COMMITTEE OF ADJUSTMENT
City Hall, 5th floor, 71 Main Street West, Hamilton, ON L8P 4Y5
Telephone (905) 546-2424, ext. 4221, 3935 Fax (905) 546-4202
E-mail: cofa@hamilton.ca

NOTICE OF PUBLIC HEARING

Application for Consent/Land Severance

APPLICATION NUMBER: **HM/B-20:46**

SUBJECT PROPERTY: **13 Herbert Pl., Flamborough**

You are receiving this notice because you are either:

- Assessed owner of a property located within 60 metres of the subject property
- Applicant/agent on file, or
- Person likely to be interested in this application

APPLICANT(S): Agent AJ Lakatos Planning Consultant
Owner Dragana A. Suykens & Steve Suykens

PURPOSE OF APPLICATION: To sever the existing residential lot into two parcels, the severed lands will be a residential building lot and the retained lands will contain the existing dwelling and accessory structures.

Severed lands:
45.00m± x 92.7m± and an area of 4176.4m²±

Retained lands:
40.39m± x 92.7m± and an area of 4425.4m² ±

This application will be heard by the Committee as shown below:

DATE: **Thursday, September October 1st, 2020**
TIME: **1:15 p.m.**
PLACE: **Via video link or call in (see attached sheet for details)**
To be streamed at www.hamilton.ca/committeeofadjustment **for viewing purposes only**

PUBLIC INPUT

Written: If you would like to submit written comments to the Committee of Adjustment you may do so via email or hardcopy. Please see attached page for complete instructions, including deadlines for submitting to be seen by the Committee.

Orally: If you would like to speak to this item at the hearing you may do so via video link or by calling in. Please see attached page for complete instructions, including deadlines for registering to participate.

MORE INFORMATION

For more information on this matter, including access to drawings illustrating this request:

…/2

- Visit www.hamilton.ca/committeeofadjustment
- Call 905-546-CITY (2489) or 905-546-2424 extension 4221, 4130, or 4144
- Email Committee of Adjustment staff at cofa@hamilton.ca

DATED: September 14th, 2020.

_____

Jamila Sheffield,
Secretary-Treasurer
Committee of Adjustment

Information respecting this application is being collected under the authority of the Planning Act, R.S.O., 1990, c. P. 13. All comments and opinions submitted to the City of Hamilton on this matter, including the name, address, and contact information of persons submitting comments and/or opinions, will become part of the public record and will be made available to the Applicant and the general public.

PLAN OF SURVEY OF

LOT 1
PLAN 62M–883
IN THE
CITY OF HAMILTON

SCALE 1:300
0 6 12 18 metres

L.G. WOODS SURVEYING INC.
2017

BEARING NOTE:
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE NORTHERN LIMIT OF BLOCK 22, PLAN 62M–883 AS N77°24'00"E

LEGEND:

□	DENOTES PLANTED MONUMENT
■	DENOTES FOUND MONUMENT
C.C.	DENOTES CUT CROSS
IB	DENOTES IRON BAR
IB⌀	DENOTES ROUND IRON BAR
O/U	DENOTES ORIGIN UNKNOWN
P1	DENOTES PLAN 62M–883
P2	DENOTES PLAN 62R–16741
824	DENOTES A.T. McLAREN OLS
1243	DENOTES E. BARICH OLS

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE: .....

.....
E.G. SALZER O.L.S.

PLAN 62R–
RECEIVED AND DEPOSITED
DATE.....

.....
REPRESENTATIVE FOR
LAND REGISTRAR FOR THE LAND
TITLES DIVISION OF WENTWORTH (62)

SCHEDULE

PART	LOT	CON/PLAN	P.I.N.	AREA
1	PART OF LOT 1	PLAN 62M–883	ALL OF 17489–0286 (LT)	4426.40 sq. m. 1.09 acres
2				4116.58 sq. m. 1.01 acres

PARTS 1 AND 2 ARE SUBJECT TO A RIGHT OF WAY AS IN INST. WE 20998

P.I.N. 17489 – 0091 (LT)
P.I.N. 17489 – 0092 (LT)
P.I.N. 17489 – 0354 (LT)
LOT 4

N 78° 10' 25" E 90.114 (P1,P2 & MEAS)
45.764
44.350

REGISTERED PLAN 62M–883

HERBERT PLACE
BY PLAN 62M–883
P.I.N. 17489 – 0309 (LT)

N 12° 36' 00" W 88.327 (P1,P2 & MEAS)
N 12° 22' 00" W 92.708 (P1,P2 & MEAS)
N 12° 47' 30" W 63.030 (P1,P2 & MEAS)

REGISTERED PLAN 62M–1162
LOT 5
P.I.N. 17489 – 0355 (LT)

CHAIN LINK FENCE
0.050 CLEAR
INGROUND POOL
WATER FEATURE
BRICK DWELLING NO. 13
CONCRETE
DECK
SHED
0.030 CLEAR
CHAIN LINK FENCE
18.18
15.13
15.56
20.74
39.22

PART 2 PLAN 62R– 16741

P.I.N. 17489 – 0286 (LT)
TOTAL AREA = 8342.2 SQ.M.

ASPHALT DRIVEWAY

PART 1
RETAINED PARCEL
4165.80 sq. m.
1.03 acres
PART 1 PLAN 62R– 16741

PART 2
SEVERED PARCEL
4176.44 sq. m.
1.03 acres

PART 3
PLAN 62R– 16741

N 10° 46' 40" W
18.352 (P1,P2 & MEAS)

PART 4

N 57° 36' 00" W
7.071 (P2 & SET)
N 12° 36' 35" W
10.727 (P2 & MEAS)

40.393
44.350
84.743 (P1 & M)

HAUSER PLACE
BY 62M–1162
P.I.N. 17489 – 0370 (LT)
PART 5

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT, THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON

DATE

E.G. SALZER, O.L.S., O.L.I.P.

REFERENCE BEARING N 77° 24' 00" E
BLOCK 22 BY PLAN 62M–883
P.I.N. 17489 – 0307 (LT)

L.G. WOODS SURVEYING INC.
PROFESSIONAL LAND SURVEYORS
334 HATT STREET – DUNDAS DISTRICT
CITY OF HAMILTON, L9H 2H9
TEL (905) 627–0978 – FAX (905) 627–2818

FILE: 17–1039 REF

PLAN OF SURVEY OF

LOT 1
PLAN 62M–883
IN THE
CITY OF HAMILTON

SCALE 1:300
0 6 12 18 metres

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2017

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RECEIVED AND DEPOSITED
DATE.....

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REPRESENTATIVE FOR
LAND REGISTRAR FOR THE LAND
TITLES DIVISION OF WENTWORTH (62)

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P.I.N. 17489 – 0354 (LT)
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CHAIN LINK FENCE
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15.13
15.56
20.74
39.22

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TOTAL AREA = 8342.2 SQ.M.

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DATE

E.G. SALZER, O.L.S., O.L.I.P.

REFERENCE BEARING N 77° 24' 00" E
BLOCK 22 BY PLAN 62M–883
P.I.N. 17489 – 0307 (LT)

L.G. WOODS SURVEYING INC.
PROFESSIONAL LAND SURVEYORS
334 HATT STREET – DUNDAS DISTRICT
CITY OF HAMILTON, L9H 2H9
TEL (905) 627–0978 – FAX (905) 627–2818

FILE: 17–1039 REF

SURVEYOR'S REAL PROPERTY REPORT (PART 1
PLAN OF

LOT 1
PLAN 62M–883

IN THE

CITY OF HAMILTON

SCALE 1:300

0 6 12 18 metres

L.G. WOODS SURVEYING INC.
2017

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P2	DENOTES PLAN 62R–16741
824	DENOTES A.T. McLAREN OLS
1243	DENOTES E. BARICH OLS

METRIC

PLAN DISTANCES ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

P.I.N. 17489 – 0091 (LT)

P.I.N. 17489 – 0092 (LT)

P.I.N. 17489 – 0354 (LT)

LOT 4

N 78° 10' 25" E 90.114 (P1,P2 & MEAS)

SIB(824)

SIB(1243)

45.114 (P2)

45.00 (P2)

REGISTERED PLAN 62M–883

HERBERT PLACE

BY PLAN 62M–883

P.I.N. 17489 – 0309 (LT)

29.74

N 12° 36' 00" W 88.327 (P1,P2 & MEAS)

18.18

15.13

15.56

CHAIN LINK FENCE

0.60

0.62

INGROUND POOL

WATER FEATURE

2.25

BRICK DWELLING NO. 13

CONCRETE

DECK

SHED

CHAIN LINK FENCE

PART 2 PLAN 62R– 16741

P.I.N. 17489 – 0286 (LT)

TOTAL AREA = 8342.2 SQ.M.

LOT 5

REGISTERED PLAN 62M–1162

P.I.N. 17489 – 0355 (LT)

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PART 1 PLAN 62R– 16741

PART 3
PLAN 62R– 16741

N 57° 36' 00" W
7.071 (P2 & SET)

39.743 (P2)

84.743 (P1 & M)

N 12° 36' 35" W
10.727 (P2 & MEAS)

PART 4

PART 5

HAUSER PLACE
BY 62M–1162

P.I.N. 17489 – 0370 (LT)

REFERENCE BEARING N 77° 24' 00" E

BLOCK 22 BY PLAN 62M–883

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L.G. WOODS SURVEYING INC.
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334 HATT STREET – DUNDAS DISTRICT
CITY OF HAMILTON, L9H 2H9
TEL (905) 627–0978 – FAX (905) 627–2818

FILE: 16–1032–TOPO

Hamilton

Planning and Economic Development Department
Planning Division

Committee of Adjustment
City Hall
5th floor, 71 Main Street West
Hamilton, Ontario L8P 4Y5

Phone (905) 546-2424, ext. 4221
Fax (905) 546-4202

APPLICATION FOR CONSENT TO SEVER LAND UNDER SECTION 53 OF THE *PLANNING ACT*

Office Use Only

Date Application Received:	Date Application Deemed Complete:	Submission No.:	File No.:

1 APPLICANT INFORMATION

1.1, 1.2	NAME	ADDRESS	PHONE/FAX
Registered Owners(s)	Dragana Anna Jocic Suykens	[redacted]	
Applicant(s)*	Same as above.		
Agent or Solicitor	AJ Lakatos Planning Consultant c/o Joe Lakatos		

* Owner's authorisation required if the applicant is not the owner.

1.3 All correspondence should be sent to ☐ Owner ☐ Applicant ☑ Agent/Solicitor

2 LOCATION OF SUBJECT LAND

Complete the applicable lines

2.1 Area Municipality	Lot	Concession	Former Township
City of Hamilton			Flamborough (Greensville)
Registered Plan N°.	Lot(s)	Reference Plan N°.	Part(s)
62M-883	1		
Municipal Address			Assessment Roll N°.
13 Herbert Place			

2.2 Are there any easements or restrictive covenants affecting the subject land?
☐ Yes ☑ No
If YES, describe the easement or covenant and its effect:

3 PURPOSE OF THE APPLICATION

3.1 Type and purpose of proposed transaction: (check appropriate box)

a) Urban Area Transfer **(do not complete Section 10):**

☐ creation of a new lot
☐ addition to a lot
☐ an easement

Other: ☐ a charge
☐ a lease
☐ a correction of title

b) Rural Area / Rural Settlement Area Transfer **(Section 10 must be completed):**

☑ creation of a new lot
☐ creation of a new non-farm parcel
(i.e. a lot containing a surplus farm dwelling resulting from a farm consolidation)
☐ addition to a lot

Other: ☐ a charge
☐ a lease
☐ a correction of title
☐ an easement

3.2 Name of person(s), if known, to whom land or interest in land is to be transferred, leased or charged:
Daryl and Gayle Lewis of 40 Marshboro Ave, City of Hamilton (Dundas)

3.3 If a lot addition, identify the lands to which the parcel will be added:

4 DESCRIPTION OF SUBJECT LAND AND SERVICING INFORMATION

4.1 Description of land intended to be **Severed**:

Frontage (m)	Depth (m)	Area (m² or ha)
84.74m	92.7m	0.85ha (2.1ac)

Existing Use of Property to be severed:

☐ Residential
☐ Agriculture (includes a farm dwelling)
☐ Other (specify)
☐ Industrial
☐ Agricultural-Related
☑ Commercial
☑ Vacant

Proposed Use of Property to be severed:

☑ Residential
☐ Agriculture (includes a farm dwelling)
☐ Other (specify)
☐ Industrial
☐ Agricultural-Related
☐ Commercial
☐ Vacant

Building(s) or Structure(s):
Existing: Lands to be severed are vacant.

Proposed: Single detached dwelling

Type of access: (check appropriate box)

☐ provincial highway
☐ municipal road, seasonally maintained
☑ municipal road, maintained all year
☐ right of way
☐ other public road

Type of water supply proposed: (check appropriate box)

☐ publicly owned and operated piped water system
☑ privately owned and operated individual well
☐ lake or other water body
☐ other means (specify)

Type of sewage disposal proposed: (check appropriate box)

☐ publicly owned and operated sanitary sewage system
☑ privately owned and operated individual septic system
☐ other means (specify)

4.2 Description of land intended to be **Retained**:

Frontage (m)	Depth (m)	Area (m² or ha)
40.39m	92.7m	4425.4 sq.m

Existing Use of Property to be retained:

☑ Residential
☐ Agriculture (includes a farm dwelling)
☐ Other (specify)
☐ Industrial
☐ Agricultural-Related
☐ Commercial
☐ Vacant

Proposed Use of Property to be retained:

☑ Residential ☐ Industrial ☐ Commercial
☐ Agriculture (includes a farm dwelling) ☐ Agricultural-Related ☐ Vacant
☐ Other (specify) _____

Building(s) or Structure(s):

Existing: Refer to Plan of Survey

Proposed: No new buildings are proposed on retained lot.

Type of access: (check appropriate box)

☐ provincial highway ☐ right of way
☐ municipal road, seasonally maintained ☐ other public road
☑ municipal road, maintained all year

Type of water supply proposed: (check appropriate box)

☐ publicly owned and operated piped water system ☐ lake or other water body
☑ privately owned and operated individual well ☐ other means (specify)

_____

Type of sewage disposal proposed: (check appropriate box)

☐ publicly owned and operated sanitary sewage system
☑ privately owned and operated individual septic system
☐ other means (specify)

4.3 Other Services: (check if the service is available)

☑ electricity ☑ telephone ☑ school bussing ☑ garbage collection

5 CURRENT LAND USE

5.1 What is the existing official plan designation of the subject land?

Rural Hamilton Official Plan designation (if applicable): _____

Urban Hamilton Official Plan designation (if applicable) Greensville Rural Settlement Area Plan
Settlement Residential

Please provide an explanation of how the application conforms with a City of Hamilton Official Plan.

Refer to Planning Justification Brief.

5.2 What is the existing zoning of the subject land? Settlement Residential (S1) Zone
If the subject land is covered by a Minister's zoning order, what is the Ontario Regulation Number? Not Applicable.

5.3 Are any of the following uses or features on the subject land or within 500 metres of the subject land, unless otherwise specified. Please check the appropriate boxes, if any apply.

