7 FEET	53.7 FEET

WATER LEVELS DURING: 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: 90 FEET

RECOMMENDED PUMPING RATE: 3 GPM

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

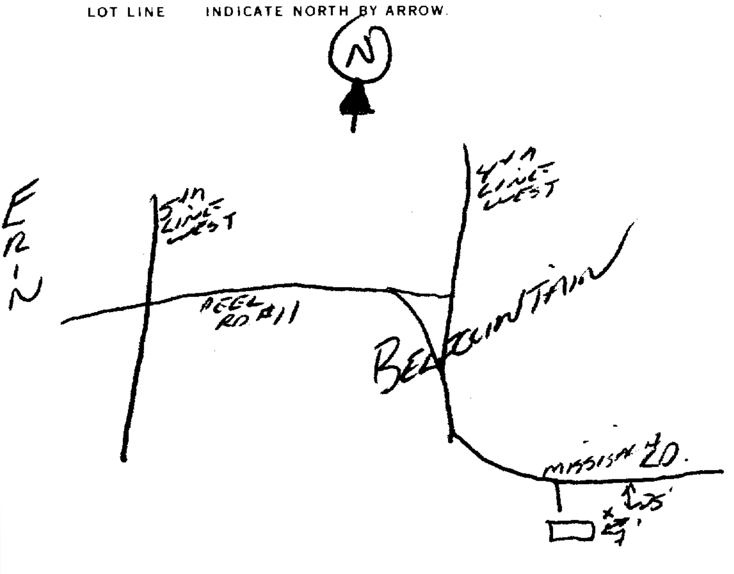
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

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

LOCATION OF WELL

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



109397

DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR: HANNON WELL DRILLING LTD.
WELL CONTRACTOR'S LICENCE NUMBER: 2663
ADDRESS: R.R.#5 GUELPH ONT. N1H 6J2
NAME OF WELL TECHNICIAN: HENRY R. HANNON
WELL TECHNICIAN'S LICENCE NUMBER: T-0590
SIGNATURE OF TECHNICIAN/CONTRACTOR
SUBMISSION DATE: DAY 01 MO 08 YR 92

OFFICE USE ONLY

DATA SOURCE 58
CONTRACTOR 59-62: 2663
DATE RECEIVED 63-68: AUG 17 1992
DATE OF INSPECTION
INSPECTOR
REMARKS

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FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of Environment and Energy

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11

4908201

Municipality 49002 Con. HS W 05

County or District [redacted]

Township/Borough/City/Town/Village: Caledon

Con block tract survey, etc.: √ WHS

Lot: 10

Address: 684 BUSH ST. Caledon

Date completed: day 22 month 04 year 97

21 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	Clay	Bolders	DENSE	0	18
BROWN	Clay	STONES	— " —	18	46
BLUE	Clay	STONES	— " —	46	85
Blue	Clay		— " —	85	99
GREY	Lime Stone		HARD	99	131
RED	Shale		HARD	131	168

31

32

41 WATER RECORD

Water found at – feet	Kind of water
110	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
157	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 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic		0	102
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		102	168
	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	20	Hole pluge and Clay

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate: GPM

Duration of pumping: 24 Hours .... Mins

Water levels during: 1 ☒ Pumping 2 ☐ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
68 feet	114 feet	114 feet	114 feet	114 feet	114 feet

If flowing give rate: GPM

Pump intake set at: 120 feet

Water at end of test: ☒ Clear ☐ Cloudy

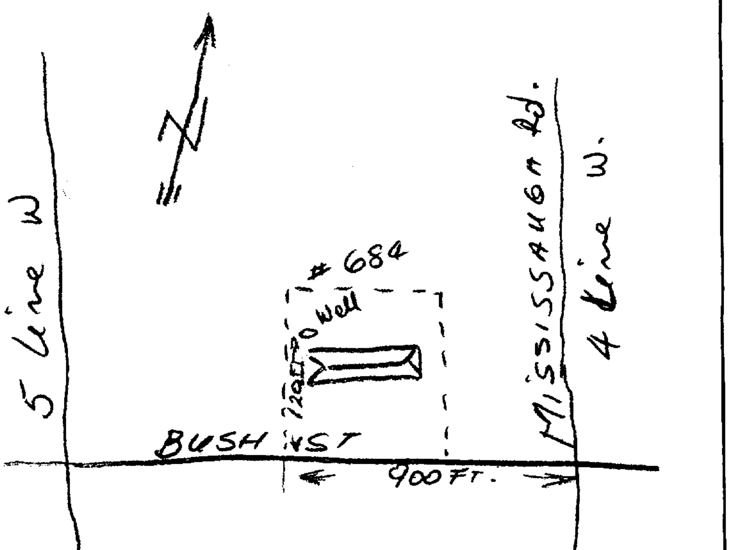
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 125 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.



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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: CONCORD Well Drilling Co.

Well Contractor's Licence No.: 6650

Address: P.O. BOX 148 Caledon - Ont. LONICO

Name of Well Technician: MARKO KIVAC

Well Technician's Licence No.: T-0278

Signature of Technician/Contractor:

Submission date: day 24 mo 04 yr 97

MINISTRY USE ONLY

Data source

Contractor 6650

Date received MAY 26 1997

Date of inspection

Inspector

Remarks

CSS. S

0506 (07/94) Front Form 9

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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

4908259

Municipality 49002 Con. HS W 05

County or District [redacted]

Township/Borough/City/Town/[✓ Village] BELFOUNTAIN

Con block tract survey, etc.

Lot 17211 10

Address 17211 OLD MAIN ST BELFOUNTAIN

Date completed 25 day 09 month 97 year

21

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
	TOP SOIL			0	1
BROWN	SANDY GRAVEL	ROCKS		1	15
BROWN	GRAVEL	CLAY		15	42
GREY	CLAY	ROCKS		42	54
RED	SHALE			54	63
GREEN	SHALE			63	105
GREY	LIMESTONE/SHALE			105	129
LIGHT GREY	SANDSTONE			129	142
RED	SHALE			142	149
GREEN	SHALE			149	151
RED	SHALE			151	170

31

32

41 WATER RECORD

Water found at – feet	Kind of water
115	☑ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas
140	☑ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas
170	☑ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas
	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas
	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
6 1/4	☑ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ Plastic	.188	+1'6"	58'6"
5"	☐ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☑ Plastic	.250	52'0	170'0
	☐ Steel ☐ Galvanized ☐ Concrete ☐ Open hole ☐ 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	BENTONITE

71 PUMPING TEST

Pumping test method ☑ Pump ☐ Bailer

Pumping rate 2 1/2 GPM

Duration of pumping 1 Hours 0 Mins

Water levels during ☑ Pumping ☐ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
76'1" feet	163'3" feet	113'0 feet	132'1 feet	148'7 feet	163'3 feet

If flowing give rate GPM

Pump intake set at 165 feet

Water at end of test ☑ Clear ☐ Cloudy

Recommended pump type ☐ Shallow ☑ Deep

Recommended pump setting 165' feet

Recommended pump rate 2 GPM

FINAL STATUS OF WELL

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

WATER USE

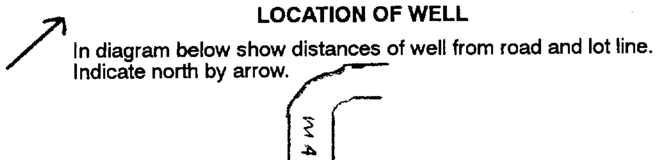
- ☑ Domestic
- ☐ Stock
- ☐ Irrigation
- ☐ Industrial
- ☐ Commercial
- ☐ Municipal
- ☐ Public supply
- ☐ Cooling & air conditioning
- ☐ Not used
- ☐ Other

METHOD OF CONSTRUCTION

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

LOCATION OF WELL

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



184518

Name of Well Contractor MEADOWBANK DRILLING SERVICES

Well Contractor's Licence No. 6865

Address BOX 416 ELORA ONT N0B 1S0

Name of Well Technician JIM BROADFOOT

Well Technician's Licence No. T0370

Signature of Technician/Contractor Jim Broadfoot

Submission date 09 day 10 mo 97 yr

MINISTRY USE ONLY

Data source

Contracctor 6865

Date received OCT 20 1997

Date of inspection

Inspector

Remarks CSS.S8

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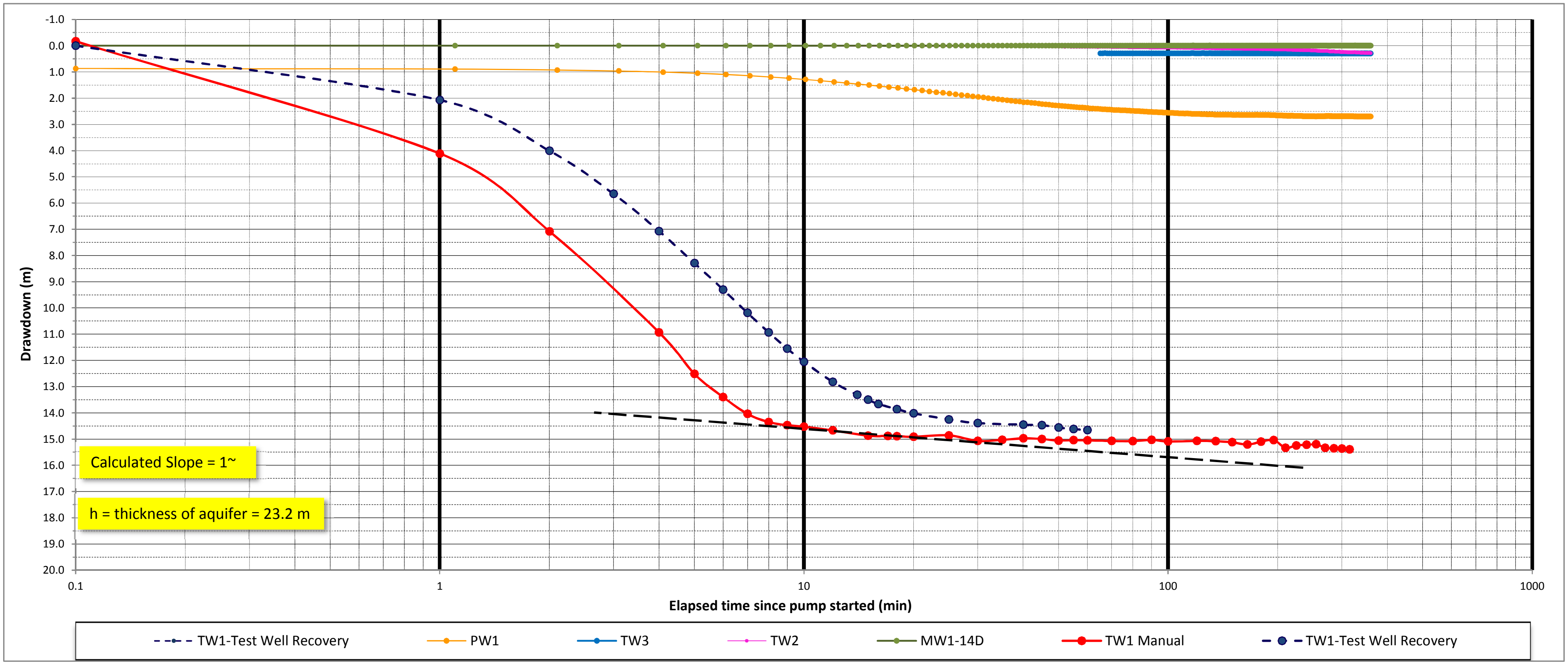
Appendix C

Drawdown-Time Curves

Drawdown vs Time
TW1-Test Well - 6 Hour Pumping Test



TW1-Test Well - Operation Data

Well Depth = 53.94 m

Static Water Level = 19.19 m below mp

Pumping rate = 0.75 L/s = 45 L/min

Transmissivity (T) = 0.183*Q/Δs = 9.37 m^2/day

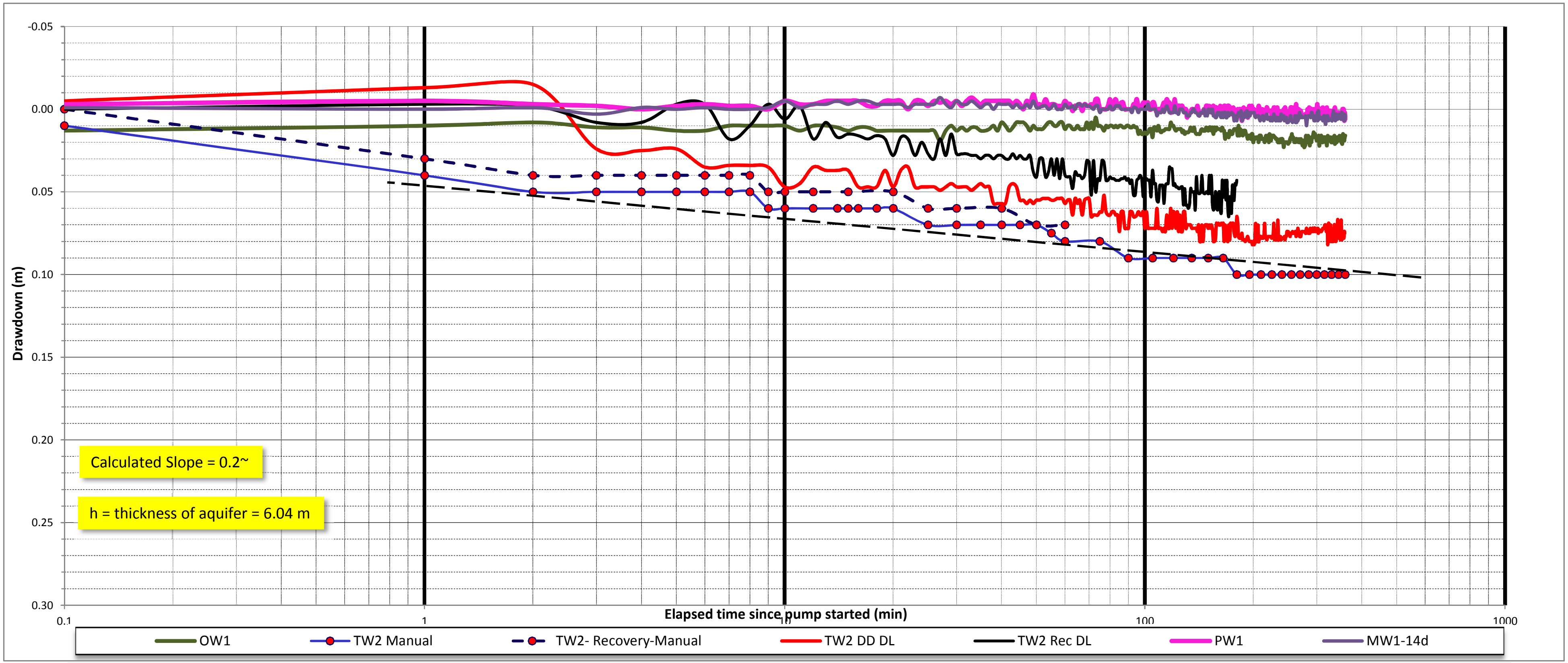
Hydraulic Conductivity (k) = T/h = 54.7*10^{-6} m/sec

Drawdown vs. Time - TW1 Pumping Test

Hydrogeology Investigation

Manors of Belfountain

Drawdown vs Time
TW2-Test Well - 6 Hour Pumping Test



TW2-Test Well - Operation Data

Well Depth = 20.11 m

Static Water Level = 14.07 m below mp

Pumping rate = 0.189 L/s = 11.34 L/min

Transmissivity (T) = 0.183*Q/Δs = 14.94 m^2/day

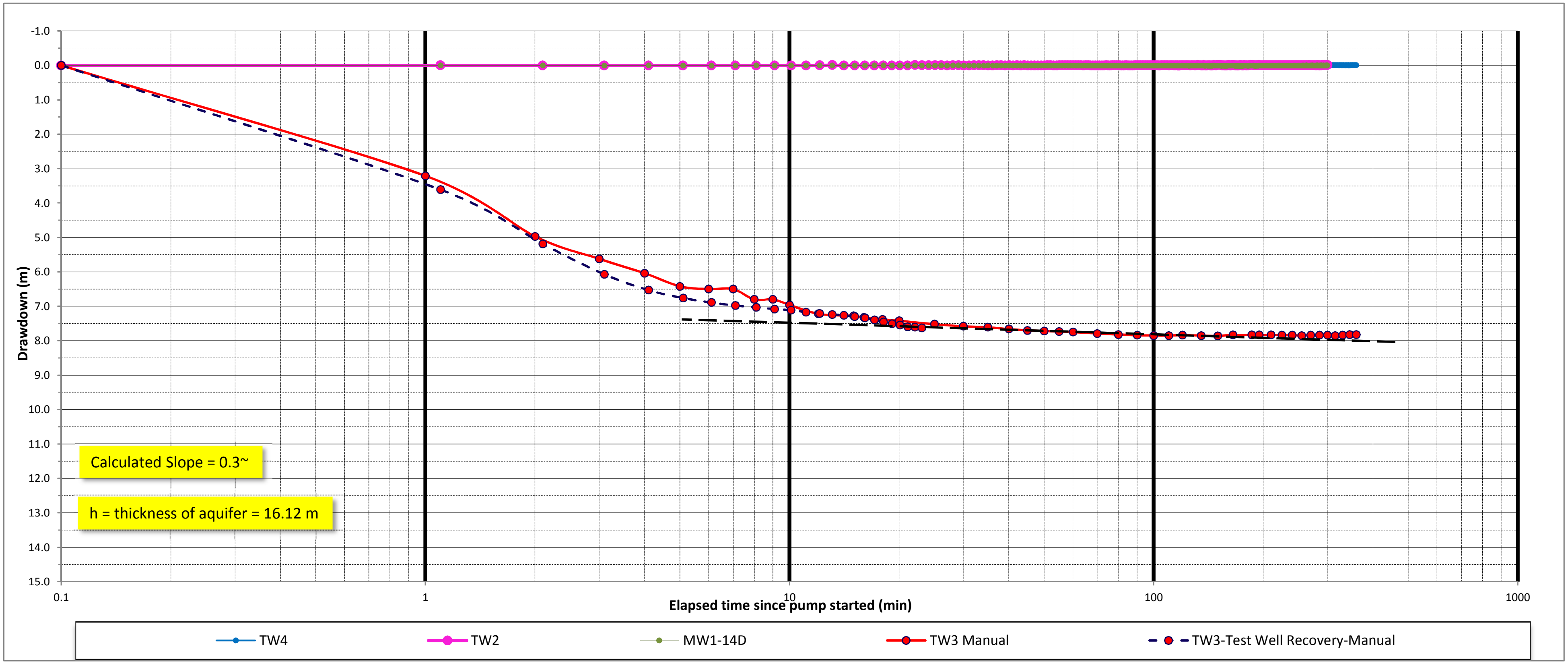
Hydraulic Conductivity (k) = T/h = $^{2.86E-5}$ m/sec

Drawdown vs. Time - TW2 Pumping Test

Hydrogeology Investigation

Belfountain

Drawdown vs Time
TW3-Test Well - 6 Hour Pumping Test



TW3-Test Well - Operation Data

Well Depth = 35.96 m

Static Water Level = 15.80 m below mp

Pumping rate = 1.61 L/s = 96.6 L/min

Transmissivity (T) = 0.183*Q/Δs = 84.85 m^2/day

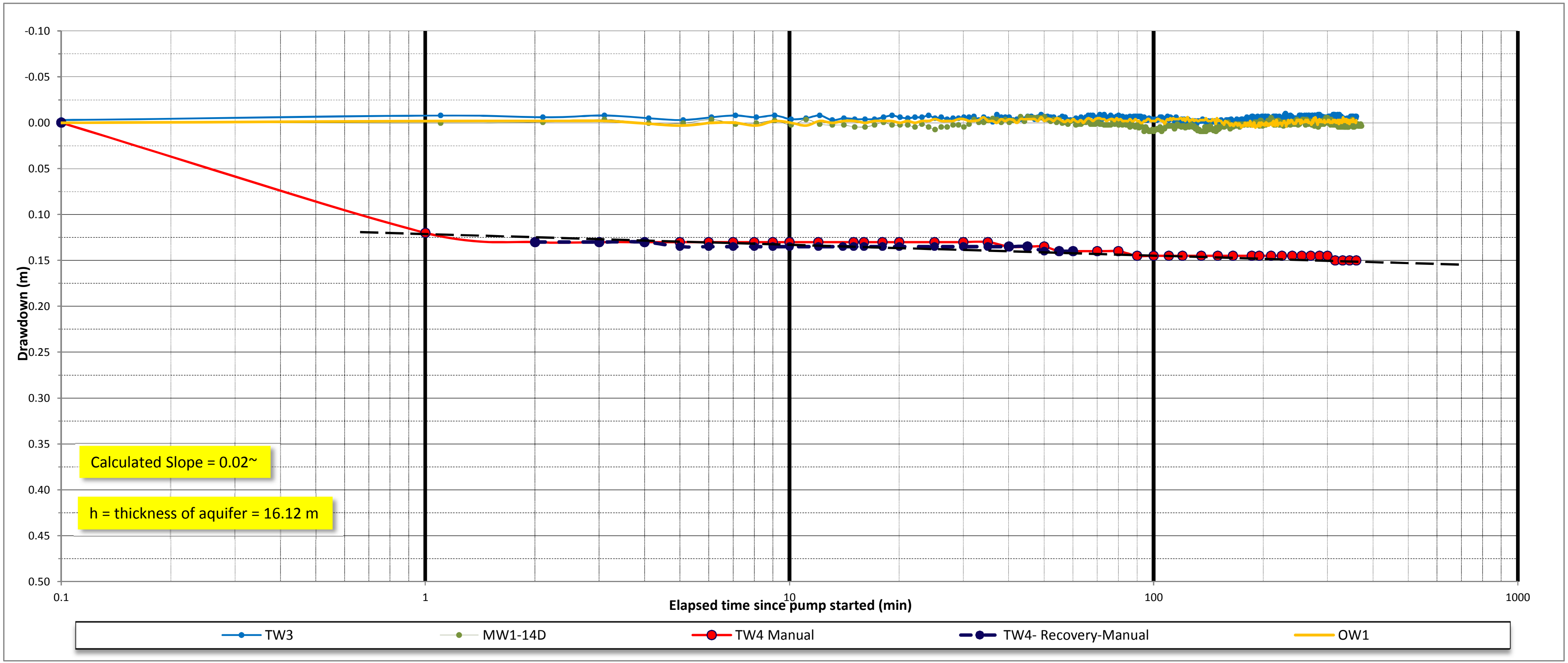
Hydraulic Conductivity (k) = T/h = 5.26 m/day = 6.1*10^{-5} m/sec

Drawdown vs. Time - TW3 Pumping Test

Hydrogeological Investigation

Belfountain

Drawdown vs Time
TW4-Test Well - 6 Hour Pumping Test



TW4-Test Well - Operation Data

Well Depth = 35.66 m

Static Water Level = 19.56 m below mp

Pumping rate = 0.5 L/s = 30 L/min

Transmissivity (T) = 0.183*Q/Δs = 403 m^2/day

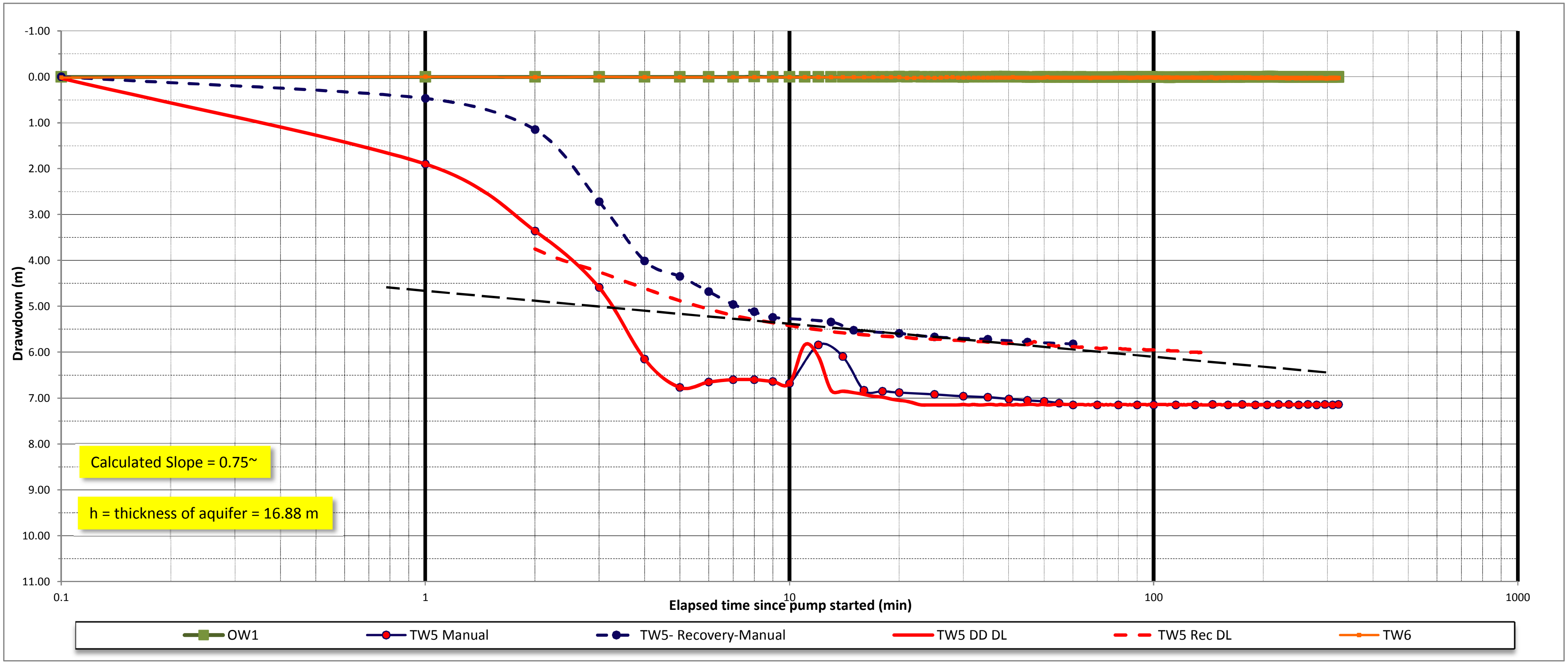
Hydraulic Conductivity (k) = T/h = 2.9*10^{-4} m/sec

Drawdown vs. Time - TW4 Pumping Test

Hydrogeological Investigation

Belfountain

Drawdown vs Time
TW5-Test Well - 6 Hour Pumping Test



TW5-Test Well - Operation Data

Well Depth = 32.3 m

Static Water Level = 15.34 m below mp

Pumping rate = 1.26 L/s = 16.66 igpm

Transmissivity (T) = 0.183*Q/Δs = 26.60 m^2/day

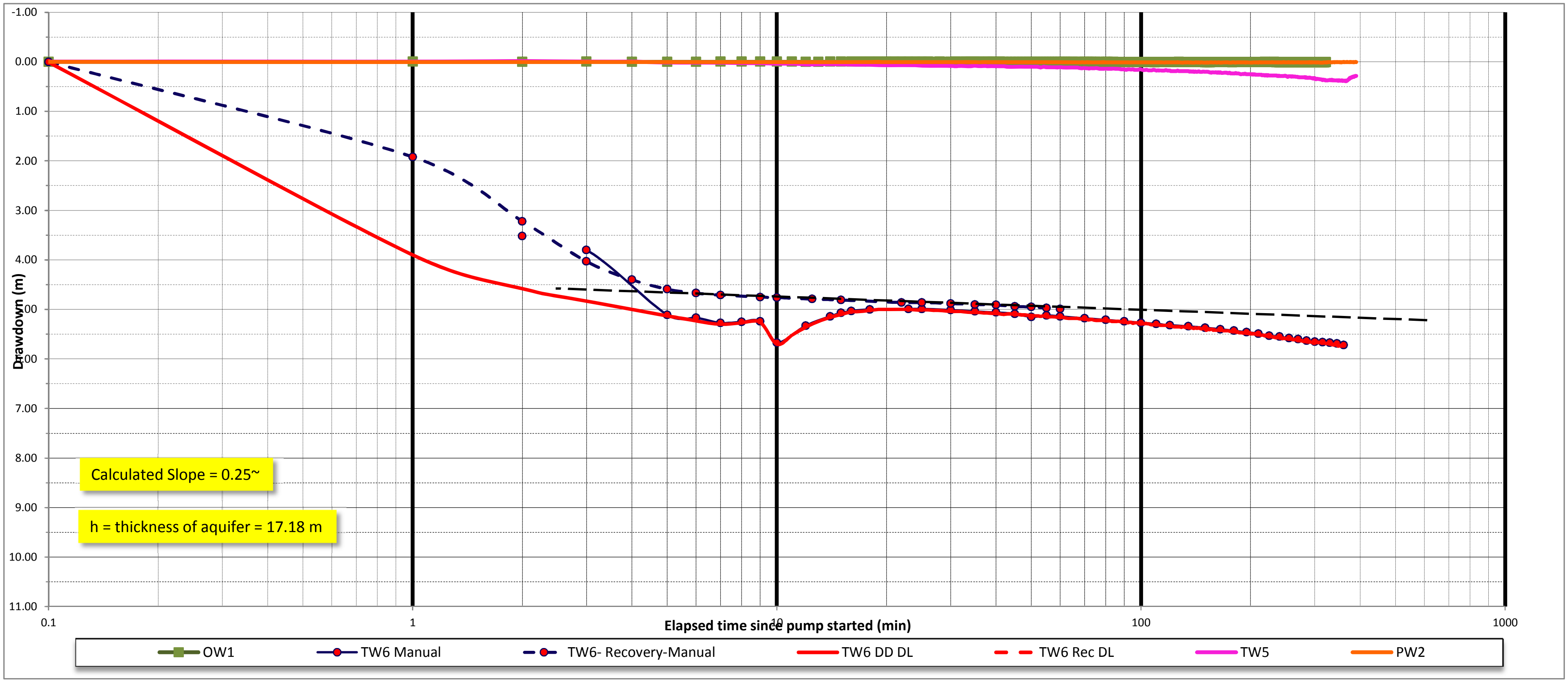
Hydraulic Conductivity (k) = T/h = 1.83*10^{-5} m/sec

Drawdown vs. Time - TW5 Pumping Test

Hydrogeological Investigation

Belfountain

Drawdown vs Time
TW6-Test Well - 6 Hour Pumping Test



Calculated Slope = 0.25~

h = thickness of aquifer = 17.18 m

<u>TW6-Test Well - Operation Data</u>

Well Depth = 32.3 m

Static Water Level = 14.69 m below mp

Pumping rate = 1.14 L/s = 68.4 L/min

Transmissivity (T) = 0.183*Q/Δs = 72.10 m^2/day

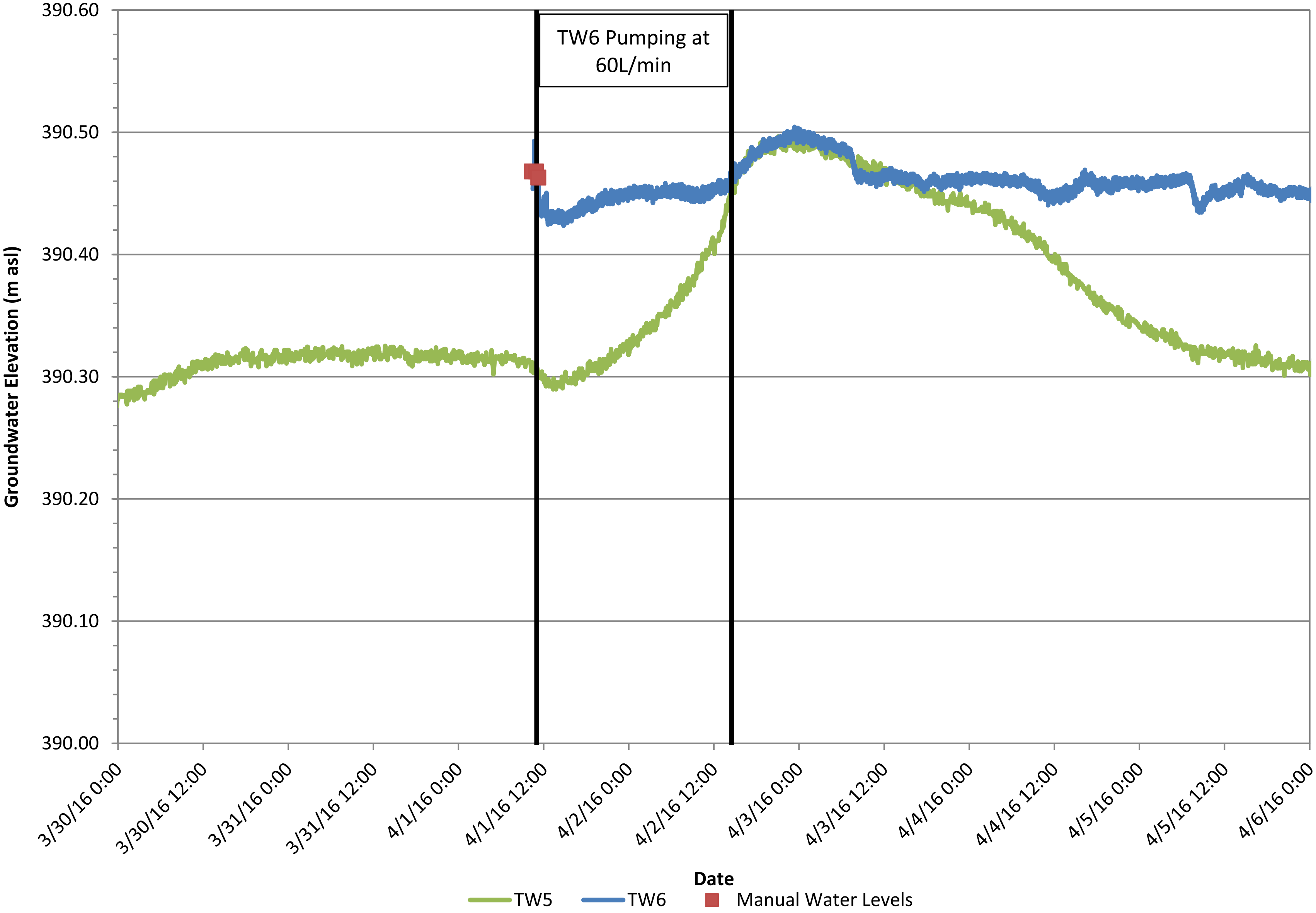
Hydraulic Conductivity (k) = T/h = 4.86*10^{-5} m/sec

Drawdown vs. Time - TW6 Pumping Test

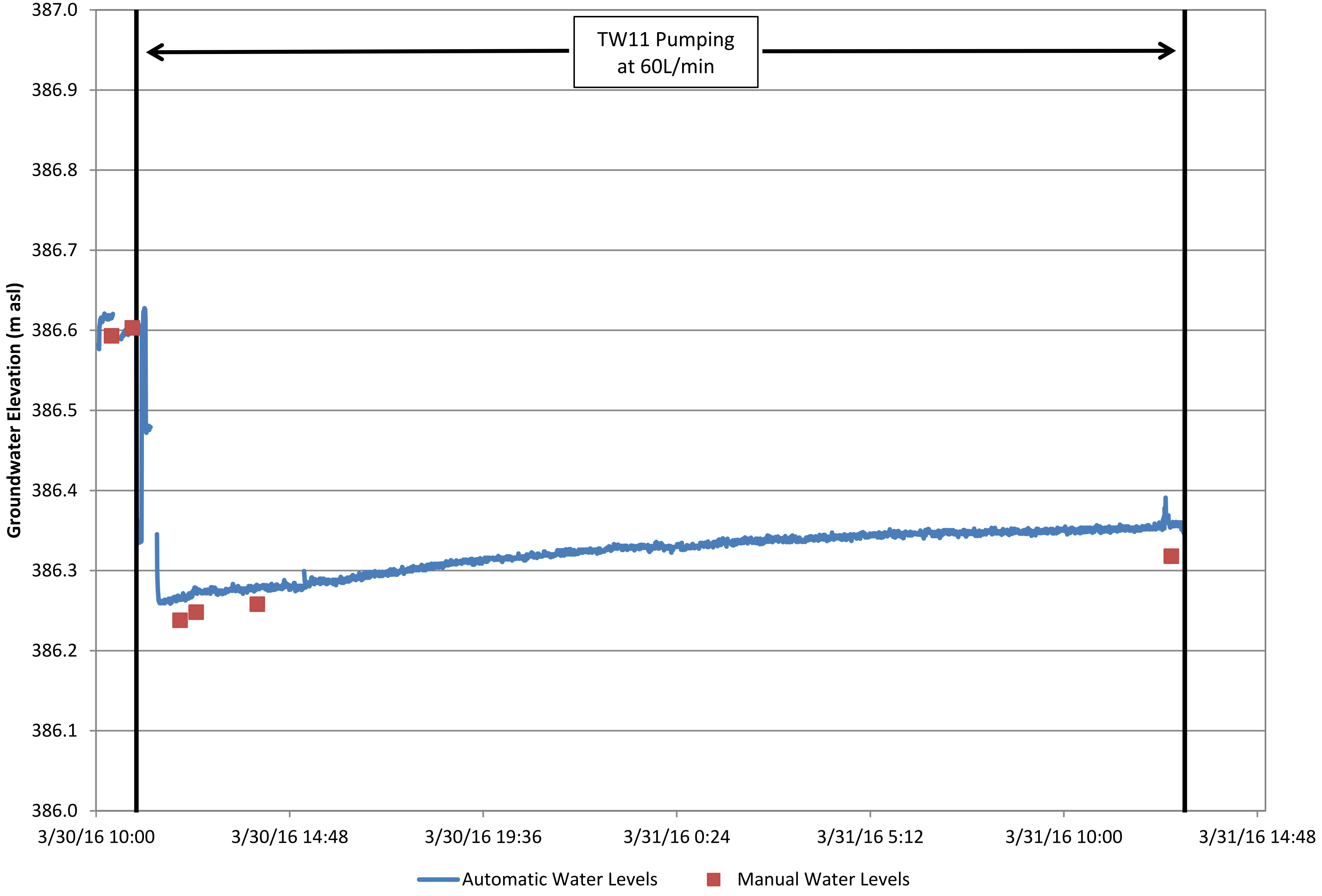
Hyrogeological Investigation

Belfountain

TW5 and TW6
26 Hour Pumping Test
Hydrographs



TW11
26 Hour Pumping Test
Hydrograph



R.J. Burnside & Associates Ltd.
Prepared by: SQ
Updated by: TH (COLE)
December 19, 2017

Appendix D

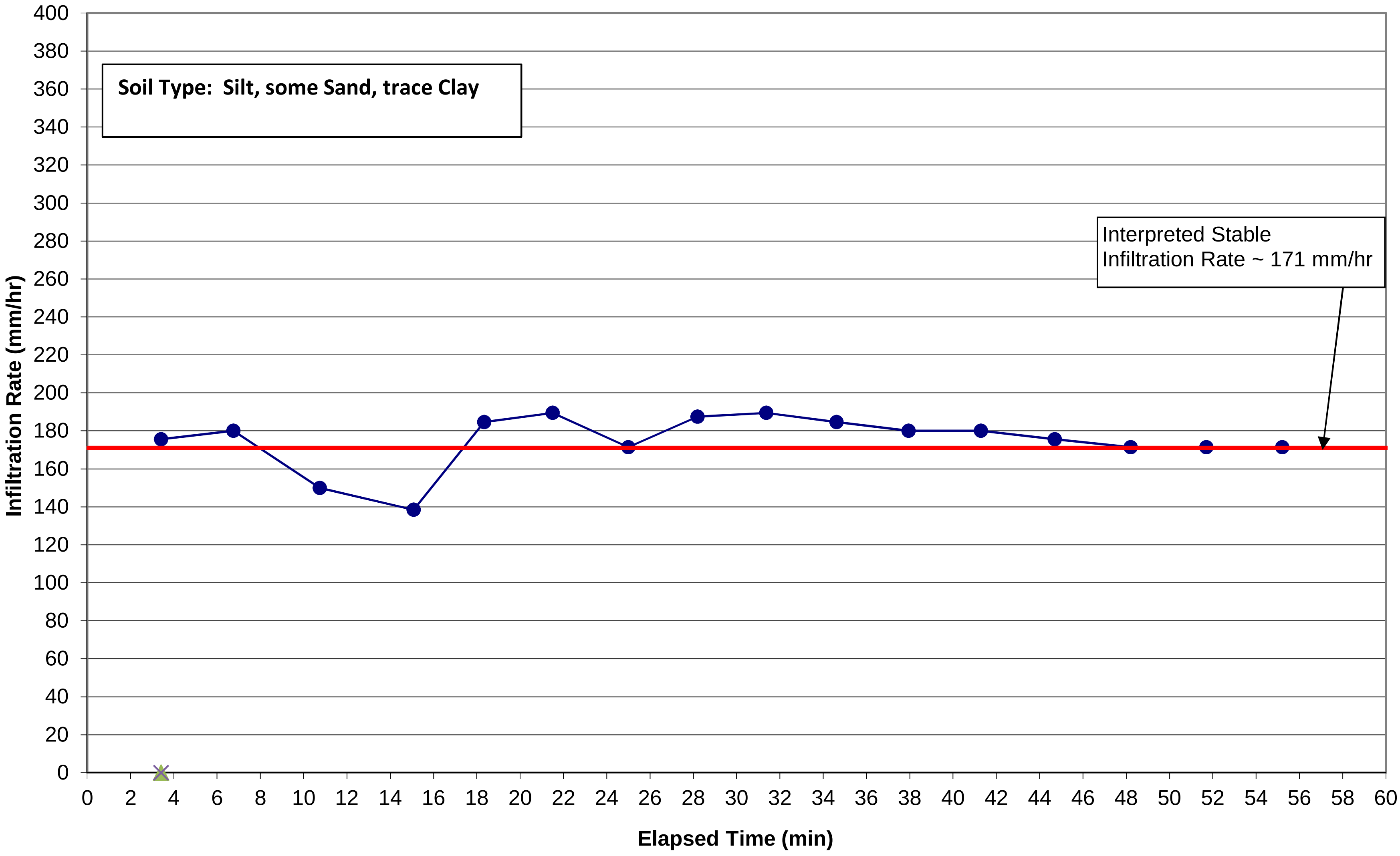
Infiltration Data

Infiltration Test - IT1

Soil Type: Silt, brown, soft, moist, some sand, trace clay
Depth: 0.33 m
Location: Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
3.42	205	3.42	0.06	10	176	4214.63
6.75	200	3.33	0.06	10	180	4320
10.75	240	4.00	0.07	10	150	3600
15.08	260	4.33	0.07	10	138	3323
18.33	195	3.25	0.05	10	185	4431
21.50	190	3.17	0.05	10	189	4547
25.00	210	3.50	0.06	10	171	4114
28.20	192	3.20	0.05	10	188	4500
31.37	190	3.17	0.05	10	189	4547
34.62	195	3.25	0.05	10	185	4431
37.95	200	3.33	0.06	10	180	4320
41.28	200	3.33	0.06	10	180	4320
44.70	205	3.42	0.06	10	176	4215
48.20	210	3.50	0.06	10	171	4114
51.70	210	3.50	0.06	10	171	4114
55.20	210	3.50	0.06	10	171	4114

Infiltration Rate at IT1

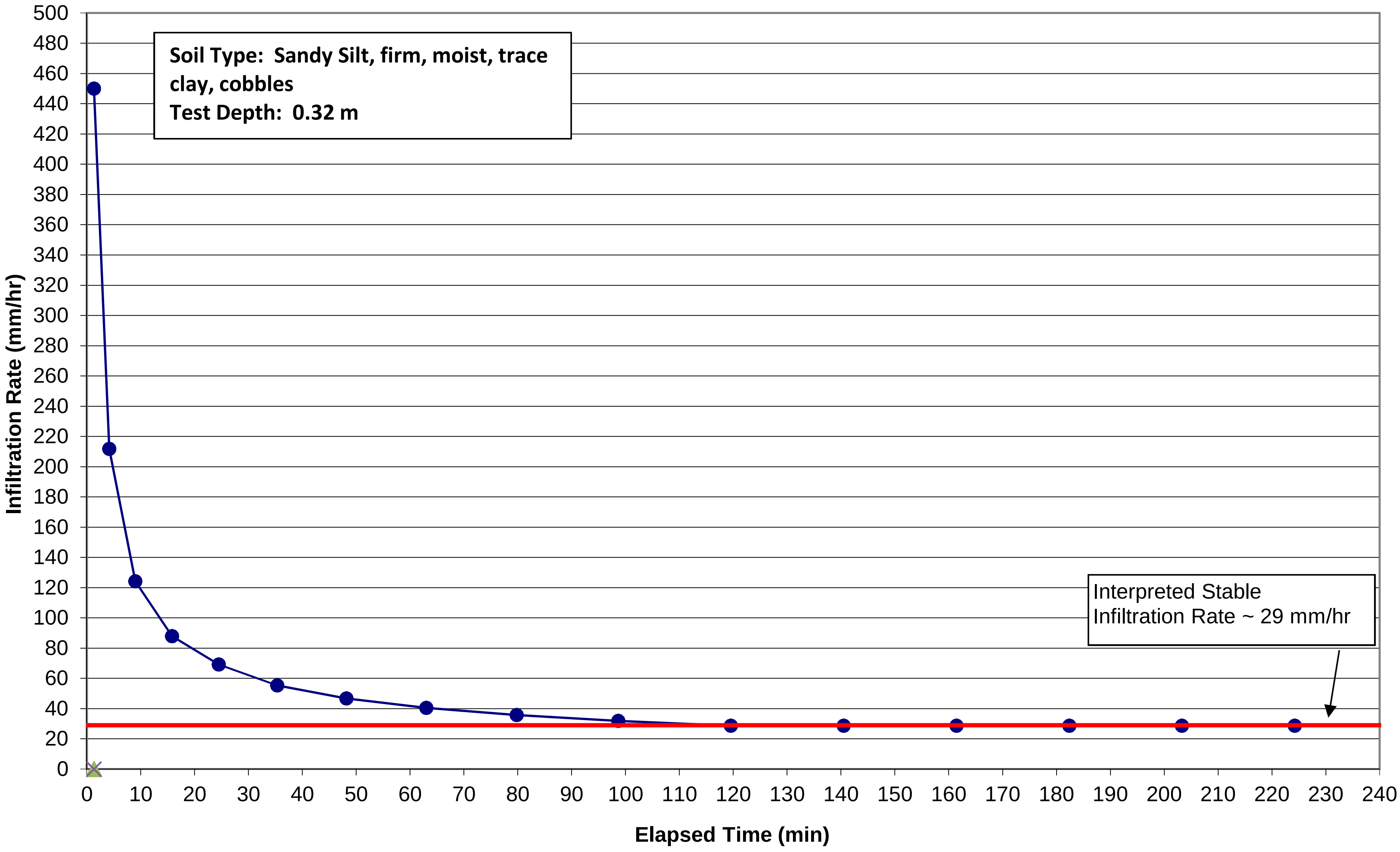


Infiltration Test - IT2

Soil Type:	Sandy Silt, firm, moist, trace clay, cobbles
Depth:	0.32 m
Location:	Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
1.33	80	1.33	0.02	10	450	10800.00
4.17	170	2.83	0.05	10	212	5082
9.00	290	4.83	0.08	10	124	2979
15.83	410	6.83	0.11	10	88	2107
24.50	520	8.67	0.14	10	69	1662
35.33	650	10.83	0.18	10	55	1329
48.18	771	12.85	0.21	10	47	1121
63.02	890	14.83	0.25	10	40	971
79.82	1008	16.80	0.28	10	36	857
98.65	1130	18.83	0.31	10	32	765
119.57	1255	20.92	0.35	10	29	688
140.52	1257	20.95	0.35	10	29	687
161.47	1257	20.95	0.35	10	29	687
182.37	1254	20.90	0.35	10	29	689
203.30	1256	20.93	0.35	10	29	688
224.25	1257	20.95	0.35	10	29	687

