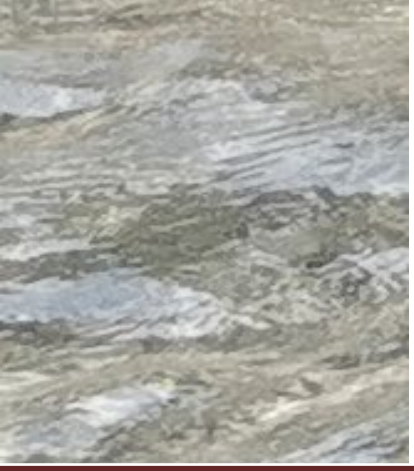


Hydrogeological Assessment
Proposed Single-Lot Severance at 149 Denyes Road
Plainfield, Ontario

Prepared for:

Marcus Sullivan
149 Denyes Road
Plainfield, ON
K0K 2V0

Submitted by:

The Greer Galloway Group Inc.
1620 Wallbridge Loyalist Road
Belleville, Ontario
K8N 4Z5

November 2023

GREER GALLOWAY
CONSULTING ENGINEERS

G R E E R
GALLOWAY
CONSULTING
ENGINEERS

1620 Wallbridge Loyalist Road

R.R. #5

Belleville, Ontario

K8N 4Z5

Telephone

(613) 966-3068

November 29, 2023 Project 23-3-8536

Marcus Sullivan
149 Denyes Road
Plainfield, ON
K0K 2V0

Via email: mckeown_amanda@hotmail.com

Scoped Hydrogeological Assessment for Proposed Single-Lot Severance at 149 Denyes Road in Plainfield, Ontario.

Dear Marcus,

We are pleased to submit this hydrogeological assessment in support of your proposed single-lot severance from your property located at 149 Denyes Road in Plainfield, Ontario. The tested drilled well on the property was found to have adequate yield for normal usage, and no impacts to surrounding water sources or natural features are expected.

We trust that this report is complete and sufficient for your requirements. Please don't hesitate to contact us if you have any questions about the report or our conclusions.

Yours very truly,

THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS

Kirby Magee-Dittburner, E.I.T.
Junior Hydrogeologist

Consulting Engineers of Ontario
Professional Engineers Ontario

Table of Contents

Drawings (appended after text)

Tables

Appendices

1. Introduction

The Greer Galloway Group (Greer Galloway) was retained by Marcus Sullivan to complete a hydrogeological assessment supporting a proposed 2.4 ha single-lot severance from a 14.5 ha property located at 149 Denyes Road in Plainfield, Ontario. The proposed severance has road access from Highway 37.

The purpose of the work was to assess the soil and groundwater conditions at the site to demonstrate that the proposed severance can be serviced by a private septic system and an existing water supply well in accordance with Provincial standards and without significantly impacting surrounding private water sources or natural features.

2. Investigation Methods

The assessment was carried out in general accordance with the Ministry of the Environment, Conservation, and Parks (MECP) procedures D-5-4 (Individual On-Site Sewage Systems) and D-5-5 (Private Well: Well Assessment).

The investigation included a review of water well records, a review of available geologic and hydrogeologic information for the area, an inventory of water supply wells within a reasonable distance of the subject property, a pumping test on the existing well on the subject property along with chemical and bacteriological analysis, and monitoring water level responses in observation wells prior, during, and after the pumping test. The investigation methods are described further in the following subsections.

2.1 Well Records Search and Survey

Information about nearby wells was obtained from available MECP water well records on the MECP wells database using a search radius of 300 m from the subject property. MECP Water Well Record sheets for the searched area are provided in Appendix A.

In August 2023, a door-to-door well survey was carried out for neighbouring wells within a 300 m radius of the subject property. A total of 6 homeowners were successfully contacted during the survey.

2.2 Water Supply Assessment

The water supply assessment was based on a pumping test of the well A386228 at the southwestern corner of the property, approximately 40 m north of Highway 37. The well is a 150 mm diameter drilled well with a depth of approximately 18.6 m below ground surface (bgs) and a measured static water level of 8.25 m bgs at the time of testing. The well record for this well indicates a driller-reported recommended pumping rate of 30 L/min.

The pumping test was performed on August 2, 2023, using a submersible pump with the discharge routed through a flow restriction valve corresponding to the desired pumping rate. Pumped water was discharged approximately 30 m downgradient of the tested well.

Data-logging pressure transducers (Solinst Model 3001) were installed in the tested well and in neighbouring wells at 48 Bay Street and 2484 Highway 37. All dataloggers were synchronized prior to the testing and were set to record at 10-second intervals in the tested well and at 20-second intervals in the monitoring wells. Hydrographs are provided in Appendix B.

2.3 Water Quality Assessment

A groundwater sample was obtained during the last hour of the pumping test. The sample was placed into a variety of laboratory-prepared sample containers that were sealed, placed into a cooler with ice packs to maintain a temperature of approximately 4 °C, and transported to Caduceon Laboratories in Kingston, Ontario. Analytical parameters included E. coli and Total Coliform bacteria and a variety of additional parameters including Alkalinity, pH, Conductivity, Colour, Turbidity, Fluoride, Chloride, Nitrite and Nitrate, Sulphate, TKN, Ammonia, Organic Nitrogen, DOC, Hardness, Calcium, Iron, Magnesium, Manganese, Potassium, Silica, Sodium, and Zinc (refer to the Laboratory Certificate of Analysis in Appendix C).

3. Summarized Findings

3.1 Site Description

The subject property covers an area of approximately 14.5 ha and is located at 149 Denyes Road in Plainfield, Ontario. The property is largely undeveloped land covered by brush and field grasses on the northern half, and by dense trees on the southern half. Local land use is Rural, with a band of Environmental Protection (EP) corresponding to a strip of unevaluated wetland and an unnamed seasonal creek flowing north to south. Mr. Sullivan wishes to sever off a 2.4 ha parcel of land from the southern half of the property along Highway 37. Maps of the property, the proposed severance, and its surroundings are provided in Drawings 1 and 2 (appended after text).

The topography of the proposed severance is rolling and is raised in the centre, declining to the south towards Highway 37, and declining to the northwest towards the strip of wetland surrounding the centreline of the seasonal creek. Drainage for the proposed severance predominately follows local topography, with some following the path of the seasonal creek and some draining to the south towards Highway 37. The elevation of the proposed severance is about 116 m above mean sea level (mASL) at the centre of the property and about 110 mASL along Highway 37.

Besides the unnamed seasonal creek, the Moira River is the only notable surface water body within 500 m of the subject property. Municipal servicing is not available in the vicinity of the subject property, so drinking water and sewage servicing must be handled by individual water supply wells and septic systems.

3.2 Climate and Water Balance

The area is characterized by mild winters and relatively cool humid summers. Snow typically occurs during 5 months of the year from December to April. Annual precipitation is approximately 911 mm/a (Environment Canada, 2020) with an average annual evapotranspiration (ET) of roughly 500 mm based on the site location (Statistics Canada, 2017)

Mapping shows primarily thin surficial soils classified as thin soils over Paleozoic bedrock in the Surficial Geology of Southern Ontario (OGS, 2011). The infiltration factors for the area were calculated as per the Ontario Ministry of the Environment 1995 Hydrogeological Technical Information Requirements for Land Development Applications.

It is based on three sub-factors which are:

- Topography sub-factor

- Soil sub-factor
- Cover sub-factor

Table 1 presents infiltration factors based on the details of the ground cover factors for the area under current conditions:

Table 1: Estimated infiltration factors

Site Characteristic	Infiltration Factor
Topography	
Flat Land	0.3
Rolling Land	**0.2**
Hilly Land	0.1
Soils	
Tight impervious clay	0.1
Medium combinations of clay and loam	**0.2**
Open Sandy loam	0.4
Cover	
Cultivated Land	0.1
Woodland	**0.2**
Sum of Infiltration Factors	**0.6**

Given an average annual moisture surplus (P-ET) of approximately 410 mm, and an infiltration factor of 0.6, we estimate an average annual infiltration of about 246 mm, or roughly 6,740 L/day per hectare for the purposes of nitrate dilution calculations.

3.3 Geology

The Ontario Soil Report No.27 classifies soils in this area as primarily Bondhead sandy loam. Surficial soils are stony, brown to dark brown sandy loam with a crumb texture. Underlying the surficial soils is a layer of grey loam to clay loam which slows drainage. These soils contain an abundance of limestone fragments and are undulating to rolling in topography.

The Ontario Geological Survey (2011) has described the bedrock as interbedded limestone and shale belonging to the Verulam Formation of the Simcoe Group. Well records in the vicinity of the subject property indicate that bedrock occurs at depths of between 0.3 m and 6.1 m, with a median depth to bedrock of 4.0 m.

3.4 Hydrogeology

A search of the Ministry of Environment, Conservation and Parks (MECP) Well Record Database returned 10 wells within a 300 m radius of the proposed severance (see Drawing 2, appended). These well records are summarized in Table 2. The records suggest the groundwater table in the area is encountered primarily within the bedrock, with a median well yield of 38 L/min. The subject lands are located outside any mapped WHPA.

Table 2: Summary of well depths and yields within a 300 m radius of the property

Well Number	Water Found (m)	Static Level (m)	Yield (L/min)	Overburden Depth (m)	Hole Depth (m)	Water Type	Aquifer
2903308	12.2	4.6	113	2.1	16.2	Fresh	Bedrock

Well Number	Water Found (m)	Static Level (m)	Yield (L/min)	Overburden Depth (m)	Hole Depth (m)	Water Type	Aquifer
2903309	12.2	4.6	75	4.3	15.2	Fresh	Bedrock
2903310	14.0	1.2	38	3.0	15.5	Fresh	Overburden
2903311	14.6	4.6	11	0.3	15.5	Untested	Bedrock
2904277	15.8	3.0	38	5.2	16.2	Fresh	Overburden
2904889	10.7	3.7	11	4.6	11.0	Sulphur	Bedrock
2908176	13.7	1.8	50	6.1	13.7	Fresh	Overburden
2908717	14.0	6.1	19	0.3	15.2	Fresh	Bedrock
A049264	5.2	1.0	35	3.7	10.4	Untested	Overburden
A100896	14.9	5.1	113	4.6	16.5	Untested	Bedrock

Based on the recorded static levels and the topographic setting, the dominant local groundwater flow direction is in a southeastern direction towards the Moira River.