Use or Feature	On the Subject Land	Within 500 Metres of Subject Land, unless otherwise specified (indicate approximate distance)
An agricultural operation, including livestock facility or stockyard	☐	

A land fill	☐	
A sewage treatment plant or waste stabilization plant	☐	
A provincially significant wetland	☐	
A provincially significant wetland within 120 metres	☐	
A flood plain	☐	
An industrial or commercial use, and specify the use(s)	☐	
An active railway line	☐	
A municipal or federal airport	☐	

6 PREVIOUS USE OF PROPERTY

☑ Residential ☐ Industrial ☐ Commercial
☐ Agriculture ☐ Vacant ☐ Other (specify)

6.1 If Industrial or Commercial, specify use _____

6.2 Has the grading of the subject land been changed by adding earth or other material, i.e., has filling occurred?
☐ Yes ☑ No ☐ Unknown

6.3 Has a gas station been located on the subject land or adjacent lands at any time?
☐ Yes ☑ No ☐ Unknown

6.4 Has there been petroleum or other fuel stored on the subject land or adjacent lands?
☐ Yes ☑ No ☐ Unknown

6.5 Are there or have there ever been underground storage tanks or buried waste on the subject land or adjacent lands?
☐ Yes ☑ No ☐ Unknown

6.6 Have the lands or adjacent lands ever been used as an agricultural operation where cyanide products may have been used as pesticides and/or biosolids was applied to the lands?
☐ Yes ☑ No ☐ Unknown

6.7 Have the lands or adjacent lands ever been used as a weapons firing range?
☐ Yes ☑ No ☐ Unknown

6.8 Is the nearest boundary line of the application within 500 metres (1,640 feet) of the fill area of an operational/non-operational landfill or dump?
☐ Yes ☑ No ☐ Unknown

6.9 If there are existing or previously existing buildings, are there any building materials remaining on site which are potentially hazardous to public health (e.g., asbestos, PCB's)?
☐ Yes ☑ No ☐ Unknown

6.10 Is there reason to believe the subject land may have been contaminated by former uses on the site or adjacent sites?
☐ Yes ☑ No ☐ Unknown

6.11 What information did you use to determine the answers to 6.1 to 6.10 above?
Owner's knowledge.

6.12 If previous use of property is industrial or commercial or if YES to any of 6.2 to 6.10, a previous use inventory showing all former uses of the subject land, or if appropriate, the land adjacent to the subject land, is needed.
Is the previous use inventory attached?
☐ Yes ☐ No

7 PROVINCIAL POLICY

7.1 a) Is this application consistent with the Policy Statements issued under subsection of the *Planning Act*? (Provide explanation)

☑ Yes ☐ No
Refer to Planning Justification Brief.

b) Is this application consistent with the Provincial Policy Statement (PPS)?
☑ Yes ☐ No (Provide explanation)

Refer to Planning Justification Brief.

c) Does this application conform to the Growth Plan for the Greater Golden Horseshoe?
☑ Yes ☐ No (Provide explanation)

Refer to Planning Justification Brief.

d) Are the subject lands within an area of land designated under any provincial plan or plans? (If YES, provide explanation on whether the application conforms or does not conflict with the provincial plan or plans.)
☐ Yes ☑ No

e) Are the subject lands subject to the Niagara Escarpment Plan?
☐ Yes ☑ No

If yes, is the proposal in conformity with the Niagara Escarpment Plan?
☐ Yes ☐ No
(Provide Explanation)

f) Are the subject lands subject to the Parkway Belt West Plan?
☐ Yes ☑ No

If yes, is the proposal in conformity with the Parkway Belt West Plan?
☐ Yes ☐ No (Provide Explanation)

g) Are the subject lands subject to the Greenbelt Plan?
☐ Yes ☑ No

If yes, does this application conform with the Greenbelt Plan?
☐ Yes ☐ No (Provide Explanation)

8 HISTORY OF THE SUBJECT LAND

8.1 Has the subject land ever been the subject of an application for approval of a plan of subdivision or a consent under sections 51 or 53 of the *Planning Act*?
☑ Yes ☐ No ☐ Unknown

If YES, and known, indicate the appropriate application file number and the decision made on the application.

FL/B - 03:16 - Approved with Conditions. Approval Lapsed.

8.2 If this application is a re-submission of a previous consent application, describe how it has been changed from the original application.

8.3 Has any land been severed or subdivided from the parcel originally acquired by the owner of the subject land? ☐ Yes ☑ No

If YES, and if known, provide for each parcel severed, the date of transfer, the name of the transferee and the land use.

8.4 How long has the applicant owned the subject land?
September 2002

8.5 Does the applicant own any other land in the City? ☐ Yes ☑ No
If YES, describe the lands in "11 - Other Information" or attach a separate page.

9 OTHER APPLICATIONS

9.1 Is the subject land currently the subject of a proposed official plan amendment that has been submitted for approval? ☐ Yes ☑ No ☐ Unknown

If YES, and if known, specify file number and status of the application.

9.2 Is the subject land the subject of any other application for a Minister's zoning order, zoning by-law amendment, minor variance, consent or approval of a plan of subdivision?
☐ Yes ☑ No ☐ Unknown

If YES, and if known, specify file number and status of the application(s).

File number _____ Status _____

10 RURAL APPLICATIONS

10.1 **Rural Hamilton Official Plan Designation(s)**

☐ Agricultural ☐ Rural ☐ Specialty Crop
☐ Mineral Aggregate Resource Extraction ☐ Open Space ☐ Utilities
☑ Rural Settlement Area (specify) Greensville (Settlement Area) Settlement Residential (Designation)

If proposal is for the creation of a non-farm parcel resulting from a farm consolidation, indicate the existing land use designation of the abutting or non-abutting farm operation.

10.2 **Type of Application** (select type and complete appropriate sections)

☐ Agricultural Severance or Lot Addition
☐ Agricultural Related Severance or Lot Addition
☐ Rural Resource-based Commercial Severance or Lot Addition
☐ Rural Institutional Severance or Lot Addition

(Complete Section 10.3)

☑ Rural Settlement Area Severance or Lot Addition

☐ Surplus Farm Dwelling Severance from an Abutting Farm Consolidation (Complete Section 10.4)

☐ Surplus Farm Dwelling Severance from a Non-Abutting Farm Consolidation (Complete Section 10.5)

10.3 **Description of Lands**

a) Lands to be Severed:

Frontage (m): (from Section 4.1)	Area (m^2 or ha): (from in Section 4.1)
44.35m	4116.58 sq.m.

Existing Land Use: Vacant Proposed Land Use: Residential

b) Lands to be Retained:

Frontage (m): (from Section 4.2)	Area (m2 or ha): (from Section 4.2)
40.39m	4426.4 sq.m.

Existing Land Use: Residential Proposed Land Use: Residential

10.4 **Description of Lands (Abutting Farm Consolidation)**

a) Location of abutting farm:

(Street) (Municipality) (Postal Code)

b) Description abutting farm:

Frontage (m):	Area (m2 or ha):

Existing Land Use(s): _____ Proposed Land Use(s): _____

c) Description of consolidated farm (excluding lands intended to be severed for the surplus dwelling):

Frontage (m):	Area (m2 or ha):

Existing Land Use: _____ Proposed Land Use: _____

d) Description of surplus dwelling lands proposed to be severed:

Frontage (m): (from Section 4.1)	Area (m2 or ha): (from Section 4.1)

Front yard set back: _____

e) Surplus farm dwelling date of construction:

☐ Prior to December 16, 2004 ☐ After December 16, 2004

f) Condition of surplus farm dwelling:

☐ Habitable ☐ Non-Habitable

g) Description of farm from which the surplus dwelling is intended to be severed (retained parcel):

Frontage (m): (from Section 4.2)	Area (m2 or ha): (from Section 4.2)

Existing Land Use: _____ Proposed Land Use: _____

10.5 **Description of Lands (Non-Abutting Farm Consolidation)**

a) Location of non-abutting farm

(Street) (Municipality) (Postal Code)

b) Description of non-abutting farm

Frontage (m):	Area (m2 or ha):

Existing Land Use(s): _____ Proposed Land Use(s): _____

c) Description of surplus dwelling lands intended to be severed:

Frontage (m): (from Section 4.1)	Area (m2 or ha): (from Section 4.1)

Front yard set back: _____

d) Surplus farm dwelling date of construction:

☐ Prior to December 16, 2004 ☐ After December 16, 2004

e) Condition of surplus farm dwelling:

☐ Habitable ☐ Non-Habitable

f) Description of farm from which the surplus dwelling is intended to be severed (retained parcel):

Frontage (m): (from Section 4.2)	Area (m2 or ha): (from Section 4.2)

Existing Land Use: _____ Proposed Land Use: _____

11 OTHER INFORMATION

Is there any other information that you think may be useful to the Committee of Adjustment or other agencies in reviewing this application? If so, explain below or attach on a separate page.

Refer to Planning Justification Brief and Hydrogeological report and comment responses.

12 SKETCH (Use the attached Sketch Sheet as a guide)

12.1 The application shall be accompanied by a sketch showing the following in metric units:

(a) the boundaries and dimensions of any land abutting the subject land that is owned by the owner of the subject land;

(b) the approximate distance between the subject land and the nearest township lot line or landmark such as a bridge or railway crossing;

(c) the boundaries and dimensions of the subject land, the part that is intended to be severed and the part that is intended to be retained;

(d) the location of all land previously severed from the parcel originally acquired by the current owner of the subject land;

(e) the approximate location of all natural and artificial features (for example, buildings, barns, railways, roads, watercourses, drainage ditches, banks of rivers or streams, wetlands, wooded areas, wells and septic tanks) that,

i) are located on the subject land an on land that is adjacent to it, and
ii) in the applicant's opinion, may affect the application;

(f) the current uses of land that is adjacent to the subject land (for example, residential, agricultural or commercial);

(g) the location, width and name of any roads within or abutting the subject land, indicating whether it is an unopened road allowance, a public travelled road, a private

Planning Justification Brief
Consent to Sever

13 Herbert Place, City of Hamilton (Greensville)

Prepared by:

AJ Lakatos Planning Consultant

1006-190 Macdonell Street, Guelph, ON, N1H 0A9

July 2020

A.J. Lakatos Planning Consultant
1006-190 Macdonell Street, Guelph, ON, N1H 0A9

Planning Justification Brief
13 Herbert Place, City of Hamilton (Greensville)

1. Introduction

A.J. Lakatos Planning Consultant has been retained by the landowner and applicant to prepare a Planning Justification Brief for a Consent to Sever application, for lands referred to as 13 Herbert Place in the Rural Settlement Area of Greensville, in the City of Hamilton. The purpose of the Consent to Sever is to create one (1) new lot that conforms to the regulations of the Settlement Residential (S1) Zone to facilitate a single detached dwelling. Note that the proposed lot creation was approved by Committee of Adjustment with a final and binding decision on April 30th, 2009. However, the applicable Conditions to of Consent were not cleared and as such, the decision has lapsed.

The following Planning Justification Brief provides a general overview of the subject lands, a detailed description of the development proposal, and an overview of the pertinent planning framework applicable to the subject lands.

1.1 Description of Subject Lands

13 Herbert Place is located in the Greensville settlement area within the former municipality of Flamborough, now the City of Hamilton.

13 Herbert Place is a corner lot legally described as Lot 1 of Registered Plan No. 62M-883 in the City of Hamilton ("subject lands"). The subject lands have a total lot area of approximately 0.85 hectares (2.1 acres) with an approximate lot frontage of 88.33 metres on Herbert Place and a depth of 84.74 metres on Hauser Place. The subject lands are occupied by one (1) single detached dwelling, an inground pool and accessory buildings located in the rear yard. The dwelling is accessed by one (1) driveway from Herbert Place.

The subject lands are located within a rural residential subdivision that is made up of large single detached estate lots with lot sizes ranging from approximately 2,800 square metres to 4,500 square metres. The neighbourhood is generally zoned Settlement Residential (S1) Zone **(refer to Figure 1 – Location Map)**.

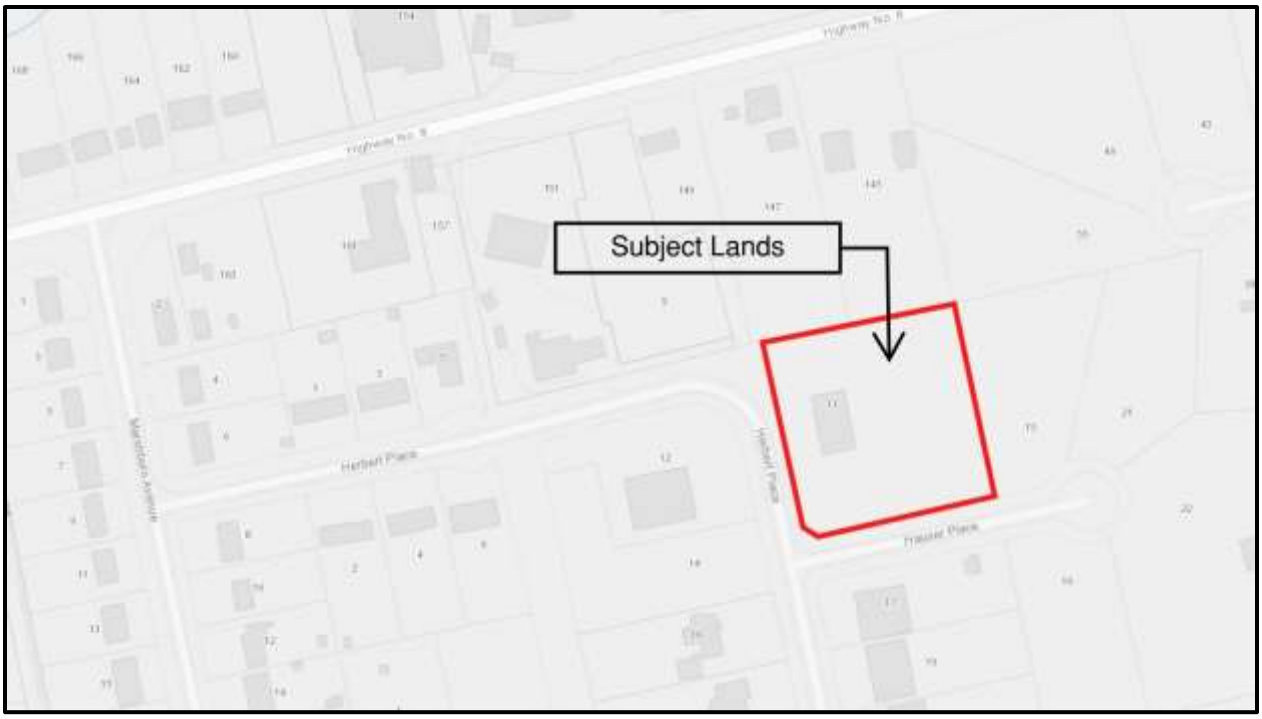


Figure 1: Location of Subject Lands – 13 Herbert Place, City of Hamilton (Greensville)

2. Proposed Development

The proposed Consent to Sever is to create a new lot that conforms to the regulations of the Settlement Residential (S1) Zone of the City of Hamilton Zoning By-law No. 05-200 to facilitate the construction of a single detached dwelling. The retained lot is intended to maintain the existing lot frontage of 88.327 metres on Herbert Place with a proposed lot depth of 40.39 metres and a total lot area of 1.09 acres. The existing dwelling, driveway and inground pool including landscaping is to be maintained. The severed lot is proposed to have 44.35 metres of frontage onto Hauser Place with a proposed lot depth of 92.71 metres and a total lot area of 1.01 acres **(Refer to Appendix A – Consent Sketch).** Driveway access is proposed to be from Hauser Place. There is an intent to purchase agreement between the landowner and a potential purchaser. The intended dwelling to be constructed is a one-storey 3-bedroom dwelling **(refer to Appendix B – Intent to Purchase with Proposed House Plan).**

A subsequent Building Permit application is required to facilitate the construction of a single detached dwelling. The Building Permit application will review the proposed dwelling in conjunction with the Ontario Building Code (OBC).

3. Planning Framework

This section reviews the planning documents applicable to the subject lands, which includes the Planning Act, Provincial Policy Statement, 2020, Places to Grow – Growth Plan for the Greater Golden Horseshoe 2019, the Rural Hamilton Official Plan including the Greensville Rural Settlement Area Plan and the City of Hamilton Zoning By-law No. 05-200.