Infiltration Rate at IT2

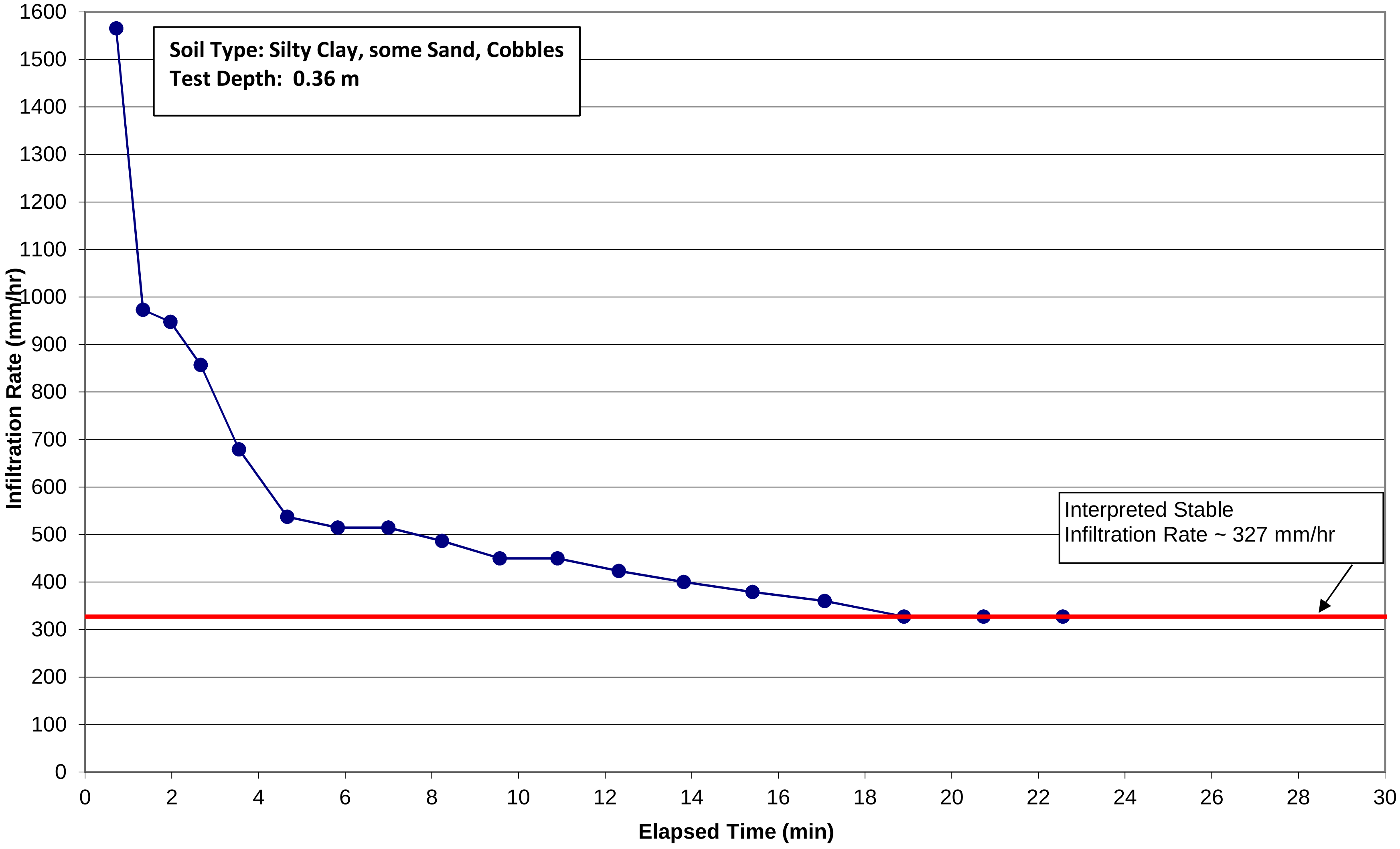


Infiltration Test - IT4

Soil Type:	Silty Clay, some Sand, cobbles
Depth:	0.36 m
Location:	Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
0.33	20	0.33	0.01	10	1800	43200
0.72	23	0.38	0.01	10	1565	37565
1.33	37	0.62	0.01	10	973	23351
1.97	38	0.63	0.01	10	947	22737
2.67	42	0.70	0.01	10	857	20571
3.55	53	0.88	0.01	10	679	16302
4.67	67	1.12	0.02	10	537	12896
5.83	70	1.17	0.02	10	514	12343
7.00	70	1.17	0.02	10	514	12343
8.23	74	1.23	0.02	10	486	11676
9.57	80	1.33	0.02	10	450	10800
10.90	80	1.33	0.02	10	450	10800
12.32	85	1.42	0.02	10	424	10165
13.82	90	1.50	0.03	10	400	9600
15.40	95	1.58	0.03	10	379	9095
17.07	100	1.67	0.03	10	360	8640
18.90	110	1.83	0.03	10	327	7855
20.73	110	1.83	0.03	10	327	7855
22.57	110	1.83	0.03	10	327	7855

Infiltration Rate at IT4

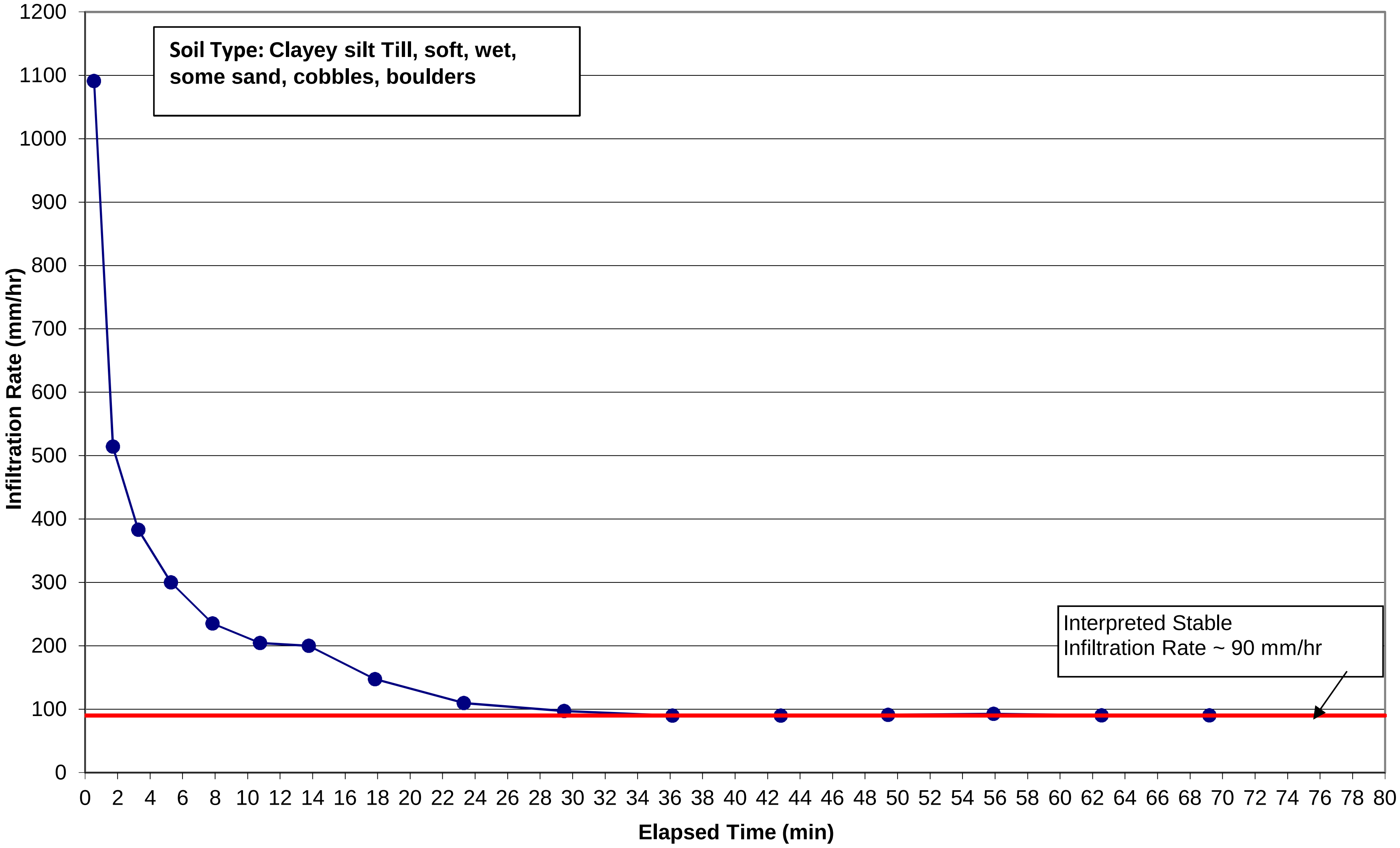


Infiltration Test - IT5

Soil Type: Clayey silt Till, soft, wet, some sand, cobbles, boulders
Depth: 0.38 m
Location: Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
0.55	33	0.55	0.01	10	1091	26182
1.72	70	1.17	0.02	10	514	12343
3.28	94	1.57	0.03	10	383	9191
5.28	120	2.00	0.03	10	300	7200
7.83	153	2.55	0.04	10	235	5647
10.77	176	2.93	0.05	10	205	4909
13.77	180	3.00	0.05	10	200	4800
17.83	244	4.07	0.07	10	148	3541
23.30	328	5.47	0.09	10	110	2634
29.48	371	6.18	0.10	10	97	2329
36.15	400	6.67	0.11	10	90	2160
42.82	400	6.67	0.11	10	90	2160
49.42	396	6.60	0.11	10	91	2182
55.90	389	6.48	0.11	10	93	2221
62.55	399	6.65	0.11	10	90	2165
69.18	398	6.63	0.11	10	90	2171

Infiltration Rate at IT5

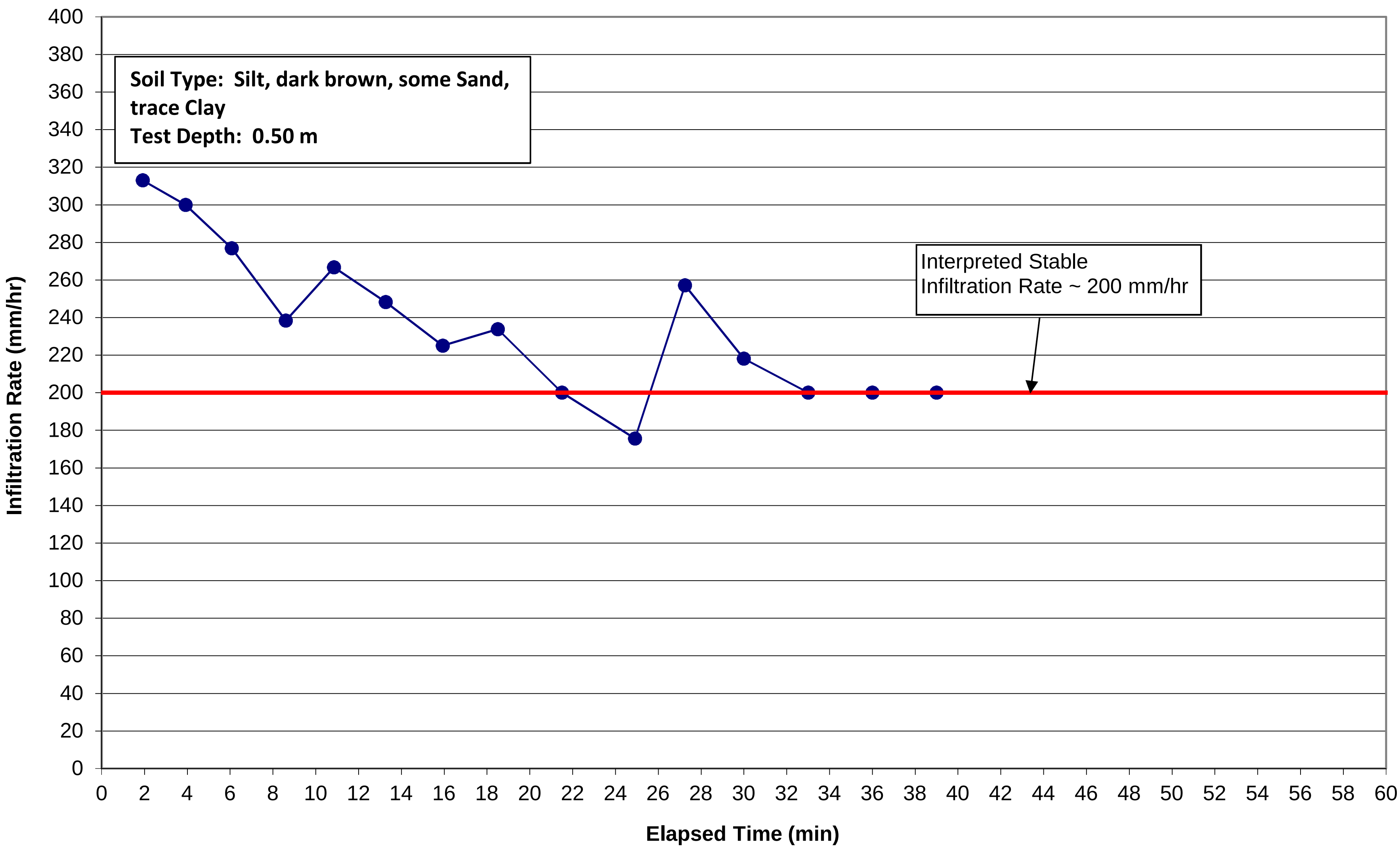


Infiltration Test - IP1

Soil Type:	Silt, dark brown, soft, moist, some sand, trace clay
Pit Size:	0.60 m x 0.60 m x 0.50 m
Location:	Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
		0.00				
1.92	115	1.92	0.03	10	313	7513
3.92	120	2.00	0.03	10	300	7200
6.08	130	2.17	0.04	10	277	6646
8.60	151	2.52	0.04	10	238	5722
10.85	135	2.25	0.04	10	267	6400
13.27	145	2.42	0.04	10	248	5959
15.93	160	2.67	0.04	10	225	5400
18.50	154	2.57	0.04	10	234	5610
21.50	180	3.00	0.05	10	200	4800
24.92	205	3.42	0.06	10	176	4215
27.25	140	2.33	0.04	10	257	6171
30.00	165	2.75	0.05	10	218	5236
33.00	180	3.00	0.05	10	200	4800
36.00	180	3.00	0.05	10	200	4800
39.00	180	3.00	0.05	10	200	4800

Infiltration Rate at IP1

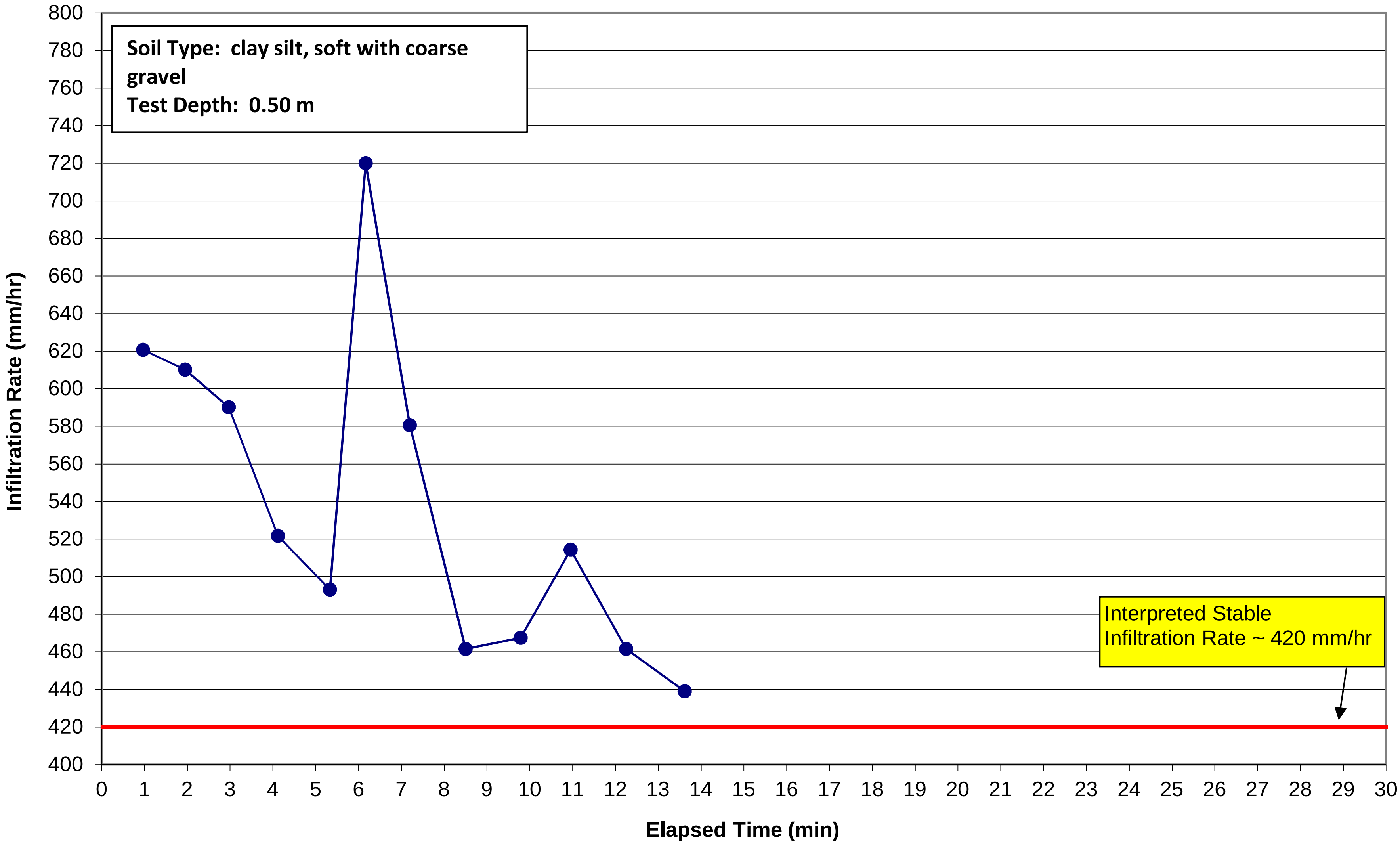


Infiltration Test - IP2

Soil Type: clay silt, soft with coarse gravel
Depth: 0.60 m x 0.60 m x 0.50 m
Location: Belfountain

Elapsed Time min	Interval Time sec	Interval Time min	Interval Time hour	Readings mm	Infiltration Rate mm/h	Infiltration Rate mm/day
		0.00				
0.97	58	0.97	0.02	10	621	14897
1.95	59	0.98	0.02	10	610	14644
2.97	61	1.02	0.02	10	590	14164
4.12	69	1.15	0.02	10	522	12522
5.33	73	1.22	0.02	10	493	11836
6.17	50	0.83	0.01	10	720	17280
7.20	62	1.03	0.02	10	581	13935
8.50	78	1.30	0.02	10	462	11077
9.78	77	1.28	0.02	10	468	11221
10.95	70	1.17	0.02	10	514	12343
12.25	78	1.30	0.02	10	462	11077
13.62	82	1.37	0.02	10	439	10537

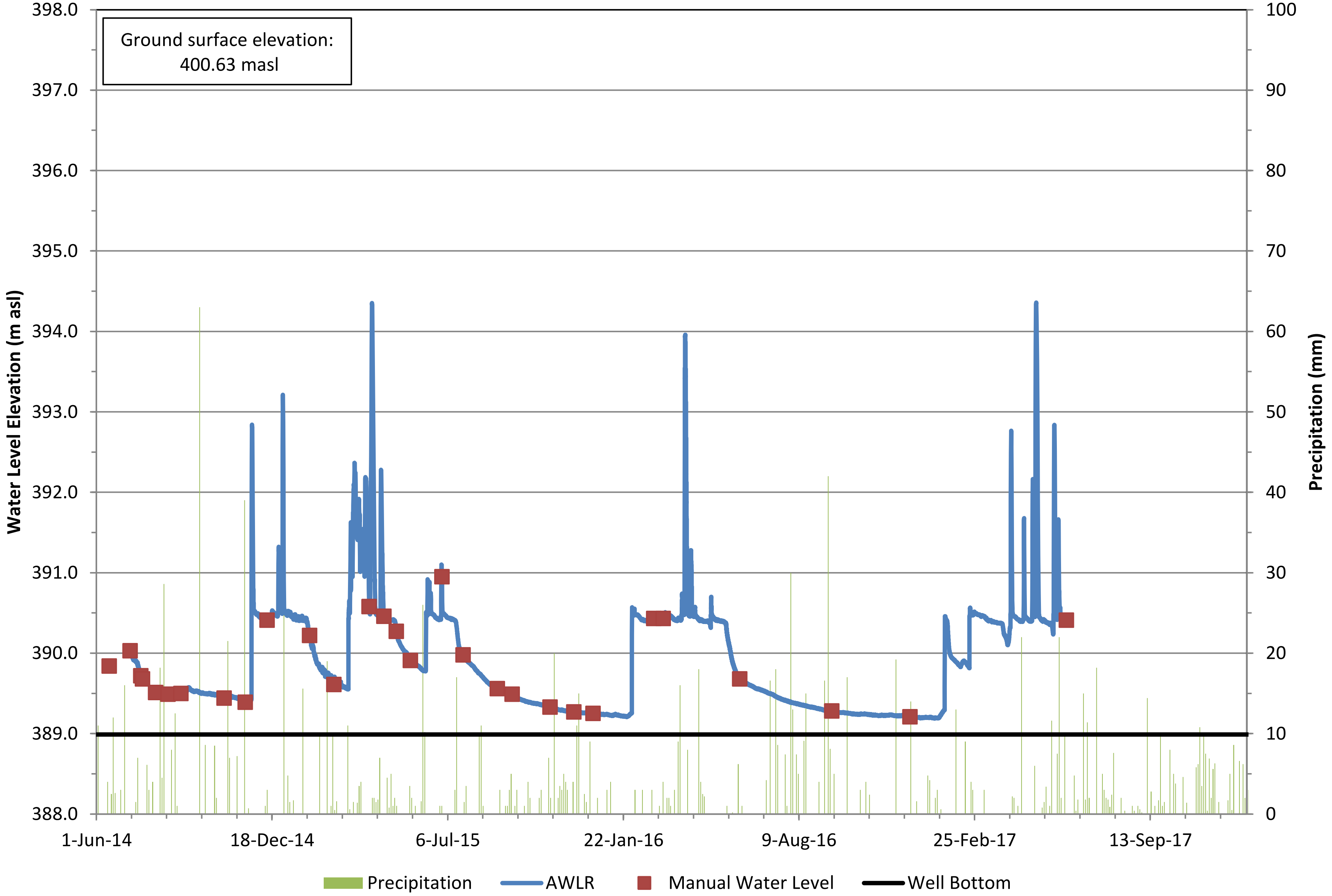
Infiltration Rate at IP2



Appendix E

Hydrographs

Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
MW1D-14 Hydrograph



Prepared By: S.B.
Updated By: T.H. (COLE)
12/12/2017

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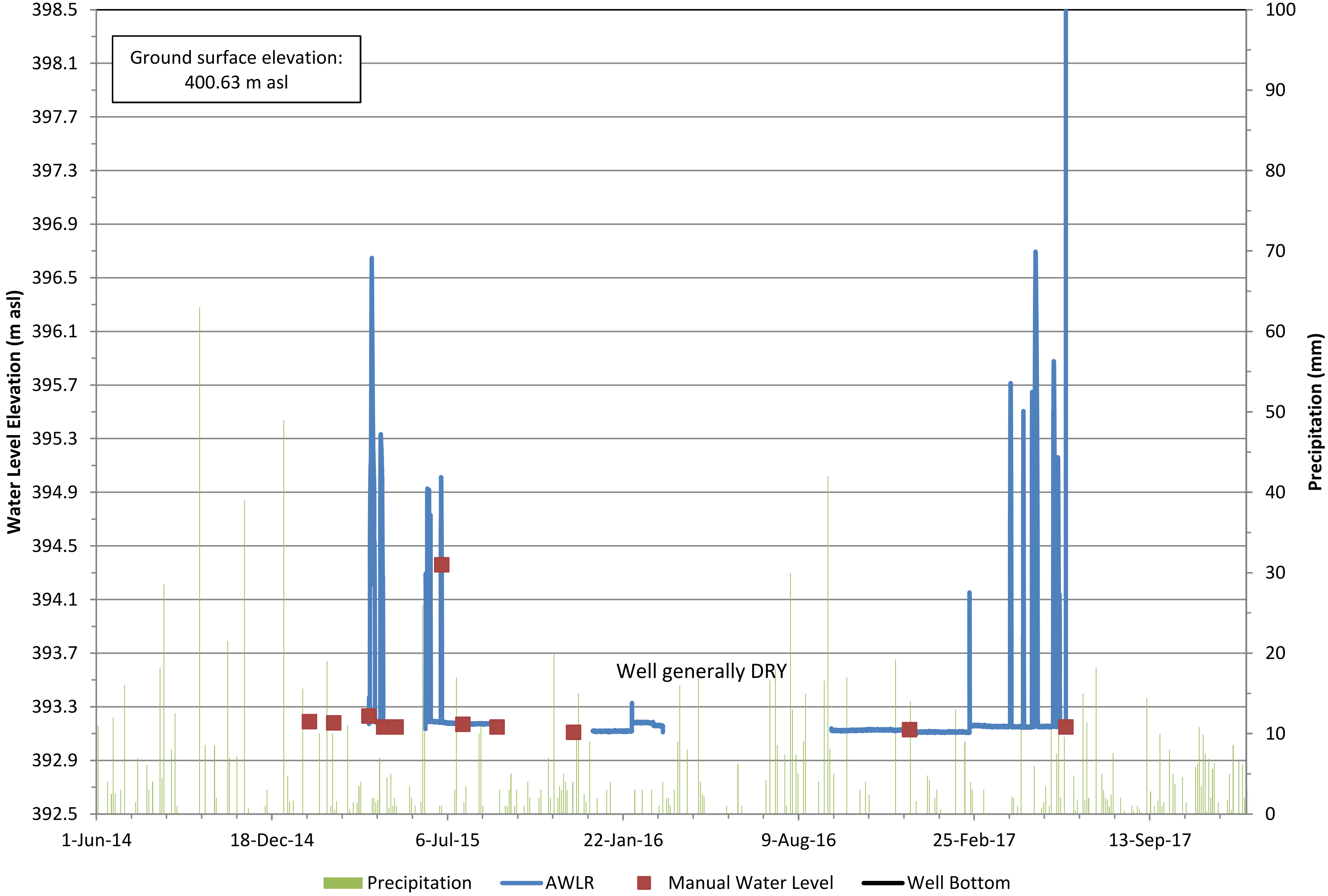
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
MW1S-14 Hydrograph



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Updated By: T.H. (COLE)
12/12/2017

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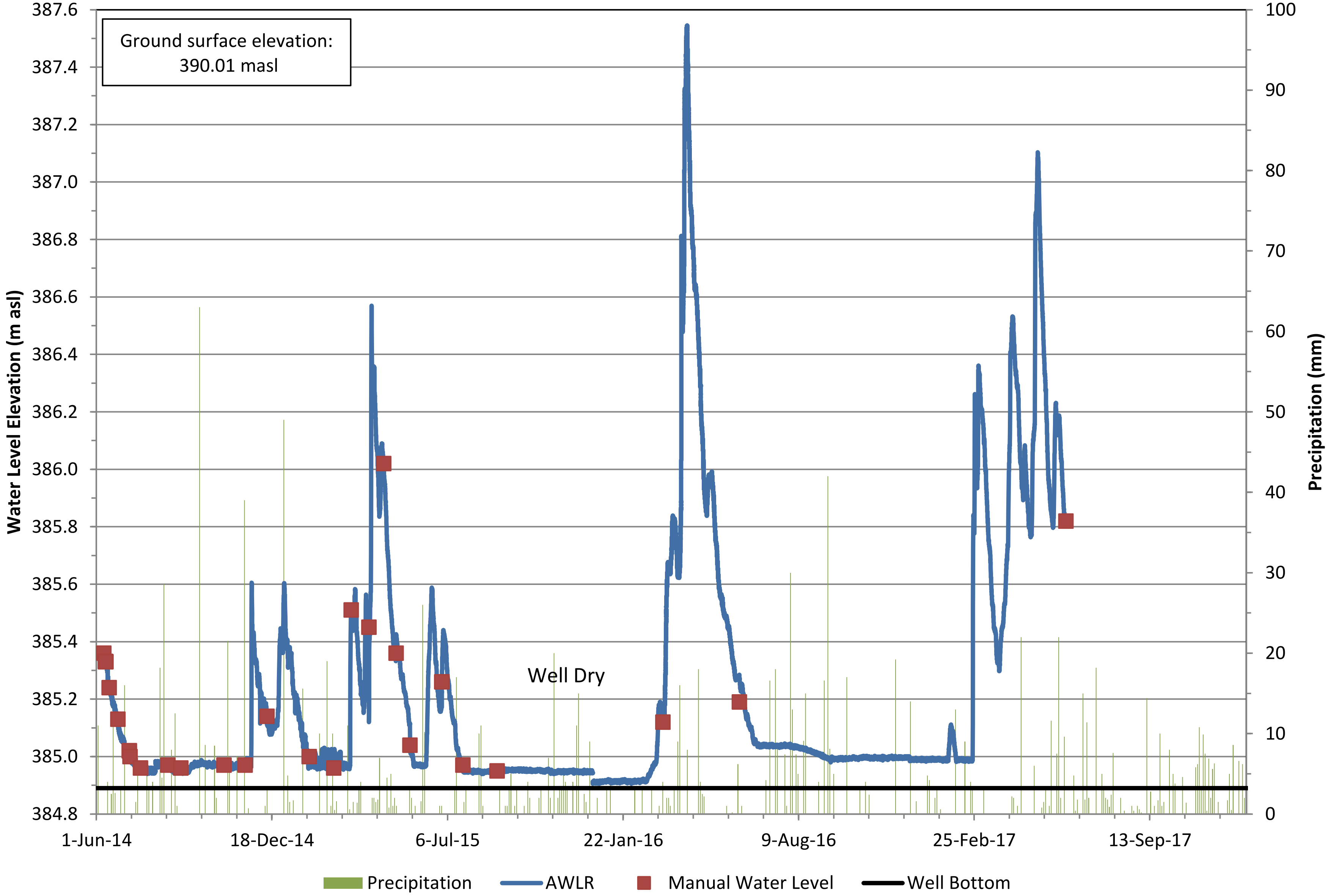
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
OW1 Hydrograph



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12/12/2017

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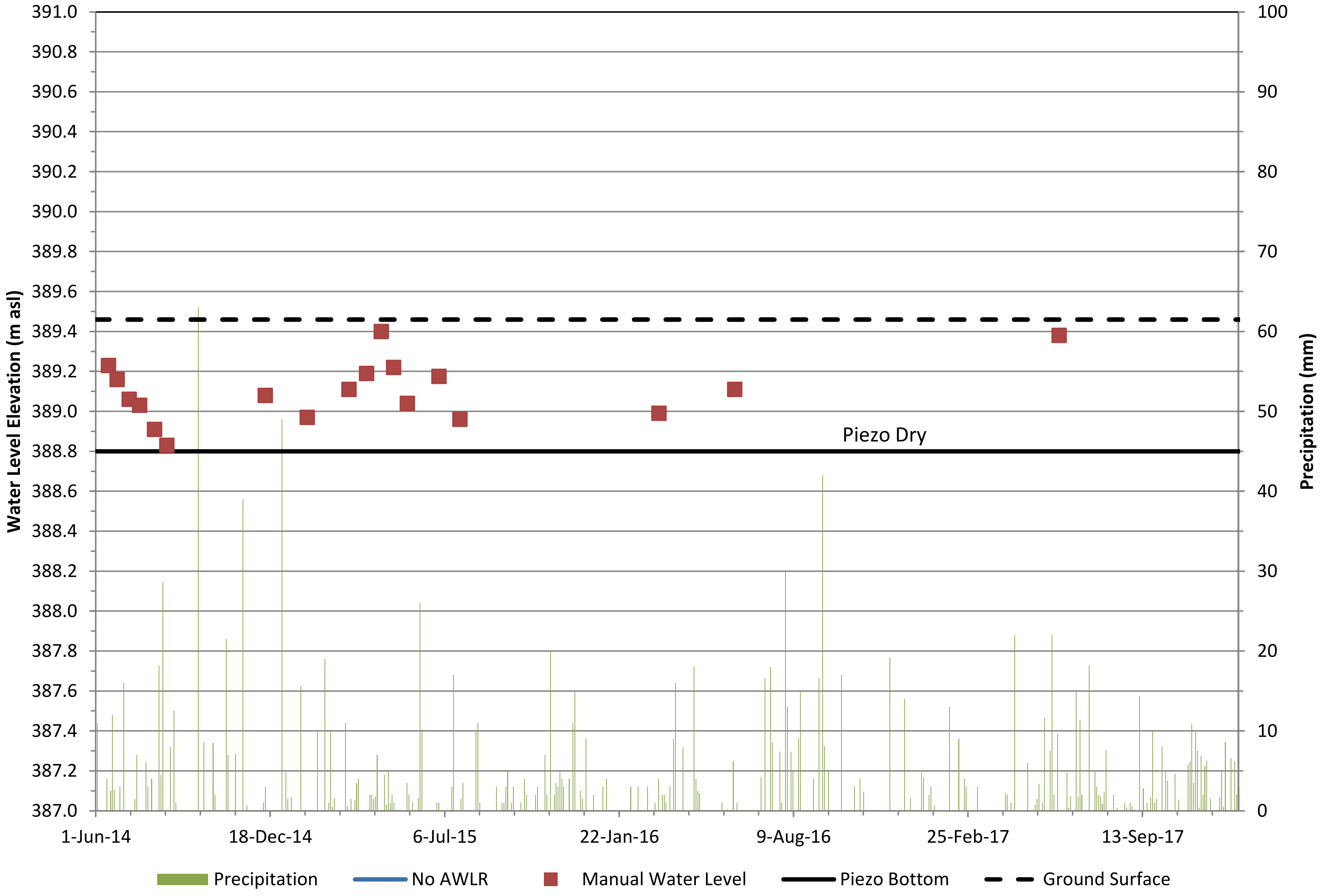
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
Piezo beside PZ2-14 Hydrograph



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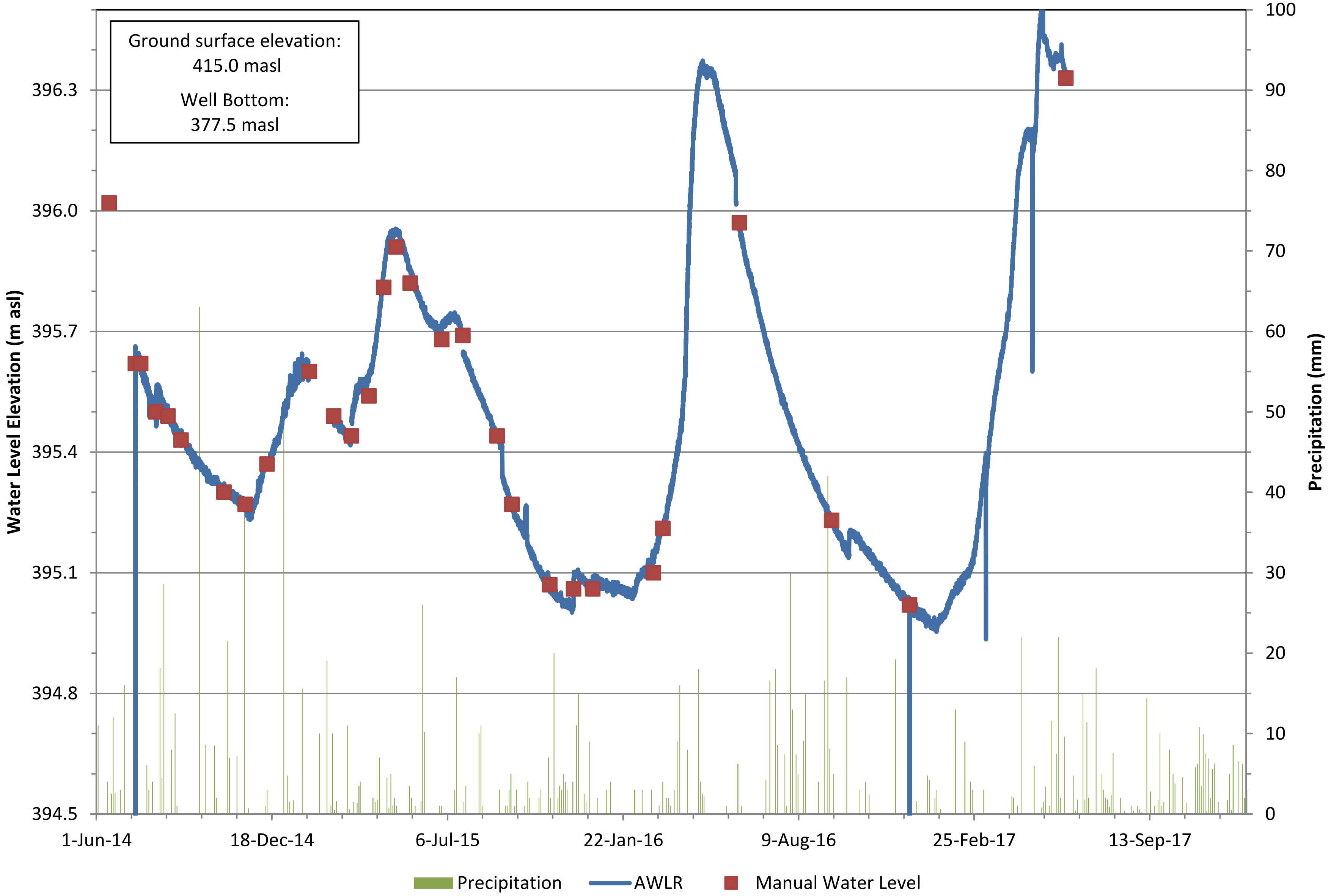
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
PW1 Hydrograph



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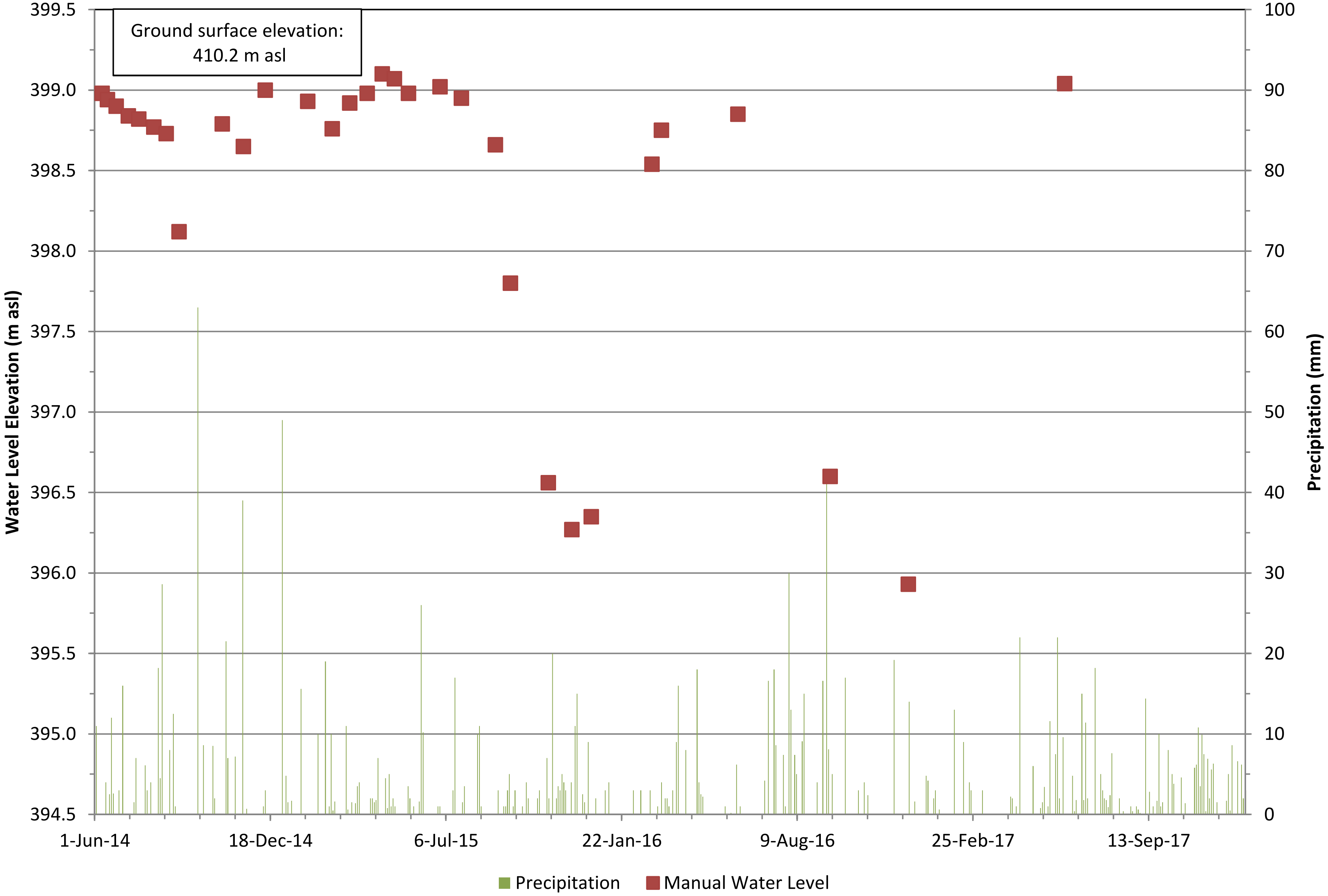
Groundwater Monitoirng
PW2 Hydrograph



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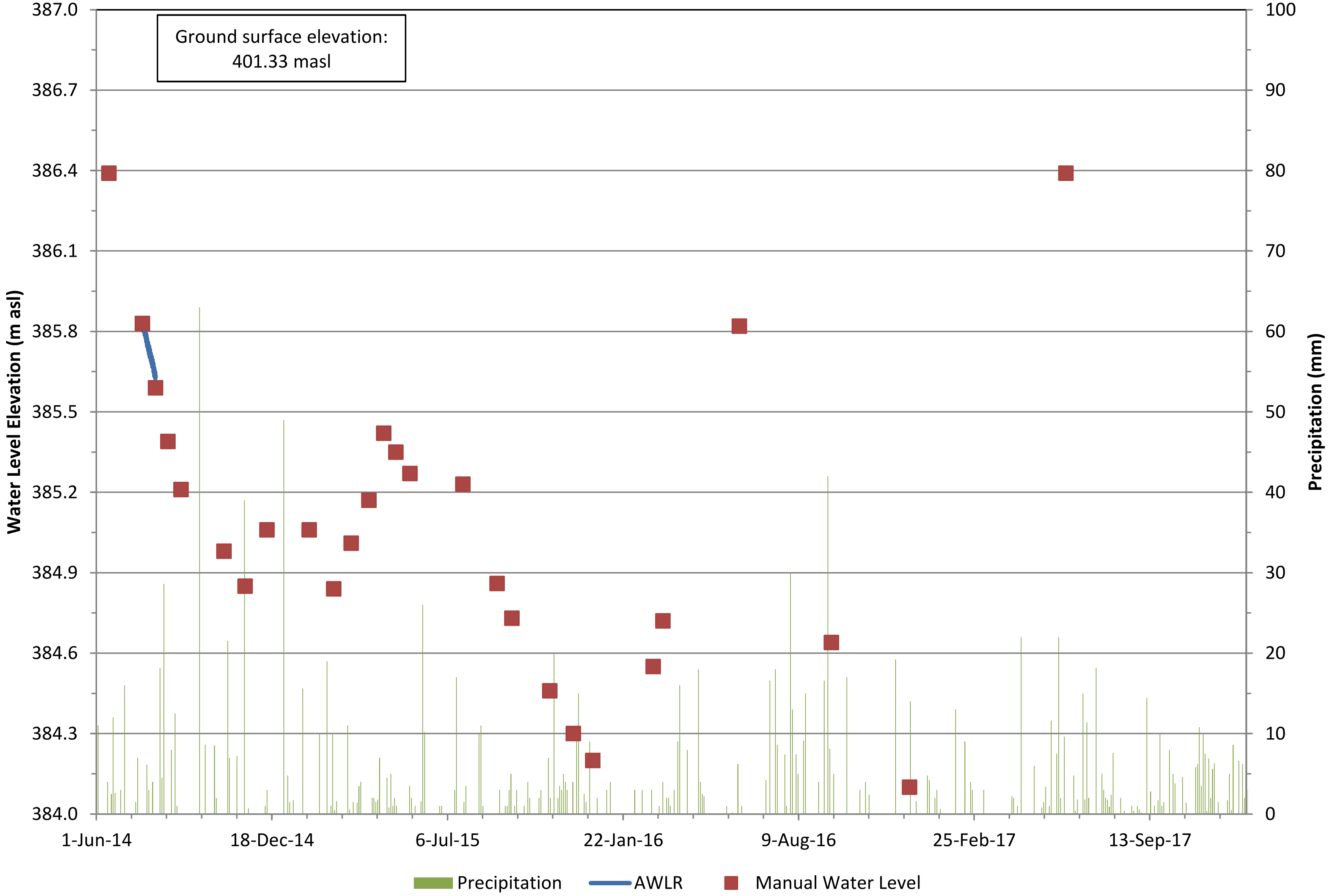
Groundwater Monitoirng
PW3 Hydrograph



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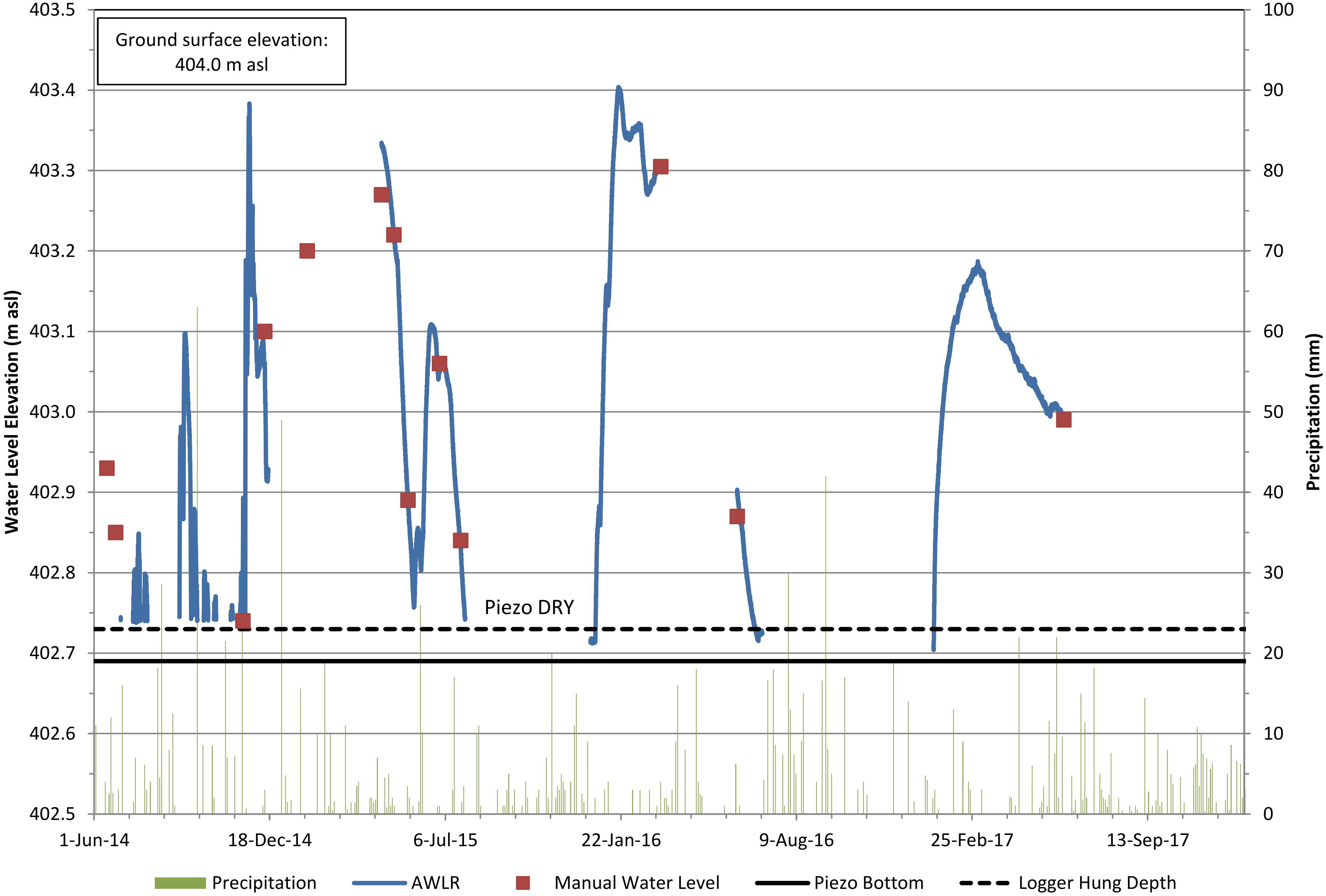
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
PZ1-14 Hydrograph



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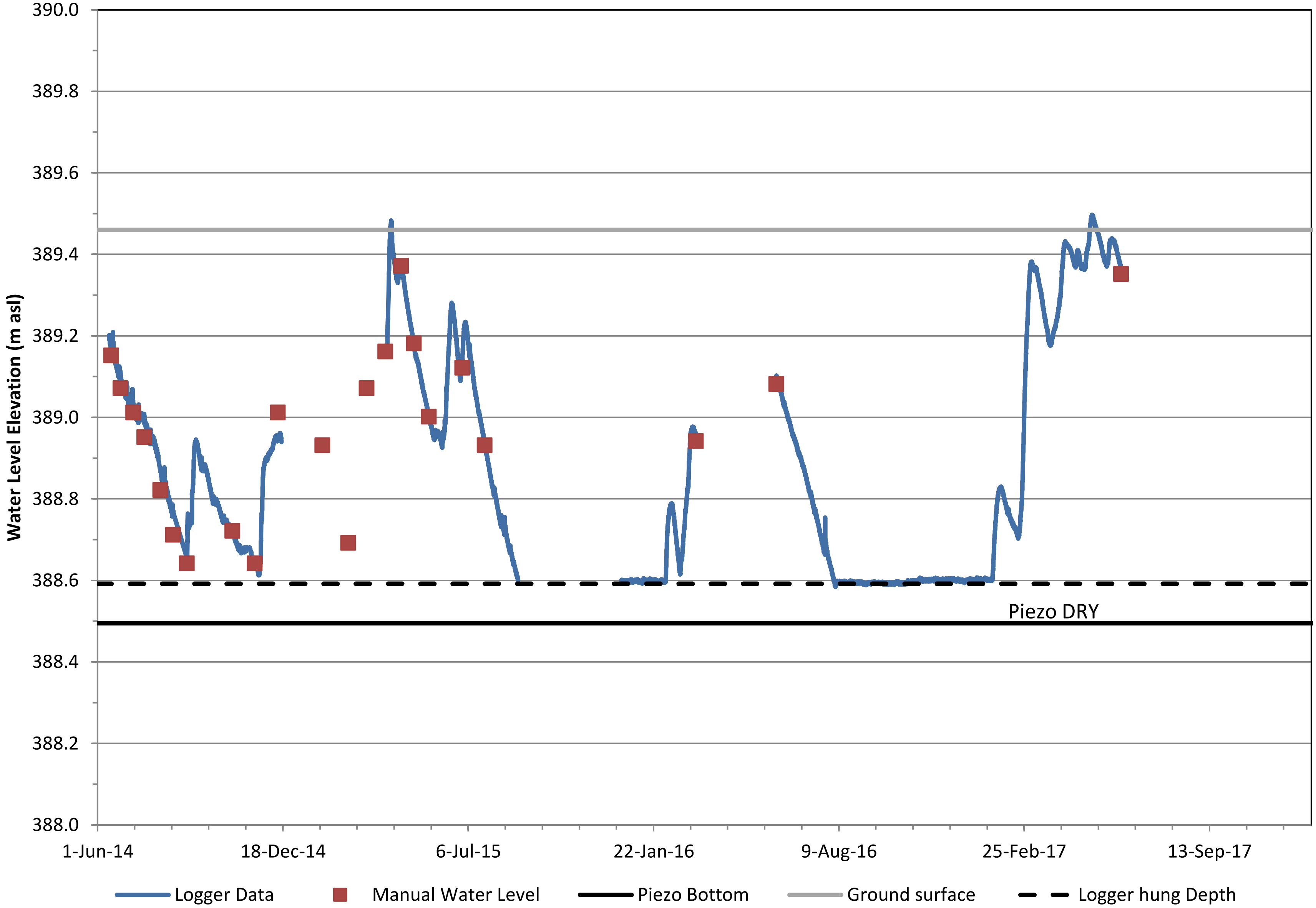
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
PZ2-14 Hydrograph (2)



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Updated By: T.H. (COLE)
12/12/2017

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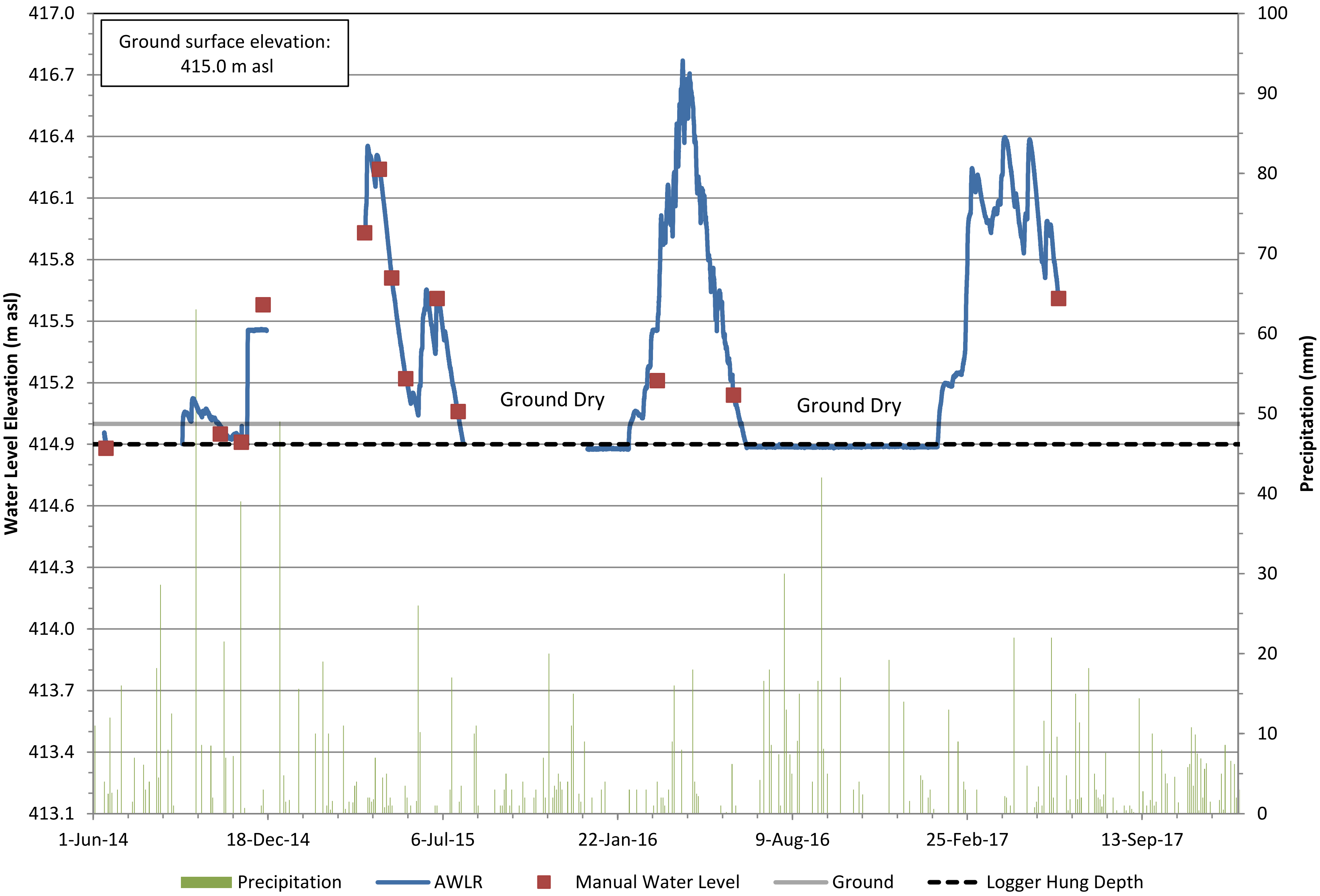
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
SG1-14 Hydrograph



Prepared By: S.B.

