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REPORT ON

HYDROGEOLOGICAL AND TERRAIN STUDY
PROPOSED INDUSTRIAL DEVELOPMENT
6622 BANK STREET
CITY OF OTTAWA, ONTARIO

Submitted to:

CAMM Warehousing and Rentals Inc.
6622 Bank Street
Greely, Ontario
K0A 2P0

DATE May 28, 2024

DISTRIBUTION

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May 28, 2024 230156

CAMM Warehousing and Rentals Inc.
6622 Bank Street
Greely, Ontario
K0A 2P0

RE: HYDROGEOLOGICAL STUDY
PROPOSED EXPANSION TO EXISTING INDUSTRIAL DEVELOPMENT
6622 BANK STREET
OSGOODE WARD
CITY OF OTTAWA, ONTARIO

Dear Sir:

Kollaard Associates Inc. was retained by CAMM Warehousing and Rentals Inc. of Ottawa, Ontario, to supplement an existing hydrogeological and terrain study for a proposed expansion to the existing industrial development at 6622 Bank Street, in the City of Ottawa, Ontario.

This report is an update to a previous Hydrogeological study completed by Kollaard Associates (170035 – Hydrogeological Study, dated June 22, 2017). The report presents the results of an evaluation of the water quality and quantity for the well that will supply water for the existing industrial warehouse building and two proposed industrial buildings. The purpose of this report is to update the existing information from the previous study in accordance with the policies in the *City of Ottawa Hydrogeological and Terrain Guidelines, 2021*. It is understood that it is being proposed to construct two industrial buildings; each warehouse buildings on the existing ~6.0 hectare (~14.9 acre) property. The proposed buildings are to consist of single storey structures with warehouse and office space.

The well in question was constructed by Olympic Drilling Company Ltd. of Metcalfe, Ontario on May 30, 2017. A Ministry of the Environment, Conservation and Parks (MECP) Well Record for the subject well (TW1) and a Compliance Certificate are provided as Attachment A. This well was drilled for the purposes of the original report and to service the proposed development.

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1.0 Groundwater Supply Evaluation

The surrounding area of the subject site has had minimal development since 2017. The property to the northeast (6571 Bank St) has developed from a single family dwelling to a storage yard with a single building on site. The lot immediately south (6638 Bank St) has been developed into a storage yard with a single building on site (AIM Recycling and Auto Parts). The remaining development in the area consists of a mixture of residential, commercial and industrial development, which was present prior to 2017. The pumping test carried out in 2017 was done at a high rate of 83 Litres per Minute and the drawdown was 0.12 metres over 6 hours with 92% water level recovery within 15 minutes after the test. The transmissivity of the aquifer is very high in this area (199 m^2/day). All area wells are at least 30 metres in depth and many are greater than 60 metres in depth. Therefore, the previous evaluation is of water quantity is considered valid.

The 2017 report is supplemented with the following:

- The water quality was updated by obtaining a water sample from the existing supply well that was tested for the subdivision parameters, including trace metals, and Petroleum Hydrocarbons F1-F4 and volatile organic compounds (VOCs) to be in compliance with the 2021 updated water testing parameters for SPC.
- A groundwater impact assessment was carried out using the total sewage design flow for the site and sewage system design information is provided.

A pumping test was carried out at the well, TW1, by a member of our engineering staff on June 8, 2017. The testing consisted of a 6 hour duration constant discharge rate pumping test. During the pumping test, water level measurements were made both manually and using a pressure transducer to monitor the drawdown of the water level in the well in response to pumping. Groundwater samples were collected from TW1 at about hour 3 and at hour 6 of the pumping test to characterize groundwater quality. After the pumping period, the pump was shut off and the recovery of the water level in the well was monitored for a period of time.

1.1 Water Quantity

A. Water Demand

The water demand is calculated using the information from the sewage system daily design flow and peaking factors available in the City of Ottawa Water Distribution Guidelines, 2010. The sewage design flows are provided below, based on the sewage design information (provided by client).

Daily sewage design flow:

The daily sewage design flow is equal to a maximum daily demand for the site. The site is to be developed as follows, with the corresponding sewage design flows as provided by the sewage design consultant (Kollaard Associates Inc).

<u>Water Demand</u>

<u>Existing Building</u>

Office: The greater of 8 employees x 75 L/day = 600 L/day OR

192.1 m^2 Office Space x 75 L/day per 9.3 m^2 = 1,550 L/day
Warehouse: 5 loading bays x 150 L/day = 750 L/day
1 water closet x 150 L/day = 950 L/day

Proposed Industrial Buildings

Office: The greater of 8 employees x 75 L/day = 600 L/day OR
105 m^2 Office Space x 75 L/day per 9.3 m^2 = 900 L/day
Warehouse: 9 loading bays x 150 L/day = 1,350 L/day
1 water closet x 150 L/day = 950 L/day

TOTAL DAILY SEWAGE DESIGN FLOW = 6,450 L/day

Since sewage system design is based on the maximum expected daily use, it is equivalent to the Maximum Daily Demand (MDD). The MDD is based on an eight hour operation schedule (i.e. full day occurs over an eight hour period and not over 24 hours).

City of Ottawa calculates the Maximum Hour Demand (MHD) for a commercial or industrial demand to be 1.8 x MDD

MDD = 6,450 litres / day x 1 day / 8 hours x 1 hour / 60 minutes
= 13.4 litres / minute
MHD = 1.8 x MDD
= 1.8 x 13.0 litres / minute
= 24.2 litres / minute

The predicted peak water hourly demand of 24.2 L/min is used.

The Maximum Hourly Demand (MHD) for the site based on its proposed use is expected to be about ~24.2 litres/minute, compared to the pumping test rate which was 83.1 litres/minute. This indicates that the pumping rate used for the test was appropriate as the peak water demand rate was met for the test. The MDD is 6,450 L/day. The test was carried out for 6 hours at the above noted rate and some ~29,900 Litres of water were removed from the well in that time. As such, the amount of water taking in six hours exceeds the expected daily water taking for the full development.

B. Pumping Test

A pumping test was carried out on June 8, 2017, at the existing well on the property.

The well was pumped for six hours at a pumping rate of about 83 litres per minute. Over the course of the pumping test, the water level in the well dropped some 0.12 metres. At the end of the pumping test, about 92 percent recovery of the total drawdown in the static water level occurred within 15 minutes (water level was at 9.37 metres from top of casing). The D-5-5 Guideline recommends monitoring recovery for at least 24 hours or until 95% recovery has occurred. After 24 hours, the water level was measured and was found to have dropped (9.43 metres from top of casing). The water level was measured again after almost four days and the water level was even lower (9.85 metres from top of casing). It is considered that the water levels in the well at the time of the pumping test were dropping due to the climatic conditions that preceded the test. Confined bedrock aquifers are more likely to have fluctuations in water levels due to recharge events in spring due to water storage occurring only in fractures and as a result, water levels can rise

dramatically in response to recharge events. In this case, there had been a significant amount of rain in the month of May (177 mm) and in early June prior to the pumping test (29 mm). From the day before the test (June 7) to the end of monitoring (June 12), there were no rainfall events recorded at the Ottawa Airport (climate data reviewed for this study). It is considered that the water levels were declining in response to a previous rise in water level due to recharge. It is considered that the water level in the well did recover sufficiently after the pumping test (92% in 15 minutes) and there are no concerns with the long term availability of the water supply at this well.

The pumping test drawdown and recovery data and plots for TW1 are provided as Attachment B. The drawdown and recovery data provided were measured with reference to the top of the well casing at the test well location.

The pumping test data for the test well was analyzed using the method of Cooper and Jacob (1946). Although the assumptions on which these equations are based are not strictly met, this method provides a reasonable estimate of the aquifer transmissivity.

Transmissivity was calculated using the following relationship:

$$T = \frac{2.3Q}{4\pi ds}$$

where Q is the pump rate, m^3/day
ds is the change in drawdown over one time log cycle, m
T is the transmissivity, m^2/day

Based on the pumping test drawdown data the transmissivity of the aquifer is estimated to be about 199.1 m^2/day. Based on the recovery data the aquifer transmissivity is estimated to be about 10,426 m^2/day. It should be noted that the well production rate is very high (360 litres per minute/80 igpm, according to the well record). As a result, the transmissivity estimates may not be accurate as the flow rate used for the test was not sufficient to achieve a high drawdown (i.e. > about 30 cm, where only 12 cm was achieved). However, the flow rate was enough to demonstrate that the water supply from this well is adequate for the proposed domestic use associated with the proposed industrial development. The proposed development does not use water for industrial uses (ie. no process water). As such, the only water use is for domestic use.

1.2 Well Interference

A review of sixteen area well records was carried out. The area well records are provided as Attachment A along with a map showing their approximate locations. The wells were indicated to be between about 8.5 and 70 metres in depth. Half of the well records indicate that limestone was encountered during drilling, the other half indicated limestone and sandstone was encountered. Based on reported test pumping rates of between 6 and 113 litres per minute (excluding one record indicating 200 GPM), corresponding specific yields of 4 to 2,481 litres per minute per metre of drawdown were calculated, based on drawdowns reported on the well records.

In order to determine water quantity, information from area well records was obtained. The following chart provides water quantity data using information reported on the well records.

The following is noted. Many of the existing property owners including the subject site were subject to a Settlement Agreement with Cornwall Gravel Company Ltd. in 2011, which required all new

wells to be at least 220 feet (67 metres). Many existing wells were deepened at that time, as a result of Cornwall quarry activities causing shallow wells (typically less than 30 metres depth) to go dry. As such, the well record search may not be accurate for some wells that have been subsequently deepened.

Well No.	Well Depth (m)	Drawdown (m)	Available Drawdown (m)	Yield Test		
				Test rate (L/min)	Specific Capacity (L/min*m)	Spec. Cap. (m^2/day)
1517028	14.34	2.44	4.58	45.4	18.6	26.8
A186997	67.10	0.03	21.96	75.7	2482.0	3574.0
A128080	70.15	0.03	58.22	75.7	2482.0	3574.0
1515392	8.54	2.14	3.97	75.7	35.5	51.1
1507372	14.34	-	-	18.9	-	-
1507377	20.74	-	18.30	6.3	-	-
1513850	15.86	0.00	7.93	37.9	-	-
A135283	70.15	0.06	59.23	75.7	1241.0	1787.0
A128031	70.15	0.31	58.71	75.7	248.2	357.4
A021623	26.60	3.00	19.40	44.0	14.7	21.1
A006908	57.91	5.46	22.15	54.6	10.0	14.4
1532268	61.00	25.32	25.32	94.6	3.7	5.4
1532951	61.00	53.38	53.38	757.0	14.2	20.4
1507373	18.30	0.61	8.24	113.6	186.1	268.1
1507374	18.61	0.61	11.29	113.6	186.1	268.1
A093655	63.44	0.08	52.31	75.7	992.8	1429.6

Based on the information from area well records, the specific capacities for area wells are in the range of 5.4 to 3,574 m^2/day for wells drilled between 8.5 and 70 metres deep. Transmissivity values are classified based on the amount of yield for water supply users. One classification (Kransy, Vol. 31, No. 2 – 1993 Ground Water) classifies specific capacity ranges between 1 and 1,000 m^2/day as low to high transmissivity, which is sufficient for groundwater supply for private consumption and local water supply.

The pumping rates used for most of the existing wells were between 37.9 and 113.6 litres per minute. The well record provided for the well at 6622 Bank Street indicates it was drilled in 2017. The specific capacity of that well based on a one hour yield test is 206.8 litres per minute per metre, at a flow rate of 37.9 litres per minute. The well for the subject site is similar depth to the area wells receiving from the sandstone underlying the limestone. However, it has a similar production rate as the existing area wells.

Available drawdown in the offsite wells, using their recommended pump depths and the static water level reported on the well records, indicates that available drawdown in the area wells is between 4.0 and 59.2 metres. There is sufficient available drawdown in existing wells, such that the addition of a commercial well is not expected to affect water supply in offsite wells. Given that the casing is 12.2 metres deep, the water supply well is isolated from any other offsite wells that are less than

12.2 metres deep. This provides additional assurance that the pumping of this well will be unlikely to cause well interference with most area wells.

1.3 Water Quality

To determine the water quality of the groundwater supply, groundwater samples were obtained from the test well during the pumping test as well as additional samples collected on May 1, 2024 and prepared/preserved in the field using appropriate techniques and submitted to Eurofins Environmental Testing in Ottawa, Ontario for the chemical, physical and bacteriological analyses listed in the MECP guideline entitled Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment, August 1996. For site plan control, additional testing for trace metals and VOCs is required. Due to onsite and offsite uses of heavy equipment PHC F1-F4 were also included. Samples that were tested for trace metals were field filtered using a 0.45 um filter prior to being placed into the laboratory supplied bottles complete with appropriate preservative to maintain sample integrity during transport. The VOC and PHC analyses were carried out by ALS Canada Ltd. The method of obtaining a water sample for VOC testing including ensuring that the water in the discharge hose was in laminar flow and the water was carefully allow to trickle down the laboratory supplied sample bottles rather than splashing to avoid aerating the water sample before storing it in a sealed bottle with no headspace.

The temperature, conductivity, pH, total dissolved solids, turbidity and residual chlorine levels of the groundwater were measured at periodic intervals during the pumping test. The results of the chemical, physical, bacteriological, and PHC and volatile organic compounds (VOCs) analyses and the field water quality of the water samples and the updated water quality compared to 2017 from the test well are provided as Attachment C, Table I, and Table II, respectively.

The water quality as determined from the results of the analyses is acceptable. The water meets all the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) health and aesthetic parameters tested for at the test well except for aesthetic objectives for hardness and total dissolved solids. Sodium is above the 20 mg/l medical advisory limit for those on sodium restricted diets. Based on water quality results there are no changes since 2017 to water quality and no detectible presence of any VOCs or hydrocarbons, trace metals are within allowable limits.

A. Hardness

The water is considered to be hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as $CaC0_3$ is often softened for domestic use. The hardness at the well is 318 milligrams per litre. Water softening by conventional sodium ion exchange may introduce relatively high concentrations of sodium into the drinking water, which may contribute a significant percentage to the daily sodium intake for a consumer on a sodium restricted diet. Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes.

B. Total Dissolved Solids

The total dissolved solids (TDS) were measured at 683 milligrams per litre, for the water sample obtained May 1, 2024, above the ODWSOG of 500 milligrams per litre. The Ryznar Stability Indices (RSI) and Langelier Saturation Indices (LSI) were calculated for the sample obtained May 1, 2024 and gave RSI values of 6.75 and LSI of 0.52, indicating that the water has a small potential for scale formation. The effect of elevated TDS levels on drinking water palatability also depends on

the individual components, which are principally chlorides, sulphates, calcium, magnesium and bicarbonates. Depending on which parameters are elevated, TDS exceedances can include hardness, taste, mineral deposition or corrosion. In this case, the test well water samples had a higher level of hardness (i.e. calcium carbonates) (318 mg/l) and presence of sodium and chlorides. The sodium and chlorides were within their aesthetic objectives. It is considered that the elevated TDS levels do not significantly impact water palatability as the individual parameters that contribute to the elevated TDS levels are within the aesthetic objectives.

C. Sodium

The sodium level in the water is about 117 mg/l. The MOECC D-5-5 Guideline states that *"the local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/l so that this information may be communicated to local physicians for their use with patients on sodium restricted diets."* The sodium levels were well within the aesthetic objective of 200 mg/l.

2.0 Terrain Study

Soils information was obtained from geotechnical boreholes put down at the subject site, which are appended to this report and the Site Plan, Figure 2 provides the locations of the boreholes. The field work for the geotechnical investigation was carried out on May 1, 2024, at which time four boreholes were put down at the site, identified as BH1 to BH4. All boreholes encountered about 0.9 to 2.4 metres of fill material, consisting of either asphalt, crushed gravel, yellow brown sand, trace clay and organics, overlying glacial till to depths of 2.1 to 3.3 metres. Where encountered, water was observed at about 1.1 and 3.2 metres below the ground surface. Two hydrometer analyses were carried out on samples of the glacial till material that was encountered across the site. The results of the hydrometer (Attachment F) indicate that the soil at a depth of 2.3 to 2.9 metres below ground surface has roughly 80% silt and clay sized particles. This is considered to be a fine grained soil which has low permeability. The second sample indicated that the soil at a depth of 3.0 to 3.6 metres below ground surface has roughly 60% sand and gravel sized particles. This is considered to be a medium grained soil which has moderate permeability. As all 4 boreholes encountered the glacial till layer at thicknesses ranging from 0.9 to 2.4 metres, below the fill and topsoil, it is considered that the glacial till deposit at the site and the upper bedrock are the receiving aquifer.

2.1 Groundwater Impact Assessment

The existing septic system for the industrial building at 6622 Bank St was designed by Kollaard Associates (File Number: 170035 – June 6, 2017). The system consists of a fully raised conventional system located in the front of the existing building. The system was designed with a daily sewage flow of 3,250 L/day.

The most probable groundwater receiver for sewage effluent is the glacial till and upper bedrock at the site. To obtain a general indication as to the potential impact of septic effluent on the properties adjoining the proposed development, a nitrate dilution model was used. For this case, as the site is considered to be an industrial use, the daily effluent loading is based on the sewage system design flows. The resulting nitrate dilution calculations are provided as Attachment E, along with the Climate Data used for the calculation.

The sewage design flow calculations were provided by the sewage system designer and are as follows;

Existing Building

Office: The greater of 8 employees x 75 L/day = 600 L/day OR
192.1 m^2 Office Space x 75 L/day per 9.3 m^2 = 1,550 L/day
Warehouse: 5 loading bays x 150 L/day = 750 L/day
1 water closet x 950 L/day = 950 L/day

Proposed Commercial Buildings

Office: The greater of 8 employees x 75 L/day = 600 L/day OR
105 m^2 Office Space x 75 L/day per 9.3 m^2 = 900 L/day
Warehouse: 9 loading bays x 150 L/day = 1,350 L/day
1 water closet x 950 L/day = 950 L/day

TOTAL DAILY SEWAGE DESIGN FLOW = 6,450 L/day

Other infiltration factors that were used in the above noted calculations are provided below.

Infiltration is based on moisture surplus and incorporates factors including soils, topography, soil cover and impervious areas (infiltration reduction factors). For this calculation, the background nitrate was assumed to be 0.0 mg/L.

The following provides the basis whereby the infiltration reduction factors for the site were chosen for the dilution calculations.

Topographic, soil and land cover infiltration factors were selected from *Table 2* of the MOE *Hydrological Technical Information Requirements for Land Development Applications*. The following is a discussion of each of the infiltration reduction factors chosen for the site.

The site is characterized by a combination of flat and rolling terrain, based on a topographical survey of the site and the post-development conditions indicate that slope is generally less than 2 metres per kilometre. The topography factor that applies to the site is 0.15.

The type of land cover observed at the site at the time of site visits and by use of satellite imagery consists mostly of cultivated lands, with some mature trees on the west portion of the site. The post-development conditions provided in the Grading Plan (230156-GR) show that the treed area is to remain post-construction (grades to remain as is). The land cover infiltration factor of 0.10 was selected, which corresponds to cultivated land and does not include any trees or post-development re-vegetation.

A soil infiltration factor of 0.20 was chosen as the site is indicated to be underlain by sandy fill followed by the native glacial till soils. The soils range from coarse (greater than 50% sand content) to fine textured silt (less than 50% coarse textured). The glacial till has some 80% silt and clay sized particles while the overlying sand fill is coarse grained. The soil infiltration value that was used corresponds to combinations of clay and loam (glacial till), based on the expected lower permeability of the underlying soils encountered across the site.

In order to determine water surplus estimates for the site area, Environment Canada published values for Ottawa International Airport obtained for the years 1939 to 2021 was used. The expected moisture surplus or net potential infiltration for the site area was estimated 379 millimetres, for the sand to silt type soils that are expected for the site.

Hard Surfaced Area post-development was calculated as follows. The areas of the roofs of the buildings at the site occupy an area of some 6972 square metres and are not available for infiltration. The parking area consists of asphaltic concrete surfaced areas of about 3015 square metres. For asphalt, the runoff coefficient is 0.9. The gravel surfaced area occupies some 25,800 square metres with a corresponding runoff coefficient of 0.6. The Net Infiltration Area (NIA) for the site was calculated as 34,723.0 square metres. There will also be additional infiltration promoted through the stormwater retention area that is not included, making the NIA calculation conservative.

The sewage system that is proposed to service the new buildings development is a tertiary treatment system that is expected to reduce nitrates to 20 mg/L (50% denitrification).

The nitrate impact calculation, using a predicted combined actual sewage flow of a 6,450 L/day (3,250 L/day existing system, and 3,200 L/day proposed development) and associated effluent quality of a conventional and tertiary system (40 mg/L for conventional, and 20 mg/L for tertiary) as total nitrogen indicates that the expected concentration of nitrate at the down gradient property boundary is some 8.6 mg/L, which is within the predicted impact of 10 mg/L.

Based on the above noted information, the expected impact at the down gradient property boundary of the site is expected to be within the allowable limits of the MOE, incorporating the sewage design considerations as discussed in the following section.

2.2 Sewage Design Considerations

The sewage design for the proposed expansion is a tertiary system capable of achieving at least 50% nitrogen removal through denitrification. The sewage system design was outlined by Kollaard (Service Feasibility Report, April 29, 2024) to consist of a class 4 sewage system with a level IV treatment unit, including a buried trench disposal field and Waterloo Biofilter. The proposed tertiary sewage bed is located in the south portion of the site. The proposed location of the sewage system is shown on the Site Plan prepared by Kollaard Associates Inc (Attachment E).

The size of the septic envelopes are a function of the percolation time of the native soil in the vicinity of the septic envelope and/or the fill used for construction of a septic bed and the daily effluent loading to the septic bed. The sewage design for the proposed development prepared by Kollaard Associates (Attachment G) is indicated to consist of a Waterloo Biofilter capable of achieving 50% nitrogen removal through denitrification.

It is the responsibility of the owner to ensure that the sewage system is maintained indefinitely as is required by the City of Ottawa and the Ottawa Septic System Office (OSSO) for denitrification systems, including:

- A maintenance contract between the owner and a maintenance provider; and
- Owner to contact OSSO regarding additional fees for monitoring and reporting requirements of the treatment system.

3.0 Wellhead Protection

The existing well casing is over 100 metres from the proposed future buildings, the following is required to protect the integrity of the well casing:

- The supply well is located within the northeast portion of the site, outside of and away from any proposed buildings or construction areas; and
- The well is situated at least 30 metres away from potential contaminant sources, including the sewage leaching bed and snow storage areas and current and proposed stormwater retention ponds; and

As the existing well is outside the area of proposed development it is expected that the grading around the wellhead will not be altered. The following is recommended as best practices to comply with well siting requirements and be in accordance with the Ontario Regulation 903 and is considered to be already met by the existing well siting which will not be altered as part of the new building phase:

- The well casing extends to greater than 400 millimetres above final finished grades around the well; and
- The ground surface at the well is graded such that the well is the highest point on the ground surface within 3 metres radially from the exterior of the well casing and shall ensure that water does not collect or pond near the well head.
- The existing sewage system leaching bed is constructed a minimum of 15 metres from the existing well location and the proposed sewage system is well over 50 metres fromt he existing well;
- The stormwater management pond is located some 25 to 30 metres from the wellhead. A minimum separation distance of 15 metres shall be maintained as stormwater ponds are considered a source of contaminants to the wellhead.
- All possible contaminant sources shall be kept a minimum distance of 15 metres from the well. Possible contaminant sources include; chemical storage, garage and related chemicals, such as antifreeze, gasoline, oils, vehicle/boat/equipment storage, sewer lines, septic systems, animal enclosures, manure or compost piles. If liquid chemicals, such as antifreeze, oil and gasoline/diesel, and their waste products, are to be stored at the site, they should be stored in containers approved for that purpose. The container(s) should be labelled with their contents. Secondary containment should be installed around all bulk liquid chemical or waste storage containers, to collect and contain leaks and spills from the tank and all connections;
- The use of curbs between the parking spaces and the landscaped area are generally sufficient to ensure well is physically protected from the access roadway. With these measures in place, it is considered that an adequate amount of wellhead protection is going to be in place to protect the water supply for the proposed light industrial use of the property.
- The well location is also appropriate for access in case of repairs and well maintenance and is located within a landscaped area.