3.1 Provincial Policy Statement, 2020

The Provincial Policy Statement, 2020 ("PPS") came into effect on May 1, 2020 as a policy-led regulating document that provides direction on provincial interest related to managing land use planning and development. The subject lands are located within an existing "Rural Settlement Area" known as Greensville, within the municipal limits of the City of Hamilton. The proposal has been reviewed with respect to the Provincial Policy Statement (PPS).

Rural settlement areas are to be supported by an appropriate range and mix of housing (1.1.4.1.c). The proposed consent will establish an estate residential lot appropriate for a single detached dwelling that is compatible with the existing lot fabric of the established and planned neighbourhood. The proposed single detached house will be supported by private services, that have capacity to accommodate the proposed functional servicing requirements (1.1.4.1.e). The proposed consent will provide minor growth in the form of a new single detached lot that can accommodate a single detached dwelling with a built form that respects the rural residential lot character in the area with appropriate building height, scale, setbacks and landscaping (1.1.4.2, 1.1.4.3).

The proposed lot will be serviced by private sewage and a private well, which is standard to this neighbourhood. The proposed lot area can accommodate private services and will not impact the environment or human health and safety. Please refer to the submitted Hydrogeological Report for further detail (1.6.6.3, 1.6.6.4).

The subject lands do not have significant natural heritage or cultural heritage resources, as such these important Provincial resources will not be adversely impacted by the proposed lot creation (2.1, 2.6). A Hydrogeological Report has been prepared by a qualified professional to ensure water resources are protected, most notably groundwater, by the construction and installation of private services for the purposes of servicing a single detached dwelling. The report concludes that the lot severance is not likely to have an impact on the ground water resource (2.2). The proposed lot creation is outside of natural or human made hazard lands, therefore public health and safety is not impacted (3.1, 3.2).

The proposed lot creation is **consistent** with the *Provincial Policy Statement, 2020.*

3.4 Rural Hamilton Official Plan

The subject lands are within the Rural Hamilton Official Plan (RHOP). The RHOP has been in force and effect as of March 7, 2012. The RHOP, Volume 1 designates the subject lands "Rural Settlement Area". Further, the RHOP, Volume 2, Flamborough Rural Settlement Area Plans designates the subject lands "Settlement Residential" (Volume 2: Map 8a).

Volume 1, Chapter D, Section 5.0 states Rural Settlement Areas are where development has clustered in a small scale with the intent of being residential in nature with service centres that serve the immediate community. Greensville is one of nineteen Rural Settlement Area within the City of Hamilton's rural area.

Volume 2, Chapter A, Section 3.5, Greensville Rural Settlement Area Plan, outlines the general development policies and Settlement Residential policies. The proposed lot creation will establish a lot that is suitable for a single detached dwelling that will be integrated and compatible with the existing community with a similar lotting pattern and size (A.3.5.3.1, A.3.5.3.2). The proposed lot is a minor infill lot that meets required Settlement Area (S1) Zoning facilitated through a Consent to Sever application to sever lands from a lot of record within a registered plan of subdivision (A.3.5.3.3, A.3.5.3.4). The subject lands are not identified as having natural heritage features on-site or within proximity and are designated Settlement Residential. Applicable policies are reviewed below (A.3.5.3.5, A.3.5.3.6).

A Hydrogeology Report has been prepared to review potential impacts to ground water the proposed private sanitary and water services may have. The report considers the surrounding lands and development and concluded that the proposed severance can be supported by private services without adverse impacts to ground water quality or quantity (A.3.5.5.1). The proposed lot severance will facilitate a proposed three-bedroom bungalow single detached dwelling (A.3.5.5.3). The proposed infill lot is proposed to be facilitated through consent and it will not interfere with existing or future development as existing public right-of-ways are established (A.3.5.5.4). The proposed consent is appropriate to establish one (1) lot as it's intent for a single detached dwelling on private services meets the policies of the RHOP (A.3.5.5.6). The proposed lot has a lot width and area that can accommodate setbacks and landscape area to facilitate a single detached house that is consistent with the surrounding lot fabric and built form. The proposed development will have respect to the existing neighbourhood character to be integrated and compatible (A.3.5.5.7).

The proposed single detached dwelling will be serviced by private water supply and private sewage disposal systems (A.3.5.13.2, A.3.5.13.3) supported by a Hydrogeological Report prepared by a qualified professional which concludes the proposed severance, dwelling and private services will not impact the ground water supplies' quantity or quality (A.3.5.13.4).

The proposed consent to create a single detached lot serviced by private services **conforms** to the RHOP.

3.5 The City of Hamilton Zoning By-law No. 05-200

The Comprehensive City of Hamilton Zoning By-law No. 05-200 (ZBL 05-200), as amended, has been in force and effect as of May 25, 2005. The Rural Zones have been in force and effect of as July 10, 2015.

ZBL 05-200 zones the subject lands Settlement Residential (S1) Zone. The S1 Zone permits a single detached dwelling. As such, the proposed intent of the lot creation for a single detached dwelling is permitted.

The following chart outlines the required regulations for a single detached dwelling in the S1 Zone, in comparison to the proposed lot.

Settlement Residential (S1) Zone	Required	Proposed	Conformity Yes/No
Minimum Lot Area	0.4 hectares	0.41 hectares	Yes
Minimum Lot Width	30.0 metres	44.35 metres	Yes
Minimum Rear Yard	7.5 metres	7.5 metres	Yes
Maximum Building Height	10.5 metres	10.5 metres	Yes
Accessory Buildings	Section 4.8 and 4.8.1	Section 4.8 and 4.8.1	Yes
Parking	2 spaces/dwelling	2 spaces/dwelling	Yes

The proposed lot, facilitated through consent, **complies** to the Settlement Residential (S1) Zone of Zoning By-law No. 05-200.

4.0 Planning Rationale

The proposed Zoning By-law Amendment has merit and can be supported for the following reasons:

1. The proposal is consistent with the Provincial Policy Statement Rural Settlement Area policies and natural and cultural heritage resources will be protected;

2. The proposal conforms to the Rural Hamilton Official Plan which permits infill single detached lots through consent subject to being compatible with the existing character of the area and able to accommodate private services without impacting ground water quality and quantity, proven through a Hydrogeological Report;

3. The proposed lot creation will comply to the single detached dwelling regulations of the Settlement Residential (S1) Zone of Zoning By-law No. 05-200.

5.0 Conclusion

In conclusion, the proposed lot creation facilitated through consent is appropriate for the subject lands, desirable and reflects good land use planning for the subject lands.

Respectfully Submitted,
A.J. Lakatos Planning Consultant

Mr. Joe Lakatos MCIP, RPP

A.J. Lakatos Planning Consultant
1006-190 Macdonell Street, Guelph, ON, N1H 0A9

Appendix “A”

Consent Sketch

A.J. Lakatos Planning Consultant
1006-190 Macdonell Street, Guelph, ON, N1H 0A9

Appendix “B”

Intent to Purchase

Proposed House Plan

A.J. Lakatos Planning Consultant
1006-190 Macdonell Street, Guelph, ON, N1H 0A9

Peto MacCallum Ltd.
CONSULTING ENGINEERS

March 13, 2020 PML Ref.: 17HX016

Mr. Luke Hewitt
13 Herbert Place
Hamilton (Dundas), Ontario
L9H 5E1

Dear Mr. Hewitt

Hydrogeological Investigation
13 Herbert Place
Hamilton (Dundas), Ontario

This letter provides our response to the comments from the City of Hamilton (City) on the report titled "Hydrogeological Investigation, 13 Herbert Place, Hamilton (Dundas), Ontario" dated April 30, 2019 completed by Peto MacCallum Ltd. (PML) (PML Ref.: 17HX016, Report 1). The subject property is referred to herein as the 'Site'.

This letter specifically addresses the comments received from the City of Hamilton Water Division - Source Protection Planning as outlined in an email dated October 16, 2019 from Mike Christie, Project Manager, Source Water Protection and as detailed in the peer review report by Cambium Inc. dated October 10, 2019.

The following section provides corresponding response for comments 1 and 3 outlined in the peer review report by Cambium Inc. dated October 10, 2019

Comment 1 – Potable Water Quality

It is understood that sampling of the potable water supply well at the Site is required for approval of the lot severance, which was recommended in our report. As well, Cambium requested the closest overburden well be sampled for septic related parameters (nutrients, bacteria, and DOC) to determine the existing overburden quality.

On December 2, 2019, PML attended the Site and collected a sample of raw water from a tap located in the basement of the residence. The sample was submitted to SGS Laboratories for chemical analysis for the ground water quality parameters listed in Tables 1 through 4 in Appendix A of the City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services.

Laboratory Certificates of Analysis compared to the Ontario Drinking Water Quality Standards (ODWQS) are included in Appendix A. The measured values and corresponding ODWQS (labelled as L1 and L2) are shown on the certificates of analysis with the levels exceeding the applicable standards highlighted in orange, if applicable. Analyses for Dioxins and Furans was subcontracted to Wellington Laboratories of Guelph, Ontario.

Based on the results of chemical testing, the measured concentrations of the tested parameters met the ODWQS with the exception of Chloride, Sodium, Hardness, Total Dissolved Solids (TDS), and Turbidity. The results are summarized in the following table.

Parameter	Measured Concentration	ODWQS	Comments	Treatment/ Mitigation
Chloride	390 mg/L	250 mg/L AO	Nontoxic material present in small amounts in drinking water and produces a detectable salty taste at the AO of 250 mg/L. Widely distributed in nature generally as the sodium, potassium and calcium salts.	N/A
Sodium	120 mg/L	200 mg/L AO	A maximum acceptable concentration (MAC) for sodium in drinking water has not been specified. High sodium does not affect the safety of the water supply. Sodium concentrations that exceed 20 mg/L may be important for those with sodium restricted diets.	N/A
Hardness	882 mg/L	80 to 100 mg/L OG	Hardness levels between 80 and 100 mg/L are considered to provide an acceptable balance between corrosion and incrustation.	Water softener
TDS	1,330 mg/L	500 mg/L AO	Refers mainly to the inorganic substances dissolved in water. The principal constituents of TDS are chloride, sulphates, calcium, magnesium and bicarbonates. The effects of TDS on drinking water quality depend on the levels of the individual components.	Sediment and/or carbon filter
Turbidity	1.88 NTU	5 NTU AO	Refers mainly to the clarity of water; turbidity is an important indicator of treatment efficiency and the efficiency of filters in particular.	Sediment and/or carbon filter

AO= Aesthetic Objective; OG = Operational Guideline; MAC – Maximum Acceptable Concentration

Regarding gross alpha/beta concentrations, The Guidelines for Canadian Drinking Water Quality: Guideline Technical Document - Radiological Parameters indicates water samples may be initially screened for radioactivity using techniques for gross alpha and gross beta activity determinations, subject to the limitations of the method. Compliance with the guidelines may be inferred if the measurements are less than 0.5 Bq/L for gross alpha activity and less than 1 Bq/L for gross beta activity. The guideline levels are set to reflect the most restrictive Maximum Acceptable Concentrations for specific radionuclides in drinking water. If these levels are not exceeded, compliance with the guidelines can be inferred. In this regard, the results of <0.2 Bq/L for both gross alpha and beta are acceptable and no further sampling and testing is required.

Based on the above results, the bedrock water quality is acceptable.

On December 9, 2019, PML obtained permission from the owner and attended a neighbouring property (151 Highway 8) in order to sample the closest overburden well. PML collected a sample of raw water directly from the well; the MECP well record indicates the well is screened in the overburden aquifer at depth of 16.7 m below grade. The sample was submitted to SGS Laboratories for chemical testing for Dissolved Organic Carbon (DOC), Heterotrophic Plate Count (HPC), Nitrates, Phosphorus, E. Coli and Total Coliform.

Laboratory Certificates of Analysis compared to the Ontario Drinking Water Quality Standards (ODWQS) are included in Appendix A. The measured values and corresponding ODWQS (labelled as L1 and L2) are shown on the certificates of analysis.

Based on the results of chemical testing, the measured concentrations of the tested parameters met the ODWQS, which indicates the overburden quality is acceptable.

Comment 3 – Predictive Assessment vs. Monitoring Data

PML has been extensively involved in hydrogeological assessment for the properties in the area and has accumulated monitoring data for nitrate concentrations in the ground water spanning 30 years. The monitoring data indicates nitrate concentrations in the range of <0.01 to 7.6 mg/L, thus demonstrating no health risks or off-site impacts. When the nitrate concentration determined using the predictive assessment calculation is compared to site specific measurements of actual nitrate concentrations in wells within the vicinity of the Site, the predictive assessment/theoretical computation is shown to be conservative, as demonstrated in the difference in concentrations. Based on the above rationale, the lot severance is not likely to have an impact on the ground water resource.

The historic sample locations are depicted on the Well Location Plan as Drawing 1. Refer to Table 1, appended for a compilation of the historical data.

We trust this letter adequately addresses the City of Hamilton/peer reviewer comments. Please do not hesitate to contact our office should you have any questions.

Sincerely

Peto MacCallum Ltd.

Melissa King, P.Geo., QP_{ESA}
Associate
Discipline Head, Geoenvironmental and Hydrogeological Services

PA/MAK:ld

Enclosures:
Table 1 - Historic Nitrate Concentrations in Ground Water
Drawing 1 – Well Location Plan
Appendix A – Laboratory Analytical Data

Distribution:
1 cc: Mr. Luke Hewitt (via email)
1 cc: Mr. Joe Lakatos, BLA, MCIP, RPP (via email)