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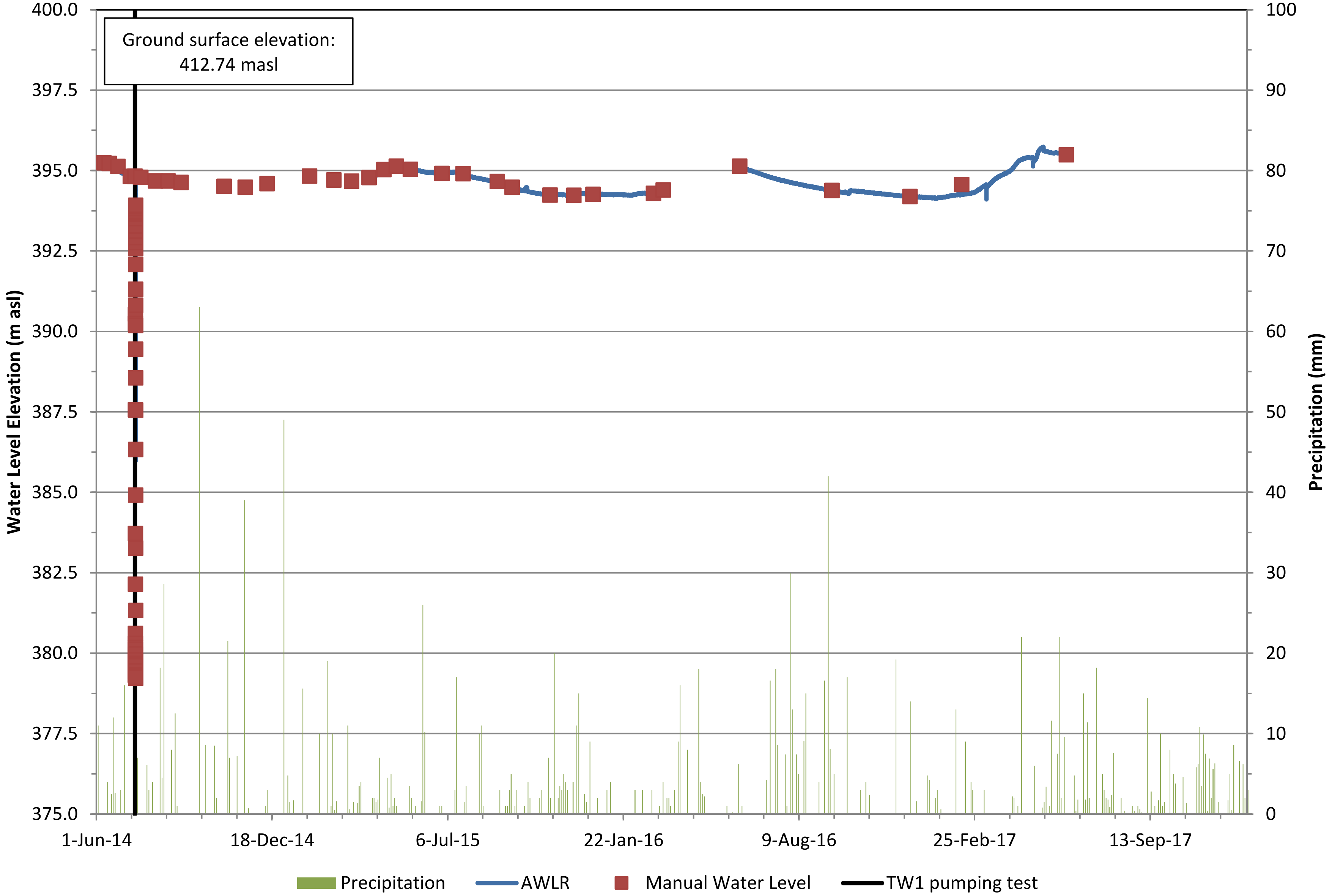
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
TW1 Hydrograph



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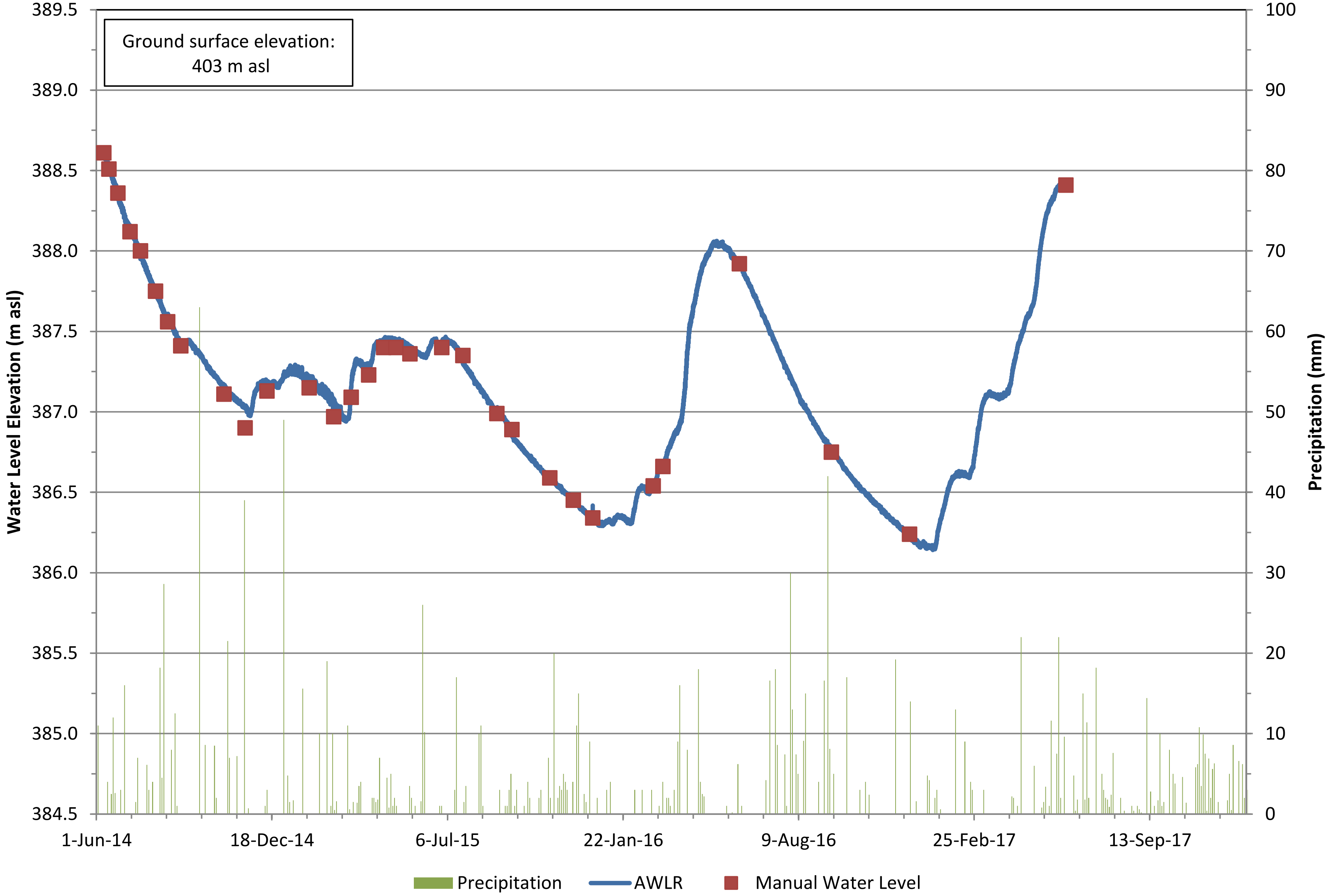
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
TW1-09 Hydrograph



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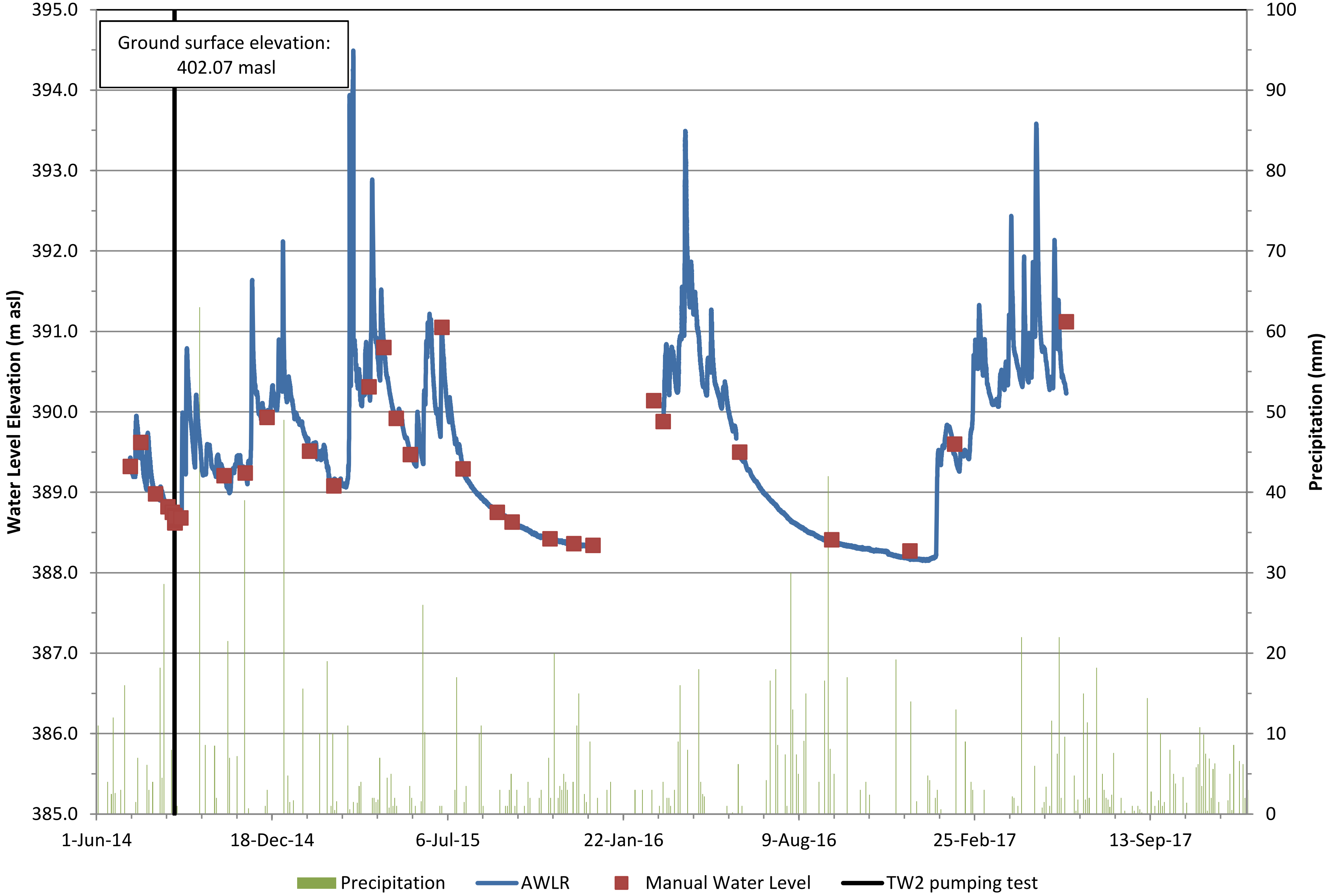
Groundwater Monitoirng

TW2 (A165390) Hydrograph



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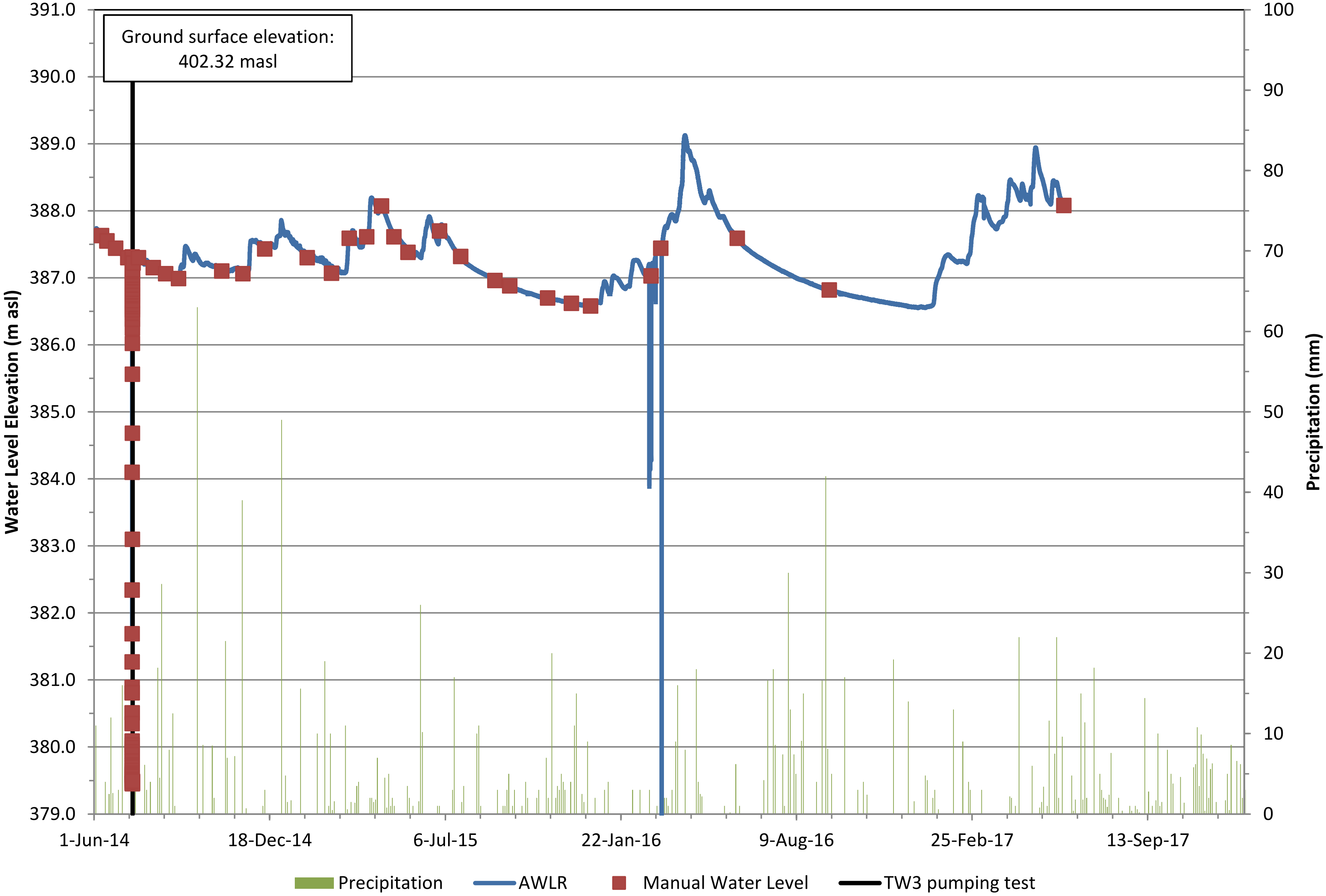
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
TW3 Hydrograph



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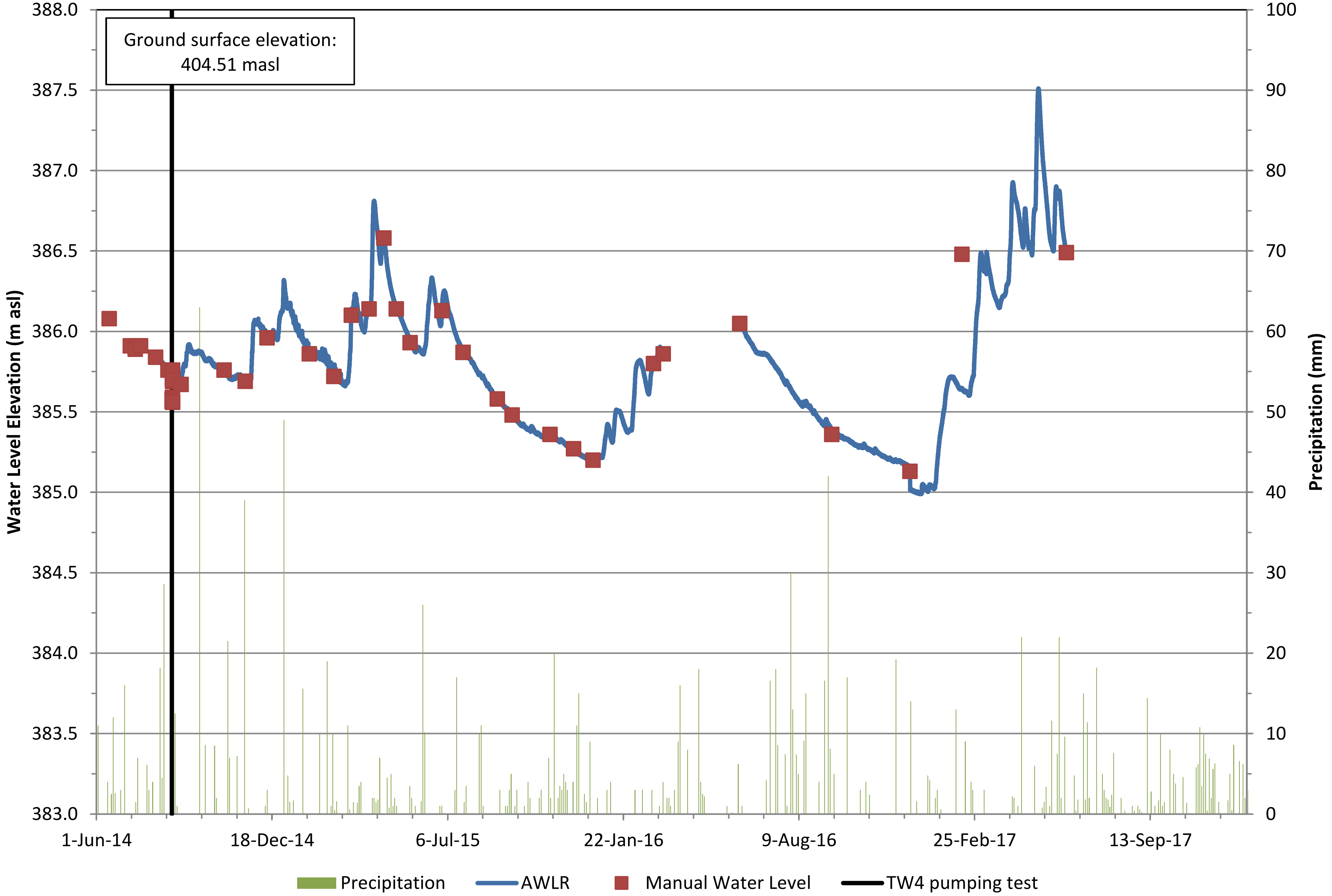
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
TW4 Hydrograph



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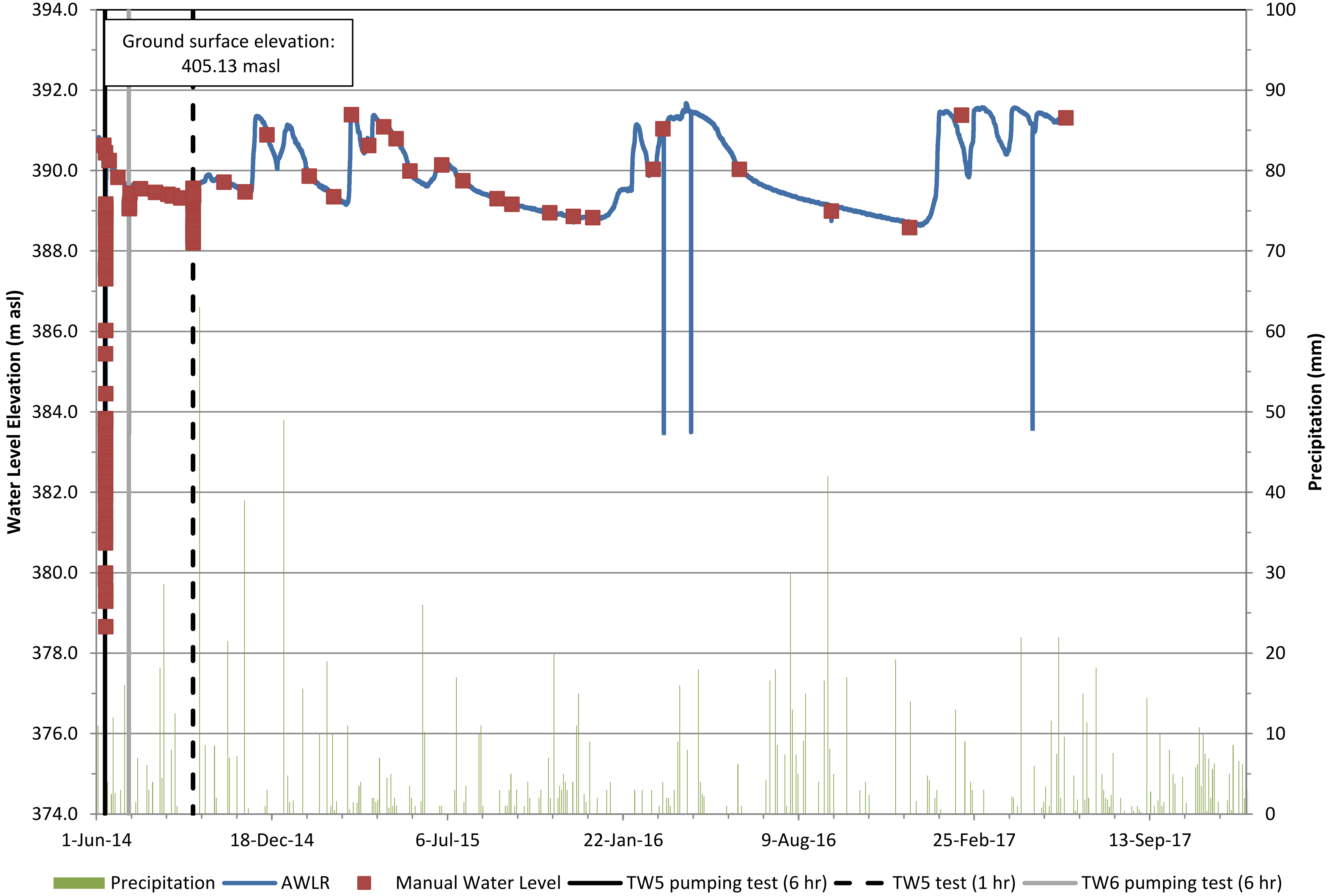
Manors of Belfountain Hydrogeological Investigation
Groundwater Monitoirng
TW5 Hydrograph



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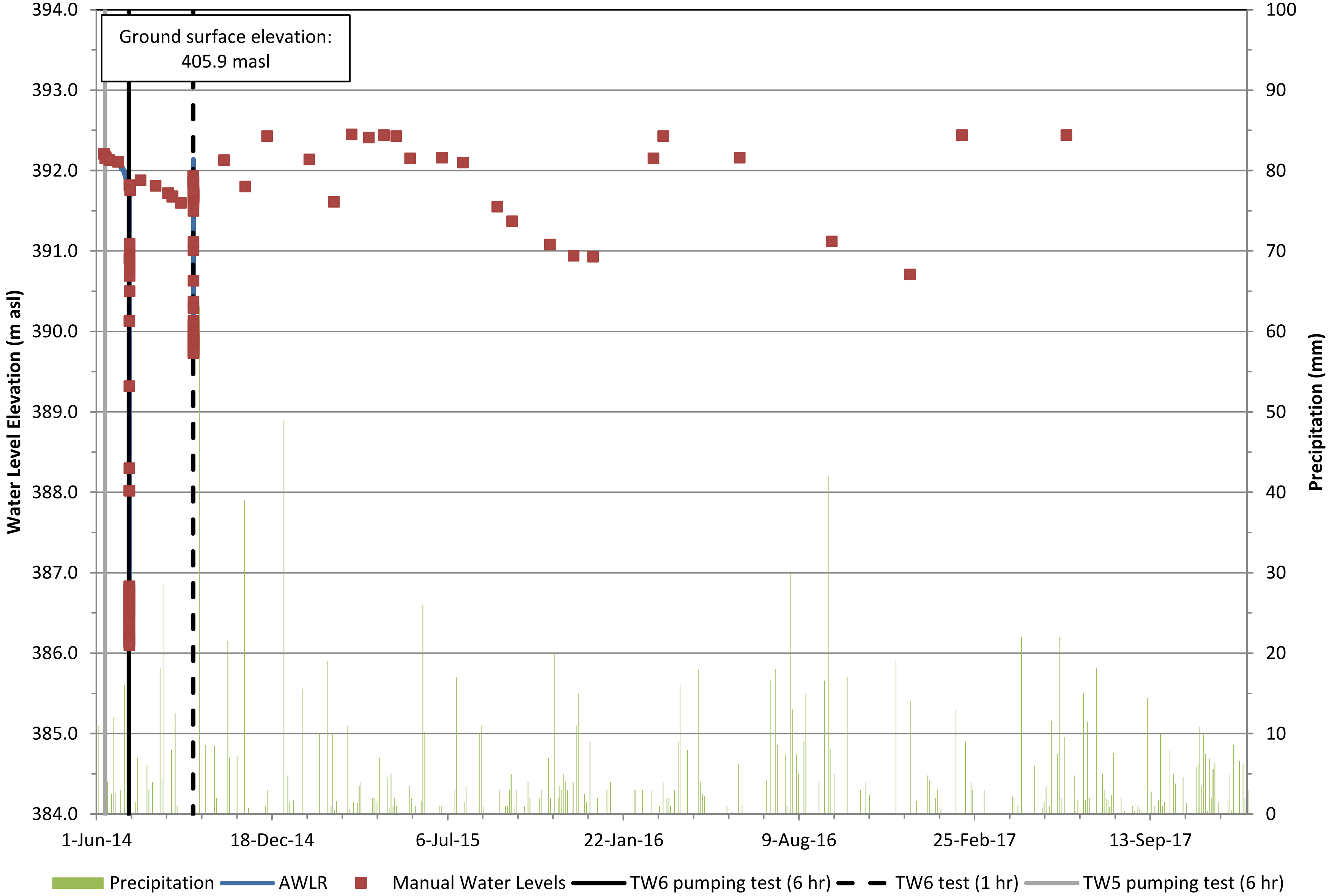
Groundwater Monitoirng
TW6 Hydrograph



BURNSIDE
Prepared By: S.B.
Updated By: T.H. (COLE)
12/12/2017

COLE ENGINEERING

Appendix E
2017-0646

Appendix F

Groundwater Quality

			Well ID	PW2					OW1		
			Sample Date	12/04/2014	04/07/2015	06/29/2015	09/17/2015	11/26/2015	12/04/2014	04/07/2015	06/29/2015
			Lab sample ID	6152997	6430214	6701615	6988488	7237258	6153004	6430223	6701613
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**								
Electrical Conductivity	uS/cm		2	-	595	-	596	-	-	601	-
pH	pH Units	6.5 - 8.5	NA	-	7.92	-	8.16	-	-	8.1	-
Saturation pH				-	7.00	-	6.99	-	-	6.98	-
Langelier Index				-	0.92	-	1.17	-	-	1.12	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	-	281	-	295	-	-	265	-
Total Dissolved Solids	mg/L	500	20	-	304	-	330	-	-	294	-
Alkalinity (as CaCO3)	mg/L	30-500	5	-	259	-	251	-	-	265	-
Bicarbonate (as CaCO3)	mg/L	-	5	-	259	-	251	-	-	265	-
Carbonate (as CaCO3)	mg/L	-	5	-	<5	-	<5	-	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	-	<5	-	<5	-	-	<5	-
Fluoride	mg/L	1.5	0.1	-	<0.05	-	<0.25	-	-	<0.05	-
Chloride	mg/L	250	0.2	-	22.3	-	22.9	-	-	3.48	-
Nitrate as N	mg/L	10	0.1	6.51	3.44	4.15	2.75	2.12	0.89	0.85	1.89
Nitrite as N	mg/L	1	0.1	-	<0.05	-	<0.25	<0.05	-	<0.05	-
Bromide	mg/L	-	0.1	-	<0.05	-	<0.25	-	-	<0.05	-
Sulphate	mg/L	500	0.2	-	18.2	-	22.0	-	-	14	-
Ortho Phosphate as P	mg/L	-	0.2	-	<0.10	-	<0.50	-	-	<0.10	-
Reactive Silica	mg/L	-	0.05	-	7.52	-	8.45	-	-	5.38	-
Ammonia as N	mg/L	-	0.02	-	0.3	-	<0.02	-	-	0.08	-
Total Phosphorus	mg/L	-	0.05	-	<0.05	-	<0.05	-	-	0.17	-
Total Organic Carbon	mg/L	-	0.5	-	0.5	-	0.7	-	-	2	-
Colour	TCU	5	5	-	<5	-	<5	-	-	<5	-
Turbidity	NTU	5	0.5	-	4.6	-	1.2	-	-	269	-
Calcium	mg/L	-	0.05	-	73.6	-	77.6	-	-	71.9	-
Magnesium	mg/L	-	0.05	-	23.5	-	24.7	-	-	20.7	-
Sodium	mg/L	200	0.05	-	8.20	-	9.37	-	-	7.68	-
Potassium	mg/L	-	0.05	-	0.90	-	0.84	-	-	2.16	-
Aluminum	mg/L	0.1	0.004	-	<0.004	-	<0.004	-	-	<0.004	-
Antimony	mg/L	0.006	0.003	-	<0.003	-	<0.003	-	-	<0.003	-
Arsenic	mg/L	0.025	0.003	-	<0.003	-	<0.003	-	-	<0.003	-
Barium	mg/L	1	0.002	-	0.056	-	0.050	-	-	0.048	-
Beryllium	mg/L	-	0.001	-	<0.001	-	<0.001	-	-	<0.001	-
Boron	mg/L	5	0.01	-	<0.010	-	<0.010	-	-	<0.010	-
Cadmium	mg/L	0.005	0.001	-	<0.001	-	<0.001	-	-	<0.001	-
Chromium	mg/L	0.05	0.003	-	0.005	-	<0.003	-	-	<0.003	-
Cobalt	mg/L	-	0.001	-	<0.001	-	<0.001	-	-	<0.001	-
Copper	mg/L	1	0.003	-	<0.003	-	<0.003	-	-	<0.003	-
Iron	mg/L	0.3	0.01	-	<0.010	-	<0.010	-	-	<0.010	-
Lead	mg/L	0.01	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Manganese	mg/L	0.05	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Mercury	mg/L	0.001	0.0001	-	<0.0001	-	<0.0001	-	-	<0.0001	-
Molybdenum	mg/L	-	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Nickel	mg/L	-	0.003	-	<0.003	-	0.004	-	-	<0.003	-
Selenium	mg/L	0.01	0.004	-	<0.004	-	<0.004	-	-	<0.004	-
Silver	mg/L	-	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Strontium	mg/L	-	0.005	-	0.126	-	0.126	-	-	0.102	-
Thallium	mg/L	-	0.006	-	<0.006	-	<0.006	-	-	<0.006	-
Tin	mg/L	-	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Titanium	mg/L	-	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Tungsten	mg/L	-	0.01	-	<0.010	-	<0.010	-	-	<0.010	-
Uranium	mg/L	0.02	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Vanadium	mg/L	-	0.002	-	<0.002	-	<0.002	-	-	<0.002	-
Zinc	mg/L	5	0.005	-	0.022	-	0.021	-	-	0.017	-
Zirconium	mg/L	-	0.004	-	<0.004	-	<0.004	-	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	-	3.400	-	0.104	-	-	0.6	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due to the presence of non-target Ions; the RDLs were adjusted to reflect the dilution.

			Well ID	**TW1**		**TW2**									
			Sample Date	**05/02/2017**	**03/10/2017**	**04/07/2015**	**06/29/2015**	**09/17/2015**	**11/26/2015**	**03/08/2016**	**06/02/2016**	**09/15/2016**	**12/13/2016**	**03/10/2017**	**05/02/2017**
			Lab sample ID	**8358383**	**8244996**	**6430142**	**6701611**	**6988471**	**7237258**	**7430218**	**7607710**	**7853176**	**8091589**	**8244997**	**8358385**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**												
Electrical Conductivity	uS/cm		2	-	705	478	-	561	-	-	526	575	-	392	-
pH	pH Units	6.5 - 8.5	NA	-	8.14	7.89	-	8.14	-	-	8.03	8.17	-	8.02	-
Saturation pH				-	6.89	7.15	-	6.96	-	-	6.97	6.96	-	7.36	-
Langelier Index				-	1.25	0.74	-	1.18	-	-	1.06	1.21	-	0.66	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	-	361	224	-	299	-	-	276	294	-	181	-
Total Dissolved Solids	mg/L	500	20	-	396	262	-	308	-	-	290	308	-	198	-
Alkalinity (as CaCO3)	mg/L	30-500	5	-	256	212	-	263	-	-	264	271	-	163	-
Bicarbonate (as CaCO3)	mg/L	-	5	-	256	212	-	263	-	-	264	271	-	163	-
Carbonate (as CaCO3)	mg/L	-	5	-	<5	<5	-	<5	-	-	<5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	-	<5	<5	-	<5	-	-	<5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	-	0.19	<0.05	-	<0.25	-	-	<0.10	<0.05	-	<0.05	-
Chloride	mg/L	250	0.2	-	14.30	18.80	-	6.85	-	-	5.59	5.96	-	16.70	-
Nitrate as N	mg/L	10	0.1	<0.05	<0.05	0.84	0.70	1.00	0.62	0.58	1.18	0.82	0.67	1.16	1.90
Nitrite as N	mg/L	1	0.1	<0.05	<0.05	<0.05	-	<0.25	<0.05	-	<0.10	<0.05	-	<0.05	<0.05
Bromide	mg/L	-	0.1	-	<0.05	<0.05	-	<0.25	-	-	<0.10	<0.05	-	<0.05	-
Sulphate	mg/L	500	0.2	-	105.0	10.0	-	23.5	-	-	19.0	25.6	-	13.8	-
Ortho Phosphate as P	mg/L	-	0.2	-	<0.10	0.35	-	<0.50	-	-	<0.20	<0.10	-	<0.10	-
Reactive Silica	mg/L	-	0.05	-	12.70	5.78	-	11.50	-	-	9.90	11.80	-	3.65	-
Ammonia as N	mg/L	-	0.02	-	<0.02	<0.02	-	<0.02	-	-	<0.02	<0.02	-	0.04	-
Total Phosphorus	mg/L	-	0.05	-	<0.05	<0.05	-	<0.05	-	-	<0.05	0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	-	1.3	1.7	-	1.1	-	-	0.7	1.1	-	2.4	-
Colour	TCU	5	5	-	<5	<5	-	<5	-	-	<5	<5	-	<5	-
Turbidity	NTU	5	0.5	-	135.0	2.7	-	4.3	-	-	6.4	110.0	-	3.3	-
Calcium	mg/L	-	0.05	-	97.9	60.9	-	79.5	-	-	73.3	77.6	-	48.8	-
Magnesium	mg/L	-	0.05	-	28.4	17.5	-	24.3	-	-	22.6	24.3	-	14.4	-
Sodium	mg/L	200	0.05	-	5.27	6.79	-	3.47	-	-	2.65	3.10	-	6.39	-
Potassium	mg/L	-	0.05	-	1.18	1.53	-	1.12	-	-	1.03	1.12	-	1.26	-
Aluminum	mg/L	0.1	0.004	-	0.006	<0.004	-	<0.004	-	-	0.006	0.014	-	0.017	-
Antimony	mg/L	0.006	0.003	-	<0.003	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	-	0.006	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Barium	mg/L	1	0.002	-	0.073	0.042	-	0.088	-	-	0.063	0.092	-	0.030	-
Beryllium	mg/L	-	0.001	-	<0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	-	0.016	0.010	-	<0.010	-	-	0.012	<0.010	-	<0.010	-
Cadmium	mg/L	0.005	0.001	-	<0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	-	<0.003	0.005	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	-	<0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	-	<0.003	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	-	0.167	<0.010	-	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	-	0.019	<0.002	-	<0.002	-	-	0.004	0.003	-	<0.002	-
Mercury	mg/L	0.001	0.0001	-	<0.0001	<0.0001	-	<0.0001	-	-	<0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Nickel	mg/L	-	0.003	-	<0.003	<0.003	-	0.004	-	-	<0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	-	<0.004	<0.004	-	<0.004	-	-	<0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	-	0.588	0.087	-	0.128	-	-	0.122	0.134	-	0.078	-
Thallium	mg/L	-	0.006	-	<0.006	<0.006	-	<0.006	-	-	<0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Tungsten	mg/L	-	0.01	-	<0.010	<0.010	-	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	-	<0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	-	0.034	0.012	-	0.010	-	-	0.010	0.009	-	0.011	-
Zirconium	mg/L	-	0.004	-	<0.004	<0.004	-	<0.004	-	-	<0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	-	1.56	2.30	-	1.09	-	-	2.23	1.18	-	2.09	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	**TW3**			**TW4**	
			Sample Date	**03/08/2016**	**03/10/2017**	**05/02/2017**	**03/10/2017**	**05/02/2017**
			Lab sample ID	**7430216**	**8245003**	**8358386**	**8245009**	**8358387**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**					
Electrical Conductivity	uS/cm		2	-	802	-	558	-
pH	pH Units	6.5 - 8.5	NA	-	8.14	-	8.10	-
Saturation pH				-	6.83	-	6.99	-
Langelier Index				-	1.31	-	1.11	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	-	433	-	275	-
Total Dissolved Solids	mg/L	500	20	-	484	-	284	-
Alkalinity (as CaCO3)	mg/L	30-500	5	-	248	-	250	-
Bicarbonate (as CaCO3)	mg/L	-	5	-	248	-	250	-
Carbonate (as CaCO3)	mg/L	-	5	-	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	-	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	-	0.1	-	<0.05	-
Chloride	mg/L	250	0.2	-	3.41	-	12.60	-
Nitrate as N	mg/L	10	0.1	0.54	0.62	0.58	3.43	3.22
Nitrite as N	mg/L	1	0.1	-	<0.05	<0.05	<0.05	<0.05
Bromide	mg/L	-	0.1	-	<0.05	-	<0.05	-
Sulphate	mg/L	500	0.2	-	193.0	-	18.9	-
Ortho Phosphate as P	mg/L	-	0.2	-	<0.10	-	<0.10	-
Reactive Silica	mg/L	-	0.05	-	10.70	-	7.28	-
Ammonia as N	mg/L	-	0.02	-	0.14	-	<0.02	-
Total Phosphorus	mg/L	-	0.05	-	<0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	-	0.7	-	1.2	-
Colour	TCU	5	5	-	<5	-	<5	-
Turbidity	NTU	5	0.5	-	15.3	-	0.6	-
Calcium	mg/L	-	0.05	-	122.0	-	74.1	-
Magnesium	mg/L	-	0.05	-	31.1	-	21.8	-
Sodium	mg/L	200	0.05	-	3.42	-	5.36	-
Potassium	mg/L	-	0.05	-	1.28	-	1.01	-
Aluminum	mg/L	0.1	0.004	-	0.008	-	0.011	-
Antimony	mg/L	0.006	0.003	-	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	-	<0.003	-	<0.003	-
Barium	mg/L	1	0.002	-	0.045	-	0.053	-
Beryllium	mg/L	-	0.001	-	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	-	0.020	-	<0.010	-
Cadmium	mg/L	0.005	0.001	-	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	-	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	-	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	-	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	-	0.032	-	<0.010	-
Lead	mg/L	0.01	0.002	-	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	-	0.005	-	<0.002	-
Mercury	mg/L	0.001	0.0001	-	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	-	0.002	-	<0.002	-
Nickel	mg/L	-	0.003	-	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	-	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	-	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	-	0.916	-	0.121	-
Thallium	mg/L	-	0.006	-	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	-	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	-	0.003	-	<0.002	-
Tungsten	mg/L	-	0.01	-	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	-	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	-	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	-	0.032	-	0.013	-
Zirconium	mg/L	-	0.004	-	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	-	1.57	-	2.07	-

Notes:
ODWS = Ontario Drinking Water Standards
RDL = Reportable Detection Limit
-' = No value available
Indicates exceedance of ODWS criteria
Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	**TW5**									
			Sample Date	**04/07/2015**	**06/29/2015**	**09/17/2015**	**11/26/2015**	**03/08/2016**	**06/02/2016**	**09/15/2016**	**12/13/2016**	**03/10/2017**	**05/02/2017**
			Lab sample ID	**6430199**	**6701614**	**6988482**	**7237247**	**7430208**	**7607719**	**7853172**	**8091594**	**8245015**	**8358388**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**										
Electrical Conductivity	uS/cm		2	592	-	655	-	-	606	667	-	604	-
pH	pH Units	6.5 - 8.5	NA	7.90	-	8.12	-	-	8.10	8.08	-	8.12	-
Saturation pH				7.02	-	7.01	-	-	6.99	7.04	-	7.00	-
Langelier Index				0.88	-	1.11	-	-	1.11	1.04	-	1.12	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	285	-	301	-	-	298	280	-	288	-
Total Dissolved Solids	mg/L	500	20	302	-	368	-	-	326	358	-	306	-
Alkalinity (as CaCO3)	mg/L	30-500	5	244	-	234	-	-	251	237	-	249	-
Bicarbonate (as CaCO3)	mg/L	-	5	244	-	234	-	-	251	237	-	249	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	<5	-	-	<5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	<5	-	-	<5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.05	-	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Chloride	mg/L	250	0.2	19.80	-	37.90	-	-	24.3	41.20	-	20.20	
Nitrate as N	mg/L	10	0.1	6.31	8.28	7.77	7.09	7.80	6.72	7.18	6.34	6.76	7.99
Nitrite as N	mg/L	1	0.1	<0.05	-	<0.25	-	-	<0.10	<0.10	-	<0.05	<0.05
Bromide	mg/L	-	0.1	<0.05	-	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Sulphate	mg/L	500	0.2	14.5	-	22.8	-	-	16.8	20.1	-	14.1	-
Ortho Phosphate as P	mg/L	-	0.2	<0.10	-	<0.50	-	-	<0.20	<0.20	-	<0.10	-
Reactive Silica	mg/L	-	0.05	6.79	-	7.42	-	-	7.49	7.43	-	7.03	-
Ammonia as N	mg/L	-	0.02	<0.02	-	<0.02	-	-	<0.02	<0.02	-	<0.02	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	<0.05	-	-	<0.05	<0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	0.6	-	1.0	-	-	<0.5	0.6	-	0.7	-
Colour	TCU	5	5	<5	-	<5	-	-	<5	<5	-	<5	-
Turbidity	NTU	5	0.5	1.5	-	8.2	-	-	2.5	1.7	-	1.9	-
Calcium	mg/L	-	0.05	80.2	-	83.4	-	-	81.5	76.6	-	79.3	-
Magnesium	mg/L	-	0.05	20.5	-	22.6	-	-	23.0	21.6	-	21.9	-
Sodium	mg/L	200	0.05	7.24	-	15.80	-	-	9.66	16.00	-	8.93	-
Potassium	mg/L	-	0.05	1.02	-	1.13	-	-	0.91	0.90	-	0.91	-
Aluminum	mg/L	0.1	0.004	<0.004	-	<0.004	-	-	0.006	0.010	-	0.013	-
Antimony	mg/L	0.006	0.003	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Barium	mg/L	1	0.002	0.110	-	0.110	-	-	0.112	0.112	-	0.110	-
Beryllium	mg/L	-	0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	0.011	-	<0.010	-	-	0.011	<0.010	-	<0.010	-
Cadmium	mg/L	0.005	0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	0.004	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	<0.010	-	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	<0.0001	-	-	<0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Nickel	mg/L	-	0.003	<0.003	-	0.004	-	-	<0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	<0.004	-	-	<0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	0.154	-	0.184	-	-	0.153	0.155	-	0.162	-
Thallium	mg/L	-	0.006	<0.006	-	<0.006	-	-	<0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Tungsten	mg/L	-	0.01	<0.010	-	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	<0.002	-	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	0.019	-	0.018	-	-	0.026	0.016	-	0.024	-
Zirconium	mg/L	-	0.004	<0.004	-	<0.004	-	-	<0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	1.30	-	0.30	-	-	1.02	3.91	-	1.24	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	TW6						
			Sample Date	04/07/2015	06/29/2015	11/26/2015	04/01/2016	04/02/2016	03/10/2017	05/02/2017
			Lab sample ID	6430206	6701612	7237256	7471115	7471117	8245021	8358389
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**							
Electrical Conductivity	uS/cm		2	602	-	-	-	-	612	-
pH	pH Units	6.5 - 8.5	NA	8.14	-	-	-	-	8.10	-
Saturation pH				7.02	-	-	-	-	7.01	-
Langelier Index				1.12	-	-	-	-	1.09	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	283	-	-	-	-	288	-
Total Dissolved Solids	mg/L	500	20	314	-	-	-	-	308	-
Alkalinity (as CaCO3)	mg/L	30-500	5	245	-	-	-	-	245	-
Bicarbonate (as CaCO3)	mg/L	-	5	245	-	-	-	-	245	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	-	-	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	-	-	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.05	-	-	-	-	<0.05	-
Chloride	mg/L	250	0.2	24.3	-	-	-	-	21.80	-
Nitrate as N	mg/L	10	0.1	7.80	8.20	7.30	7.89	8.23	8.52	9.08
Nitrite as N	mg/L	1	0.1	<0.05	-	-	-	-	<0.05	<0.10
Bromide	mg/L	-	0.1	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L	500	0.2	15.3	-	-	-	-	13.5	-
Ortho Phosphate as P	mg/L	-	0.2	<0.10	-	-	-	-	<0.10	-
Reactive Silica	mg/L	-	0.05	6.87	-	-	-	-	7.01	-
Ammonia as N	mg/L	-	0.02	<0.02	-	-	-	-	<0.02	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	-	-	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	0.6	-	-	-	-	0.7	-
Colour	TCU	5	5	<5	-	-	-	-	<5	-
Turbidity	NTU	5	0.5	6.8	-	-	-	-	<0.5	-
Calcium	mg/L	-	0.05	79.7	-	-	-	-	79.9	-
Magnesium	mg/L	-	0.05	20.3	-	-	-	-	21.6	-
Sodium	mg/L	200	0.05	8.54	-	-	-	-	8.87	-
Potassium	mg/L	-	0.05	0.98	-	-	-	-	0.86	-
Aluminum	mg/L	0.1	0.004	<0.004	-	-	-	-	0.006	-
Antimony	mg/L	0.006	0.003	<0.003	-	-	-	-	<0.003	-
Arsenic	mg/L	0.025	0.003	<0.003	-	-	-	-	<0.003	-
Barium	mg/L	1	0.002	0.088	-	-	-	-	0.105	-
Beryllium	mg/L	-	0.001	<0.001	-	-	-	-	<0.001	-
Boron	mg/L	5	0.01	<0.010	-	-	-	-	<0.010	-
Cadmium	mg/L	0.005	0.001	<0.001	-	-	-	-	<0.001	-
Chromium	mg/L	0.05	0.003	0.008	-	-	-	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	-	-	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	-	-	-	<0.003	-
Iron	mg/L	0.3	0.01	<0.010	-	-	-	-	<0.010	-
Lead	mg/L	0.01	0.002	<0.002	-	-	-	-	<0.002	-
Manganese	mg/L	0.05	0.002	<0.002	-	-	-	-	<0.002	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	-	-	-	<0.0001	-
Molybdenum	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	-
Nickel	mg/L	-	0.003	<0.003	-	-	-	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	-	-	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	-
Strontium	mg/L	-	0.005	0.139	-	-	-	-	0.156	-
Thallium	mg/L	-	0.006	<0.006	-	-	-	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	-
Titanium	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	-
Tungsten	mg/L	-	0.01	<0.010	-	-	-	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	-	-	-	<0.002	-
Vanadium	mg/L	-	0.002	0.003	-	-	-	-	<0.002	-
Zinc	mg/L	5	0.005	0.014	-	-	-	-	0.017	-
Zirconium	mg/L	-	0.004	<0.004	-	-	-	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	3.3	-	-	-	-	1.84	-