3.5 Water Availability

A pumping test was performed on the drilled water supply well A386228 at 11:38 on August 2, 2023, following 3 days without precipitation. The static level was measured as 8.25 m bgs immediately prior to starting the pumping test, and the well was chlorinated to a free chlorine concentration of approximately 10 ppm.

Pumping was carried out over an approximately 7-hour period (453 minutes), ending at 19:11 on the same day. The flow rate was set at 22 L/min at the beginning of the test, but was increased to 24 L/min after 110 minutes and remained constant for the rest of the test. The final water level reading before the test was stopped was 14.06 m bgs, indicating a maximum drawdown of 5.81 m. A volume of approximately 10,600 L was pumped from the well over the course of the test, and 100% recovery of the water column was observed within 30 minutes following the end of the test.

According to MECP Guideline D-5-5, the per-person water requirement is 450 L/day (though recent data shows that actual per-person usage in Ontario is approximately 225 L/day), with peak demand occurring for a period of 120 minutes each day. Based on a 4-bedroom household with an occupancy of 5 persons, this is equivalent to a peak demand of 18.7 L/min. The tested well was able to support pumping at a rate exceeding the estimated peak demand.

Given the sustainable pumping rate observed and the rapid recovery of the water column, we conclude that there is sufficient water availability to support the proposed severance. The tested yield is considered to be representative, and the well is expected to be able to meet normal residential water demand even during the dry summer months.

3.6 Water Quality

A groundwater sample was obtained from the tested well just before the end of the pumping test after confirming with a handheld free chlorine colorimeter that the concentration of free chlorine was below the detection limit of the device. This sample was analyzed at Caduceon Laboratories Ltd. in Kingston, Ontario for selected parameters. Key results are summarized in Table 3, with exceedances of Drinking Water Standards being highlighted in bold text. The full results of this testing are included with the Laboratory Certificates of Analysis in Appendix C.

Table 3: Summary of Key Analytical Results (A386228)

	Units	RL	August 2, 2023	August 16, 2023	ODWS
Bacteriological Parameters					
Total Coliform	cfu/100mL	1	**6**	1	0 (5 in D-5-5)
E coli	cfu/100mL	1	0	-	0
Fecal Coliform	cfu/100mL	1	0	-	N/A
Background	cfu/100mL	1	11	-	N/A
Physical/Chemical parameters with Health-related Criteria					
Turbidity	NTU	0.1	1.9	-	5
Nitrite (N)	mg/L	0.1	<0.05	-	1
Nitrate (N)	mg/L	0.1	<0.05	-	10
Fluoride	mg/L	0.1	0.3	-	2.4
Physical/Chemical parameters with Aesthetic Criteria/Operational Guidelines					
Alkalinity (as $CaCO_3$)	mg/L	5	219	-	500^{OG}
pH @25°C	pH Units	-	7.8	-	$6.5 – 8.5^{OG}$
Colour	TCU	2	<2	-	5^{OG}
Chloride	mg/L	0.5	24.7	-	250^{AO}
Sulphate	mg/L	1	29	-	500^{AO}
Dissolved Organic Carbon	mg/L	0.2	2.2	-	5^{AO}
Sulphide	mg/L	0.01	<0.01	-	0.05^{AO}
Hardness (as $CaCO_3$)	mg/L	1	250	-	100^{OG}
Iron	mg/L	0.005	0.064	-	0.3^{AO}
Manganese	mg/L	0.001	0.008	-	0.05^{AO}
Sodium	mg/L	0.2	11.2	-	200^{AO}

The sample taken from A386228 at the end of the pumping test was found to have a marginal exceedance of the Guideline D-5-5 criterion for Total Coliform. Slightly elevated hardness was observed, though this is universal for wells sourcing limestone bedrock aquifers. Other tested parameters met applicable water quality Standards. After receiving the results, the well was chlorinated to a free chlorine residual exceeding 50 mg/L and resampled after several days, after confirming that the residual concentration of free chlorine was below the detection limit of our free chlorine colorimeter. The results of the resample are considered acceptable under Guideline D-5-5.

The groundwater was found to be of generally good quality. According to the results of neighbour surveys and observations during the pumping test, the groundwater is generally free of any objectionable taste or colour, though 2 respondents reported occasional sulfur odour in the summer.

3.7 Potential for Well Interference

The radius of influence (r, metres) between a pumped well and the neighbouring properties may be estimated using the estimated value for Q (i.e., the average amount pumped per day in litres) and the average recharge (R, mm per year) to the aquifer according to:

$$Q = \frac{R\pi r^2}{365}$$

This calculation yields a radius of influence of less than 30 m based on a shallow drilled well, pumping at a rate of 1,125 L/day (5 people x 225 L/day) over the course of a year for A386228.

During the pumping test, the water supply wells at 48 Bay Street and 2484 Highway 37 were monitored for well interference. No response to the pumping test was observed in either of the monitoring wells.

We note that the fractured bedrock aquifer does not behave in the same way as an ideal porous media. Localized zones of higher permeability soils will be associated with a locally greater radius of influence, while lower permeability zones will have a correspondingly reduced radius of influence. However, even accounting for these effects, well interference is not anticipated to be a problem at the subject property.

3.8 Onsite Sewage Treatment

Neither municipal water supply nor sewage servicing is available at the property. As such, servicing for the proposed severance will be a private water supply well and private individual septic system.

Because the proposed severance has an area greater than 1 ha, risk to neighbouring water sources from nitrate-rich sewage effluent is considered low under MECP Guideline D-5-4 section 5.5.

Site conditions are considered suitable for the construction of a private septic system. Any such system must be constructed in accordance with Section 8 of the Ontario Building Code and must meet the setback distances outlined in Table 4.

Table 4: Minimum Clearances for Distribution Piping

Object	Minimum Setback (m)
Structure	5
Well with a watertight casing to a depth of 6 m	15
Any other well	30
Pond	15
Stream	15

4. Summary

The purpose of the work was to determine soil and groundwater conditions at the site and to demonstrate that the proposed development can be serviced by groundwater and an individual septic system in accordance with Provincial standards without adversely affecting surrounding private water sources.

Our assessment found the following:

1. The tested well (A386228) has sufficient yield to meet peak demand for the proposed severance. This yield is considered to be representative and is expected to meet typical residential water demand even during the dry summer months.
2. Well testing did not demonstrate any adverse impacts with the surrounding neighbouring wells or natural ecological features. Well interference is not anticipated to be a concern based on the results of this assessment.
3. Initial water quality results during the pumping test showed an adverse result for Total Coliform bacteria, but results showed acceptable quality after resampling and retesting. The well is considered suitable as a potable water supply, though it is recommended that UV sterilization be employed as a minimum for in-home water treatment.

4. Because the area of the proposed severance is greater than 1 ha, the lot is considered large enough to meet MECP Guideline D-5-4 requirements with respect to nitrates in groundwater leaving the property. The risk of impacting neighbouring water sources with nitrate-rich sewage effluent is considered to be low.

We trust that this report will satisfy your current requirements. If you have any questions about our assessment or our conclusions, please don't hesitate to contact us.

All of which is respectfully submitted.

THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS

Kirby Magee-Dittburner, E.I.T.
Junior Hydrogeologist

Charles Mitz, M.Eng., Ph.D., P.Geo
Senior Project Manager

5. References

Environment Canada, 2020
https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?stnID=4859&autofwd=1

Experimental Farms Service, 1947: Soil Map of Prince Edward County, Ontario. Soil Survey Report No. 10, Scale 1:63 360.

MECP (Ministry of Environment Conservation and Parks) 1996: D-5-5 Private Wells: Water Supply Assessment, updated March 15, 2016.

MECP (Ministry of Environment Conservation and Parks) 1996: D-5-4 Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment, updated April 14, 2016.

Ontario Geological Survey 2011. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV

Stats Canada, 2017 https://www150.statcan.gc.ca/n1/pub/16-201-x/2017000/sec-2/m-c/m-c-2.5-eng.htm

GREER GALLOWAY
CONSULTING ENGINEERS
PETERBOROUGH
BELLEVILLE
KINGSTON
1620 WALLBRIDGE LOYALIST ROAD
BELLEVILLE, ONTARIO, K8N 4Z5
PHONE: 613-966-3068
FAX: 613-966-3087

NOTES:

1) Base drawing and information obtained from Google Earth.