Recommendations for well maintenance include; inspect wellhead annually to ensure that the casing is structurally sound, verify well cap is sealed and that surface water is not pooling around wellhead. The well is located such that it is easily accessible for maintenance/repairs. A lock on the well cap is useful to prevent vandalism.

4.0 Conclusions

Based on the results of this evaluation it is considered that the well in question is capable of supplying water of adequate quantity and quality for the proposed development with suitable treatment and wellhead protection as indicated above.

The sewage impact from the proposed development is within allowable limits of 10 mg/L as nitrate, using denitrification of at least 50% through the use of the Waterloo Biofilter sewage system. The current design flow is some 6,450 L/day which results in a predicted down gradient property boundary of 8.6 mg/L as nitrate, considering the impact of the existing conventional system and the proposed tertiary system with denitrification. Based on the on the above noted information, the predicted sewage impact on the down gradient properties is within the allowable limits.

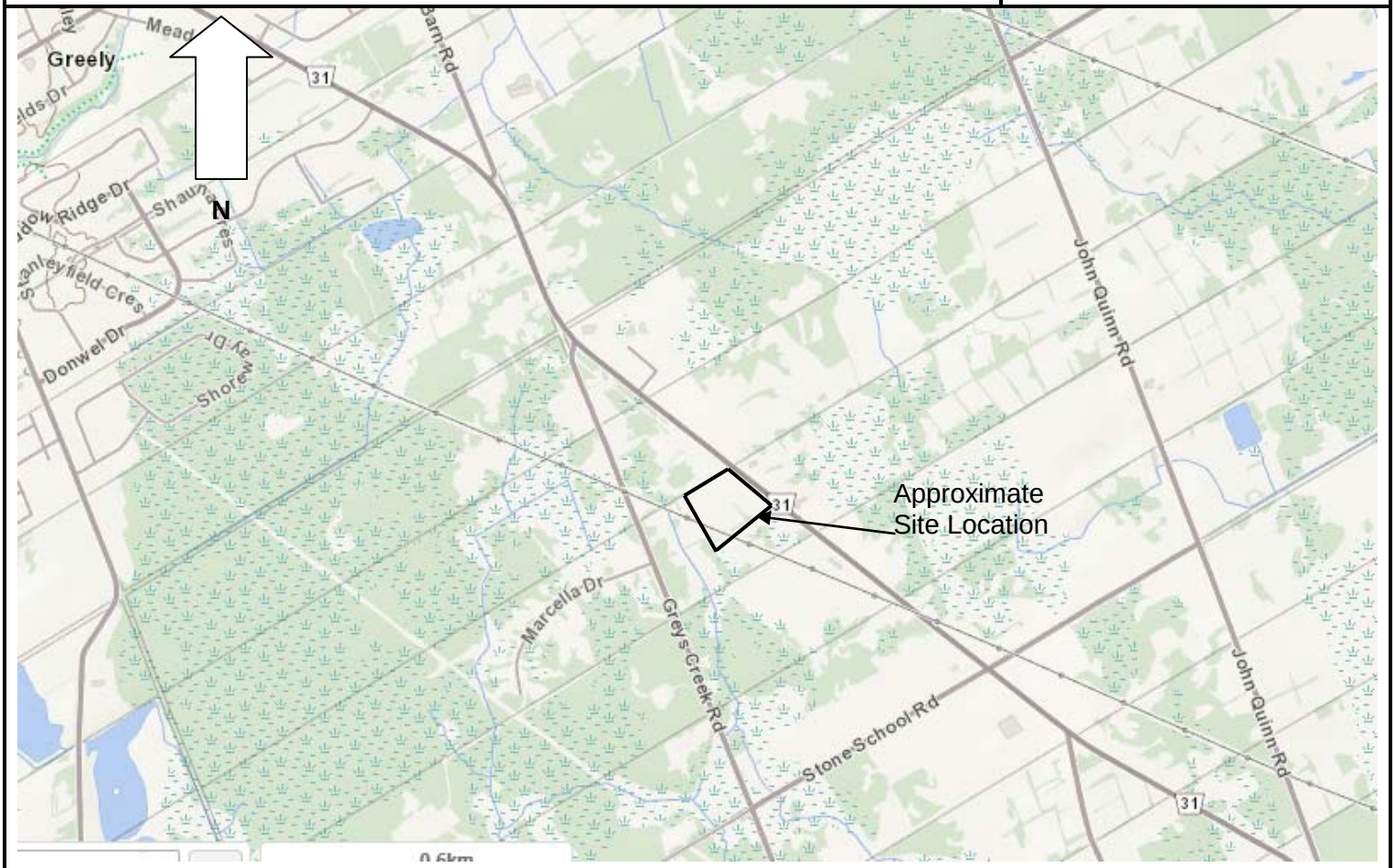
We trust this report provides sufficient information for your purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Best Regards,
Kollaard Associates Inc.

Isaac Bacon, P.Eng.

Colleen Vermeersch, P. Eng.

KEY PLAN	FIGURE 1



NOT TO SCALE

Kollaard Associates
Engineers

Project No. 230156

Date May 2024

DRAWING NUMBER:

SITE PLAN, FIGURE 2

LEGEND:

TW1 APPROXIMATE TEST WELL LOCATION

BH1 APPROXIMATE BOREHOLE LOCATION

REFERENCE: PLAN SUPPLIED BY COSINE

SPECIAL NOTE: THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

REV.	NAME	DATE	DESCRIPTION

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CLIENT:
CAMM WAREHOUSING AND RENTALS INC.

PROJECT:
HYDROGEOLOGICAL INVESTIGATION FOR PROPOSED WAREHOUSE BUILDINGS

LOCATION:
6622 BANK STREET
CITY OF OTTAWA, ONTARIO

DESIGNED BY:	*DATE:*
--	APRIL 8, 2024
DRAWN BY:	*SCALE:*
DT	N.T.S

KOLLAARD FILE NUMBER:
230156

TABLE I

FIELD WATER QUALITY MEASUREMENTS
FOR TEST WELL

	Time Since Pumping Test Started (min)	Temp. (^{0}C)	pH	Turbidity (NTU)	Total Dissolved Solids (ppm)	Conductivity (µS)	Free chlorine (ppm)
TW 1	60	10.9	7.9	0.0	502	1001	-
	120	10.6	7.4	0.0	498	1008	-
	180	10.6	7.5	0.0	505	1035	0.0
	240	10.6	7.5	0.1	500	997	-
	300	10.6	7.5	0.0	496	992	-
	360	11.4	7.3	0.0	496	996	0.0

TABLE II

SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
Anions				
Chloride [mg/l]	AO/MCCRT 250	129	126	104
Nitrate [mg/l]	MAC 10.0	<0.10	<0.10	<0.5
Nitrite [mg/l]	MAC 1.0	<0.10	<0.10	<0.5
Sulphate [mg/l]	AO 500	126	124	113
Calculations				
Hardness [mg/l]	OG 100	**429**	**427**	**318**
Ion Balance		0.91	0.92	1.01
General Chemistry				
Alkalinity [mg/l]	OG 500	313	299	307
Colour (True) [TCU]	AO 5 MCCRT 7	2	2	<2
Conductivity [uS/cm]		1110	1100	1050
DOC [mg/l]	AO 5	1.7	1.9	1.8
Fluoride [mg/l]	MAC 1.5	0.18	0.19	0.24
pH		7.95	7.96	7.80
Hydrogen Sulphide [mg/l]	AO 0.05	<0.02	<0.02	<0.01
Tannin & Ligin [mg/l]		<0.1	<0.1	0.4
Turbidity [NTU]	AO 5.0	1.6	1.2	0.3
General Chemistry				
Calcium [mg/l]		96	95	54
Magnesium [mg/l]		46	46	45
Potassium [mg/l]		6	6	6
Sodium [mg/l]	AO 200	62	57	117

SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
Metals				
Aluminum [mg/l]	OG 0.1			<0.01
Antimony [mg/l]	IMAC 0.006			<0.0005
Arsenic [mg/l]	IMAC 0.01			<0.001
Barium [mg/l]	MAC 1.0			0.118
Beryllium [mg/l]				<0.0005
Boron [mg/l]	IMAC 5.0			0.17
Cadmium [mg/l]	MAC 0.005			<0.0001
Chromium [mg/l]	MAC 0.05			<0.001
Cobalt [mg/l]	*0.0038			<0.0002
Copper [mg/l]	AO 1.0			0.057
Iron [mg/l]	AO 0.3			<0.03
Lead [mg/l]	MAC 0.010			<0.001
Manganese [mg/l]	MAC 0.05			0.04
Mercury [mg/l]	MAC 0.001			<0.0001
Molybdenum [mg/l]				<0.005
Nickel [mg/l]	MAC 0.010			0.006
Selenium [mg/l]	MAC 0.05			<0.001
Silver [mg/l]				<0.0001
Strontium [mg/l]	** 7.0			1.49
Thallium [mg/l]				<0.0001
Uranium [mg/l]	MAC 0.02			<0.001
Vanadium [mg/l]	*0.0062			<0.001
Zinc [mg/l]	AO 5.0			0.07

TABLE II (Continued)

SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
Nutrients, Phenols, Solids				
Ammonia [mg/l]		0.14	0.15	0.129
TKN [mg/l]		0.3	0.3	0.200
Phenols [mg/l]		<0.001	<0.001	<0.001
TDS [mg/l]	AO 500	**722**	**715**	**683**

SUMMARY OF WATER BACTERIA FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
Nutrients, Phenols, Solids				
Escherichia Coli [ct/100ml]	MAC 0	0	0	0
Faecal Coliforms [ct/100ml]		0	0	NA
Heterotrophic Plate Count [ct/100ml] [ct/1ml]	OG <500	26	0	2
Total Coliforms [ct/100ml]	MAC 0	**1***	0	0

Guideline refers to Ontario Drinking Water Standards, Objectives and Guidelines except where noted
* O. Reg 153/04 standard Table 2 for potable groundwater
** Health Canada health related maximum

ATTACHMENT A

MOE WELL RECORD FOR TW1, CERTIFICATE OF COMPLIANCE
PROVIDED BY WELL DRILLER
AND AREA WELL RECORDS AND MAP

Ontario — Ministry of the Environment

Well Tag No. (Place Sticker and/or Print Below): **Tag#: A153626**

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	CAMM Warehousing		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
6622 Bank street	Ottawa Carleton	Ont	K0A2P0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6622 Bank Street	Metcalfe	13	06

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Metcalfe Osgoode	Ontario	K0A2P0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	75 52382	45 24396	4R25595	

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
	Buck fill			0	10'
	med limestone			10'	150'
	limestone with	sandstone layers		150'	190'
	Sand stone			190'	220'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
40'	0'	16 Bags cement	
		6 Bags Quik grout	

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"/8	Steel	.188	40'	+2'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth	Kind of Water	
105' (m/ft) ☐ Gas	☒ Fresh ☐ Untested	☐ Other, specify
208' (m/ft) ☐ Gas	☒ Fresh ☐ Untested	☐ Other, specify
212' (m/ft) ☐ Gas	☒ Fresh ☐ Untested	☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
40'	0	10"
220'	40'	6 1/8"

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): 80 ft

Pumping rate (l/min / GPM): 10 gpm

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 32.0

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

Recommended pump depth (m/ft): 80'

Recommended pump rate (l/min / GPM): 10 gpm

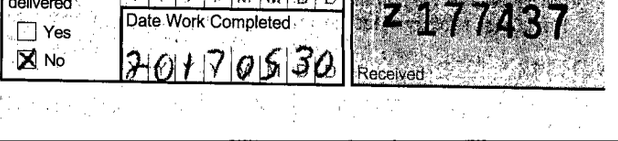
Well production (l/min / GPM): 80 gpm

Disinfected? ☒ Yes ☐ No: 35

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		31.4		
1		31.5	1	31.5
2		31.6	2	31.6
3		31.6	3	31.4
4		31.8	4	31.4
5		31.8	5	31.4
10		31.10	10	31.4
15		31.12	15	31.4
20		32.0	20	31.4
25		32.0	25	31.4
30		32.0	30	31.4
40		32.0	40	31.4
50		32.0	50	31.4
60		32.0	60	31.4

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.
Olympic Drilling Coltd	4006

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6662 Bank street	Metcalfe	Ont	K0A2P0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6132298371	Wayne Renwick

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0327	Wayne Renwick	2017 05 30

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☐ Yes ☒ No	Date Work Completed: 2017 05 30	Audit No. Z177437 Received

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

Well Owner's Copy

Certificate of Well Compliance

Wayne Renwick DO HEREBY CERTIFY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of Camm Warehousing and Rentals Ltd. (Name of Landowner), located at 6622 Bank Street (Legal Description, Lot/Plan #) in the City of Ottawa (Geographic Township of Osgoode).
Lot 13, Concession 6, Plan # 4R-25595, S/L# Parts 1, 2 and 3
CERTIFY FURTHER that, I am aware of the well drilling requirements, guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to the site and City Standards.

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

Signed this 20 day of June 2017
Wayne Renwick
Well Driller/Company
Olympic Drilling Co ltd

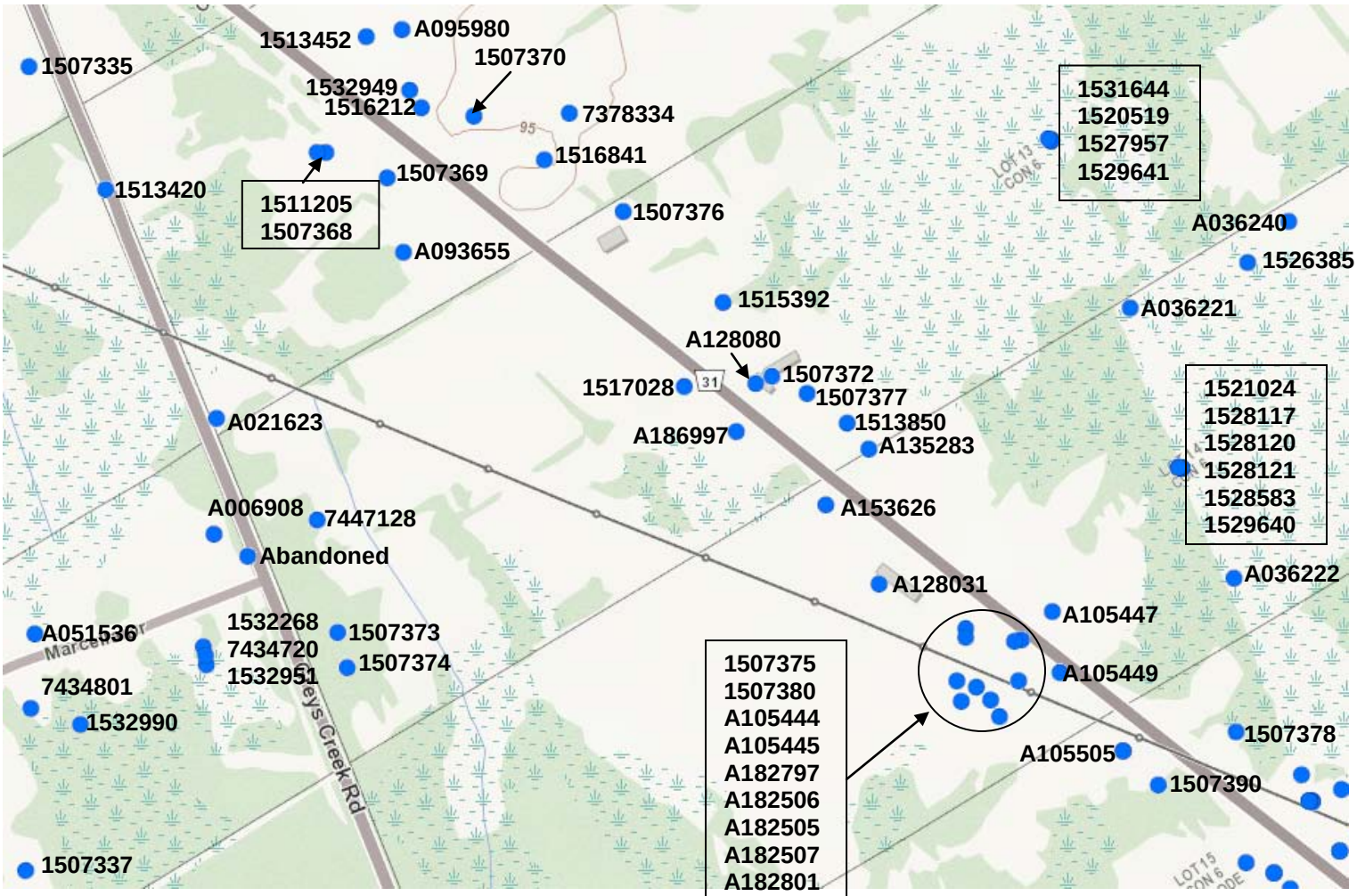
The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg.903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this 21st day of June, 2017
Engineer

Table IV: Summary of Well Record Information

Well No	Soil Depth m	Soil Desc.	Bedrock desc.	Casing Depth m	Total Depth m	Water Desc.	Yield Test			
							Test rate L/min	Static Level m	Specific Capacity L/min*m	Spec. Cap. m^2/day
1517028	3.05	Stone	Limestone	6.71	14.34	Fresh	45.4	3.05	18.6	26.8
A186997	4.88	Sand and gravel	Limestone and Sandstone	12.20	67.10	Not Tested	75.7	8.54	2482.0	3574.0
A128080	4.88	Sand and gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	8.88	2482.0	3574.0
1515392	1.22	Shale	Limestone	6.71	8.54	Fresh	75.7	2.14	35.5	51.1
1507372	4.88	Till	Limestone	5.49	14.34	Fresh	18.9	2.44	-	-
1507377	3.66	Stone	Limestone	4.58	20.74	Fresh	6.3	2.14	-	-
1513850	2.59	Topsoil	Limestone	3.05	15.86	Fresh	37.9	2.75	-	-
A135283	4.88	Sand and gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	7.87	1241.0	1787.0
A128031	1.53	Gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	8.39	248.2	357.4
A021623	2.10	Topsoil	Limestone	6.60	26.60	Not Tested	44.0	3.60	14.7	21.1
A006908	1.21	Soil	Limestone and Sandstone	13.10	57.91	Not Tested	54.6	8.33	10.0	14.4
1532268	1.53	Sand	Limestone and Sandstone	12.81	61.00	Not Tested	94.6	5.19	3.7	5.4
1532951	1.22	Clay	Limestone and Sandstone	13.42	61.00	Not Tested	757.0	1.53	14.2	20.4
1507373	3.97	Stone	Limestone	6.10	18.30	Fresh	113.6	3.97	186.1	268.1
1507374	3.66	Stone	Limestone	6.10	18.61	Fresh	113.6	2.44	186.1	268.1
A093655	3.36	Clay and boulders	Limestone and Sandstone	6.10	63.44	Not Tested	75.7	8.69	992.8	1429.6

REGIONAL WELLS MAP	APPENDIX A



NOT TO SCALE

Kollaard Associates
Engineers

Project No. 230156

Date April 2024

316/4h.

UTM 1/18 Z 4/5/8/8/0/0/0 E

5 R 5/0/1/1/0/1/1/1/0 N

~~Elev.~~ Con. 4/8 VI 0/3/0/0/0

~~Basin~~ Lot 2/5 13

ONTARIO

RECEIVED JUL 22 1952 GEOLOGICAL BRANCH DEPARTMENT of MINES

15 № ~~7372~~

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

W. H

County or District Carleton .... Tp. osgood .... Con. 6 Lot 13 ..... Pt. Lot ....

[redacted]cluding pump) ....

p.o.1 ...... Acres ....

Pipe and Casing Record		Pumping Test	
Casing diameter(s)	5 in	Date	
Length(s) of casing(s)	18	Developed Capacity	
Length of screen		Duration of Test	1 HR
Type of screen		Pumping Rate	300 pr H
Type of pump		Drawdown	6 feet
Capacity of pump		Static level of completed well	8 feet
Depth of pump setting		Is well a gravel-wall type?	

Water Record

Kind (fresh or mineral) .... fresh

Quality (hard, soft, contains iron, sulphur etc.) .... hard

Appearance (clear, cloudy, coloured) .... clear

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

How far is well from possible source of contamination? .... 8 feet

What is source of contamination? .... septic

Enclose a copy of any mineral analysis that has been made of water ....

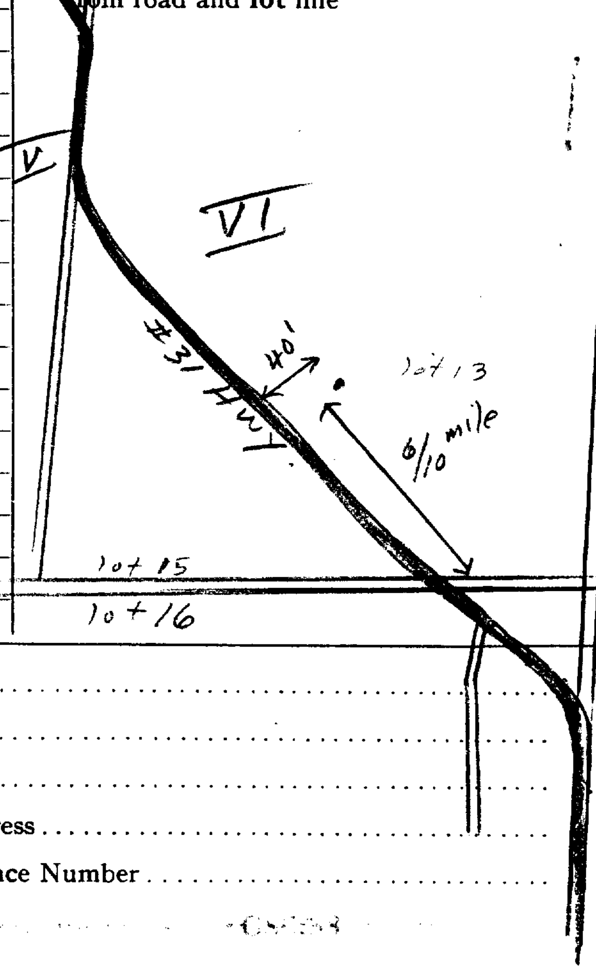
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
~~8 feet~~	hard	39
47		

Well Log

Drift and Bedrock Record	From O ft.	To ....ft.
Loam	1	16
Lime stone	16	47

Location of Well

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



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

Drilling Firm Geo. L. Christy

Address Vars. P.O.1

Recorded by .... Address ....

Date .... Licence Number ....

ONTARIO

The Well Drillers Act

Department of Mines, Province of Ontario

RECEIVED
DEC 12 1952
GEOLOGICAL BRANCH
DEPARTMENT of MINES

Water Well Record

County or District Carleton Tp. osgood Con VI Lot 413 Pt. Lot .....

Owner [redacted] Address Greely Acres .....

Date Completed July 15/52 Cost of Well (not including pump) .....

Pipe and Casing Record

Casing diameter(s) 5" ~~6"~~

Length(s) of casing(s) 12 ft

Length of screen .....

Type of screen .....

Type of pump .....

Capacity of pump .....

Depth of pump setting .....

Pumping Test

Date .....

Developed Capacity .....

Duration of Test 4 hr

Pumping Rate 300 P.H.

Drawdown 11 feet

Static level of completed well 9 feet

Is well a gravel-wall type? .....