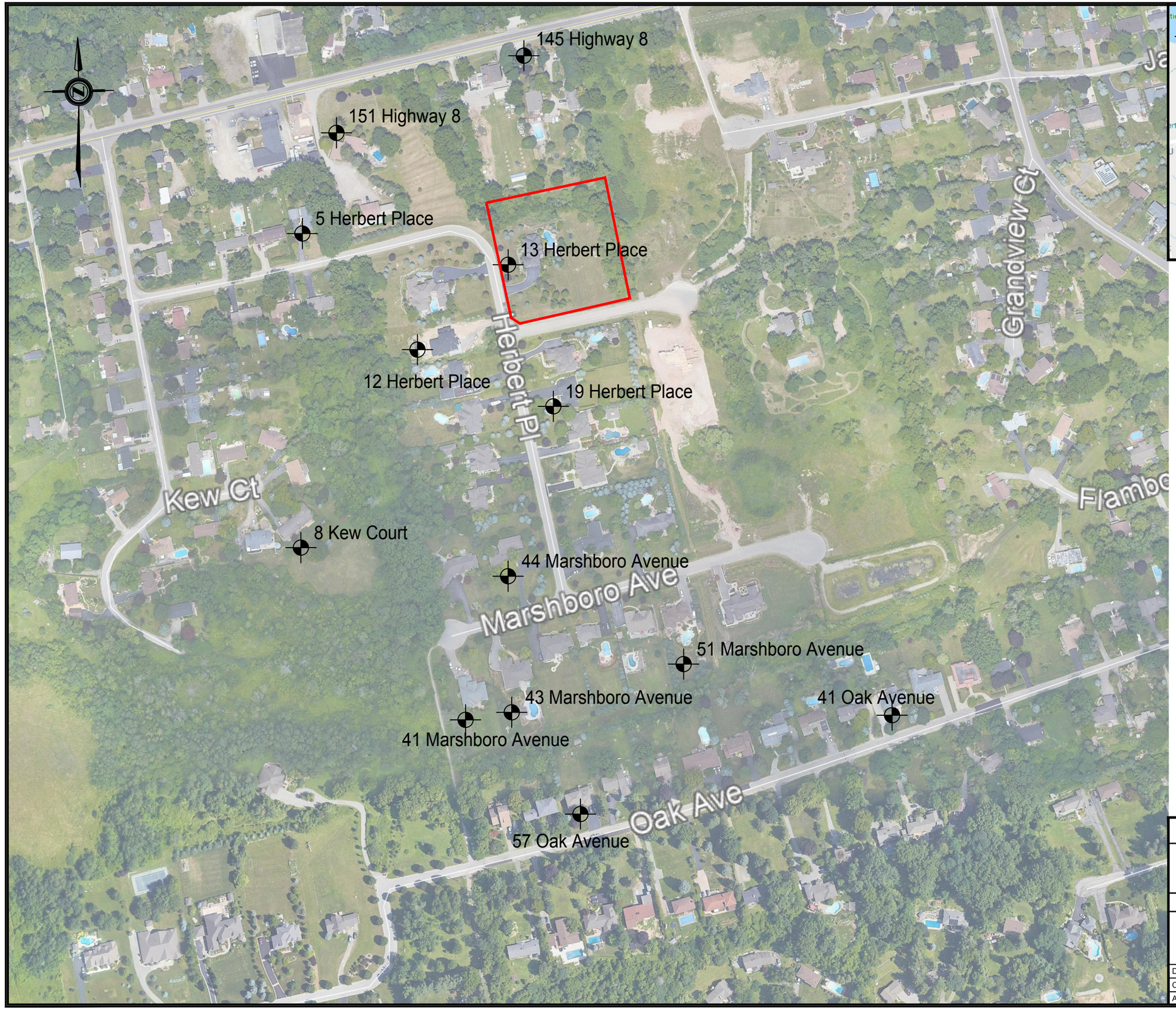
TABLE 1

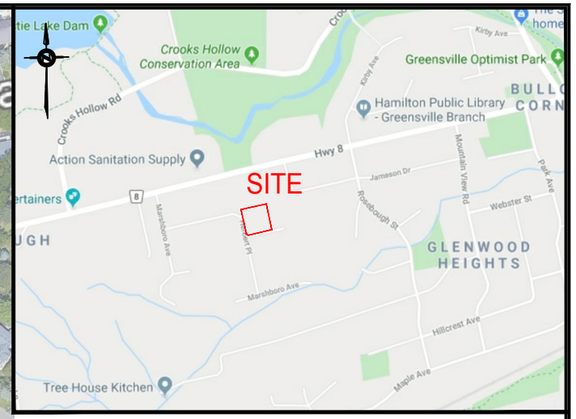
Historic Nitrate Concentrations in Ground Water

Municipal Address	Soil Profile (depth in metres)[1]	Aquifer		Sampling Date	Nitrate (mg/L)
		Type	Well Depth (m)		
13 Herbert Place (Site)	Brown sandy clay (5.5) Grey sandy clay (14.6) Brown sand and gravel (15.8) Grey limestone (18.3)	Bedrock	16.5	December 2, 2019	0.79
151 Highway 8	Brown loam medium sand and gravel (12.8) Gravel and clay (15.5) Gravel (15.5) Gravel and coarse sand (17.4)	Sand and/or gravel	15.5	January 31, 2012	2.21
				December 9, 2019	1.98
8 Kew Court	Sandy Clay (8.2) Clayey Sand (13.1) Black Coarse Sand (21.0) Brown Sand (24.4)	Sand and/or gravel	24.4	August, 1988	4.0
5 Herbert Place	Previously dug (18.9) Brown clay (23.2) Grey gravel (23.8)	Sand and/or gravel	23.2	August, 1988	6.0
145 Highway 8	Clay (30.8) Limestone (42.7)	Bedrock	30.8	August, 1988	4.5
41 Oak Avenue	Brown sandy clay (10.1) Brown limestone (10.7)	Bedrock	10.7	August, 1988	0.71
57 Oak Avenue	Brown clay (3.7) Grey clay (15.8) Grey limestone (17.1)	Bedrock	17.1	August, 1988	0.17
19 Herbert Place (Lot 3)	Brown sandy clay (12.8) Brown sand and gravel (13.4) Grey Limestone (15.2)	Bedrock	14.0	June 6, 2011	1.1
				January 11, 2006	1.6
				August 24, 2005	1.2
				October 7, 2004	1.6
				April 7, 2004	0.5
				November 18, 2003	0.8
				May 1, 2002	0.2
				March 5, 2001	0.05
				April 17, 2000	1.72
51 Marshboro Avenue (Lot 8)	Brown sandy clay (9.1) Brown sand and gravel (12.2) Limestone (15.2)	Bedrock	14.0	June 2, 2011	2.8
				January 11, 2006	2.6
				August 24, 2005	1.6
				October 7, 2004	1.2
				April 7, 2004	0.9
				November 18, 2003	0.8
				May 1, 2002	0.9
				March 5, 2001	0.05

Municipal Address	Soil Profile (depth in metres)[1]	Aquifer		Sampling Date	Nitrate (mg/L)
		Type	Well Depth (m)		
43 Marshboro Avenue (Lot 12)	Well information not available	N/A	N/A	April 17, 2000	0.07
41 Marshboro Avenue (Lot 13)	Well information not available	N/A	N/A	January 11, 2006	ND
				August 24, 2005	ND
				October 7, 2004	ND
				April 7, 2004	ND
				November 18, 2003	ND
				May 1, 2002	ND
				April 17, 2000	<0.01
44 Marshboro Avenue (Lot 15)	Well information not available	N/A	N/A	January 19, 2000	0.48
12 Herbert Place (Lot 20)	Brown Sand (10.7) Brown sand and gravel (13.1) Brown clayey sand (15.5) Brown sandy clay (16.8) Grey limestone (17.1)	Bedrock	17.1	August 20, 2012	2.86
				June 2, 2011	3.0
				January 11, 2006	5
				August 24, 2005	3.8
				October 7, 2004	4.7
				April 7, 2004	ND
				November 18, 2003	ND
				May 1, 2002	3.3
				February 1, 2000	1.74
12 Herbert Place (Lot 20)	Brown silt and sand (13)	Monitoring well BH1-1	12.6	August 20, 2012	4.74
	Brown silt and sand (9.8)	Monitoring well BH1-2	9.8		3.86
	Brown silt (11.3)	Monitoring well BH2	9.0		7.62

Note:
1. Subsurface profile based on MECP Water Well Record
ND = not detected





KEY PLAN
HAMILTON, ONTARIO

LEGEND:

SITE LIMITS

Municipal Address

APPROXIMATE LOCATION OF WATER WELL

REFERENCE:
PLAN PRODUCED FROM FROM GIS INFORMATION PROVIDED BY GOOGLE EARTH SATELLITE IMAGERY SERVICE. 2019

0m 25 50 75 100 150

SCALE

MR. LUKE HEWITT

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE LOT SEVERANCE
HAMILTON, ONTARIO

WELL LOCATION PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	PA	MAR. 2020	AS SHOWN	17HX016	1
CHECKED	MAK				
APPROVED	MAK				

APPENDIX A

Laboratory Analytical Data

FINAL REPORT

CA14306-DEC19 R

17HX016, 151 Highway 8, Hamilton

Prepared for

Peto MacCallum Ltd

FINAL REPORT

CA14306-DEC19 R

First Page

CLIENT DETAILS

Client	Peto MacCallum Ltd
Address	45 Burford Road Hamilton, ON L8E 3C6. Canada
Contact	Melissa King
Telephone	(905) 561-2231
Facsimile	(905) 561-6366
Email	mking@petomaccallum.com;parlos@petomaccallum.com
Project	17HX016, 151 Highway 8, Hamilton
Order Number	
Samples	Water (1)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14306-DEC19
Received	12/09/2019
Approved	12/12/2019
Report Number	CA14306-DEC19 R
Date Reported	12/12/2019

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

SIGNATORIES

Brad Moore Hon. B.Sc

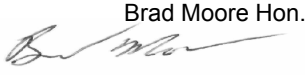


TABLE OF CONTENTS

Client: Peto MacCallum Ltd
Project: 17HX016, 151 Highway 8, Hamilton
Project Manager: Melissa King
Samplers: Philip Arlos

PACKAGE: **ODWS_AO_OG - General Chemistry** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03
L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Dissolved Organic Carbon	mg/L	1	5		1

PACKAGE: **ODWS_AO_OG - Metals and Inorganics** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03
L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics					
Nitrite (as N)	as N mg/L	0.003			0.003#<MDL
Nitrate (as N)	as N mg/L	0.006		10	1.98
Nitrate + Nitrite (as N)	as N mg/L	0.006			1.98
Phosphorus	mg/L	0.003			< 0.003

PACKAGE: **ODWS_AO_OG - Microbiology** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03
L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
Microbiology					
E. Coli	cfu/100mL	-			0
Total Coliform	cfu/100mL	-			0

Client: Peto MacCallum Ltd
Project: 17HX016, 151 Highway 8, Hamilton
Project Manager: Melissa King
Samplers: Philip Arlos

PACKAGE: **ODWS_AO_OG - Microbiology** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
Microbiology (continued)					
Heterotrophic Plate Count (HPC)	cfu/1mL	-			860

PACKAGE: **ODWS_MAC - General Chemistry** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Dissolved Organic Carbon	mg/L	1	5		1

PACKAGE: **ODWS_MAC - Metals and Inorganics** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics					
Nitrite (as N)	as N mg/L	0.003			0.003#<MDL
Nitrate (as N)	as N mg/L	0.006		10	1.98
Nitrate + Nitrite (as N)	as N mg/L	0.006			1.98
Phosphorus	mg/L	0.003			< 0.003

Client: Peto MacCallum Ltd

Project: 17HX016, 151 Highway 8, Hamilton

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **ODWS_MAC - Microbiology** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	8
Sample Name	151 Highway 8
Sample Matrix	Water
Sample Date	09/12/2019

Microbiology

Parameter	Units	RL	L1	L2	Result
E. Coli	cfu/100mL	-			0
Total Coliform	cfu/100mL	-			0
Heterotrophic Plate Count (HPC)	cfu/1mL	-			860

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrate + Nitrite (as N)	DIO0139-DEC19	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0139-DEC19	mg/L	0.003	<0.003	ND	20	100	80	120	101	75	125
Nitrate (as N)	DIO0139-DEC19	mg/L	0.006	<0.006	0	20	105	80	120	109	75	125

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0088-DEC19	mg/L	1	<1	0	10	96	90	110	92	75	125

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Phosphorus	EMS0064-DEC19	mg/L	0.003	<0.003	0	20	101	90	110	NV	70	130

Microbiology

Method: OMOE MICROMFDC-E3407A | Internal ref.: ME-CA-IENVIMIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9156-DEC19	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9156-DEC19	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9156-DEC19	cfu/100mL	-	ACCEPTED	ACCEPTED							

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 004640
Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Oleg Mozhin
Received Date (mm/dd/yyyy): 12/9/19 (mm/dd/yy)
Received Time: 16:00
Received By (signature):
Custody Seal Present: ☑
Custody Seal Intact: ☑
Cooling Agent Present: ☑ ice pack
Temperature Upon Receipt (°C): 9,9,9
LAB LIMS #: CA14306-DEC19

REPORT INFORMATION

Company: Peto MacCallum Ltd.
Contact: Melissa King
Address: 45 Burford Road
Hamilton, ON
Phone: 905-561-2231
Email: 905-561-6366
Email: mking@petomaccallum.com

INVOICE INFORMATION

☒ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email:

PROJECT INFORMATION

Quotation #: ~~2019 PM~~ PM
P.O. #:
Project #: PM17HX016
Site Location/ID: 151 Highway 8, Hamilton

TURNAROUND TIME (TAT) REQUIRED

☐ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day
RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days
PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION
Specify Due Date:
Rush Confirmation ID:

REGULATIONS

Regulation 153/04: ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ____ ☐ R/P/I ☐ I/C/C ☐ A/O
Soil Texture: ☐ Coarse ☐ Medium ☐ Fine
Other Regulations: ☐ Reg 347/558 (3 Day min TAT) ☐ PWQO ☐ MMER ☐ CCME ☒ Other: ODWQS ☐ MISA
Sewer By-Law: ☐ Sanitary ☐ Storm Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	Metals & Inorganics	PAH ☐ ABN ☐ SVOC(all) ☐	PCB Total ☐ Aroclor ☐	PHC F1-F4 ☐ VOC ☐ BTEX ☐ BTEX/F1 ☐ F2-F4 ☐	VOC ☐ BTEX ☐ THM ☐	Pesticides OC ☐ OP ☐	TCLP M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit. ☐	Water Pkg Gen. ☐ Ext. ☐	Sewer Use:	Nitrate / Nitrite	Phosphorus	E.Coli / Chloroform (total)	HPC and DOC		COMMENTS:
1	151 Highway 8	Dec/09/19	11:45	4	water	N										X	X	X	X		
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Observations/Comments/Special Instructions

Sampled By (NAME): Philip Arles
Signature:
Date: 12/09/19 (mm/dd/yy)
Pink Copy - Client

Relinquished by (NAME):
Signature:
Date: ___/___/___ (mm/dd/yy)
Yellow & White Copy - SGS

Revision #: 1.1
Date of Issue: 04 April, 2018

WELLINGTON LABORATORIES

345 Southgate Drive
Guelph ON N1G 3M5 CANADA
Tel: 519-822-2436
Fax: 519-822-2849

2019-396-LR	CA 14040-DEC19				
Table A: Dioxins and Furans: Water (ppq)					
			CA 14040-DEC19		
	Lab Blank		December 02/2019		
		# of	13 Herbert Place	# of	
Furans:		pks		pks	
2378-TCDF	ND (1)		ND (1)		
Total TCDFs *	ND (1)		ND (1)		
12378-PeCDF	ND (1)		ND (1)		
23478-PeCDF	ND (1)		ND (1)		
Total PeCDFs *	ND (1)		ND (1)		
123478-HxCDF	ND (1)		ND (1)		
123678-HxCDF	ND (1)		ND (1)		
234678-HxCDF	ND (1)		ND (1)		
123789-HxCDF	ND (1)		ND (1)		
Total HxCDFs *	ND (1)		ND (1)		
1234678-HpCDF	ND (1)		ND (1)		
1234789-HpCDF	ND (1)		ND (1)		
Total HpCDFs *	ND (1)		ND (1)		
OCDF	ND (1)		ND (1)		
Dioxins:					
2378-TCDD	ND (1)		ND (1)		
Total TCDDs *	ND (1)		ND (1)		
12378-PeCDD	ND (1)		ND (1)		
Total PeCDDs *	ND (1)		ND (1)		
123478-HxCDD	ND (1)		ND (1)		
123678-HxCDD	ND (1)		ND (1)		
123789-HxCDD	ND (1)		ND (1)		
Total HxCDDs *	ND (1)		ND (1)		
1234678-HpCDD	ND (1)		ND (1)		
Total HpCDDs *	ND (1)		ND (1)		
OCDD	ND (1)		ND (1)		
I-TEQ **	0 ppq		0 ppq		
Approved By:	Dave Potter				
Signature:					December 18/2019 12:41 pm
					Date and Time

WELLINGTON LABORATORIES

345 Southgate Drive
Guelph ON N1G 3M5 CANADA
Tel: 519-822-2436
Fax: 519-822-2849

2019-396-LR

Table A (cont.)

	Lab Blank	CA 14040-DEC19 December 02/2019 13 Herbert Place
% Recovery of Surrogates:		
13C-2378-TCDF	85	83
13C-2378-TCDD	86	87
13C-12378-PeCDF	81	79
13C-23478-PeCDF	78	77
13C-12378-PeCDD	85	85
13C-123478-HxCDF	92	89
13C-123678-HxCDF	91	88
13C-234678-HxCDF	91	89
13C-123789-HxCDF	89	81
13C-123478-HxCDD	98	95
13C-123678-HxCDD	90	90
13C-1234678-HpCDF	93	83
13C-1234789-HpCDF	92	74
13C-1234678-HpCDD	94	87
13C-OCDD	92	80

ND - none detected (detection limits in brackets)
NDR - none detected based on peak ratio
NDS - none detected based on peak shape
DPE - diphenyl ether interference present

***** Calculated as the sum of the individual named PCDDs/PCDFs and other detected unnamed PCDDs/PCDFs.
The summations do not include ND and NDR values.
** The reported TEQ is a calculated parameter.