LEGEND:

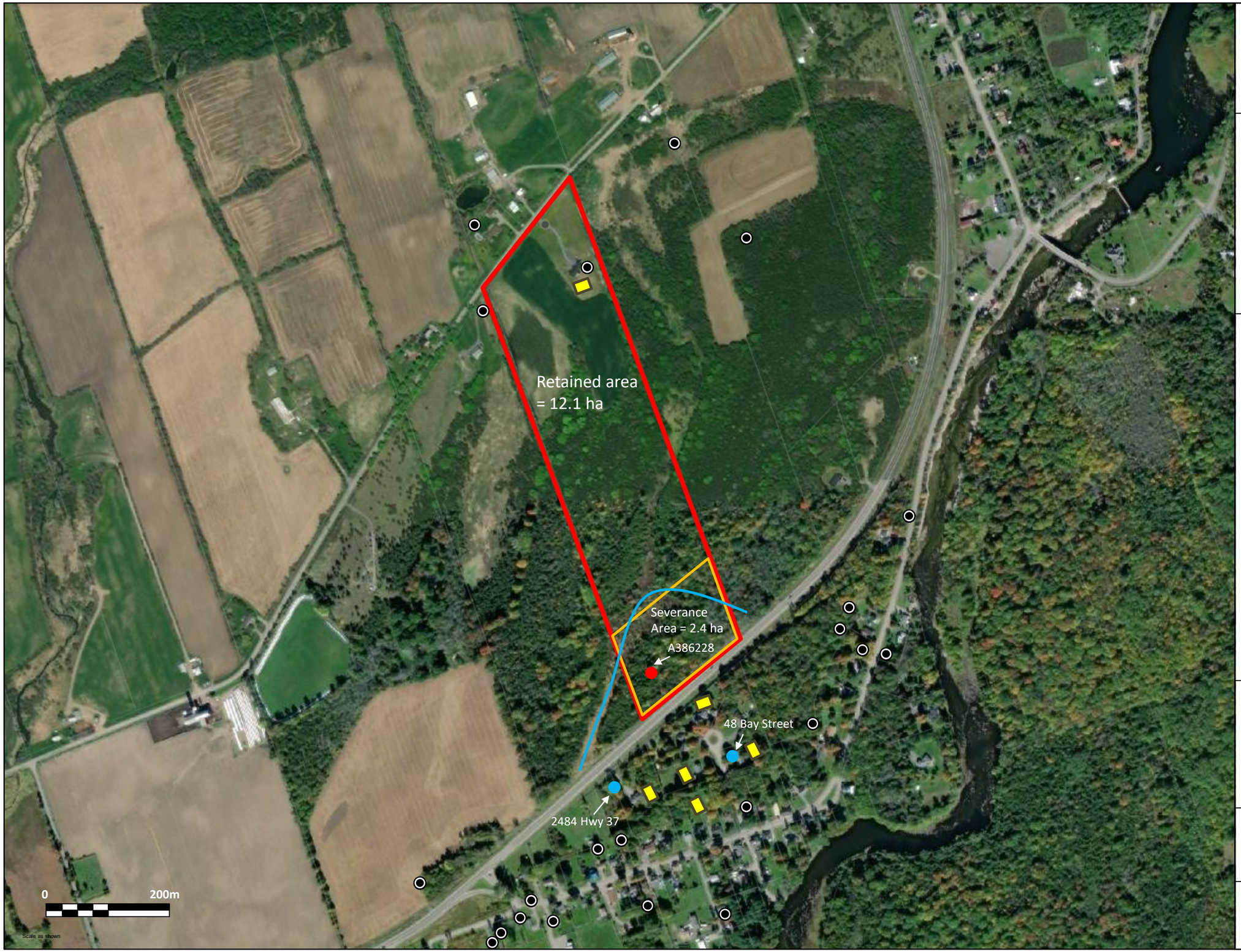
Property Location

PROJECT 2338536:

HYDROGEOLOGICAL ASSESSMENT
149 DENYES ROAD
PLAINFIELD, ONTARIO

DRAWING 1:

PLAN SHOWING PROPERTY LOCATION



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FAX: 613-966-3087

NOTES:

1) Base drawing and information obtained from City of Belleville GIS: https://www.thecounty.ca/residents/services/gis-mapping/

2) Sizes of septic systems not to scale. Appropriate setbacks are met.

LEGEND:

- Property boundary
- Proposed severance
- Seasonal Creek
- Test Well
- Monitoring Well
- MECP Well Record
- Class 4 Septic Bed

N

PROJECT 2338536:

HYDROGEOLOGICAL ASSESSMENT
149 DENYES ROAD
PLAINFIELD, ONTARIO

DRAWING 2:

SITE PLAN SHOWING WELL LOCATIONS

Appendix A

MECP Water Well Records

UTM | | Z | | | | | | E
| 5 | R | | | | | | | N

Elev. | 5 | R | 0 | 3 | 6 | 4 |

Basin | 2 | 4 | County or District Hastings

29 No. 3308

The Ontario Water Resources Commission Act

WATER WELL RECORD

Township, Village, Town or City Thurlow

Con. 7 Lot Pt. 23 Date completed 18 (day) Aug. (month) 66 (year)

Owner United Church (print in block letters) Address Plainfield

Casing and Screen Record

Inside diameter of casing 6 1/4"

Total length of casing 20 ft.

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 6 1/4"

Pumping Test

Static level 15 ft.

Test-pumping rate 30 G.P.M.

Pumping level 40 ft.

Duration of test pumping 3 hrs.

Water clear or cloudy at end of test clear

Recommended pumping rate upto 30 G.P.M.

with pump setting of 50 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
clay	0	7		
limestone, shale	7	18		
grey limestone	18	53	40 ft.	fresh

For what purpose(s) is the water to be used? Plainfield United Church

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

Drilling or Boring Firm George H. Chalk Jr.

Address R.R.#6 Napanee

Licence Number 2051

Name of Driller or Borer George H. Chalk Jr.

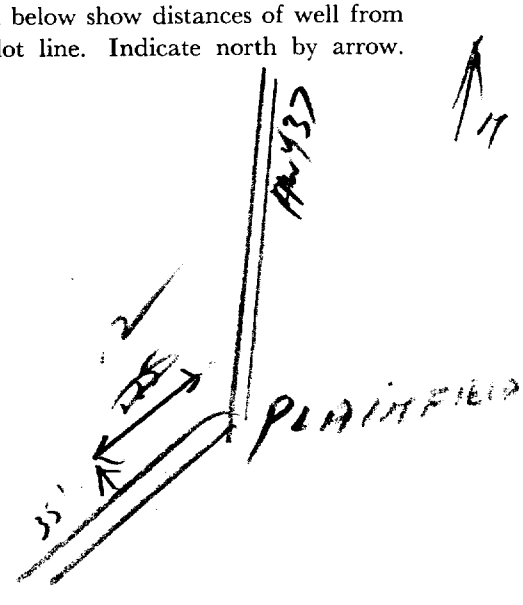
Address R.R.#6 Napanee

Date Aug. 31/66

George H. Chalk Jr. (Signature of Licensed Drilling or Boring Contractor) per BM.

Location of Well

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



Form 7 15M-60-4138

OWRC COPY

CSS.S8

UTM | | Z | | | | | | | E
| 9 | R | | | | | | | N
Elev. | 9 | F | 0 | 3 | 3 | 8 |
Basin | 2 | 4 | + | | | |

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

GROUND WATER BRANCH
DEC 15 1958
ONTARIO WATER RESOURCES COMMISSION

29 No. 3309

Water-Well Record

[redacted]

...ip, Village, Town or City.....Thurlow.....
...n Village, Town or City).....
Address .....PLAINFIELD ONT.

Date completed .....10..... (day) .....6..... (month) .....1958..... (year)

Pipe and Casing Record

Casing diameter(s) .....6"....
Length(s) .....15'....
Type of screen .....none....
Length of screen .....none....

Pumping Test

Static level .....15'....
Pumping rate .....1200 gal per hr....
Pumping level .....35'....
Duration of test .....1 hr....

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
COURSE GRAVEL	0'	14'			
SOFT LIMESTONE	14'	50'	40'	35'	FRESH

Water Record

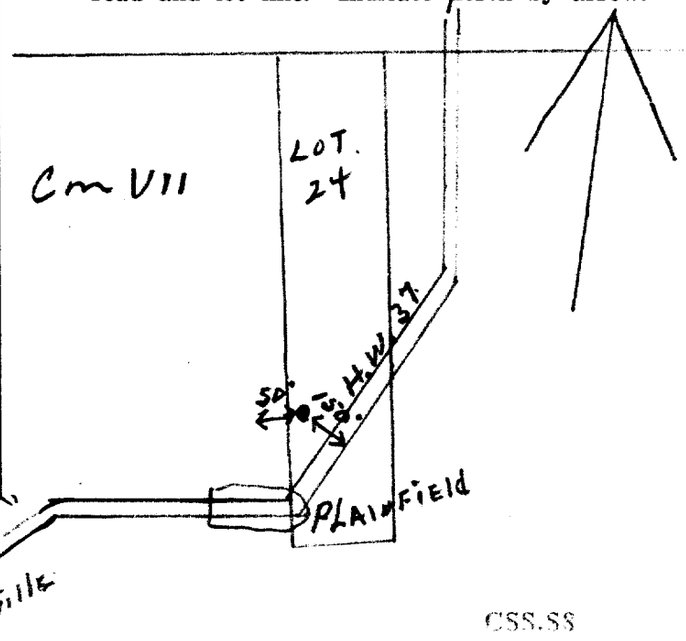
For what purpose(s) is the water to be used?
.....Domestic.....
Is water clear or cloudy?.....Clear.....
Is well on upland, in valley, or on hillside?.....
.....Valley.....
Drilling firm .....T. Donaldson & Son.....
Address .....191 North Front St.....
.....Belleville.....
Name of Driller .....Manuel Donaldson.....
Address .....31 Wilkins St.....
.....Belleville.....
Licence Number.....1175.....

I certify that the foregoing statements of fact are true.