Notes:
ODWS = Ontario Drinking Water Standards
RDL = Reportable Detection Limit
-' = No value available
Indicates exceedance of ODWS criteria
Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	TW7							
			Sample Date	02/19/2016	02/19/2016	03/08/2016	06/02/2016	09/15/2016	12/13/2016	03/10/2017	05/02/2017
			Lab sample ID	7395659	7395664	7430212	7607713	7853182	8091592	8245027	8358390
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**								
Electrical Conductivity	uS/cm		2	587	-	-	585	606	-	592	-
pH	pH Units	6.5 - 8.5	NA	7.88	-	-	8.07	8.14	-	8.11	-
Saturation pH				6.99	-	-	6.96	7.01	-	6.98	-
Langelier Index				0.89	-	-	1.11	1.13	-	1.13	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	280	-	-	303	284	-	291	-
Total Dissolved Solids	mg/L	500	20	354	-	-	326	334	-	306	-
Alkalinity (as CaCO3)	mg/L	30-500	5	262	-	-	261	247	-	260	-
Bicarbonate (as CaCO3)	mg/L	-	5	262	-	-	261	247	-	260	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Chloride	mg/L	250	0.2	18.3	-	-	15.2	17.4	-	12.5	-
Nitrate as N	mg/L	10	0.1	8.52	8.00	7.27	6.32	6.97	5.96	5.77	6.87
Nitrite as N	mg/L	1	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	<0.05
Bromide	mg/L	-	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Sulphate	mg/L	500	0.2	20.6	-	-	16.4	18.5	-	14.4	-
Ortho Phosphate as P	mg/L	-	0.2	<0.50	-	-	<0.20	<0.20	-	<0.10	-
Reactive Silica	mg/L	-	0.05	7.03	-	-	7.14	7.12	-	6.72	-
Ammonia as N	mg/L	-	0.02	0.1	-	-	<0.02	<0.02	-	0.03	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	0.6	-	-	0.5	1.0	-	0.6	-
Colour	TCU	5	5	<5	-	-	<5	<5	-	<5	-
Turbidity	NTU	5	0.5	3.9	-	-	3.7	4.8	-	1.8	-
Calcium	mg/L	-	0.05	77.2	-	-	83.2	77.5	-	80.0	-
Magnesium	mg/L	-	0.05	21.2	-	-	23.1	21.9	-	22.2	-
Sodium	mg/L	200	0.05	5.60	-	-	5.15	6.44	-	4.86	-
Potassium	mg/L	-	0.05	1.00	-	-	0.89	0.87	-	0.92	-
Aluminum	mg/L	0.1	0.004	< 0.004	-	-	0.009	0.012	-	0.009	-
Antimony	mg/L	0.006	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Barium	mg/L	1	0.002	0.093	-	-	0.101	0.099	-	0.109	-
Beryllium	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	<0.010	-	-	0.012	<0.010	-	0.010	-
Cadmium	mg/L	0.005	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	-	<0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Nickel	mg/L	-	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	0.106	-	-	0.132	0.124	-	0.136	-
Thallium	mg/L	-	0.006	<0.006	-	-	<0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Tungsten	mg/L	-	0.01	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	0.017	-	-	0.035	0.020	-	0.029	-
Zirconium	mg/L	-	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	7.26	-	-	1.11	2.78	-	1.69	-

Notes:
ODWS = Ontario Drinking Water Standards
RDL = Reportable Detection Limit
-' = No value available
Indicates exceedance of ODWS criteria
Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	TW8							
			Sample Date	**02/23/2016**	**02/23/2016**	**03/07/2016**	**06/02/2016**	**09/15/2016**	**12/13/2016**	**03/10/2017**	**05/02/2017**
			Lab sample ID	**7401690**	**7401689**	**7426611**	**7607726**	**7853189**	**8091595**	**8245033**	**8358391**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**								
Electrical Conductivity	uS/cm		2	606	-	-	627	598	-	604	-
pH	pH Units	6.5 - 8.5	NA	8.02	-	-	8.17	8.08	-	8.12	-
Saturation pH				6.96	-	-	6.95	7.01	-	6.98	-
Langelier Index				1.06	-	-	1.22	1.07	-	1.14	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	315	-	-	324	296	-	301	-
Total Dissolved Solids	mg/L	500	20	368	-	-	358	364	-	312	-
Alkalinity (as CaCO3)	mg/L	30-500	5	254	-	-	251	238	-	251	-
Bicarbonate (as CaCO3)	mg/L	-	5	254	-	-	251	238	-	251	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Chloride	mg/L	250	0.2	10.4	-	-	11.0	9.46		9.54	-
Nitrate as N	mg/L	10	0.1	8.25	7.93	7.76	5.35	7.85	7.41	6.68	5.15
Nitrite as N	mg/L	1	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	<0.05
Bromide	mg/L	-	0.1	<0.25	-	-	<0.10	<0.10	-	<0.05	-
Sulphate	mg/L	500	0.2	49.1	-	-	58.0	43.5	-	31.1	-
Ortho Phosphate as P	mg/L	-	0.2	<0.50	-	-	<0.20	<0.20	-	<0.10	-
Reactive Silica	mg/L	-	0.05	7.60	-	-	7.75	7.49	-	7.18	-
Ammonia as N	mg/L	-	0.02	<0.02	-	-	<0.02	<0.02	-	0.15	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	-	0.05	0.06	-	0.08	-
Total Organic Carbon	mg/L	-	0.5	0.6	-	-	0.7	1.5	-	1.1	-
Colour	TCU	5	5	<5	-	-	<5	<5	-	<5	-
Turbidity	NTU	5	0.5	21.1	-	-	53.6	113	-	113	-
Calcium	mg/L	-	0.05	85.6	-	-	88.3	80.6	-	81.6	-
Magnesium	mg/L	-	0.05	24.7	-	-	25.1	22.9	-	23.6	-
Sodium	mg/L	200	0.05	4.69	-	-	4.72	3.22	-	3.67	-
Potassium	mg/L	-	0.05	1.30	-	-	1.34	1.17	-	1.12	-
Aluminum	mg/L	0.1	0.004	<0.004	-	-	0.011	0.011	-	<0.004	-
Antimony	mg/L	0.006	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	<0.003	-	-	<0.003	0.003	-	<0.003	-
Barium	mg/L	1	0.002	0.110	-	-	0.087	0.085	-	0.099	-
Beryllium	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	0.013	-	-	0.025	0.022	-	0.011	-
Cadmium	mg/L	0.005	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	0.007	-	-	0.005	0.005	-	0.002	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	-	<0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Nickel	mg/L	-	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	0.44	-	-	1.42	1.66	-	0.55	-
Thallium	mg/L	-	0.006	<0.006	-	-	<0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Tungsten	mg/L	-	0.01	<0.010	-	-	<0.010	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	0.016	-	-	0.023	0.024	-	0.017	-
Zirconium	mg/L	-	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	3.27	-	-	1.52	3.31	-	1.59	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	**TW9**							**TW10**		
			Sample Date	**02/26/2016**	**02/26/2016**	**03/08/2016**	**06/02/2016**	**09/15/2016**	**12/13/2016**	**03/10/2017**	**03/10/2017**	**02/25/2016**	**05/02/2017**
			Lab sample ID	**7410959**	**7410958**	**7430214**	**7607733**	**7853195**	**8091593**	**8245039**	**8245045**	**7408001**	**8358393**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**										
Electrical Conductivity	uS/cm		2	610	-	-	601	594	-	620	430	-	-
pH	pH Units	6.5 - 8.5	NA	8.02	-	-	8.10	8.15	-	8.10	8.06	-	-
Saturation pH				6.94	-	-	6.95	7.00	-	6.90	7.26	-	-
Langelier Index				1.08	-	-	1.15	1.15	-	1.20	0.80	-	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	310	-	-	314	289	-	310	202	-	-
Total Dissolved Solids	mg/L	500	20	332	-	-	334	332	-	326	216	-	-
Alkalinity (as CaCO3)	mg/L	30-500	5	265	-	-	257	249	-	294	182	-	-
Bicarbonate (as CaCO3)	mg/L	-	5	265	-	-	257	249	-	294	182	-	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	<5	-	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	-	<5	<5	-	<5	<5	-	-
Fluoride	mg/L	1.5	0.1	<0.05	-	-	<0.10	<0.05	-	<0.05	<0.05	-	-
Chloride	mg/L	250	0.2	9.37	-	-	9.32	9.76	-	8.84	14.40	-	-
Nitrate as N	mg/L	10	0.1	3.26	3.65	3.41	2.99	2.17	1.51	2.68	1.68	2.41	0.85
Nitrite as N	mg/L	1	0.1	<0.05	-	-	<0.10	<0.05	-	<0.05	<0.05	-	<0.05
Bromide	mg/L	-	0.1	<0.05	-	-	<0.10	<0.05	-	<0.05	<0.05	-	-
Sulphate	mg/L	500	0.2	50.0	-	-	50.5	45.3	-	50.1	14.3	-	-
Ortho Phosphate as P	mg/L	-	0.2	<0.10	-	-	<0.20	<0.10	-	<0.10	<0.10	-	-
Reactive Silica	mg/L	-	0.05	8.72	-	-	8.60	8.77	-	8.42	4.56	-	-
Ammonia as N	mg/L	-	0.02	<0.02	-	-	<0.02	<0.02	-	0.09	0.03	-	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	0.06	-	-
Total Organic Carbon	mg/L	-	0.5	0.6	-	-	0.6	0.9	-	0.8	2.1	-	-
Colour	TCU	5	5	<5	-	-	<5	<5	-	<5	<5	-	-
Turbidity	NTU	5	0.5	10.4	-	-	3.5	2.4	-	2.0	64.8	-	-
Calcium	mg/L	-	0.05	82.4	-	-	82.5	76.2	-	81.5	54.3	-	-
Magnesium	mg/L	-	0.05	25.4	-	-	26.2	23.9	-	25.8	16.2	-	-
Sodium	mg/L	200	0.05	3.99	-	-	3.91	4.03	-	4.17	5.76	-	-
Potassium	mg/L	-	0.05	1.19	-	-	0.98	0.89	-	0.99	1.21	-	-
Aluminum	mg/L	0.1	0.004	<0.004	-	-	<0.004	0.01	-	0.009	0.014	-	-
Antimony	mg/L	0.006	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	<0.003	-	-
Arsenic	mg/L	0.025	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	<0.003	-	-
Barium	mg/L	1	0.002	0.070	-	-	0.069	0.074	-	0.074	0.036	-	-
Beryllium	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	<0.001	-	-
Boron	mg/L	5	0.01	0.014	-	-	0.013	0.010	-	0.012	<0.010	-	-
Cadmium	mg/L	0.005	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	<0.001	-	-
Chromium	mg/L	0.05	0.003	0.005	-	-	<0.003	<0.003	-	<0.003	<0.003	-	-
Cobalt	mg/L	-	0.001	<0.001	-	-	<0.001	<0.001	-	<0.001	<0.001	-	-
Copper	mg/L	1	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	<0.003	-	-
Iron	mg/L	0.3	0.01	< 0.010	-	-	<0.010	<0.010	-	<0.010	<0.010	-	-
Lead	mg/L	0.01	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Manganese	mg/L	0.05	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	0.009	-	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	-	<0.0001	<0.0001	-	<0.0001	<0.0001	-	-
Molybdenum	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Nickel	mg/L	-	0.003	<0.003	-	-	<0.003	<0.003	-	<0.003	<0.003	-	-
Selenium	mg/L	0.01	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	<0.004	-	-
Silver	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Strontium	mg/L	-	0.005	0.320	-	-	0.296	0.279	-	0.339	0.083	-	-
Thallium	mg/L	-	0.006	<0.006	-	-	<0.006	<0.006	-	<0.006	<0.006	-	-
Tin	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Titanium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Tungsten	mg/L	-	0.01	<0.010	-	-	<0.010	<0.010	-	<0.010	<0.010	-	-
Uranium	mg/L	0.02	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Vanadium	mg/L	-	0.002	<0.002	-	-	<0.002	<0.002	-	<0.002	<0.002	-	-
Zinc	mg/L	5	0.005	0.022	-	-	0.031	0.028	-	0.037	0.016	-	-
Zirconium	mg/L	-	0.004	<0.004	-	-	<0.004	<0.004	-	<0.004	<0.004	-	-
% Difference/ Ion Balance	%	-	NA	3.26	-	-	1.52	3.13	-	6.98	1.56	-	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	TW11									
			Sample Date	**02/29/2016**	**02/29/2016**	**03/30/2016**	**03/07/2016**	**03/31/2016**	**06/02/2016**	**09/15/2016**	**12/13/2016**	**03/10/2017**	**05/02/2017**
			Lab sample ID	**7413129**	**7413121**	**7471112**	**7426610**	**7471114**	**7607739**	**7853203**	**8091596**	**8245052**	**8358394**
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**										
Electrical Conductivity	uS/cm		2	607	-	-	-	-	572	589	-	568	-
pH	pH Units	6.5 - 8.5	NA	8.00	-	-	-	-	8.08	8.20	-	8.16	-
Saturation pH				6.95	-	-	-	-	6.95	6.99	-	6.99	-
Langelier Index				1.05	-	-	-	-	1.13	1.21	-	1.17	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	303	-	-	-	-	289	286	-	278	-
Total Dissolved Solids	mg/L	500	20	326	-	-	-	-	300	314	-	286	-
Alkalinity (as CaCO3)	mg/L	30-500	5	267	-	-	-	-	262	258	-	249	-
Bicarbonate (as CaCO3)	mg/L	-	5	267	-	-	-	-	262	258	-	249	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	-	-	-	<5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	-	-	-	<5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.10	-	-	-	-	<0.10	<0.05	-	<0.05	-
Chloride	mg/L	250	0.2	12.8	-	-	-	-	18.4	12.7	-	13.9	-
Nitrate as N	mg/L	10	0.1	4.58	4.61	3.46	5.03	3.37	3.00	4.08	3.58	3.94	3.00
Nitrite as N	mg/L	1	0.1	<0.10	-	-	-	-	<0.10	<0.05	-	<0.05	<0.05
Bromide	mg/L	-	0.1	<0.10	-	-	-	-	<0.10	<0.05	-	<0.05	-
Sulphate	mg/L	500	0.2	21.3	-	-	-	-	17.3	21.3	-	19.1	-
Ortho Phosphate as P	mg/L	-	0.2	<0.20	-	-	-	-	<0.20	<0.10	-	<0.10	-
Reactive Silica	mg/L	-	0.05	8.05	-	-	-	-	7.67	7.88	-	7.19	-
Ammonia as N	mg/L	-	0.02	<0.02	-	-	-	-	<0.02	<0.02	-	<0.02	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	-	-	-	<0.05	<0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	0.7	-	-	-	-	1.1	0.8	-	1.6	-
Colour	TCU	5	5	<5	-	-	-	-	<5	<5	-	<5	-
Turbidity	NTU	5	0.5	2.9	-	-	-	-	10.2	4.9	-	7.4	-
Calcium	mg/L	-	0.05	81.7	-	-	-	-	78.3	77.5	-	75.0	-
Magnesium	mg/L	-	0.05	24.0	-	-	-	-	22.8	22.4	-	22.0	-
Sodium	mg/L	200	0.05	5.39	-	-	-	-	7.26	5.49	-	5.82	-
Potassium	mg/L	-	0.05	1.01	-	-	-	-	0.99	0.97	-	0.98	-
Aluminum	mg/L	0.1	0.004	<0.004	-	-	-	-	<0.004	0.013	-	0.011	-
Antimony	mg/L	0.006	0.003	<0.003	-	-	-	-	<0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	<0.003	-	-	-	-	<0.003	<0.003	-	<0.003	-
Barium	mg/L	1	0.002	0.060	-	-	-	-	0.056	0.059	-	0.061	-
Beryllium	mg/L	-	0.001	<0.001	-	-	-	-	<0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	<0.010	-	-	-	-	0.010	<0.010	-	0.010	-
Cadmium	mg/L	0.005	0.001	<0.001	-	-	-	-	<0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	< 0.003	-	-	-	-	<0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	-	-	-	<0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	-	-	-	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	< 0.010	-	-	-	-	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	-	-	-	<0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Nickel	mg/L	-	0.003	<0.003	-	-	-	-	<0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	-	-	-	<0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	0.132	-	-	-	-	0.123	0.128	-	0.129	-
Thallium	mg/L	-	0.006	<0.006	-	-	-	-	<0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Tungsten	mg/L	-	0.01	<0.010	-	-	-	-	<0.010	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	0.013	-	-	-	-	0.024	0.016	-	0.015	-
Zirconium	mg/L	-	0.004	<0.004	-	-	-	-	<0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	1.24	-	-	-	-	1.67	2.28	-	1.85	-

Notes:
ODWS = Ontario Drinking Water Standards
RDL = Reportable Detection Limit
-' = No value available
Indicates exceedance of ODWS criteria
Samples 7607710-7607739 required dilution prior to analysis for Anions due

			Well ID	TW12			
			Sample Date	03/01/2016	03/01/2016	03/10/2017	05/02/2017
			Lab sample ID	7417874	7417866	8245058	8358397
Sample Parameter	**Unit**	**ODWS Criteria**	**RDL**				
Electrical Conductivity	uS/cm		2	1740	-	1730	-
pH	pH Units	6.5 - 8.5	NA	7.92	-	7.95	-
Saturation pH				6.6	-	6.61	-
Langelier Index				1.32	-	1.34	-
Total Hardness (as CaCO3)	mg/L	80-100	0.5	1010	-	1020	-
Total Dissolved Solids	mg/L	500	20	1480	-	1400	-
Alkalinity (as CaCO3)	mg/L	30-500	5	195	-	192	-
Bicarbonate (as CaCO3)	mg/L	-	5	195	-	192	-
Carbonate (as CaCO3)	mg/L	-	5	<5	-	<5	-
Hydroxide (as CaCO3)	mg/L	-	5	<5	-	<5	-
Fluoride	mg/L	1.5	0.1	<0.25	-	<0.25	-
Chloride	mg/L	250	0.2	2.3	-	2.11	-
Nitrate as N	mg/L	10	0.1	<0.25	<0.25	<0.25	<0.10
Nitrite as N	mg/L	1	0.1	<0.25	-	<0.25	<0.10
Bromide	mg/L	-	0.1	<0.25	-	<0.25	-
Sulphate	mg/L	500	0.2	875	-	896	-
Ortho Phosphate as P	mg/L	-	0.2	<0.50	-	<0.50	-
Reactive Silica	mg/L	-	0.05	14.2	-	13.1	-
Ammonia as N	mg/L	-	0.02	0.08	-	<0.02	-
Total Phosphorus	mg/L	-	0.05	<0.05	-	<0.05	-
Total Organic Carbon	mg/L	-	0.5	<0.5	-	0.6	-
Colour	TCU	5	5	<5	-	<5	-
Turbidity	NTU	5	0.5	5	-	8.6	-
Calcium	mg/L	-	0.05	320	-	318	-
Magnesium	mg/L	-	0.05	51.6	-	54.3	-
Sodium	mg/L	200	0.05	7.51	-	8.43	-
Potassium	mg/L	-	0.05	1.91	-	1.95	-
Aluminum	mg/L	0.1	0.004	<0.004	-	0.008	-
Antimony	mg/L	0.006	0.003	<0.003	-	<0.003	-
Arsenic	mg/L	0.025	0.003	0.013	-	0.013	-
Barium	mg/L	1	0.002	0.005	-	0.012	-
Beryllium	mg/L	-	0.001	<0.001	-	<0.001	-
Boron	mg/L	5	0.01	0.055	-	0.058	-
Cadmium	mg/L	0.005	0.001	<0.001	-	<0.001	-
Chromium	mg/L	0.05	0.003	<0.003	-	<0.003	-
Cobalt	mg/L	-	0.001	<0.001	-	<0.001	-
Copper	mg/L	1	0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.01	0.401	-	0.665	-
Lead	mg/L	0.01	0.002	<0.002	-	<0.002	-
Manganese	mg/L	0.05	0.002	0.026	-	0.030	-
Mercury	mg/L	0.001	0.0001	<0.0001	-	<0.0001	-
Molybdenum	mg/L	-	0.002	0.004	-	0.005	-
Nickel	mg/L	-	0.003	<0.003	-	<0.003	-
Selenium	mg/L	0.01	0.004	<0.004	-	<0.004	-
Silver	mg/L	-	0.002	<0.002	-	<0.002	-
Strontium	mg/L	-	0.005	3.52	-	3.86	-
Thallium	mg/L	-	0.006	<0.006	-	<0.006	-
Tin	mg/L	-	0.002	<0.002	-	<0.002	-
Titanium	mg/L	-	0.002	0.012	-	0.013	-
Tungsten	mg/L	-	0.01	<0.010	-	<0.010	-
Uranium	mg/L	0.02	0.002	<0.002	-	<0.002	-
Vanadium	mg/L	-	0.002	<0.002	-	<0.002	-
Zinc	mg/L	5	0.005	0.036	-	0.046	-
Zirconium	mg/L	-	0.004	<0.004	-	<0.004	-
% Difference/ Ion Balance	%	-	NA	3.66	-	4.11	-

Notes:

ODWS = Ontario Drinking Water Standards

RDL = Reportable Detection Limit

-' = No value available

🟨 Indicates exceedance of ODWS criteria

Samples 7607710-7607739 required dilution prior to analysis for Anions due

Appendix G

Certificates of Analysis

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON   N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 14W924797

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Dec 08, 2014

PAGES (INCLUDING COVER): 4

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 14W924797

PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

SAMPLING SITE:

ATTENTION TO: Dwight Smikle

SAMPLED BY:Sean Quinlan

Nitrate (Water)

DATE RECEIVED: 2014-12-05

DATE REPORTED: 2014-12-08

			SAMPLE DESCRIPTION:	PW2	OW1
			SAMPLE TYPE:	Water	Water
			DATE SAMPLED:	12/4/2014	12/4/2014
Parameter	Unit	G / S	RDL	6152997	6153004
Nitrate as N	mg/L		0.05	6.51	0.89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 14W924797

ATTENTION TO: Dwight Smikle

SAMPLED BY:Sean Quinlan

Water Analysis

RPT Date: Dec 08, 2014			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	6150673		<0.5	<0.5	0.0%	< 0.05	95%	90%	110%	99%	90%	110%	104%	80%	120%

Certified By:

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 14W924797

ATTENTION TO: Dwight Smikle

SAMPLED BY:Sean Quinlan

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

2.0, 2.1, 2.2

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2
www.agatlabs.com · webearth.agatlabs.com
P: 905.712.5100 · F: 905.712.5122

Laboratory Use Only
Arrival Temperature: 3.1/2.3/2.9
AGAT WO #: 14W924797
Lab Temperature:
Notes:

Chain of Custody Record

Client Information

Company: BURNSIDE
Contact: DWIGHT SMIKLE
Address: 292 Speedvale Ave
Guelph, ON
Phone: 823-4995 Fax: 836-5477
Project: 300033273 PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements

☐ Regulation 153/04 (reg. 511 Amend.)
Table ______ Indicate one
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (check one)
☐ Coarse ☐ Fine

☐ Sewer Use
Region ______ Indicate one
☐ Sanitary
☐ Storm

☐ Regulation 558
☐ CCME
☐ Other (specify)
☐ Prov. Water Quality Objectives (PWQO)
☐ None

Turnaround Time Required (TAT) Required*

Regular TAT
☐ 5 to 7 Working Days
Rush TAT (please provide prior notification)
Rush Surcharges Apply
☐ 3 Working Days
☐ 2 Working Days
☒ 1 Working Day
OR
Date Required (Rush surcharges may apply): Morning of Dec 8th
*TAT is exclusive of weekends and statutory holidays

Invoice To

Same: Yes ☑ No ☐
Company:
Contact:
Address:

Is this a drinking water sample?
(potable water intended for human consumption)
☐ Yes ☒ No
If "Yes", please use the **Drinking Water Chain of Custody Form**

Is this submission for a **Record of Site Condition?**
☐ Yes ☒ No

Legend Matrix

GW Ground Water **O** Oil
SW Surface Water **P** Paint
SD Sediment **S** Soil

Report Information – reports to be sent to:

1. Name: Dwight Smikle
Email: Dwight.Smikle@rjburnside.com
2. Name:
Email:

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☐ Cr+6- ☐ SAR ☐ NO_3/NO_2 ☐ N-Total ☐ Hg ☐ pH	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	VOC: ☐ VOC ☐ THM ☐ BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate								
FW2	4 Dec 14	10:45	GW	1																	✓								
OW1	4 Dec 14	11:15	GW	1																	✓								

Samples Relinquished By (Print Name and Sign): SEAN QUINLAN S Quin
Date/Time: 4 DEC 14
Samples Received By (Print Name and Sign): Ranji Singh
Date/Time: 4 Dec 14

Samples Relinquished By (Print Name and Sign):
Date/Time:
Samples Received By (Print Name and Sign): N. Desnely
Date/Time: Dec 5 9:46

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
Nº: 46237

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON   N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 15T047356

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Dec 04, 2015

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 15T047356
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:MV

Nitrate/Nitrite (Water)

DATE RECEIVED: 2015-11-27

DATE REPORTED: 2015-12-04

			SAMPLE DESCRIPTION:	TW5	TW6	PW2	TW2
			SAMPLE TYPE:	Water	Water	Water	Water
			DATE SAMPLED:	11/26/2015	11/26/2015	11/26/2015	11/26/2015
Parameter	Unit	G / S	RDL	7237247	7237256	7237257	7237258
Nitrate as N	mg/L		0.05	7.09	7.30	2.12	0.62
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: Amanjot Bhela

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 15T047356

ATTENTION TO: Dwight Smikle

SAMPLED BY:MV

Water Analysis

RPT Date: Dec 04, 2015

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Nitrate/Nitrite (Water)															
Nitrate as N	7238301		<0.25	<0.25	NA	< 0.05	90%	90%	110%	92%	90%	110%	96%	80%	120%
Nitrite as N	7238301		<0.25	<0.25	NA	< 0.05	NA	90%	110%	106%	90%	110%	91%	80%	120%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15T047356

PROJECT: 300033273

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:MV

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 15T047356

Cooler Quantity: 1 large

Arrival Temperatures: 4.2 | 3.8 | 3.5
2.7 | 3 | 3.2

Custody Seal Intact: ☐Yes ☐No ~~☐N/A~~

Notes:

Report Information:

Company: RJ Burnside
Contact: Dwight Smikle
Address: 292 Speedvale Ave. West, Unit 20
Guelph ONT N1H 1C4
Phone: 519-823-4995 Fax:
Reports to be sent to:
1. Email: Dwight.Smikle@rjburnside.com
2. Email:

Project Information:

Project: 300033273
Site Location: Bel Fountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04
Table ______ *Indicate One*
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture (Check One)
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ______ *Indicate One*

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
______ *Indicate One*

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on Certificate of Analysis
☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) **ORPs:** ☐B-HWS ☐Cl ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☒NO$_3$/NO$_2$ ☐Total N ☐Hg ☐pH ☐SAR	**Nutrients:** ☐TP ☐NH$_3$ ☐TKN ☐NO$_3$ ☐NO$_2$ ☒NO$_3$/NO$_2$	**Volatiles:** ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
TW5	11/26/15	11:00	1	GW						✓	✓									
TW6	↓	12:00	1	GW						✓	✓									
PW2		12:45	1	GW						✓	✓									
TW2		13:45	1	GW						✓	✓									

Samples Relinquished By (Print Name and Sign): Matt Valeriote / Matt V	Date	Time	Samples Received By (Print Name and Sign):	Date 2015-11-27	Time 12:46	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date 2015-11-27	Time 3:37	Samples Received By (Print Name and Sign):	Date	Time	Nº: T 018756

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Document ID: DIV-78-1511.010

Date Issued: November 2, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON   N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: Belfountain

AGAT WORK ORDER: 15T990997

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Jul 08, 2015

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 15T990997
PROJECT: Belfountain

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:Sean Quinlan

Nitrate (Water)

DATE RECEIVED: 2015-06-30

DATE REPORTED: 2015-07-08

			SAMPLE DESCRIPTION:	TW2	TW6	OW1	TW5	PW2
			SAMPLE TYPE:	Water	Water	Water	Water	Water
			DATE SAMPLED:	6/29/2015	6/29/2015	6/29/2015	6/29/2015	6/29/2015
Parameter	Unit	G / S	RDL	6701611	6701612	6701613	6701614	6701615
Nitrate as N	mg/L		0.05	0.70	8.20	1.89	8.28	4.15

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

DR. ANTHONY R. K. DAPAAH

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: Belfountain
SAMPLING SITE:

AGAT WORK ORDER: 15T990997
ATTENTION TO: Dwight Smikle
SAMPLED BY:Sean Quinlan

Water Analysis

RPT Date: Jul 08, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	6698272		14.4	14.3	0.7%	< 0.05	96%	90%	110%	107%	90%	110%	106%	80%	120%

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
DR. ANTHONY R. K. DAPAAH
CHEMIST

Certified By: Tony Dapaah

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 15T990997
PROJECT: Belfountain
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:Sean Quinlan

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
www.agatlabs.com webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 15T990997

Cooler Quantity:

Arrival Temperatures: 8.7 | 8.9 | 8.9
8.7 | 7.9 | 7.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: BURNSIDE
Contact: DWIGHT SMIKLE
Address: 292 Speedvale Ave
Guelph ON
Phone: 823-4995 Fax:
Reports to be sent to:
1. Email: dwight.smikle@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04
Table ______ Indicate One
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture (Check One)
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ______ Indicate One

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
______ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: Belfountain
Site Location: 300033273
Sampled By: SEAN QUINLAN
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐B-HWS ☐Cl ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate								
TW2	29 JUNE 15	12:00	1	GW																	✓								
TW6		9:20	1																		✓								
BW1		10:20	1																		✓								
TW5		10:00	1																		✓								
PW2		11:00	1																		✓								

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	
SEAN QUINLAN	29JUNE15			Jun30/15	11.40	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T 009718
				Jun30/15	3.32	

Document ID: DIV-78-1511.008

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Date Issued: Jan 8, 2015

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 15W020701
PROJECT: Belfountain

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2015-09-18
DATE REPORTED: 2015-09-28

			SAMPLE DESCRIPTION:	TW2	TW6	TW5	PW2
			SAMPLE TYPE:	Water	Water	Water	Water
			DATE SAMPLED:	9/17/2015	9/17/2015	9/17/2015	9/17/2015
Parameter	Unit	G / S	RDL	6988471	6988476	6988482	6988488
Electrical Conductivity	uS/cm		2	561	661	655	596
pH	pH Units		NA	8.14	8.11	8.12	8.16
Saturation pH				6.96	7.01	7.01	6.99
Langelier Index				1.18	1.10	1.11	1.17
Total Hardness (as CaCO3)	mg/L		0.5	299	302	301	295
Total Dissolved Solids	mg/L		20	308	356	368	330
Alkalinity (as CaCO3)	mg/L		5	263	235	234	251
Bicarbonate (as CaCO3)	mg/L		5	263	235	234	251
Carbonate (as CaCO3)	mg/L		5	<5	<5	<5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	<5	<5	<5
Fluoride	mg/L		0.25	<0.25	<0.25	<0.25	<0.25
Chloride	mg/L		0.50	6.85	38.1	37.9	22.9
Nitrate as N	mg/L		0.25	1.00	7.48	7.77	2.75
Nitrite as N	mg/L		0.25	<0.25	<0.25	<0.25	<0.25
Bromide	mg/L		0.25	<0.25	<0.25	<0.25	<0.25
Sulphate	mg/L		0.50	23.5	23.2	22.8	22.0
Ortho Phosphate as P	mg/L		0.50	<0.50	<0.50	<0.50	<0.50
Reactive Silica	mg/L		0.05	11.5	7.07	7.42	8.45
Ammonia as N	mg/L		0.02	<0.02	<0.02	<0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05	<0.05	<0.05	<0.05
Total Organic Carbon	mg/L		0.5	1.1	0.6	1.0	0.7
Colour	TCU		5	<5	<5	<5	<5
Turbidity	NTU		0.5	4.3	1.1	8.2	1.2
Calcium	mg/L		0.05	79.5	83.1	83.4	77.6
Magnesium	mg/L		0.05	24.3	23.0	22.6	24.7
Sodium	mg/L		0.05	3.47	16.5	15.8	9.37
Potassium	mg/L		0.05	1.12	0.99	1.13	0.84
Aluminum	mg/L		0.004	<0.004	<0.004	<0.004	<0.004
Antimony	mg/L		0.003	<0.003	<0.003	<0.003	<0.003
Arsenic	mg/L		0.003	<0.003	<0.003	<0.003	<0.003

Certified By:

DR. ANTHONY R. K. DAPAAH

Certificate of Analysis

AGAT WORK ORDER: 15W020701
PROJECT: Belfountain

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2015-09-18

DATE REPORTED: 2015-09-28

			SAMPLE DESCRIPTION:	TW2	TW6	TW5	PW2
			SAMPLE TYPE:	Water	Water	Water	Water
			DATE SAMPLED:	9/17/2015	9/17/2015	9/17/2015	9/17/2015
Parameter	Unit	G / S	RDL	6988471	6988476	6988482	6988488
Barium	mg/L		0.002	0.088	0.107	0.110	0.050
Beryllium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L		0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L		0.003	<0.003	<0.003	<0.003	<0.003
Cobalt	mg/L		0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L		0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L		0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Manganese	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Mercury	mg/L		0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Nickel	mg/L		0.003	0.004	0.004	0.004	0.004
Selenium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004
Silver	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Strontium	mg/L		0.005	0.128	0.193	0.184	0.126
Thallium	mg/L		0.006	<0.006	<0.006	<0.006	<0.006
Tin	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Titanium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Tungsten	mg/L		0.010	<0.010	<0.010	<0.010	<0.010
Uranium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Vanadium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L		0.005	0.010	0.018	0.018	0.021
Zirconium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004
% Difference/ Ion Balance	%		NA	1.09	0.0657	0.298	0.104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

CHARTERED DR. ANTHONY R. K. DAPAAH CHEMIST

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15W020701

PROJECT: Belfountain

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: Sep 28, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment															
Electrical Conductivity	6988394		576	577	0.2%	< 2	100%	80%	120%	NA			NA		
pH	6988394		8.14	8.07	0.9%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	6993029		198	196	1.0%	< 20	100%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	6988394		201	201	0.0%	< 5	96%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	6988394		201	201	0.0%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	6988394		<5	<5	0.0%	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	6988394		<5	<5	0.0%	< 5	NA			NA			NA		
Fluoride	6988476	6988476	<0.25	<0.25	0.0%	< 0.05	105%	90%	110%	107%	90%	110%	101%	80%	120%
Chloride	6988476	6988476	38.1	39.3	3.1%	< 0.10	96%	90%	110%	103%	90%	110%	104%	80%	120%
Nitrate as N	6988476	6988476	7.48	7.63	2.0%	< 0.05	93%	90%	110%	104%	90%	110%	105%	80%	120%
Nitrite as N	6988476	6988476	<0.25	<0.25	0.0%	< 0.05	NA	90%	110%	100%	90%	110%	98%	80%	120%
Bromide	6988476	6988476	<0.25	<0.25	0.0%	< 0.05	109%	90%	110%	101%	90%	110%	98%	80%	120%
Sulphate	6988476	6988476	23.2	23.7	2.1%	< 0.10	108%	90%	110%	104%	90%	110%	103%	80%	120%
Ortho Phosphate as P	6988476	6988476	<0.50	<0.50	0.0%	< 0.10	102%	90%	110%	96%	90%	110%	99%	80%	120%
Reactive Silica	6970809		10.6	10.6	0.0%	< 0.05	98%	90%	110%	101%	90%	110%	89%	80%	120%
Ammonia as N	6984408		<0.02	<0.02	0.0%	< 0.02	102%	90%	110%	103%	90%	110%	99%	80%	120%
Total Phosphorus	6985416		0.98	1.00	2.0%	< 0.05	96%	80%	120%	93%	90%	110%	97%	70%	130%
Total Organic Carbon	6985404		15.5	16.0	3.2%	< 0.5	93%	90%	110%	108%	90%	110%	83%	80%	120%
Colour	6984708		126	126	0.0%	< 5	103%	90%	110%	NA			NA		
Turbidity	6988488	6988488	1.2	1.3	8.0%	< 0.5	94%	90%	110%	NA			NA		
Calcium	6985382		57.8	58.8	1.7%	< 0.05	105%	90%	110%	101%	90%	110%	103%	70%	130%
Magnesium	6985382		31.4	31.8	1.3%	< 0.05	102%	90%	110%	98%	90%	110%	100%	70%	130%
Sodium	6985382		14.8	14.7	0.7%	< 0.05	104%	90%	110%	101%	90%	110%	104%	70%	130%
Potassium	6985382		5.51	5.60	1.6%	< 0.05	104%	90%	110%	101%	90%	110%	107%	70%	130%
Aluminum	6987565		0.006	0.006	0.0%	< 0.004	103%	90%	110%	109%	90%	110%	103%	70%	130%
Antimony	6987565		<0.003	<0.003	0.0%	< 0.003	108%	90%	110%	105%	90%	110%	106%	70%	130%
Arsenic	6987565		<0.003	<0.003	0.0%	< 0.003	107%	90%	110%	110%	90%	110%	113%	70%	130%
Barium	6987565		0.120	0.121	0.8%	< 0.002	106%	90%	110%	107%	90%	110%	104%	70%	130%
Beryllium	6987565		<0.001	<0.001	0.0%	< 0.001	103%	90%	110%	108%	90%	110%	106%	70%	130%
Boron	6987565		0.146	0.143	2.1%	< 0.010	104%	90%	110%	108%	90%	110%	100%	70%	130%
Cadmium	6987565		<0.001	<0.001	0.0%	< 0.001	101%	90%	110%	104%	90%	110%	102%	70%	130%
Chromium	6987565		<0.003	<0.003	0.0%	< 0.003	103%	90%	110%	109%	90%	110%	100%	70%	130%
Cobalt	6987565		<0.001	<0.001	0.0%	< 0.001	103%	90%	110%	107%	90%	110%	102%	70%	130%
Copper	6987565		<0.003	<0.003	0.0%	< 0.003	102%	90%	110%	108%	90%	110%	93%	70%	130%
Iron	6987565		<0.010	<0.010	0.0%	< 0.010	102%	90%	110%	100%	90%	110%	96%	70%	130%
Lead	6987565		<0.002	<0.002	0.0%	< 0.002	104%	90%	110%	105%	90%	110%	105%	70%	130%
Manganese	6987565		0.003	0.003	0.0%	< 0.002	100%	90%	110%	107%	90%	110%	87%	70%	130%
Mercury	6985826		<0.0001	<0.0001	0.0%	< 0.0001	101%	90%	110%	98%	90%	110%	96%	80%	120%
Molybdenum	6987565		<0.002	<0.002	0.0%	< 0.002	96%	90%	110%	97%	90%	110%	98%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: Belfountain
SAMPLING SITE:

AGAT WORK ORDER: 15W020701
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Sep 28, 2015			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	6987565		0.006	0.006	0.0%	< 0.003	103%	90%	110%	107%	90%	110%	98%	70%	130%
Selenium	6987565		<0.004	<0.004	0.0%	< 0.004	98%	90%	110%	102%	90%	110%	114%	70%	130%
Silver	6987565		<0.002	<0.002	0.0%	< 0.002	100%	90%	110%	114%	90%	110%	86%	70%	130%
Strontium	6987565		0.179	0.178	0.6%	< 0.005	103%	90%	110%	105%	90%	110%	106%	70%	130%
Thallium	6987565		<0.006	<0.006	0.0%	< 0.006	101%	90%	110%	102%	90%	110%	103%	70%	130%
Tin	6987565		<0.002	<0.002	0.0%	< 0.002	103%	90%	110%	105%	90%	110%	102%	70%	130%
Titanium	6987565		<0.002	<0.002	0.0%	< 0.002	104%	90%	110%	103%	90%	110%	99%	70%	130%
Tungsten	6987565		<0.010	<0.010	0.0%	< 0.010	107%	90%	110%	101%	90%	110%	105%	70%	130%
Uranium	6987565		<0.002	<0.002	0.0%	< 0.002	96%	90%	110%	95%	90%	110%	100%	70%	130%
Vanadium	6987565		<0.002	<0.002	0.0%	< 0.002	102%	90%	110%	108%	90%	110%	104%	70%	130%
Zinc	6987565		<0.005	<0.005	0.0%	< 0.005	101%	90%	110%	107%	90%	110%	105%	70%	130%
Zirconium	6987565		<0.004	<0.004	0.0%	< 0.004	93%	90%	110%	99%	90%	110%	96%	70%	130%

Comments: NA signifies Not Applicable
QA Qualifier for Silver: In a multi-element scan up to 10% of analytes may exceed the quoted limits for lab control standards and matrix spike by up to 10% absolute and the spike is deemed acceptable.

CHARTERED
DR. ANTHONY R. K. DAPAAH
CHEMIST

Certified By:

QA Violation

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15W020701

PROJECT: Belfountain

ATTENTION TO: Dwight Smikle

RPT Date: Sep 28, 2015			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment											
Silver		TW2	100%	90%	110%	114%	90%	110%	86%	70%	130%

Comments: NA signifies Not Applicable
QA Qualifier for Silver: In a multi-element scan up to 10% of analytes may exceed the quoted limits for lab control standards and matrix spike by up to 10% absolute and the spike is deemed acceptable.