Approved By: Dave Potter

Signature: 

December 18/2019 12:41 pm
Date and Time

FINAL REPORT

CA14040-DEC19 R1

17HX016

Prepared for

Peto MacCallum Ltd

FINAL REPORT

CA14040-DEC19 R1

First Page

CLIENT DETAILS

Client	Peto MacCallum Ltd
Address	45 Burford Road Hamilton, ON L8E 3C6. Canada
Contact	Melissa King
Telephone	(905) 561-2231
Facsimile	(905) 561-6366
Email	mking@petomaccallum.com;parlos@petomaccallum.com
Project	17HX016
Order Number	
Samples	Non-Reportable (1)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14040-DEC19
Received	12/02/2019
Approved	12/13/2019
Report Number	CA14040-DEC19 R1
Date Reported	12/13/2019

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Dioxins/Furans - sub-contracted to Wellington Laboratories.
Note: Cyanide reported as total cyanide. The total cyanide incorporates all species of cyanide including free cyanide.

Chloramines is calulation as: [(Total Chlorine) - (Residual Chlorine)]

Temperature of Sample upon Receipt: 8 degrees C
Cooling Agent Present:Yes
Custody Seal Present:Yes

Chain of Custody Number:012337

Azinphos-methyl, Malathion and Methoxychlor LCS; recovery for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

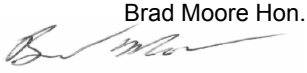
Azinphos-methyl, Cyanazine, Malathion, Methoxychlor and Parathion Matrix Spike; recovery for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

High TDS required the rasing of the Gross Alpha and Gross Beta reporting limit

Atrazine Method Blank; Result is above MDL, the overall quality control for this analysis meets acceptability criteria.

SIGNATORIES

Brad Moore Hon. B.Sc



Raised RL for DQ/PQ, due to SM

TABLE OF CONTENTS

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Chlorophenols** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
Chlorophenols					
2,4-dichlorophenol	µg/L	0.15	0.3	900	<0.15
2,4,6-trichlorophenol	µg/L	0.25	2	5	<0.25
2,3,4,6-tetrachlorophenol	µg/L	0.2	1	100	<0.2
Pentachlorophenol	µg/L	0.15	30	60	<0.15
General Chemistry					
Alkalinity	mg/L as CaCO3	2	500		415
Colour	TCU	3	5		< 3
Turbidity	NTU	0.10	5	1	1.88
Total Dissolved Solids	mg/L	30	500		1330
Organic Nitrogen	mg/L	0.05	0.15		< 0.05
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05			0.38
Ammonia+Ammonium (N)	as N mg/L	0.04			0.41
Sulphide	µg/L	6			< 6
Dissolved Organic Carbon	mg/L	1	5		1

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Haloacetic Acids** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
Haloacetic Acids					
Total Haloacetic Acids (HAA5)	µg/L	5.3			<5.3
Bromoacetic Acid	µg/L	2.9			<2.9
Chloroacetic Acid	µg/L	4.7			<4.7
Dichloroacetic Acid	µg/L	2.6			<2.6
Dibromoacetic Acid	µg/L	2.0			<2.0
Trichloroacetic Acid	µg/L	5.3			<5.3
Herbicide					
Diquat	ug/L	1		70	<5↑
Paraquat	ug/L	1		10	<5↑
Glyphosate	ug/L	1		280	<1
Metals and Inorganics					
Cyanide (total)	mg/L	0.002		0.2	< 0.002
Bromate	mg/L	0.003		0.01	<0.003
Chlorate	mg/L	0.01			0.07
Chlorite	mg/L	0.01			<0.01
Total Chlorine	mg/L	0.02			0.02
Residual chlorine	mg/L	0.02			0.02
Chloride	mg/L	0.04	250		390
Fluoride	mg/L	0.06		1.5	0.48
Sulphate	mg/L	0.04	500		180
Nitrite (as N)	as N mg/L	0.003		1	0.232
Nitrate (as N)	as N mg/L	0.006		10	0.791
Nitrate + Nitrite (as N)	as N mg/L	0.006			1.02

Client: Peto MacCallum Ltd
Project: 17HX016
Project Manager: Melissa King
Samplers: Philip Arlos

PACKAGE: **Metals and Inorganics** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Metals and Inorganics (continued)

Parameter	Units	RL	L1	L2	Result
Hardness	mg/L as CaCO3	0.05	100		882
Aluminum	µg/L	1	100		4
Arsenic	µg/L	0.2		10	< 0.2
Barium	µg/L	0.02		1000	87.6
Boron	µg/L	2		5000	194
Calcium	mg/L	0.01			264
Cadmium	µg/L	0.003		5	0.027
Chromium	µg/L	0.08		50	0.18
Copper	µg/L	0.2	1000		13.2
Iron	ug/L	7	300		164
Mercury	µg/L	0.01		1	0.01
Sodium	mg/L	0.01	200	20	120
Magnesium	mg/L	0.001			53.9
Manganese	µg/L	0.01	50		16.2
Lead	µg/L	0.01		10	3.38
Antimony	µg/L	0.09		6	< 0.09
Selenium	µg/L	0.04		50	0.06
Uranium	µg/L	0.002		20	0.414
Zinc	µg/L	2	5000		50

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Methane** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
Methane					
Methane	L/m3	0.02	3		<0.02
Microbiology					
Total Coliform	cfu/100mL	0			0
E. Coli	cfu/100mL	0			0
Heterotrophic Plate Count (HPC)	cfu/1mL	0			2
Microcystin (Quantitative)	ug/L	0.1		1.5	<0.1
NDMA					
Nitrosodimethylamine (NDMA)	µg/L	0.0008		0.009	0.0017
NTA					
Nitrilotriacetic acid (NTA)	mg/L	0.03		0.4	< 0.03
Other (ORP)					
pH	no unit	0.05	8.5		7.55

Client: Peto MacCallum Ltd
Project: 17HX016
Project Manager: Melissa King
Samplers: Philip Arlos

PACKAGE: **PCBs** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	µg/L	0.04		3	<0.04
Pesticides					
Alachlor	µg/L	0.02		5	< 0.02
Aldicarb	µg/L	0.01			<0.01
Aldrin	µg/L	0.01			<0.01
Dieldrin	µg/L	0.01			<0.01
Aldrin + Dieldrin	µg/L	0.01			<0.01
Atrazine + N-dealkylated metabolites	µg/L	0.01		5	<0.01
Atrazine	µg/L	0.01			<0.01
Desethyl atrazine	µg/L	0.01			<0.01
Azinphos-methyl	µg/L	0.05		20	<0.05
Bendiocarb	µg/L	0.01			<0.01
Carbaryl	µg/L	0.05		90	<0.05
Carbofuran	µg/L	0.01		90	<0.01
Chlordane (total)	µg/L	0.01			<0.01
Chlorpyrifos	µg/L	0.02		90	<0.02
Cyanazine	µg/L	0.03			<0.03
Diazinon	µg/L	0.02		20	<0.02
Dimethoate	µg/L	0.06		20	<0.06
Diuron	µg/L	0.03		150	<0.03
(DDT) + Metabolites	µg/L	0.01			<0.01
Heptachlor	µg/L	0.01			<0.01
Heptachlor epoxide	µg/L	0.01			<0.01

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Pesticides** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Pesticides (continued)

Parameter	Units	RL	L1	L2	Result
Heptachlor + Heptachlor Epoxide	µg/L	0.01			<0.01
Lindane	µg/L	0.01			<0.01
Malathion	µg/L	0.02		190	<0.02
Methoxychlor	µg/L	0.01			<0.01
Metolachlor	µg/L	0.01		50	<0.01
Metribuzin	µg/L	0.02		80	<0.02
Parathion	µg/L	0.02			<0.02
Phorate	µg/L	0.01		2	<0.01
Prometryne	µg/L	0.03		1	<0.03
Simazine	µg/L	0.01		10	<0.01
Temephos	µg/L	0.01			<0.01
Terbufos	µg/L	0.01		1	<0.01
Triallate	µg/L	0.01		230	<0.01
Trifluralin	µg/L	0.02		45	<0.22↑

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Phenoxy Acid Herbicides** (WATER)

Sample Number 9

Sample Name 13 Herbert Place

Sample Matrix Non-Reportable

Sample Date 02/12/2019

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Result
Phenoxy Acid Herbicides					
Dinoseb	µg/L	0.36			<0.36
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	µg/L	0.22	20		<0.22
2,4-dichlorophenoxyacetic acid (2,4-D)	µg/L	0.19		100	<0.19
Bromoxynil	µg/L	0.33		5	<0.33
Dicamba	µg/L	0.20		120	<0.20
Diclofop-methyl	µg/L	0.40		9	<0.40
MCPA	mg/L	0.00012		0.1	<0.00012
Picloram	µg/L	1		190	<1
Radionuclides					
Gross Alpha	Bq/L	0.1		0.1	<0.2↑
Gross Beta	Bq/L	0.1		0.1	<0.2↑
Tritium	Bq/L	10		7000	<100↑
SVOCs - PAHs					
Benzo(a)pyrene	µg/L	0.004		0.01	<0.004

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **Taste & Odour** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
Taste & Odour					
MIB	ng/L	3			<3
Geosmin	ng/L	3			<3
VOCs					
Carbon tetrachloride	µg/L	0.17		2	<0.17
1,2-Dichlorobenzene	µg/L	0.41	100	200	<0.41
1,4-Dichlorobenzene	µg/L	0.36	1	5	<0.36
1,1-Dichloroethylene (vinylidene chloride)	µg/L	0.33		14	<0.33
1,2-Dichloroethane	µg/L	0.35		5	<0.35
Dichloromethane	µg/L	0.35		50	<0.35
Monochlorobenzene	µg/L	0.30	30	80	<0.3
Tetrachloroethylene (perchloroethylene)	µg/L	0.35		10	<0.35
Trichloroethylene	µg/L	0.44		5	<0.44
Trihalomethanes (total)	µg/L	0.37		100	<0.37
Bromodichloromethane	µg/L	0.26			<0.26
Bromoform	µg/L	0.34			<0.34
Chloroform	µg/L	0.29			<0.29
Dibromochloromethane	µg/L	0.37			<0.37
Vinyl Chloride	µg/L	0.17		2	<0.17

Client: Peto MacCallum Ltd

Project: 17HX016

Project Manager: Melissa King

Samplers: Philip Arlos

PACKAGE: **VOCs - BTEX** (WATER)

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	9
Sample Name	13 Herbert Place
Sample Matrix	Non-Reportable
Sample Date	02/12/2019

Parameter	Units	RL	L1	L2	Result
VOCs - BTEX					
Benzene	ug/L	0.32		1	<0.32
Ethylbenzene	ug/L	0.33	1.6	140	<0.33
Toluene	ug/L	0.36		60	<0.36
Xylene (total)	ug/L	0.43	20	90	<0.43
m/p-xylene	ug/L	0.43			<0.43
o-xylene	ug/L	0.17			<0.17

EXCEEDANCE SUMMARY

13 Herbert Place

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
Gross Alpha		Bq/L	<0.2		0.1
Gross Beta		Bq/L	<0.2		0.1
Chloride	EPA300/MA300-Ions1.3	mg/L	390	250	
Turbidity	SM 2130	NTU	1.88		1
Total Dissolved Solids	SM 2540C	mg/L	1330	500	
Hardness	SM 3030/EPA 200.8	mg/L as CaCO3	882	100	
Sodium	SM 3030/EPA 200.8	mg/L	120		20

QC SUMMARY

QCR_SubCategory

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Turbidity	EWL0029-DEC19	NTU	0.10	< 0.10	1	10	100	90	110	NA		

Alkalinity

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0027-DEC19	mg/L as CaCO3	2	< 2	2	10	108	80	120	NA		

Ammonia by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0027-DEC19	mg/L	0.04	<0.04	4	10	98	90	110	97	75	125

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrate + Nitrite (as N)	DIO0024-DEC19	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0024-DEC19	mg/L	0.003	<0.003	3	20	98	80	120	97	75	125
Nitrate (as N)	DIO0024-DEC19	mg/L	0.006	<0.006	0	20	100	80	120	96	75	125
Chloride	DIO0086-DEC19	mg/L	0.04	<0.04	ND	20	96	80	120	98	75	125
Sulphate	DIO0086-DEC19	mg/L	0.04	<0.04	1	20	95	80	120	102	75	125

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-IENVISFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0029-DEC19	mg/L	1	<1	2	10	101	90	110	106	75	125

QC SUMMARY

Chlorine

Method: SM 4500 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Residual chlorine	EWL0028-DEC19	mg/L	0.02	< 0.02	ND	20	99	90	110	NA		
Total Chlorine	EWL0028-DEC19	mg/L	0.02	< 0.02	ND	20	100	90	110	NA		

QC SUMMARY

Chlorophenols and Phenoxyacid Herbicides

Method: EPA 515.1 | Internal ref.: ME-CA-[ENVIGC-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	GCM0022-DEC19	ug/L	0.22	< 0.22	ND	30	62	50	140	116	50	140
2,4-dichlorophenoxyacetic acid (2,4-D)	GCM0022-DEC19	ug/L	0.19	< 0.19	ND	30	54	50	140	101	50	140
2,4-dichlorophenol	GCM0022-DEC19	ug/L	0.15	< 0.15	ND	30	70	50	140	69	50	140
Bromoxynil	GCM0022-DEC19	ug/L	0.33	< 0.33	ND	30	85	50	140	103	50	140
Dicamba	GCM0022-DEC19	ug/L	0.20	< 0.20	ND	30	52	50	140	74	50	140
Diclofop-methyl	GCM0022-DEC19	ug/L	0.40	< 0.40	ND	30	99	50	140	61	50	140
Dinoseb	GCM0022-DEC19	ug/L	0.36	< 0.36	ND	30	66	40	130	65	30	130
MCPA	GCM0022-DEC19	mg/L	0.00012	< 0.00012	ND	30	57	50	140	88	50	140
Pentachlorophenol	GCM0022-DEC19	ug/L	0.15	< 0.15	ND	30	85	50	140	114	50	140
Picloram	GCM0022-DEC19	ug/L	1	< 1	ND	30	27	20	130	52	20	130
2,3,4,6-tetrachlorophenol	GCM0022-DEC19	ug/L	0.2	< 0.2	ND	30	82	50	140	108	50	140
2,4,6-trichlorophenol	GCM0022-DEC19	ug/L	0.25	< 0.25	ND	30	69	50	140	75	50	140

QC SUMMARY

Colour

Method: SM 2120 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Colour	EWL0019-DEC19	TCU	3	< 3	ND	10	105	90	110	NA		

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0038-DEC19	mg/L	0.002	<0.002	ND	10	96	90	110	90	75	125

QC SUMMARY

Disinfection Byproducts by IC

Method: EPA317 | Internal ref.: ME-CA-IENVIIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bromate	DIO0039-DEC19	mg/L	0.003	<0.003	ND	20	101	80	120	94	75	125
Chlorate	DIO0039-DEC19	mg/L	0.01	<0.01	7	20	108	80	120	97	75	125
Chlorite	DIO0039-DEC19	mg/L	0.01	<0.01	ND	20	103	80	120	96	75	125
Chlorate	DIO0077-DEC19	mg/L	0.01	<0.01	NV	20	107	80	120	96	75	125

Glyphosate

Method: EPA547 | Internal ref.: ME-CA-IENVIIC-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Glyphosate	DIO0078-DEC19	ug/L	1	<1	ND	30	105	70	130	95	70	130