Date.....July 10th..... Manuel Donaldson
Signature of Licensee

Location of Well

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



Form 5

CSS.58

UTM 5B E N

Elev. 15 F 0 3 3 15

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION
29 No. 3310
SEP 1967
ONTARIO WATER RESOURCES COMMISSION

Basin 2 4 | County or District Hasting | Township, Village, Town or City Thurlow

Con. 7 Lot 24 Date completed 15 (day) 8 month 1967 year)

[redacted] dress Plainfield Ontario

Casing and Screen Record

Inside diameter of casing	6¼"
Total length of casing	12'
Type of screen	Nil
Length of screen	Nil
Depth to top of screen	Nil
Diameter of finished hole	6¼"

Pumping Test

Static level	4'
Test-pumping rate	20 G.P.M.
Pumping level	12'
Duration of test pumping	2 Hrs.
Water clear or cloudy at end of test	Clear
Recommended pumping rate	10 G.P.M.
with pump setting of	45 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Top Soil & Boulders	0	6		
Hard Pan & Boulders	6	10		
Grey Limestone	10	51	46	Fresh

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

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

Drilling or Boring Firm Mansel Donaldson

Address Box 40 Foxboro Ontario

Licence Number 2382

Name of Driller or Borer Wm Donaldson

Address Foxboro Ontario

Date Aug. 15/67

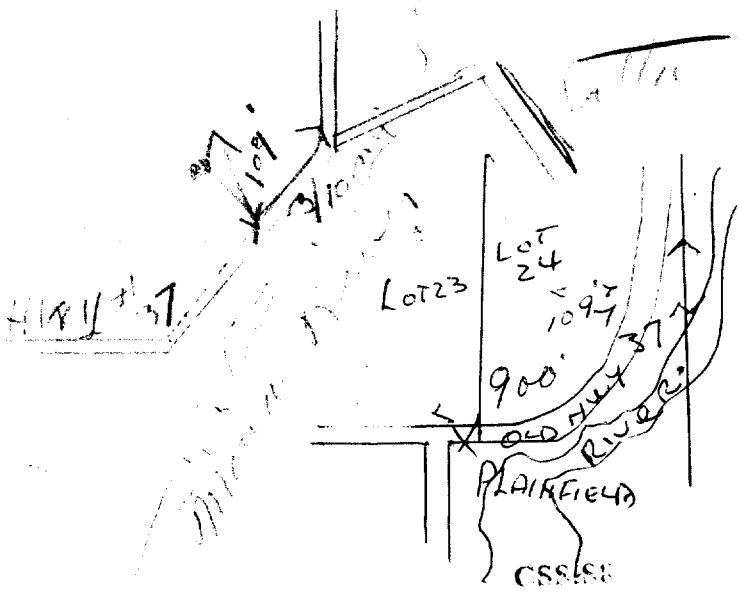
Mansel Donaldson
(Signature of Licensed Drilling or Boring Contractor)

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.



UTM 55 | | Z | | | | | | | | E

| | R | | | | | | | | N

Elev. 5 R 574 | | |

Basin 124 | | |

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION
29 No 3311
SEP 9 1967
ONTARIO WATER RESOURCES COMMISSION

County or District Hastings   Township, ~~Village, Town or City~~ Thurlow

Con. 7   Lot 24 ~~24 23~~   Date completed 4 (day) 8 (month) 1967 (year)

[redacted] Address Plainfield Ont.

Casing and Screen Record

Inside diameter of casing	6¼"
Total length of casing	6½'
Type of screen	none
Length of screen	none
Depth to top of screen	none
Diameter of finished hole	6"

Pumping Test

Static level	15'
Test-pumping rate	4 G.P.M.
Pumping level	50'
Duration of test pumping	1 hr.
Water clear or cloudy at end of test	clear
Recommended pumping rate	3 G.P.M.
with pump setting of	48' 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)
Top Soil	0'	1'		
Shale Limestone	1'	6'		
Soft Limestone	6'	53'	48'	Fresh
				(not tested)

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

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

Drilling or Boring Firm Thos Donaldson

Address Belleville R.R. 5

Licence Number 2554

Name of Driller or Borer Florn Donaldson

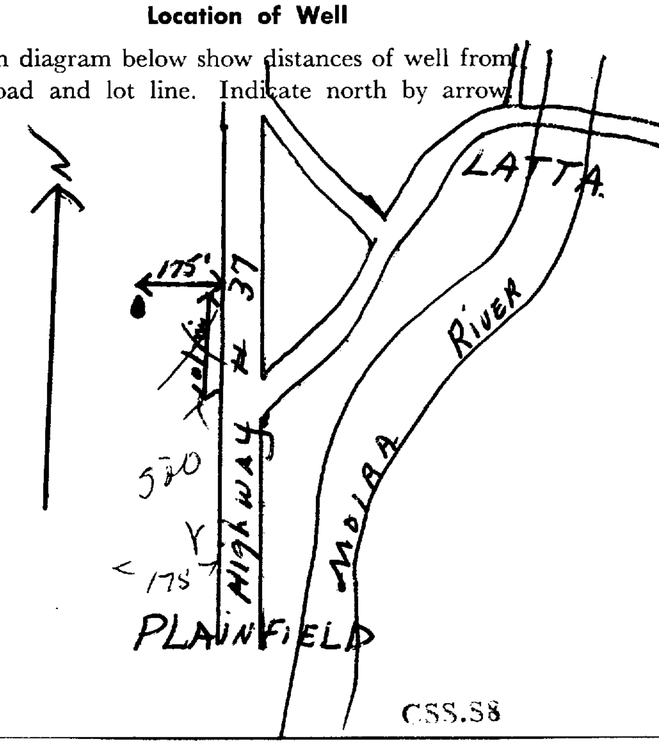
Address Belleville R.R. 5

Date August 5th. 1967

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



CSS.S8

Form 7 15M-60-4138

OWRC COPY

31C/6W

2904277

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S

IM 1|8|4|3|1|2|4|7|0

4|R|4|9|0|6|7|0|8

ev. 5|R|0|3|6|5

Water management in Ontario

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Hastings

Township, Village, Town or City Thurlow

Con. [redacted] 7 Lot 23

DIVISION OF WATER RESOURCES

Date completed 7 (day) 8 (month) 1969 (year)

[redacted] ress 5 Village Drive Belleville Ont.

SB

ONTARIO WATER RESOURCES COMMISSION

Casing and Screen Record

Inside diameter of casing 6¼"

Total length of casing 18'

Type of screen Nil

Length of screen Nil

Depth to top of screen Nil

Diameter of finished hole 6¼"

Pumping Test

Static level 10'

Test-pumping rate 20 G.P.M.

Pumping level 15'

Duration of test pumping 3 Hrs,

Water clear or cloudy at end of test Clear

Recommended pumping rate 10 G.P.M.

with pump setting of 45 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Clay	0	10		
Gravel	10	17		
Grey Limestone	17	53	52	Fresh

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

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

Drilling or Boring Firm Mansel Donaldson

Address 274 Main St, FOmboro Ont,

Licence Number 3177

Name of Driller or Borer Wm Donaldson

Address Foxboro Ont,

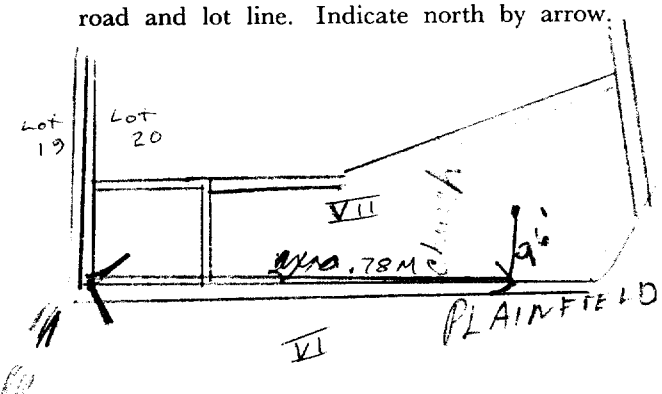
Date Aug, 7/69

Mansel Donaldson

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7

OWRC COPY

CSS.38

The Ontario Water Resources Commission Act

WATER WELL RECORD

31 C 6 W

Water management in Ontario

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

11 | 2904889 | MUNICIP. 29020 | CON. 9th N | 07

COUNTY OR DISTRICT: Hastings | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Thurlow | CON., BLOCK, TRACT, SURVEY, ETC.: 7 | LOT: 23

[redacted] Plainfield ont

DATE COMPLETED: DAY 06 MO. 08 YR. 71

UTM NORTHING 906760 | RC. 4 | ELEVATION 0355 | RC. 5 | BASIN CODE 214

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
		Clay & Boulders		0	15
Grey		Hornerstone		15	36

31 00 15 15 | 00 30 21 5

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0035	1 ☐ FRESH 3 ☒ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
06	1 ☒ STEEL / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / ☐ OPEN HOLE	188 W	0	0015
			15	36
	4 ☒ OPEN HOLE			0036

SCREEN

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

61 PLUGGING & SEALING RECORD

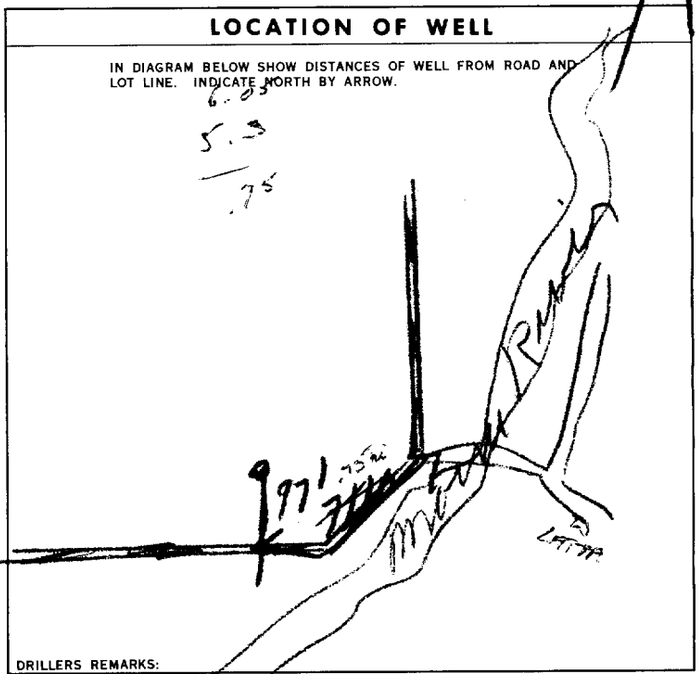
DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER	PUMPING RATE: 0004 GPM.	DURATION OF PUMPING: 01 HOURS 00 MINS.		
STATIC LEVEL: 012 FEET	WATER LEVEL END OF PUMPING: 036 FEET	WATER LEVELS DURING: 15 MINUTES 020 FEET	30 MINUTES 012 FEET	45 MINUTES 012 FEET / 60 MINUTES 012 FEET
IF FLOWING, GIVE RATE: GPM.	PUMP INTAKE SET AT: FEET	WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY		
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING: 033 FEET	RECOMMENDED PUMPING RATE: 0003 GPM.		
50-53: 000.2 GPM./FT. SPECIFIC CAPACITY				