Water Record

Kind (fresh or mineral) fresh

Quality (hard, soft, contains iron, sulphur etc.) hard

Appearance (clear, cloudy, coloured) clear

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

How far is well from possible source of contamination? 15 feet

What is source of contamination? ~~earth~~ house

Enclose a copy of any mineral analysis that has been made of water

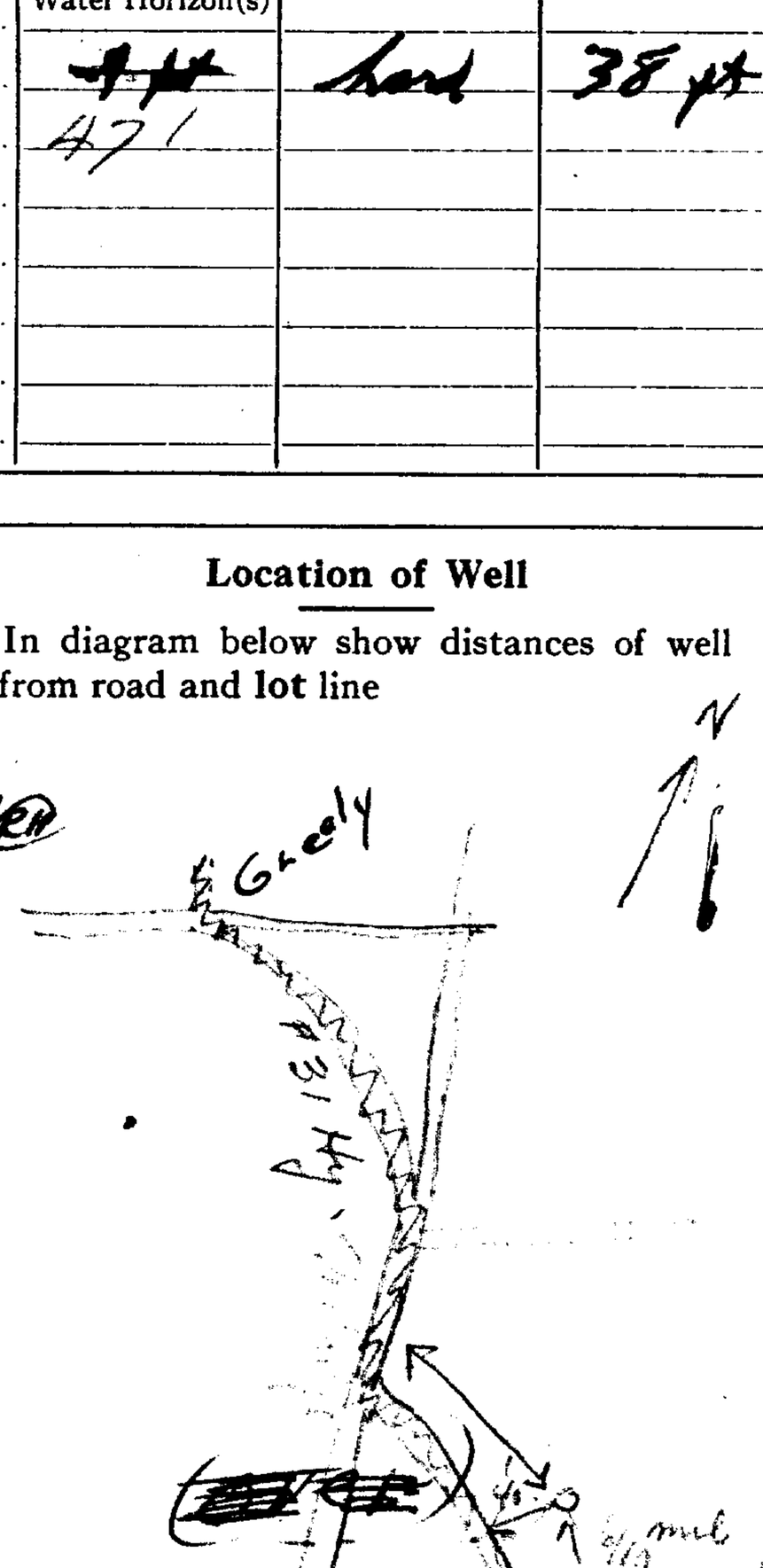
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
~~4 ft~~ 47 1	hard	38 ft

Well Log

Drift and Bedrock Record	From	To
	0 ft.	.....ft.
Loam	1	10
Lime stone	10	~~37~~ 47 (R)

Location of Well

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



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

Drilling Firm Christy

Address Vars

Recorded by W. G. Christy Address Vars

Date Dec 8/52 Licence Number 345

DUPLICATE.

316/504h

CO

UTM 1 4 8 | 4 5 8 3 0 0 E

0 5 R | 5 0 0 9 8 2 0 N

Elev. 4 R | 0 2 9 5

Basin 2 5

15 № 7373

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carl .... Township, Village, Town or City Osgoode

Con. VI .... Lot 13 .... Date completed 7 (day) Dec (month) 1965 (year)

[redacted]dress RR#3 Metcalfe Ont

Casing and Screen Record	
Inside diameter of casing	5"
Total length of casing	20'
Type of screen	
Length of screen	
Depth to top of screen	
Diameter of finished hole	5"

Pumping Test	
Static level	13'
Test-pumping rate	30 G.P.M.
Pumping level	15'
Duration of test pumping	1 hr
Water clear or cloudy at end of test	cloudy
Recommended pumping rate	5 G.P.M.
with pump setting of	40' feet below ground surface

Well Log / **Water Record**

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
hardpan & boulders	0'	13'	58'	fresh
limestone	13	60		

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

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

Drilling or Boring Firm Capital Water Supply

Address 1243 Heron Rd Ottawa 733-0600

Licence Number 1687

Name of Driller or Borer H Mains

Address

Date Dec 8 1965

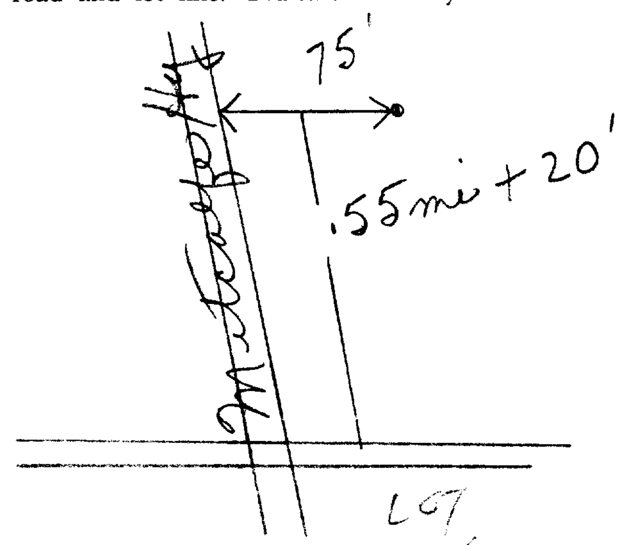
Walter Kavanagh
(Signature of Licensed Drilling or Boring Contractor)

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.



L07
16

(2)   316/4h

UTM |1|8| Z |4|5|8|3|1|0| E

|5| R |5|0|0|9|7|8|4| N

Elev. |4| R |0|2|9|5|

Basin |2|5|

15 № 7374

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District: Carl

Township, Village, Town or City: Osgoode

Con.: VI   Lot: 13

Date completed: 2 (day) Dec (month) 1965 (year)

[redacted]dress: RR #3 Metcalfe Ont

Casing and Screen Record

- Inside diameter of casing: 5"
- Total length of casing: 20'
- Type of screen:
- Length of screen:
- Depth to top of screen:
- Diameter of finished hole: 5"

Pumping Test

- Static level: 8
- Test-pumping rate: 30 G.P.M.
- Pumping level: 10
- Duration of test pumping: 1 hr
- Water clear or cloudy at end of test: cloudy
- Recommended pumping rate: 10 G.P.M.
- with pump setting of 45' feet below ground surface

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
boulders & hardpan	0'	12'	60'	fresh
limestone	12'	61'		

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

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

Drilling or Boring Firm: Capital Water Supply

Address: 1243 Heron Rd Ottawa 733-0600

Licence Number: 1687

Name of Driller or Borer: G. Colbourne

Address:

Date: Dec 4 1965

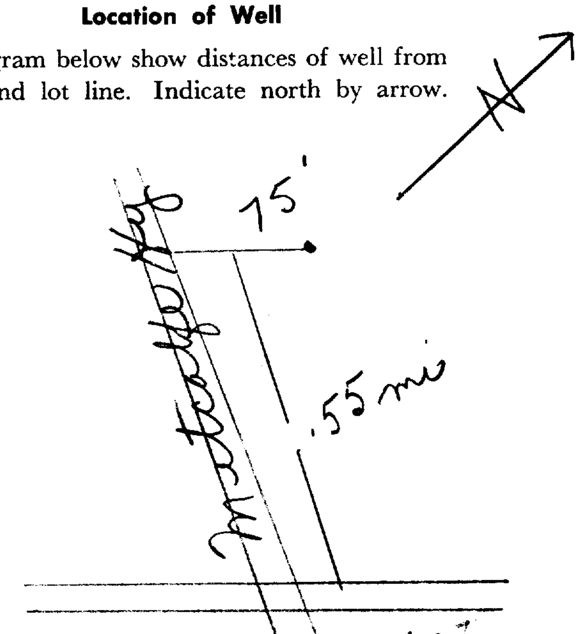
Walter Kavanagh
(Signature of Licensed Drilling or Boring Contractor)

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.



107
16

31 316/4h 1962

UTM 1/18 Z 4/5/8/8/4/0 E

CON 5 50/1/0/0/9/0 N

Elev. LOT 4 13 0/3/0/0

Basin 2/5

The Ontario Water Resources Commission Act

WATER WELL RECORD

GROUND WATER BRANCH
15 No 7377
FEB 25 1963
ONTARIO WATER RESOURCES COMMISSION

County or District Carleton ..... Township, Village, Town or City Osgoode

Con. 6 ..... Lot 13 ..... Date completed Oct 18 1962 (day month year)

[redacted] Address Metcalfe Ont

Casing and Screen Record	
Inside diameter of casing	4
Total length of casing	15 feet
Type of screen	
Length of screen	
Depth to top of screen	
Diameter of finished hole	4 inch

Pumping Test	
Static level	7 feet
Test-pumping rate	102 gal P Hour ~~G.P.M.~~
Pumping level	20 feet
Duration of test pumping	[illegible]
Water clear or cloudy at end of test	Clear
Recommended pumping rate	100 GPH ~~G.P.M.~~
with pump setting of	67 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)
hard pan - Boulder	0	12	68	fresh
hard Grey lime stone	12	68		

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

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

Drilling or Boring Firm James R. Kittle

Address Ramsayville

Licence Number 759

Name of Driller or Borer James R. Kittle

Address Ramsayville

Date Oct 18 1962

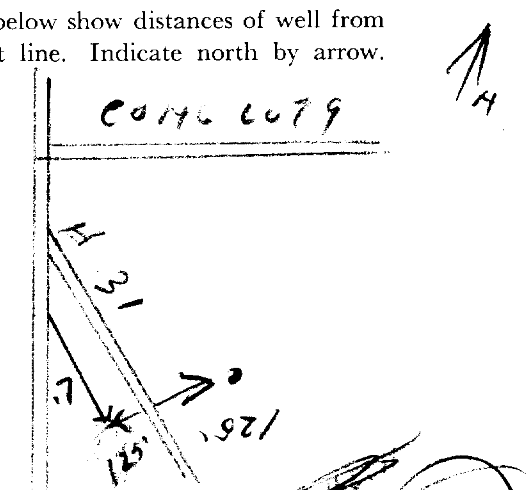
James Robert Kittle
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

OWRC COPY

Location of Well

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



DC

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

ONTARIO

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

11 | 1513850 | MUNICIP. 15009 | CON. CON 3rd/4th | 06

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT	DATE COMPLETED
CARLETON	OSGOODE	CONCESSION 6	013	DAY 02 MO. 08 YR. 73
[redacted]	OSGOODE ONT			

RING | BC. | ELEVATION | RC. | BASIN CODE | II | III | IV

1 1513850 18 458686 5010056 4 297 4 26 MAR 17, 1975 247

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWNISH		TOP SOIL	ORGANIC	0	8½
BLUE	GREY		LIMESTONE	8½	52

31 00091602 00512315

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13: 0052	1 ☒ FRESH 3 ☐ SULPHUR 14; 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 19; 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24; 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29; 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34 80; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
10-11: 02	1 ☐ STEEL 12; 2 ☒ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	STP	0	00.0 13-16
17-18	1 ☐ STEEL 19; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			20-23
24-25	1 ☐ STEEL 26; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			27-30

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD 10: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE 11-14: 0010 GPM | DURATION OF PUMPING 15-16: 02 HOURS 17-18: 00 MINS

STATIC LEVEL 19-21	WATER LEVEL END OF PUMPING 22-24	WATER LEVELS DURING 25: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES 26-28	30 MINUTES 29-31	45 MINUTES 32-34	60 MINUTES 35-37
009 FEET	009 FEET	009 FEET	009 FEET	009 FEET	009 FEET

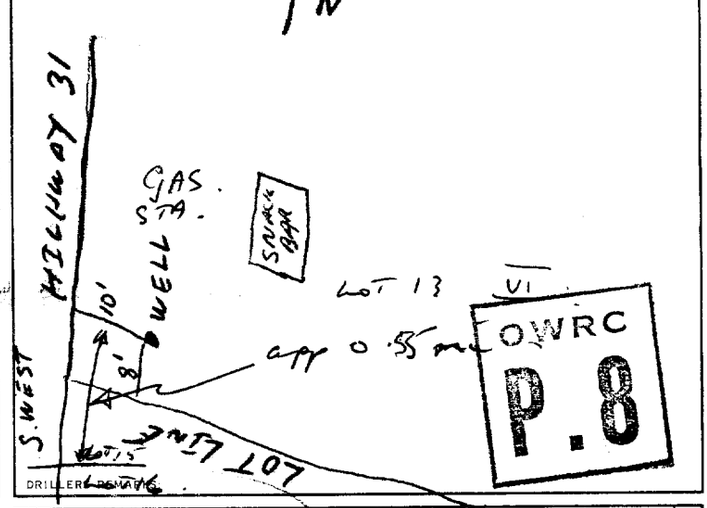
IF FLOWING GIVE RATE 38-41 GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST 42: 1 ☑ CLEAR 2 ☐ CLOUDY
	35	

RECOMMENDED PUMP TYPE: ☑ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING 43-45 FEET	RECOMMENDED PUMPING RATE 46-49 GPM
	035	0010

50-53: 0020.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



OWRC P.8

FINAL STATUS OF WELL 54

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

WATER USE 55-56: 01

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

METHOD OF DRILLING 57

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

CONTRACTOR

NAME OF WELL CONTRACTOR: W. A. Deery | LICENCE NUMBER: 1703

ADDRESS: 309 Carlton Crt Ottawa Ont

NAME OF DRILLER OR BORER: W. A. Deery | LICENCE NUMBER: 1703

SIGNATURE OF CONTRACTOR: W A Deery | SUBMISSION DATE: DAY 2 MO. 8 YR. 73

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1703 | DATE RECEIVED 63-68: 110274 | 80

DATE OF INSPECTION | INSPECTOR

REMARKS: P R WI

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

316/1

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

11 | 1515392 | MUNICIP 15009 | CON. CON | 06

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton [redacted]	Osgoode	6	013 / 13

[redacted] Sweely Ont.

DATE COMPLETED: DAY 03 MO. 06 YR. 76

NORTHING 0088.25 | RC. 5 | ELEVATION 0290 | RC. 5 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Brown	shale			0	4
grey	limestone			4	28

31 | 0004617 | 0028215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0026	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
06 5¼	1 ☐ STEEL 2 ☒ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

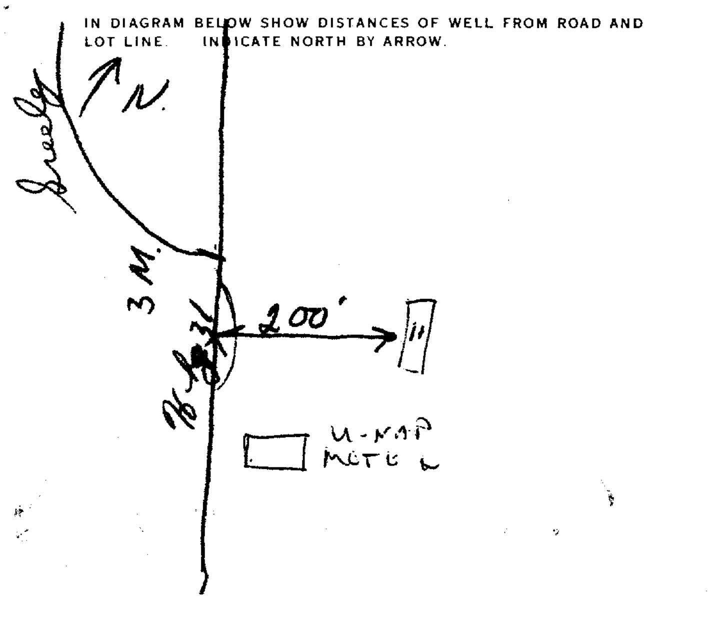
71 PUMPING TEST

PUMPING TEST METHOD	1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE	0020 GPM
DURATION OF PUMPING	01 HOURS 00 MINS
STATIC LEVEL	007 FEET
WATER LEVEL END OF PUMPING	014 FEET
WATER LEVELS DURING	1 ☒ PUMPING 2 ☐ RECOVERY
15 MINUTES	014 FEET
30 MINUTES	014 FEET
45 MINUTES	014 FEET
60 MINUTES	014 FEET
IF FLOWING, GIVE RATE	GPM
PUMP INTAKE SET AT	25 FEET
WATER AT END OF TEST	1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE	☒ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING	020 FEET
RECOMMENDED PUMPING RATE	0005 GPM

50-53 ______ GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS

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

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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Maurice Cayer | LICENCE NUMBER 1517
ADDRESS: Casselman Ont.
NAME OF DRILLER OR BORER | LICENCE NUMBER
SIGNATURE OF CONTRACTOR: Maurice Cayer | SUBMISSION DATE DAY ___ MO. ___ YR. ___

OWRC C-9

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1517 | DATE RECEIVED 300676
DATE OF INSPECTION Aug 31/76 | INSPECTOR P/R Dyl
REMARKS
P
WI

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FORM 7 MOE 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act 3164h

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
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11 — 1517028 — MUNICIP 15009 — CON. CON — 06

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
C[redacted]	Osgood	6 III	013

[redacted] Ont RR 3 Metcalf — DATE COMPLETED: DAY 21 MO. 06 June YR. 79

NORTHING 5010099 — RC 4 — ELEVATION 0300 — RC 4 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Brown	hardpan	stone		0	10
grey	limestone			10	47

31 — 0010061412 — 0047215

32

41 WATER RECORD	
WATER FOUND AT - FEET	KIND OF WATER
0045	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

51 CASING & OPEN HOLE RECORD				
INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
06	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	188	0	0022
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

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

61 PLUGGING & SEALING RECORD		
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☒ BAILER	0012 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	018 FEET	018 FEET	018 FEET	018 FEET	018 FEET

WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

IF FLOWING, GIVE RATE: GPM — PUMP INTAKE SET AT: 47 FEET — WATER AT END OF TEST: ☐ CLEAR ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP — RECOMMENDED PUMP SETTING: 025 FEET — RECOMMENDED PUMPING RATE: 0005 GPM

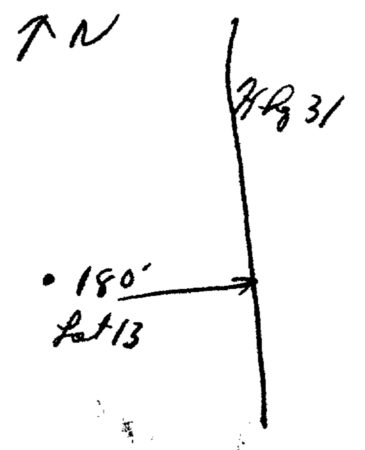
FINAL STATUS OF WELL 1: ☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED POOR QUALITY ☐ UNFINISHED

WATER USE 01: ☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED

METHOD OF DRILLING 1: ☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ 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: Maurice Cayer Ltd — LICENCE NUMBER: 1517
ADDRESS: Casselman Ont.
NAME OF DRILLER OR BORER: — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Maurice Cayer — SUBMISSION DATE: DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 1517 — DATE RECEIVED: 090779
DATE OF INSPECTION — INSPECTOR: K
REMARKS: CSS.S8

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FORM NO. 0506—4—77

Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

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

11 — **1532268**

Municipality 15009 Con. CON 05 Sublot 3

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	OSgoodC6	5	13

Address: Greely, ONT

Date completed: 27 (day) 07 (month) 01 (year)

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	fill		0	5
grey	limestone			5	178
"	Sandstone			178	200

31

32

41 WATER RECORD

Water found at - feet	Kind of water
128	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
192	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	42
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	40
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		40	200

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.)
2	42	Cement grout

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate: 25 GPM — Duration of pumping: 1 Hours ... Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☒ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
17 feet	100 feet	17 feet	17 feet	17 feet	17 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☒ Cloudy

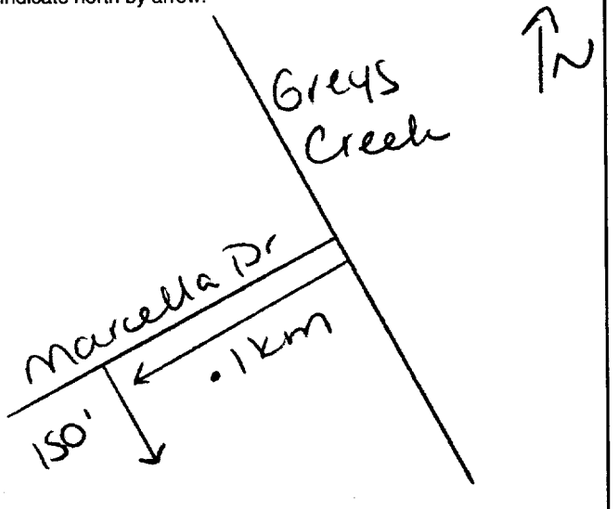
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 100 feet

Recommended pump rate: 25 GPM

LOCATION OF WELL

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



234294

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Ltd	1119
Address RR#2 Jasper, Ont	
Name of Well Technician Shannon Purcell	Well Technician's Licence No. T2122
Signature of Technician/Contractor	Submission date 1008 01 (day mo yr)

MINISTRY USE ONLY

Data source 58 — Contractor 1119 — Date received SEP 20 2001

Date of inspection — Inspector

Remarks

CSS.ES1

0506 (07/00) Front Form 9

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

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

11 **1532951**

Municipality 15009 Con. CON 05

Plan 4M 1029

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Ottawa Carleton	Osgoode	5	13

Owner's surname	First Name	Address	Date completed
Miramar Homes		Greely, Ont	23 day 05 month 02 year

21 UTM Zone Easting 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
	clay	fill		0	4
grey	limestone			4	142
grey	sandstone			142	200

31 32

41 WATER RECORD

Water found at - feet	Kind of water
195	1 ☒ Fresh 3 ☐ Sulphur 14 / 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
180	1 ☐ Fresh 3 ☐ Sulphur 19 / 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 3 ☐ Sulphur 24 / 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 3 ☐ Sulphur 29 / 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 3 ☐ Sulphur 34 / 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas

60

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	44
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	42
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		42	200

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	To	Material and type (Cement grout, bentonite, etc.)
2	44	Cement grout

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate 200 GPM

Duration of pumping 1 Hours Mins

25 Water levels during 1 ☐ Pumping 2 ☒ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
5 feet	180 feet	5 feet	5 feet	5 feet	5 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☒ Cloudy

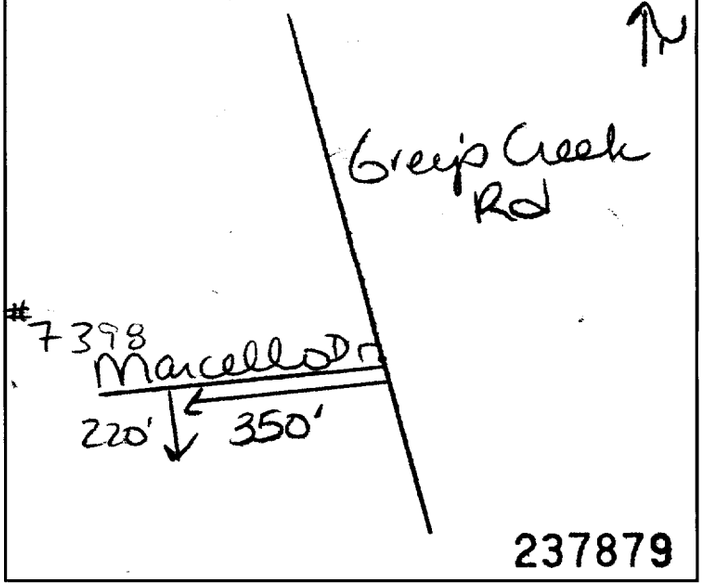
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 180 feet