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15W020701

PROJECT: Belfountain

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15W020701

PROJECT: Belfountain

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 15W020701
Cooler Quantity:
Arrival Temperatures: 9.7 | 8.1 | 7.6
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: On ice

Report Information:

Company: Burnside
Contact: Dwight Smikle
Address: 292 Speedvale Ave
Guelph ON
Phone: 823 4995 Fax:
Reports to be sent to:
1. Email: Dwight.Smikle@rjburnside.com
2. Email: Sean.Quinlan@rjburnside.com

Regulatory Requirements:

☑ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ______ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ Indicate One

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on Certificate of Analysis
☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: Be Fountain
Site Location: 300033273
Sampled By: S. Quinlan
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	TDS	Various Inorganics	Metals	Mercury	TOC	Ammonia, Total Phosphorus
TW2	17 Sept 15	12:00	6	GW																	X	X	X	X	X	X
TW6		10:45	6	GW																	X	X	X	X	X	X
TW5		10:00	6	GW																	X	X	X	X	X	X
PW2		11:30	6	GW																	X	X	X	X	X	X
			~~6~~	~~GW~~																						

WQA

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Page 1 of 1
Sean Quinlan	18 Sept 15	14:00	M. Kelly Maggie Kelly	2015/9/18	3:13 pm	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T 013128
				Sep. 19	10:00	

Document ID: DIV-78-1511.009

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

Date Issued: Jan 8, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 15W960815

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Apr 15, 2015

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 15W960815
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2015-04-08

DATE REPORTED: 2015-04-15

			SAMPLE DESCRIPTION:	TW2	TW5	TW6	PW2	OW1
			SAMPLE TYPE:	Water	Water	Water	Water	Water
			DATE SAMPLED:	4/7/2015	4/7/2015	4/7/2015	4/7/2015	4/7/2015
Parameter	Unit	G / S	RDL	6430142	6430199	6430206	6430214	6430223
Electrical Conductivity	uS/cm		2	478	592	602	595	601
pH	pH Units		NA	7.89	7.90	8.14	7.92	8.10
Saturation pH				7.15	7.02	7.02	7.00	6.98
Langelier Index				0.74	0.88	1.12	0.92	1.12
Total Hardness (as CaCO3)	mg/L		0.5	224	285	283	281	265
Total Dissolved Solids	mg/L		20	262	302	314	304	294
Alkalinity (as CaCO3)	mg/L		5	212	244	245	259	265
Bicarbonate (as CaCO3)	mg/L		5	212	244	245	259	265
Carbonate (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5
Fluoride	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride	mg/L		0.10	18.8	19.8	24.3	22.3	3.48
Nitrate as N	mg/L		0.05	0.84	6.31	7.80	3.44	0.85
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromide	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L		0.10	9.96	14.5	15.3	18.2	14.0
Ortho Phosphate as P	mg/L		0.10	0.35	<0.10	<0.10	<0.10	<0.10
Reactive Silica	mg/L		0.05	5.78	6.79	6.87	7.52	5.38
Ammonia as N	mg/L		0.02	<0.02	<0.02	<0.02	0.30	0.08
Total Phosphorus	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	0.17
Total Organic Carbon	mg/L		0.5	1.7	0.6	0.6	0.5	2.0
Colour	TCU		5	<5	<5	<5	<5	<5
Turbidity	NTU		0.5	2.7	1.5	6.8	4.6	269
Calcium	mg/L		0.05	60.9	80.2	79.7	73.6	71.9
Magnesium	mg/L		0.05	17.5	20.5	20.3	23.5	20.7
Sodium	mg/L		0.05	6.79	7.24	8.54	8.20	7.68
Potassium	mg/L		0.05	1.53	1.02	0.98	0.90	2.16
Aluminum	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Antimony	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Arsenic	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 15W960815

PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2015-04-08

DATE REPORTED: 2015-04-15

			SAMPLE DESCRIPTION:	TW2	TW5	TW6	PW2	OW1
			SAMPLE TYPE:	Water	Water	Water	Water	Water
			DATE SAMPLED:	4/7/2015	4/7/2015	4/7/2015	4/7/2015	4/7/2015
Parameter	Unit	G / S	RDL	6430142	6430199	6430206	6430214	6430223
Barium	mg/L		0.002	0.042	0.110	0.088	0.056	0.048
Beryllium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L		0.010	0.010	0.011	<0.010	<0.010	<0.010
Cadmium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L		0.003	0.005	0.004	0.008	0.005	<0.003
Cobalt	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Manganese	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Mercury	mg/L		0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Silver	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Strontium	mg/L		0.005	0.087	0.154	0.139	0.126	0.102
Thallium	mg/L		0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Tin	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Titanium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Tungsten	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Vanadium	mg/L		0.002	<0.002	<0.002	0.003	<0.002	<0.002
Zinc	mg/L		0.005	0.012	0.019	0.014	0.022	0.017
Zirconium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004
% Difference/ Ion Balance			0.1	2.3	1.3	3.3	3.4	0.6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 15W960815
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date: Apr 15, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment - Groundwater Samples															
Electrical Conductivity	6428305		6200	6200	0.0%	< 2	95%	80%	120%	NA			NA		
pH	6428305		7.71	7.43	3.7%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	6430142	6430142	262	262	0.0%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	6428305		518	524	1.2%	< 5	99%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	6428305		518	524	1.2%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	6428305		<5	<5	0.0%	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	6428305		<5	<5	0.0%	< 5	NA			NA			NA		
Fluoride	6430050		<0.25	<0.25	0.0%	< 0.05	108%	90%	110%	104%	90%	110%	99%	80%	120%
Chloride	6430050		172	167	2.9%	< 0.10	101%	90%	110%	105%	90%	110%	102%	80%	120%
Nitrate as N	6430050		<0.25	<0.25	0.0%	< 0.05	92%	90%	110%	102%	90%	110%	105%	80%	120%
Nitrite as N	6430050		<0.25	<0.25	0.0%	< 0.05	NA	90%	110%	98%	90%	110%	92%	80%	120%
Bromide	6430050		<0.25	<0.25	0.0%	< 0.05	110%	90%	110%	100%	90%	110%	100%	80%	120%
Sulphate	6430050		133	129	3.1%	< 0.10	99%	90%	110%	101%	90%	110%	102%	80%	120%
Ortho Phosphate as P	6430050		<0.50	<0.50	0.0%	< 0.10	104%	90%	110%	95%	90%	110%	102%	80%	120%
Reactive Silica	6432724		12.2	12.2	0.0%	< 0.05	96%	90%	110%	97%	90%	110%	96%	80%	120%
Ammonia as N	6429741		0.25	0.23	8.3%	< 0.02	107%	90%	110%	99%	90%	110%	104%	80%	120%
Total Phosphorus	6430142	6430142	< 0.05	<0.05	0.0%	< 0.05	100%	80%	120%	95%	90%	110%	102%	70%	130%
Total Organic Carbon	6430142	6430142	1.7	1.8	5.7%	< 0.5	95%	90%	110%	102%	90%	110%	94%	80%	120%
Colour	6430142	6430142	< 5	<5	0.0%	< 5	103%	90%	110%	NA			NA		
Turbidity	6430199	6430199	1.5	1.4	6.9%	< 0.5	106%	90%	110%	NA			NA		
Calcium	6430214	6430214	73.6	73.5	0.1%	< 0.05	100%	90%	110%	98%	90%	110%	93%	70%	130%
Magnesium	6430214	6430214	23.5	23.6	0.4%	< 0.05	97%	90%	110%	94%	90%	110%	93%	70%	130%
Sodium	6430214	6430214	8.20	8.23	0.4%	< 0.05	99%	90%	110%	97%	90%	110%	94%	70%	130%
Potassium	6430214	6430214	0.90	0.90	0.0%	< 0.05	101%	90%	110%	99%	90%	110%	99%	70%	130%
Aluminum	6430223	6430223	< 0.004	< 0.004	0.0%	< 0.004	105%	90%	110%	107%	90%	110%	107%	70%	130%
Antimony	6430223	6430223	< 0.003	< 0.003	0.0%	< 0.003	96%	90%	110%	100%	90%	110%	96%	70%	130%
Arsenic	6430223	6430223	< 0.003	< 0.003	0.0%	< 0.003	101%	90%	110%	100%	90%	110%	98%	70%	130%
Barium	6430223	6430223	0.048	0.048	0.0%	< 0.002	98%	90%	110%	102%	90%	110%	104%	70%	130%
Beryllium	6430223	6430223	< 0.001	< 0.001	0.0%	< 0.001	97%	90%	110%	97%	90%	110%	116%	70%	130%
Boron	6430223	6430223	< 0.010	0.010	10.5%	< 0.010	97%	90%	110%	110%	90%	110%	109%	70%	130%
Cadmium	6430223	6430223	< 0.001	< 0.001	0.0%	< 0.001	101%	90%	110%	104%	90%	110%	104%	70%	130%
Chromium	6430223	6430223	< 0.003	<0.003	0.0%	< 0.003	101%	90%	110%	107%	90%	110%	101%	70%	130%
Cobalt	6430223	6430223	< 0.001	< 0.001	0.0%	< 0.001	98%	90%	110%	100%	90%	110%	101%	70%	130%
Copper	6430223	6430223	< 0.003	< 0.003	0.0%	< 0.003	99%	90%	110%	98%	90%	110%	98%	70%	130%
Iron	6430223	6430223	< 0.010	<0.010	0.0%	< 0.010	93%	90%	110%	110%	90%	110%	92%	70%	130%
Lead	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	103%	90%	110%	107%	90%	110%	104%	70%	130%
Manganese	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	105%	90%	110%	109%	90%	110%	99%	70%	130%
Mercury	6430142	6430142	< 0.0001	< 0.0001	0.0%	< 0.0001	100%	90%	110%	103%	90%	110%	107%	80%	120%
Molybdenum	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	97%	90%	110%	100%	90%	110%	100%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 15W960815

ATTENTION TO: Dwight Smikle

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Apr 15, 2015			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	6430223	6430223	< 0.003	< 0.003	0.0%	< 0.003	103%	90%	110%	101%	90%	110%	100%	70%	130%
Selenium	6430223	6430223	< 0.004	< 0.004	0.0%	< 0.004	100%	90%	110%	104%	90%	110%	96%	70%	130%
Silver	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	101%	90%	110%	110%	90%	110%	101%	70%	130%
Strontium	6430223	6430223	0.102	0.097	5.0%	< 0.005	101%	90%	110%	107%	90%	110%	103%	70%	130%
Thallium	6430223	6430223	< 0.006	< 0.006	0.0%	< 0.006	100%	90%	110%	105%	90%	110%	101%	70%	130%
Tin	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	93%	90%	110%	102%	90%	110%	97%	70%	130%
Titanium	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	98%	90%	110%	103%	90%	110%	99%	70%	130%
Tungsten	6430223	6430223	< 0.010	< 0.010	0.0%	< 0.010	97%	90%	110%	105%	90%	110%	101%	70%	130%
Uranium	6430223	6430223	< 0.002	< 0.002	0.0%	< 0.002	97%	90%	110%	108%	90%	110%	102%	70%	130%
Vanadium	6430223	6430223	0.003	0.003	0.0%	< 0.002	101%	90%	110%	105%	90%	110%	99%	70%	130%
Zinc	6430223	6430223	0.017	0.016	6.1%	< 0.005	102%	90%	110%	107%	90%	110%	101%	70%	130%
Zirconium	6430223	6430223	< 0.004	< 0.004	0.0%	< 0.004	100%	90%	110%	102%	90%	110%	100%	70%	130%

Comments: NA signifies Not Applicable

Certified By: ______________________

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 15W960815
ATTENTION TO: Dwight Smikle
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6002	AQ2 EPA-103A & SM 4500 NH3-F	AQ-2 DISCRETE ANALYZER
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 15W960815

PROJECT: 300033273

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

2.0/2.1/2.0

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2
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P: 905.712.5100 · F: 905.712.5122

Laboratory Use Only

Arrival Temperature:
AGAT WO #: 15W960815
Lab Temperature: 2.6/1.8/2.2
Notes: on ice

Chain of Custody Record

Client Information

Company: BURNSIDE
Contact: Dwight Smikle
Address: 292 Speedvale Ave
Guelph, ON
Phone: 823-4995 Fax:
Project: 300033273 PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements

☐ Regulation 153/04 *(reg. 511 Amend.)*
Table ____ *Indicate one*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(check one)* ☐ Coarse ☐ Fine

☐ Sewer Use
Region ____ *Indicate one*
☐ Sanitary
☐ Storm

☐ Regulation 558
☐ CCME
☐ Other *(specify)*
☐ Prov. Water Quality Objectives (PWQO)
☒ None

Turnaround Time Required (TAT) Required*

Regular TAT
☒ 5 to 7 Working Days
Rush TAT (please provide prior notification)
Rush Surcharges Apply
☐ 3 Working Days
☐ 2 Working Days
☐ 1 Working Day

OR

Date Required (Rush surcharges may apply):

**TAT is exclusive of weekends and statutory holidays*

Invoice To Same: Yes ☒ No ☐
Company:
Contact:
Address:

Is this a drinking water sample?
(potable water intended for human consumption)
☐ Yes ☒ No
If "Yes", please use the *Drinking* **Water Chain** *of Custody* **Form**

Is this submission for a **Record of Site Condition?**
☐ Yes ☒ No

Legend Matrix

GW	Ground Water	**O**	Oil
SW	Surface Water	**P**	Paint
SD	Sediment	**S**	Soil

Report Information – reports to be sent to:
1. Name: Dwight Smikle
Email: Dwight.Smikle@rjburnside.com
2. Name:
Email:

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☐ Cr+6- ☐ SAR ☐ NO_3/NO_2 ☐ N-Total ☐ Hg ☐ pH	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	VOC: ☐ VOC ☐ THM ☐ BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	WQA
TW2	7Apr.15	11:00	GW	6	Metals + Mercury field filtered																✓
TW5	↓	9:30	↓	↓																	✓
TW6		9:00			" "																✓
PW2		10:15			" "																✓
OW1		14:00			" "																✓

Samples Relinquished By (Print Name and Sign): Sean Quinlan Sean Quinlan
Date/Time: 8 April 15
Samples Received By (Print Name and Sign): M. Kelly
Date/Time: 04-08-15 8:23

Samples Relinquished By (Print Name and Sign):
Date/Time:
Samples Received By (Print Name and Sign): Sharmin Apr 9/15
Date/Time: 930am

Pink Copy - Client
Yellow Copy - AGAT
White Copy- AGAT

Page 1 of 1

Nº: 53688

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: 3000 33273

AGAT WORK ORDER: 16T069988

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Feb 22, 2016

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 1:Partial Report Issued Feb 22nd 2016.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-02-19
DATE REPORTED: 2016-02-22

			SAMPLE DESCRIPTION:	TW7 (12:50)
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395664
Nitrate as N	mg/L		0.25	8.00

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7395664 Elevated RDL indicates the degree of sample dilution prior to the analysis for anions in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

Certificate of Analysis

AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-19

DATE REPORTED: 2016-02-22

			SAMPLE DESCRIPTION:	TW7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395659
Electrical Conductivity	uS/cm		2	587
pH	pH Units		NA	7.88
Saturation pH				6.99
Langelier Index				0.89
Total Hardness (as CaCO3)	mg/L		0.5	280
Total Dissolved Solids	mg/L		20	354
Alkalinity (as CaCO3)	mg/L		5	262
Bicarbonate (as CaCO3)	mg/L		5	262
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.25	<0.25
Chloride	mg/L		0.50	18.3
Nitrate as N	mg/L		0.25	8.52
Nitrite as N	mg/L		0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		0.50	20.6
Ortho Phosphate as P	mg/L		0.50	<0.50
Reactive Silica	mg/L		0.05	
Ammonia as N	mg/L		0.02	
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.6
Colour	TCU		5	<5
Turbidity	NTU		0.5	3.9
Calcium	mg/L		0.05	77.2
Magnesium	mg/L		0.05	21.2
Sodium	mg/L		0.05	5.60
Potassium	mg/L		0.05	1.00
Aluminum	mg/L		0.004	< 0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

Certified By: Amanjot Bhela

Certificate of Analysis

AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273

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CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-19
DATE REPORTED: 2016-02-22

			SAMPLE DESCRIPTION:	TW7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395659
Barium	mg/L		0.002	0.093
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	<0.010
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	<0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	<0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	<0.002
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.106
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.017
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	7.32

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7395659 Elevated RDL indicates the degree of sample dilution prior to the analysis for anions in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 3000 33273
SAMPLING SITE:

AGAT WORK ORDER: 16T069988
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis

RPT Date: Feb 22, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment (mg/L)															
Electrical Conductivity	7397209		1320	1320	0.0%	< 2	98%	80%	120%	NA			NA		
pH	7397209		8.11	8.02	1.1%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	7393504		552	562	1.8%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7397209		336	337	0.3%	< 5	102%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7397209		336	337	0.3%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7397209		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7397209		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7395664	7395664	<0.25	<0.25	NA	< 0.05	99%	90%	110%	93%	90%	110%	89%	80%	120%
Chloride	7395664	7395664	16.8	16.8	0.0%	< 0.10	105%	90%	110%	98%	90%	110%	96%	80%	120%
Nitrate as N	7395664	7395664	8.00	7.88	1.5%	< 0.05	98%	90%	110%	101%	90%	110%	113%	80%	120%
Nitrite as N	7395664	7395664	<0.25	<0.25	NA	< 0.05	NA	90%	110%	98%	90%	110%	113%	80%	120%
Bromide	7395664	7395664	<0.25	<0.25	NA	< 0.05	108%	90%	110%	104%	90%	110%	112%	80%	120%
Sulphate	7395664	7395664	18.9	18.4	2.7%	< 0.10	104%	90%	110%	95%	90%	110%	102%	80%	120%
Ortho Phosphate as P	7395664	7395664	<0.50	<0.50	NA	< 0.10	95%	90%	110%	90%	90%	110%	92%	80%	120%
Total Phosphorus	7396488		<0.05	<0.05	NA	< 0.05	102%	80%	120%	95%	90%	110%	102%	70%	130%
Total Organic Carbon	7396282		<0.5	<0.5	NA	< 0.5	96%	90%	110%	103%	90%	110%	99%	80%	120%
Colour	7396488		<5	<5	NA	< 5	102%	90%	110%	NA			NA		
Turbidity	7396488		<0.5	<0.5	NA	< 0.5	100%	90%	110%	NA			NA		
Calcium	7395659	7395659	77.2	76.9	0.4%	< 0.05	105%	90%	110%	104%	90%	110%	89%	70%	130%
Magnesium	7395659	7395659	21.2	21.6	1.9%	< 0.05	98%	90%	110%	98%	90%	110%	86%	70%	130%
Sodium	7395659	7395659	5.60	5.64	0.7%	< 0.05	101%	90%	110%	102%	90%	110%	95%	70%	130%
Potassium	7395659	7395659	1.00	1.02	2.0%	< 0.05	101%	90%	110%	102%	90%	110%	106%	70%	130%
Antimony	7394156		< 0.003	< 0.003	NA	< 0.003	94%	90%	110%	92%	90%	110%	97%	70%	130%
Arsenic	7394156		< 0.003	< 0.003	NA	< 0.003	98%	90%	110%	96%	90%	110%	114%	70%	130%
Barium	7394156		0.453	0.447	1.3%	< 0.002	96%	90%	110%	97%	90%	110%	92%	70%	130%
Beryllium	7394156		< 0.001	< 0.001	NA	< 0.001	91%	90%	110%	97%	90%	110%	98%	70%	130%
Boron	7394156		0.040	0.039	NA	< 0.010	100%	90%	110%	101%	90%	110%	106%	70%	130%
Cadmium	7394156		< 0.001	< 0.001	NA	< 0.001	94%	90%	110%	94%	90%	110%	99%	70%	130%
Chromium	7394156		0.009	0.009	NA	< 0.003	100%	90%	110%	101%	90%	110%	104%	70%	130%
Cobalt	7394156		< 0.001	< 0.001	NA	< 0.001	101%	90%	110%	102%	90%	110%	105%	70%	130%
Copper	7394156		< 0.003	< 0.003	NA	< 0.003	99%	90%	110%	101%	90%	110%	102%	70%	130%
Iron	7394156		7.79	7.51	3.7%	< 0.010	102%	90%	110%	101%	90%	110%	110%	70%	130%
Lead	7394156		< 0.002	< 0.002	NA	< 0.002	92%	90%	110%	91%	90%	110%	91%	70%	130%
Manganese	7394156		1.35	1.35	0.0%	< 0.002	97%	90%	110%	97%	90%	110%	80%	70%	130%
Mercury	7395659	7395659	<0.0001	<0.0001	NA	< 0.0001	99%	90%	110%	98%	90%	110%	99%	80%	120%
Molybdenum	7394156		0.002	0.002	NA	< 0.002	94%	90%	110%	95%	90%	110%	101%	70%	130%
Nickel	7394156		< 0.003	< 0.003	NA	< 0.003	106%	90%	110%	106%	90%	110%	108%	70%	130%
Selenium	7394156		< 0.004	< 0.004	NA	< 0.004	102%	90%	110%	99%	90%	110%	119%	70%	130%
Silver	7394156		< 0.002	< 0.002	NA	< 0.002	95%	90%	110%	105%	90%	110%	102%	70%	130%

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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 3000 33273
SAMPLING SITE:

AGAT WORK ORDER: 16T069988
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 22, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Strontium	7394156		0.496	0.488	1.6%	< 0.005	94%	90%	110%	96%	90%	110%	95%	70%	130%
Thallium	7394156		< 0.006	< 0.006	NA	< 0.006	100%	90%	110%	100%	90%	110%	101%	70%	130%
Tin	7394156		< 0.002	< 0.002	NA	< 0.002	97%	90%	110%	92%	90%	110%	98%	70%	130%
Titanium	7394156		0.002	0.003	NA	< 0.002	97%	90%	110%	96%	90%	110%	104%	70%	130%
Tungsten	7394156		< 0.010	< 0.010	NA	< 0.010	96%	90%	110%	90%	90%	110%	101%	70%	130%
Uranium	7394156		< 0.002	< 0.002	NA	< 0.002	97%	90%	110%	91%	90%	110%	97%	70%	130%
Vanadium	7394156		< 0.002	< 0.002	NA	< 0.002	91%	90%	110%	95%	90%	110%	101%	70%	130%
Zinc	7394156		< 0.005	< 0.005	NA	< 0.005	97%	90%	110%	98%	90%	110%	101%	70%	130%
Zirconium	7394156		< 0.004	< 0.004	NA	< 0.004	101%	90%	110%	97%	90%	110%	108%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 3000 33273
SAMPLING SITE:

AGAT WORK ORDER: 16T069988
ATTENTION TO: Jim Baxter
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

* TURBIDITY

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T 069 988

Cooler Quantity: 1 SMALL BLUE

Arrival Temperatures: 8.2 | 9.7 | 9.5

Custody Seal Intact: ☐ Yes ☐ No ☒ N/A

Notes: ON ICE

Report Information:

Company: RJ Burnside & Associates Ltd.

Contact: Jim Barker

Address: # 292 Speedvale Av. west,
Unit 20, Guelph ONT N1H 1C4

Phone: Fax:

Reports to be sent to:

1. Email: Jim.Barker@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ______ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 3000 33273

Site Location:

Sampled By:

AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions
TW2	Feb 19/2015	10:56	4	GW	
FW2	Feb 19/2015	12:50	1	GW	

(Check Applicable)

Sample Identification	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As ~~Hex~~ /	~~Metals~~	WQA	Nitrates
TW2																		X	
FW2																			X

Samples Relinquished By (Print Name and Sign): Matt Valeriote | Date: Feb 19/2015 | Time:

Samples Received By (Print Name and Sign): A. MARTIN | Date: 2016/02/19 | Time: 13:45

Samples Relinquished By (Print Name and Sign): | Date: | Time:

Samples Received By (Print Name and Sign): | Date: | Time:

Page ____ of ____

Nº: T 022761

Document ID: DIV-78-1511.010

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Date Issued: November 2, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: 3000 33273

AGAT WORK ORDER: 16T069988

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Feb 23, 2016

PAGES (INCLUDING COVER): 9

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 2:Full Report Issued Feb 22nd 2016.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T069988

PROJECT: 3000 33273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-02-19

DATE REPORTED: 2016-02-23

			SAMPLE DESCRIPTION:	TW7 (12:50)
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395664
Nitrate as N	mg/L		0.25	8.00

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7395664 Elevated RDL indicates the degree of sample dilution prior to the analysis for anions in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-19

DATE REPORTED: 2016-02-23

			SAMPLE DESCRIPTION:	TW7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395659
Electrical Conductivity	uS/cm		2	587
pH	pH Units		NA	7.88
Saturation pH				6.99
Langelier Index				0.89
Total Hardness (as CaCO3)	mg/L		0.5	280
Total Dissolved Solids	mg/L		20	354
Alkalinity (as CaCO3)	mg/L		5	262
Bicarbonate (as CaCO3)	mg/L		5	262
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.25	<0.25
Chloride	mg/L		0.50	18.3
Nitrate as N	mg/L		0.25	8.52
Nitrite as N	mg/L		0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		0.50	20.6
Ortho Phosphate as P	mg/L		0.50	<0.50
Reactive Silica	mg/L		0.05	7.03
Ammonia as N	mg/L		0.02	0.10
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.6
Colour	TCU		5	<5
Turbidity	NTU		0.5	3.9
Calcium	mg/L		0.05	77.2
Magnesium	mg/L		0.05	21.2
Sodium	mg/L		0.05	5.60
Potassium	mg/L		0.05	1.00
Aluminum	mg/L		0.004	< 0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

Certified By: Amanjot Bhela

Certificate of Analysis

AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273

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http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-19
DATE REPORTED: 2016-02-23

			SAMPLE DESCRIPTION:	TW7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/19/2016
Parameter	Unit	G / S	RDL	7395659
Barium	mg/L		0.002	0.093
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	<0.010
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	<0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	<0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	<0.002
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.106
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.017
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	7.26

Comments:	RDL - Reported Detection Limit; G / S - Guideline / Standard
7395659	Elevated RDL indicates the degree of sample dilution prior to the analysis for anions in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 3000 33273
SAMPLING SITE:

AGAT WORK ORDER: 16T069988
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis

RPT Date: Feb 23, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment (mg/L)															
Electrical Conductivity	7397209		1320	1320	0.0%	< 2	98%	80%	120%	NA			NA		
pH	7397209		8.11	8.02	1.1%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	7393504		552	562	1.8%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7397209		336	337	0.3%	< 5	102%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7397209		336	337	0.3%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7397209		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7397209		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7395664	7395664	<0.25	<0.25	NA	< 0.05	99%	90%	110%	93%	90%	110%	89%	80%	120%
Chloride	7395664	7395664	16.8	16.8	0.0%	< 0.10	105%	90%	110%	98%	90%	110%	96%	80%	120%
Nitrate as N	7395664	7395664	8.00	7.88	1.5%	< 0.05	98%	90%	110%	101%	90%	110%	113%	80%	120%
Nitrite as N	7395664	7395664	<0.25	<0.25	NA	< 0.05	NA	90%	110%	98%	90%	110%	113%	80%	120%
Bromide	7395664	7395664	<0.25	<0.25	NA	< 0.05	108%	90%	110%	104%	90%	110%	112%	80%	120%
Sulphate	7395664	7395664	18.9	18.4	2.7%	< 0.10	104%	90%	110%	95%	90%	110%	102%	80%	120%
Ortho Phosphate as P	7395664	7395664	<0.50	<0.50	NA	< 0.10	95%	90%	110%	90%	90%	110%	92%	80%	120%
Reactive Silica	7395659	7395659	7.03	6.92	1.6%	< 0.05	98%	90%	110%	99%	90%	110%	89%	80%	120%
Ammonia as N	7395659	7395659	0.10	0.10	0.0%	< 0.02	94%	90%	110%	96%	90%	110%	85%	80%	120%
Total Phosphorus	7396488		<0.05	<0.05	NA	< 0.05	102%	80%	120%	95%	90%	110%	102%	70%	130%
Total Organic Carbon	7396282		<0.5	<0.5	NA	< 0.5	96%	90%	110%	103%	90%	110%	99%	80%	120%
Colour	7396488		<5	<5	NA	< 5	102%	90%	110%	NA			NA		
Turbidity	7396488		<0.5	<0.5	NA	< 0.5	100%	90%	110%	NA			NA		
Calcium	7395659	7395659	77.2	76.9	0.4%	< 0.05	105%	90%	110%	104%	90%	110%	89%	70%	130%
Magnesium	7395659	7395659	21.2	21.6	1.9%	< 0.05	98%	90%	110%	98%	90%	110%	86%	70%	130%
Sodium	7395659	7395659	5.60	5.64	0.7%	< 0.05	101%	90%	110%	102%	90%	110%	95%	70%	130%
Potassium	7395659	7395659	1.00	1.02	2.0%	< 0.05	101%	90%	110%	102%	90%	110%	106%	70%	130%
Antimony	7394156		< 0.003	< 0.003	NA	< 0.003	94%	90%	110%	92%	90%	110%	97%	70%	130%
Arsenic	7394156		< 0.003	< 0.003	NA	< 0.003	98%	90%	110%	96%	90%	110%	114%	70%	130%
Barium	7394156		0.453	0.447	1.3%	< 0.002	96%	90%	110%	97%	90%	110%	92%	70%	130%
Beryllium	7394156		< 0.001	< 0.001	NA	< 0.001	91%	90%	110%	97%	90%	110%	98%	70%	130%
Boron	7394156		0.040	0.039	NA	< 0.010	100%	90%	110%	101%	90%	110%	106%	70%	130%
Cadmium	7394156		< 0.001	< 0.001	NA	< 0.001	94%	90%	110%	94%	90%	110%	99%	70%	130%
Chromium	7394156		0.009	0.009	NA	< 0.003	100%	90%	110%	101%	90%	110%	104%	70%	130%
Cobalt	7394156		< 0.001	< 0.001	NA	< 0.001	101%	90%	110%	102%	90%	110%	105%	70%	130%
Copper	7394156		< 0.003	< 0.003	NA	< 0.003	99%	90%	110%	101%	90%	110%	102%	70%	130%
Iron	7394156		7.79	7.51	3.7%	< 0.010	102%	90%	110%	101%	90%	110%	110%	70%	130%
Lead	7394156		< 0.002	< 0.002	NA	< 0.002	92%	90%	110%	91%	90%	110%	91%	70%	130%
Manganese	7394156		1.35	1.35	0.0%	< 0.002	97%	90%	110%	97%	90%	110%	80%	70%	130%
Mercury	7395659	7395659	<0.0001	<0.0001	NA	< 0.0001	99%	90%	110%	98%	90%	110%	99%	80%	120%
Molybdenum	7394156		0.002	0.002	NA	< 0.002	94%	90%	110%	95%	90%	110%	101%	70%	130%
Nickel	7394156		< 0.003	< 0.003	NA	< 0.003	106%	90%	110%	106%	90%	110%	108%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 3000 33273

SAMPLING SITE:

AGAT WORK ORDER: 16T069988

ATTENTION TO: Jim Baxter

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 23, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Selenium	7394156		< 0.004	< 0.004	NA	< 0.004	102%	90%	110%	99%	90%	110%	119%	70%	130%
Silver	7394156		< 0.002	< 0.002	NA	< 0.002	95%	90%	110%	105%	90%	110%	102%	70%	130%
Strontium	7394156		0.496	0.488	1.6%	< 0.005	94%	90%	110%	96%	90%	110%	95%	70%	130%
Thallium	7394156		< 0.006	< 0.006	NA	< 0.006	100%	90%	110%	100%	90%	110%	101%	70%	130%
Tin	7394156		< 0.002	< 0.002	NA	< 0.002	97%	90%	110%	92%	90%	110%	98%	70%	130%
Titanium	7394156		0.002	0.003	NA	< 0.002	97%	90%	110%	96%	90%	110%	104%	70%	130%
Tungsten	7394156		< 0.010	< 0.010	NA	< 0.010	96%	90%	110%	90%	90%	110%	101%	70%	130%
Uranium	7394156		< 0.002	< 0.002	NA	< 0.002	97%	90%	110%	91%	90%	110%	97%	70%	130%
Vanadium	7394156		< 0.002	< 0.002	NA	< 0.002	91%	90%	110%	95%	90%	110%	101%	70%	130%
Zinc	7394156		< 0.005	< 0.005	NA	< 0.005	97%	90%	110%	98%	90%	110%	101%	70%	130%
Zirconium	7394156		< 0.004	< 0.004	NA	< 0.004	101%	90%	110%	97%	90%	110%	108%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T069988
PROJECT: 3000 33273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

* TURBIDITY

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T 069 988

Cooler Quantity: 1 Small Blue

Arrival Temperatures: 8.2 | 9.7 | 9.5

Custody Seal Intact: ☐Yes ☐No ☒N/A

Notes: On ice

Report Information:

Company: RJ Burnside & Associates Ltd.

Contact: Jim Barter

Address: # 292 Speedvale Ave. west, Unit 20, Guelph ONT N1H 1C4

Phone: Fax:

Reports to be sent to:

1. Email: Tim. Baxter@rjburnside.com
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ No Regulatory Requirement

☐Regulation 153/04

Table ____ Indicate One

☐Ind/Com
☐Res/Park
☐Agriculture

Soil Texture (Check One)

☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm

Region ____ Indicate One

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other

____ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033273

Site Location:

Sampled By:

AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐B-HWS ☐Cl ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As ~~[illegible]~~ /	~~[illegible]~~	WQA	Nitrates				
TW2	Feb 19/2015	10:56	4	GW																			X					
FW2	Feb 19/2015	12:50	1	GW																				X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	
Matt Valeriote /	Feb19/2015		A. MARTIN	2016/02/19	13:45	Page ____ of ____
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T 022761

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 16T070836

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Feb 24, 2016

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T070836
PROJECT: 300033273

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MISSISSAUGA, ONTARIO
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-02-23

DATE REPORTED: 2016-02-24

			SAMPLE DESCRIPTION:	TW8 - 10 min
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/23/2016
Parameter	Unit	G / S	RDL	7401689
Nitrate as N	mg/L		0.25	7.93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7401689 Sample required dilution prior to analysis in order to keep the analyte within the calibration range of the instrument and/or to minimize any matrix interferences; the RDL was adjusted accordingly.

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16T070836
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment - Groundwater Sample

DATE RECEIVED: 2016-02-23
DATE REPORTED: 2016-02-24

			SAMPLE DESCRIPTION:	TW8
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/23/2016
Parameter	Unit	G / S	RDL	7401690
Electrical Conductivity	uS/cm		2	606
pH	pH Units		NA	8.02
Saturation pH				6.96
Langelier Index				1.06
Total Hardness (as CaCO3)	mg/L		0.5	315
Total Dissolved Solids	mg/L		20	368
Alkalinity (as CaCO3)	mg/L		5	254
Bicarbonate (as CaCO3)	mg/L		5	254
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.25	<0.25
Chloride	mg/L		0.50	10.4
Nitrate as N	mg/L		0.25	8.25
Nitrite as N	mg/L		0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		0.50	49.1
Ortho Phosphate as P	mg/L		0.50	<0.50
Reactive Silica	mg/L		0.05	7.60
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.6
Colour	TCU		5	<5
Turbidity	NTU		0.5	21.1
Calcium	mg/L		0.05	85.6
Magnesium	mg/L		0.05	24.7
Sodium	mg/L		0.05	4.69
Potassium	mg/L		0.05	1.30
Aluminum	mg/L		0.004	<0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16T070836
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment - Groundwater Sample

DATE RECEIVED: 2016-02-23

DATE REPORTED: 2016-02-24

			SAMPLE DESCRIPTION:	TW8
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/23/2016
Parameter	Unit	G / S	RDL	7401690
Barium	mg/L		0.002	0.110
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	0.013
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	<0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	<0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	0.007
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.437
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.016
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	3.27

Comments:	RDL - Reported Detection Limit; G / S - Guideline / Standard
7401690	Sample required dilution prior to analysis for Anions in order to keep the analytes within the calibration range of the instrument and/or to minimize any matrix interferences; the RDLs were adjusted accordingly.

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T070836
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date: Feb 24, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment - Groundwater Sample															
Electrical Conductivity	7401323		<2	<2	NA	< 2	101%	80%	120%	NA			NA		
pH	7401323		5.51	5.16	6.6%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	7398229		232	238	2.6%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7401323		<5	<5	NA	< 5	96%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7401323		<5	<5	NA	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7401323		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7401323		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7401689	7401689	< 0.05	< 0.05	NA	< 0.05	94%	90%	110%	94%	90%	110%	99%	80%	120%
Chloride	7401689	7401689	12.7	12.3	3.2%	< 0.10	107%	90%	110%	98%	90%	110%	100%	80%	120%
Nitrate as N	7401689	7401689	7.93	7.70	2.9%	< 0.05	100%	90%	110%	106%	90%	110%	106%	80%	120%
Nitrite as N	7401689	7401689	< 0.05	< 0.05	NA	< 0.05	NA	90%	110%	108%	90%	110%	113%	80%	120%
Bromide	7401689	7401689	< 0.05	< 0.05	NA	< 0.05	110%	90%	110%	96%	90%	110%	107%	80%	120%
Sulphate	7401689	7401689	159	156	1.9%	< 0.10	90%	90%	110%	101%	90%	110%	96%	80%	120%
Ortho Phosphate as P	7401689	7401689	< 0.10	< 0.10	NA	< 0.10	93%	90%	110%	92%	90%	110%	91%	80%	120%
Reactive Silica	7401690	7401690	7.60	7.55	0.7%	< 0.05	95%	90%	110%	97%	90%	110%	87%	80%	120%
Ammonia as N	7399914		<0.02	<0.02	NA	< 0.02	95%	90%	110%	97%	90%	110%	96%	80%	120%
Total Phosphorus	7401323		<0.05	<0.05	NA	< 0.05	103%	80%	120%	100%	90%	110%	101%	70%	130%
Total Organic Carbon	7401690	7401690	0.6	0.6	NA	< 0.5	102%	90%	110%	99%	90%	110%	97%	80%	120%
Colour	7401690	7401690	< 5	<5	NA	< 5	102%	90%	110%	NA			NA		
Turbidity	7401690	7401690	21.1	21.5	1.9%	< 0.5	101%	90%	110%	NA			NA		
Calcium	7401690	7401690	85.6	85.2	0.5%	< 0.05	104%	90%	110%	102%	90%	110%	100%	70%	130%
Magnesium	7401690	7401690	24.7	24.5	0.8%	< 0.05	98%	90%	110%	97%	90%	110%	100%	70%	130%
Sodium	7401690	7401690	4.69	4.70	0.2%	< 0.05	100%	90%	110%	99%	90%	110%	101%	70%	130%
Potassium	7401690	7401690	1.30	1.26	3.1%	< 0.05	100%	90%	110%	99%	90%	110%	105%	70%	130%
Aluminum	7401690	7401690	< 0.004	<0.004	NA	< 0.004	109%	90%	110%	108%	90%	110%	102%	70%	130%
Antimony	7401690	7401690	< 0.003	<0.003	NA	< 0.003	107%	90%	110%	97%	90%	110%	99%	70%	130%
Arsenic	7401690	7401690	< 0.003	<0.003	NA	< 0.003	101%	90%	110%	100%	90%	110%	93%	70%	130%
Barium	7401690	7401690	0.110	0.106	3.7%	< 0.002	102%	90%	110%	100%	90%	110%	107%	70%	130%
Beryllium	7401690	7401690	< 0.001	<0.001	NA	< 0.001	106%	90%	110%	107%	90%	110%	97%	70%	130%
Boron	7401690	7401690	0.013	0.013	NA	< 0.010	107%	90%	110%	101%	90%	110%	91%	70%	130%
Cadmium	7401690	7401690	< 0.001	<0.001	NA	< 0.001	103%	90%	110%	106%	90%	110%	97%	70%	130%
Chromium	7401690	7401690	< 0.003	<0.003	NA	< 0.003	103%	90%	110%	103%	90%	110%	99%	70%	130%
Cobalt	7401690	7401690	< 0.001	<0.001	NA	< 0.001	106%	90%	110%	104%	90%	110%	98%	70%	130%
Copper	7401690	7401690	< 0.003	<0.003	NA	< 0.003	104%	90%	110%	102%	90%	110%	86%	70%	130%
Iron	7401690	7401690	< 0.010	<0.010	NA	< 0.010	108%	90%	110%	103%	90%	110%	104%	70%	130%
Lead	7401690	7401690	< 0.002	<0.002	NA	< 0.002	103%	90%	110%	102%	90%	110%	93%	70%	130%
Manganese	7401690	7401690	0.007	0.007	NA	< 0.002	103%	90%	110%	103%	90%	110%	103%	70%	130%
Mercury	7401690	7401690	<0.0001	<0.0001	NA	< 0.0001	101%	90%	110%	103%	90%	110%	104%	80%	120%
Molybdenum	7401690	7401690	< 0.002	<0.002	NA	< 0.002	101%	90%	110%	96%	90%	110%	108%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T070836
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 24, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	7401690	7401690	< 0.003	<0.003	NA	< 0.003	106%	90%	110%	105%	90%	110%	94%	70%	130%
Selenium	7401690	7401690	< 0.004	<0.004	NA	< 0.004	103%	90%	110%	102%	90%	110%	101%	70%	130%
Silver	7401690	7401690	< 0.002	<0.002	NA	< 0.002	105%	90%	110%	108%	90%	110%	101%	70%	130%
Strontium	7401690	7401690	0.437	0.428	2.1%	< 0.005	98%	90%	110%	99%	90%	110%	94%	70%	130%
Thallium	7401690	7401690	< 0.006	<0.006	NA	< 0.006	104%	90%	110%	99%	90%	110%	94%	70%	130%
Tin	7401690	7401690	< 0.002	<0.002	NA	< 0.002	110%	90%	110%	100%	90%	110%	106%	70%	130%
Titanium	7401690	7401690	< 0.002	<0.002	NA	< 0.002	107%	90%	110%	99%	90%	110%	103%	70%	130%
Tungsten	7401690	7401690	< 0.010	<0.010	NA	< 0.010	104%	90%	110%	96%	90%	110%	101%	70%	130%
Uranium	7401690	7401690	< 0.002	<0.002	NA	< 0.002	103%	90%	110%	99%	90%	110%	104%	70%	130%
Vanadium	7401690	7401690	< 0.002	<0.002	NA	< 0.002	102%	90%	110%	101%	90%	110%	103%	70%	130%
Zinc	7401690	7401690	0.016	0.016	NA	< 0.005	103%	90%	110%	103%	90%	110%	83%	70%	130%
Zirconium	7401690	7401690	< 0.004	<0.004	NA	< 0.004	96%	90%	110%	93%	90%	110%	104%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T070836
ATTENTION TO: Dwight Smikle
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16T070836

PROJECT: 300033273

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T070836

Cooler Quantity:

Arrival Temperatures: 2.6 | 2.1 | 3.3

Custody Seal Intact: ☐Yes ☐No ☒N/A

Notes:

Report Information:

Company: BURNSIDE
Contact: DWIGHT SMIKLE
Address:
Phone: 519 823-4995 Fax:
Reports to be sent to:
1. Email: Dwight.Smikle@rjburnside.com
2. Email:

Regulatory Requirements: ☒ No Regulatory Requirement
(Please check all applicable boxes)

☐ Regulation 153/04
Table ______ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ *Indicate One*

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033273
Site Location: Belfountain
Sampled By: S Quinlan
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Invoice Information: Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate	TDS	Various Inorganics	Metals	Ammonia, Total Phosphorus	TOC	Mercury	
TW8 - 10 min	23FEB16	12:52	1	GW																	✓							
TW8	23FEB16	14:42	6	GW																		✓	✓	✓	✓	✓	✓	

Samples Relinquished By (Print Name and Sign): SEAN Quinlan S.Q. Date: 23FEB16 Time: 15:00
Samples Received By (Print Name and Sign): Sharmin Feb23/16 Date: Time: 3:50pm
Samples Relinquished By (Print Name and Sign): Date: Time:
Samples Received By (Print Name and Sign): Date: Time:

Page 1 of 1

Nº: T 021167

Document ID: DIV-78-1511.010

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Date Issued: November 2, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: Belfountain - 300033273

AGAT WORK ORDER: 16T071689

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Feb 26, 2016

PAGES (INCLUDING COVER): 4

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 1:Partial Report Issued Feb 26th 2016 at 1:20pm

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T071689
PROJECT: Belfountain - 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-02-25
DATE REPORTED: 2016-02-26

			SAMPLE DESCRIPTION:	TW10N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/25/2016
Parameter	Unit	G / S	RDL	7408001
Nitrate as N	mg/L		0.25	2.41

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7408001 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: Belfountain - 300033273

SAMPLING SITE:

AGAT WORK ORDER: 16T071689

ATTENTION TO: Jim Baxter

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T071689

Cooler Quantity:

Arrival Temperatures: 5.3 | 4.6 | 5.5

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: R.J. Burnside + Associates Ltd.

Contact: Jim Baxter

Address: 292 Speedvale Ave. West, unit 20,
Guelph, ONT

Phone: 519-823-4995 Fax:

Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Project Information:

Project: Belfountain - 300033273

Site Location: Belfountain

Sampled By: Matt Valeriote

AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:

Contact:

Address:

Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region ____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on Certificate of Analysis
☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
***TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	**ORPs:** ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	**Nutrients:** ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	**Volatiles:** ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrates	MWQA							
TW10N	Feb.25,2016	13:40	1	GW																	X								
TW10	Feb.25,2016	15:30	6	GW																		X							

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Matt Valeriote /	Feb. 25, 2016		Neil Ramnarayan	Feb 25/16	4:41PM

Page 1 of 1

Nº: T 021168

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME:	R.J. BURNSIDE & ASSOCIATES LTD 292 Speedvale Avenue West, Unit 7 Guelph, ON N1H1C4 (519) 823-4995
ATTENTION TO:	Jim Baxter
PROJECT:	300033273
AGAT WORK ORDER:	16T072180
WATER ANALYSIS REVIEWED BY:	Anthony Dapaah, PhD (Chem), Inorganic Lab Manager
DATE REPORTED:	Mar 01, 2016
PAGES (INCLUDING COVER):	9
VERSION*:	2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 2:Revised Report issued March 07th 2016. Reactive Silica Results corrected.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16T072180
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:MV

Nitrate (Water)

DATE RECEIVED: 2016-02-29
DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW9N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/26/2016
Parameter	Unit	G / S	RDL	7410958
Nitrate as N	mg/L		0.05	3.65

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

DR. ANTHONY R. K. DAPAAH

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 16T072180
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:MV

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-29
DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW9
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/26/2016
Parameter	Unit	G / S	RDL	7410959
Electrical Conductivity	uS/cm		2	610
pH	pH Units		NA	8.02
Saturation pH				6.94
Langelier Index				1.08
Total Hardness (as CaCO3)	mg/L		0.5	310
Total Dissolved Solids	mg/L		20	332
Alkalinity (as CaCO3)	mg/L		5	265
Bicarbonate (as CaCO3)	mg/L		5	265
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.10	9.37
Nitrate as N	mg/L		0.05	3.26
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	50.0
Ortho Phosphate as P	mg/L		0.10	<0.10
Reactive Silica	mg/L		0.05	8.72
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.6
Colour	TCU		5	<5
Turbidity	NTU		0.5	10.4
Calcium	mg/L		0.05	82.4
Magnesium	mg/L		0.05	25.4
Sodium	mg/L		0.05	3.99
Potassium	mg/L		0.05	1.19
Aluminum	mg/L		0.004	<0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

DR. ANTHONY R. K. DAPAAH

Certified By:

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Jim Baxter
SAMPLED BY:MV

Water Quality Assessment (mg/L)

DATE RECEIVED: 2016-02-29

DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW9
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/26/2016
Parameter	Unit	G / S	RDL	7410959
Barium	mg/L		0.002	0.070
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	0.014
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	0.005
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	< 0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	<0.002
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.320
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.022
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	3.26

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7410959 Revised March 04, 2016.
Revision: This report replaces the Certificate of Analysis issued on March 01, 2016. The Certificate of analysis has been updated to correct the erroneous Reactive Silica value reported.The discrepancy was due to sampling error during the analysis.

DR. ANTHONY R. K. DAPAAH

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T072180
ATTENTION TO: Jim Baxter
SAMPLED BY:MV

Water Analysis

RPT Date: Mar 01, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Water Quality Assessment (mg/L)															
Electrical Conductivity	7410959	7410959	610	611	0.2%	< 2	102%	80%	120%	NA			NA		
pH	7410959	7410959	8.02	8.01	0.1%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	7410971		436	430	1.4%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7410959	7410959	265	263	0.8%	< 5	102%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7410959	7410959	265	263	0.8%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7410959	7410959	<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7410959	7410959	<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7411422		<0.5	<0.5	NA	< 0.05	96%	90%	110%	95%	90%	110%	89%	80%	120%
Chloride	7411422		247	248	0.4%	< 0.10	105%	90%	110%	109%	90%	110%	99%	80%	120%
Nitrate as N	7411422		1.2	1.1	8.7%	< 0.05	101%	90%	110%	110%	90%	110%	114%	80%	120%
Nitrite as N	7411422		<0.5	<0.5	NA	< 0.05	NA	90%	110%	109%	90%	110%	112%	80%	120%
Bromide	7411422		<0.5	<0.5	NA	< 0.05	108%	90%	110%	109%	90%	110%	109%	80%	120%
Sulphate	7411422		162	162	0.0%	< 0.10	101%	90%	110%	108%	90%	110%	105%	80%	120%
Ortho Phosphate as P	7411422		<1.0	<1.0	NA	< 0.10	92%	90%	110%	98%	90%	110%	88%	80%	120%
Reactive Silica	7402270		1.97	2.00	1.5%	< 0.05	98%	90%	110%	99%	90%	110%	93%	80%	120%
Ammonia as N	7408819		4.81	4.80	0.2%	< 0.02	100%	90%	110%	103%	90%	110%	96%	80%	120%
Total Phosphorus	7410959	7410959	<0.05	<0.05	NA	< 0.05	102%	80%	120%	103%	90%	110%	102%	70%	130%
Total Organic Carbon	7410959	7410959	0.6	0.5	NA	< 0.5	98%	90%	110%	98%	90%	110%	94%	80%	120%
Colour	7410959	7410959	<5	<5	NA	< 5	100%	90%	110%	NA			NA		
Turbidity	7410852		948	1020	7.3%	< 0.5	101%	90%	110%	NA			NA		
Calcium	7410959	7410959	82.4	82.5	0.1%	< 0.05	105%	90%	110%	106%	90%	110%	98%	70%	130%
Magnesium	7410959	7410959	25.4	25.5	0.4%	< 0.05	98%	90%	110%	100%	90%	110%	97%	70%	130%
Sodium	7410959	7410959	3.99	3.97	0.5%	< 0.05	100%	90%	110%	102%	90%	110%	99%	70%	130%
Potassium	7410959	7410959	1.19	1.17	1.7%	< 0.05	101%	90%	110%	103%	90%	110%	101%	70%	130%
Aluminum	7410959	7410959	< 0.004	< 0.004	NA	< 0.004	102%	90%	110%	105%	90%	110%	117%	70%	130%
Antimony	7410959	7410959	< 0.003	< 0.003	NA	< 0.003	98%	90%	110%	96%	90%	110%	101%	70%	130%
Arsenic	7410959	7410959	< 0.003	< 0.003	NA	< 0.003	102%	90%	110%	98%	90%	110%	107%	70%	130%
Barium	7410959	7410959	0.070	0.070	0.0%	< 0.002	99%	90%	110%	99%	90%	110%	110%	70%	130%
Beryllium	7410959	7410959	< 0.001	< 0.001	NA	< 0.001	94%	90%	110%	96%	90%	110%	98%	70%	130%
Boron	7410959	7410959	0.014	0.012	NA	< 0.010	107%	90%	110%	109%	90%	110%	111%	70%	130%
Cadmium	7410959	7410959	< 0.001	< 0.001	NA	< 0.001	100%	90%	110%	99%	90%	110%	119%	70%	130%
Chromium	7410959	7410959	0.005	0.003	NA	< 0.003	100%	90%	110%	104%	90%	110%	109%	70%	130%
Cobalt	7410959	7410959	< 0.001	< 0.001	NA	< 0.001	100%	90%	110%	101%	90%	110%	108%	70%	130%
Copper	7410959	7410959	< 0.003	< 0.003	NA	< 0.003	99%	90%	110%	102%	90%	110%	109%	70%	130%
Lead	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	98%	90%	110%	94%	90%	110%	104%	70%	130%
Manganese	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	98%	90%	110%	98%	90%	110%	101%	70%	130%
Mercury	7410971		<0.0001	<0.0001	NA	< 0.0001	100%	90%	110%	102%	90%	110%	102%	80%	120%
Molybdenum	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	101%	90%	110%	99%	90%	110%	108%	70%	130%
Nickel	7410959	7410959	< 0.003	< 0.003	NA	< 0.003	103%	90%	110%	105%	90%	110%	111%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T072180
ATTENTION TO: Jim Baxter
SAMPLED BY:MV

Water Analysis (Continued)

RPT Date: Mar 01, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Selenium	7410959	7410959	< 0.004	< 0.004	NA	< 0.004	99%	90%	110%	99%	90%	110%	111%	70%	130%
Silver	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	102%	90%	110%	107%	90%	110%	120%	70%	130%
Strontium	7410959	7410959	0.320	0.307	4.1%	< 0.005	100%	90%	110%	98%	90%	110%	109%	70%	130%
Thallium	7410959	7410959	< 0.006	< 0.006	NA	< 0.006	104%	90%	110%	102%	90%	110%	115%	70%	130%
Tin	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	98%	90%	110%	97%	90%	110%	101%	70%	130%
Titanium	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	102%	90%	110%	97%	90%	110%	105%	70%	130%
Tungsten	7410959	7410959	< 0.010	< 0.010	NA	< 0.010	95%	90%	110%	95%	90%	110%	94%	70%	130%
Uranium	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	100%	90%	110%	95%	90%	110%	106%	70%	130%
Vanadium	7410959	7410959	< 0.002	< 0.002	NA	< 0.002	96%	90%	110%	95%	90%	110%	103%	70%	130%
Zinc	7410959	7410959	0.022	0.021	NA	< 0.005	100%	90%	110%	103%	90%	110%	112%	70%	130%
Zirconium	7410959	7410959	< 0.004	< 0.004	NA	< 0.004	93%	90%	110%	91%	90%	110%	93%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

CHARTERED
DR. ANTHONY R. K. DAPAAH
CHEMIST

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16T072180

PROJECT: 300033273

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:MV

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T072180
PROJECT: 300033273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:MV

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T072180

Cooler Quantity:

Arrival Temperatures: 8.0 8.1 8.5
LAS 7.9 7.6 7.4

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: RJ Burnside & Associates Ltd.
Contact: Jim Baxter
Address: 292 Speedvale Ave. West, Unit 20
Guelph, ONT
Phone: 519-823-4995 Fax:
Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ Indicate One

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on Certificate of Analysis
☐ Yes ☑ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: ____ PO:

Please note: If quotation number is not provided, client will be billed full price for analysis

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	**ORPs:** ☐B-HWS ☐Cl ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☐NO_3/NO_2 ☐Total N ☐Hg ☐pH ☐SAR	**Nutrients:** ☐TP ☐NH_3 ☐TKN ☐NO_3 ☐NO_2 ☐NO_3/NO_2	**Volatiles:** ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate	MWQA							
TW9N	Feb.26.2016	9:50	1	GW																	x								
TW9	Feb.26.2016	11:40	6	GW																		x							

Samples Relinquished By (Print Name and Sign): Matt Valeriote
Date: Feb.26, 2016
Time:

Samples Received By (Print Name and Sign): Ranj Singh
Date: 26Feb2016
Time: 1:00pm

Samples Relinquished By (Print Name and Sign):
Date:
Time:

Samples Received By (Print Name and Sign): Siva
Date: 27/2/16
Time: 7:21

Page 1 of 1

Nº: T 021169

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: 300033273

AGAT WORK ORDER: 16T072717

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Mar 01, 2016

PAGES (INCLUDING COVER): 9

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 2:Revised Report: Reactive Silica results corrected.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T072717
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-02-29
DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW11N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/29/2016
Parameter	Unit	G / S	RDL	7413121
Nitrate as N	mg/L		0.10	4.61

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7413121 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
DR. ANTHONY R. K. DAPAAH
CHEMIST

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 16T072717
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-02-29

DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW11N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/29/2016
Parameter	Unit	G / S	RDL	7413129
Electrical Conductivity	uS/cm		2	607
pH	pH Units		NA	8.00
Saturation pH				6.95
Langelier Index				1.05
Total Hardness (as CaCO3)	mg/L		0.5	303
Total Dissolved Solids	mg/L		20	326
Alkalinity (as CaCO3)	mg/L		5	267
Bicarbonate (as CaCO3)	mg/L		5	267
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.10	<0.10
Chloride	mg/L		0.20	12.8
Nitrate as N	mg/L		0.10	4.58
Nitrite as N	mg/L		0.10	<0.10
Bromide	mg/L		0.10	<0.10
Sulphate	mg/L		0.20	21.3
Ortho Phosphate as P	mg/L		0.20	<0.20
Reactive Silica	mg/L		0.10	8.05
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.7
Colour	TCU		5	<5
Turbidity	NTU		0.5	2.9
Calcium	mg/L		0.05	81.7
Magnesium	mg/L		0.05	24.0
Sodium	mg/L		0.05	5.39
Potassium	mg/L		0.05	1.01
Aluminum	mg/L		0.004	<0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
DR. ANTHONY R. K. DAPAAH
CHEMIST

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16T072717
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-02-29

DATE REPORTED: 2016-03-01

			SAMPLE DESCRIPTION:	TW11N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2/29/2016
Parameter	Unit	G / S	RDL	7413129
Barium	mg/L		0.002	0.060
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	<0.010
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	< 0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	< 0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	<0.002
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.132
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.013
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	1.24

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7413129 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.
Revised March 04, 2016.
Revision: This report replaces the Certificate of Analysis issued on March 01, 2016. The Certificate of analysis has been updated to correct the erroneous Reactive Silica value reported.The discrepancy was due to sampling error during the analysis.