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL

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

WATER USE 01

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Marvel Donaldson | LICENCE NUMBER: 1805

ADDRESS: 274 main St Foxboro

NAME OF DRILLER OR BORER: Bill Donaldson | LICENCE NUMBER: 1352

SIGNATURE OF CONTRACTOR: Marvel Donaldson | SUBMISSION DATE: DAY 6 MO. 9 YR. 71

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1805 | DATE RECEIVED: 090971

DATE OF INSPECTION | INSPECTOR

REMARKS:

P K

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OWRC COPY

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

3/C / (GW)

Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK [X] CORRECT BOX WHERE APPLICABLE

11 | 2908176 | MUNICIP 29020 | CON. CON 06

COUNTY OR DISTRICT: HASTINGS

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: THURLOW

CON., BLOCK, TRACT, SURVEY, ETC.: 6

LOT: 023

[redacted]

ADDRESS: PLAINFIELD

DATE COMPLETED: DAY 29 MO 06 YR 77

WATER: 906600 | RC 5 | ELEVATION: 0360 | RC 5 | BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
GREY	GRAVEL			0	20
GREY	LIMESTONE			20	45

31: 0002811 | 0045215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0045	1 [X] FRESH 3 [ ] SULPHUR; 2 [ ] SALTY 4 [ ] MINERAL
	1 [ ] FRESH 3 [ ] SULPHUR; 2 [ ] SALTY 4 [ ] MINERAL
	1 [ ] FRESH 3 [ ] SULPHUR; 2 [ ] SALTY 4 [ ] MINERAL
	1 [ ] FRESH 3 [ ] SULPHUR; 2 [ ] SALTY 4 [ ] MINERAL
	1 [ ] FRESH 3 [ ] SULPHUR; 2 [ ] SALTY 4 [ ] MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 [X] STEEL; 2 [ ] GALVANIZED; 3 [ ] CONCRETE; 4 [ ] OPEN HOLE	188	0	0020 (20)
	1 [ ] STEEL; 2 [ ] GALVANIZED; 3 [ ] CONCRETE; 4 [ ] OPEN HOLE			
	1 [ ] STEEL; 2 [ ] GALVANIZED; 3 [ ] CONCRETE; 4 [ ] OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 [ ] PUMP 2 [X] BAILER

PUMPING RATE: 0050 GPM | DURATION OF PUMPING: 02 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	012 FEET	1 [X] PUMPING 2 [ ] RECOVERY	012 FEET	012 FEET	012 FEET	012 FEET

IF FLOWING GIVE RATE: GPM

PUMP INTAKE SET AT: 43 FEET

WATER AT END OF TEST: [X] CLEAR 2 [ ] CLOUDY

RECOMMENDED PUMP TYPE: [ ] SHALLOW [X] DEEP

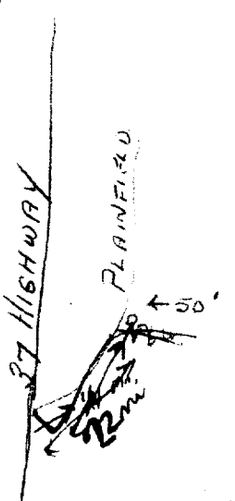
RECOMMENDED PUMP SETTING: 043 FEET

RECOMMENDED PUMPING RATE: 0050 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: [X] 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 — [X] 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 — [X] 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: HASTINGS WELL DRILLING | LICENCE NUMBER: 2562

ADDRESS: RR#1 CORBYVILLE

NAME OF DRILLER OR BORER: Elmer Rhode | LICENCE NUMBER: 2562

SIGNATURE OF CONTRACTOR: Elmer Rhode. | SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 2562 | DATE RECEIVED 63-68: 010977 | 80

DATE OF INSPECTION | INSPECTOR: PM

REMARKS:

P

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MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

3106

Ontario

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

(11) 2908717 MUNICIP 29020 CON. CON 06

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
Hastings	Thurlow	6	023

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Bell Canada Ltd.	Belleville ontario	DAY 28 MO 08 YR 78

(21) UTM ZONE 18 EASTING 312550 NORTHING 4906600 RC 5 ELEVATION 0365 RC 5 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
		Sand		0	3
grey		limestone		3	50

(31) 0003 28 0050215

(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0046	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	148 W	0022	50
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		0050	
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

(61) PLUGGING & SEALING RECORD

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

(71) PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0005 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	046 FEET		FEET	29-31 FEET	32-34 FEET	35-37 FEET

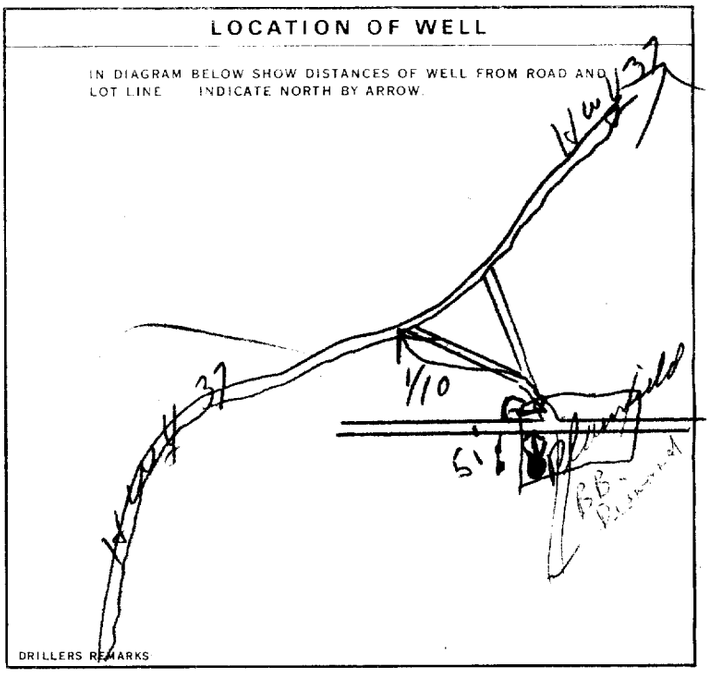
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☑ DEEP	045 FEET	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

(54) 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

(55-56) WATER USE: 05

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

(57) METHOD OF DRILLING: 4

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

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Marsal Donaldson	1805
ADDRESS	
274 main St Foxboro	
NAME OF DRILLER OR BORER	LICENCE NUMBER
Ken Donaldson	1841
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
M. Donaldson	DAY 28 MO. 8 YR. 78

OFFICE USE ONLY

DATA SOURCE (58)	CONTRACTOR (59-62)	DATE RECEIVED (63-68)
1	1805	160978

DATE OF INSPECTION | INSPECTOR: KM

REMARKS: P WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ontario Ministry of the Environment

Well Tag A049264 (enter below)

A049264

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

[redacted]

Address of Well Location (County/District/Municipality): Hastings

Township: Thurlow

Lot: 23

Concession: VII

RR#/Street Number/Name: Hwy. #37

City/Town/Village: Plainfield

Site/Compartment/Block/Tract etc.:

GPS Reading: NAD 83 | Zone 18 | Easting 312539 | Northing 4907045

Unit Make/Model: GARMIN ETREX

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	Depth To (Metres)
Brown	Clay	Boulders	Packed	0	0.9
Brown	Clay	Smallstone	Packed	0.9	3.7
Grey	Limestone	Shale	Broken	3.7	4.9
Grey	Limestone		Hard	4.9	10.4

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	4.9	20.3
4.9	10.4	15.3

Water Record

Water found at ___ Metres	Kind of Water
5.2 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: Untested
___ 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	Depth To (Metres)
Casing				
15.8	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	5.8
	☐ 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		5.1	10.4

Test of Well Yield

Pumping test method: Pump

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres) 9.4	Static Level	1.0		3.5
Pumping rate (litres/min) 45.5	1	1.7	1	2.8
Duration of pumping 1 hrs + 0 min	2	1.7	2	2.6
Final water level end of pumping 3.4 metres	3	1.9	3	2.5
Recommended pump type. ☐ Shallow ☒ Deep	4	2.1	4	2.4
Recommended pump depth. 9.4 metres	5	2.1	5	2.3
Recommended pump rate. 25.5 (litres/min)	10	2.4	10	2.0
	15	2.6	15	1.9
If flowing give rate - (litres/min)	20	2.8	20	1.8
	25	2.9	25	1.7
If pumping discontinued, give reason.	30	3.0	30	1.7
	40	3.2	40	1.6
	50	3.3	50	1.5
	60	3.4	60	1.4

Plugging and Sealing Record

☐ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
5.1	0	Bentonite	.12

Method of Construction

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

Water Use

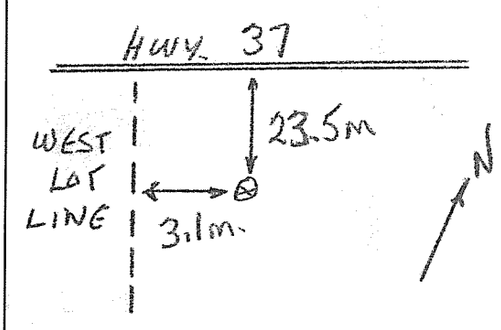
☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

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

Location of Well

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



Audit No. Z 46332

Date Well Completed: YYYY 2007 MM 04 DD 11

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor: CHALK WELL DRILLING LTD.