Recommended pump rate: 200 GPM

LOCATION OF WELL

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



237879

FINAL STATUS OF WELL 54

1 ☒ Water supply 5 ☐ Abandoned, insufficient supply 9 ☐ Unfinished
2 ☐ Observation well 6 ☐ Abandoned, poor quality 10 ☐ Replacement well
3 ☐ Test hole 7 ☐ Abandoned (Other)
4 ☐ Recharge well 8 ☐ Dewatering

WATER USE 55-56

1 ☒ Domestic 5 ☐ Commercial 9 ☐ Not use
2 ☐ Stock 6 ☐ Municipal 10 ☐ Other
3 ☐ Irrigation 7 ☐ Public supply
4 ☐ Industrial 8 ☐ Cooling & air conditioning

METHOD OF CONSTRUCTION 57

1 ☐ Cable tool 5 ☒ Air percussion 9 ☐ Driving
2 ☐ Rotary (conventional) 6 ☐ Boring 10 ☐ Digging
3 ☐ Rotary (reverse) 7 ☐ Diamond 11 ☐ Other
4 ☐ Rotary (air) 8 ☐ Jetting

Name of Well Contractor	Well Contractor's Licence No.
A. Rock Drilling Ltd	1119
Address: RR# 1 Richmond, Ont	
Name of Well Technician: Shannon Purcell	Well Technician's Licence No.: T2122
Signature of Technician/Contractor	Submission date: 13 day 06 mo 02 yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68	80
	1119	JUL 12 2002	

Date of inspection | Inspector

Remarks: CSS.ES2

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0506 (07/00) Front Form 9

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below)
A 006908
A006908

Well Record
Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

[redacted]

Address of Well Location (County/District/Municipality): Ottawa Carleton
Township: Osgoode
Lot: 13
Concession: 5
RR#/Street Number/Name: 7399 Marcella Drive
City/Town/Village: Greely
Site/Compartment/Block/Tract etc.:
GPS Reading: NAD 83 Zone 18 Easting 45 81 89 Northing 50 10 15 6 Unit Make/Model: Garmin
Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
Brown	Soil	Broken Rock		0	1.21
Gray	Limestone			1.21	42.67
Gray & White	Sandstone			42.67	57.91

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	13.10	22.53
13.10	57.91	15.23

Water Record

Water found at ___ Metres | Kind of Water
56.69 m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☒ Clear and sediment free
☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Metres To
Casing				
15.86	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.48	+ 0.76	13.10
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
15.23	☒ Open hole		13.10	57.91

Test of Well Yield

Pumping test method: submersable
Pump intake set at - (metres) 30.48
Pumping rate - (litres/min) 54.6
Duration of pumping 3 hrs + ___ min
Final water level end of pumping 13.84 metres
Recommended pump type. ☐ Shallow ☒ Deep
Recommended pump depth 30.48 metres
Recommended pump rate. 45.5 (litres/min)
If flowing give rate - (litres/min)
If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		8.33		
1	1	10.31	1	10.54
2	2	11.23	2	9.01
3	3	11.88	3	8.44
4	4	12.39	4	8.40
5	5	12.75	5	8.40
10	10	13.51	10	8.37
15	15	13.72	15	8.36
20	20	13.77	20	8.36
25	25	13.78	25	8.36
30	30	13.82	30	8.35
40	40	13.79	40	8.35
50	50	13.78	50	8.35
60	60	13.79	60	8.35

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
13.10	0	Grouted - Cement	0.42m3

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

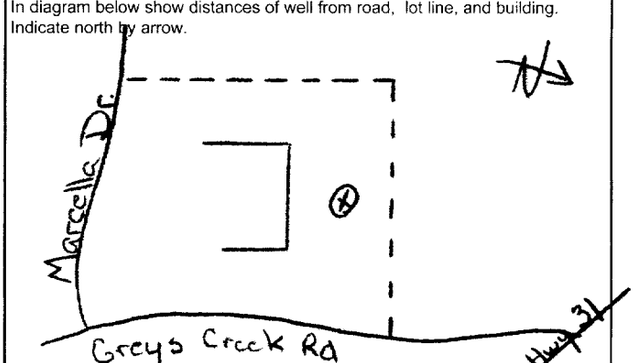
☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: Capital Water Spply Ltd.
Well Contractor's Licence No.: 1558
Business Address (street name, number, city etc.): P.O. Box 490 Stittsville, Ontario K2S 1A6
Name of Well Technician (last name, first name): Miller; S.
Well Technician's Licence No.: T0097
Signature of Technician/Contractor: X [signature]
Date Submitted YYYY MM DD: 2004 02 09

Location of Well

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



Audit No. Z 07053
Date Well Completed YYYY MM DD: 2004 02 04
Was the well owner's information package delivered? ☒ Yes ☐ No
Date Delivered YYYY MM DD: 2004 02 05

Ministry Use Only

Data Source
Contractor: 1558
Date Received YYYY MM DD: MAR 25 2004
Date of Inspection YYYY MM DD
Remarks: CSS ESS
Well Record Number: 1534570

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag No. A 021623 (place sticker and print number below)

A021623

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN	CON	LOT

Well Owner's Information and Location of Well Information

[redacted]

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Greys Creek Rd Metcafe	Metcafe	

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation:
✓	83	18	0458193	5010288	E Trex	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth Metres From	To
Brown	Top Soil			0	2.1
Gray	Limestone			2.1	6.6
Gray	Limestone			6.6	26.6

Hole Diameter

Depth Metres From	To	Diameter Centimetres
0	6.6	25.40

Water Record

Water found at Metres	Kind of Water
20 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☒ Clear and sediment free
☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth Metres From	To
Casing				
15.24	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.48	0	6.6
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Pump
Pump intake set at - (metres)	20
Pumping rate - (litres/min)	44
Duration of pumping	1 hrs + ___ min
Final water level end of pumping	6.6 metres
Recommended pump type.	☐ Shallow ☒ Deep
Recommended pump depth.	23 metres
Recommended pump rate. (litres/min)	44
If flowing give rate - (litres/min)	0
If pumping discontinued, give reason.	0

Draw Down Time min	Water Level Metres	Recovery Time min	Water Level Metres
Static Level	3.6		6.6
1	1	1	2
2	1	2	2
3	1	3	1
4	0	4	1
5	0	5	0
10	0	10	0
15	0	15	0
20	0	20	0
25	0	25	0
30	0	30	0
40	0	40	0
50	0	50	0
60	0	60	0

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	6.6	Quick Grout	2 Bags

Location of Well

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

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Audit No.	Date Well Completed (YYYY MM DD)
Z 38047	2005 10 03

Was the well owner's information package delivered?	Date Delivered (YYYY MM DD)
☐ Yes ☐ No	2005 10 03

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
Daves Well Drilling	6565

Business Address (street name, number, city etc.): RR 3 North Augusta

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Dave List	T0-144

Signature of Technician/Contractor	Date Submitted (YYYY MM DD)
X [signature]	2005 10 03

Ministry Use Only

Data Source	Contractor 6565
Date Received FEB 14 2006	Date of Inspection (YYYY MM DD)
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

A 093655

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag (below): A093655

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
WESA			

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
3108 Carp Road Box 430	Carp	Ont	K0A1L0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#6570 Bank Street	Osgoode	P/L 12	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	458409	5010477	PLAN 4R-18752	Part 2

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
	Boulders & Clay			0'	11'
	Grey & Black limestone			11'	180'
	Grey & White Sandstone			180'	208'

"[redacted]"

"Ottawa Childrens Treatment Centre"

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
20'	0'	Neat Cement Slurry	14.04

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
6"	Steel	.188"	+2'	20'
5 7/8"	Open Hole		20'	208'

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 (m/ft)	Kind of Water	
57	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	
201	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	
	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	20'	6"
20'	208'	5 7/8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify — NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 200'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 28'9"

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

Recommended pump depth (m/ft): 140'

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

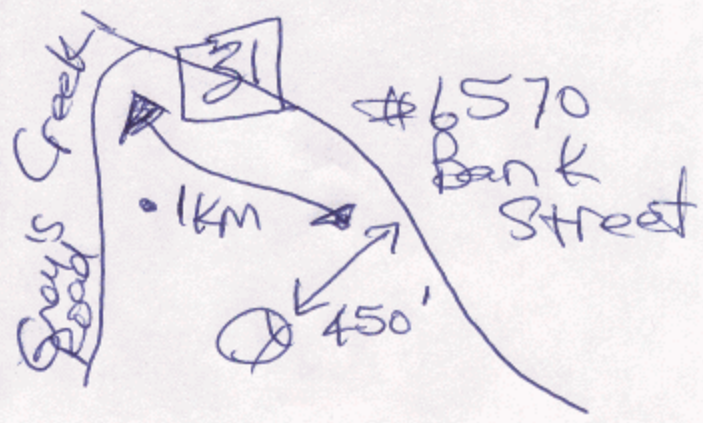
Well production (l/min / GPM): 30

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	28'6"		28'9"
1	28'7"	1	28'6"
2	28'8"	2	
3	↓	3	
4	28'9"	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 Contractor's Licence No.
AIRRock DRILLING Co LTD	1119

Business Address (Street Number/Name)	Municipality
RR#1	RICHMOND

Province	Postal Code	Business E-mail Address
ONT	K0A2Z0	

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2010 03 15

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2010 02 02	Audit No. Z 108240
	Date Work Completed: 2010 01 28	Received MAR 2 2 2010

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Ontario — Ministry of the Environment

Tag#: A128031

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A128031

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Measurements recorded in: ☐ Metric ☒ Imperial

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6682 Bank Street	Osgoode	W P/L 14	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	458952	5010094		

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
	Gravel			0'	5'
Grey & Brown	Limestone			5'	174'
Grey	Limestone	+ White Sandstone Mix		174'	212'
Grey	Limestone	+ White Sandstone Mix		212'	230'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/cf)
198'	0'	Neat cement	95.2

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
6 1/4"	Steel	.188"	+2'	198'
5 7/8"	Open Hole		198'	230'

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 (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
212 ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify X	0'	198'	9 3/4"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	198'	230'	5 7/8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 220'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 28.5"

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

Recommended pump depth (m/ft): 220'

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

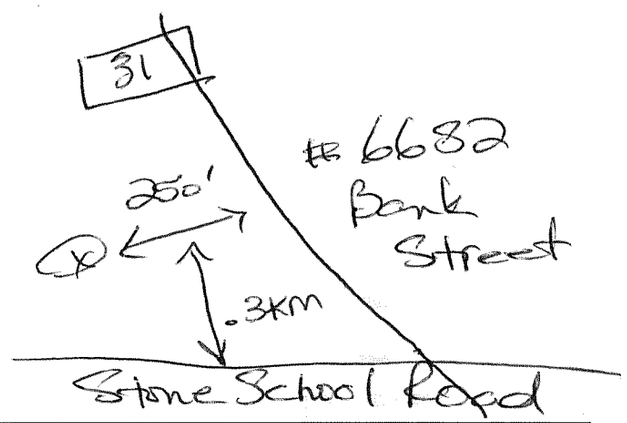
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	27.5"		28.5"
1	28.5	1	27.5
2	28.5	2	27.5
3	28.5	3	27.5
4	28.5	4	27.5
5	28.5	5	27.5
10	28.5	10	27.5
15	28.5	15	27.5
20	28.5	20	27.5
25	28.5	25	27.5
30	28.5	30	27.5
40	28.5	40	27.5
50	28.5	50	27.5
60	28.5"	60	27.5"

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.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3484		2012 08 31

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2012 08 13

Date Work Completed: 2012 08 08

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Audit No. Z 144678

Received 2012

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Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A128080

(Print Below) A128080

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6637 Bank Street	Osgoode	WP/L 13	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	458812	5010324		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand & Gravel			0'	16'
Grey	Limestone			16'	154'
Grey & White	Sandstone			154'	208'
White	Sandstone			208'	217'
White	Sandstone			217'	230'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
198'	0'	Neat cement	78

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	198'
6 1/8"	Open Hole		198'	230'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From (m/ft)	Depth To (m/ft)	Diameter (cm/in)
208' ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify ____	0'	198'	9 3/4"
217' ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify ____	198'	230'	6 1/8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify ____			

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 220

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 29.2'

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

Recommended pump depth (m/ft): 220'

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

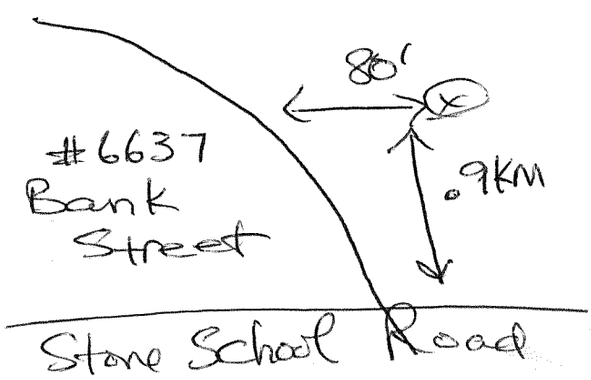
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		29.1'		29.2'
1	1	29.1	1	29.1
2	2	29.1	2	29.1
3	3	29.1	3	29.1
4	4	29.1	4	29.1
5	5	29.1	5	29.1
10	10	29.1	10	29.1
15	15	29.1	15	29.1
20	20	29.1	20	29.1
25	25	29.1	25	29.1
30	30	29.1	30	29.1
40	40	29.1	40	29.1
50	50	29.2	50	29.1
60	60	29.2'	60	29.1'

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.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T2122	[signature]	2012 08 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2012 08 17	2012 08 15

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Ontario — Ministry of the Environment

Tag#: A135283

W(rint Below)

A135283

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☐ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	[redacted] HAWLER AUTO BODY		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
c/o Cornwall Gravel Co. Ltd. 390 Eleventh St.	Cornwall	ON	K6H 5R9	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6653 Bank Street	Osgoode	W P/L 13	8

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	458941	5010248		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
	Sand & Gravel			0	16
Grey	Limestone			16	168
Grey & White	Sandstone			168	210
White	Sandstone			210	211
White	Sandstone			211	215
White	Sandstone			215	230

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed (m^3/ft^3)
198	0	Neat cement	82.6

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
6 1/4"	Steel	.188"	+2'	198'
6"	Open Hole		198'	230'

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

Hole Diameter

Depth (m/ft) From	To	Diameter *(cm/in)*
0'	198'	9 3/4"
198'	230'	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 220

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 28.7'

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

Recommended pump depth (m/ft): 220' 220'

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

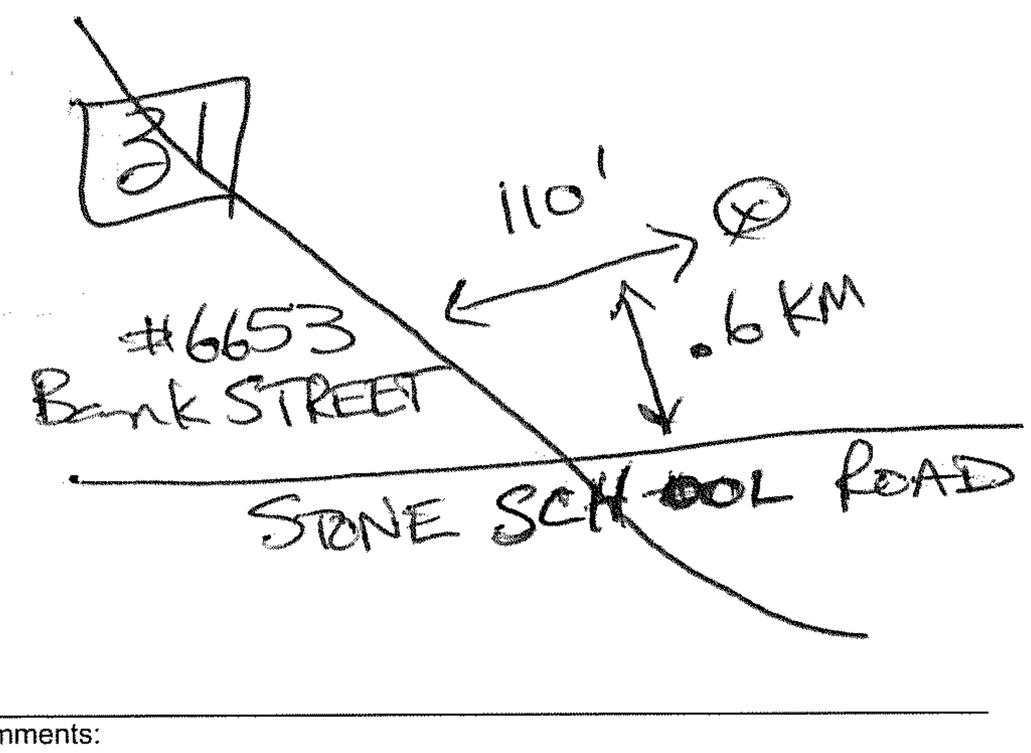
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	28.5		28.7
1	28.7	1	28.5
2	28.7	2	28.5
3	28.7	3	28.5
4	28.7	4	28.5
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 Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

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

Bus.Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
6138382170	Purcell, Shannon

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T2122		2012 08 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2012 08 03	2012 07 31

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Ontario — Ministry of the Environment and Climate Change

Tag# : A186997 (Print Below) — A186997

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Kenny U Pull Ottawa		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
9100 Henri-Bourassa East	Montreal	PQ	H1E 2S4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6650 Bank Street	Osgoode	P/L 13	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Metcalfe	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	455789	5010264	4R-25595	Parts 7 to 9

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand & Gravel	& Stones		0	18
Grey	Limestone			18	108
Grey	Limestone			108	146
Grey	Sandstone			146	204
Grey	Sandstone			204	214
Grey	Sandstone			214	220

* PO# 32-364779EG. *

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/gal)
40	30	Neat cement	12.5
30	0	Bentonite slurry	16.8

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	40'
6 1/16"	Open Hole		40'	220'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
108	☐	☐ Fresh ☒ Untested	
204	☐	☐ Fresh ☒ Untested	
214	☐	☐ Fresh ☒ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	40'	9 3/4"
40'	220'	6 1/16"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 200'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 28.1'

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

Recommended pump depth (m/ft): 100'

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

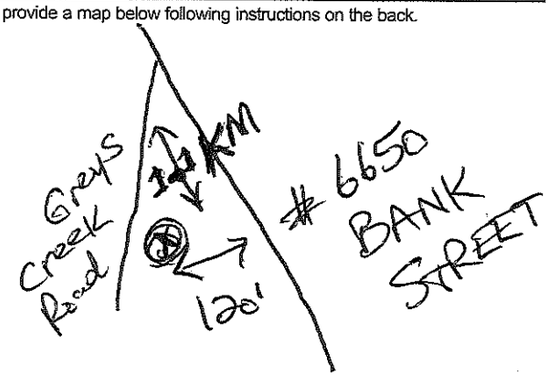
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	28'		28.1"
1	28.1	1	28
2	28.1	2	28
3	28.1	3	28
4	28.1	4	28
5	28.1	5	28
10	28.1	10	28
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:
3 / 4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1118

Business Address (Street Number/Name)	Municipality
6859 Franktown Road, RR#1	Richmond

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

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138821170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2017 / 01 / 31

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2017 / 01 / 24

Date Work Completed: 2017 / 01 / 24

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Received APR 18 2017

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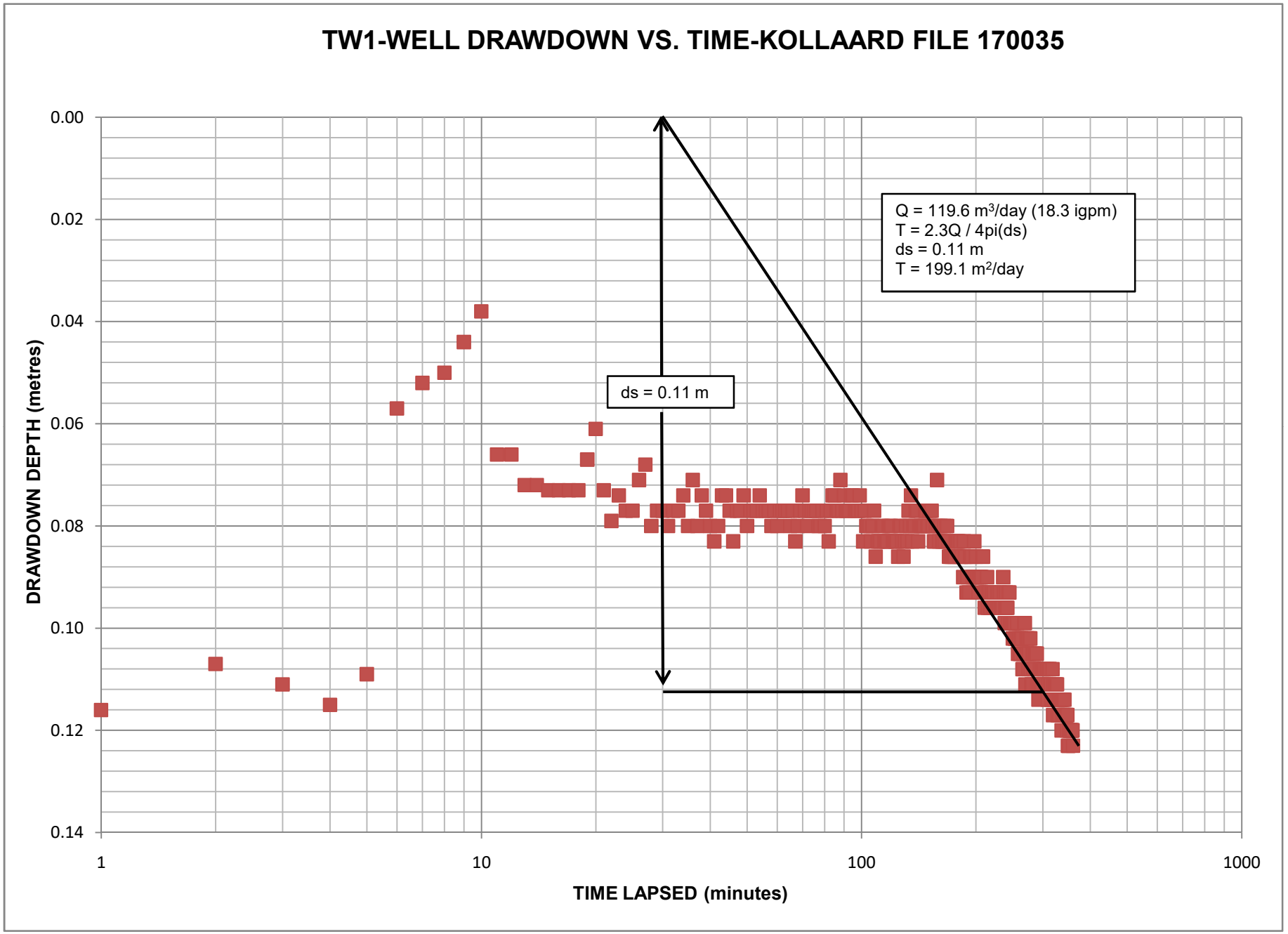
ATTACHMENT B

PUMPING TEST DATA FOR TW1


TW1-WELL DRAWDOWN VS. TIME-KOLLAARD FILE 170035
DRAWDOWN DEPTH (metres)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
1
10
100
1000
TIME LAPSED (minutes)
ds = 0.11 m
Q = 119.6 m3/day (18.3 igpm)
T = 2.3Q / 4pi(ds)
ds = 0.11 m
T = 199.1 m2/day