QC SUMMARY

Haloacetic Acids

Method: EPA 552.3 | Internal ref.: ME-CA-IENVIGC-LAK-AN-013

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bromoacetic Acid	GCM0095-DEC19	ug/L	2.9	< 2.9	ND	30	104	70	130	109	70	130
Chloroacetic Acid	GCM0095-DEC19	ug/L	4.7	< 4.7	ND	30	103	70	130	109	70	130
Dibromoacetic Acid	GCM0095-DEC19	ug/L	2.0	< 2.0	9	30	103	70	130	109	70	130
Dichloroacetic Acid	GCM0095-DEC19	ug/L	2.6	< 2.6	5	30	106	70	130	122	70	130
Trichloroacetic Acid	GCM0095-DEC19	ug/L	5.3	< 5.3	ND	30	112	70	130	103	70	130

Mercury by CVAAS

Method: SM3112/EPA 245 | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury	EHG0003-DEC19	ug/L	0.01	<0.01	ND	20	100	80	120	101	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Aluminum	EMS0044-DEC19	ug/L	1	<0.001	ND	20	103	90	110	95	70	130
Arsenic	EMS0044-DEC19	ug/L	0.2	<0.0002	ND	20	99	90	110	102	70	130
Barium	EMS0044-DEC19	ug/L	0.02	<0.00002	0	20	99	90	110	NV	70	130
Boron	EMS0044-DEC19	ug/L	2	<0.002	2	20	106	90	110	NV	70	130
Calcium	EMS0044-DEC19	mg/L	0.01	<0.01	3	20	108	90	110	NV	70	130
Cadmium	EMS0044-DEC19	ug/L	0.003	<0.000003	ND	20	100	90	110	105	70	130
Chromium	EMS0044-DEC19	ug/L	0.08	<0.00008	6	20	102	90	110	102	70	130
Copper	EMS0044-DEC19	ug/L	0.2	<0.0002	3	20	101	90	110	86	70	130
Iron	EMS0044-DEC19	ug/L	7	<0.007	0	20	110	90	110	NV	70	130
Magnesium	EMS0044-DEC19	mg/L	0.001	<0.001	4	20	105	90	110	NV	70	130
Manganese	EMS0044-DEC19	ug/L	0.01	<0.00001	2	20	100	90	110	109	70	130
Sodium	EMS0044-DEC19	mg/L	0.01	<0.01	3	20	105	90	110	NV	70	130
Lead	EMS0044-DEC19	ug/L	0.01	<0.00001	1	20	102	90	110	102	70	130
Antimony	EMS0044-DEC19	ug/L	0.09	<0.0009	ND	20	103	90	110	87	70	130
Selenium	EMS0044-DEC19	ug/L	0.04	<0.00004	ND	20	102	90	110	110	70	130
Uranium	EMS0044-DEC19	ug/L	0.002	2e-006	ND	20	100	90	110	94	70	130
Zinc	EMS0044-DEC19	ug/L	2	<0.002	5	20	100	90	110	92	70	130

QC SUMMARY

Metals in aqueous samples - ICP-OES

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Hardness	EMS0044-DEC19	mg/L as CaCO3	0.05	<0.05	3	20	108	90	110	NV	70	130

Methane

Method: In-House | Internal ref.: ME-CA-IENVIGC-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Methane	GCM0067-DEC19	L/m3	0.02	< 0.02	ND	30	89	70	130	NA	70	130

QC SUMMARY

Microbiology

Method: OMOE MICROMFDC-E3407A | Internal ref.: ME-CA-IENVIMIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
E. Coli	BAC9018-DEC19	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9018-DEC19	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9018-DEC19	cfu/100mL	-	ACCEPTED	ACCEPTED							
Microcystin (Quantitative)	BAC9114-DEC19	ug/L	0.1	0.1#<MDL	ND	30	92	70	130			

NDMA

Method: In-House | Internal ref.: ME-CA-IENVIGC-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
Nitrosodimethylamine (NDMA)	GCM0075-DEC19	ug/L	0.0008	< 0.0008	NSS	30	102	80	120			

QC SUMMARY

NTA

Method: In-House I Internal ref.: ME-CA-[ENVIGC-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrilotriacetic acid (NTA)	GCM0150-DEC19	mg/L	0.03	< 0.03	ND	30	102	80	120			

Paraquat/Diquat

Method: EPA549.1 I Internal ref.: ME-CA-[ENVIIC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Diquat	DIO0023-DEC19	ug/L	1	<1	ND	30	103	70	130	87	50	125
Paraquat	DIO0023-DEC19	ug/L	1	<1	ND	30	101	70	130	92	50	125

QC SUMMARY

Pesticides

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-018

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alachlor	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	134	50	140	136	50	140
Aldicarb	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	94	50	140	98	50	140
Aldrin	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	95	50	140	110	50	140
Atrazine	GCM0041-DEC19	ug/L	0.01	0.02	2	30	129	50	140	126	50	140
Azinphos-methyl	GCM0041-DEC19	ug/L	0.05	< 0.05	ND	30	180	50	140	187	50	140
Bendiocarb	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	85	50	140	84	50	140
Carbaryl	GCM0041-DEC19	ug/L	0.05	< 0.05	ND	30	114	50	140	112	50	140
Carbofuran	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	94	50	140	93	50	140
Chlorpyrifos	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	124	50	140	126	50	140
Cyanazine	GCM0041-DEC19	ug/L	0.03	< 0.03	ND	30	136	50	140	141	50	140
Desethyl atrazine	GCM0041-DEC19	ug/L	0.01	< 0.01	0	30	66	30	130	62	30	130
Diazinon	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	124	50	140	123	50	140
Dieldrin	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	121	50	140	121	50	140
Dimethoate	GCM0041-DEC19	ug/L	0.06	< 0.06	ND	30	109	50	140	113	50	140
Diuron	GCM0041-DEC19	ug/L	0.03	< 0.03	ND	30	115	50	140	119	50	140
Heptachlor epoxide	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	120	50	140	118	50	140
Heptachlor	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	102	50	140	118	50	140
Lindane	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	110	50	140	108	50	140
Malathion	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	151	50	140	157	50	140
Methoxychlor	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	157	50	140	154	50	140

QC SUMMARY

Pesticides (continued)

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-018

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Metolachlor	GCM0041-DEC19	ug/L	0.01	< 0.01	12	30	136	50	140	139	50	140
Metribuzin	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	129	50	140	137	50	140
Parathion	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	140	50	140	147	50	140
Phorate	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	106	50	140	111	50	140
Prometryne	GCM0041-DEC19	ug/L	0.03	< 0.03	ND	30	133	50	140	136	50	140
Simazine	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	122	50	140	120	50	140
Temephos	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	117	50	140	113	50	140
Terbufos	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	113	50	140	119	50	140
Triallate	GCM0041-DEC19	ug/L	0.01	< 0.01	ND	30	120	50	140	119	50	140
Trifluralin	GCM0041-DEC19	ug/L	0.02	< 0.02	ND	30	118	50	140	137	50	140

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0027-DEC19	no unit	0.05	NA	1		100			NA		

QC SUMMARY

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-IENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0028-DEC19	ug/L	0.04	< 0.04	ND	30	90	60	140	99	60	140

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-IENVIGC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Benzo(a)pyrene	GCM0041-DEC19	ug/L	0.004	< 0.004	ND	30	102	50	140	102	50	140

Solids Analysis

Method: SM 2540C | Internal ref.: ME-CA-IENVIEWL-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Dissolved Solids	EWL0033-DEC19	mg/L	30	<30	0	20	96	90	110	NA		

QC SUMMARY

Sulphide by SFA

Method: SM 4500 I Internal ref.: ME-CA-[ENV]SFA-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphide	SKA0023-DEC19	ug/L	6	<0.006	ND	20	91	80	120	NA	75	125

Taste & Odour

Method: In-House I Internal ref.: ME-CA-[ENV]GC-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Geosmin	GCM0059-DEC19	ng/L	3	< 3	NSS	30	96	60	140			
MIB	GCM0059-DEC19	ng/L	3	< 3	NSS	30	88	60	140			

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F I Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen (N)	SKA0026-DEC19	mg/L	0.05	<0.05	ND	10	103	90	110	107	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1-Dichloroethylene (vinylidene chloride)	GCM0030-DEC19	ug/L	0.33	< 0.33	ND	30	90	60	130	93	50	140
1,2-Dichlorobenzene	GCM0030-DEC19	ug/L	0.41	< 0.41	ND	30	101	60	130	103	50	140
1,2-Dichloroethane	GCM0030-DEC19	ug/L	0.35	< 0.35	ND	30	94	60	130	99	50	140
1,4-Dichlorobenzene	GCM0030-DEC19	ug/L	0.36	< 0.36	ND	30	102	60	130	103	50	140
Benzene	GCM0030-DEC19	ug/L	0.32	< 0.32	ND	30	97	60	130	101	50	140
Bromodichloromethane	GCM0030-DEC19	ug/L	0.26	< 0.26	ND	30	99	60	130	104	50	140
Bromoform	GCM0030-DEC19	ug/L	0.34	< 0.34	ND	30	98	60	130	99	50	140
Carbon tetrachloride	GCM0030-DEC19	ug/L	0.17	< 0.17	ND	30	97	60	130	102	50	140
Chloroform	GCM0030-DEC19	ug/L	0.29	< 0.29	ND	30	98	60	130	101	50	140
Dibromochloromethane	GCM0030-DEC19	ug/L	0.37	< 0.37	ND	30	98	60	130	101	50	140
Dichloromethane	GCM0030-DEC19	ug/L	0.35	< 0.35	ND	30	87	60	130	127	50	140
Ethylbenzene	GCM0030-DEC19	ug/L	0.33	< 0.33	ND	30	101	60	130	103	50	140
m/p-xylene	GCM0030-DEC19	ug/L	0.43	< 0.43	ND	30	102	60	130	104	50	140
Monochlorobenzene	GCM0030-DEC19	ug/L	0.30	< 0.30	ND	30	100	60	130	102	50	140
o-xylene	GCM0030-DEC19	ug/L	0.17	< 0.17	ND	30	101	60	130	103	50	140
Tetrachloroethylene (perchloroethylene)	GCM0030-DEC19	ug/L	0.35	< 0.35	ND	30	101	60	130	103	50	140
Toluene	GCM0030-DEC19	ug/L	0.36	< 0.36	ND	30	100	60	130	103	50	140
Trichloroethylene	GCM0030-DEC19	ug/L	0.44	< 0.44	ND	30	99	60	130	102	50	140
Vinyl Chloride	GCM0030-DEC19	ug/L	0.17	< 0.17	ND	30	89	50	140	94	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.
Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.
LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.
Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.
RL: Reporting limit
RPD: Relative percent difference
AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.
Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.
Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. “Temperature Upon Receipt” is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 012337 Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Oleg Moshkiv
Received Date: 12,02,19 (mm/dd/yy)
Received Time: 15 : 30 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ice pack
Temperature Upon Receipt (°C) 8.8, 8
LAB LIMS #: GA/4040-Dec19

REPORT INFORMATION

Company: Peto MacCallum Ltd.
Contact: Melissa King
Address: 45 Burford Road
Hamilton, ON
Phone: 905-561-2231
Fax: 905-561-6366
Email: mking@petomaccallum.com

INVOICE INFORMATION

☑ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email:

Quotation #: 2019 741
P.O. #: 17HX016
Project #:
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☒ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days
PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

Regulation 153/04:
☐ Table 1 ☐ Res/Park ☐ Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium
☐ Table 3 ☐ Agri/Other ☐ Fine
☐ Table ____

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☒ Other: ODWQS
☐ MISA

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	M&I: Field Filtered (Y/N)	M&I: Metals & Inorganics incl CrVI, CN, Hg pH,(B(HWS),EC,SAR-soil) (Cl, Nitrate)	M&I: Full Metals Suite ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni, Se,Ag,Tl,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other: X COH Table 1-4	Other: Sewer Use: Specify pkg:	Other: Water Characterization Pkg ☐ Extended ☐ General	TCLP: Specify TCLP tests ☐M&I ☐VOC ☐PCB ☐B(a)P ☐ABN ☐Ignit.	COMMENTS:
1	13 Herbert Place	Dec/02/19	14:00	34	Water	N												X				
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Observations/Comments/Special Instructions

Sampled By (NAME): Philip Arkos
Signature:
Date: 12,02,19 (mm/dd/yy)

Relinquished by (NAME):
Signature:
Date: ____/____/____ (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.2
Date of Issue: 09 Sept, 2019

Peto MacCallum Ltd.
CONSULTING ENGINEERS

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON (DUNDAS), ONTARIO

for

MR. LUKE HEWITT

PETO MacCALLUM LTD.
45 BURFORD ROAD
HAMILTON, ONTARIO
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Distribution:
1 cc: Mr. Luke Hewitt (via email)
1 cc: AJ Lakatos Planning Consultant (via email)
1 cc: PML Hamilton

PML Ref.: 17HX016
Report: 1
April 2019

Peto MacCallum Ltd.
CONSULTING ENGINEERS

April 30, 2019

PML Ref.: 17HX016
Report: 1

Mr. Luke Hewitt
13 Herbert Place
Hamilton (Dundas), Ontario
L9H 5E1

Dear Mr. Hewitt

Hydrogeological Investigation
13 Herbert Place
Hamilton (Dundas), Ontario

Peto MacCallum Ltd. (PML) is pleased to present the results of the hydrogeologic investigation recently completed in connection with the above project. Authorization to proceed with this assignment was provided by Mr. Luke Hewitt in an email dated August 14, 2017 and was confirmed with a signed Engineering Services Agreement dated September 7, 2017.

It is understood that plans call for a severance of a 0.4 ha (1.0 ac) lot from an approximate (0.8 ha) 2.1 ac residential property located at 13 Herbert Place in Hamilton (Dundas), Ontario. The hydrogeological assessment is to be conducted on the lands to be severed in support of development of a single family three bedroom dwelling serviced by an on site sewage treatment system and individual potable water supply well.

Terms of Reference

The purpose of this study is to define the subsurface soil and ground water conditions at the planned lot and based on this information, provide an assessment of the capability for onsite treatment of domestic sewage, mitigation of the nutrient loading from the sewage treatment system and the offsite impact of infiltration of septic effluent on the ground water resource in the area, as well as an evaluation of the feasibility of developing a potable water supply for the severed lot.

Study Methodology

The objectives of the study were accomplished by completing the following tasks:

1. Attend the Site to visually examine the terrain on and in the vicinity of the lands to be severed.

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BARRIE, COLLINGWOOD, HAMILTON, KITCHENER, LONDON, TORONTO

2. Review of geotechnical and hydrogeological reports conducted in the area, Ministry of the Environment and Climate Change (MOECC) well records, and published geological data to determine the hydrostratigraphy and hydrogeological conditions in the area.
3. Witness excavation of four test pits on the lands to be severed to determine the subsurface conditions on the lot, obtain and conduct laboratory tests on selected soil samples.
4. Conduct two particle size distribution analyses on soil samples retrieved from the boreholes to determine appropriate soil permeability parameters for septic bed design.
5. Conducting engineering analysis to determine the nitrate loading from septic effluent infiltration on the lands to be severed and retained.
6. Preparation of this report to document the factual aspects of the study, summarize the hydrogeologic conditions, document the results of the water quality laboratory test results, provide hydrogeologic comments regarding the feasibility of drilling a new well to supply potable water as well as to assess the capability of the on-site soils to treat domestic sewage.

Site Setting

The land parcels that are the subject of this assessment are described in the following paragraphs and shown on Drawing 1, appended. The entire property at 13 Herbert Place Hamilton (Dundas), Ontario (including the lands to be severed and the lands to be retained) is referred to herein as the “Site”.