Well Contractor's Licence No.: 1507

Business Address (street name, number, city etc.): 31 Johnsons Side Rd., RR 6 Napanee ON, K7R 3L1

Name of Well Technician (last name, first name): Chalk, R. Ian / Chalk, Dan

Well Technician's Licence No.: T-0047 / T-3304

Signature of Technician/Contractor: X CHALK WELL DRILLING LTD.

Date Submitted: YYYY 2007 MM 04 DD 11

Ministry Use Only

Data Source | Contractor 1507

Date Received: YYYY MM DD MAY 28 2007 | 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*

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. **A 100896**

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 3

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
167 HOSKIN RD.	THURLOW	24	7

County/District/Municipality	City/Town/Village	Province	Postal Code
HASTINGS	PLAINFIELD	Ontario	K0K2V0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	312936	4907210		CITY OF BELLEVILLE

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
BROWN	TOPSOIL			0	1
BROWN	CLAY	BOULDER		1	6
BROWN	CLAY	ROCK LIMESTONE	BROKEN	6	15
GREY	LIMESTONE			15	54

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
20	0	BENTONITE SLURRY 20%	7 BAGS

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	20
6 1/8	OPEN HOLE		20	54

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
49	☐	☐ Fresh ☒ Untested	
	☐	☐ Fresh ☐ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
+2	20	6 1/4
20	54	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) 44

Pumping rate (l/min / GPM) 10

Duration of pumping 1 hrs + 00 min

Final water level end of pumping (m/ft) 27.35

If flowing give rate (l/min / GPM) —

Recommended pump depth (m/ft) 45

Recommended pump rate (l/min / GPM) 10-15

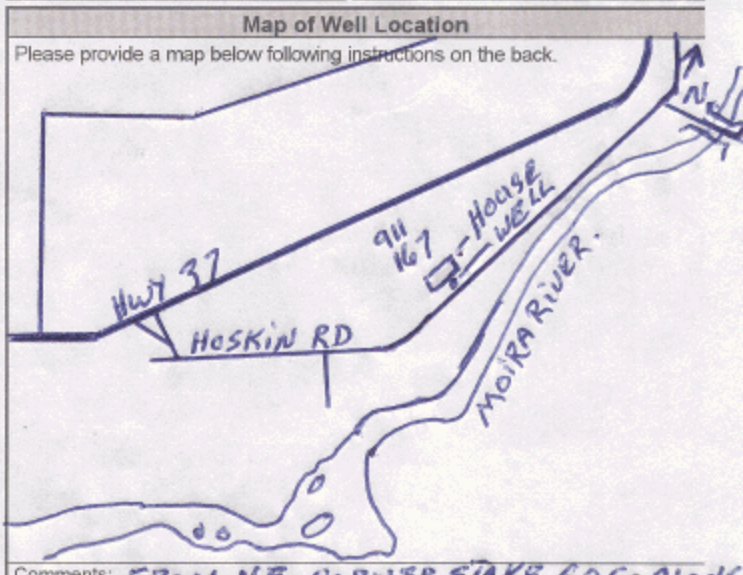
Well production (l/min / GPM) 30+

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	16.82		
1	20.56	1	23.80
2	21.90	2	22.51
3	22.79	3	21.60
4	23.50	4	20.90
5	24.04	5	20.39
10	25.60	10	18.89
15	26.30	15	18.24
20	26.71	20	17.90
25	26.91	25	17.42
30	27.09	30	17.42
40	27.32	40	17.40
50	27.43	50	17.23
60	27.35	60	17.08

Map of Well Location

Please provide a map below following instructions on the back.



Comments: FROM N.E. CORNER STAKE GO SO ALONG E. PROP. LINE 48 FT. THAN GO W. 22 FT.

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
MANSE DONALDSON WELL DRILLING	1805

Business Address (Street Number/Name)	Municipality
394 KETCHESONS RD. RR#1	FOXBORO

Province	Postal Code	Business E-mail Address
ONT.	K0K2B0	—

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139689431	DONALDSON KEN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T-19	Ken Donaldson	20110702

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☑ Yes ☐ No	20110620	20110702

Ministry Use Only

Audit No. z132246

Received AUG 12 2011

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Ministry's Copy

Ontario — Ministry of the Environment, Conservation and Parks

Well Tag No. (Place Sticker and/or Print Below) A386228 Tag#:A386228

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
Marcus	Sullivan		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
149 Denyes Rd.	Plainfeild	Ontario	K0K 2V0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
2507 Hwy. 37	Thurlow	PT. 23	VII

County/District/Municipality	City/Town/Village	Province	Postal Code
Hastings	City of Belleville	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	312580	4907183		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Clay Till	Boulders	Packed	0	11
Grey	Clay Till		Packed	11	20
Grey	Limestone		Hard	20	61

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	0	Bentonite	7.5

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
6.25	Steel	.188	+2	20

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: ☐ Fresh ☒ Untested ☐ Other, specify
58		
	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	10"
20	61	6"

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at (m/ft): 58

Pumping rate (l/min / GPM): 8 gpm

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 50.3

If flowing give rate (l/min/GPM)

Recommended pump depth (m/ft): 58

Recommended pump rate (l/min/GPM): 8 gpm

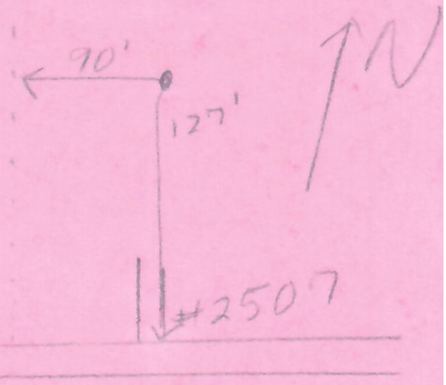
Well production (l/min/GPM): 8 gpm

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	27.2		
1	32.6	1	45.8
2	36.2	2	42.1
3	39.5	3	39.2
4	41.6	4	36.8
5	42.6	5	35.0
10	46.2	10	29.6
15	47.9	15	27.8
20	48.6	20	27.2
25	49.1	25	27.2
30	49.5	30	27.2
40	49.8	40	27.2
50	50.1	50	27.2
60	50.3	60	27.2

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.
Chalk Well Drilling Ltd.	1507