Kollaard File 170035 Pump Rate 83.1 litres/minute

DRAWDOWN DATA TW-1

Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)
0	366.717	9.571	-9.36	0.00
1	365.584	9.571	-9.476	0.12
2	365.667	9.472	-9.467	0.11
3	365.63	9.373	-9.471	0.11
4	365.594	9.275	-9.475	0.12
5	365.647	9.176	-9.469	0.11
6	366.154	9.176	-9.417	0.06
7	366.207	9.077	-9.412	0.05
8	366.23	8.978	-9.41	0.05
9	366.29	8.978	-9.404	0.04
10	366.343	8.879	-9.398	0.04
11	366.074	8.879	-9.426	0.07
12	366.068	8.779	-9.426	0.07
13	366.008	8.779	-9.432	0.07
14	366.008	8.779	-9.432	0.07
15	366.001	8.68	-9.433	0.07
16	366.001	8.68	-9.433	0.07
17	366.001	8.68	-9.433	0.07
18	366.001	8.68	-9.433	0.07
19	366.061	8.68	-9.427	0.07
20	366.121	8.68	-9.421	0.06
21	366.001	8.68	-9.433	0.07
22	365.942	8.68	-9.439	0.08
23	365.995	8.581	-9.434	0.07
24	365.965	8.581	-9.437	0.08
25	365.965	8.581	-9.437	0.08
26	366.025	8.581	-9.431	0.07
27	366.054	8.581	-9.428	0.07
28	365.935	8.581	-9.44	0.08
29	365.965	8.581	-9.437	0.08
30	365.965	8.581	-9.437	0.08
31	365.935	8.581	-9.44	0.08
32	365.965	8.581	-9.437	0.08
33	365.965	8.581	-9.437	0.08
34	365.995	8.581	-9.434	0.07
35	365.935	8.581	-9.44	0.08
36	366.025	8.581	-9.431	0.07
37	365.935	8.581	-9.44	0.08
38	365.995	8.581	-9.434	0.07
39	365.965	8.581	-9.437	0.08
40	365.935	8.581	-9.44	0.08
41	365.905	8.581	-9.443	0.08
42	365.935	8.581	-9.44	0.08
43	365.995	8.581	-9.434	0.07
44	365.995	8.581	-9.434	0.07
45	365.965	8.581	-9.437	0.08
46	365.905	8.581	-9.443	0.08
47	365.965	8.581	-9.437	0.08
48	365.965	8.581	-9.437	0.08
49	365.995	8.581	-9.434	0.07
50	365.935	8.581	-9.44	0.08
51	365.965	8.581	-9.437	0.08
52	365.965	8.581	-9.437	0.08
53	365.965	8.581	-9.437	0.08
54	365.995	8.581	-9.434	0.07
55	365.965	8.581	-9.437	0.08
56	365.965	8.581	-9.437	0.08
57	365.965	8.581	-9.437	0.08
58	365.935	8.581	-9.44	0.08
59	365.965	8.581	-9.437	0.08
60	365.935	8.581	-9.44	0.08
61	365.965	8.581	-9.437	0.08
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64	365.965	8.581	-9.437	0.08
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67	365.905	8.581	-9.443	0.08
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80	365.935	8.581	-9.44	0.08
81	365.965	8.581	-9.437	0.08
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86	365.965	8.581	-9.437	0.08

87	365.965	8.581	-9.437	0.08
88	366.018	8.481	-9.431	0.07
89	365.965	8.581	-9.437	0.08
90	365.995	8.581	-9.434	0.07
91	365.965	8.581	-9.437	0.08
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97	365.958	8.481	-9.437	0.08
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99	365.988	8.481	-9.434	0.07
100	365.965	8.581	-9.437	0.08
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126	365.929	8.481	-9.44	0.08
127	365.929	8.481	-9.44	0.08
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185	365.839	8.481	-9.45	0.09
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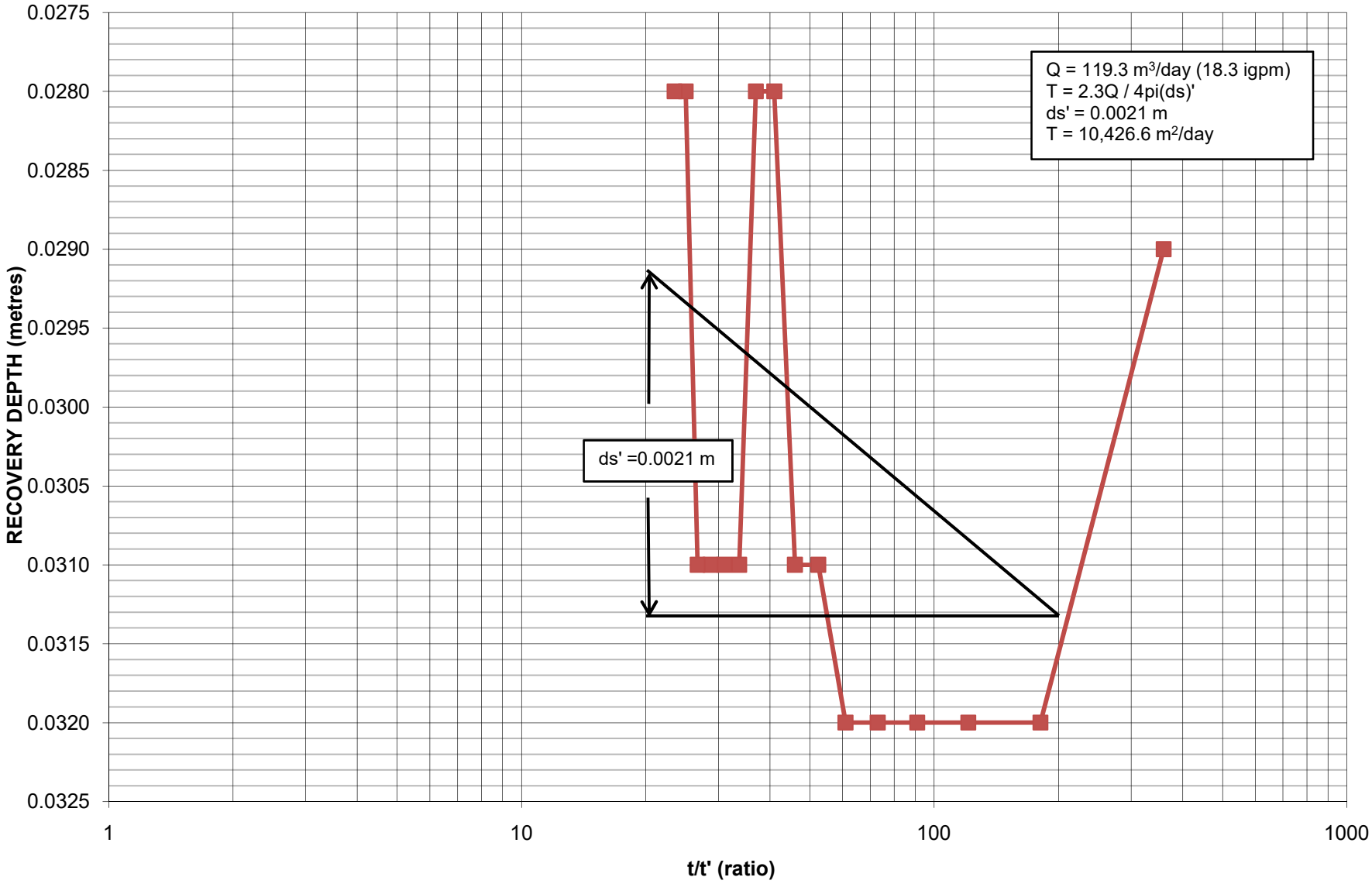
189	365.809	8.481	-9.453	0.09
190	365.839	8.481	-9.45	0.09
191	365.809	8.481	-9.453	0.09
192	365.809	8.481	-9.453	0.09
193	365.869	8.481	-9.446	0.09
194	365.869	8.481	-9.446	0.09
195	365.869	8.481	-9.446	0.09
196	365.839	8.481	-9.45	0.09
197	365.839	8.481	-9.45	0.09
198	365.899	8.481	-9.443	0.08
199	365.839	8.481	-9.45	0.09
200	365.869	8.481	-9.446	0.09
201	365.839	8.481	-9.45	0.09
202	365.839	8.481	-9.45	0.09
203	365.809	8.481	-9.453	0.09
204	365.839	8.481	-9.45	0.09
205	365.839	8.481	-9.45	0.09
206	365.839	8.481	-9.45	0.09
207	365.839	8.481	-9.45	0.09
208	365.869	8.481	-9.446	0.09
209	365.869	8.481	-9.446	0.09
210	365.809	8.481	-9.453	0.09
211	365.779	8.481	-9.456	0.10
212	365.809	8.481	-9.453	0.09
213	365.809	8.481	-9.453	0.09
214	365.839	8.481	-9.45	0.09
215	365.779	8.481	-9.456	0.10
216	365.809	8.481	-9.453	0.09
217	365.809	8.481	-9.453	0.09
218	365.779	8.481	-9.456	0.10
219	365.779	8.481	-9.456	0.10
220	365.809	8.481	-9.453	0.09
221	365.809	8.481	-9.453	0.09
222	365.779	8.481	-9.456	0.10
223	365.809	8.481	-9.453	0.09
224	365.779	8.481	-9.456	0.10
225	365.779	8.481	-9.456	0.10
226	365.779	8.481	-9.456	0.10
227	365.779	8.481	-9.456	0.10
228	365.809	8.481	-9.453	0.09
229	365.779	8.481	-9.456	0.10
230	365.779	8.481	-9.456	0.10
231	365.809	8.481	-9.453	0.09
232	365.779	8.481	-9.456	0.10
233	365.779	8.481	-9.456	0.10
234	365.779	8.481	-9.456	0.10
235	365.779	8.481	-9.456	0.10
236	365.839	8.481	-9.45	0.09
237	365.809	8.481	-9.453	0.09
238	365.75	8.481	-9.459	0.10
239	365.779	8.481	-9.456	0.10
240	365.809	8.481	-9.453	0.09
241	365.779	8.481	-9.456	0.10
242	365.779	8.481	-9.456	0.10
243	365.75	8.481	-9.459	0.10
244	365.809	8.481	-9.453	0.09
245	365.809	8.481	-9.453	0.09
246	365.75	8.481	-9.459	0.10
247	365.75	8.481	-9.459	0.10
248	365.75	8.481	-9.459	0.10
249	365.75	8.481	-9.459	0.10
250	365.72	8.481	-9.462	0.10
251	365.75	8.481	-9.459	0.10
252	365.75	8.481	-9.459	0.10
253	365.72	8.481	-9.462	0.10
254	365.72	8.481	-9.462	0.10
255	365.72	8.481	-9.462	0.10
256	365.72	8.481	-9.462	0.10
257	365.75	8.481	-9.459	0.10
258	365.69	8.481	-9.465	0.11
259	365.72	8.481	-9.462	0.10
260	365.72	8.481	-9.462	0.10
261	365.69	8.481	-9.465	0.11
262	365.69	8.481	-9.465	0.11
263	365.72	8.481	-9.462	0.10
264	365.72	8.481	-9.462	0.10
265	365.66	8.481	-9.468	0.11
266	365.66	8.481	-9.468	0.11
267	365.69	8.481	-9.465	0.11
268	365.75	8.481	-9.459	0.10
269	365.75	8.481	-9.459	0.10
270	365.63	8.481	-9.471	0.11
271	365.69	8.481	-9.465	0.11
272	365.72	8.481	-9.462	0.10

273	365.69	8.481	-9.465	0.11
274	365.72	8.481	-9.462	0.10
275	365.66	8.481	-9.468	0.11
276	365.69	8.481	-9.465	0.11
277	365.72	8.481	-9.462	0.10
278	365.72	8.481	-9.462	0.10
279	365.66	8.481	-9.468	0.11
280	365.63	8.481	-9.471	0.11
281	365.63	8.481	-9.471	0.11
282	365.69	8.481	-9.465	0.11
283	365.66	8.481	-9.468	0.11
284	365.66	8.481	-9.468	0.11
285	365.69	8.481	-9.465	0.11
286	365.69	8.481	-9.465	0.11
287	365.66	8.481	-9.468	0.11
288	365.69	8.481	-9.465	0.11
289	365.69	8.481	-9.465	0.11
290	365.63	8.481	-9.471	0.11
291	365.63	8.481	-9.471	0.11
292	365.601	8.481	-9.474	0.11
293	365.63	8.481	-9.471	0.11
294	365.63	8.481	-9.471	0.11
295	365.66	8.481	-9.468	0.11
296	365.63	8.481	-9.471	0.11
297	365.63	8.481	-9.471	0.11
298	365.66	8.481	-9.468	0.11
299	365.63	8.481	-9.471	0.11
300	365.66	8.481	-9.468	0.11
301	365.66	8.481	-9.468	0.11
302	365.66	8.481	-9.468	0.11
303	365.66	8.481	-9.468	0.11
304	365.63	8.481	-9.471	0.11
305	365.63	8.481	-9.471	0.11
306	365.63	8.481	-9.471	0.11
307	365.66	8.481	-9.468	0.11
308	365.66	8.481	-9.468	0.11
309	365.601	8.481	-9.474	0.11
310	365.63	8.481	-9.471	0.11
311	365.66	8.481	-9.468	0.11
312	365.66	8.481	-9.468	0.11
313	365.66	8.481	-9.468	0.11
314	365.63	8.481	-9.471	0.11
315	365.63	8.481	-9.471	0.11
316	365.601	8.481	-9.474	0.11
317	365.601	8.481	-9.474	0.11
318	365.66	8.481	-9.468	0.11
319	365.571	8.481	-9.477	0.12
320	365.63	8.481	-9.471	0.11
321	365.601	8.481	-9.474	0.11
322	365.601	8.481	-9.474	0.11
323	365.63	8.481	-9.471	0.11
324	365.601	8.481	-9.474	0.11
325	365.63	8.481	-9.471	0.11
326	365.601	8.481	-9.474	0.11
327	365.63	8.481	-9.471	0.11
328	365.571	8.481	-9.477	0.12
329	365.571	8.481	-9.477	0.12
330	365.601	8.481	-9.474	0.11
331	365.601	8.481	-9.474	0.11
332	365.571	8.481	-9.477	0.12
333	365.601	8.481	-9.474	0.11
334	365.601	8.481	-9.474	0.11
335	365.601	8.481	-9.474	0.11
336	365.541	8.481	-9.48	0.12
337	365.601	8.481	-9.474	0.11
338	365.571	8.481	-9.477	0.12
339	365.601	8.481	-9.474	0.11
340	365.571	8.481	-9.477	0.12
341	365.571	8.481	-9.477	0.12
342	365.601	8.481	-9.474	0.11
343	365.571	8.481	-9.477	0.12
344	365.571	8.481	-9.477	0.12
345	365.571	8.481	-9.477	0.12
346	365.571	8.481	-9.477	0.12
347	365.541	8.481	-9.48	0.12
348	365.571	8.481	-9.477	0.12
349	365.511	8.481	-9.483	0.12
350	365.511	8.481	-9.483	0.12
351	365.511	8.481	-9.483	0.12
352	365.541	8.481	-9.48	0.12
353	365.541	8.481	-9.48	0.12
354	365.541	8.481	-9.48	0.12
355	365.541	8.481	-9.48	0.12
356	365.541	8.481	-9.48	0.12
357	365.541	8.481	-9.48	0.12
358	365.541	8.481	-9.48	0.12
359	365.541	8.481	-9.48	0.12
360	365.511	8.481	-9.483	0.12

TW1- WELL RECOVERY VS. TIME - KOLLAARD FILE 170035



Kollaard File 170035

RECOVERY DATA TW-1

t'	t / t'	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Manual Measured Water Level	Drawdown (m)	Recovery (%)
1	360	366.435	8.481	-9.389	0.03	9.38	0.02	83%
2	181.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
3	121.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
4	91.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
5	73.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
6	61.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
7	52.4	366.412	8.581	-9.391	0.03	9.38	0.02	83%
8	46.0	366.412	8.581	-9.391	0.03	9.38	0.02	83%
9	41.0	366.442	8.581	-9.388	0.03	9.38	0.02	83%
10	37.0	366.442	8.581	-9.388	0.03	9.38	0.02	83%
11	33.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
12	31.0	366.412	8.581	-9.391	0.03	9.38	0.02	83%
13	28.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
14	26.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
15	25.0	366.442	8.581	-9.388	0.03	9.37	0.01	92%
16	23.5	366.442	8.581	-9.388	0.03	9.37	0.01	92%
17	22.2	366.442	8.581	-9.388	0.03	-	-	-
18	21.0	366.442	8.581	-9.388	0.03	-	-	-
19	19.9	366.412	8.581	-9.391	0.03	-	-	-
20	19.0	366.442	8.581	-9.388	0.03	-	-	-
21	18.1	366.442	8.581	-9.388	0.03	-	-	-
1405	1.3	365.445	9.275	-9.49	0.13	9.43	0.07	-
5740	1.1	362.053	9.373	-9.836	0.48	9.85	0.49	-

ATTACHMENT C

RESULTS OF LABORATORY TESTING
OF WELL WATER SAMPLES (2017 and 2024)

Certificate of Analysis

Client: Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#:
Invoice to: Kollaard Associates Inc.

Report Number: 1709239
Date Submitted: 2017-06-09
Date Reported: 2017-06-11
Project: 170035
COC #: 190936

Dear Colleen Vermeersch:

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

Report Comments:

APPROVAL: _____

Dragana Dzeletovic
Team Leader, Microbiology

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Eurofins (Mississauga) is accredited for specific parameters by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

eurofins | Environment Testing

Client: Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#:
Invoice to: Kollaard Associates Inc.

Report Number: 1709239
Date Submitted: 2017-06-09
Date Reported: 2017-06-11
Project: 170035
COC #: 190936

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1297441 Water 2017-06-08 TW1 - 3hrs	1297442 Water 2017-06-08 TW1 - 6 hours
Others	Escherichia Coli	0	ct/100mL	MAC 0		0	0
	Faecal Coliforms	0	ct/100mL			0	0
	Heterotrophic Plate Count	0	ct/100mL				0
			ct/1mL			26	
	Total Coliforms	0	ct/100mL	MAC 0		1*	0

Guideline = ODWSOG *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Analytical Method: AMBCOLM1
additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#: 170035
Invoice to: Kollaard Associates Inc.

Report Number: 1709240
Date Submitted: 2017-06-09
Date Reported: 2017-06-16
Project: 170035
COC #: 190936

Dear Colleen Vermeersch:

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

Report Comments:

APPROVAL: _____

Addrine Thomas
Team Leader, Inorganics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

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Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

eurofins | Environment Testing

Certificate of Analysis

Client: Kollaard Associates Inc.
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Attention: Ms. Colleen Vermeersch
PO#: 170035
Invoice to: Kollaard Associates Inc.

Report Number: 1709240
Date Submitted: 2017-06-09
Date Reported: 2017-06-16
Project: 170035
COC #: 190936

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1297443 Water 2017-06-08 TW1-3hrs	1297444 Water 2017-06-08 TW1-6hrs
Calculations	Hardness as CaCO3	1	mg/L	OG 100	429*	427*
	Ion Balance	0.01			0.91	0.92
	TDS (COND - CALC)	1	mg/L	AO 500	722*	715*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG 500	313	299
	Cl	1	mg/L	AO 250	129	126
	Colour	2	TCU	AO 5	2	2
	Conductivity	5	uS/cm		1110	1100
	F	0.10	mg/L	MAC 1.5	0.18	0.19
	N-NO2	0.10	mg/L	MAC 1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	<0.10	<0.10
	pH	1.00		6.5-8.5	7.95	7.96
	SO4	1	mg/L	AO 500	126	124
	Turbidity	0.1	NTU	AO 5.0	1.6	1.2
Metals	Ca	1	mg/L		96	95
	Fe	0.03	mg/L	AO 0.3	0.19	0.16
	K	1	mg/L		6	6
	Mg	1	mg/L		46	46
	Mn	0.01	mg/L	AO 0.05	0.04	0.04
	Na	2	mg/L	AO 200	62	57
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		0.3	0.3
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO 5	1.7	1.9
	N-NH3	0.01	mg/L		0.14	0.15
	S2-	0.02	mg/L	AO 0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1	<0.1

Guideline = ODWSOG *** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Kollaard Associates Inc.
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K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#: 170035
Invoice to: Kollaard Associates Inc.

Report Number: 1709240
Date Submitted: 2017-06-09
Date Reported: 2017-06-16
Project: 170035
COC #: 190936

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 328025 **Analysis/Extraction Date** 2017-06-09 **Analyst** H D			
Method C SM2130B			
Turbidity	<0.1 NTU	99	70-130
Run No 328037 **Analysis/Extraction Date** 2017-06-09 **Analyst** SKH			
Method M SM3120B-3500C			
Calcium	<1 mg/L	95	90-110
Potassium	<1 mg/L	94	87-113
Magnesium	<1 mg/L	94	76-124
Sodium	<2 mg/L	95	82-118
Run No 328051 **Analysis/Extraction Date** 2017-06-09 **Analyst** H D			
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	107	80-120
N-NO3	<0.10 mg/L	108	80-120
Run No 328101 **Analysis/Extraction Date** 2017-06-12 **Analyst** SKH			
Method EPA 200.8			
Iron	<0.03 mg/L	95	91-109
Manganese	<0.01 mg/L	98	92.9-107
Run No 328114 **Analysis/Extraction Date** 2017-06-12 **Analyst** MAG			

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#: 170035
Invoice to: Kollaard Associates Inc.

Report Number: 1709240
Date Submitted: 2017-06-09
Date Reported: 2017-06-16
Project: 170035
COC #: 190936

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method C SM2120C			
Colour	<2 TCU	95	90-110
Run No 328249 **Analysis/Extraction Date** 2017-06-13 **Analyst** H D			
Method C SM4500-H+B			
Alkalinity (CaCO3)	<5 mg/L	100	90-110
Conductivity	<5 uS/cm	99	90-110
F	<0.10 mg/L	101	90-110
pH	5.89	99	90-110
Run No 328360 **Analysis/Extraction Date** 2017-06-13 **Analyst** AET			
Method SM 4110			
Chloride	<1 mg/L	104	90-110
SO4	<1 mg/L	107	90-110
Run No 328373 **Analysis/Extraction Date** 2017-06-14 **Analyst** AET			
Method SUBCONTRACT P-INORG			
DOC	<0.5 mg/L	92	
N-NH3	<0.01 mg/L	96	
Phenols	<0.001 mg/L	96	69-132
S2-	<0.02 mg/L	96	

Guideline = ODWSOG *** = Guideline Exceedence**
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Certificate of Analysis

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Kemptville, ON
K0G 1J0
Attention: Ms. Colleen Vermeersch
PO#: 170035
Invoice to: Kollaard Associates Inc.

Report Number: 1709240
Date Submitted: 2017-06-09
Date Reported: 2017-06-16
Project: 170035
COC #: 190936

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Tannin & Lignin	<0.1 mg/L	100	
Total Kjeldahl Nitrogen	<0.1 mg/L	99	81-126
Run No 328434 **Analysis/Extraction Date** 2017-06-16 **Analyst** AET			
Method C Ion Balance			
Ion Balance			
Method C SM2340B			
Hardness as CaCO3			
Method C SM2540			
TDS (COND - CALC)			

Guideline = ODWSOG *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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OFFICIAL CERTIFICATE OF ANALYSIS : 3894495

WORK REQUEST : 100279175

Report Date : 2024-05-06

Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention : Colleen Vermeersch

Reception Date : 2024-05-02
Project : 230156
Sampler : NA
PO Number : Not Applicable
Temperature : 9 °C

Analysis	Quantity	External Method
E.Coli and Total Coliforms (DC Plate)	1	Modified from MECP E3407
Heterotrophic Plate Count (mHPC)	1	Modified from SM 9215 D

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

Sample status upon receipt :

7668653
Compliant

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

Legend :

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

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

					Eurofins Sample No :	**7668653**				
					Matrix :	Drinking water				
					Sampling Date :	2024-05-01				
					Client Sample Identification :	6622 Bank St				
Microbiology	**RL**	**Unit**	**Criteria**							
			A	**B**	**C**					
E.Coli and Total Coliforms (DC Plate)										
Escherichia coli (DC)	0	CFU/100mL	0			0				
Total Coliforms (DC)	0	CFU/100mL	0			0				
Heterotrophic Plate Count (mHPC)	0	CFU/1 mL				2				

Approved by :

Emma-Dawn Ferguson,
Enviromental Chemist

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
E.Coli and Total Coliforms (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 7668653								Prep Date: 2024-05-02 Analysis Date: 2024-05-03	
Method : Heterotrophic Plate Count by MF (mHPC Media). Internal method: OTT-M-BAC-WI45296.									
Heterotrophic Plate Count (mHPC)	CFU/1 mL	0	0					0	0-30
Associated Samples : 7668653								Prep Date: 2024-05-02 Analysis Date: 2024-05-04	

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

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DRINKING WATER CHAIN-OF-CUSTODY

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

Eurofins Workorder #:

100279175

Printed On : 2024-05-02 15:43:42

CLIENT INFORMATION

Company: Kollaard Associates Inc.
Contact: Colleen Vermeersch
Address: 210 Prescott St, Kemptville, On K0G 1J0
Telephone: 613-860-0923 ext230 Fax:
Email #1: #2:
Project: 230156
PO #: Quote #: 170314

WATERWORKS INFORMATION

Waterworks Name:
Waterworks #:
Contact:
Address:
Telephone: Fax:
Cell Phone:
Email #1: #2:

REGULATION/GUIDELINE REQUIRED

☐ O. Reg 170 ☐ O. Reg 170 15.1 ☑ ODWSOG ☑ Private Well ☐ None
☐ O. Reg 318/319 ☐ O. Reg 243 ☐ GCDWQ ☐ Other:

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☑ 5-7 Days (Standard)

Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service. Note that some tests (i.e. O. Reg. 170 Schedule 24 pesticides may take up to 3 weeks to analyze). Please see notes (on reverse) about TAT policies.