Certified By:

CHARTERED CHEMIST

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16T072717

PROJECT: 300033273

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: Mar 01, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment															
Electrical Conductivity	7412084		754	750	0.5%	< 2	102%	80%	120%	NA			NA		
pH	7412084		7.74	7.79	0.6%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	7413129	7413129	326	324	0.6%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7412084		103	103	0.0%	< 5	100%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7412084		103	103	0.0%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7412084		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7412084		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7413121	7413121	<0.10	<0.10	NA	< 0.05	106%	90%	110%	100%	90%	110%	104%	80%	120%
Chloride	7413121	7413121	12.9	13.1	1.5%	< 0.10	102%	90%	110%	107%	90%	110%	102%	80%	120%
Nitrate as N	7413121	7413121	4.61	4.67	1.3%	< 0.05	93%	90%	110%	104%	90%	110%	89%	80%	120%
Nitrite as N	7413121	7413121	<0.10	<0.10	NA	< 0.05	NA	90%	110%	107%	90%	110%	101%	80%	120%
Bromide	7413121	7413121	<0.10	<0.10	NA	< 0.05	102%	90%	110%	109%	90%	110%	100%	80%	120%
Sulphate	7413121	7413121	21.9	22.2	1.4%	< 0.10	94%	90%	110%	106%	90%	110%	94%	80%	120%
Ortho Phosphate as P	7413121	7413121	<0.20	<0.20	NA	< 0.10	93%	90%	110%	100%	90%	110%	100%	80%	120%
Reactive Silica	7402270		1.97	2.00	1.5%	< 0.05	98%	90%	110%	99%	90%	110%	93%	80%	120%
Ammonia as N	7413129	7413129	<0.02	<0.02	NA	< 0.02	92%	90%	110%	101%	90%	110%	89%	80%	120%
Total Phosphorus	7410959		<0.05	<0.05	NA	< 0.05	102%	80%	120%	103%	90%	110%	102%	70%	130%
Total Organic Carbon	7413129	7413129	0.7	0.7	NA	< 0.5	98%	90%	110%	98%	90%	110%	102%	80%	120%
Colour	7413129	7413129	<5	<5	NA	< 5	100%	90%	110%	NA			NA		
Turbidity	7413129	7413129	2.9	3.0	3.4%	< 0.5	101%	90%	110%	NA			NA		
Calcium	7413129	7413129	81.7	82.2	0.6%	< 0.05	103%	90%	110%	103%	90%	110%	101%	70%	130%
Magnesium	7413129	7413129	24.0	24.0	0.0%	< 0.05	98%	90%	110%	97%	90%	110%	100%	70%	130%
Sodium	7413129	7413129	5.39	5.28	2.1%	< 0.05	101%	90%	110%	100%	90%	110%	100%	70%	130%
Potassium	7413129	7413129	1.01	1.01	0.0%	< 0.05	100%	90%	110%	100%	90%	110%	100%	70%	130%
Aluminum	7413129	7413129	< 0.004	< 0.004	NA	< 0.004	100%	90%	110%	101%	90%	110%	103%	70%	130%
Antimony	7413129	7413129	< 0.003	< 0.003	NA	< 0.003	95%	90%	110%	95%	90%	110%	96%	70%	130%
Arsenic	7413129	7413129	< 0.003	< 0.003	NA	< 0.003	99%	90%	110%	97%	90%	110%	108%	70%	130%
Barium	7413129	7413129	0.060	0.058	3.4%	< 0.002	100%	90%	110%	103%	90%	110%	101%	70%	130%
Beryllium	7413129	7413129	< 0.001	< 0.001	NA	< 0.001	104%	90%	110%	105%	90%	110%	112%	70%	130%
Boron	7413129	7413129	< 0.010	< 0.010	NA	< 0.010	101%	90%	110%	101%	90%	110%	109%	70%	130%
Cadmium	7413129	7413129	< 0.001	< 0.001	NA	< 0.001	97%	90%	110%	93%	90%	110%	110%	70%	130%
Chromium	7413129	7413129	< 0.003	< 0.003	NA	< 0.003	100%	90%	110%	96%	90%	110%	101%	70%	130%
Cobalt	7413129	7413129	< 0.001	< 0.001	NA	< 0.001	96%	90%	110%	97%	90%	110%	98%	70%	130%
Copper	7413129	7413129	< 0.003	< 0.003	NA	< 0.003	99%	90%	110%	99%	90%	110%	98%	70%	130%
Lead	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	99%	90%	110%	97%	90%	110%	96%	70%	130%
Manganese	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	100%	90%	110%	97%	90%	110%	98%	70%	130%
Mercury	7413129	7413129	<0.0001	<0.0001	NA	< 0.0001	101%	90%	110%	103%	90%	110%	100%	80%	120%
Molybdenum	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	96%	90%	110%	91%	90%	110%	98%	70%	130%
Nickel	7413129	7413129	< 0.003	< 0.003	NA	< 0.003	98%	90%	110%	99%	90%	110%	99%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T072717
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Mar 01, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Selenium	7413129	7413129	< 0.004	< 0.004	NA	< 0.004	97%	90%	110%	98%	90%	110%	111%	70%	130%
Silver	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	99%	90%	110%	104%	90%	110%	111%	70%	130%
Strontium	7413129	7413129	0.132	0.130	1.5%	< 0.005	99%	90%	110%	96%	90%	110%	100%	70%	130%
Thallium	7413129	7413129	< 0.006	< 0.006	NA	< 0.006	103%	90%	110%	101%	90%	110%	100%	70%	130%
Tin	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	100%	90%	110%	97%	90%	110%	95%	70%	130%
Titanium	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	97%	90%	110%	93%	90%	110%	95%	70%	130%
Tungsten	7413129	7413129	< 0.010	< 0.010	NA	< 0.010	96%	90%	110%	92%	90%	110%	96%	70%	130%
Uranium	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	99%	90%	110%	95%	90%	110%	92%	70%	130%
Vanadium	7413129	7413129	< 0.002	< 0.002	NA	< 0.002	93%	90%	110%	93%	90%	110%	94%	70%	130%
Zinc	7413129	7413129	0.013	0.012	NA	< 0.005	99%	90%	110%	99%	90%	110%	99%	70%	130%
Zirconium	7413129	7413129	< 0.004	< 0.004	NA	< 0.004	98%	90%	110%	94%	90%	110%	91%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

DR. ANTHONY R. K. DAPAAH

Tony Dpaah

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T072717
PROJECT: 300033273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16T072717
PROJECT: 300033273
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T072717
Cooler Quantity:
Arrival Temperatures: 7.8 | 7.9 | 7.9
LAO 5.9 | 6 | 6.2
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes: on ice

Report Information:

Company: RJ Burnside & Associates Ltd
Contact: Tim Baxter
Address: 292 Speedvale Ave. West, unit 20
Guelph, ONT
Phone: 519-823-4995 Fax:
Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☐Regulation 153/04
Table ____ *Indicate One*
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture *(Check One)*
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ____ *Indicate One*

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
____ *Indicate One*

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis ☐ Yes ☒ No

Turnaround Time (TAT) Required:

RUSH

Regular TAT ☐ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information: Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐B-HWS ☐Cl⁻ ☐CN⁻ ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrates	MWQA
TW11N	Feb.29,2016	11:00	1	GW																	X	
TW11	Feb.29,2016	12:51	6	GW																		X

Samples Relinquished By (Print Name and Sign): Matt Valeriote | Date: Feb.29,2016 | Time:
Samples Relinquished By (Print Name and Sign): | Date: | Time:

Samples Received By (Print Name and Sign): M. Kelly Maggie Kelly | Date: 2016/2/29 | Time: 2:25 pm
Samples Received By (Print Name and Sign): S. | Date: 1/3/16 | Time: 9:14

Page 1 of 1

Nº: T014312

Document ID: DIV-78-1511.009

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Date Issued: Jan 8, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 16T101841

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Jun 17, 2016

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16T101841
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2016-06-06

DATE REPORTED: 2016-06-08

			SAMPLE DESCRIPTION:	TW2	TW6	TW5	TW8	TW9	TW11
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	Unit	G / S	RDL	7607710	7607713	7607719	7607726	7607733	7607739
Electrical Conductivity	uS/cm		2	526	585	606	627	601	572
pH	pH Units		NA	8.03	8.07	8.10	8.17	8.10	8.08
Saturation pH				6.97	6.96	6.99	6.95	6.95	6.95
Langelier Index				1.06	1.11	1.11	1.22	1.15	1.13
Total Hardness (as CaCO3)	mg/L		0.5	276	303	298	324	314	289
Total Dissolved Solids	mg/L		20	290	326	326	358	334	300
Alkalinity (as CaCO3)	mg/L		5	264	261	251	251	257	262
Bicarbonate (as CaCO3)	mg/L		5	264	261	251	251	257	262
Carbonate (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5
Fluoride	mg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	mg/L		0.20	5.59	15.2	24.3	11.0	9.32	18.4
Nitrate as N	mg/L		0.10	1.18	6.32	6.72	5.35	2.99	3.00
Nitrite as N	mg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bromide	mg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sulphate	mg/L		0.20	19.0	16.4	16.8	58.0	50.5	17.3
Ortho Phosphate as P	mg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Reactive Silica	mg/L		0.05	9.90	7.14	7.49	7.75	8.60	7.67
Ammonia as N	mg/L		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.7	0.5	<0.5	0.7	0.6	1.1
Colour	TCU		5	<5	<5	<5	<5	<5	<5
Turbidity	NTU		0.5	6.4	3.7	2.5	53.6	3.5	10.2
Calcium	mg/L		0.05	73.3	83.2	81.5	88.3	82.5	78.3
Magnesium	mg/L		0.05	22.6	23.1	23.0	25.1	26.2	22.8
Sodium	mg/L		0.05	2.65	5.15	9.66	4.72	3.91	7.26
Potassium	mg/L		0.05	1.03	0.89	0.91	1.34	0.98	0.99
Aluminum	mg/L		0.004	0.006	0.009	0.006	0.011	<0.004	<0.004
Antimony	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Arsenic	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003

Certified By:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2016-06-06

DATE REPORTED: 2016-06-08

			SAMPLE DESCRIPTION:	TW2	TW6	TW5	TW8	TW9	TW11
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016	6/2/2016
Parameter	Unit	G / S	RDL	7607710	7607713	7607719	7607726	7607733	7607739
Barium	mg/L		0.002	0.063	0.101	0.112	0.087	0.069	0.056
Beryllium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L		0.010	0.012	0.012	0.011	0.025	0.013	0.010
Cadmium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cobalt	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Manganese	mg/L		0.002	0.004	<0.002	<0.002	0.005	<0.002	<0.002
Mercury	mg/L		0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Silver	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Strontium	mg/L		0.005	0.122	0.132	0.153	1.42	0.296	0.123
Thallium	mg/L		0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Tin	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Titanium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Tungsten	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Vanadium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L		0.005	0.010	0.035	0.026	0.023	0.031	0.024
Zirconium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
% Difference/ Ion Balance	%		NA	2.23	1.11	1.02	1.52	1.52	1.67

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7607710-7607739 Samples required dilution prior to analysis for Anions due to the presence of non-target Ions; the RDLs were adjusted to reflect the dilution.

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T101841
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment - Groundwater Samples															
Electrical Conductivity	7607726	7607726	627	630	0.5%	< 2	100%	80%	120%	NA			NA		
pH	7607726	7607726	8.17	8.11	0.7%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	7606122		858	906	5.4%	< 20	114%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7607726	7607726	251	262	4.3%	< 5	102%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7607726	7607726	251	262	4.3%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7607726	7607726	< 5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7607726	7607726	< 5	<5	NA	< 5	NA			NA			NA		
Fluoride	7607427		<0.10	<0.10	NA	< 0.05	98%	90%	110%	97%	90%	110%	94%	80%	120%
Chloride	7607427		122	117	4.2%	< 0.10	91%	90%	110%	108%	90%	110%	NA	80%	120%
Nitrate as N	7607427		0.73	0.73	0.0%	< 0.05	92%	90%	110%	90%	90%	110%	95%	80%	120%
Nitrite as N	7607427		<0.10	<0.10	NA	< 0.05	NA	90%	110%	96%	90%	110%	85%	80%	120%
Bromide	7607427		<0.10	<0.10	NA	< 0.05	104%	90%	110%	104%	90%	110%	102%	80%	120%
Sulphate	7607427		28.2	28.2	0.0%	< 0.10	105%	90%	110%	100%	90%	110%	101%	80%	120%
Ortho Phosphate as P	7607427		<0.20	<0.20	NA	< 0.10	107%	90%	110%	106%	90%	110%	116%	80%	120%
Ammonia as N	7605143		<0.02	<0.02	NA	< 0.02	90%	90%	110%	97%	90%	110%	95%	80%	120%
Total Phosphorus	7602935		0.44	0.43	2.3%	< 0.05	101%	80%	120%	95%	90%	110%	101%	70%	130%
Total Organic Carbon	7603116		2.7	2.6	3.8%	< 0.5	98%	90%	110%	92%	90%	110%	97%	80%	120%
Colour	7595900		60	63	4.9%	< 5	101%	90%	110%	NA			NA		
Turbidity	7606359		<0.5	<0.5	NA	< 0.5	103%	90%	110%	NA			NA		
Calcium	7607710	7607710	73.3	74.7	1.9%	< 0.05	102%	90%	110%	101%	90%	110%	97%	70%	130%
Magnesium	7607710	7607710	22.6	23.0	1.8%	< 0.05	99%	90%	110%	97%	90%	110%	98%	70%	130%
Sodium	7607710	7607710	2.65	2.63	0.8%	< 0.05	96%	90%	110%	97%	90%	110%	94%	70%	130%
Potassium	7607710	7607710	1.03	1.02	1.0%	< 0.05	93%	90%	110%	94%	90%	110%	92%	70%	130%
Aluminum	7607710	7607710	0.006	0.009	NA	< 0.004	104%	90%	110%	98%	90%	110%	105%	70%	130%
Antimony	7607710	7607710	< 0.003	<0.003	NA	< 0.003	99%	90%	110%	93%	90%	110%	102%	70%	130%
Arsenic	7607710	7607710	< 0.003	<0.003	NA	< 0.003	104%	90%	110%	99%	90%	110%	107%	70%	130%
Barium	7607710	7607710	0.063	0.062	1.6%	< 0.002	103%	90%	110%	99%	90%	110%	105%	70%	130%
Beryllium	7607710	7607710	< 0.001	<0.001	NA	< 0.001	106%	90%	110%	100%	90%	110%	111%	70%	130%
Boron	7607710	7607710	0.012	0.011	NA	< 0.010	110%	90%	110%	103%	90%	110%	110%	70%	130%
Cadmium	7607710	7607710	< 0.001	<0.001	NA	< 0.001	100%	90%	110%	99%	90%	110%	118%	70%	130%
Chromium	7607710	7607710	< 0.003	<0.003	NA	< 0.003	104%	90%	110%	98%	90%	110%	105%	70%	130%
Cobalt	7607710	7607710	< 0.001	<0.001	NA	< 0.001	103%	90%	110%	99%	90%	110%	106%	70%	130%
Copper	7607710	7607710	< 0.003	<0.003	NA	< 0.003	104%	90%	110%	99%	90%	110%	105%	70%	130%
Iron	7607710	7607710	< 0.010	<0.010	NA	< 0.010	104%	90%	110%	91%	90%	110%	94%	70%	130%
Lead	7607710	7607710	< 0.002	<0.002	NA	< 0.002	99%	90%	110%	94%	90%	110%	98%	70%	130%
Manganese	7607710	7607710	0.004	0.004	NA	< 0.002	104%	90%	110%	99%	90%	110%	108%	70%	130%
Mercury	7607710	7607710	<0.0001	<0.0001	NA	< 0.0001	104%	90%	110%	98%	90%	110%	101%	80%	120%
Molybdenum	7607710	7607710	< 0.002	<0.002	NA	< 0.002	101%	90%	110%	94%	90%	110%	105%	70%	130%
Nickel	7607710	7607710	< 0.003	<0.003	NA	< 0.003	106%	90%	110%	101%	90%	110%	107%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T101841
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Selenium	7607710	7607710	< 0.004	<0.004	NA	< 0.004	102%	90%	110%	97%	90%	110%	110%	70%	130%
Silver	7607710	7607710	< 0.002	<0.002	NA	< 0.002	104%	90%	110%	109%	90%	110%	120%	70%	130%
Strontium	7607710	7607710	0.122	0.121	0.8%	< 0.005	105%	90%	110%	97%	90%	110%	106%	70%	130%
Thallium	7607710	7607710	< 0.006	<0.006	NA	< 0.006	106%	90%	110%	106%	90%	110%	109%	70%	130%
Tin	7607710	7607710	< 0.002	<0.002	NA	< 0.002	101%	90%	110%	97%	90%	110%	105%	70%	130%
Titanium	7607710	7607710	< 0.002	<0.002	NA	< 0.002	106%	90%	110%	95%	90%	110%	102%	70%	130%
Tungsten	7607710	7607710	< 0.010	<0.010	NA	< 0.010	106%	90%	110%	100%	90%	110%	100%	70%	130%
Uranium	7607710	7607710	< 0.002	<0.002	NA	< 0.002	106%	90%	110%	92%	90%	110%	98%	70%	130%
Vanadium	7607710	7607710	< 0.002	<0.002	NA	< 0.002	100%	90%	110%	95%	90%	110%	101%	70%	130%
Zinc	7607710	7607710	0.010	0.010	NA	< 0.005	101%	90%	110%	96%	90%	110%	102%	70%	130%
Zirconium	7607710	7607710	< 0.004	<0.004	NA	< 0.004	102%	90%	110%	95%	90%	110%	94%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16T101841
ATTENTION TO: Dwight Smikle
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 16T101841

ATTENTION TO: Dwight Smikle

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

TURBIDITY 1Lg

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16T101841

Cooler Quantity:

Arrival Temperatures: 8.0 | 7.6 | 7.8
7.2 | 7.4 | 7.3

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: RJ Burnside + Associates Ltd.
Contact: Dwight Smikle
Address: 292 Speedvale Ave. West
Unit #20, Guelph ONT, N1H 1C4
Phone: Fax:
Reports to be sent to:
1. Email: dwight.smikle@rjburnside.com
2. Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ______ (Indicate One)
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ (Indicate One)

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 3000 33273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	**ORPs:** ☐ B-HWS ☐ Cl^- ☐ CN^- ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	**Nutrients:** ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	**Volatiles:** ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	WQA								
TW2	Jun 2 2016		6	GW	Filtered Metals																X								
TW7			6	GW	+ Mercury																X								
TW5			6	GW	For All Samples																X								
TW8			6	GW																	X								
TW9			6	GW																	X								
TW11			6	GW																	X								

Samples Relinquished By (Print Name and Sign): Matt Valeriote
Date: Jun 2, 2016
Time:
Samples Received By (Print Name and Sign): Ranji Singh
Date: 2016-Jun-2
Time: 5:00pm

Samples Relinquished By (Print Name and Sign):
Date:
Time:
Samples Received By (Print Name and Sign): Bina
Date: 16/6/4
Time: 11:06

Page 1 of 1

Nº: T 022151

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Document ID: DIV 78 1511.010

Date Issued: November 2, 2015

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME:	R.J. BURNSIDE & ASSOCIATES LTD 292 Speedvale Avenue West, Unit 7 Guelph, ON N1H1C4 (519) 823-4995
ATTENTION TO:	Jim Baxter
PROJECT:	300033273
AGAT WORK ORDER:	16W073428
WATER ANALYSIS REVIEWED BY:	Mike Muneswar, BSc (Chem), Senior Inorganic Analyst
DATE REPORTED:	Mar 03, 2016
PAGES (INCLUDING COVER):	9
VERSION*:	1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16W073428
PROJECT: 300033273

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http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-03-02
DATE REPORTED: 2016-03-03

			SAMPLE DESCRIPTION:	TW12N
			SAMPLE TYPE:	Water
			DATE SAMPLED:	3/1/2016
Parameter	Unit	G / S	RDL	7417866
Nitrate as N	mg/L		0.25	<0.25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
7417866 Sample required dilution prior to analysis for Nitrate due to the presence of non-target Anions; the RDL was adjusted accordingly.

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16W073428
PROJECT: 300033273

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-03-02
DATE REPORTED: 2016-03-03

			SAMPLE DESCRIPTION:	TW12
			SAMPLE TYPE:	Water
			DATE SAMPLED:	3/1/2016
Parameter	Unit	G / S	RDL	7417874
Electrical Conductivity	uS/cm		2	1740
pH	pH Units		NA	7.92
Saturation pH				6.60
Langelier Index				1.32
Total Hardness (as CaCO3)	mg/L		0.5	1010
Total Dissolved Solids	mg/L		20	1480
Alkalinity (as CaCO3)	mg/L		5	195
Bicarbonate (as CaCO3)	mg/L		5	195
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.25	<0.25
Chloride	mg/L		0.50	2.30
Nitrate as N	mg/L		0.25	<0.25
Nitrite as N	mg/L		0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		2.0	875
Ortho Phosphate as P	mg/L		0.50	<0.50
Reactive Silica	mg/L		0.05	14.2
Ammonia as N	mg/L		0.02	0.08
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	<0.5
Colour	TCU		5	<5
Turbidity	NTU		0.5	5.0
Calcium	mg/L		0.10	320
Magnesium	mg/L		0.10	51.6
Sodium	mg/L		0.10	7.51
Potassium	mg/L		0.10	1.91
Aluminum	mg/L		0.004	<0.004
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	0.013

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16W073428
PROJECT: 300033273

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CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-03-02
DATE REPORTED: 2016-03-03

			SAMPLE DESCRIPTION:	TW12
			SAMPLE TYPE:	Water
			DATE SAMPLED:	3/1/2016
Parameter	Unit	G / S	RDL	7417874
Barium	mg/L		0.002	0.005
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	0.055
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	<0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	0.401
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	0.026
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	0.004
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	3.52
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	0.012
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.036
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	3.66

Comments:	RDL - Reported Detection Limit; G / S - Guideline / Standard
7417874	Sample required dilution prior to analysis for Anions & Cations in order to keep the analytes within the calibration range of the instruments and/or to minimize any matrix interferences; the RDLs were adjusted accordingly.

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W073428
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis

RPT Date: Mar 03, 2016			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment															
Electrical Conductivity	7415208		751	751	0.0%	< 2	102%	80%	120%	NA			NA		
pH	7415208		7.85	7.87	0.3%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	7417874	7417874	1480	1270	15.3%	< 20	98%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7415208		102	104	1.9%	< 5	101%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7415208		102	104	1.9%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7415208		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7415208		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7411105		<0.5	<0.5	NA	< 0.05	107%	90%	110%	109%	90%	110%	99%	80%	120%
Chloride	7411105		171	172	0.6%	< 0.10	102%	90%	110%	107%	90%	110%	95%	80%	120%
Nitrate as N	7411105		<0.5	<0.5	NA	< 0.05	93%	90%	110%	102%	90%	110%	105%	80%	120%
Nitrite as N	7411105		<0.5	<0.5	NA	< 0.05	NA	90%	110%	94%	90%	110%	90%	80%	120%
Bromide	7411105		<0.5	<0.5	NA	< 0.05	109%	90%	110%	104%	90%	110%	89%	80%	120%
Sulphate	7411105		<1.0	<1.0	NA	< 0.10	96%	90%	110%	100%	90%	110%	95%	80%	120%
Ortho Phosphate as P	7411105		<1.0	<1.0	NA	< 0.10	93%	90%	110%	101%	90%	110%	94%	80%	120%
Reactive Silica	7402270		1.97	2.00	1.5%	< 0.05	98%	90%	110%	101%	90%	110%	93%	80%	120%
Ammonia as N	7417865		0.06	0.06	NA	< 0.02	103%	90%	110%	102%	90%	110%	94%	80%	120%
Total Phosphorus	7417874	7417874	< 0.05	<0.05	NA	< 0.05	103%	80%	120%	98%	90%	110%	101%	70%	130%
Total Organic Carbon	7417874	7417874	< 0.5	<0.5	NA	< 0.5	96%	90%	110%	92%	90%	110%	99%	80%	120%
Colour	7417874	7417874	< 5	<5	NA	< 5	100%	90%	110%	NA			NA		
Turbidity	7417874	7417874	5.0	4.8	4.1%	< 0.5	104%	90%	110%	NA			NA		
Calcium	7413138		17.0	16.7	1.8%	< 0.05	103%	90%	110%	105%	90%	110%	100%	70%	130%
Magnesium	7413138		3.77	3.75	0.5%	< 0.05	97%	90%	110%	99%	90%	110%	100%	70%	130%
Sodium	7413138		80.8	81.6	1.0%	< 0.05	101%	90%	110%	98%	90%	110%	97%	70%	130%
Potassium	7413138		0.79	0.79	0.0%	< 0.05	99%	90%	110%	98%	90%	110%	97%	70%	130%
Aluminum	7417874	7417874	< 0.004	<0.004	NA	< 0.004	102%	90%	110%	110%	90%	110%	101%	70%	130%
Antimony	7417874	7417874	< 0.003	<0.003	NA	< 0.003	102%	90%	110%	98%	90%	110%	96%	70%	130%
Arsenic	7417874	7417874	0.013	0.013	NA	< 0.003	106%	90%	110%	103%	90%	110%	107%	70%	130%
Barium	7417874	7417874	0.005	0.005	NA	< 0.002	99%	90%	110%	99%	90%	110%	94%	70%	130%
Beryllium	7417874	7417874	< 0.001	<0.001	NA	< 0.001	103%	90%	110%	106%	90%	110%	106%	70%	130%
Boron	7417874	7417874	0.055	0.058	5.3%	< 0.010	108%	90%	110%	104%	90%	110%	101%	70%	130%
Cadmium	7417874	7417874	< 0.001	<0.001	NA	< 0.001	102%	90%	110%	100%	90%	110%	103%	70%	130%
Chromium	7417874	7417874	< 0.003	<0.003	NA	< 0.003	100%	90%	110%	102%	90%	110%	97%	70%	130%
Cobalt	7417874	7417874	< 0.001	<0.001	NA	< 0.001	107%	90%	110%	102%	90%	110%	98%	70%	130%
Copper	7417874	7417874	< 0.003	<0.003	NA	< 0.003	102%	90%	110%	102%	90%	110%	96%	70%	130%
Iron	7417874	7417874	0.401	0.400	0.2%	< 0.010	107%	90%	110%	102%	90%	110%	87%	70%	130%
Lead	7417874	7417874	< 0.002	<0.002	NA	< 0.002	100%	90%	110%	97%	90%	110%	90%	70%	130%
Manganese	7417874	7417874	0.026	0.025	3.9%	< 0.002	110%	90%	110%	103%	90%	110%	101%	70%	130%
Mercury	7417874	7417874	<0.0001	<0.0001	NA	< 0.0001	99%	90%	110%	101%	90%	110%	93%	80%	120%
Molybdenum	7417874	7417874	0.004	0.004	NA	< 0.002	100%	90%	110%	93%	90%	110%	91%	70%	130%

AGAT Laboratories

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Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W073428
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Mar 03, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	7417874	7417874	< 0.003	<0.003	NA	< 0.003	105%	90%	110%	100%	90%	110%	95%	70%	130%
Selenium	7417874	7417874	< 0.004	<0.004	NA	< 0.004	104%	90%	110%	102%	90%	110%	112%	70%	130%
Silver	7417874	7417874	< 0.002	<0.002	NA	< 0.002	104%	90%	110%	108%	90%	110%	110%	70%	130%
Strontium	7417874	7417874	3.52	3.55	0.8%	< 0.005	99%	90%	110%	97%	90%	110%	85%	70%	130%
Thallium	7417874	7417874	< 0.006	<0.006	NA	< 0.006	107%	90%	110%	106%	90%	110%	100%	70%	130%
Tin	7417874	7417874	< 0.002	<0.002	NA	< 0.002	99%	90%	110%	99%	90%	110%	95%	70%	130%
Titanium	7417874	7417874	0.012	0.012	0.0%	< 0.002	106%	90%	110%	103%	90%	110%	96%	70%	130%
Tungsten	7417874	7417874	< 0.010	<0.010	NA	< 0.010	93%	90%	110%	91%	90%	110%	91%	70%	130%
Uranium	7417874	7417874	< 0.002	<0.002	NA	< 0.002	103%	90%	110%	97%	90%	110%	92%	70%	130%
Vanadium	7417874	7417874	< 0.002	<0.002	NA	< 0.002	107%	90%	110%	103%	90%	110%	97%	70%	130%
Zinc	7417874	7417874	0.036	0.036	0.0%	< 0.005	105%	90%	110%	104%	90%	110%	110%	70%	130%
Zirconium	7417874	7417874	< 0.004	<0.004	NA	< 0.004	98%	90%	110%	94%	90%	110%	91%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: ____________________

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W073428
ATTENTION TO: Jim Baxter
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16W073428

PROJECT: 300033273

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 16W073428

Cooler Quantity:

Arrival Temperatures: 7.6 | 7.2 | 7.8
6.9 | 7.1 | 7

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: on ice

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: RJ Burnside & Associates Ltd.
Contact: Jim Baxter
Address: 299 Speedvale Ave. West, Unit 2
Guelph ONT
Phone: Fax:
Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Project Information:

Project: 300037273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?**
☐ Yes ☒ No

Report Guideline on *Certificate of Analysis*
☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrates	MWQA							
TW12W	March 1, 2016	12:10	1	GW																	x								
TW12	March 1, 2016	14:00	6	GW																		x							

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	
Matt Valeriote /	March 2, 2016		M. Kelly / Maggie Kelly	2016/03/2	9:15 Am	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T014314
				16/3/3	9:29	

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: 320033273

AGAT WORK ORDER: 16W074674

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: Mar 09, 2016

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 16W074674
PROJECT: 320033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Jim Baxter
SAMPLED BY:MV

Nitrate (Water)

DATE RECEIVED: 2016-03-08

DATE REPORTED: 2016-03-09

			SAMPLE DESCRIPTION:	TW4	TW11	TW8
			SAMPLE TYPE:	Water	Water	Water
			DATE SAMPLED:	3/7/2016	3/7/2016	3/7/2016
Parameter	Unit	G / S	RDL	7426607	7426610	7426611
Nitrate as N	mg/L		0.05	2.97	5.03	7.76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Parvathi Malemath

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 320033273
SAMPLING SITE:

AGAT WORK ORDER: 16W074674
ATTENTION TO: Jim Baxter
SAMPLED BY:MV

Water Analysis

RPT Date: Mar 09, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	7427214		3.61	3.59	0.6%	< 0.05	104%	90%	110%	109%	90%	110%	101%	80%	120%

Parvathi Malemath

Certified By:

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 320033273

SAMPLING SITE:

AGAT WORK ORDER: 16W074674

ATTENTION TO: Jim Baxter

SAMPLED BY:MV

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

/ 1 Bag

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16W074674

Cooler Quantity:

Arrival Temperatures: 2.8 | 2.8 | 2.9
2.6 | 2.6 | 2.7

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: on ice

Report Information:

Company: RJ Burnside & Associates Ltd
Contact: Jim Baxter
Address: 292 Speedvale Ave. West unit 20
Guelph Ont
Phone: Fax:
Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04
Table ______ Indicate One
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture (Check One)
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ______ Indicate One

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
______ Indicate One

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

RUSH!

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033277
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on *Certificate of Analysis*
☒ Yes ~~☒ No~~

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐B-HWS ☐Cl⁻ ☐CN⁻ ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate
TW4	March 7 2016		1	GW																	X
TW11	"		1	GW																	X
TW8	"		1	GW																	X

Samples Relinquished By (Print Name and Sign): Matt Valeriote | Date: March 8 2016 | Time:

Samples Received By (Print Name and Sign): M.Kelly Maggie Kelly | Date: 2016/3/8 | Time: 8:30 Am

Samples Relinquished By (Print Name and Sign): M.Kelly Maggie Kelly | Date: 2016/3/8 | Time: 12:25

Samples Received By (Print Name and Sign): | Date: 2016/03/08 | Time: 12:25

2016/03/08 1:23

for Sharmin & Mar 8/16 1:23

Page 1 of 1

Nº: T 014328

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON   N1H1C4
(519) 823-4995

ATTENTION TO: Jim Baxter

PROJECT: 300033273

AGAT WORK ORDER: 16W074853

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Mar 10, 2016

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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MISSISSAUGA, ONTARIO
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Certificate of Analysis

AGAT WORK ORDER: 16W074853
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Jim Baxter
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-03-09
DATE REPORTED: 2016-03-10

			SAMPLE DESCRIPTION:	TW5	TW7	TW9		TW3		TW2
			SAMPLE TYPE:	Water	Water	Water		Water		Water
			DATE SAMPLED:	3/8/2016	3/8/2016	3/8/2016		3/8/2016		3/8/2016
Parameter	Unit	G / S	RDL	7430208	7430212	7430214	RDL	7430216	RDL	7430218
Nitrate as N	mg/L		0.05	7.80	7.27	3.41	0.25	0.54	0.05	0.58

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
7430216 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analyte within the calibration range of the instrument and to reduce matrix interference.

Certified By: Amanjot Bhela

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W074853
ATTENTION TO: Jim Baxter
SAMPLED BY:

Water Analysis

RPT Date: Mar 10, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	7430216	7430216	0.54	0.56	3.6%	< 0.05	108%	90%	110%	108%	90%	110%	110%	80%	120%

Certified By: Amanjot Bhela

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16W074853

PROJECT: 300033273

ATTENTION TO: Jim Baxter

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 16W074853

Cooler Quantity:

Arrival Temperatures: 7.6 | 7.0 | 7.2
7.1 | 7.4 | 6.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: on ice

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: RJ Burnside + Associates Ltd
Contact: Jim Baxter
Address: 299 Speedvale Ave. West unit 20
Guelph, ONT
Phone: Fax:
Reports to be sent to:
1. Email: jim.baxter@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04
Table ____ *Indicate One*
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture *(Check One)*
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ____ *Indicate One*

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
____ *Indicate One*

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

RUSH!! (Rush Surcharges Apply)

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 300033273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐B-HWS ☐Cl⁻ ☐CN⁻ ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate
TW5	March 9, 2016	10:40	1	GW																	X
TW7	"	11:15	1	GW																	X
TW9	"	11:50	1	GW																	X
TW3	"	12:30	1	GW																	X
TW2	"	13:00	1	GW																	X

Samples Relinquished By (Print Name and Sign): Matt Valeriote / Date: March 9, 2016 Time:

Samples Relinquished By (Print Name and Sign): Date: Time:

Samples Received By (Print Name and Sign): M. Kelly Maggie Kelly Date: 2016/3/8 Time: 4:10

Samples Received By (Print Name and Sign): Sima Date: 16/03/3 Time: 944 PM

Page 1 of 1

Nº: T014329

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: Belfountain

AGAT WORK ORDER: 16W082447

WATER ANALYSIS REVIEWED BY: Sofka Pehlyova, Senior Analyst

DATE REPORTED: Apr 06, 2016

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16W082447
PROJECT: Belfountain

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-04-05

DATE REPORTED: 2016-04-05

			SAMPLE DESCRIPTION:	TW11-1 hr	TW11-26 hr	TW6-1 hr	TW6-26 hr
			SAMPLE TYPE:	Water	Water	Water	Water
			DATE SAMPLED:	3/30/2016	3/31/2016	4/1/2016	4/2/2016
Parameter	Unit	G / S	RDL	7471112	7471114	7471115	7471117
Nitrate as N	mg/L		0.05	3.46	3.37	7.89	8.23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: Sofia Pehlyova

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: Belfountain
SAMPLING SITE:

AGAT WORK ORDER: 16W082447
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	7469191		1.99	1.92	3.6%	< 0.05	99%	90%	110%	108%	90%	110%	106%	80%	120%

Certified By: Sofia Pehlyova

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16W082447

PROJECT: Belfountain

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

RUSH!

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 16W082447

Cooler Quantity:

Arrival Temperatures: 7.5 | 4.9 | 5.6
4.9 | 5.5 | 5.7

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: on ice

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: Burnside
Contact: Dwight Smikle
Address: 292 Speedvale Ave West
Geulph, ON
Phone: 519 823 4995 Fax:
Reports to be sent to:
1. Email: Dwight.Smikle@rjburnside.com
2. Email: Sean.Quinlan@rjburnside.com

Project Information:

Project: Belfountain
Site Location: 300033273
Sampled By: Sean Quinlan
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Regulatory Requirements:

☑ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04
Table *Indicate One*
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture *(Check One)*
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region *Indicate One*

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☑ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☑ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☑ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
***TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐B-HWS ☐Cl ☐CN ☐Cr⁶⁺ ☐EC ☐FOC ☐NO₃/NO₂ ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH₃ ☐TKN ☐NO₃ ☐NO₂ ☐NO₃/NO₂	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Nitrate						
TW11 - 1 hr	30 Mar 16	12:30	1	GW		N																☑						
TW11 - 26 hr	31 Mar 16	13:00	1	GW		N																☑						
TW6 - 1 hr	1 Apr 16	12:00	1	GW		N																☑						
TW6 - 26 hr	2 Apr 16	14:55	1	GW		N																☑						
24 HR RUSH TAT REQUESTED																												

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	
Sean Quinlan	4 April 16	10:55	M. Kelly Maggie Kelly	2016/04/04	4:30 pm	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign): Sima	Date 16/5/4	Time 900	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº:

5835 COOPERS AVENUE
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http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 16W138240

WATER ANALYSIS REVIEWED BY: Sofka Pehlyova, Senior Analyst

DATE REPORTED: Sep 26, 2016

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 16W138240
PROJECT: 300033273

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http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-09-16
DATE REPORTED: 2016-09-26

			SAMPLE DESCRIPTION:	TW5		TW2		TW7	TW8		TW9
			SAMPLE TYPE:	Water		Water		Water	Water		Water
			DATE SAMPLED:	9/15/2016		9/15/2016		9/15/2016	9/15/2016		9/15/2016
Parameter	Unit	G / S	RDL	7853172	RDL	7853176	RDL	7853182	7853189	RDL	7853195
Electrical Conductivity	uS/cm		2	667	2	575	2	606	598	2	594
pH	pH Units		NA	8.08	NA	8.17	NA	8.14	8.08	NA	8.15
Saturation pH				7.04		6.96		7.01	7.01		7.00
Langelier Index				1.04		1.21		1.13	1.07		1.15
Total Hardness (as CaCO3)	mg/L		0.5	280	0.5	294	0.5	284	296	0.5	289
Total Dissolved Solids	mg/L		20	358	20	308	20	334	364	20	332
Alkalinity (as CaCO3)	mg/L		5	237	5	271	5	247	238	5	249
Bicarbonate (as CaCO3)	mg/L		5	237	5	271	5	247	238	5	249
Carbonate (as CaCO3)	mg/L		5	<5	5	<5	5	<5	<5	5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	5	<5	5	<5	<5	5	<5
Fluoride	mg/L		0.10	<0.10	0.05	<0.05	0.10	<0.10	<0.10	0.05	<0.05
Chloride	mg/L		0.20	41.2	0.10	5.96	0.20	17.4	9.46	0.10	9.76
Nitrate as N	mg/L		0.10	7.18	0.05	0.82	0.10	6.97	7.85	0.05	2.17
Nitrite as N	mg/L		0.10	<0.10	0.05	<0.05	0.10	<0.10	<0.10	0.05	<0.05
Bromide	mg/L		0.10	<0.10	0.05	<0.05	0.10	<0.10	<0.10	0.05	<0.05
Sulphate	mg/L		0.20	20.1	0.10	25.6	0.20	18.5	43.5	0.10	45.3
Ortho Phosphate as P	mg/L		0.20	<0.20	0.10	<0.10	0.20	<0.20	<0.20	0.10	<0.10
Reactive Silica	mg/L		0.05	7.43	0.05	11.8	0.05	7.12	7.49	0.05	8.77
Ammonia as N	mg/L		0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.02	0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05	0.05	0.05	0.05	<0.05	0.06	0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.6	0.5	1.1	0.5	1.0	1.5	0.5	0.9
Colour	TCU		5	<5	5	<5	5	<5	<5	5	<5
Turbidity	NTU		0.5	1.7	0.5	110	0.5	4.8	113	0.5	2.4
Calcium	mg/L		0.05	76.6	0.05	77.6	0.05	77.5	80.6	0.05	76.2
Magnesium	mg/L		0.05	21.6	0.05	24.3	0.05	21.9	22.9	0.05	23.9
Sodium	mg/L		0.05	16.0	0.05	3.10	0.05	6.44	3.22	0.05	4.03
Potassium	mg/L		0.05	0.90	0.05	1.12	0.05	0.87	1.17	0.05	0.89
Aluminum	mg/L		0.004	0.010	0.004	0.014	0.004	0.012	0.011	0.004	0.010
Antimony	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003	0.003	<0.003
Arsenic	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	0.003	0.003	<0.003

Certified By: Sofia Pehlyova

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16W138240
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-09-16

DATE REPORTED: 2016-09-26

			SAMPLE DESCRIPTION:	TW5		TW2		TW7	TW8		TW9
			SAMPLE TYPE:	Water		Water		Water	Water		Water
			DATE SAMPLED:	9/15/2016		9/15/2016		9/15/2016	9/15/2016		9/15/2016
Parameter	Unit	G / S	RDL	7853172	RDL	7853176	RDL	7853182	7853189	RDL	7853195
Barium	mg/L		0.002	0.112	0.002	0.092	0.002	0.099	0.085	0.002	0.074
Beryllium	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Boron	mg/L		0.010	<0.010	0.010	<0.010	0.010	<0.010	0.022	0.010	0.010
Cadmium	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Chromium	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003	0.003	<0.003
Cobalt	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Copper	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	<0.010
Lead	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Manganese	mg/L		0.002	<0.002	0.002	0.003	0.002	<0.002	0.005	0.002	<0.002
Mercury	mg/L		0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Nickel	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003	0.003	<0.003
Selenium	mg/L		0.004	<0.004	0.004	<0.004	0.004	<0.004	<0.004	0.004	<0.004
Silver	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Strontium	mg/L		0.005	0.155	0.005	0.134	0.005	0.124	1.66	0.005	0.279
Thallium	mg/L		0.006	<0.006	0.006	<0.006	0.006	<0.006	<0.006	0.006	<0.006
Tin	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Titanium	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Tungsten	mg/L		0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	<0.010
Uranium	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Vanadium	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002
Zinc	mg/L		0.005	0.016	0.005	0.009	0.005	0.020	0.024	0.005	0.028
Zirconium	mg/L		0.004	<0.004	0.004	<0.004	0.004	<0.004	<0.004	0.004	<0.004
% Difference/ Ion Balance	%		NA	3.91	NA	1.18	NA	2.78	3.31	NA	3.13

Certified By: Sofia Pehlyova

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 16W138240
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-09-16

DATE REPORTED: 2016-09-26

			SAMPLE DESCRIPTION:	TW11
			SAMPLE TYPE:	Water
			DATE SAMPLED:	9/15/2016
Parameter	Unit	G / S	RDL	7853203
Electrical Conductivity	uS/cm		2	589
pH	pH Units		NA	8.20
Saturation pH				6.99
Langelier Index				1.21
Total Hardness (as CaCO3)	mg/L		0.5	286
Total Dissolved Solids	mg/L		20	314
Alkalinity (as CaCO3)	mg/L		5	258
Bicarbonate (as CaCO3)	mg/L		5	258
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.10	12.7
Nitrate as N	mg/L		0.05	4.08
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	21.3
Ortho Phosphate as P	mg/L		0.10	<0.10
Reactive Silica	mg/L		0.05	7.88
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.8
Colour	TCU		5	<5
Turbidity	NTU		0.5	4.9
Calcium	mg/L		0.05	77.5
Magnesium	mg/L		0.05	22.4
Sodium	mg/L		0.05	5.49
Potassium	mg/L		0.05	0.97
Aluminum	mg/L		0.004	0.013
Antimony	mg/L		0.003	<0.003
Arsenic	mg/L		0.003	<0.003

Certified By: Sofia Pehlyora

Certificate of Analysis

AGAT WORK ORDER: 16W138240

PROJECT: 300033273

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CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

ATTENTION TO: Dwight Smikle

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-09-16

DATE REPORTED: 2016-09-26

			SAMPLE DESCRIPTION:	TW11
			SAMPLE TYPE:	Water
			DATE SAMPLED:	9/15/2016
Parameter	Unit	G / S	RDL	7853203
Barium	mg/L		0.002	0.059
Beryllium	mg/L		0.001	<0.001
Boron	mg/L		0.010	<0.010
Cadmium	mg/L		0.001	<0.001
Chromium	mg/L		0.003	<0.003
Cobalt	mg/L		0.001	<0.001
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	<0.010
Lead	mg/L		0.002	<0.002
Manganese	mg/L		0.002	<0.002
Mercury	mg/L		0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002
Nickel	mg/L		0.003	<0.003
Selenium	mg/L		0.004	<0.004
Silver	mg/L		0.002	<0.002
Strontium	mg/L		0.005	0.128
Thallium	mg/L		0.006	<0.006
Tin	mg/L		0.002	<0.002
Titanium	mg/L		0.002	<0.002
Tungsten	mg/L		0.010	<0.010
Uranium	mg/L		0.002	<0.002
Vanadium	mg/L		0.002	<0.002
Zinc	mg/L		0.005	0.016
Zirconium	mg/L		0.004	<0.004
% Difference/ Ion Balance	%		NA	2.28

Certified By: Sofra Pehlyova

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CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment

DATE RECEIVED: 2016-09-16
DATE REPORTED: 2016-09-26

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

7853172 Elevated RDLs for Anions indicate the degree of sample dilutions prior to analyses to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

Turbidity Analysis: Hold time of 48 hours for this parameter was exceeded. Samples were received and analyzed past hold time. Review data with discretion.

7853182 Elevated RDLs for Anions indicate the degree of sample dilutions prior to analyses to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

Turbidity Analysis: Hold time of 48 hours for this parameter was exceeded. Samples were received and analyzed past hold time. Review data with discretion.