Business Address (Street Number/Name)	Municipality
31 Johnsons Side Road	Napanee

Province	Postal Code	Business E-mail Address
Ontario	K7R 3L1	chalkwel kos.net

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613-388-2809	Chalk, Kevin

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0627		2023 08 16

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No		2023 08 09

Ministry Use Only

Audit No. Z409238

Received

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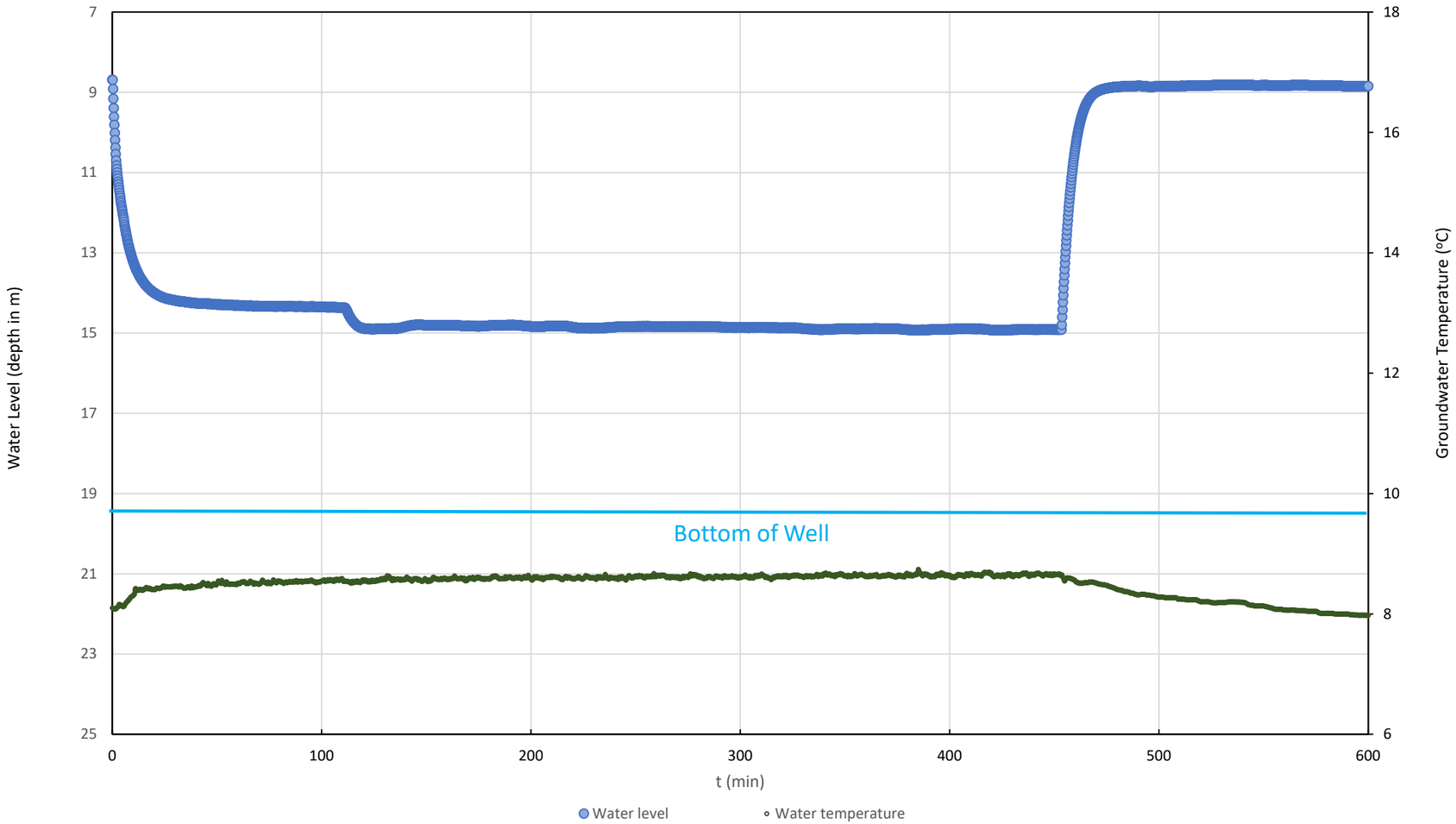
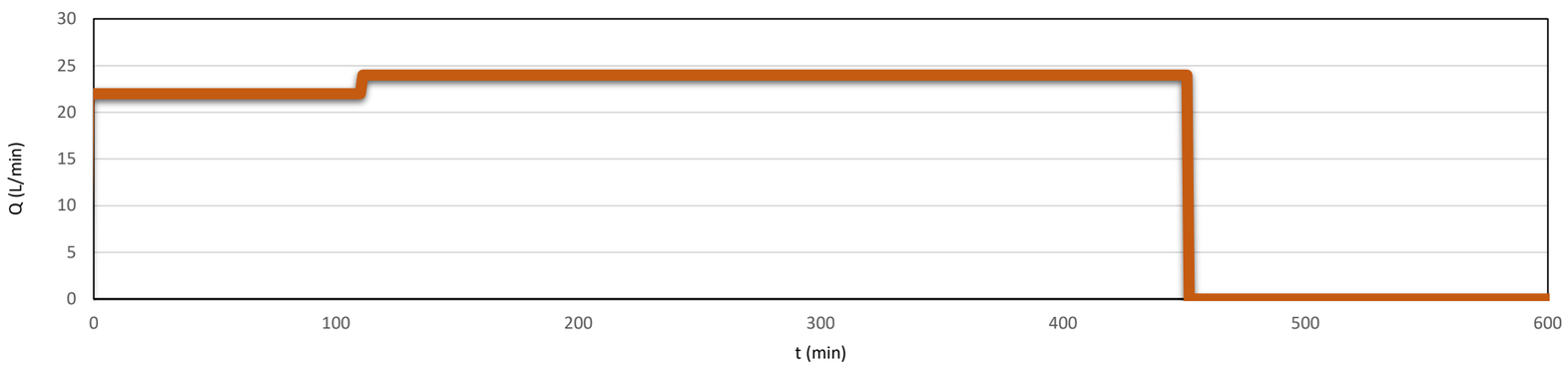
Well Owner's Copy

Appendix B

Hydrographs





GREER GALLOWAY
CONSULTING ENGINEERS
PETERBOROUGH
BELLEVILLE
KINGSTON
1620 WALLBRIDGE LOYALIST ROAD
BELLEVILLE, ONTARIO, K8N 4Z5
PHONE: 613-966-3068
FAX: 613-966-3087

NOTES:

1) Testing carried out on August 2, 2023
2) On-site pressure and temperature data collected using a Solinst Model 3001 datalogger transducer.
3) Water level data is not corrected for fluctuations in barometric pressure.

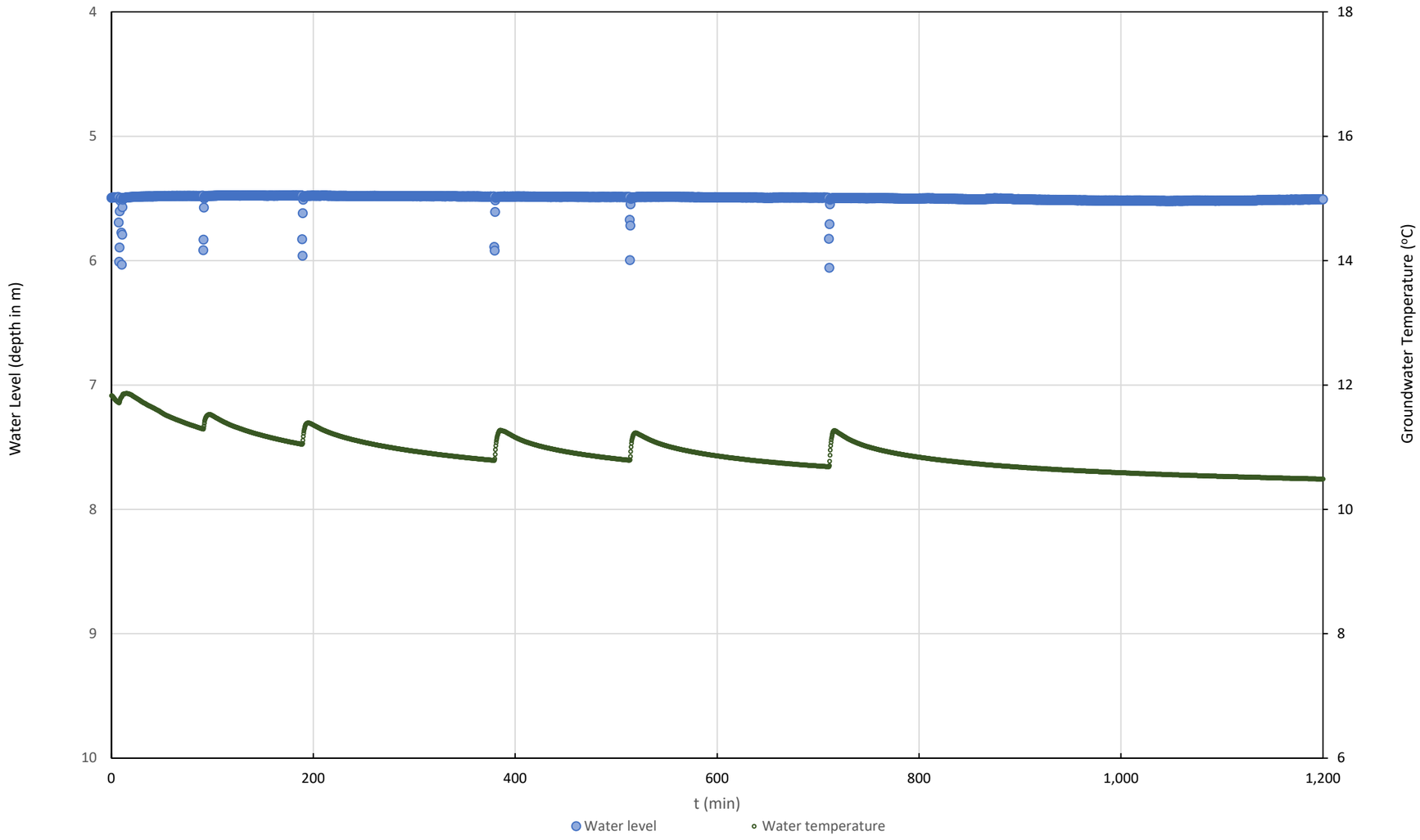
Key Plan:

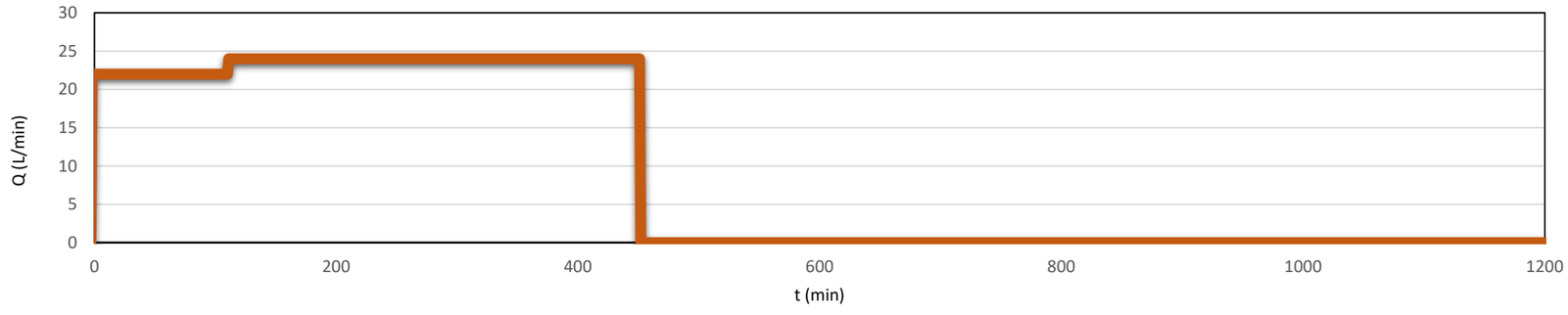
PROJECT 2338536:

HYDROGEOLOGICAL ASSESSMENT
149 DENYES ROAD
PLAINFIELD, ONTARIO

FIGURE 1:

WELL HYDROGRAPH – A386228 (TW)
AUGUST 2, 2023





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BELLEVILLE, ONTARIO, K8N 4Z5
PHONE: 613-966-3068
FAX: 613-966-3087

NOTES:

1) Testing carried out on August 2, 2023

2) On-site pressure and temperature data collected using a Solinst Model 3001 datalogger transducer.

3) Water level data is not corrected for fluctuations in barometric pressure.