The optimal temperature conditions during transport must be less than 10°C. Sample(s) cannot be frozen. Note that for drinking water samples, all exceedances will be reported where (and how) the application legislation requires.
The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details								Sample Analysis Required							Field Measurements			
Sample ID	Date/Time Collected	Sample Type Code (see below)	Resample? Y = Yes N = No	MOE/MOH Reportable? Y = Yes N = No	# of Containers	SPL Code/Watertrax	Sample Location (i.e. Kitchen, POE)	Subdivision parameters	Kollaard Subdivisionbacteria	Kollaard Special Metals	true colour				Total Chlorine	Free Chlorine	Field Turbidity	Sample RN# (Lab Use Only)
6622 Bank St	May-01 / 10:00	PW	N	N	8		wellhead	✓	✓	✓	✓				-	-	-	7668653
															-	-	-	

Sample Type Codes for Drinking Water: RW = Raw Water, TW = Treated Water at Point of Entry to distribution, TW-NT = Untreated Water at Point of Entry to distribution, DW = Distribution, RP = Residential Plumbing, NRP = Non-Residential Plumbing, S = Standing, F = Flushed, PW = Private Well

	PRINT	SIGN	DATE/TIME	TEMP [°C]
Sampled By:	Connor Ibach			
Relinquished By:				
Received By:			5/2/24 1555	9

COMMENTS:
Sample for metals were field filtered using 0.45 micron filter

Copies: White - Laboratory, Yellow - Sampler

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OFFICIAL CERTIFICATE OF ANALYSIS : 3900285

WORK REQUEST : 100279205

Report Date : 2024-05-09

Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention : Colleen Vermeersch

Reception Date : 2024-05-02
Project : 230156
Sampler : NA
PO Number : Not Applicable
Temperature : 9 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	1	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	1	Modified from EPA 350.1
Chloride (Water, IC)	1	Modified from SM 4110 B and C
Colour, Apparent (Water, Spectrophotometry)	1	Modified from SM 2120 C
Colour, True (Water, Spectrophotometry)	1	Modified from SM 2120 C
Conductivity (Water, Automated)	1	Modified from SM 2510 B
DOC (Water, IR)	1	Modified from SM 5310 B
Fluoride (Water, Auto/ISE)	1	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	1	SM 2340 B
Ion Balance (Water, Calculation)	1	Modified from SM1030 E
Lab Filtration (Water, Sample Preparation)	1	Lab Prep
Metals Scan (Water, ICP/MS)	1	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	1	Modified from SM 3120 B
Nitrate (Water, IC)	1	Modified from SM 4110 B and C
Nitrite (Water, IC)	1	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	1	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	1	Modified from EPA 420.2
Sulphate (Water, IC)	1	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	1	Modified from SM 4500-S2 D
Tannin and Lignin (Water, Spec)	1	Modified from SM 5550 B
TDS (Estimated)	1	Modified from SM 2510 A
Total Kjeldahl Nitrogen (Water, Colorimetry)	1	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	1	Modified from SM 2130 B

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

Sample status upon receipt :

7668847
Compliant

Certificate Comments :

7668847
Carbon spike not availabe due to matrix interference. Anions MRL raised due to matrix interference.

Notes :

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Legend :

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QC : Reference material (QC)
N/A : Not applicable
1 : Results in annex
* : Analysis conducted by external subcontracting
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OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Kollaard Associates Inc.
Project : 230156

Reception Date : 2024-05-02

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Hardness (Water, Calculation Only)							
7668847	6622 Bank St	Hardness as CaCO3 (Calculation)	318	mg/L	80-100		
TDS (Estimated)							
7668847	6622 Bank St	TDS (Estimated)^	683	mg/L	500		

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

					Eurofins Sample No :	**7668847**				
					Matrix :	Drinking water				
					Sampling Date :	2024-05-01				
					Client Sample Identification :	6622 Bank St				
Anions	**RL**	**Unit**	**Criteria A**	**B**	**C**					
Chloride	0.5	mg/L	250			104				
Nitrate (as Nitrogen)	0.1	mg/L	10.0			<0.5				
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.5				
Sulphate	1	mg/L	500			113				

			Eurofins Sample No :	**7668847**						
			Matrix :	Drinking water						
			Sampling Date :	2024-05-01						
			Client Sample Identification :	6622 Bank St						
Calculations	**RL**	**Unit**								
Ion Balance (Calculation)^	0.1		1.01							

					Eurofins Sample No :	**7668847**				
					Matrix :	Drinking water				
					Sampling Date :	2024-05-01				
					Client Sample Identification :	6622 Bank St				
General Chemistry	**RL**	**Unit**	**Criteria A**	**B**	**C**					
Alkalinity (as CaCO3)	5	mg/L	500			307				
Colour (Apparent)	2	TCU	5			<2				
Colour (True)	2	TCU				<2				
Conductivity @ 25°C	5	uS/cm				1050				
Dissolved Organic Carbon	0.5	mg/L	5			1.8				
Fluoride	0.1	mg/L	1.5			0.24				
Hardness as CaCO3 (Calculation)	1	mg/L	80-100			318				
pH @ 25°C	1		6.5-8.5			7.80				
Phenols-4AAP	0.001	mg/L				<0.001				
Sulphide (S2-)	0.01	mg/L	0.05			<0.01				
Tannin and Lignin	0.1	mg/L				0.4				
TDS (Estimated)^	5	mg/L	500			683				
Turbidity	0.1	NTU	5			0.3				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

					Eurofins Sample No :	**7668847**				
					Matrix :	Drinking water				
					Sampling Date :	2024-05-01				
					Client Sample Identification :	6622 Bank St				
Metals	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**					
Metals Scan (Water, ICP/MS)										
Aluminum	0.01	mg/L	0.1			<0.01				
Antimony	0.0005	mg/L	0.006			<0.0005				
Arsenic	0.001	mg/L	0.01			<0.001				
Barium	0.001	mg/L	1			0.118				
Beryllium	0.0005	mg/L				<0.0005				
Boron	0.01	mg/L	5			0.17				
Cadmium	0.0001	mg/L	0.005			<0.0001				
Chromium	0.001	mg/L	0.05			<0.001				
Cobalt	0.0002	mg/L				<0.0002				
Copper	0.001	mg/L	1			0.057				
Iron	0.03	mg/L	0.3			<0.03				
Lead	0.001	mg/L	0.01			<0.001				
Manganese	0.01	mg/L	0.05			0.04				
Mercury	0.0001	mg/L	0.001			<0.0001				
Molybdenum	0.005	mg/L				<0.005				
Nickel	0.005	mg/L				0.006				
Selenium	0.001	mg/L	0.05			<0.001				
Silver	0.0001	mg/L				<0.0001				
Strontium	0.001	mg/L				1.49				
Thallium	0.0001	mg/L				<0.0001				
Uranium	0.001	mg/L	0.02			<0.001				
Vanadium	0.001	mg/L				<0.001				
Zinc	0.01	mg/L	5			0.07				
Metals Scan (Water, ICP/OES)										
Calcium	1	mg/L				54				
Magnesium	1	mg/L				45				
Potassium	1	mg/L				6				
Sodium	1	mg/L	200			117				

			Eurofins Sample No :	**7668847**						
			Matrix :	Drinking water						
			Sampling Date :	2024-05-01						
			Client Sample Identification :	6622 Bank St						
Nutrients	**RL**	**Unit**								
Ammonia (Total, as Nitrogen)	0.02	mg/L	0.129							
Total Kjeldahl Nitrogen	0.1	mg/L	0.200							

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

Eurofins Sample No :			**7668847**						
Matrix :			Drinking water						
Sampling Date :			2024-05-01						
Client Sample Identification :			6622 Bank St						
Sample Preparation	**RL**	**Unit**							
Lab Filtration			y						

Approved by : _____
Emma-Dawn Ferguson, M.Sc.
Environmental Chemist

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Alkalinity (Water, Automated)									
Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.									
Alkalinity (as CaCO3)	mg/L	5	<5	97	95-105			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
Ammonia, Total (Water, Colorimetry)									
Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	118	80-120	108	80-120	3	0-20
Associated Samples : 7668847								Prep Date: 2024-05-07 Analysis Date: 2024-05-08	
Chloride (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Chloride	mg/L	0.5	<0.5	100	80-120	96	80-120	1	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
Colour, Apparent (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (Apparent)	TCU	2	<2	87	39-159			4	0-40
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-06	
Colour, True (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (True)	TCU	2	<2	87	39-159			-	0-40
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-06	
Conductivity (Water, Automated)									
Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.									
Conductivity @ 25°C	uS/cm	5	<5	99	98-102			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
DOC (Water, IR)									
Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.									
Dissolved Organic Carbon	mg/L	0.5	<0.5	101	84-116			4	0-15
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
Fluoride (Water, Auto/ISE)									
Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.									
Fluoride	mg/L	0.1	<0.1	101	90-110			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.									
Aluminum	mg/L	0.01	<0.01	100	80-120	97	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	94	80-120	88	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	103	80-120	98	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	87	70-130	3	0-20
Beryllium	mg/L	0.0005	<0.0005	106	80-120	108	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	91	70-130	0	0-20
Cadmium	mg/L	0.0001	<0.0001	104	80-120	98	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	110	80-120	96	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	110	80-120	93	70-130	-	0-20
Copper	mg/L	0.001	<0.001	110	80-120	92	70-130	3	0-20
Iron	mg/L	0.03	<0.03	100	80-120	96	70-130	-	0-20
Lead	mg/L	0.001	<0.001	110	80-120	92	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	94	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	96	80-120	90	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	100	80-120	96	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	110	80-120	96	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	100	80-120	93	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	104	80-120	80	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	89	70-130	2	0-20
Thallium	mg/L	0.0001	<0.0001	109	80-120	93	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	93	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	95	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	110	80-120	95	70-130	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
Metals Scan (Water, ICP/OES)									
Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.									
Calcium	mg/L	1	<1	101	86-115	106	70-130	0	0-20
Magnesium	mg/L	1	<1	100	91-109	103	70-130	0	0-20
Potassium	mg/L	1	<1	100	87-113	104	70-130	-	0-20
Sodium	mg/L	1	<1	99	85-115	105	70-130	0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-02	
Nitrate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	97	80-120	106	80-120	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
Nitrite (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	95	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
pH (25°C) (Water, Automated)									
Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.									
pH @ 25°C		1	5.74	100	97-103			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	

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

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

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Phenols (Water, Colorimetry)									
Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.									
Phenols-4AAP	mg/L	0.001	<0.001	112	75-125	106	70-130	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
Sulphate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Sulphate	mg/L	1	<1	90	90-110	89	80-120	0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
Sulphide (Water, Colorimetry)									
Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.									
Sulphide (S2-)	mg/L	0.01	<0.01	115	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-08	
Tannin and Lignin (Water, Spec)									
Method : Tannin and Lignin (Water, Spec), Internal method: OTT-I-SPEC-WI57693.									
Tannin and Lignin	mg/L	0.1	<0.1	108	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-09 Analysis Date: 2024-05-09	
Total Kjeldahl Nitrogen (Water, Colorimetry)									
Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	109	70-130	115	70-130	16	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
Turbidity (Water, Turbidimeter)									
Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.									
Turbidity	NTU	0.1	<0.1	98	80-120			4	0-30
Associated Samples : 7668847								Prep Date: 2024-05-03 Analysis Date: 2024-05-06	

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **WT2410851**	Page	: 1 of 5
Client	: **Kollaard Associates Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Colleen Vermeersch	Account Manager	: Costas Farassoglou
Address	: 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 613 860 0923	Telephone	: 613 225 8279
Project	: 230156	Date Samples Received	: 02-May-2024 13:50
PO	: 230156	Date Analysis Commenced	: 06-May-2024
C-O-C number	: ----	Issue Date	: 08-May-2024 10:46
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µg/L	micrograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	6622 BANK ST	----	----	----	----
					Client sampling date / time	01-May-2024 10:00	----	----	----	----
					WT2410851-001	--------	--------	--------	--------	
					Result	----	----	----	----	
Volatile Organic Compounds										
Acetone	67-64-1	E611D/WT	20	µg/L		<20	----	----	----	----
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Bromodichloromethane	75-27-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Bromoform	75-25-2	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Bromomethane	74-83-9	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Carbon tetrachloride	56-23-5	E611D/WT	0.20	µg/L		<0.20	----	----	----	----
Chlorobenzene	108-90-7	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Chloroform	67-66-3	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dibromochloromethane	124-48-1	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT	0.20	µg/L		<0.20	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		<1.0	----	----	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	0.30	µg/L		<0.30	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	0.30	µg/L		<0.30	----	----	----	----
Ethylbenzene	100-41-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Hexane, n-	110-54-3	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	20	µg/L		<20	----	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	20	µg/L		<20	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	6622 BANK ST	----	----	----	----
					Client sampling date / time	01-May-2024 10:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		WT2410851-001	--------	--------	--------	--------
						Result	----	----	----	----
Volatile Organic Compounds										
Styrene	100-42-5	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	0.40	µg/L		<0.40	----	----	----	----
Xylene, o-	95-47-6	E611D/WT	0.30	µg/L		<0.30	----	----	----	----
Xylenes, total	1330-20-7	E611D/WT	0.50	µg/L		<0.50	----	----	----	----
BTEX, total	----	E611D/WT	1.0	µg/L		<1.0	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1-L/WT	25	µg/L		<25	----	----	----	----
F2 (C10-C16)	----	E601.SG/WT	100	µg/L		<100	----	----	----	----
F3 (C16-C34)	----	E601.SG/WT	250	µg/L		<250	----	----	----	----
F4 (C34-C50)	----	E601.SG/WT	250	µg/L		<250	----	----	----	----
F1-BTEX	----	EC580/WT	25	µg/L		<25	----	----	----	----
Hydrocarbons, total (C6-C50)	n/a	EC581SG/WT	240	µg/L		<370	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG/WT	-	-		YES	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/WT	1.0	%		93.2	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1-L/WT	1.0	%		103	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%		104	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%		98.5	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2410851**	Page	: 1 of 5
Client	: **Kollaard Associates Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Colleen Vermeersch	Account Manager	: Costas Farassoglou
Address	: 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 613 860 0923	Telephone	: 613 225 8279
Project	: 230156	Date Samples Received	: 02-May-2024 13:50
PO	: 230156	Issue Date	: 08-May-2024 10:46
C-O-C number	: ----		
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) 6622 BANK ST	E581.F1-L	01-May-2024	07-May-2024	14 days	6 days	✓	07-May-2024	14 days	6 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 6622 BANK ST	E601.SG	01-May-2024	06-May-2024	14 days	5 days	✓	07-May-2024	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 6622 BANK ST	E611D	01-May-2024	07-May-2024	14 days	6 days	✓	07-May-2024	14 days	6 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1430025	1	10	10.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1430025	1	10	10.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **WT2410851**	Page	: 1 of 10
Client	: Kollaard Associates Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Colleen Vermeersch	Account Manager	: Costas Farassoglou
Address	: 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 613 860 0923	Telephone	: 613 225 8279
Project	: 230156	Date Samples Received	: 02-May-2024 13:50
PO	: 230156	Date Analysis Commenced	: 06-May-2024
C-O-C number	: ----	Issue Date	: 08-May-2024 10:47
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Volatile Organic Compounds (QC Lot: 1430751)											
WT2410851-001	6622 BANK ST	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 1430751) - continued											
WT2410851-001	6622 BANK ST	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1430753)											
WT2410851-001	6622 BANK ST	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1430751)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1430751) - continued						
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1430025)						
F2 (C10-C16)	----	E601.SG	100	µg/L	<100	----
F3 (C16-C34)	----	E601.SG	250	µg/L	<250	----
F4 (C34-C50)	----	E601.SG	250	µg/L	<250	----
Hydrocarbons (QCLot: 1430753)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1430751)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	97.8	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	98.8	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	90.3	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	99.8	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	113	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	99.9	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	97.6	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	92.8	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	77.4	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	87.8	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	88.5	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	99.3	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	103	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	96.4	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	97.0	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	93.4	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	84.3	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	90.6	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	91.7	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	98.0	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	94.4	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	99.4	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 1430751) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	95.4	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	110	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	96.3	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	102	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	100	70.0	130	----
Hydrocarbons (QCLot: 1430025)									
F2 (C10-C16)	----	E601.SG	100	µg/L	4010 µg/L	108	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	8300 µg/L	109	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4360 µg/L	111	70.0	130	----
Hydrocarbons (QCLot: 1430753)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	92.3	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1430751)										
WT2410851-001	6622 BANK ST	Acetone	67-64-1	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Benzene	71-43-2	E611D	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Bromoform	75-25-2	E611D	90.9 µg/L	100 µg/L	90.9	60.0	140	----
		Bromomethane	74-83-9	E611D	95.7 µg/L	100 µg/L	95.7	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	109 µg/L	100 µg/L	109	60.0	140	----
		Chlorobenzene	108-90-7	E611D	97.4 µg/L	100 µg/L	97.4	60.0	140	----
		Chloroform	67-66-3	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	63.4 µg/L	100 µg/L	63.4	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	99.9 µg/L	100 µg/L	99.9	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	92.1 µg/L	100 µg/L	92.1	60.0	140	----
		Dichloromethane	75-09-2	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	96.7 µg/L	100 µg/L	96.7	60.0	140	----
		Ethylbenzene	100-41-4	E611D	95.9 µg/L	100 µg/L	95.9	60.0	140	----
		Hexane, n-	110-54-3	E611D	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Styrene	100-42-5	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Toluene	108-88-3	E611D	95.2 µg/L	100 µg/L	95.2	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Trichloroethylene	79-01-6	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Vinyl chloride	75-01-4	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	193 µg/L	200 µg/L	96.3	60.0	140	----
		Xylene, o-	95-47-6	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Hydrocarbons (QCLot: 1430753)										
WT2410851-001	6622 BANK ST	F1 (C6-C10)	----	E581.F1-L	1610 µg/L	2000 µg/L	80.7	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 17 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	Kollaard Associates (27196)
Contact:	Colleen Vermeersch
Phone:	613.860.0923, ext.230
	Company address below will appear on the final report
Street:	210 Prescott Street, Unit 1 P.O. Box 189
City/Province:	Kemptville, Ontario
Postal Code:	K0G 1J0
Invoice To	Same as Report To ☑ Y ☑ N
	Copy of Invoice with Report ☑ Y ☑ N
Company:	Kollaard Associates Inc.
Contact:	admin@kollaard.ca

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ Y ☐ N
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax colleen@kollaard.ca
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax admin@kollaard.ca
Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E1 - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 -200%] (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q71021	AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:	230156	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Environmental Division
Waterloo
Work Order Reference
WT2410851

Telephone : +1 519 886 6910

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOCs	Petroleum Hydrocarbons F1-F4	SAI	Sam.	NUMBER OF CONTAINERS
	6622 Bank St	1-May-24	10:00	Water	R	R			

Analy
Indicate Filtered (F), Preserved (P) or Filte

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ Y ☑ N	Ontario Drinking Water Regulation (ODWQS) JAN.1,2017
Are samples for human consumption/ use? ☑ Y ☐ N	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
11.8	8.2

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: May2	Time:	Received by: AR	Date: 02/05/24	Time: 13:50	Received by:	Date: 3 MAY 24	Time: 9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

VW142, OR053

Ryznar Stability Index

RSI = 2(pH_s) - pH

RSI << 6 → the scale tendency increases as the index decreases
RSI >> 7 → the calcium carbonate formation probably does not lead to a protective corrosion inhibitor film
RSI >> 8 → mild steel corrosion becomes an increasing problem

Langelier Saturation Index

LSI = pH - pH_s

If LSI is negative → no potential to scale, the water will dissolve $CaCO_3$
If LSI is positive → scale can form and $CaCO_3$ precipitation may occur
If LSI is close to zero → borderline scale potential, water quality or temperature change or evaporation could change the index

where pH measured from sample
pH_s = pH at saturation in calcite or calcium carbonate

$$pH_s = (9.3 + A + B) - (C + D)$$

$$A = \frac{\log_{10}[TDS] - 1}{10}$$

$$B = -13.12 \times \log_{10}(°C + 273) + 34.55$$

$$C = \log_{10}[Ca^{2+} as CaCO_3] - 0.4$$

$$D = \log_{10}[alkalinity as CaCO_3]$$

	TW1-3hr	TW1-6hr
pH	7.95	7.96
hardness [mg/l as $CaCo_3$]	429	427
Alkalinity [mg/l as $CaCo_3$]	313	299
total dissolved solids [mg/l]	722	715
temperature (°C)	8.5	8.5
A	0.18585	0.18543
B	2.41284	2.41284
C	2.23246	2.23043
D	2.49554	2.47567
pH_s	7.1707	7.19217
→→ RSI	6.39139	6.42435
→→ LSI	0.7793	0.76783

ATTACHMENT D

SEWAGE EFFLUENT DILUTION CALCULATIONS AND CLIMATE DATA

May 2024 230156

SEPTIC EFFLUENT DILUTION CALCULATIONS

Number of Lots	1	
Gross Site Area	60190.0	m^2
Env. Can. Water Surplus (NPI-Glacial Till)	379	mm

Hard Surface Area (Post-Development)

Existing Building Area	2326	m^2		
Proposed Storage Building	2323	m^2		
Proposed Warehouse Building	2323	m^2		
Asphalt (C=0.9)	3015.0	m^2		
gravel area (semi-pervious, C=0.6)	15480.0	m^2	Total gravel area	25,800 m^2

Net Infiltration Area = Gross Site Area - Hard Surface Area (Post-Development)

34723.0 m^2

Maximum daily sewage flow	6,450	L/day
	2,354	m^3/year

Infiltration Reduction Factor:

Topography (rolling/flat, 2m/km)	0.15
Soil (med. Combinations of clay and loam)	0.20
Cover (cultivated)	0.10
Total IRF	0.45

Concentration Septic System #1 (Conventional) C_1	40	mg/L
Volume Septic System #1 (Conventional) V_1	3250	L
Concentration Septic System #2 (Tertiary) C_2	20	mg/L
Volume Septic System #2 (Tertiary) V_2	3200	L

V_{water} =annual volume of precipitation infiltration, available for dilution

V_{water} =NIA x NPI x IRF

V_{water} 5922.008 m3/yr

V_{sewage} = annual volume of sewage generated

V_{sewage} 2354.25 m3/yr

$$[NO3]_{gw} = \frac{[NO3]eff \times Daily\ Flow \times 365\ days/year}{V_{water} + V_{sewage}}$$

8.6 mg/L

Ottawa Intl A WATER BUDGET MEANS FOR THE PERIOD 1939-2021 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 75 MM HEAT INDEX... 36.75
LONG... 75.67 LOWER ZONE..... 45 MM A..... 1.080