Certified By: Sofia Pehlyova

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W138240
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date: Sep 26, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Water Quality Assessment															
Electrical Conductivity	7854077		1770	1760	0.6%	< 2	97%	80%	120%	NA			NA		
pH	7854077		7.24	7.16	1.1%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	7853217		364	360	1.1%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	7854077		777	784	0.9%	< 5	95%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	7854077		777	784	0.9%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	7854077		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	7854077		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	7857463		<0.25	<0.25	NA	< 0.05	95%	90%	110%	97%	90%	110%	99%	80%	120%
Chloride	7857463		129	129	0.0%	< 0.10	95%	90%	110%	103%	90%	110%	102%	80%	120%
Nitrate as N	7857463		14.6	14.7	0.7%	< 0.05	93%	90%	110%	103%	90%	110%	110%	80%	120%
Nitrite as N	7857463		<0.25	<0.25	NA	< 0.05	NA	90%	110%	90%	90%	110%	93%	80%	120%
Bromide	7857463		<0.25	<0.25	NA	< 0.05	106%	90%	110%	103%	90%	110%	107%	80%	120%
Sulphate	7857463		35.4	35.4	0.0%	< 0.10	98%	90%	110%	100%	90%	110%	103%	80%	120%
Ortho Phosphate as P	7857463		<0.50	<0.50	NA	< 0.10	104%	90%	110%	96%	90%	110%	102%	80%	120%
Reactive Silica	7848788		18.3	18.3	0.0%	< 0.05	100%	90%	110%	102%	90%	110%	100%	80%	120%
Ammonia as N	7853203	7853203	<0.02	<0.02	NA	< 0.02	110%	90%	110%	101%	90%	110%	98%	80%	120%
Total Phosphorus	7853203	7853203	<0.05	<0.05	NA	< 0.05	99%	80%	120%	100%	90%	110%	98%	70%	130%
Total Organic Carbon	7853182	7853182	1.0	0.8	NA	< 0.5	100%	90%	110%	103%	90%	110%	98%	80%	120%
Colour	7853217		<5	<5	NA	< 5	100%	90%	110%	NA			NA		
Turbidity	7853172	7853172	1.7	1.5	NA	< 0.5	104%	90%	110%	NA			NA		
Calcium	7853398		49.8	53.8	7.7%	< 0.05	100%	90%	110%	97%	90%	110%	99%	70%	130%
Magnesium	7853398		8.04	8.68	7.7%	< 0.05	98%	90%	110%	95%	90%	110%	96%	70%	130%
Sodium	7853398		7.45	8.07	8.0%	< 0.05	94%	90%	110%	92%	90%	110%	95%	70%	130%
Potassium	7853398		3.17	3.42	7.6%	< 0.05	99%	90%	110%	96%	90%	110%	97%	70%	130%
Aluminum	7853172	7853172	0.010	0.010	NA	< 0.004	101%	90%	110%	102%	90%	110%	97%	70%	130%
Antimony	7853172	7853172	<0.003	<0.003	NA	< 0.003	98%	90%	110%	91%	90%	110%	92%	70%	130%
Arsenic	7853172	7853172	<0.003	<0.003	NA	< 0.003	104%	90%	110%	99%	90%	110%	100%	70%	130%
Barium	7853172	7853172	0.112	0.110	1.8%	< 0.002	105%	90%	110%	100%	90%	110%	98%	70%	130%
Beryllium	7853172	7853172	<0.001	<0.001	NA	< 0.001	99%	90%	110%	100%	90%	110%	112%	70%	130%
Boron	7853172	7853172	<0.010	<0.010	NA	< 0.010	98%	90%	110%	97%	90%	110%	97%	70%	130%
Cadmium	7853172	7853172	<0.001	<0.001	NA	< 0.001	100%	90%	110%	97%	90%	110%	95%	70%	130%
Chromium	7853172	7853172	<0.003	<0.003	NA	< 0.003	102%	90%	110%	101%	90%	110%	101%	70%	130%
Cobalt	7853172	7853172	<0.001	<0.001	NA	< 0.001	102%	90%	110%	98%	90%	110%	98%	70%	130%
Copper	7853172	7853172	<0.003	<0.003	NA	< 0.003	105%	90%	110%	104%	90%	110%	102%	70%	130%
Iron	7853172	7853172	<0.010	<0.010	NA	< 0.010	107%	90%	110%	97%	90%	110%	94%	70%	130%
Lead	7853172	7853172	<0.002	<0.002	NA	< 0.002	100%	90%	110%	96%	90%	110%	95%	70%	130%
Manganese	7853172	7853172	<0.002	<0.002	NA	< 0.002	105%	90%	110%	99%	90%	110%	101%	70%	130%
Mercury	7853172	7853172	<0.0001	<0.0001	NA	< 0.0001	104%	90%	110%	101%	90%	110%	103%	80%	120%
Molybdenum	7853172	7853172	<0.002	<0.002	NA	< 0.002	98%	90%	110%	94%	90%	110%	98%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W138240
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Sep 26, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	7853172	7853172	<0.003	<0.003	NA	< 0.003	103%	90%	110%	100%	90%	110%	98%	70%	130%
Selenium	7853172	7853172	<0.004	<0.004	NA	< 0.004	96%	90%	110%	96%	90%	110%	100%	70%	130%
Silver	7853172	7853172	<0.002	<0.002	NA	< 0.002	102%	90%	110%	104%	90%	110%	107%	70%	130%
Strontium	7853172	7853172	0.155	0.153	1.3%	< 0.005	105%	90%	110%	97%	90%	110%	98%	70%	130%
Thallium	7853172	7853172	<0.006	<0.006	NA	< 0.006	105%	90%	110%	104%	90%	110%	101%	70%	130%
Tin	7853172	7853172	<0.002	<0.002	NA	< 0.002	95%	90%	110%	97%	90%	110%	97%	70%	130%
Titanium	7853172	7853172	<0.002	<0.002	NA	< 0.002	97%	90%	110%	94%	90%	110%	94%	70%	130%
Tungsten	7853172	7853172	<0.010	<0.010	NA	< 0.010	98%	90%	110%	101%	90%	110%	100%	70%	130%
Uranium	7853172	7853172	<0.002	<0.002	NA	< 0.002	100%	90%	110%	99%	90%	110%	97%	70%	130%
Vanadium	7853172	7853172	<0.002	<0.002	NA	< 0.002	96%	90%	110%	94%	90%	110%	95%	70%	130%
Zinc	7853172	7853172	0.016	0.016	NA	< 0.005	104%	90%	110%	102%	90%	110%	103%	70%	130%
Zirconium	7853172	7853172	<0.004	<0.004	NA	< 0.004	96%	90%	110%	89%	90%	110%	86%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.
QA Qualifier for Zirconium : In a multi-element scan up to 10% of analytes may exceed the quoted limits for lab control standards and matrix spike by up to 10% absolute and the spike is deemed acceptable.

Certified By: Sofia Pehlyova

QA Violation

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16W138240

PROJECT: 300033273

ATTENTION TO: Dwight Smikle

RPT Date: Sep 26, 2016			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment											
Zirconium	7853172	TW5	96%	90%	110%	89%	90%	110%	86%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.
QA Qualifier for Zirconium : In a multi-element scan up to 10% of analytes may exceed the quoted limits for lab control standards and matrix spike by up to 10% absolute and the spike is deemed acceptable.

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16W138240
PROJECT: 300033273
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	AQ2 EPA-122A & SM 4500 SiO2 D	AQ2 DISCRETE ANALYSER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 16W138240
PROJECT: 300033273
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16W138240

Cooler Quantity:

Arrival Temperatures: 3.7 | 3.3 | 2.9
C7 2.6 | 2.0 | 3.4

Custody Seal Intact: ☐ Yes ☐ No ☒ N/A

Notes: on ice

Report Information:

Company: RJ Burnside + Associates Ltd.
Contact: Dwight Smikle
Address: 292 Speedvale Ave. West
Guelph, ONT
Phone: 519-823-4995 Fax:
Reports to be sent to:
1. Email: D.Smikle@rjburnside.com
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☒ No Regulatory Requirement

☐ Regulation 153/04
Table ______ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ Indicate One

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Report Guideline on Certificate of Analysis
☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: ~~Belfountain~~ 300033273
Site Location: Belfountain
Sampled By: Matt V. Sean Q.
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

(Check Applicable)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - [✓ Metals] [✓ Hg] CrVI (Please Circle) [✓ Y]/N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO₃/NO₂ ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃/NO₂	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	WQA
TW5	Sept. 15 2016	8:30	6	GW		Y																X
TW2		12:30			* Metals +	Y																X
TW7		9:15			Mercury BOTH	Y																X
TW8		10:00			Field Filtered	Y																X
TW9		11:00				Y																X
TW11		11:45				Y																X

Samples Relinquished By (Print Name and Sign): Matt Valeriote	Date Sept. 15, 2016	Time	Samples Received By (Print Name and Sign): m. venne M/Venne	Date 2016/9/15	Time 4:30pm	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign): Sharmin Sept 17/16	Date	Time 9:40am	Nº: T 034695

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Matt Valeriote

PROJECT: 300033273

AGAT WORK ORDER: 16W170996

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Dec 15, 2016

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 16W170996
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Matt Valeriote
SAMPLING SITE:
SAMPLED BY:

Nitrate (Water)

DATE RECEIVED: 2016-12-15
DATE REPORTED: 2016-12-15

			SAMPLE DESCRIPTION:	TW2	TW7	TW9	TW5	TW8	TW11
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	2016-12-13	2016-12-13	2016-12-13	2016-12-13	2016-12-13	2016-12-13
Parameter	Unit	G / S	RDL	8091589	8091592	8091593	8091594	8091595	8091596
Nitrate as N	mg/L		0.05	0.67	5.96	1.51	6.34	7.41	3.58

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: Amanjot Bhela

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 16W170996
ATTENTION TO: Matt Valeriote
SAMPLED BY:

Water Analysis

RPT Date: Dec 15, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate (Water)															
Nitrate as N	8086759		<0.05	<0.05	NA	< 0.05	93%	90%	110%	99%	90%	110%	97%	80%	120%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

AGAT WORK ORDER: 16W170996

PROJECT: 300033273

ATTENTION TO: Matt Valeriote

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

15m

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 16W170996

Cooler Quantity:

Arrival Temperatures: 1.8 | 1.9 | 2.2
6 | 5.9 | 5.7

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: BURNSIDE
Contact: Matt Valeriote
Address: 292 Speedvale Ave West
Unit 20, Guelph
Phone: 823-4995 Fax:
Reports to be sent to:
1. Email: Matt.Valeriote@rjburnside.com
2. Email:

Regulatory Requirements: ☒ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ___ *Indicate One*
☐Ind/Com
☐Res/Park
☐Agriculture
Soil Texture *(Check One)*
☐Coarse
☐Fine

☐Sewer Use
☐Sanitary
☐Storm
Region ___ *Indicate One*

☐Regulation 558
☐CCME
☐Prov. Water Quality Objectives (PWQO)
☐Other
Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 300033273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y / N	Metals and Inorganics (O. Reg 153)	☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☒ NO₃ ☐ NO₂ ☐ NO₃+NO₂	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use						
TW2	13DEC16	11:34	~~5~~ 1	GW								✓														
TW7		9:38										✓														
TW9		10:02										✓														
TW5		9:08										✓														
TW8		10:40										✓														
TW11		10:58										✓														

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	
Matt Valeriote /	Dec. 14, 16	15:00		2016-Dec 15	15:00pm	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign): Siman	16/12/15	850	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T 042376

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Date Issued: September 30, 2016

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 17T211486

WATER ANALYSIS REVIEWED BY: Sofka Pehlyova, Senior Analyst

DATE REPORTED: May 05, 2017

PAGES (INCLUDING COVER): 6

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 17T211486
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Nitrate/Nitrite (Water)

DATE RECEIVED: 2017-05-03
DATE REPORTED: 2017-05-05

		SAMPLE DESCRIPTION:		TW1	TW2	TW3	TW4	TW5		TW6
		SAMPLE TYPE:		Water	Water	Water	Water	Water		Water
		DATE SAMPLED:		2017-05-02	2017-05-02	2017-05-02	2017-05-02	2017-05-02		2017-05-02
Parameter	Unit	G / S	RDL	8358383	8358385	8358386	8358387	8358388	RDL	8358389
Nitrate as N	mg/L		0.05	<0.05	1.90	0.58	3.22	7.99	0.10	9.08
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.10

		SAMPLE DESCRIPTION:		TW7	TW8	TW9	TW10	TW11		TW12
		SAMPLE TYPE:		Water	Water	Water	Water	Water		Water
		DATE SAMPLED:		2017-05-02	2017-05-02	2017-05-02	2017-05-02	2017-05-02		2017-05-02
Parameter	Unit	G / S	RDL	8358390	8358391	8358392	8358393	8358394	RDL	8358397
Nitrate as N	mg/L		0.05	6.87	5.15	3.02	0.85	3.00	0.10	<0.10
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.10

Comments:	RDL - Reported Detection Limit; G / S - Guideline / Standard
8358389	Elevated RDLs indicate the degree of sample dilutions prior to analyses to keep analytes within the calibration range, reduce matrix interference and to avoid contaminating the instrument.
8358397	Elevated RDLs indicate the degree of sample dilutions prior to analyses to keep analytes within the calibration range, reduce matrix interference and to avoid contaminating the instrument.

Certified By: Sofia Pehlyova

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD

PROJECT: 300033273

SAMPLING SITE:

AGAT WORK ORDER: 17T211486

ATTENTION TO: Dwight Smikle

SAMPLED BY:

Water Analysis

RPT Date: May 05, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nitrate/Nitrite (Water)															
Nitrate as N	8358389	8358389	9.08	9.02	0.7%	< 0.05	102%	90%	110%	107%	90%	110%	114%	80%	120%
Nitrite as N	8358389	8358389	<0.10	<0.10	NA	< 0.05	NA	90%	110%	103%	90%	110%	102%	80%	120%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Sofia Pehlyova

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 17T211486
PROJECT: 300033273
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories 1 WED

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 17T 211486

Cooler Quantity:

Arrival Temperatures: 7.2 | 7.4 | 7.5
3.2 2.3 4 3 3

Custody Seal Intact: ☐ Yes ☒ No ☐ N/A

Notes:

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: RJ Burnside + Associates Ltd.
Contact: Dwight Smikle
Address: 292 Speedvale Ave. W, Unit #20
Guelph ON. N1H 1C4
Phone: Fax:
Reports to be sent to:
1. Email: dwight.smikle@rjburnside.com
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ______ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
______ *Indicate One*

Is this submission for a Record of Site Condition? ☐ Yes ☐ No

Report Guideline on Certificate of Analysis ☐ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: ~~Belfountain~~ 300033273
Site Location: Belfountain, ON
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

							O. Reg 153																				
Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y [✓ N]	Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides)	☐ Hydride Metals ☐ 153 Metals (Incl. Hydrides)	**ORPs:** ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	**Nutrients:** ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂	**Volatiles:** ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	Nitrate + Nitrite					
TW1	May 2, 2017	10:00	1	GW																		X					
TW2		10:30																				X					
TW3		11:00																				X					
TW4		11:30																				X					
TW5		12:00																				X					
TW6		12:30																				X					
TW7		13:00																				X					
TW8		13:30																				X					
TW9		14:00																				X					
TW10		14:30																				X					
TW11		15:00																				X					

Samples Relinquished By (Print Name and Sign): Matt Valeriote	Date: May 2, 2017	Time: 16:30	Samples Received By (Print Name and Sign): D. Burns 2017/05/03	Date	Time: 12:15
Samples Relinquished By (Print Name and Sign): D. Burns 2017/05/03	Date	Time: 4:40	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 1 of 2

Nº: T 051085

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AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
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webearth.agatlabs.com

Laboratory Use Only

Work Order #:

Cooler Quantity:

Arrival Temperatures: 4.2 | 4.3 | 4.5
3.2 | 3.3 | 3.5

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: RJ Burnside & Associates Ltd.
Contact: Dwight Smikle
Address: 292 Speedvale Ave. W. Unit #20
Guelph ON. N1H 1C4
Phone: Fax:
Reports to be sent to:
1. Email: dwight-Smikle@rjburnside.com
2. Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ________ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ________ *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
________ *Indicate One*

Is this submission for a Record of Site Condition? ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☒ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: ~~Belfountain~~ 300033273
Site Location: Belfountain
Sampled By: Matt Valeriote
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y/[✓ N]	Metals and Inorganics (O. Reg 153)	☐ All Metals ☐ 153 Metals (excl. Hydrides)	☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	Nitrate & Nitrite					
TW12	May 2, 2017	15:30	1	GW																		X					

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Matt Valeriote	May 2, 2017	16:30	D. Bueno 2017/05/03		12:15
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
D. Bueno 2017/05/03		4:40			

Page 2 of 2

Nº: T 051086

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
292 Speedvale Avenue West, Unit 7
Guelph, ON N1H1C4
(519) 823-4995

ATTENTION TO: Dwight Smikle

PROJECT: 300033273

AGAT WORK ORDER: 17W195195

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Mar 22, 2017

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 17W195195
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2017-03-10
DATE REPORTED: 2017-03-22

			SAMPLE DESCRIPTION:	TW1		TW2		TW3		TW4	TW5
			SAMPLE TYPE:	Water		Water		Water		Water	Water
			DATE SAMPLED:	2017-03-10		2017-03-10		2017-03-10		2017-03-10	2017-03-10
Parameter	Unit	G / S	RDL	8244996	RDL	8244997	RDL	8245003	RDL	8245009	8245015
Electrical Conductivity	uS/cm		2	705	2	392	2	802	2	558	604
pH	pH Units		NA	8.14	NA	8.02	NA	8.14	NA	8.10	8.12
Saturation pH				6.89		7.36		6.83		6.99	7.00
Langelier Index				1.25		0.66		1.31		1.11	1.12
Total Hardness (as CaCO3)	mg/L		0.5	361	0.5	181	0.5	433	0.5	275	288
Total Dissolved Solids	mg/L		20	396	20	198	20	484	20	284	306
Alkalinity (as CaCO3)	mg/L		5	256	5	163	5	248	5	250	249
Bicarbonate (as CaCO3)	mg/L		5	256	5	163	5	248	5	250	249
Carbonate (as CaCO3)	mg/L		5	<5	5	<5	5	<5	5	<5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	5	<5	5	<5	5	<5	<5
Fluoride	mg/L		0.05	0.19	0.05	<0.05	0.05	0.10	0.05	<0.05	<0.05
Chloride	mg/L		0.10	14.3	0.10	16.7	0.10	3.41	0.10	12.6	20.2
Nitrate as N	mg/L		0.05	<0.05	0.05	1.16	0.05	0.62	0.05	3.43	6.76
Nitrite as N	mg/L		0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	<0.05
Bromide	mg/L		0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	<0.05
Sulphate	mg/L		0.50	105	0.10	13.8	0.50	193	0.10	18.9	14.1
Ortho Phosphate as P	mg/L		0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	<0.10	<0.10
Reactive Silica	mg/L		0.05	12.7	0.05	3.65	0.05	10.7	0.05	7.28	7.03
Ammonia as N	mg/L		0.02	<0.02	0.02	0.04	0.02	0.14	0.02	<0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	<0.05
Total Organic Carbon	mg/L		0.5	1.3	0.5	2.4	0.5	0.7	0.5	1.2	0.7
Colour	TCU		5	<5	5	<5	5	<5	5	<5	<5
Turbidity	NTU		0.5	135	0.5	3.3	0.5	15.3	0.5	0.6	1.9
Calcium	mg/L		0.05	97.9	0.05	48.8	0.05	122	0.05	74.1	79.3
Magnesium	mg/L		0.05	28.4	0.05	14.4	0.05	31.1	0.05	21.8	21.9
Sodium	mg/L		0.05	5.27	0.05	6.39	0.05	3.42	0.05	5.36	8.93
Potassium	mg/L		0.05	1.18	0.05	1.26	0.05	1.28	0.05	1.01	0.91
Aluminum	mg/L		0.004	0.006	0.004	0.017	0.004	0.008	0.004	0.011	0.013
Antimony	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003
Arsenic	mg/L		0.003	0.006	0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17W195195
PROJECT: 300033273

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2017-03-10
DATE REPORTED: 2017-03-22

		SAMPLE DESCRIPTION:		TW1		TW2		TW3		TW4	TW5
		SAMPLE TYPE:		Water		Water		Water		Water	Water
		DATE SAMPLED:		2017-03-10		2017-03-10		2017-03-10		2017-03-10	2017-03-10
Parameter	Unit	G / S	RDL	8244996	RDL	8244997	RDL	8245003	RDL	8245009	8245015
Barium	mg/L		0.002	0.073	0.002	0.030	0.002	0.045	0.002	0.053	0.110
Beryllium	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001
Boron	mg/L		0.010	0.016	0.010	<0.010	0.010	0.020	0.010	<0.010	<0.010
Cadmium	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001
Chromium	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003
Cobalt	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001
Copper	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003
Iron	mg/L		0.010	0.167	0.010	<0.010	0.010	0.032	0.010	<0.010	<0.010
Lead	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002
Manganese	mg/L		0.002	0.019	0.002	<0.002	0.002	0.005	0.002	<0.002	<0.002
Mercury	mg/L		0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	0.002	<0.002	0.002	0.002	0.002	<0.002	<0.002
Nickel	mg/L		0.003	<0.003	0.003	<0.003	0.003	<0.003	0.003	<0.003	<0.003
Selenium	mg/L		0.004	<0.004	0.004	<0.004	0.004	<0.004	0.004	<0.004	<0.004
Silver	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002
Strontium	mg/L		0.005	0.588	0.005	0.078	0.005	0.916	0.005	0.121	0.162
Thallium	mg/L		0.006	<0.006	0.006	<0.006	0.006	<0.006	0.006	<0.006	<0.006
Tin	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002
Titanium	mg/L		0.002	<0.002	0.002	<0.002	0.002	0.003	0.002	<0.002	<0.002
Tungsten	mg/L		0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010
Uranium	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002
Vanadium	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	<0.002
Zinc	mg/L		0.005	0.034	0.005	0.011	0.005	0.032	0.005	0.013	0.024
Zirconium	mg/L		0.004	<0.004	0.004	<0.004	0.004	<0.004	0.004	<0.004	<0.004
% Difference/ Ion Balance	%		NA	1.56	NA	2.09	NA	1.57	NA	2.07	1.24

Certified By:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17W195195
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2017-03-10
DATE REPORTED: 2017-03-22

			SAMPLE DESCRIPTION:	TW6	TW7	TW8	TW9	TW10	TW11		TW12
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water		Water
			DATE SAMPLED:	2017-03-10	2017-03-10	2017-03-10	2017-03-10	2017-03-10	2017-03-10		2017-03-10
Parameter	Unit	G / S	RDL	8245021	8245027	8245033	8245039	8245045	8245052	RDL	8245058
Electrical Conductivity	uS/cm		2	612	592	604	620	430	568	2	1730
pH	pH Units		NA	8.10	8.11	8.12	8.10	8.06	8.16	NA	7.95
Saturation pH				7.01	6.98	6.98	6.90	7.26	6.99		6.61
Langelier Index				1.09	1.13	1.14	1.20	0.80	1.17		1.34
Total Hardness (as CaCO3)	mg/L		0.5	288	291	301	310	202	278	0.5	1020
Total Dissolved Solids	mg/L		20	308	306	312	326	216	286	20	1400
Alkalinity (as CaCO3)	mg/L		5	245	260	251	294	182	249	5	192
Bicarbonate (as CaCO3)	mg/L		5	245	260	251	294	182	249	5	192
Carbonate (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5	5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5	5	<5
Fluoride	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.25	<0.25
Chloride	mg/L		0.10	21.8	12.5	9.54	8.84	14.4	13.9	0.50	2.11
Nitrate as N	mg/L		0.05	8.52	5.77	6.68	2.68	1.68	3.94	0.25	<0.25
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.25	<0.25
Bromide	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.25	<0.25
Sulphate	mg/L		0.10	13.5	14.4	31.1	50.1	14.3	19.1	1.0	896
Ortho Phosphate as P	mg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.50	<0.50
Reactive Silica	mg/L		0.05	7.01	6.72	7.18	8.42	4.56	7.19	0.05	13.1
Ammonia as N	mg/L		0.02	<0.02	0.03	0.15	0.09	0.03	<0.02	0.02	<0.02
Total Phosphorus	mg/L		0.05	<0.05	<0.05	0.08	<0.05	0.06	<0.05	0.05	<0.05
Total Organic Carbon	mg/L		0.5	0.7	0.6	1.1	0.8	2.1	1.6	0.5	0.6
Colour	TCU		5	<5	<5	<5	<5	<5	<5	5	<5
Turbidity	NTU		0.5	<0.5	1.8	113	2.0	64.8	7.4	0.5	8.6
Calcium	mg/L		0.05	79.9	80.0	81.6	81.5	54.3	75.0	0.10	318
Magnesium	mg/L		0.05	21.6	22.2	23.6	25.8	16.2	22.0	0.10	54.3
Sodium	mg/L		0.05	8.87	4.86	3.67	4.17	5.76	5.82	0.10	8.43
Potassium	mg/L		0.05	0.86	0.92	1.12	0.99	1.21	0.98	0.10	1.95
Aluminum	mg/L		0.004	0.006	0.009	<0.004	0.009	0.014	0.011	0.004	0.008
Antimony	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003
Arsenic	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	0.013

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 17W195195
PROJECT: 300033273

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Quality Assessment - Groundwater Samples

DATE RECEIVED: 2017-03-10

DATE REPORTED: 2017-03-22

			SAMPLE DESCRIPTION:	TW6	TW7	TW8	TW9	TW10	TW11		TW12
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water		Water
			DATE SAMPLED:	2017-03-10	2017-03-10	2017-03-10	2017-03-10	2017-03-10	2017-03-10		2017-03-10
Parameter	Unit	G / S	RDL	8245021	8245027	8245033	8245039	8245045	8245052	RDL	8245058
Barium	mg/L		0.002	0.105	0.109	0.099	0.074	0.036	0.061	0.002	0.012
Beryllium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Boron	mg/L		0.010	<0.010	0.010	0.011	0.012	<0.010	0.010	0.010	0.058
Cadmium	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Chromium	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003
Cobalt	mg/L		0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Copper	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.665
Lead	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Manganese	mg/L		0.002	<0.002	<0.002	0.002	<0.002	0.009	<0.002	0.002	0.030
Mercury	mg/L		0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Molybdenum	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.005
Nickel	mg/L		0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003
Selenium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.004	<0.004
Silver	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Strontium	mg/L		0.005	0.156	0.136	0.545	0.339	0.083	0.129	0.005	3.86
Thallium	mg/L		0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.006	<0.006
Tin	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Titanium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.013
Tungsten	mg/L		0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010
Uranium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Vanadium	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Zinc	mg/L		0.005	0.017	0.029	0.017	0.037	0.016	0.015	0.005	0.046
Zirconium	mg/L		0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.004	<0.004
% Difference/ Ion Balance	%		NA	1.84	1.69	1.59	6.98	1.56	1.85	NA	4.11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8244996-8245058 Elevated RDLs indicate the degree of sample dilutions prior to analysis in order to keep the analytes within the calibration range of the instruments and to reduce matrix interferences.

Certified By:

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 17W195195
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis

RPT Date: Mar 22, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment - Groundwater Samples															
Electrical Conductivity	8241738		1620	1610	0.6%	< 2	103%	80%	120%	NA			NA		
pH	8241738		7.91	7.92	0.1%	NA	99%	90%	110%	NA			NA		
Total Dissolved Solids	8248350		754	800	5.9%	< 20	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	8241738		104	104	0.0%	< 5	107%	80%	120%	NA			NA		
Bicarbonate (as CaCO3)	8241738		104	104	0.0%	< 5	NA			NA			NA		
Carbonate (as CaCO3)	8241738		<5	<5	NA	< 5	NA			NA			NA		
Hydroxide (as CaCO3)	8241738		<5	<5	NA	< 5	NA			NA			NA		
Fluoride	8245009	8245009	< 0.05	<0.05	NA	< 0.05	98%	90%	110%	104%	90%	110%	105%	80%	120%
Chloride	8245009	8245009	12.6	13.1	3.9%	< 0.10	94%	90%	110%	104%	90%	110%	99%	80%	120%
Nitrate as N	8245009	8245009	3.43	3.50	2.0%	< 0.05	95%	90%	110%	92%	90%	110%	98%	80%	120%
Nitrite as N	8245009	8245009	< 0.05	<0.05	NA	< 0.05	NA	90%	110%	96%	90%	110%	89%	80%	120%
Bromide	8245009	8245009	< 0.05	<0.05	NA	< 0.05	109%	90%	110%	98%	90%	110%	100%	80%	120%
Sulphate	8245009	8245009	18.9	19.1	1.1%	< 0.10	93%	90%	110%	97%	90%	110%	101%	80%	120%
Ortho Phosphate as P	8245009	8245009	< 0.10	<0.10	NA	< 0.10	103%	90%	110%	107%	90%	110%	98%	80%	120%
Reactive Silica	8244996	8244996	12.7	12.7	0.0%	< 0.05	96%	90%	110%	98%	90%	110%	82%	80%	120%
Ammonia as N	8249575		<0.02	<0.02	NA	< 0.02	97%	90%	110%	91%	90%	110%	84%	80%	120%
Total Phosphorus	8243025		0.06	0.06	NA	< 0.05	98%	80%	120%	97%	90%	110%	98%	70%	130%
Total Organic Carbon	8244996	8244996	1.3	1.4	NA	< 0.5	109%	90%	110%	NA	90%	110%	105%	80%	120%
Colour	8244996	8244996	< 5	<5	NA	< 5	106%	90%	110%	NA			NA		
Turbidity	8244996	8244996	135	135	0.0%	< 0.5	101%	90%	110%	NA			NA		
Calcium	8244996	8244996	97.9	98.4	0.5%	< 0.05	103%	90%	110%	102%	90%	110%	96%	70%	130%
Magnesium	8244996	8244996	28.4	28.1	1.1%	< 0.05	100%	90%	110%	100%	90%	110%	97%	70%	130%
Sodium	8244996	8244996	5.27	5.22	1.0%	< 0.05	99%	90%	110%	99%	90%	110%	99%	70%	130%
Potassium	8244996	8244996	1.18	1.14	3.4%	< 0.05	99%	90%	110%	99%	90%	110%	99%	70%	130%
Aluminum	8244996	8244996	0.006	0.006	NA	< 0.004	99%	90%	110%	110%	90%	110%	109%	70%	130%
Antimony	8244996	8244996	< 0.003	<0.003	NA	< 0.003	97%	90%	110%	105%	90%	110%	106%	70%	130%
Arsenic	8244996	8244996	0.006	0.006	NA	< 0.003	103%	90%	110%	102%	90%	110%	107%	70%	130%
Barium	8244996	8244996	0.073	0.072	1.4%	< 0.002	100%	90%	110%	102%	90%	110%	99%	70%	130%
Beryllium	8244996	8244996	< 0.001	<0.001	NA	< 0.001	103%	90%	110%	109%	90%	110%	108%	70%	130%
Boron	8244996	8244996	0.016	0.016	NA	< 0.010	100%	90%	110%	108%	90%	110%	103%	70%	130%
Cadmium	8244996	8244996	< 0.001	<0.001	NA	< 0.001	98%	90%	110%	106%	90%	110%	117%	70%	130%
Chromium	8244996	8244996	< 0.003	<0.003	NA	< 0.003	100%	90%	110%	107%	90%	110%	110%	70%	130%
Cobalt	8244996	8244996	< 0.001	<0.001	NA	< 0.001	96%	90%	110%	103%	90%	110%	104%	70%	130%
Copper	8244996	8244996	< 0.003	<0.003	NA	< 0.003	100%	90%	110%	109%	90%	110%	110%	70%	130%
Iron	8244996	8244996	0.167	0.145	14.1%	< 0.010	106%	90%	110%	105%	90%	110%	98%	70%	130%
Lead	8244996	8244996	< 0.002	<0.002	NA	< 0.002	100%	90%	110%	107%	90%	110%	103%	70%	130%
Manganese	8244996	8244996	0.019	0.018	5.4%	< 0.002	103%	90%	110%	107%	90%	110%	104%	70%	130%
Mercury	8245003	8245003	< 0.0001	<0.0001	NA	< 0.0001	102%	90%	110%	101%	90%	110%	94%	80%	120%
Molybdenum	8244996	8244996	< 0.002	<0.002	NA	< 0.002	100%	90%	110%	102%	90%	110%	104%	70%	130%

Quality Assurance

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
PROJECT: 300033273
SAMPLING SITE:

AGAT WORK ORDER: 17W195195
ATTENTION TO: Dwight Smikle
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Mar 22, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Nickel	8244996	8244996	< 0.003	<0.003	NA	< 0.003	103%	90%	110%	109%	90%	110%	107%	70%	130%
Selenium	8244996	8244996	< 0.004	<0.004	NA	< 0.004	100%	90%	110%	102%	90%	110%	110%	70%	130%
Silver	8244996	8244996	< 0.002	<0.002	NA	< 0.002	97%	90%	110%	108%	90%	110%	113%	70%	130%
Strontium	8244996	8244996	0.588	0.560	4.9%	< 0.005	106%	90%	110%	108%	90%	110%	112%	70%	130%
Thallium	8244996	8244996	< 0.006	<0.006	NA	< 0.006	104%	90%	110%	110%	90%	110%	108%	70%	130%
Tin	8244996	8244996	< 0.002	<0.002	NA	< 0.002	97%	90%	110%	102%	90%	110%	104%	70%	130%
Titanium	8244996	8244996	< 0.002	<0.002	NA	< 0.002	96%	90%	110%	100%	90%	110%	102%	70%	130%
Tungsten	8244996	8244996	< 0.010	<0.010	NA	< 0.010	94%	90%	110%	100%	90%	110%	98%	70%	130%
Uranium	8244996	8244996	< 0.002	<0.002	NA	< 0.002	104%	90%	110%	108%	90%	110%	106%	70%	130%
Vanadium	8244996	8244996	< 0.002	<0.002	NA	< 0.002	94%	90%	110%	102%	90%	110%	104%	70%	130%
Zinc	8244996	8244996	0.034	0.031	9.2%	< 0.005	102%	90%	110%	108%	90%	110%	110%	70%	130%
Zirconium	8244996	8244996	< 0.004	<0.004	NA	< 0.004	96%	90%	110%	96%	90%	110%	95%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 17W195195
PROJECT: 300033273
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6047	SmartChem Method SIL-001-A & SM 4500 Si-F 18 &19th	DISCRETE ANALYZER
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Method Summary

CLIENT NAME: R.J. BURNSIDE & ASSOCIATES LTD
AGAT WORK ORDER: 17W195195
PROJECT: 300033273
ATTENTION TO: Dwight Smikle
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
% Difference/ Ion Balance		SM 1030 E	CALCULATION

AGAT Laboratories **Short Holding Time**

2 Lq.

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17W195195

Cooler Quantity:

Arrival Temperatures: 6.7 | 5.9 | 5.8
6/5.9/4.8 / 4.6/5.1 /5.3

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: RJ Burnside & Associates Ltd.
Contact: Dwight Smikle
Address: 292 Speedvale Ave. west
Unit #20 Guelph, ONT
Phone: Fax:
Reports to be sent to:
1. Email: dwight.smikle@rjburnside.com
2. Email: matt.valeriote@rjburnside.com

Regulatory Requirements: ☒ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ___ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ___ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
___ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 300033273
Site Location: Belfountain, ONT
Sampled By: Matt Valeriote
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - [✓ Metals], [✓ Hg], CrVI [✓ Y] N	Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	Well
TW 1	March 10, 2017	8:25	6	GW	* Field Filtered metals + Mercury *	Y															X
TW 2		10:00				Y															X
TW 3		9:35				Y															X
TW 4		13:45				Y															X
TW 5		12:25				Y															X
TW 6		12:00				Y															X
TW 7		11:30				Y															X
TW 8		12:56				Y															X
TW 9		11:05				Y															X
TW 10		10:30				Y															X
TW 11		13:18				Y															X

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Matt Valeriote	March 10 2017		RanjiSyh	2017 March 10	3:45pm
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign): Siva	Date 17/3/11	Time 7 38
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

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Nº: T 047459

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AGAT Laboratories

Short Holding Time

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water ~~Chain of Custody Form~~ (potable water intended for human consumption)

Laboratory Use Only

Work Order #:

Cooler Quantity:

Arrival Temperatures: 7.1 | 6.5 | 5.1

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: R J Burnside & Associates Ltd

Contact: dwight. Smikle

Address: 292 Speedvale Ave. West
Unit #20, Guelph ONT

Phone: Fax:

Reports to be sent to:

1. Email: dwight.smikle@rjburnside.com
2. Email: matt.valeriote@rjburnside.com

Regulatory Requirements:

(Please check all applicable boxes)

☒ No Regulatory Requirement

☐ Regulation 153/04

Table _____ Indicate One

☐ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture (Check One)

☐ Coarse
☐ Fine

☐ Sewer Use

☐ Sanitary
☐ Storm

Region _____ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other

_____ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: Belfountain # 300033273

Site Location: Belfountain, ONT

Sampled By: Matt Valeriote

AGAT Quote #: — PO:

Please note: If quotation number is not provided, client will be billed full price for analysis

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI [✓ Y] N	O. Reg 153 Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr6+ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH3 ☐ TKN ☐ NO3 ☐ NO2 ☐ NO3+NO2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	WQA					
TW12	March 10, 2017	~~[illegible]~~ 9:00	6	GW	*Field Filtered Mercury + Metals*	Y															X					

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Matt Valeriote	March 10, 2017		Ranji Singh	2017 Mar 10	3:45pm
			Sin[illegible]	17/3/11	9:35

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Nº: T 047460

Document ID: DIV-78-1511.013

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Date Issued: September 20, 2016

Appendix H

MOECC Well Records Search

Well ID	Zone	Easting	Northing	First Use	Second Use	Final Status
4908977	17	579679	4849026			Abandoned-Other
7226686	17	579410	4849408			Abandoned-Other
7226687	17	579458	4849364			Abandoned-Other
7227270	17	579267	4849590			Abandoned-Other
7244358	17	579305	4849431			Abandoned-Other
4900935	17	580130	4849589	Not Used		Abandoned-Supply
4901017	17	579561	4849643			Abandoned-Supply
4902928	17	580334	4849763			Abandoned-Supply
4902973	17	580414	4849923			Abandoned-Supply
7104809	17	579297	4849532	Domestic		Abandoned-Supply
7109610	17	579143	4848750	Not Used		Abandoned-Supply
7225052	17	579813	4848777	Monitoring and Test Hole		Monitoring and Test Hole
4906840	17	579466	4848761	Not Used		Observation Wells
4906842	17	579567	4848299	Not Used		Observation Wells
4906845	17	579466	4848759	Not Used		Observation Wells
4906846	17	579180	4849396	Not Used		Observation Wells
4906847	17	579567	4848301	Not Used		Observation Wells
4906848	17	579584	4848324	Not Used		Observation Wells
7225053	17	579814	4848771	Monitoring		Observation Wells
6712134	17	578800	4848946	Not Used		Test Hole
7140490	17	579080	4848673	Test Hole		Test Hole
7225054	17	579491	4848283	Test Hole		Test Hole
7225055	17	579995	4849204	Test Hole		Test Hole
7225056	17	579614	4848788	Test Hole		Test Hole
7225057	17	580008	4849203	Test Hole		Test Hole
7226632	17	579631	4849072	Test Hole		Test Hole
4906841	17	579469	4848760	Not Used		Unfinished
4900936	17	580155	4849605	Domestic		Water Supply
4900937	17	580329	4849762	Domestic		Water Supply
4900938	17	580347	4849883	Domestic		Water Supply
4901005	17	580366	4849130	Domestic		Water Supply
4901006	17	579779	4849344	Livestock	Domestic	Water Supply
4901007	17	579352	4849464	Domestic		Water Supply
4901008	17	579460	4849367	Domestic		Water Supply
4901009	17	578984	4848882	Public		Water Supply
4901010	17	579304	4849391	Domestic		Water Supply

4901011	17	579622	4849394	Domestic		Water Supply
4901012	17	579011	4849211	Domestic		Water Supply
4901016	17	579285	4849524	Domestic		Water Supply
4901018	17	579581	4849479	Domestic		Water Supply
4901020	17	579076	4849263	Domestic		Water Supply
4901021	17	578822	4848994	Domestic		Water Supply
4901022	17	579329	4849559	Domestic		Water Supply
4901023	17	578871	4849235	Domestic		Water Supply
4901025	17	579347	4849667	Domestic		Water Supply
4901048	17	578747	4848905	Domestic		Water Supply
4902929	17	580334	4849753	Domestic		Water Supply
4902940	17	580524	4849773	Domestic		Water Supply
4902941	17	580524	4849793	Domestic		Water Supply
4902947	17	580364	4849723	Domestic		Water Supply
4902948	17	580234	4849683	Domestic		Water Supply
4903143	17	579089	4849323	Domestic		Water Supply
4903144	17	579139	4849533	Domestic		Water Supply
4903703	17	579614	4849823	Domestic		Water Supply
4903832	17	579314	4849473	Domestic		Water Supply
4903893	17	579564	4849763	Domestic		Water Supply
4904041	17	579374	4849613	Domestic		Water Supply
4904255	17	579712	4849856	Livestock	Domestic	Water Supply
4904256	17	579882	4849907	Domestic		Water Supply
4904407	17	578846	4848676	Domestic		Water Supply
4904412	17	580774	4849521	Domestic		Water Supply
4904488	17	580349	4849567	Domestic		Water Supply
4904489	17	580624	4849458	Domestic		Water Supply
4904555	17	579438	4849307	Domestic		Water Supply
4904661	17	580509	4849246	Domestic		Water Supply
4904662	17	580648	4849216	Domestic		Water Supply
4904689	17	580618	4849631	Domestic		Water Supply
4904724	17	580682	4849561	Domestic		Water Supply
4904725	17	580580	4849183	Domestic		Water Supply
4904726	17	580541	4849306	Domestic		Water Supply
4904727	17	580640	4849222	Domestic		Water Supply
4904728	17	580555	4849441	Domestic		Water Supply
4904750	17	579384	4849547	Domestic		Water Supply

4904772	17	580617	4849298	Domestic		Water Supply
4904798	17	580670	4849458	Domestic		Water Supply
4904812	17	580541	4849360	Domestic		Water Supply
4904813	17	578861	4849089	Domestic		Water Supply
4904816	17	579434	4849486	Domestic		Water Supply
4904854	17	579373	4849527	Domestic		Water Supply
4904879	17	578914	4849123	Domestic		Water Supply
4904971	17	580464	4849323	Domestic		Water Supply
4904973	17	580664	4849573	Domestic		Water Supply
4905014	17	580549	4849543	Domestic		Water Supply
4905033	17	579164	4849523	Domestic		Water Supply
4905085	17	578914	4849273	Domestic		Water Supply
4905174	17	580414	4849423	Domestic		Water Supply
4905176	17	580784	4849463	Domestic		Water Supply
4905259	17	579114	4849323	Domestic		Water Supply
4905271	17	579364	4849623	Domestic		Water Supply
4905347	17	580364	4849473	Domestic		Water Supply
4905356	17	579064	4849123	Domestic		Water Supply
4905490	17	579514	4849523	Domestic		Water Supply
4905619	17	578914	4849273	Domestic		Water Supply
4905863	17	578864	4849023	Domestic		Water Supply
4905867	17	578814	4848873	Domestic		Water Supply
4906310	17	579338	4849346	Public		Water Supply
4906377	17	579397	4849397	Domestic		Water Supply
4906378	17	579513	4849315	Domestic		Water Supply
4906385	17	579728	4849854	Domestic		Water Supply
4906488	17	579324	4849607	Domestic		Water Supply
4906608	17	579325	4849619	Domestic		Water Supply
4906673	17	579338	4849346	Domestic		Water Supply
4906792	17	579549	4849813	Domestic		Water Supply
4906802	17	579320	4849612	Domestic		Water Supply
4906918	17	579035	4849190	Domestic		Water Supply
4906948	17	579627	4848237			Water Supply
4906996	17	579033	4849190	Domestic		Water Supply
4907142	17	579458	4849367	Domestic		Water Supply
4907143	17	579465	4848760	Domestic		Water Supply
4907305	17	579325	4849619	Domestic		Water Supply

4907450	17	579342	4848016	Domestic		Water Supply
4907527	17	579431	4849421	Domestic		Water Supply
4907566	17	579432	4849369	Domestic		Water Supply
4907588	17	579513	4848057	Domestic		Water Supply
4907667	17	579467	4849324	Domestic		Water Supply
4907835	17	580054	4849565	Domestic		Water Supply
4907914	17	579020	4849145	Domestic		Water Supply
4907937	17	578605	4848620	Domestic		Water Supply
4908028	17	579359	4849439	Domestic		Water Supply
4908046	17	579773	4849928	Domestic		Water Supply
4908201	17	579212	4849382	Domestic		Water Supply
4908259	17	579615	4849394	Domestic		Water Supply
4908260	17	579070	4849102	Domestic		Water Supply
4908261	17	578985	4849116	Domestic		Water Supply
4908300	17	579279	4849618	Domestic		Water Supply
4908348	17	579255	4848557	Domestic		Water Supply
4908409	17	579237	4849428	Domestic		Water Supply
4908458	17	579548	4848006	Domestic		Water Supply
4908511	17	580573	4849178	Domestic		Water Supply
4908686	17	579519	4849115	Domestic		Water Supply
4908830	17	579562	4849797	Domestic		Water Supply
4908979	17	579679	4849026	Domestic		Water Supply
4909426	17	579463	4849114	Domestic		Water Supply
4909875	17	578977	4848892	Public		Water Supply
7106064	17	578821	4848647	Domestic		Water Supply
7206790	17	578914	4848423	Domestic		Water Supply
7206791	17	578897	4848407	Domestic		Water Supply
7224239	17	579530	4849753	Domestic		Water Supply
7255729	17	579229	4849417	Domestic		Water Supply
7259263	17	580086	4849091	Domestic		Water Supply
7259264	17	579801	4849157	Domestic	Test Hole	Water Supply
7259265	17	579945	4848906	Domestic	Test Hole	Water Supply
7259266	17	579789	4848906	Domestic	Test Hole	Water Supply
7259267	17	579692	4849093	Domestic		Water Supply
7259268	17	579469	4848667	Domestic	Test Hole	Water Supply

Appendix I

Water Balance Analysis

Monthly Water Balance Analysis - Thornthwaite and Mather model
Existing conditions Belfountain (Pre-development)

Total Site Area (ha)	70.28		
Land Description Factors	**Area A (Agricultural)**	**Sub-Area B (Forest)**	
Topography	0.30	0.10	
Soils	0.40	0.40	
Cover	0.10	0.20	
Sum (Infiltration Factor)	0.80	0.70	
Soil Moisture Capacity (mm)	75	200	
Site Area	50.27	20.01	
Percentage of Total Site Area	72%	28%	

100%

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Climate Data (Data from Orangeville MOE station, Ontario via Environment Canada Website - 1981-2010, Climate ID: 6155790													
Average Daily Temperature (°C)	-7.5	-6.5	-2.1	5.3	11.7	16.9	19.4	18.4	14.3	7.8	2.0	-4.1	**6.3**
Precipitation (mm)	64.3	54.5	60.9	70.1	86.6	81.3	80.8	88.2	87.0	76.6	87.1	64.2	**901.6**
Evapotranspiration Analysis (Sub-Area A)													
Heat Index	0.0	0.0	0.0	1.1	3.6	6.3	7.8	7.2	4.9	2.0	0.2	0.0	**33**
Unadjusted Potential Evapotranspiration (mm)	0.0	0.0	0.0	25.9	58.1	84.7	97.5	92.4	71.4	38.4	9.5	0.0	**478**
Potential Evapotranspiration Adjusting Factor for Latitude	0.81	0.82	1.03	1.12	1.27	1.28	1.30	1.20	1.05	0.95	0.81	0.78	
Adjusted Potential Evapotranspiration (mm)	0	0	0	29	74	109	127	111	75	36	8	0	**568**
PET (Malstrom, 1969) (mm/month)	0	0	0	29	74	109	127	111	75	36	8	0	**568**
Precipitation - PET (mm)	64	55	61	41	13	-27	-46	-23	12	40	79	64	**334**
Accumulated Potential Water Loss (APWL)	0	0	0	0	0	-27	-73	-96	-61	-2	0	0	**-260**
Storage (S)	75	75	75	75	75	52	28	21	33	73	75	75	
Change in Storage	0	0	0	0	0	-23	-24	-7	12	40	2	0	**0**
Actual Evapotranspiration (mm)	**0**	**0**	**0**	**29**	**74**	**104**	**105**	**96**	**75**	**36**	**8**	**0**	**526**
Recharge/Runoff Analysis													
Water Surplus (mm)	64	55	61	41	13	0	0	0	0	0	78	64	**376**
Potential Infiltration (I)	51	44	49	33	10	0	0	0	0	0	62	51	**300**
Potential Direct Surface Water Runoff (R)	**13**	**11**	**12**	**8**	**3**	**0**	**0**	**0**	**0**	**0**	**16**	**13**	**75**
Evapotranspiration (m^3)	0	0	0	14,591	37,037	52,398	52,618	48,050	37,542	18,304	3,883	0	264,422
Runoff (m^3)	6,465	5,479	6,123	4,130	1,299	0	0	0	0	0	7,812	6,455	37,762
Infiltration (m^3)	25,859	21,918	24,492	16,518	5,198	0	0	0	0	0	31,246	25,819	151,050
Evapotranspiration Analysis (Sub-Area B)													
Accumulated Potential Water Loss (APWL)	0	0	0	0	0	-27	-73	-96	-77	-25	0	0	
Storage (S)	200	200	200	200	200	174	139	124	136	176	200	200	
Change in Storage	0	0	0	0	0	-26	-36	-15	12	40	24	0	**0**
Actual Evapotranspiration (mm)	**0**	**0**	**0**	**29**	**74**	**107**	**117**	**103**	**75**	**36**	**8**	**0**	**548**
Recharge/Runoff Analysis													
Water Surplus (mm)	64	55	61	41	13	0	0	0	0	0	56	64	**353**
Potential Infiltration (I)	45	38	43	29	9	0	0	0	0	0	39	45	**247**
Potential Direct Surface Water Runoff (R)	**19**	**16**	**18**	**12**	**4**	**0**	**0**	**0**	**0**	**0**	**17**	**19**	**106**
Evapotranspiration (m^3)	0	0	0	5808	14742	21387	23339	20633	14944	7286	1546	0	109684
Runoff (m^3)	3860	3272	3656	2466	776	0	0	0	0	0	3335	3854	21218
Infiltration (m^3)	9007	7634	8530	5753	1810	0	0	0	0	0	7781	8992	49508

Water Balance Total	**Inputs**	**Outputs**
Precipitation (mm)	901.6	
Soil Storage (mm)		0.0
Evapotranspiration+Evaporation (mm)		532
Infiltration (mm)		285
Runoff (mm)		84
Total	**901.6**	**901.6**

Water Balance	**Inputs**	**Outputs**
Precipitation (m^	633644.5	
Soil Storage (m^3)		
Evapotranspiration (m^3)		374107
Infiltration (m^3)		200558
Runoff (m^3)		58980
Total	**633644.5**	**633644.5**

Appendix J

Pumping Test Data

Belfountain

6 Hour Pupmping Test Results TW1 - Test Well

TW1 (fully penetrating)

Well depth (mbgs)	53.94
Open hole interval (mbgs)	30.78 to 53.94
standing water level (mbTOC)	19.19
stick up (m above gs)	1.1
Datalogger at (mbTOC)	28.2
Pumping Rate L/sec	0.75
Pumping Rate L/min	45

TW1 Pumping			**TW1 Recovery**		
Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)
0.1	19.02	-0.17	0.1	34.58	0
1	23.3	4.11	1	32.51	2.07
2	26.27	7.08	2	30.57	4.01
4	30.12	10.93	3	28.93	5.65
5	31.7	12.51	4	27.51	7.07
6	32.59	13.4	5	26.29	8.29
7	33.23	14.04	6	25.28	9.3
8	33.54	14.35	7	24.39	10.19
9	33.66	14.47	8	23.65	10.93
10	33.72	14.53	9	23.03	11.55
12	33.86	14.67	10	22.53	12.05
15	34.06	14.87	12	21.76	12.82
17	34.07	14.88	14	21.27	13.31
18	34.08	14.89	15	21.08	13.5
20	34.1	14.91	16	20.92	13.66
25	34.05	14.86	18	20.72	13.86
30	34.26	15.07	20	20.56	14.02
35	34.22	15.03	25	20.33	14.25
40	34.16	14.97	30	20.19	14.39
45	34.19	15	40	20.13	14.45
50	34.25	15.06	45	20.11	14.47
55	34.23	15.04	50	20.02	14.56
60	34.24	15.05	55	19.96	14.62
70	34.26	15.07	60	19.92	14.66
80	34.27	15.08			
90	34.22	15.03			
100	34.28	15.09			
120	34.26	15.07			
135	34.27	15.08			
150	34.31	15.12			
165	34.4	15.21			
180	34.29	15.1			
195	34.23	15.04			
210	34.52	15.33			
225	34.43	15.24			
240	34.41	15.22			
255	34.39	15.2			
270	34.52	15.33			
285	34.54	15.35			
300	34.55	15.36			
315	34.58	15.39			
330	34.58	15.39			
345	34.62	15.43			
360	34.59	15.4			