Lands to be Severed: Comprises 1.03 acres (0.42 ha) of land located on the east side of the Site. It is currently vacant and comprises a grassed lot.

Lands to be Retained: Comprises 1.03 acres (0.42 ha) of land located on the west side of the Site. It is currently occupied by a three bedroom residential dwelling, a shed, and a swimming pool.

According to the 2017 survey plan provided to PML, the lands to be retained and the lands to be severed are located on Lot 1, Concession 1, formerly in the Township of West Flamborough, now in the Town of Dundas, Regional Municipality of Hamilton, Ontario.

Adjacent land uses include a vacant lot to the east at 15 Hauser Place. To the south is the road Hauser Place followed by a residential dwelling at 17 Herbert Place. To the west is the road Herbert Place followed by a residential dwelling at 12 Herbert Place. To the North is residential dwellings at 145 and 147 The King's Highway No. 8.

Physiographic and Geologic Setting

The Site is situated within the physiographic region known as the Flamborough Plain. This area is bounded to the northwest by the Galt moraine, and on the south by the silts and sands of glacial Lake Warren. A few drumlins are found scattered over this limestone plain and swamps are plentiful (Chapman and Putnam, 1984).

Ontario Base Map (OBM) data published in 2004 on the Geography Network Canada online GIS service was reviewed and topographic contours indicate the grade of the Site was near elevation 232 (metric, geodetic) at the northwest corner of the property sloping to elevation 226 (metric, geodetic) at the southeast corner of the property.

According to Paleozoic Geology Map 2336, the area is underlain by bedrock of the Eramosa Member: dark brown or black, bituminous dolostone of the Lockport and Amabel Formation. According to Bedrock Topography Map 2034, geologic data indicates that bedrock underlying the Site is near elevation 198 to 206 (metric, geodetic), or 20 to 30 m below the ground surface.

Hydrogeology

Surface Water

No surface water bodies, creeks or streams were observed on Site. Tributaries of Spencer Creek are located approximately 350 m north and 800 m south of the Site and Christie Lake/Reservoir is located about 900 m northwest of the Site. Cootes Paradise/Burlington Bay/Lake Ontario is located approximately 6.5 km east/southeast of the Site.

Aquifers and Local Ground Water Use

Published water well records were obtained from the Ministry of the Environmental and Climate Change (MECP), formerly MOECC, Environmental Monitoring and Reporting Branch, Water Well Records Management for the Site and adjacent lands. These records were reviewed in order to establish the general hydrogeological environment in the area and determine anticipated well capacities.

Based on water well information obtained from the MECP, 117 wells were reported to be located within an approximate 500 m radius of the centroid of the Site. The well records for seven of the nearest water wells and a summary of the 117 well records are included in Appendix A.

Based on the records, we note the following:

- Forty (40) of the wells were terminated in the sand, gravel and/or clay overburden at depths of 8.2 to 44.2 m and generally encountered water at 5.5 to 43.6 m, with static levels at 1.2 to 30.5 m.

  Pump tests conducted following installation of the wells in the overburden indicate the yield of wells typically ranged from 3.8 to 75.7 L/min with an average of 33 L/min.

  The water quality reported on 36 of the 40 overburden well records was generally fresh; one overburden well was reported as sulphur water; and three overburden wells reported unknown quality.

- Seventy-five (75) of the wells comprised 150 mm diameter drilled wells developed in the bedrock at depths of 9.1 to 60 m. The bedrock aquifer generally encountered water at depths of 7.0 to 45.7 m, with static levels at 1.8 to 35.1 m.

  Pump tests conducted following installation of the wells in bedrock indicate the yield of wells ranged from 3.8 to 132.5 L/min with an average of 39.9 L/min.

  The water quality reported on 46 of the 75 bedrock well records was generally fresh; 19 bedrock wells reported sulphur water; and 10 bedrock wells reported unknown quality.

- For two of the well records, no soil descriptions and water details were provided.

Based on the potentiometric surface deduced from the static water level documented on the well records and using Google Earth for approximate elevations, the inferred regional ground water flow is expected to be north (towards Spencer Creek) with components to the southeast (towards the Niagara Escarpment) in both the overburden and bedrock.

Potable Water Supply Assessment

Water Quantity

Based on the published well records drawing, Well No. 6813459 is the well located on the lands to be retained. The record indicated the subsurface conditions comprised sandy clay, over limestone, with a layer of sand and gravel. The well was 18.3 m deep and was completed on March 27, 2001. The current occupant reported sufficient yield from the well.

The existing well is a drilled well developed in a bedrock deposit of limestone. The pump test conducted following installation the well indicates the yield is 114 L/min and the static water level in the well was 4.5 m. The water quality reported was fresh.

The five closest wells to the Site indicated the following:

- Four of the wells were terminated in the sand and/or gravel overburden at depths of 17.1 to 28.7 m and generally encountered water at 16.8 to 28.7 m, with static levels at 4.9 to 25.6 m.

  Pump tests conducted following installation of two of the wells indicates the yield typically ranged from 9.5 to 76 L/min with an average of 38 L/min. The water quality reported was fresh.

- One of the wells was terminated in the limestone bedrock at a depth of 22.5 m and generally encountered water at 22 m, with a static level at 10.7 m.

  A pump test conducted following installation of the well indicated a yield of 34 L/min; the water quality was reported as fresh.

For preliminary planning purposes, the water demand for the proposed residential three bedroom dwelling is considered to approximate the daily sewage flow rate. A daily sewage flow of 1,600 L/day corresponds to 1.1 L/min for a 24 hour period.

Since the majority of the water demand will be limited to two, 2 hour periods in the day, a well yield of at least 6.7 L/min will be required to service the peak water demand of the development. The measured yield in four close wells was an average of 38 L/min, which is sufficient to supply the demand of a three bedroom residential dwelling. An adequate water supply therefore, should be able to be developed on the lands to be severed.

It should be noted that the assessed water demand exceeded the reported yield of a few of the wells developed in the overburden and bedrock aquifers within 500 m of the property, however a majority of the reported well yields were sufficient. It is noteworthy that sulphur water was identified in some bedrock and overburden wells.

Pump tests will be required to confirm that an adequate water supply can be developed on the property and the sustained pumping rate will not have an adverse impact on other wells in the area.

Water Quality

In order to check the quality of the ground water, a sample of raw water was retrieved from the water well on the lands to be retained (13 Herbert Place). The sample was tested for turbidity, hardness, pH, E. coli, total coliform and Schedule 23 inorganic parameters, which includes nitrate.

Laboratory Certificates of Analysis are included in Appendix B. The measured values of the tested parameters and the corresponding Standards are shown on the Certificates of Analysis with the levels exceeding the applicable Standards highlighted in orange.

Three additional samples were obtained for nitrate from properties within a 500 m radius of the site (45 Marshboro Avenue, 48 Marshboro Avenue, and 51 Marshboro Avenue).

The results of the water quality testing were compared to the Ontario Drinking Water Quality Standards (ODWQS), Ontario Regulation 169/03 of the Safe Drinking Water Act, 2002. The results indicate that the level of nitrate met the criteria of 10 mg/L, as summarized below:

Sample ID/Address	Nitrate Concentration (mg/L)	Type of Well	Well Depth (m)
13 Herbert Place	0.291	Drilled	18.3
45 Marshboro Avenue	2.41	Drilled	27.4
48 Marshboro Avenue	2.97	Drilled	16.8
51 Marshboro Avenue	2.23	Drilled	36.6

A background nitrate concentration of 2.97 mg/L was used for the subsequent nitrate loading calculation.

Regarding the remaining parameters tested, the measured concentrations met the ODWQS.

The wells had treatment systems including ultraviolet light and water softener systems, with the exception of 51 Marshboro Avenue having no treatment systems.

Based on the reported use of treatment systems in the area, a private water treatment system may be desired to improve the water quality. If a system for treated drinking water is installed, PML recommends that a sample be obtained and tested to ensure the treatment system is functioning properly and the quality of the water meets the ODWQS. It is noted that additional water quality testing will likely be required by The City of Hamilton.

Sewage Treatment System

Test Pit Investigation

The field work was carried out on October 12, 2017 and comprised a total of four test pits (Test Pits 1 to 4) excavated to depths of 3.0 m. The test pit (TP) locations are shown on Drawing 1, appended.

The test pit locations were selected and established in the field by PML. Ground surface elevations and UTM co-ordinates at the test pit locations were determined by PML. The following temporary benchmark (TBM) was used for vertical reference:

TBM: Top of culvert located on the west side of Herbert Place, approximately 20 m north of Hauser Place.
Elevation: 229.3 m (geodetic)

The test pits were excavated using a John Deere 410J rubber tire backhoe. The backhoe was supplied and operated by a specialist contractor, working under the full time supervision of a PML technical staff member.

The ground water conditions at the test pit locations were assessed during excavation by visual examination of the soil as the samples were retrieved and when appropriate by measurement of the water level in the open test pit.

The recovered soil samples were returned to our laboratory for detailed visual examination and classification. Laboratory testing was completed by PML on selected samples to determine index properties and soil classification (moisture content, grain size).

Summarized Subsurface Conditions

Reference is made to the appended Log of Test Pit sheets for details of the subsurface conditions including soil classifications, inferred stratigraphy, ground water observations, and the results of laboratory grain size analysis and moisture content determinations.

Due to the soil sampling procedures and limited sample size, the depth demarcations on the test pit logs must be viewed as transitional zones between layers and cannot be construed as exact geologic boundaries between layers. PML would be pleased to assist in defining geologic boundaries during construction if required.

The subsurface stratigraphy revealed in the test pits generally comprised topsoil or topsoil fill, overlying fill, over silt, underlain by sand.

Topsoil

A 50 and 240 mm thick sandy/clayey silt topsoil layer was contacted at the ground surface of Test Pits 2 and 4. The moisture content of the topsoil was judged to be damp/drier than plastic limit (DTPL).

Topsoil Fill

In Test Pits 1 and 3, a 210 and 110 mm thick sandy silt topsoil fill layer was contacted at the ground surface. The topsoil fill was judged to be damp.

Fill

A 0.2 and 1.0 m thick layer of sand and silt fill was encountered below the topsoil fill and was penetrated at 0.5 and 1.1 m (elevation 229.5 and 227.7) in Test Pits 1 and 2, respectively. The fill contained occasional rootlets, cobbles, and metal and shale fragments. The fill was judged to be damp to moist with moisture content ranging from 6 to 15%.

Silt

Silt was encountered below the topsoil and fill at depths of 0.1 to 1.1 m (elevation 227.0 to 229.5) in the test pits. The silt was contacted to the termination depths of 3.0 m (elevation 225.3 to 226.9) in Test Pits 1, 2, and 3. Locally, in Test Pit 4, the silt was penetrated at a depth of 2.7 m (elevation 224.5). The moisture content of the silt ranged from 14 to 29% and was judged to be damp to moist.

The results of two grain size tests (Figure 1 and 2) indicate that the silt stratum comprises 0 to 8% gravel, 4 to 28% sand, 58 to 81% silt, and 7 to 14% clay.

Sand

In Test Pit 4, sand was contacted below the silt at 2.7 m (elevation 224.5) and extended to the termination depth of 3.0 m (elevation 224.2). The in situ moisture content level was 19% and was judged to be wet.

Ground Water

Upon completion of excavation, no seepage or cave was observed in the test pits. Ground water levels will fluctuate subject to seasonal variations and precipitation patterns.

Particle Size Distribution Testing

Two soil samples were submitted for particle size analysis. The results are included in Figures 2 and 3. Based on the grain size distribution curves, the percolation rate "T" of the native soils at the sample locations is considered to be 20 to 50 min/cm.

Nitrate Loading Considerations

Assessment of the nitrate loading from infiltration of effluent from the sewage treatment systems was conducted in accordance with the following documents:

- Procedure D-5-4 – Technical Guideline for Individual On Site Sewage Systems: Water Quality Impact Assessment (MOEE April 1996);
- Hydrogeological Technical Information Requirements for Land Development Chapter 4, Section 4.5 (MOEE April 1995).
- Guidelines for Hydrogeological Studies and Technical Standards for Private Services (City of Hamilton, November 2013)

Nitrate in septic effluent is attenuated by dilution with infiltrating surface water and water discharged into the septic bed as well as ground water seepage from the upstream to the downstream side of the property (ground water flux). Ground water flux was not considered in the nitrate dilution calculation for this lot; consequently, the nitrate loading assessment is considered to be conservative.

The surface water infiltration rate was computed in accordance with the procedure noted in the MOEE information document. This procedure involves a three step process:

a) A water budget analysis to compute the 'water surplus' (total rainfall – evapotranspiration).

b) Selection of infiltration factors for the conditions at this particular Site to compute the rate of infiltration (sum of infiltration factors x water surplus).

c) Computation of the nitrate loading on the ground water resource.

The water budget analysis was conducted using the Thornwaite and Mather procedure noted in the MOEE information document. This method is based on classic storm water management principles. Since the equations employed to compute the volume of surface water runoff were developed for heavy rainfall events of short duration, and a large volume of the precipitation occurs at a light to moderate rate over an extended period of time, the procedure over-estimates the volume of runoff and yields a conservative assessment of the infiltration rate.

The water surplus and infiltration rates noted in the following table were computed from rainfall data provided by Environment Canada and the infiltration factors noted in the MOEE information document:

Topography 0.2
Soil.....0.3
Cover 0.1
Total 0.6

Monitoring Station	Annual Precipitation (mm)	Water Surplus[1] (mm/year)	Infiltration Rate (mm/year)
Millgrove[2]	973	388.2	232.9

1. Computed by the Thornwaite and Mather Method
2. Millgrove Monitoring Station was used since it was the closest station with a complete set of data.

The nitrate loading computation was based on the following equation and input parameters noted in the MOEE Procedure and City of Hamilton Guidelines (November 2013).

$$N_L = \frac{N_s V_s + N_b V_b}{V_i + V_b}$$

where N_L = nitrate loading mg/L

N_s = nitrate concentration in septic effluent (40 mg/L, per MOEE and City of Hamilton Guidelines)

N_b = background nitrate concentration (2.97 mg/L; maximum measured)

V_s = daily sewage flow volume (L)

V_b = volume of sewage effluent

V_i = infiltration volume (L)
(infiltration rate x land area)/365 days

infiltration rate = 232.9 mm/year

land area = 0.42 ha

For an effluent nitrate concentration of 40 mg/L, the nitrate concentration at the down gradient property line of the approximate 1.0 acres (0.42 ha) parcel of land to be severed and retained is computed to be 11.7 mg/L, which does not satisfy the regulatory requirement of 10.0 mg/L. A copy of this calculation is provided on Figure 4.

To achieve a nitrate concentration down gradient of the property line that satisfies the regulatory requirement of 10 mg/L a maximum effluent nitrate concentration of 33 mg/L is required, which is an 18% reduction from the 40mg/L required by the MOEE and City of Hamilton Guidelines. In this regard, a tertiary treatment system is required to reduce the nitrate concentration by a minimum of 18%, which results in a downgradient concentration of 9.8 mg/L. A copy of this calculation is provided on Figure 5. It is noted that tertiary treatment systems can a achieve a minimum of 25% nitrate reduction, up to 90 to 95%, depending on the chosen system.

Per a City of Hamilton 2012 staff memo, the use of a tertiary treatment systems is recommended for properties within a vulnerable area located in a source water protection area. These at-risk areas are generally located in Wards 12, 14 and 15 (Site is situated in Ward 14).

Leaching Bed Design Criteria

The silt on Site is considered capable of treating domestic sewage. Ground water was not observed in the test pits. Provided Site grades are maintained or raised during development, the minimum 900 mm clearance requirement between the water level and the base of the trench excavated for leaching beds should be satisfied.