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	62	12	14	0	0	0	25	83	74	294
28- 2	-9.0	56	10	16	1	1	0	26	111	74	350
31- 3	-2.8	65	31	77	6	6	0	103	68	75	416
30- 4	5.7	73	68	73	31	31	0	110	0	75	489
31- 5	13.1	75	75	0	80	80	0	14	0	56	565
30- 6	18.3	85	85	0	116	107	-9	5	0	29	650
31- 7	20.9	88	88	0	136	103	-33	3	0	11	737
31- 8	19.7	84	84	0	118	83	-35	1	0	11	822
30- 9	14.8	82	82	0	75	65	-10	4	0	24	904
31-10	8.3	78	78	0	37	36	-1	14	0	52	78
30-11	1.2	76	59	8	10	10	0	38	9	71	154
31-12	-6.9	79	27	14	1	1	0	36	47	74	233
AVE	6.0 TTL	903	699	202	611	523	-88	379			

Ottawa Intl A STANDARD DEVIATIONS FOR THE PERIOD 1939-2021 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	2.9	26	15	17	1	1	0	28	44	3	59
28- 2	2.6	26	14	25	1	1	0	34	59	3	63
31- 3	2.6	28	22	49	5	5	0	55	87	0	71
30- 4	1.8	32	33	88	9	9	0	89	2	2	80
31- 5	1.8	34	34	2	12	12	0	24	0	22	94
30- 6	1.2	38	38	0	8	17	18	16	0	29	105
31- 7	1.2	45	45	0	8	31	33	16	0	22	117
31- 8	1.3	37	37	0	9	29	31	4	0	21	126
30- 9	1.5	39	39	0	8	16	16	15	0	28	132
31-10	1.5	37	37	1	7	7	2	21	0	27	37
30-11	1.8	27	27	8	4	4	0	32	13	12	45
31-12	3.0	30	22	13	1	1	0	30	34	4	55

ATTACHMENT E

SITE PLAN (KOLLAARD)

SITE STATISTICS:

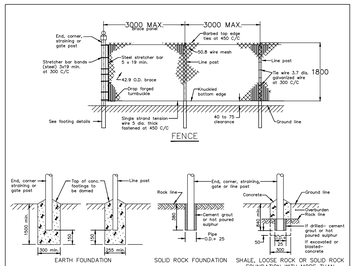
TOTAL AREA	60190	m²
AREA OF NEW DEVELOPMENT	22423	m²
EXISTING BUILDING FOOTPRINT	2517	m²
NEW BUILDING FOOTPRINT	4646	m²
GROSS FLOOR AREA (TOTAL)	4561	m²
WAREHOUSE	4381	m²
ACCESSORY OFFICE	180	m²

PARKING REQUIREMENTS FOR BUILDING #2:

VEHICULAR PARKING	REQUIRED	PROVIDED
WAREHOUSE (0.8 per 100m² OF GFA)	18	18
ACCESSORY OFFICE (2.4 per 100m² OF GFA)	4	4
TOTAL	22	22
HANDICAP PARKING	1 TYPE B	1
TOTAL		22
LOADING SPACE	1	5

RH3 (RURAL HEAVY INDUSTRIAL ZONE) PROVISIONS:

ZONING MECHANISMS	REQUIRED	PROVIDED
(a) MINIMUM LOT WIDTH (m)	30	233.23
(b) MINIMUM LOT AREA (m²)	1,000	60,190.00
(c) MINIMUM FRONT YARD SETBACK (m)	15	27.90
(d) MINIMUM REAR YARD SETBACK (m)	15	79.60
(e) MINIMUM INTERIOR SIDE YARD SETBACK (m) (i) ABUTTING AN INDUSTRIAL ZONE	3	24.50
(ii) OTHER CASES	10	N/A
(f) MINIMUM CORNER SIDE YARD SETBACK (m)	15	N/A
(g) MAXIMUM PRINCIPAL BUILDING HEIGHT (m)	15	7.60
(h) MAXIMUM LOT COVERAGE (%)	50	11.90%
(i) OUTDOOR STORAGE	(a) OUTSIDE STORAGE IS NOT PERMITTED WITHIN ANY REQUIRED FRONT YARD OR CORNER SIDE YARD b) OUTSIDE STORAGE MUST BE SCREENED FROM ABUTTING RESIDENTIAL USES OR ZONES AND PUBLIC STREETS BY AN OPAQUE SCREEN AT LEAST 1.8 M IN HEIGHT FROM FINISHED GRADE)	



POST DETAILS	
Description	O.D.(mm)
Line	60.3
End, corner, straining and gate (5.5m max. opening)	88.9

NOTES:
1. Pipe braces
   a. Gate leaves up to 1.8m wide, require horizontal brace only.
   b. Gate leaves over 1.8m wide require both horizontal and vertical braces.
2. All dimensions are in millimetres.

ELEVATION — CHAIN-LINK FENCE WITH PRIVACY SLATS
(NOT TO SCALE)

EXISTING DEVELOPMENT

6622 BANK STREET
PIN 043151369
AREA = 60,190m²

LIMIT OF DEVELOPMENT

EXISTING DWELLING
EXISTING DRIVEWAY
EXISTING STORMWATER RETENTION POND
EXISTING WAREHOUSE BUILDING AREA = 2326 m²
T/O FOUNDATION = 95.50
FINISHED FLOOR FRONT = 95.30
FINISHED FLOOR REAR = 95.35
EXISTING ASPHALT RAMP
EXISTING SEPTIC TREATMENT UNITS
DRILLED WELL
OUTDOOR STORAGE (SEA CONTAINERS X140)
APPROXIMATE LOCATION OF HYDRO ONE TOWER #216
EXISTING TREES TO REMAIN
EDGE OF EXISTING TREES
SNOW STORAGE
LANDSCAPE
LIGHT DUTY ASPHALT
EXISTING HEAVY DUTY ASPHALT ROADWAY
EXISTING 20' SLIDE GATE
EXISTING CHAIN LINK FENCE TO REMAIN
BOLLARDS
WATER CHUTE
GRASS
LOCATION OF UNDERGROUND FIRE FIGHTING WATER SUPPLY STORAGE
PROPOSED CHAIN LINK FENCE EXTENSION
EXISTING 270,000L FIRE WATER STORAGE TANK
PROPOSED WATER CHUTE
PROPOSED BOLLARDS (TYP)
PROPOSED HEAVY DUTY ASPHALT ROADWAY
SIDEWALK
EXISTING 300mmø CSP CULVERT
NW INV = 93.80
SE INV = 93.75
EXISTING CULVERT
OVERSIZE Rb-21 SIGN FOR ENTRANCE ONLY TO BE PLACE BACK TO BACK
EXISTING BOX CULVERT
PROPOSED 450mmø CSP CULVERT
PROPOSED 450 mmø CSP CULVERT
EDGE OF GRAVEL TIE-IN TO SHOULDER
EDGE OF ASPHALT
BANK STREET
EDGE OF ROAD
CENTRELINE OF ROAD
EDGE OF SHOULDER
RIP-RAP
EXISTING 525mmø HDPE OUTLET PIPE
EXISTING 375mmø PIPE INV = 94.05
OUTLET INV = 93.75
PROPOSED 570,000L FIRE WATER STORAGE TANK
PROPOSED WAREHOUSE STORAGE
150' REQUIRED PER CUSTOMER SPEC FOR TRUCK TURNAROUND
PROPOSED STORAGE BUILDING #3
AREA = 2323 m²
FINISHED FLOOR = 94.90
60.96 [200']
PROPOSED SEPTIC TREATMENT UNITS
PROPOSED SEPTIC BED
PROPOSED SNOW STORAGE
TRAFFIC TO BE RESTRICTED FROM FIRE WATER STORAGE TANKS DETAIL TBD
PROPOSED WAREHOUSE BUILDING #2
TOTAL AREA = 2323 m²
PRELIMINARY OFFICE AREA = 174 m²
PRELIMINARY WAREHOUSE AREA = 2194 m²
FINISHED FLOOR = 95.00
DEPRESSED CURB AND TWSI (TYP)
PROPOSED RE-GRADING OF STORMWATER RETENTION POND
PROPOSED SEPTIC TREATMENT UNIT
GRAVEL YARD
GRASS
PROPOSED SWALE
EXISTING GATE
PROPOSED EXPANSION OF STORMWATER RETENTION POND
VACANT RURAL COUNTRYSIDE
HYDRO EASEMENT
HYDRO ONE TOWER #215
82.44(P&S) N58°57'00"E
188.23
308.54(P&M)
SITE PLAN
SCALE = 1:500
TBM = NAIL IN EXISTING HYDRO POLE ELEVATION = 94.53
THE MINIMUM CLEARANCE REQUIRED UNDER THE OVERHEAD UTILITY LINES TO BE ENSURED AND NEW POLES ARE TO BE INSTALLED, IF REQUIRED. (TYP)
OVERSIZE Rb-19 AND Rb-19R
OVERSIZE Rb-21 FOR EXIT ONLY TO BE PLACED BACK TO BACK
PROPOSED 400mmø CSP CULVERT
EXISTING DRIVEWAY TO BE REMOVED AND DITCH TO BE REINSTATED
EXISTING CULVERT NW INV = 93.40 SE INV = 93.40
PROPOSED DICB1
RIPRAP
30.80± ROW
15.00± ROW
GEODETIC INFORMATION WAS DERIVED FROM MONUMENT NO. 0011970U042 (LOCATION: 6844 BANK STREET. TABLET IN NE CONCRETE FOUNDATION WALL, 22cm SE OF N CORNER, 9cm BELOW BRICKWORK; GEODETIC ELEVATION 92.813)
© COPYRIGHT 2024
KOLLAARD ASSOCIATES INCORPORATED

0 5 10 20 40
SCALE 1:500 METRIC

GENERAL LEGEND

EXISTING ELEVATION
PROPOSED/EXISTING ELEVATIONS
PROPOSED ELEVATION
DRAINAGE SLOPE
CENTRELINE OF ROAD
EDGE OF ROAD
TOP OF SLOPE
PROPERTY LINE
OVERHEAD WIRE
EDGE OF TREES
PROPOSED FENCE
LIMITING DISTANCE
DIRECTION OF FLOW
BUILDING ENTRANCE LOCATION
EXISTING HYDRO POLE
EXISTING WELL
PROPOSED BOLLARD
STONE TRAFFIC BARRIER
TEMPORARY BENCHMARK
BASE OF CURB/TOP OF CURB

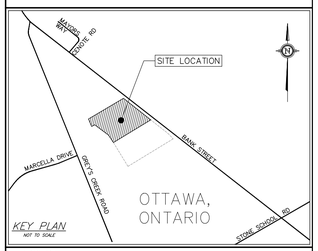
HATCHING LEGEND

FIRE LANE
ASPHALTIC CONCRETE
GRANULAR SURFACED ACCESS ROADWAY AND PARKING AREA
SNOW STORAGE
SEEDED GRASS
GRANULAR SURFACED YARD AREA

TREE LEGEND

EXISTING TREES
PROPOSED DECIDUOUS TREE
PROPOSED CONIFEROUS TREE

DRAWING NUMBER:
230156-SP



DRAWING:
SITE PLAN

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METRES, UNLESS OTHERWISE SPECIFIED; ALL ELEVATIONS ARE IN METRES AND ARE GEODETIC.
2. GEODETIC INFORMATION WAS DERIVED FROM MONUMENT NO. 0011970U042.
3. TBM = NAIL IN EXISTING HYDRO POLE. ELEVATION = 94.53.
4. THIS IS NOT A LEGAL SURVEY. BOUNDARY INFORMATION WAS DERIVED FROM PLAN 4R-25595.
5. CLIENT IS RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS.
6. CONTRACTOR TO VERIFY THAT APPROPRIATE PERMITS HAVE BEEN ACQUIRED PRIOR TO ANY CONSTRUCTION.
7. CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION OF UTILITIES.
8. ALL DIMENSIONS TO BE VERIFIED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION.
9. THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL ALL APPROVALS HAVE BEEN GRANTED.
10. HYDRO SERVICE TO BE INSTALLED ACCORDING TO THE SPECIFICATIONS OF SERVICE PROVIDER AND THE MECHANICAL ENGINEER.
11. ALL MATERIALS AND CONSTRUCTION TO BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
12. ANY CHANGES MADE TO THIS PLAN MUST BE VERIFIED AND APPROVED BY KOLLAARD ASSOCIATES, INC.
13. THIS DRAWING IS PART OF KOLLAARD ASSOCIATES DESIGN REPORTS #230156.

REV	BY	DATE	DESCRIPTION
0	ARK	APRIL 29, 2024	SUBMITTED FOR SITE PLAN CONTROL

Kollaard Associates Engineers
P.O. BOX 189, 210 PRESCOTT ST. (613) 860-0923
KEMPTVILLE, ONTARIO info@kollaard.ca
K0G 1J0 FAX (613) 258-0475
http://www.kollaard.ca

CONSULTANTS:

CLIENT:
CAMM WAREHOUSING AND RENTALS INC.

PROJECT:
PROPOSED WAREHOUSE WITH OFFICE

LOCATION:
6622 BANK STREET, OTTAWA, ON

LICENSED PROFESSIONAL ENGINEER
APR. 29, 2024
S. E. deWit
100079612
PROVINCE OF ONTARIO

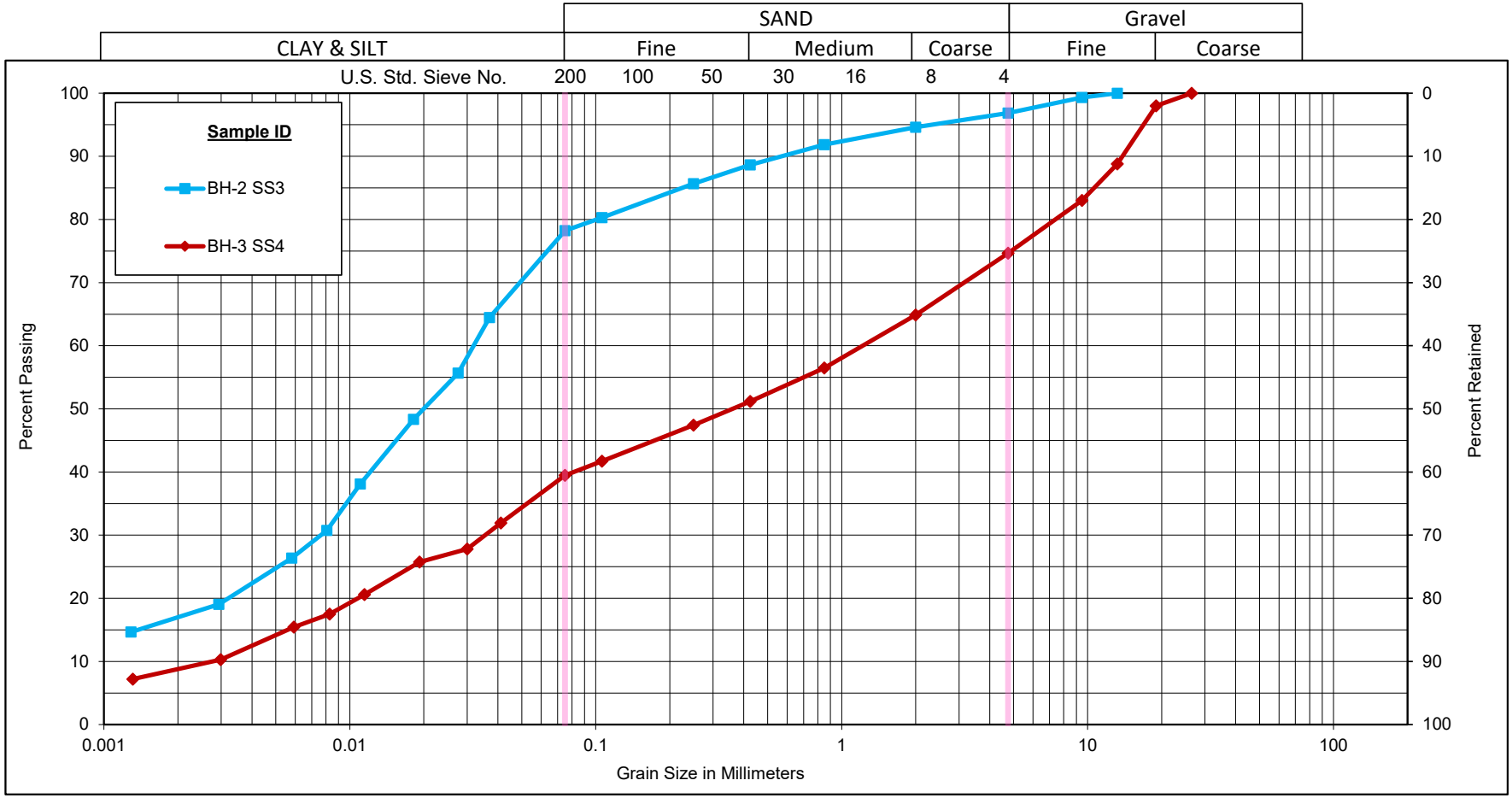
DESIGNED BY:	CHECKED BY:
ARK	SD
DRAWN BY:	APPROVED BY:
ARK	SD

DATE: 04/29/2024
SCALE: AS NOTED
PROJECT NUMBER: 230156

ATTACHMENT F

HYDROMETER ANALYSIS FOR GLACIAL TILL, BH2 AND BH3

Unified Soil Classification System



Sample ID	Depth	% Gravel	% Sand	% Silt	% Clay
BH-2 SS3	7'6"-9'6"	3.1	18.7	61.2	17.0
BH-3 SS4	10'-12'	25.3	35.2	31.5	8.0

Stantec

GRAIN SIZE DISTRIBUTION

Kolaard Associates, File #230156

Camm Machinery

Figure No.

Project No. 121625581

Stantec

Particle-Size Analysis of Soils

LS702

AASHTO T88

PROJECT DETAILS			
Client:	**Kolaard Associates, File #230156**	Project No.:	**121625581**
Project:	**Camm Machinery**	Test Method:	**LS702**
Material Type:	**Soil**	Sampled By:	**Kolaard Associates**
Source:	**BH-2**	Date Sampled:	**May 1, 2024**
Sample No.:	**SS3**	Tested By:	**Brian Prevost**
Sample Depth	**7'6"-9'6"**	Date Tested:	**May 6, 2024**

WASH TEST DATA	
Oven Dry Mass In Hydrometer Analysis (g)	63.19
Sample Weight after Hydrometer and Wash (g)	11.20
Percent Passing No. 200 Sieve (%)	**82.3**
Percent Passing Corrected (%)	**77.85**

PERCENT LOSS IN SIEVE	
Sample Weight Before Sieve (g)	**191.60**
Sample Weight After Sieve (g)	**191.50**
Percent Loss in Sieve (%)	**0.05**

SOIL INFORMATION		
Liquid Limit (LL)		
Plasticity Index (PI)		
Soil Classification		
Specific Gravity (G_s)	2.750	
Sg. Correction Factor (α)	0.978	
Mass of Dispersing Agent/Litre	40	g

CALCULATION OF DRY SOIL MASS	
Oven Dried Mass (W_o), (g)	115.44
Air Dried Mass (W_a), (g)	117.16
Hygroscopic Corr. Factor ($F=W_o/W_a$)	0.9853
Air Dried Mass in Analysis (M_a), (g)	64.13
Oven Dried Mass in Analysis (M_o), (g)	63.19
Percent Passing 2.0 mm Sieve (P_{10}), (%)	94.62
Sample Represented (W), (g)	66.78

HYDROMETER DETAILS	
Volume of Bulb (V_B), (cm^3)	63.0
Length of Bulb (L_2), (cm)	14.47
Length from '0' Reading to Top of Bulb (L_1), (cm)	10.29
Scale Dimension (h_s), (cm/Div)	0.155
Cross-Sectional Area of Cylinder (A), (cm^2)	27.25
Meniscus Correction (H_m), (g/L)	1.0

SIEVE ANALYSIS		
Sieve Size mm	**Cum. Wt. Retained**	**Percent Passing**
75.0		100.0
63.0		100.0
53.0		100.0
37.5		100.0
26.5		100.0
19.0		100.0
13.2	0.0	100.0
9.5	1.3	99.3
4.75	6.0	96.9
2.00	10.3	94.6
Total (C + F)[1]	191.50	
0.850	1.86	91.84
0.425	3.98	88.66
0.250	5.97	85.68
0.106	9.56	80.31
0.075	10.95	78.23
PAN	11.07	

Note 1: (C + F) = Coarse + Fine

START TIME 10:05 AM

HYDROMETER ANALYSIS

Date	Time	Elapsed Time T Mins	H_s Divisions g/L	H_c Divisions g/L	Temperature T_c °C	Corrected Reading $R = H_s - H_c$ g/L	Percent Passing P %	L cm	η Poise	K	Diameter D mm
06-May-24	10:06 AM	1	51.0	7.0	23.0	44.0	64.46	8.30904	9.39251	0.012818	0.03695
06-May-24	10:07 AM	2	45.0	7.0	23.0	38.0	55.67	9.23904	9.39251	0.012818	0.02755
06-May-24	10:10 AM	5	40.0	7.0	23.0	33.0	48.35	10.01404	9.39251	0.012818	0.01814
06-May-24	10:20 AM	15	33.0	7.0	23.0	26.0	38.09	11.09904	9.39251	0.012818	0.01103
06-May-24	10:35 AM	30	28.0	7.0	23.0	21.0	30.77	11.87404	9.39251	0.012818	0.00806
06-May-24	11:05 AM	60	25.0	7.0	23.0	18.0	26.37	12.33904	9.39251	0.012818	0.00581
06-May-24	2:15 PM	250	20.0	7.0	23.0	13.0	19.0463	13.11404	9.39251	0.012818	0.00294
07-May-24	9:16 AM	1391	17.0	7.0	21.5	10.0	14.6510	13.57904	9.73081	0.013047	0.00129

Remarks:

Reviewed By: Brian Prevost

Date: May 8, 2024

V:\01216\active\laboratory_standing_offers\2024 Laboratory Standing Offers\121625581 Kollaard Associate Engineers\April 30, MC_Limit_Hyd, Kollaard #230156\Hydrometer-Lab Standing Offers.xlsx

Stantec

Particle-Size Analysis of Soils

LS702

AASHTO T88

PROJECT DETAILS			
Client:	**Kolaard Associates, File #230156**	Project No.:	**121625581**
Project:	**Camm Machinery**	Test Method:	**LS702**
Material Type:	**Soil**	Sampled By:	**Kolaard Associates**
Source:	**BH-3**	Date Sampled:	**May 1, 2024**
Sample No.:	**SS4**	Tested By:	**Brian Prevost**
Sample Depth	**10'-12'**	Date Tested:	**May 6, 2024**

WASH TEST DATA	
Oven Dry Mass In Hydrometer Analysis (g)	61.66
Sample Weight after Hydrometer and Wash (g)	24.49
Percent Passing No. 200 Sieve (%)	**60.3**
Percent Passing Corrected (%)	**39.11**

PERCENT LOSS IN SIEVE	
Sample Weight Before Sieve (g)	**432.70**
Sample Weight After Sieve (g)	**431.70**
Percent Loss in Sieve (%)	**0.23**

SOIL INFORMATION		
Liquid Limit (LL)		
Plasticity Index (PI)		
Soil Classification		
Specific Gravity (G_s)	2.750	
Sg. Correction Factor (α)	0.978	
Mass of Dispersing Agent/Litre	40	g

CALCULATION OF DRY SOIL MASS	
Oven Dried Mass (W_o), (g)	216.14
Air Dried Mass (W_a), (g)	217.30
Hygroscopic Corr. Factor ($F=W_o/W_a$)	0.9947
Air Dried Mass in Analysis (M_a), (g)	61.99
Oven Dried Mass in Analysis (M_o), (g)	61.66
Percent Passing 2.0 mm Sieve (P_{10}), (%)	64.87
Sample Represented (W), (g)	95.05

HYDROMETER DETAILS	
Volume of Bulb (V_B), (cm^3)	63.0
Length of Bulb (L_2), (cm)	14.47
Length from '0' Reading to Top of Bulb (L_1), (cm)	10.29
Scale Dimension (h_s), (cm/Div)	0.155
Cross-Sectional Area of Cylinder (A), (cm^2)	27.25
Meniscus Correction (H_m), (g/L)	1.0