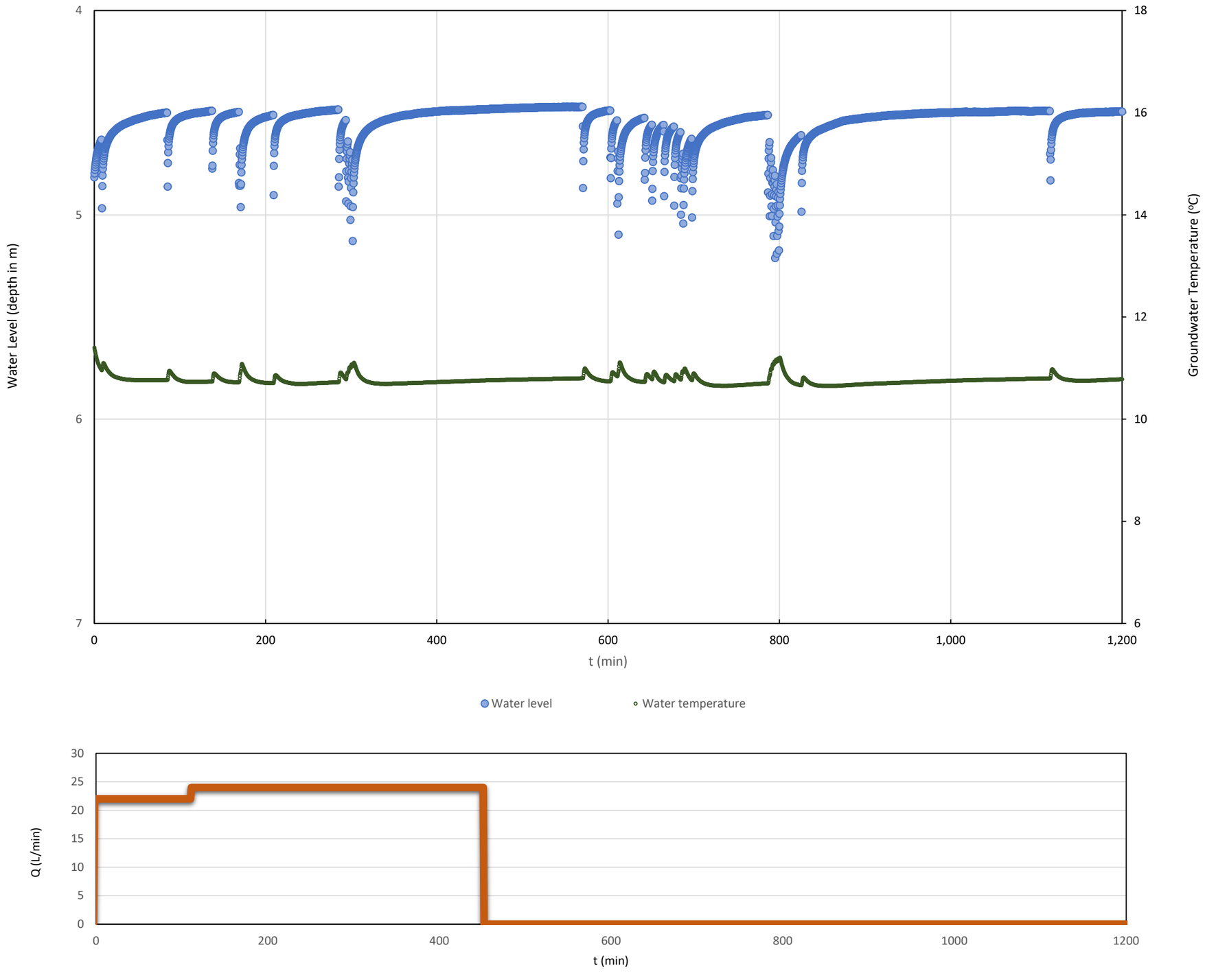
Key Plan:

PROJECT 2338536:

HYDROGEOLOGICAL ASSESSMENT
149 DENYES ROAD
PLAINFIELD, ONTARIO

FIGURE 2:

WELL HYDROGRAPH – 48 BAY STREET (MW)
AUGUST 2, 2023



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KINGSTON
1620 WALLBRIDGE LOYALIST ROAD
BELLEVILLE, ONTARIO, K8N 4Z5
PHONE: 613-966-3068
FAX: 613-966-3087

NOTES:

1) Testing carried out on August 2, 2023

2) On-site pressure and temperature data collected using a Solinst Model 3001 datalogger transducer.

3) Water level data is not corrected for fluctuations in barometric pressure.

Key Plan:

PROJECT 2338536:

HYDROGEOLOGICAL ASSESSMENT
149 DENYES ROAD
PLAINFIELD, ONTARIO

FIGURE 3:

WELL HYDROGRAPH – 2484 HWY 37 (MW)
AUGUST 2, 2023

Appendix C

Laboratory Certificates of Analysis

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: McKeown HydroG **REPORT No: 23-019878 - Rev. 0**

Report To:
The Greer Galloway Group
1620 Wallbridge-Loyalist Road, RR #5
Belleville, ON K8N 4Z5

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Kirby Magee-Dittburner

DATE RECEIVED: 2023-Aug-03
DATE REPORTED: 2023-Aug-17
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: McKeown HydroG
P.O. NUMBER: 2238536

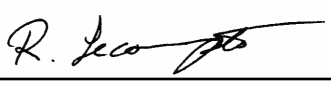
Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2023-Aug-03	A-IC-01	SM 4110B
Colour (Liquid)	1	OTTAWA	STAILLON	2023-Aug-04	A-COL-01	SM 2120C
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2023-Aug-03	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Coliforms - DC Media (Liquid)	1	KINGSTON	BBURTCH	2023-Aug-03	ECTC-001	MECP E3407
DOC/DIC (Liquid)	1	OTTAWA	VKASYAN	2023-Aug-08	C-OC-01	EPA 415.2
Ion Balance (Calc)	1	OTTAWA	STAILLON		CP-028	MECP E3196
ICP/OES (Liquid)	1	OTTAWA	NHOGAN	2023-Aug-08	D-ICP-01	SM 3120B
Ammonia (Liquid)	1	KINGSTON	AMANIYA	2023-Aug-09	NH3-001	SM 4500NH3
Organic Nitrogen (Liquid)	1	KINGSTON	KDIBBITS	2023-Aug-10	TPTKN-001	MECP E3516.2
Sulphide (Liquid)	1	KINGSTON	EHINCH	2023-Aug-08	H2S-001	SM 4500-S2
Tannins (Liquid)	1	KINGSTON	EHINCH	2023-Aug-04	TAN-001	SM 5550
TP & TKN (Liquid)	1	KINGSTON	KDIBBITS	2023-Aug-08	TPTKN-001	MECP E3516.2
Turbidity (Liquid)	1	OTTAWA	MDON	2023-Aug-03	A-TURB-01	SM 2130B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Richard Lecompte
Laboratory Supervisor

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

Parameter	Units	R.L.	Client I.D.: TW Sample I.D.: 23-019878-1 Date Collected: 2023-08-02 -
Total Coliform (DC Media)	CFU/100mL	1	6
E coli (DC Media)	CFU/100mL	1	0
Background (DC Media)	CFU/100mL	1	11
Alkalinity(CaCO3) to pH4.5	mg/L	5	219
pH @25°C	pH units	-	7.80
Conductivity @25°C	uS/cm	1	523
Colour	TCU	2	<2
Turbidity	NTU	0.1	1.9
Fluoride	mg/L	0.1	0.3
Chloride	mg/L	0.5	24.7
Nitrate (N)	mg/L	0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05
Sulphate	mg/L	1	29
Total Kjeldahl Nitrogen	mg/L	0.1	0.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.14
Organic Nitrogen	mg/L	0.1	0.1
Dissolved Organic Carbon	mg/L	0.2	2.2
Tannin & Lignin	mg/L	0.5	<0.5
Sulphide	mg/L	0.01	<0.01
Hardness (as CaCO3)	mg/L as CaCO3	0.02	250
Calcium	mg/L	0.02	57.4



Richard Lecompte
Laboratory Supervisor

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

		Client I.D.	TW
		Sample I.D.	23-019878-1
		Date Collected	2023-08-02
Parameter	**Units**	**R.L.**	-
Copper	mg/L	0.002	<0.002
Iron	mg/L	0.005	0.064
Magnesium	mg/L	0.02	25.9
Manganese	mg/L	0.001	0.008
Potassium	mg/L	0.1	2.1
Silica	mg/L	2	14
Sodium	mg/L	0.2	11.2
Zinc	mg/L	0.005	<0.005
Anion Sum	meq/L	-	5.70
Cation Sum	meq/L	-	5.54
% Difference	%	-	1.43
TDS (Ion Sum Calc)	mg/L	1	282
Conductivity Calc	µmho/cm	-	530

Richard Lecompte
Laboratory Supervisor

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: McKeown H.G

REPORT No: 23-021577 - Rev. 0

Report To:
The Greer Galloway Group
1620 Wallbridge-Loyalist Road, RR #5
Belleville, ON K8N 4Z5

CADUCEON Environmental Laboratories
285 Dalton Ave
Kingston, ON K7K 6Z1

Attention: Kirby Magee-Dittburner

DATE RECEIVED: 2023-Aug-18
DATE REPORTED: 2023-Aug-22
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: McKeown HydroG
P.O. NUMBER: 2238536

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Total Coliforms (m-Endo Media)	1	KINGSTON	BBURTCH	2023-Aug-18	TC-001	SM 9222B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

		Parameter	Total Coliform
		Units	CFU/100mL
		R.L.	1
Client I.D.	Sample I.D.	Date Collected	-
Resample	23-021577-1	2023-Aug-17	1

Brandon Burtch
Microbiology Supervisor

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.