Belfountain

6 Hour Pupmping Test Results TW2 - Test Well

TW2 (partially penetrating)

Well depth (mbgs)	20.11
Open hole interval (mbgs)	12.49 to 20.11
standing water level (mbTOC)	14.07
stick up (m above gs)	0.88
Datalogger at (mbTOC)	20
Pumping Rate L/sec	0.189
Pumping Rate L/min	11.34

TW2 Pumping			**TW2 Recovery**		
Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)
0.1	14.07	0.01	0.1	14.16	0
1	14.1	0.04	1	14.13	0.03
2	14.11	0.05	2	14.12	0.04
3	14.11	0.05	3	14.12	0.04
4	14.11	0.05	4	14.12	0.04
5	14.11	0.05	5	14.12	0.04
6	14.11	0.05	6	14.12	0.04
7	14.11	0.05	7	14.12	0.04
8	14.11	0.05	8	14.12	0.04
9	14.12	0.06	9	14.11	0.05
10	14.12	0.06	10	14.11	0.05
12	14.12	0.06	12	14.11	0.05
14	14.12	0.06	15	14.11	0.05
15	14.12	0.06	20	14.11	0.05
16	14.12	0.06	25	14.1	0.06
18	14.12	0.06	30	14.1	0.06
20	14.12	0.06	40	14.1	0.06
25	14.13	0.07	50	14.09	0.07
30	14.13	0.07	60	14.09	0.07
35	14.13	0.07			
40	14.13	0.07			
45	14.13	0.07			
50	14.13	0.07			
55	14.135	0.075			
60	14.14	0.08			
75	14.14	0.08			
90	14.15	0.09			
105	14.15	0.09			
120	14.15	0.09			
135	14.15	0.09			
150	14.15	0.09			
165	14.15	0.09			
180	14.16	0.1			
195	14.16	0.1			
210	14.16	0.1			
225	14.16	0.1			
240	14.16	0.1			
255	14.16	0.1			
270	14.16	0.1			
285	14.16	0.1			
300	14.16	0.1			
315	14.16	0.1			
330	14.16	0.1			
345	14.16	0.1			
360	14.16	0.1			

Belfountain

6 Hour Pupmping Test Results TW3 - Test Well

TW3 (fully penetrating)

Well depth (mbgs)	35.96
Open hole interval (mbgs)	22.8 to 35.96
standing water level (mbTOC)	15.8
stick up (m above gs)	0.79
Datalogger at (mbTOC)	21.62
Pumping Rate L/sec	1.61
Pumping Rate L/min	96.6

TW3 Pumping			**TW3 Recovery**		
Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)
0.1	15.8	0	0.1	23.62	0
1	19.01	3.21	1.1	20.01	3.61
2	20.77	4.97	2.1	18.43	5.19
3	21.42	5.62	3.1	17.55	6.07
4	21.84	6.04	4.1	17.09	6.53
5	22.22	6.42	5.1	16.86	6.76
6	22.3	6.5	6.1	16.73	6.89
7	22.3	6.5	7.1	16.64	6.98
8	22.6	6.8	8.1	16.59	7.03
9	22.6	6.8	9.1	16.54	7.08
10	22.76	6.96	10.1	16.51	7.11
12	23.02	7.22	11.1	16.45	7.17
15	23.08	7.28	12.1	16.41	7.21
16	23.12	7.32	13.1	16.38	7.24
18	23.18	7.38	14.1	16.36	7.26
20	23.22	7.42	15.1	16.32	7.3
25	23.32	7.52	16.1	16.28	7.34
30	23.38	7.58	17.1	16.22	7.4
35	23.41	7.61	18.1	16.16	7.46
40	23.46	7.66	19.1	16.11	7.51
45	23.5	7.7	20.1	16.07	7.55
50	23.52	7.72	21.1	16.02	7.6
55	23.53	7.73	22.1	16.01	7.61
60	23.55	7.75	23.1	15.99	7.63
70	23.59	7.79			
80	23.62	7.82			
90	23.64	7.84			
100	23.65	7.85			
110	23.65	7.85			
120	23.64	7.84			
135	23.65	7.85			
150	23.66	7.86			
165	23.63	7.83			
186	23.63	7.83			
195	23.63	7.83			
210	23.63	7.83			
225	23.64	7.84			
240	23.64	7.84			
255	23.65	7.85			
270	23.64	7.84			
285	23.64	7.84			
300	23.64	7.84			
315	23.65	7.85			
330	23.64	7.84			
345	23.62	7.82			
360	23.62	7.82			

Belfountain		**Belfountain**	
6 Hour Pupmping Test Results TW4 - Test Well		**6 Hour Pupmping Test Results TW5 - Test Well**	
TW4 (fully penetrating)		**TW5 (fully penetrating)**	
Well depth (mbgs)	35.66	Well depth (mbgs)	32.3
Open hole interval (mbgs)	17.67 to 35.66	Open hole interval (mbgs)	13.41 to 32.30
standing water level (mbTOC)	19.56	standing water level (mbTOC)	15.34
stick up (m above gs)	0.94	stick up (m above gs)	0.83
Datalogger at (mbTOC)	27.72	Datalogger at (mbTOC)	30
Pumping Rate L/sec	0.5	Pumping Rate L/sec	1.26
Pumping Rate L/min	30	Pumping Rate L/min	75.6

TW4 Pumping			**TW4 Recovery**			**TW5 Pumping**			**TW5 Recovery**		
Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)
0.1	19.56	0	0.1	19.71	0	0.1	15.34	0	0.1	22.48	0
1	19.68	0.12	1	19.51		1	16.97	1.63	1	22.01	0.47
2	19.69	0.13	2	19.58	0.13	2	18.23	2.89	2	21.33	1.15
3	19.69	0.13	3	19.58	0.13	3	20.34	5	3	19.76	2.72
4	19.69	0.13	4	19.58	0.13	4	22.89	7.55	4	18.47	4.01
5	19.69	0.13	5	19.575	0.135	5	23.09	7.75	5	18.13	4.35
6	19.69	0.13	6	19.575	0.135	6	21.98	6.64	6	17.8	4.68
7	19.69	0.13	7	19.575	0.135	7	21.95	6.61	7	17.52	4.96
8	19.69	0.13	8	19.575	0.135	8	21.95	6.61	8	17.36	5.12
9	19.69	0.13	9	19.575	0.135	9	21.97	6.63	9	17.24	5.24
10	19.69	0.13	10	19.575	0.135	10	22	6.66	13	17.14	5.34
12	19.69	0.13	12	19.575	0.135	12	22.13	6.79	15	16.96	5.52
15	19.69	0.13	14	19.575	0.135	14	22.19	6.85	20	16.89	5.59
16	19.69	0.13	15	19.575	0.135	16	22.24	6.9	25	16.81	5.67
18	19.69	0.13	16	19.575	0.135	18	22.3	6.96	35	16.76	5.72
20	19.69	0.13	18	19.575	0.135	20	22.38	7.04	45	16.7	5.78
25	19.69	0.13	20	19.575	0.135	25	22.56	7.22	60	16.66	5.82
30	19.69	0.13	25	19.575	0.135	30	22.65	7.31			
35	19.69	0.13	30	19.575	0.135	35	22.74	7.4			
40	19.695	0.135	35	19.575	0.135	40	22.81	7.47			
45	19.695	0.135	40	19.575	0.135	45	22.9	7.56			
50	19.695	0.135	45	19.575	0.135	50	22.99	7.65			
55	19.7	0.14	50	19.57	0.14	55	23.02	7.68			
60	19.7	0.14	55	19.57	0.14	60	23.06	7.72			
70	19.7	0.14	60	19.57	0.14	70	23.16	7.82			
80	19.7	0.14				80	23.28	7.94			
90	19.705	0.145				90	23.31	7.97			
100	19.705	0.145				100	23.37	8.03			
110	19.705	0.145				115	23.52	8.18			
120	19.705	0.145				130	23.64	8.3			
135	19.705	0.145				145	23.8	8.46			
150	19.705	0.145				160	23.85	8.51			
165	19.705	0.145				175	24.13	8.79			
186	19.705	0.145				190	24.4	9.06			
195	19.705	0.145				205	24.56	9.22			
210	19.705	0.145				220	24.67	9.33			
225	19.705	0.145				235	24.84	9.5			
240	19.705	0.145				250	25.04	9.7			
255	19.705	0.145				265	25.79	10.45			
270	19.705	0.145				280	25.96	10.62			
285	19.705	0.145				295	26.21	10.87			
300	19.705	0.145				310	26.49	11.15			
315	19.71	0.15				322	27.12	11.78			
330	19.71	0.15									
345	19.71	0.15									
360	19.71	0.15									

Belfountain

6 Hour Pupmping Test Results TW6 - Test Well

TW6 (fully penetrating)

Well depth (mbgs)	32.39
Open hole interval (mbgs)	13.41 to 32.30
standing water level (mbTOC)	14.69
stick up (m above gs)	0.79
Datalogger at (mbTOC)	30
Pumping Rate L/sec	1.14
Pumping Rate L/min	68.4

TW6 Pumping			**TW6 Recovery**		
Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)	Elapsed Time Manual (min)	Water Level Manual (mbTOC)	Drawdown manual (m)
0.1	14.69	0	0.1	20.41	0
2	18.21	3.52	1	18.49	1.92
3	18.49	3.8	2	17.19	3.22
5	19.8	5.11	3	16.38	4.03
6	19.86	5.17	4	16.01	4.4
7	19.96	5.27	5	15.82	4.59
8	19.94	5.25	6	15.74	4.67
9	19.93	5.24	7	15.7	4.71
10	20.36	5.67	9	15.66	4.75
12	20.02	5.33	10	15.65	4.76
14	19.83	5.14	12.5	15.62	4.79
15	19.76	5.07	15	15.6	4.81
16	19.72	5.03	22	15.55	4.86
18	19.69	5	25	15.55	4.86
23	19.68	4.99	30	15.53	4.88
25	19.68	4.99	35	15.51	4.9
30	19.7	5.01	40	15.5	4.91
35	19.73	5.04	45	15.47	4.94
40	19.75	5.06	50	15.46	4.95
45	19.78	5.09	55	15.44	4.97
50	19.84	5.15	60	15.42	4.99
55	19.81	5.12			
60	19.83	5.14			
70	19.87	5.18			
80	19.9	5.21			
90	19.93	5.24			
100	19.96	5.27			
110	19.98	5.29			
120	20.01	5.32			
135	20.03	5.34			
150	20.06	5.37			
165	20.09	5.4			
180	20.12	5.43			
195	20.15	5.46			
210	20.18	5.49			
225	20.22	5.53			
240	20.24	5.55			
255	20.27	5.58			
270	20.29	5.6			
285	20.32	5.63			
300	20.34	5.65			
315	20.35	5.66			
330	20.36	5.67			
345	20.38	5.69			
360	20.41	5.72			

Appendix K

Long-term Drawdown Analysis

Long-term Drawdown Calculations (20 and 50 years)

Table 1 - Based on Peak Pumping Rates (27,000 L/day)

Well ID	Estimated Transmissivity (m^2/day)	Pumping rate (m^3/day)	Radius from pumping well (m)	Storage	20 years			50 years			Static Water Level (mbgs)	Available Drawdown (m)	Calculated Drawdown (m)	
					Time (days) 20 years	u	W(u)	Time (days) 50 years	u	W(u)			20 years	50 years
TW1	9.37	27	0.075	5	7300	1.0E-07	15.5409	18250	4.1E-08	16.4825	19.19	23.17	3.56	3.78
TW2	14.94	27	0.075	5	7300	6.4E-08	15.9872	18250	2.6E-08	16.888	14.07	2.23	2.30	2.43
TW3	84.85	27	0.075	5	7300	1.1E-08	17.7482	18250	4.5E-09	18.642	15.8	13.58	0.45	0.47
TW4	403.19	27	0.075	5	7300	2.4E-09	19.2706	18250	9.6E-10	20.1869	19.56	7.105	0.10	0.11
TW5	26.60	27	0.075	5	7300	3.6E-08	16.5625	18250	1.4E-08	17.507	15.34	7.515	1.34	1.41
TW6	72.10	27	0.075	5	7300	1.3E-08	17.5811	18250	5.3E-09	18.4783	14.69	8.165	0.52	0.55

Table 2 - Based on Average Pumping Rates (2,250 L/day)

Well ID	Estimated Transmissivity (m^2/day)	Pumping rate (m^3/day)	Radius from pumping well (m)	Storage	20 years			50 years			Static Water Level (mbgs)	Available Drawdown (m)	Calculated Drawdown (m)	
					Time (days) 20 years	u	W(u)	Time (days) 50 years	u	W(u)			20 years	50 years
TW1	9.37	2.25	0.075	5	7300	1.0E-07	15.5409	18250	4.1E-08	16.4825	19.19	23.17	0.30	0.31
TW2	14.94	2.25	0.075	5	7300	6.4E-08	15.9872	18250	2.6E-08	16.888	14.07	2.23	0.19	0.20
TW3	84.85	2.25	0.075	5	7300	1.1E-08	17.7482	18250	4.5E-09	18.642	15.8	13.58	0.04	0.04
TW4	403.19	2.25	0.075	5	7300	2.4E-09	19.2706	18250	9.6E-10	20.1869	19.56	7.105	0.01	0.01
TW5	26.60	2.25	0.075	5	7300	3.6E-08	16.5625	18250	1.4E-08	17.507	15.34	7.515	0.11	0.12
TW6	72.10	2.25	0.075	5	7300	1.3E-08	17.5811	18250	5.3E-09	18.4783	14.69	8.165	0.04	0.05

Notes:

Where available drawdown is considered to be the distance between the static water level and the centre of the well screer

Appendix L

Radius of Influence Analysis

Radius of Influence for TW1

Observation Well = PW1

Variables	
Peak Pumping Rate (m^3/day)	27
Average Pumping Rate (m^3/day)	2.25
Transmissivity (m^2/day)	9.37
Storage for Limestone (dimensionless)	5
Time (days)	18250
Radius from pumping well (m) - TW1	0.075
Radius from pumping well (m) - PW1	87
Ro = radius of influence where drawdown is zero	

TW1 - Peak Pumping Rate

u =	4.11E-08
W(u) =	16.4325
drawdown, s (m) =	3.77

PW1 - Peak Pumping Rate

u =	5.53E-02
W(u) =	2.3775
drawdown, s (m) =	0.54

TW1 - Average Pumping Rate

u =	4.11E-08
W(u) =	16.4325
drawdown, s (m) =	0.31

PW1 - Average Pumping Rate

u =	5.53E-02
W(u) =	2.3775
drawdown, s (m) =	0.05

Radius of Influence

Therefore, pumping at peak pumping rate results in radius of infleunce of approximately 300 m after 50 years compared to a radius of influence of approximately 100 meters after 50 years for average pumping rate.

Theis (1935)

$$s = \frac{Q}{4\pi T} W(u) \qquad (1)$$

and,

$$u = \frac{r^2 S}{4Tt} \qquad (2)$$

Where:

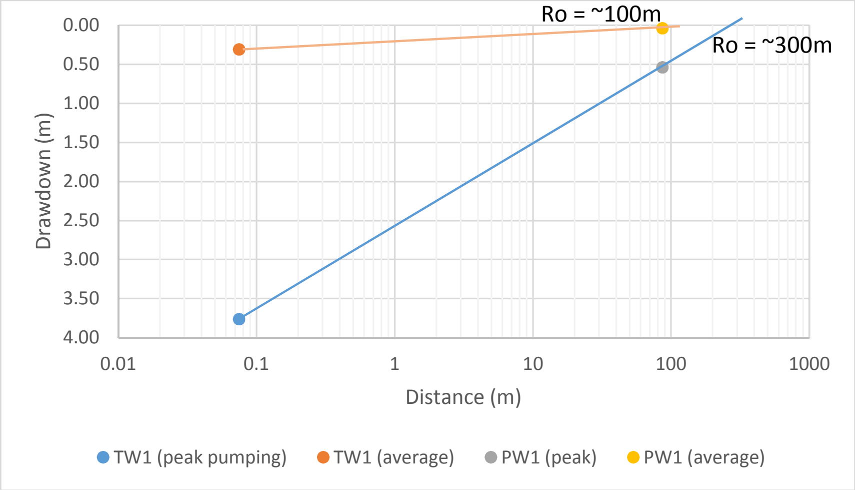
s	*is drawdown (m)*
Q	*is pumping rate (m^3/d)*
T	*is transmissivity (m^2/d)*
W(u)	*is the well function*
S	*is storativity (-)*
t	*is time (d)*
r	*is the distance from the pumping well to the observation well or point of interest (m)*

The assumptions that are implicit in the mathematics used in the Theis derivation include:

a) The aquifer is uniform in character and the hydraulic conductivity is the same in all directions.

b) The aquifer is uniform in thickness and infinite in areal extent.

c) The aquifer receives no recharge from any source; all water removed from the well comes from aquifer storage.



Radius of Influence for TW1 at 15 m

Observation Well = PW1

Variables	
Peak Pumping Rate (m^3/day)	27
Average Pumping Rate (m^3/day)	2.25
Transmissivity (m^2/day)	9.37
Storage for Limestone (dimensionless)	5
Time (days)	18250
Radius from pumping well (m) - TW1	0.075
Radius from pumping well (m)	15
Ro = radius of influence where drawdown is zero	

TW1 - Peak Pumping Rate

u =	4.11E-08
W(u) =	16.4325
drawdown, s (m) =	3.77

PW1 - Peak Pumping Rate

u =	1.64E-03
W(u) =	5.8621
drawdown, s (m) =	1.34

TW1 - Average Pumping Rate

u =	4.11E-08
W(u) =	16.4325
drawdown, s (m) =	0.31

PW1 - Average Pumping Rate

u =	1.64E-03
W(u) =	5.8621
drawdown, s (m) =	0.11

Radius of Influence

Therefore, pumping at peak pumping rate results in radius of infleunce of approximately 300 m after 50 years compared to a radius of influence of approximately 100 meters after 50 years for average pumping rate.

Theis (1935)

$$s = \frac{Q}{4\pi T} W(u) \qquad (1)$$

and,

$$u = \frac{r^2 S}{4Tt} \qquad (2)$$

Where:

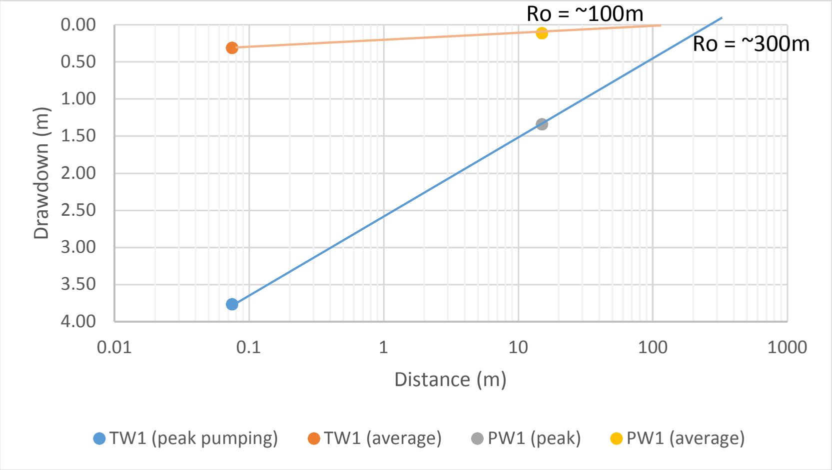
s	*is drawdown (m)*
Q	*is pumping rate (m^3/d)*
T	*is transmissivity (m^2/d)*
W(u)	*is the well function*
S	*is storativity (-)*
t	*is time (d)*
r	*is the distance from the pumping well to the observation well or point of interest (m)*

The assumptions that are implicit in the mathematics used in the Theis derivation include:

a) The aquifer is uniform in character and the hydraulic conductivity is the same in all directions.

b) The aquifer is uniform in thickness and infinite in areal extent.

c) The aquifer receives no recharge from any source; all water removed from the well comes from aquifer storage.



Radius of Influence for TW4

Observation Well = immaginary at 87 m

Variables	
Peak Pumping Rate (m^3/day)	27
Average Pumping Rate (m^3/day)	2.25
Transmissivity (m^2/day)	403.20
Storage for Limestone (dimensionless)	5
Time (days)	18250
Radius from pumping well (m) - TW1	0.075
Radius from pumping well (m)	87
Ro = radius of influence where drawdown is zero	

TW4 - Peak Pumping Rate

u =	9.56E-10
W(u) =	20.1869
drawdown, s (m) =	0.11

Obs well - Peak Pumping Rate

u =	1.29E-03
W(u) =	6.0695
drawdown, s (m) =	0.03

TW4 - Average Pumping Rate

u =	9.56E-10
W(u) =	20.1869
drawdown, s (m) =	0.01

Obs Well - Average Pumping Rate

u =	1.29E-03
W(u) =	6.0695
drawdown, s (m) =	0.00

Radius of Influence

Therefore, pumping at peak pumping rate results in radius of infleunce of approximately 1100 m after 50 years compared to a radius of influence of approximately 100 meters after 50 years for average pumping rate.

Theis (1935)

$$s = \frac{Q}{4\pi T} W(u) \qquad (1)$$

and,

$$u = \frac{r^2 S}{4Tt} \qquad (2)$$

Where:

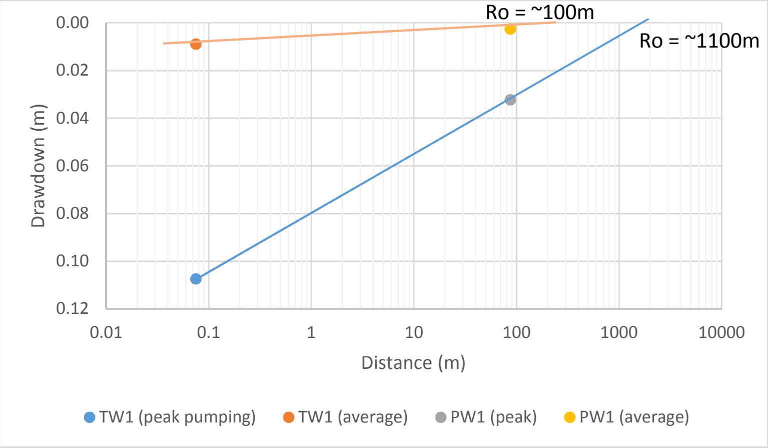
s	*is drawdown (m)*
Q	*is pumping rate (m^3/d)*
T	*is transmissivity (m^2/d)*
W(u)	*is the well function*
S	*is storativity (-)*
t	*is time (d)*
r	*is the distance from the pumping well to the observation well or point of interest (m)*

The assumptions that are implicit in the mathematics used in the Theis derivation include:

a) The aquifer is uniform in character and the hydraulic conductivity is the same in all directions.

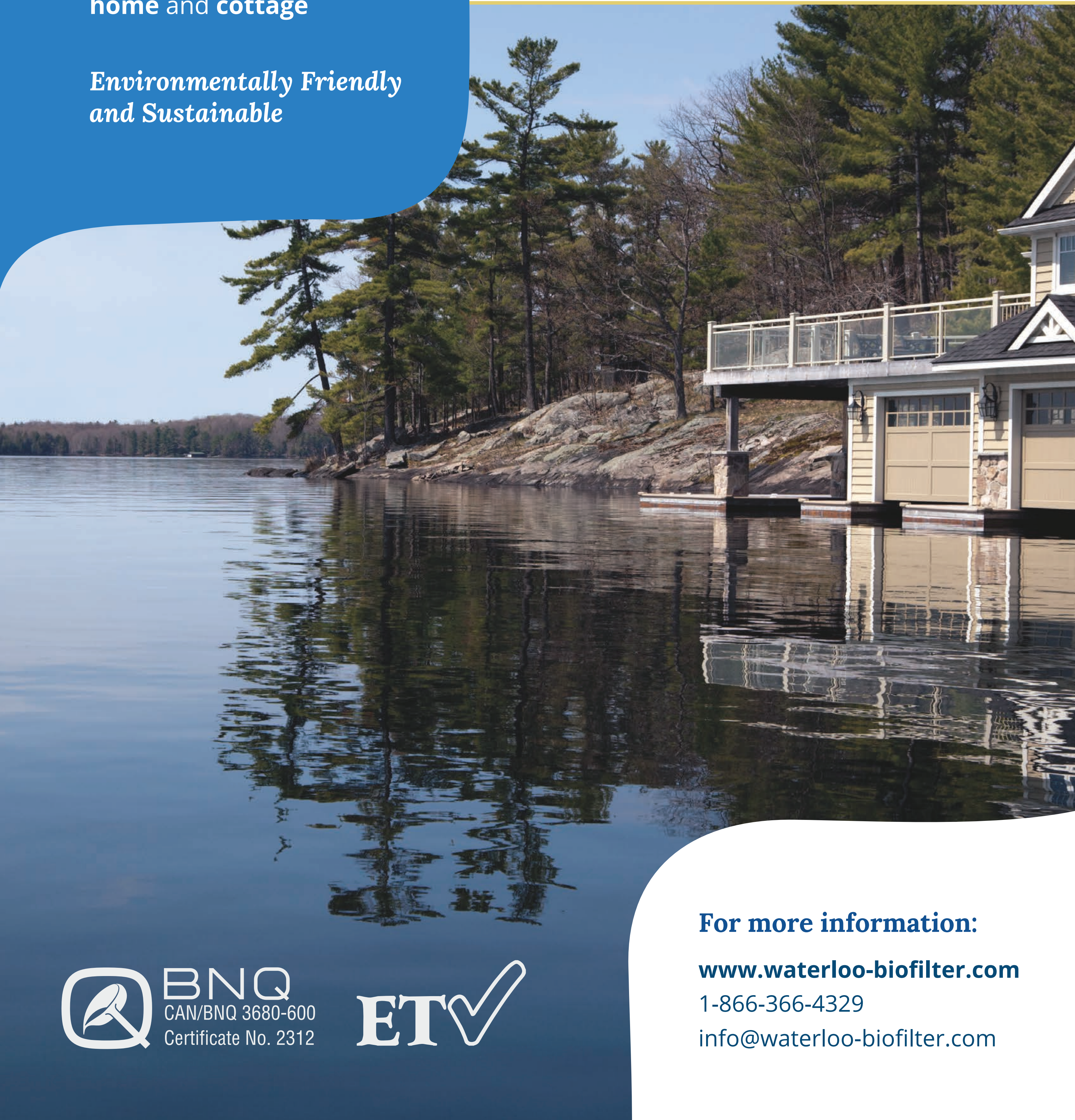
b) The aquifer is uniform in thickness and infinite in areal extent.

c) The aquifer receives no recharge from any source; all water removed from the well comes from aquifer storage.



Appendix M

Typical Water and Wastewater Treatment Systems



The Waterloo Advantage

Waterloo Biofilter Systems Inc. is a Canadian-owned and operated company that has for over 20 years developed, designed, manufactured, and maintained advanced onsite wastewater treatment systems.

We are committed to helping protect the environment with technology focused on high quality treatment, low energy usage, and system robustness.

A Waterloo is designed to perform on difficult sites

Small or Remote Lots

Bedrock or Clay Soils

High Watertable

Environmentally Sensitive Areas

The environmentally friendly choice

UNIVERSITY OF WATERLOO

The patented Waterloo Biofilter system was developed at the University of Waterloo's Centre for Groundwater Research.

Permanent Filter Medium

The key to the Waterloo Biofilter system is the absorbent foam filter medium that has been optimized to physically filter and biologically treat sewage. This filter medium is warrantied for 20 years and will likely last generations.

Step 1

Wastewater is collected and distributed over the Waterloo foam filter medium.

Step 2

Wastewater slowly trickles down through the foam pieces where natural occurring bacteria remove contaminants.

Step 3

After passing through the foam, the treated water is put back into the environment.

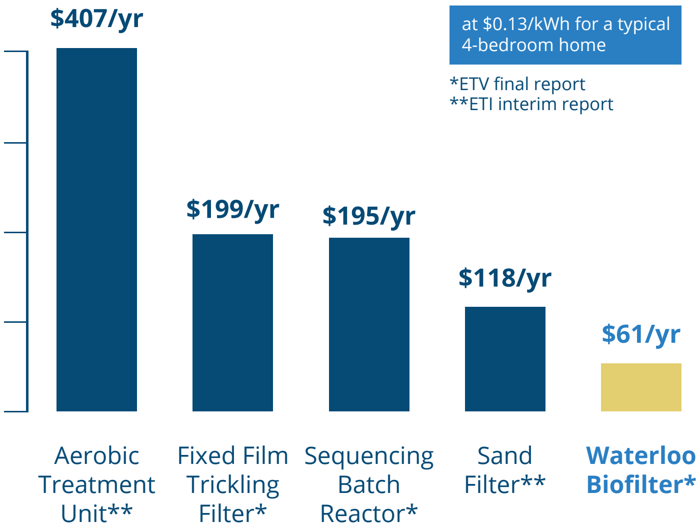
Low Energy, Low Operating Cost

Waterloo Biofilters use very little energy; up to **85% less** power than aeration technologies using air compressors. In the long-term we have the lowest operating costs.

Few moving parts

Less energy use

No noisy air compressor



at $0.13/kWh for a typical 4-bedroom home

*ETV final report
**ETI interim report

Nitrogen Removal

Standard Waterloo systems remove up to **50-65% total nitrogen**, helping to reduce nitrate levels in groundwater and protect surface waters. With the **WaterNOx-LS™** system add-on, up to **95% TN removal** can be achieved passively and cost-effectively.

Phosphorous Removal

With the **Waterloo EC-P™** system add-on, greater than **95% total phosphorus** can be removed – helping protect surface waters from blue-green algae and lake eutrophication. Compact and low energy, the Waterloo EC-P™ permanently removes phosphorus without chemicals or additional sludge production.

Small Footprint

A Waterloo is discrete and minimizes raised mounding and tree removal. A variety of product configurations are available to suit your unique site conditions and personal tastes.

Seasonal Performance

Whether for seasonal or year-round use, the Waterloo is designed to withstand extreme cold temperatures and can easily handle variable flow rates.

Made in Canada
Tough Enough for Canada

Residential Products

Waterloo Shed Biofilters are spray foam insulated for winter operation, clad in attractive composite siding, and roofed with 50-year shingles. Shed Biofilters are compact and require only a single pump to operate.

Waterloo Flat Bed Biofilters are constructed of strong yet lightweight fibreglass shells. Flat Bed Biofilters easily blend in with landscaping and require only a single pump to operate.

Waterloo Basket Biofilters are constructed of a rigid steel mesh coated for corrosion protection. Basket Biofilters are placed in a below-ground concrete tank and are ideal for larger homes or increased nitrogen removal.

Waterloo HDPE Tank Biofilters are constructed using very durable below-ground high-density polyethylene tanks. HDPE Tank Biofilters are ideal for difficult access sites and increased nitrogen removal.

Proved and Approved

The Waterloo Biofilter has been thoroughly tested and proven effective by numerous 3rd party verification programs. We pride ourselves on the high treatment levels our technology consistently demonstrates.

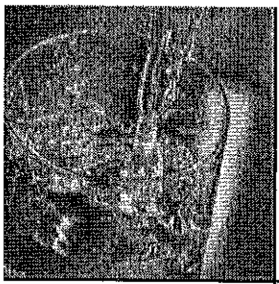
Is *yours* a Waterloo?

CAN/BNQ Certification

	Median Concentration	Percent Removal
$cBOD_5$	4 mg/L	98%
TSS	4 mg/L	> 98%
Fecal Coliforms	17,900 cfu/100mL	> 99%

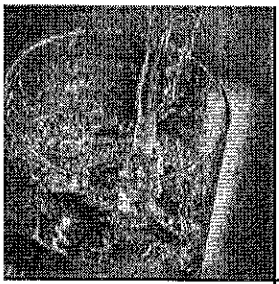
ETV Verification

	Median Concentration	Percent Removal
$cBOD_5$	7 mg/L	96%
TSS	5 mg/L	97%
Total Nitrogen	13 mg/L	65%



Culligan®

Culligan® Aqua-Cleer® Advanced Drinking Water Systems Owners Guide



About Your System

Thank you for choosing a Culligan Aqua-Cleer advanced drinking water system. Your new system is designed to bring you years of deliciously crystal-clear Culligan water. The best part is it comes right from the tap. No more lugging around bottles or waiting for pitchers to slowly fill up. With your continuous supply of great tasting water, not only can you get your 8 glasses a day but you can easily use it for cooking, coffee, juice, baby formula, ice cubes, anything you use water with.

The important thing to remember is to change out your filters on a regular basis. The quality of your water is only as good as the quality of your filters. Each filter is designed to last for 1,000 gallons (roughly 12 months). Membranes will last longer if used with pre-filtration. A flow monitor is available with your system to let you know when you have consumed 1,000 gallons of water through your system. If you did not purchase one with your system, you may consider asking your Culligan man about having one installed. Faucets with reminder lights are also available.

System Specifications:

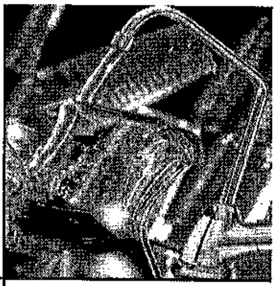
Dimensions	Filter Assembly Standard Storage Tank Medium Storage Tank Large Storage Tank	13.8" wide x 4.2" deep x 15.5" high 9" diameter x 14" high 11" diameter x 14" high 15.5: diameter x 24" high
Storage Tank Capacity	Standard Medium Large	2 gallons [✓ 3 gallons] 9 gallons
Reverse Osmosis Efficiency Rating	Standard Medium Large	16.86% [✓ 16.86%] 16.86%
Reverse Osmosis Recovery Rating	Standard Medium Large	33.49% [✓ 33.49%] 33.49%

Filtration Options:

Sequence of Filtration	**Type of Filtration**	**Specification**
Pre-Filtration	Sediment	1 2 3
	Carbon	Block Granulated Active Carbon Granulated Active Carbon - Large
Membrane	Reverse Osmosis	[✓ 30 gpd] 50 gpd*
	Nano Filtration†	30 gpd

* Cartridges not for sale in California.

† Cartridges not for sale in California or Iowa.



Sequence of Filtration	Type of Filtration	Specification
Advanced Filtration	Total Defense	Speciality Carbon Block
	Arsenic	Specialty Media [1]
	Perchlorate*	Specialty Media [1]
Post-Filtration	Carbon	Granulated Activated Carbon Block

* Cartridges not for sale in California

[1] Specialty media cartridges must be installed after the RO membrane and system must have a Performance Indicator Device (PID) installed to track gallon usage.

Purpose of each level of filtration:

Pre-Filtration:

Pre-filtration for this system is used to reducing large contaminants from the water before they reach either the reverse osmosis or nano filtration membrane. The use of pre-filtration cartridges helps extent the membrane's life. There are two types of pre-filtration available with this system: sediment filtration and carbon filtration.

Sediment Filtration: Sediment is defined as sand, dirt, silt, fine sand and or coarse sand that can be found in many water supplies.

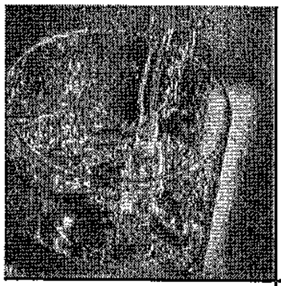
Carbon Filtration: Carbon is used to reduce chlorine taste and odor. Most people often describe this taste as being slightly chemical or they equate their drinking water to that of the local pool. Municipalities use chlorine to disinfect the water on the way to your home. This is a necessary step to delivering safe water to your home but depending on the level of chlorine by the time it reaches your home the taste of your water may be unpalatable.

Membrane Technologies:

The Aqua-Cleer system can utilize two different membrane technologies; reverse osmosis and nano filtration. Each one of these technologies use a tightly woven membrane that acts as a barrier to contaminants. Water is pushed up against this membrane at pressure. Depending on the weave of the membrane only a certain percentage of contaminants can pass through. Reverse Osmosis can reduce up to 99% of contaminants. The reason you may choose nano filtration versus reverse osmosis is often a question of taste. Some of the things that give water its taste are minerals such as calcium and magnesium. A nano filtration membrane will leave more of those minerals in the water.

Advanced Filtration:

The advanced filtration cartridges are specifically designed to reduce contaminants that reverse osmosis membranes are not efficient in removing.



About Your System (con't)

Total Defense: OPTIONAL 5 Stage system only.

The Total Defense cartridge should be added to your system to deal with lead, mercury, aesthetic chloramines, aesthetic chlorine taste and odor, cysts, Volatile Organic Compounds (VOC) and MTBE.

- Chloramines have a stronger taste and are more difficult to remove than chlorine.
- Mercury is a toxin that can cause kidney damage.
- Lead is a toxin that can cause kidney problems or high blood pressure in adults and developmental problems in children.
- Cysts are a common cause of health issues. They can be found in some municipal water sources but more often found in wells under the influence of surface water.
- VOC is a name given to a wide range of organic contaminants, some are known to be carcinogenic.
- MTBE was used in gasoline to reduce emissions and is considered harmful.

Perchlorate*:

Perchlorate is a by-product of munitions manufacturing (common in solid rocket fuel, road flares, etc) that can be found in some water sources.

Arsenic:

Arsenic (As) is found naturally in some well water. Arsenic in water has no color, taste or odor. It must be measured by a lab test. Public water utilities must have their water tested for arsenic. You can get the result from your water utility. If you have your own well, you can have the water tested by an accredited lab. The local health department or the state environmental health agency can provide a list of certified labs. Culligan International is one such lab. For more information please contact your local Culligan dealer. For additional information about the arsenic in water can be found through the EPA's website at www.epa.gov/safewater/arsenic.html.

There are two forms of arsenic: pentavalent arsenic (As (V)) and trivalent arsenic (As (III)). Special sampling procedures are needed for a lab to determine what type and how much of each type of arsenic is in the water. In well water, arsenic may be pentavalent, trivalent, or a combination of both. Reverse osmosis membranes are effective at reducing pentavalent arsenic but not trivalent arsenic. The Arsenic specific cartridge was specifically designed to reduce trivalent arsenic.

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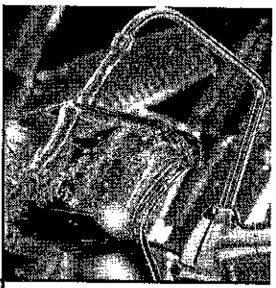
* Cartridges not for sale in California.



Carbon Block (CB)

The Carbon Block pre-filter has been tested according to NSF/ANSI 42 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42.

Substance	Influent Challenge Concentration	Maximum Permissible Product water Concentration	Reduction Requirements	Minimum Reduction	Average Reduction
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	97.6%	97.3%

Granular Activated Carbon (GAC)

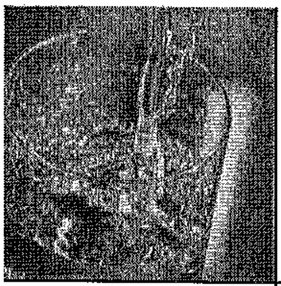
The Granular Activated Carbon has been tested according to NSF/ANSI 42 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42.

Substance	Influent Challenge Concentration	Maximum Permissible Product water Concentration	Reduction Requirements	Minimum Reduction	Average Reduction
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	79.4%	64.4%

Granular Activated Carbon - Large (GAC-L)

The Granular Activated Carbon - Large has been tested according to NSF/ANSI 42 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42.

Substance	Influent Challenge Concentration	Maximum Permissible Product water Concentration	Reduction Requirements	Minimum Reduction	Average Reduction
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	86.1%	80.3%



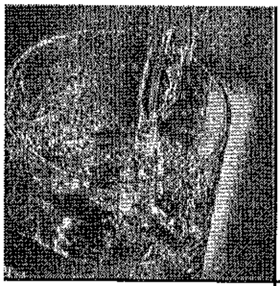
Performance Data Sheet (con't)

Total Defense (TD) ✓ 5 Stage only.

The Total Defense has been tested according to NSF/ANSI 42 and 53 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42 and 53.

Substance	**Influent Challenge Concentration**	**Maximum Permissible Product water Concentration**	**Reduction Requirements**	**Minimum Reduction**	**Average Reduction**
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	97.6%	98.0%
Aesthetic Chloramines	3.0 mg/L + 10%	0.5 mg/L		97.6%	98.0%
Particulate (0.5 - < um) Class I	At least 10,000 particles/mL		>85%	99.9%	99.9%
Standard 53					
MTBE	0.015 + 20%	0.005 mg/L		74.6%	83.3%
Cyst[t]	Minimum 50,000/L		99.95%	99.99%	99.99%
Turbidity	11 mg/L + 1 NTU	0.5 NTU		96.6%	98.0%
Lead (pH 6.5)	0.15 mg/L + 10%	0.010 mg/L		99.3%	99.3%
Lead (pH 8.5)	0.15 mg/L + 10%	0.010 mg/L		99.3%	99.3%
Mercury (pH 6.5)	0.006 mg/L + 10%	0.002 mg/L		96.6%	96.6%
Mercury (pH 8.5)	0.006 mg/L + 10%	0.002 mg/L		72.4%	95.4%
Chloroform (VOC surrogate chemical)	0.300 mg/L + 10%	0.015 mg/L		95.2%	91.0%

Flow Rate = 0.5 gpm (1.89 Lpm)
Capacity = 1,000 gallons (3786 L)
[t] Based on the use of microspheres or Cryptosporidium parvum oocysts
Testing was performed under standard laboratory conditions, actual performance may vary.



Performance Data Sheet (con't)

RO30 with TD

These systems have been tested and certified by NSF International according to NSF/ANSI 42, 53, and 58 for the reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42, 53, and 58.

This system is acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and is certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

Substance Reduction[1]

Substance	Influent Challenge Concentration mg/L	Maximum Permissible Product water Concentration mg/L	Reduction Requirements	Minimum Reduction	Average Reduction
Arsenic (pentavalent)[2]	0.050 +/- 10%	0.01			97.4%
Barium	10.0 +/- 10%	2			98.3%
Cadmium	0.03 +/- 10%	0.005			98.7%
Hexavalent Chromium	0.30 +/- 10%	0.05			91.2%
Trivalent Chromium	0.30 +/- 10%	0.05			97.8%
Copper	3.00 +/- 10%	1.3			98.9%
Fluoride	8.0 +/- 10%	1.5			95.6%
Lead	0.15 +/- 10%	0.010			98.7%
Nitrate/Nitrite (both as N)	30 +/- 10%			83.1%	86.8%
Nitrate[5]	27.0 +/- 10%	10.0		83.4%	87.0%
Nitrite	3.0 +/- 10%	1.0		79.5%	84.8%
Radium 226/228[3]	25pCi/L +/- 10%	5pCi/L			80.0%
Selenium	0.10 +/- 10%	0.05			96.0%
Cyst[4]	>50,000/mL		99.95%	99.99%	99.99%
Turbidity	11 +/- 1 NTU	0.5 NTU			99.00%

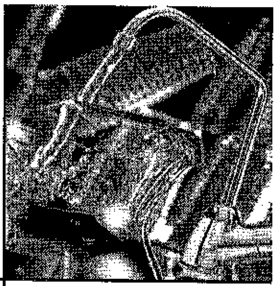
[1] While testing was performed under standard laboratory conditions, actual performance may vary depending on water pressure, temperatures and other substances, which may be found in your water.

[2] This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5) or arsenate) at concentrations of 0.050 mg/L or less. This system reduces pentavalent arsenic, but may not remove other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts Sheet for further Information.

[3] Based upon testing methods using Barium as a surrogate. All concentrations in pCi/L pico curie/L.

[4] Includes Giardia lamblia, Entamoeba histolyca and Cryptosporidium.

[5] Units are not certified on water supplies with a pressure less than 40 psi (280 kPa). A booster pump is strongly recommended.



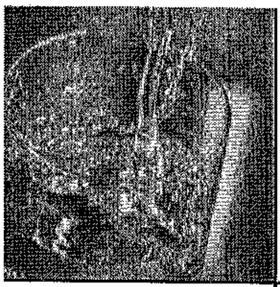
Total Defense (TD)

The Total Defense has been tested according to NSF/ANSI 42 and 53 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42 and 53.

Substance Reduction[1]

Substance	Influent Challenge Concentration mg/L	Maximum Permissible Product water Concentration mg/L	Reduction Require-ments	Minimum Reduction	Average Reduction
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	97.6%	98.0%
Aesthetic Chloramines	3.0 mg/L + 10%	0.5 mg/L		97.6%	98.0%
Particulate (0.5 - < um) Class I	at least 10,000 particles/mL		>85%	99.9%	99.9%
Standard 53					
MTBE	0.015 + 20%	0.005 mg/L		74.6%	83.3%
Cyst[†]	Minimum 50,000/L		99.95%	99.99%	99.99%
Turbidity	11 mg/L + 1 NTU	0.5 NTU		96.6%	98.0%
Lead (pH 6.5)	0.15 mg/L + 10%	0.010 mg/L		99.3%	99.3%
Lead (pH 8.5)	0.15 mg/L + 10%	0.010 mg/L		99.3%	99.3%
Mercury (pH 6.5)	0.006 mg/L + 10%	0.002 mg/L		96.6%	96.6%
Mercury (pH 8.5)	0.006 mg/L + 10%	0.002 mg/L		72.4%	95.4%
Chloroform (VOC surrogate chemical)	0.300 mg/L + 10%	0.015 mg/L		95.2%	91.0%

Flow Rate = 0.5 gpm (1.89 Lpm)
Capacity = 1,000 gallons (3786 L)
† Based on the use of microspheres or Cryptosporidium parvum oocysts
Testing was performed under standard laboratory conditions, actual performance may vary
Organic Chemicals Included in Surrogate Testing:
Applies to Total Defense (TD) only



Performance Data Sheet (con't)

4 Stage

The Aqua-Cleer Advanced Drinking Water System with CB, GAC, or GAC-L cartridge has been tested and certified by NSF International against NSF/ANSI Standard 42 for the effective reduction of aesthetic Chlorine Taste and Odor, the TD cartridge for the effective reduction of aesthetic Chlorine Taste and Odor and Nominal Particulate Class 1 and against CSA B483.1.

5 Stage

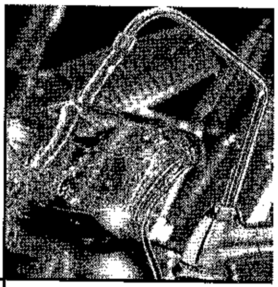
The Aqua-Cleer Advanced Drinking Water System with TD cartridge has been tested and certified by NSF International against NSF/ANSI Standard 53 for the effective reduction of Cyst, Lead, Mercury, VOC, MTBE and Turbidity and against CSA B483.1.

The Aqua-Cleer Advanced Drinking Water System with RO30 or RO50* has been tested and certified by NSF International against NSF/ANSI Standard 58 for the effective reduction of TDS, pentavalent arsenic, barium, cadmium, hexavalent and trivalent chromium, copper, lead, nitrate/nitrite, radium 226/228 and selenium. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system as specified in NSF/ANSI 58 and against CSA B483.1.

The Aqua-Cleer Advanced Drinking Water System with AS3 has been tested and certified by NSF International against NSF/ANSI Standard 53 for the effective reduction of arsenic (trivalent and pentavalent) when following an RO and against CSA B483.1.

Refer to your Installation and Operating Instructions and printed limited Warranties for more specific product information. To avoid contamination from improper handling and installation, your system should only be installed and serviced by your Culligan Man. Performance will vary based on local water conditions. The substances reduced by these systems are not necessarily in your water.

*RO50 not for sale in California.



Culligan Lifetime Limited Warranty

Culligan Aqua-Cleer Advanced Drinking Water System

You have just purchased one of the finest drinking water systems made. As an expression of our confidence in Culligan products, your drinking water system is warranted to the original end-user, when installed in accordance with Culligan International Company specifications, against defects in material and workmanship from the date of original installation, as follows:

• **For the LIFETIME of the original end-user**	**The entire reverse osmosis water conditioning unit, EXCLUDING THE EXPENDABLE FILTER CARTRIDGES AND REVERSE OSMOSIS MEMBRANE FILTER USED IN THE UNIT.**
• **For a period of ONE YEAR**	**The Culligan brand reverse osmosis membrane filter.**

If a part described above is found defective within the specified period, you should notify your independently operated Culligan dealer and arrange a time during normal business hours for the dealer to inspect the drinking water system on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by the dealer. You pay only freight from our factory and local dealer charges.

Damage caused by accident, fire, flood, freezing, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to our printed instructions, or by the use of accessories or components which do not meet Culligan specifications, is not covered by this warranty.

Our product performance specifications are furnished with each drinking water system. TO THE EXTENT PERMITTED BY LAW, CULLIGAN DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE; TO THE EXTENT REQUIRED BY LAW, ANY SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE ONE-YEAR PERIOD SPECIFIED ABOVE FOR THE PARTS DESCRIBED IN THIS LIMITED WARRANTY. As manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing a drinking water system. Please understand that the quality of water supplies may vary seasonally or over a period of time, and that your water usage rate may vary as well. Water characteristics can also change considerably if your drinking water system is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product on a non-potable water source. OUR OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED TO THE REPAIR OR REPLACEMENT OF THE FAILED PARTS OF THE DRINKING WATER SYSTEM, AND WE ASSUME NO LIABILITY WHATSOEVER FOR DIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, GENERAL, OR OTHER DAMAGES, WHETHER FROM CORROSION OR OTHER CAUSES.

CONSUMERS:
Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Consult your telephone directory for your local independently-operated Culligan dealer, or write Culligan International Company, for warranty and service information.

Culligan International Company
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