SIEVE ANALYSIS		
Sieve Size mm	**Cum. Wt. Retained**	**Percent Passing**
75.0		100.0
63.0		100.0
53.0		100.0
37.5		100.0
26.5	0.0	100.0
19.0	8.6	98.0
13.2	48.4	88.8
9.5	73.5	83.0
4.75	109.6	74.7
2.00	152.0	64.9
Total (C + F)[1]	431.70	
0.850	7.97	56.49
0.425	13.01	51.18
0.250	16.59	47.42
0.106	22.01	41.71
0.075	24.13	39.48
PAN	24.21	

Note 1: (C + F) = Coarse + Fine

START TIME 10:05 AM

HYDROMETER ANALYSIS

Date	Time	Elapsed Time T Mins	H_s Divisions g/L	H_c Divisions g/L	Temperature T_c °C	Corrected Reading $R = H_s - H_c$ g/L	Percent Passing P %	L cm	η Poise	K	Diameter D mm
6-May-24	10:06 AM	1	38.0	7.0	23.0	31.0	31.91	10.32404	9.39251	0.012818	0.04119
6-May-24	10:07 AM	2	34.0	7.0	23.0	27.0	27.79	10.94404	9.39251	0.012818	0.02999
6-May-24	10:10 AM	5	32.0	7.0	23.0	25.0	25.73	11.25404	9.39251	0.012818	0.01923
6-May-24	10:20 AM	15	27.0	7.0	23.0	20.0	20.59	12.02904	9.39251	0.012818	0.01148
6-May-24	10:35 AM	30	24.0	7.0	23.0	17.0	17.50	12.49404	9.39251	0.012818	0.00827
6-May-24	11:05 AM	60	22.0	7.0	23.0	15.0	15.44	12.80404	9.39251	0.012818	0.00592
6-May-24	2:15 PM	250	17.0	7.0	23.0	10.0	10.29	13.57904	9.39251	0.012818	0.00299
7-May-24	9:17 AM	1392	14.0	7.0	21.5	7.0	7.21	14.04404	9.73081	0.013047	0.00131

Remarks:

Reviewed By: Brian Prevost

Date: May 8, 2024

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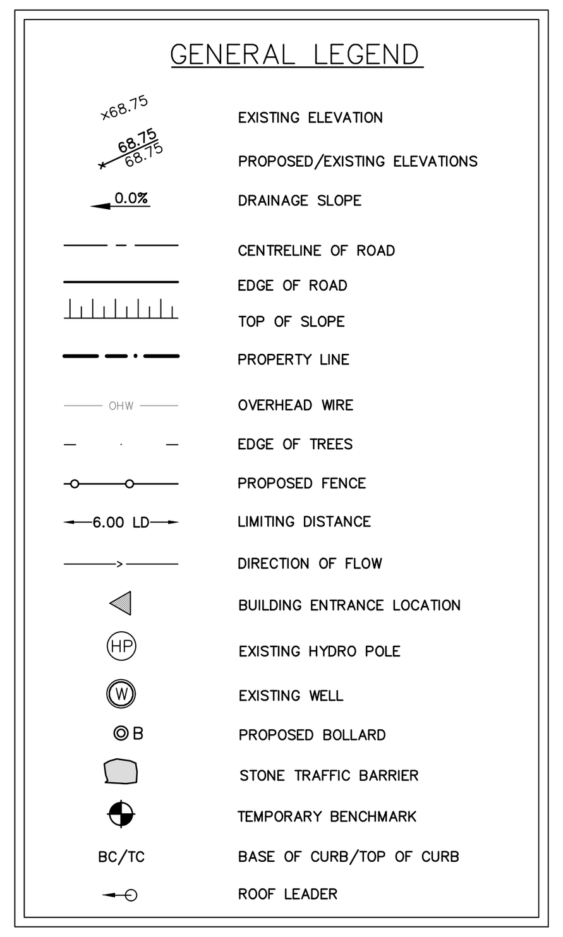
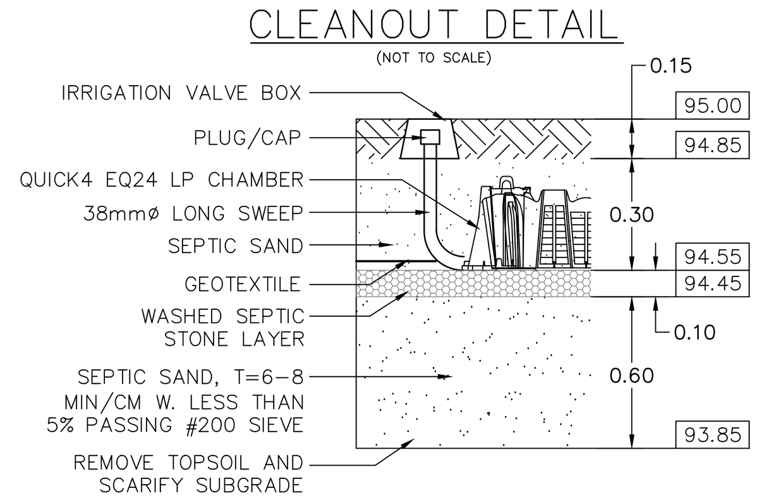
ATTACHMENT G

SEPTIC DESIGN (KOLLAARD)

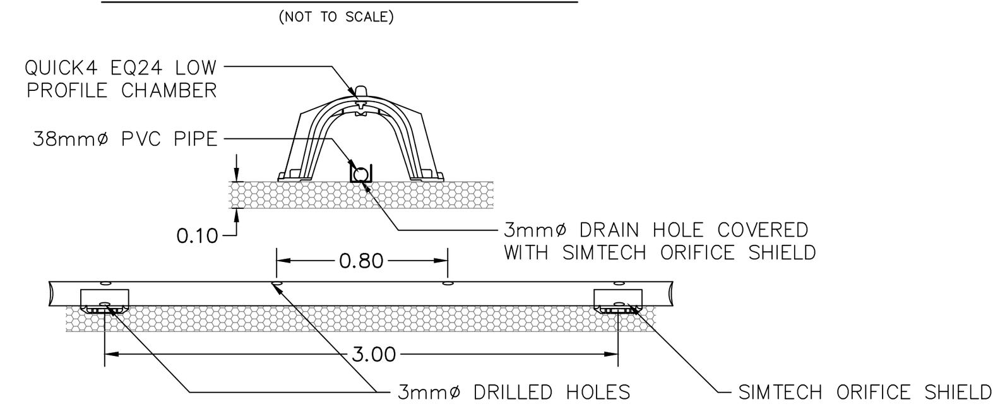
GENERAL LEGEND



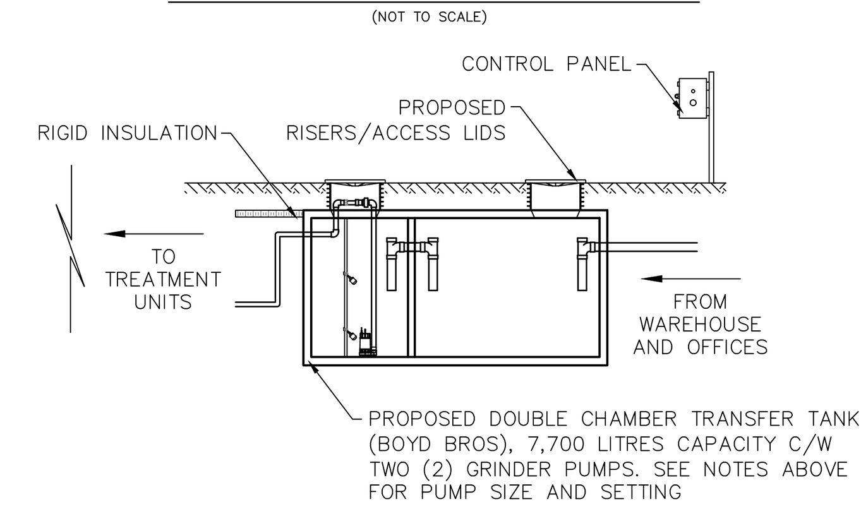
CLEANOUT DETAIL
(NOT TO SCALE)



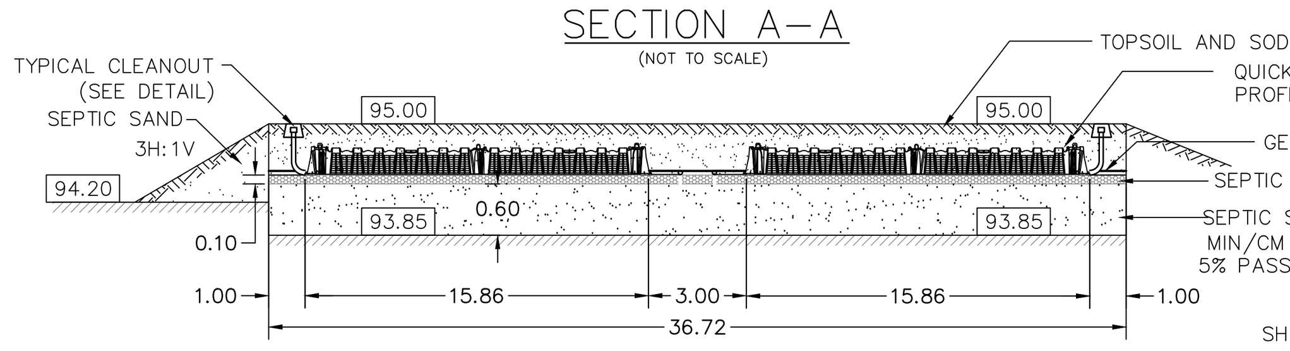
ORIFICE SHIELD DETAIL
(NOT TO SCALE)



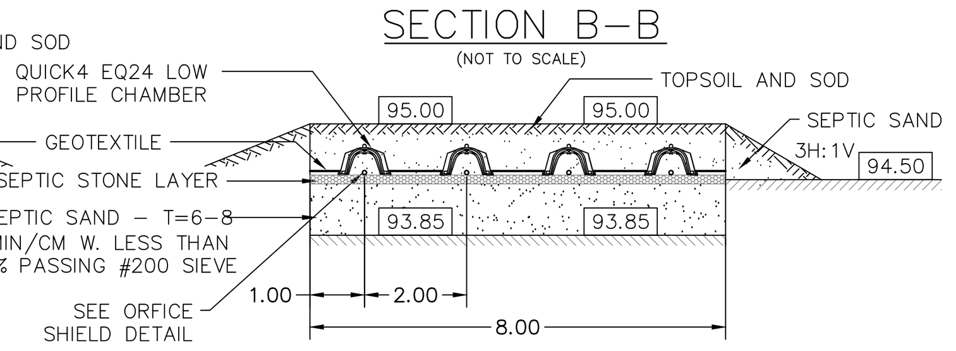
TYPICAL TRANSFER TANK
(NOT TO SCALE)



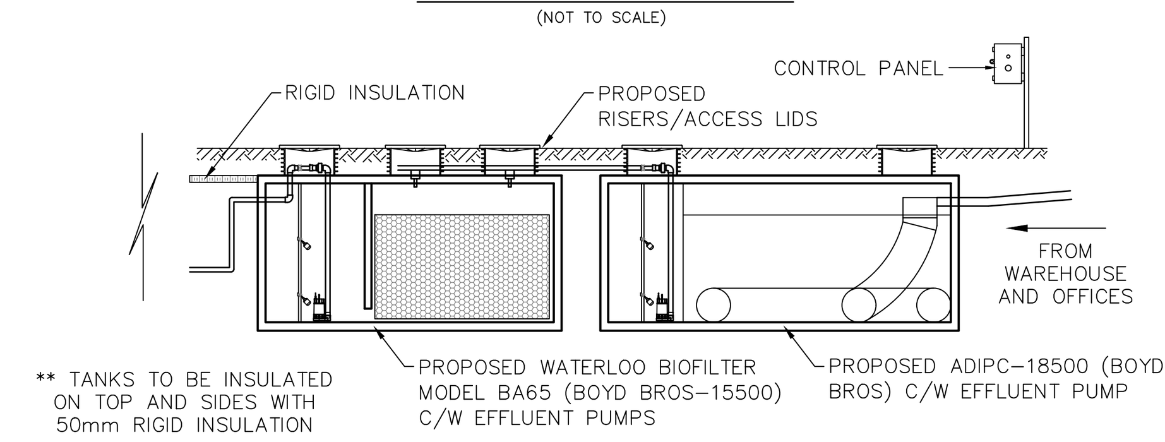
SECTION A-A
(NOT TO SCALE)



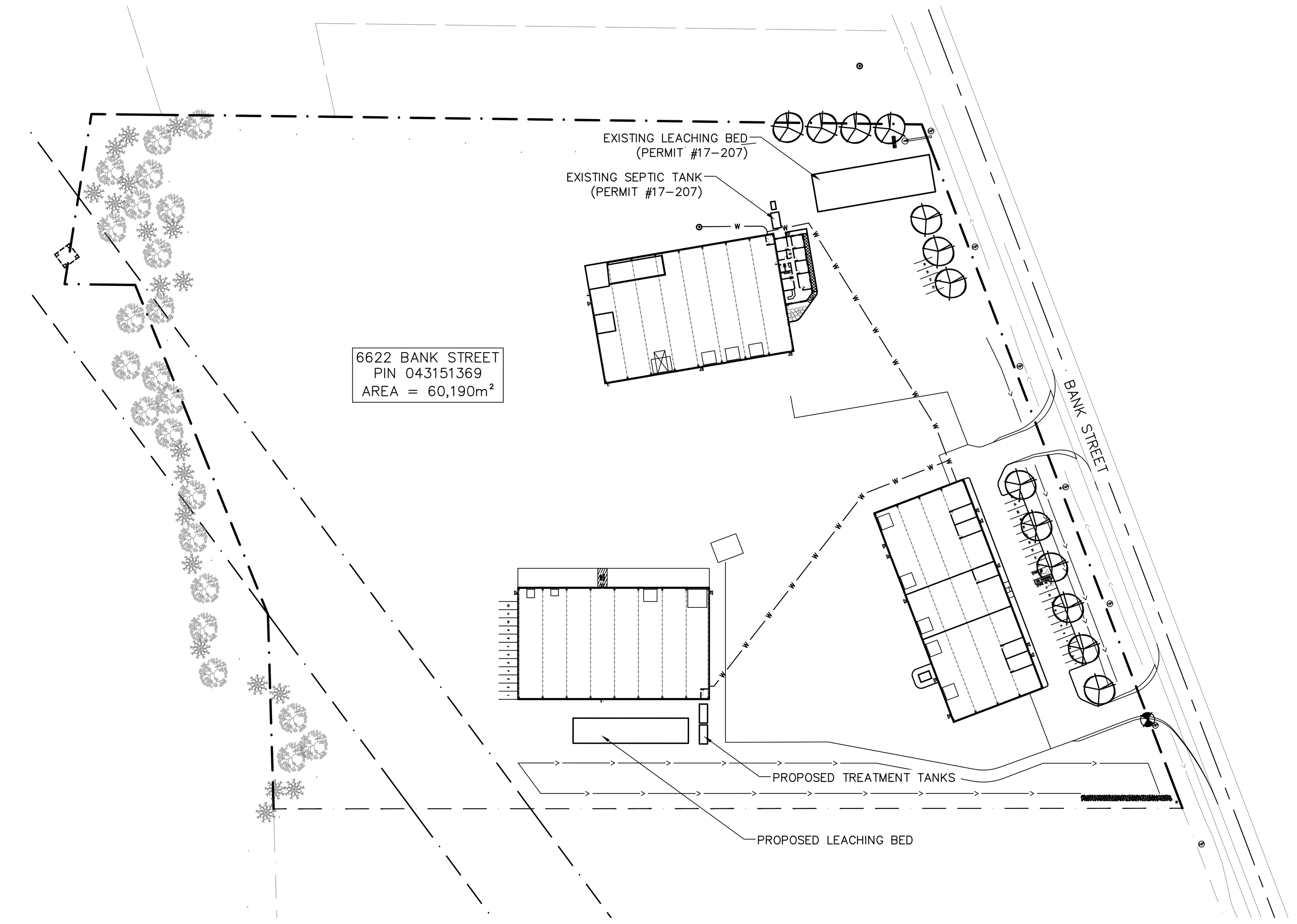
SECTION B-B
(NOT TO SCALE)



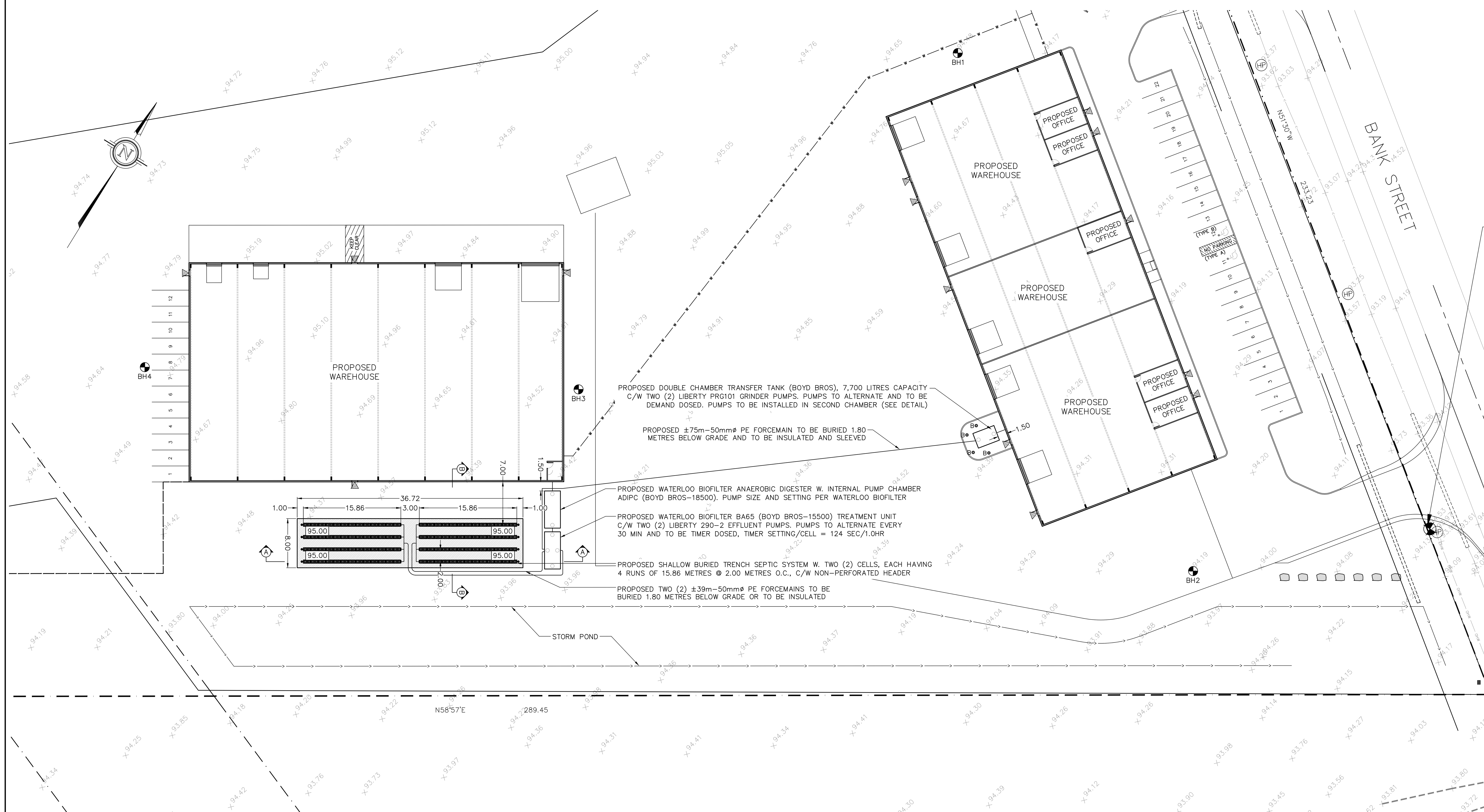
TREATMENT UNITS
(NOT TO SCALE)



** TANKS TO BE INSULATED ON TOP AND SIDES WITH 50mm RIGID INSULATION



SITE PLAN
SCALE = 1:1500



SEPTIC DESIGN PLAN
SCALE = 1:400

SPECIAL NOTE
IF WATER IS ENCOUNTERED DURING EXCAVATION PLEASE CALL KOLLAARD ASSOCIATES INC IMMEDIATELY

TBM = NAIL IN EXISTING HYDRO POLE.
ELEVATION = 94.53 METRES

THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL APPROVED BY THE RELEVANT AUTHORITIES

* REMOVE ORGANIC MATERIAL AND SCARIFY SUBGRADE PRIOR TO PLACEMENT OF SEPTIC SAND

* INSTALL WATERLOO SYSTEM AS PER MANUFACTURER SPECIFICATIONS AND INSTALLATION MANUAL

* PUMPING SYSTEM TO BE EQUIPPED WITH AUDIO AND VISUAL ALARMS

* PUMPS TO BE HARDWIRED, NO PLUGINS

KEY PLAN
NOT TO SCALE

DRAWING:
SEPTIC DESIGN PLAN AND DETAILS

1. All dimensions and elevations are in metres. Do not scale drawing. This drawing is not a site grading plan. This drawing is not for construction until approved by the relevant authorities.
2. TBM = Nail in existing hydro pole. Elevation = 94.53.
3. The sewage system envelope (leaching bed) as identified on the drawing must be maintained free of the deposit or disposal of any materials, structures, or equipment other than the material or equipment required for the construction of the leaching bed within the sewage system envelope.
4. Topsoil rootmat (organics) to be removed from bed area and exposed subgrade. No wheeled vehicles to be allowed in leaching bed area.
5. Percolation rate of any imported sand for bed to be 6 to 8 min/cm, with < 5% passing the #200 (0.080 mm) sieve.
6. Stone layer to be washed septic stone, free of fine material, with gradation conforming to OBC Table 8.7.3.3.A.
7. The septic system leaching bed is to be graded to provide positive drainage away from the septic system and treated with 75 to 100 mm permeable topsoil and seed. Grass growth is to be established.
8. The following are not to be connected to the septic system: Water softener; swimming pool or filter system backwash; sump pump discharge.
9. Septic system to be installed in accordance with the OBC.
10. Septic tank to meet criteria described in the OBC.
11. No silty clay or clayey or silty material to be placed around or over leaching bed.
12. All changes to this design must be verified and approved by Kollaard Associates Incorporated.
13. Minimum clearance from treatment unit to;
    * structure = 1.5m
    * property line = 3m
    * drilled well = 15m
14. Minimum clearance from distribution piping to;
    * structure = 7m
    * property line = 5m
    * drilled well = 17m

REV	BY	DATE	DESCRIPTION

Kollaard Associates
Engineers
P.O. BOX 189, 210 PRESCOTT ST. KEMPTVILLE, ONTARIO K0G 1J0
(613) 860-0923
FAX (613) 258-0475
info@kollaard.ca
http://www.kollaard.ca

CONSULTANTS:
H.A.KEN SHIPMAN SURVEYING LTD. P.O. BOX 53, NORTH GOWER, ONT. K0A 2T0
JAMES B. LENNOX & ASSOCIATES INC. LANDSCAPE ARCHITECTS
P H ROBINSON CONSULTING URBAN PLANNING, CONSULTING, PROJECT MANAGEMENT
Castleglenn Consultants Engineers, Project Managers & Planners

CLIENT:
CAMM WAREHOUSING AND RENTALS INC.

PROJECT:
PROPOSED WAREHOUSE WITH OFFICE

LOCATION:
6622 BANK STREET, OTTAWA, ON

LICENSED PROFESSIONAL ENGINEER
K. LAKEW
90421595
FEB 28, 2025
PROVINCE OF ONTARIO

DESIGNED BY:	CHECKED BY:
PV	PV
DRAWN BY: PV/AKM	APPROVED BY: KL
DATE: FEB 28, 2025	
SCALE: AS NOTED	
PROJECT NUMBER: 230156	

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