The leaching bed should be designed based on the maximum daily sewage effluent loading. The total daily sewage flow (Q) for a three-bedroom house was deemed to be 1,600 L/day based on the 2006 Ontario Building Code (Table 8.2.1.3A)

Based on the grain size distribution curve of a sample of the silt (Figures 2 and 3), it is expected the native soils will exhibit a coefficient of permeability, K in the order of 10^{-5} to 10^{-6} cm/sec. It is considered that a percolation rate "T" of 20 to 50 min/cm may be used for design purposes and a fully raised leaching bed may be required.

For planning purposes, the minimum required area for the leaching bed in accordance with Table 8.7.4.1.A of the OBC can range from 250 to 500 m^2. Once the location of the sewage treatment system is selected, we recommend field percolation tests to determine the in situ percolation rate and confirm the required area of the leaching bed.

The sewage treatment system should be designed and constructed in accordance with the Ontario Building Code and/or local regulations.

General recommendations for management practices are provided on Table 1.

Engineering Discussion and Recommendations

It is understood that plans call for a severance of a 0.4 ha (1.0 ac) lot from an approximate 0.84 ha (2.08 ac) residential property located at 13 Herbert Place in Hamilton (Dundas), Ontario. Current plans call for the construction of a three bedroom residential dwelling serviced by an on site sewage treatment system and individual potable water supply well on the lands to be severed.

Based on the findings of this study, PML's summarized comments are provided below.

1. It is likely that the ground water aquifer on this Site will be capable of meeting the water demand for the development, subject to the results of pump testing. A private water treatment system may also be required.

   Pump tests will be required to confirm the aquifer characteristics, yield and the potential for an adverse impact to the ground water resource in the area and neighbouring wells. Additional water sampling and testing will also be required per the City of Hamilton Guidelines.

2. It is recommended that a sample of the treated drinking water from the well to be installed on the lands to be severed be obtained and tested to ensure the treatment system is functioning properly and the quality of the water meets the ODWQS.

3. In order to achieve a nitrate loading less than the regulatory requirement of 10 mg/L from a sewage system constructed to service a three bedroom dwelling, the effluent nitrate concentration must be reduced from 40 mg/L to 33 mg/L (minimum 18% reduction) by employing tertiary treatment on both the lands to be severed and retained.

4. Provided tertiary treatment is installed, it is considered that infiltration of septic effluent from the severed and/or retained lots will not have significant impact on the ground water resource.

5. On site treatment of domestic sewage is considered to be feasible through the installation of a septic bed; the minimum area required is estimated to be 250 to 500 m^2 for a three bedroom dwelling.

6. Once the location of the sewage treatment system is selected, we recommend field percolation tests to determine the in-situ percolation rate and confirm the required area of the leaching bed.

7. The sewage treatment system should be designed and constructed in accordance with the Ontario Building Code and/or local regulations, including confirmation of existing conditions and set backs.

Closure

We trust the information presented in this report is sufficient for your present purposes. Please do not hesitate to contact our office should you have any questions.

Sincerely

Peto MacCallum Ltd.

Melissa King, P.Geo., QP_{ESA}
Director
Discipline Head, Geoenvironmental and Hydrogeological Services

TF/KF:ld

Enclosures:
Table 1 – Recommended Construction and Management Practices For Private Septic Tile Leaching Bed Sewage Disposal Systems
Figure 1 – Topography Map
Figures 2 and 3 - Particle Size Distribution Charts
Figures 4 and 5 – Nitrate Loading Calculations
List of Abbreviations Sheet
Test Pit Logs 1 to 4
Drawing 1 – Test Pit Location Plan
Appendix A – Water Well Records
Appendix B – SGS - Certificate of Analysis

References

Topographic, Physiologic, Geologic, and Hydrologic Setting Maps

Ontario Basic Maps (OBM) ArcIMS Service, Environmental Systems Research Institute Canada, 2004, http://www.geographynetwork.ca/

Google Earth™, http://www.google.com/earth/index.html

Chapman, L.J., and Putnam, D.F., 1984: The Physiography of Southern Ontario; Ontario. Ontario Research Foundation.

M2605; Quaternary Geology, Hamilton, Southern Ontario; Ministry of Natural Resources; 1983; Scale: 1:50 000.

M2034; Bedrock Topography of the Hamilton Area, Southern Ontario; Ontario Department of Mines, 1958; Scale: 1:63,360.

P495; Drift Thickness Series, Hamilton Sheet, Southern Ontario; Ontario Department of Mines, 1968.

M2336; Paleozoic Geology, Hamilton, Southern Ontario; Ontario Division of Mines, 1975; Scale: 1:50 000.

M2033; Pleistocene Geology of the Hamilton Area, Southern Ontario; Ontario Department of Mines, 1962; Scale: 1:63,360.

Publications

Ministry of Environment and Energy (MOEE) Hydrogeological Technical Information Requirements for Land Development Applications, April 1995, Her Majesty the Queen in Right of Ontario as Represented by the Minister of Environment and Energy.

Ministry of the Environment and Energy (MOEE), Procedure D-5-4 – Technical Guideline for Individual on Site Sewage Systems: Water Quality Impact Assessment, April 1996.

O. Reg. 169/03 Ontario Drinking Water Quality Standards, Safe Drinking Water Act, 2002.

O. Reg. 170/03 Drinking Water Systems, Safe Drinking Water Act, 2002.

Guidelines for Hydrogeological Studies and Technical Standards for Private Services (City of Hamilton, November 2013)

Well Records

Ontario Ministry of the Environment (MOE) Environmental Monitoring and Reporting Branch, Water Well Records Management

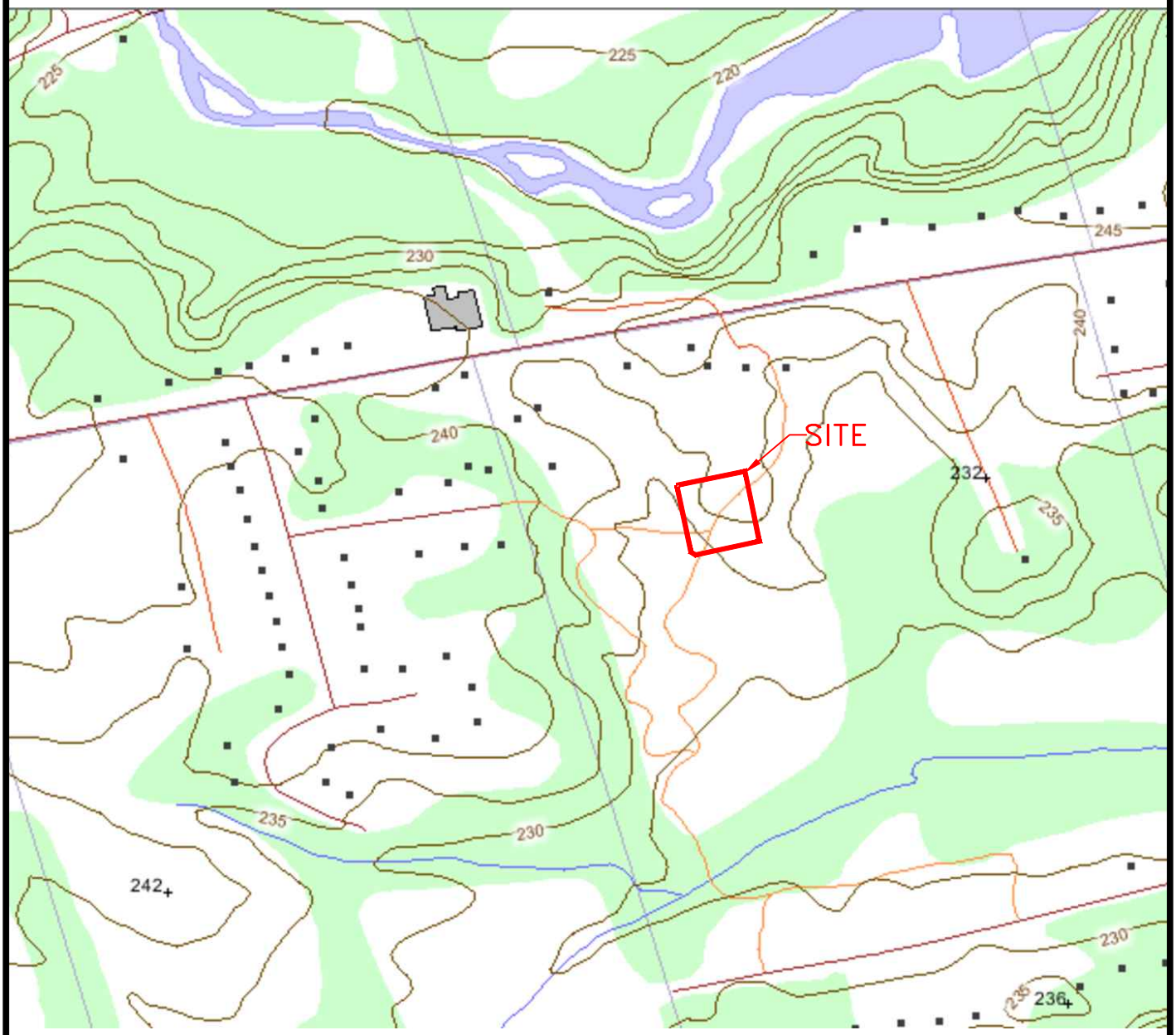
TABLE 1

RECOMMENDED CONSTRUCTION AND MANAGEMENT PRACTICES FOR PRIVATE SEPTIC TILE LEACHING BED SEWAGE DISPOSAL SYSTEMS

1. Lot drainage should be accentuated to ensure positive runoff of storm water away from the tile field. Sewage effluent should not compete with infiltrating storm water which may overload the tile field capacity.
2. Provided it is allowed by local authorities, eavestrough downspouts should be connected directly into the storm sewer, eliminating a potential water source to compete for ground infiltration.

   If storm sewers are not available, the downspouts and extensions should be planned for the opposite side of the house away from the leaching bed.
3. Water conservation should be exercised to reduce the volume of effluent to be handled by the tile field.

   The tile field should be fenced off before construction proceeds.
4. All heavy construction equipment and stockpiling of fill should be prohibited on the tile field area, since soil compaction will result which could severely restrict evapotranspiration within the bed area.
5. Vehicular traffic of any type should not be permitted on the surface of the leaching bed following construction.
6. In order to prevent frost damage, the snow cover should be left in place and measures taken to ensure it is not packed by surface use.
7. Construction of the leaching bed system should be supervised by geotechnical personnel.
8. Routine maintenance is necessary to control growth of excessive vegetation such as trees and heavy growth of weeds over the leaching bed area.
9. To ensure continued bacterial breakdown of sewage effluent, the septic tank should be pumped periodically to remove sludge build-up.
10. If the septic system is equipped with a grease trap, a routine maintenance program must be implemented to ensure it is cleaned regularly.
11. Backwash water from water softener systems can adversely affect bacterial action and concrete components of the sewage system. Therefore, the water should not be discharged to the sewage system.
12. Chemicals such as drain cleaners, petroleum products, solvents, degreasers, etc. will also affect bacterial action and should not be discharged into the sewage system.



0.05 0 km 0.10 0.25

SCALE

REFERENCE:

ONTARIO BASE MAP OBTAINED FROM GEOGRAPHY NETWORK CANADA ONLINE GIS

MR. LUKE HEWITT

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON, ON

TOPOGRAPHY MAP

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		DATE	SCALE	PML REF.	FIGURE NO.
DRAWN	TF	JUNE 2018	AS SHOWN	17HX016	1
CHECKED	KF				
APPROVED	MAK				

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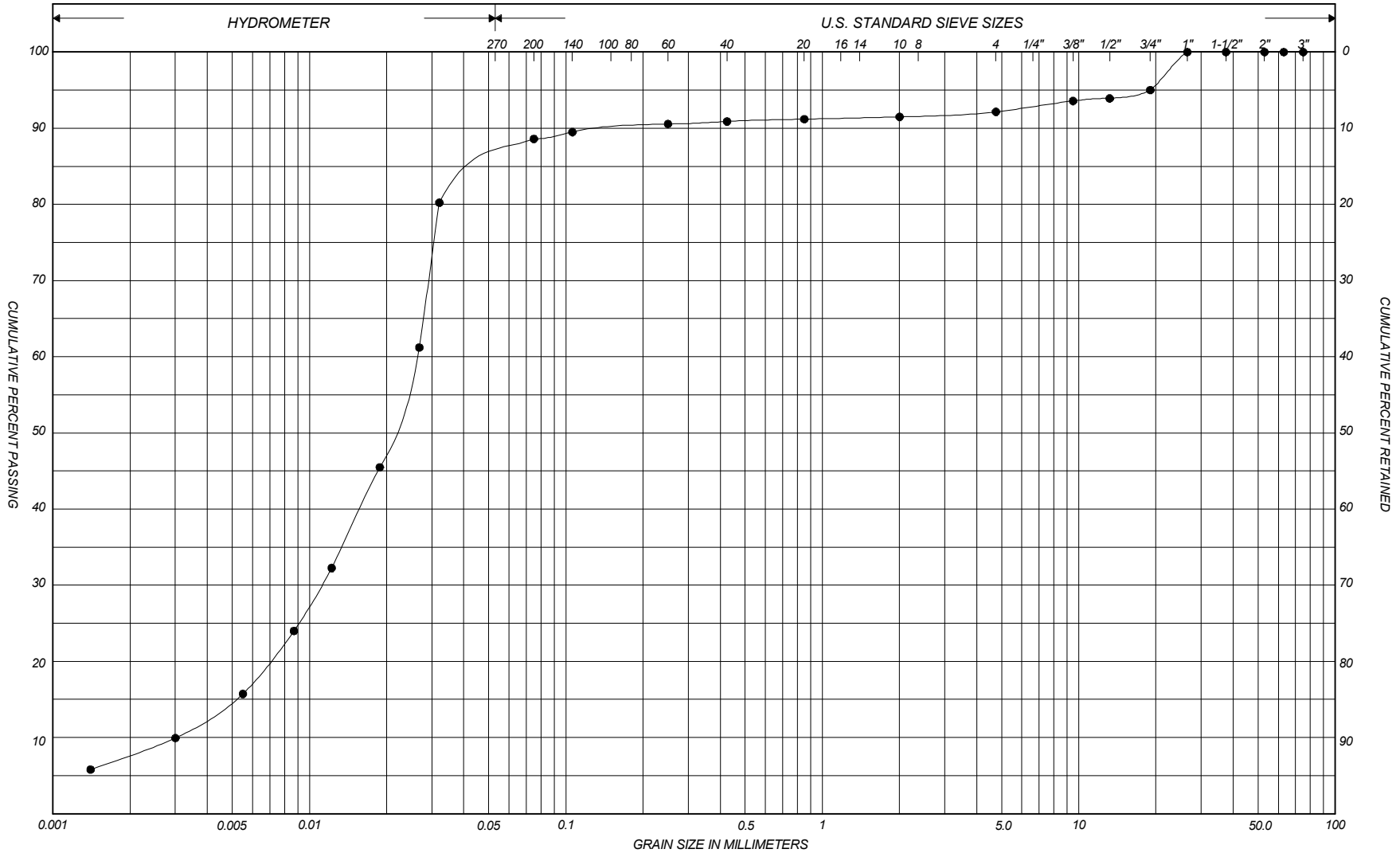
PROJECT NO. 17HX016

FIGURE NO. 2

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL		COB BLES	UNIFIED		
			SAND								
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL		COBBLES	M.I.T.	
	SILT			SAND							
CLAY	SILT		V. FINE	FINE	MED.	COARSE	GRAVEL			U.S. BUREAU	
			SAND								

REMARKS: Test Pit 1, Sample 3, Depth 0.5 - 1.5 m

SILT, TRACE GRAVEL, SAND, AND CLAY

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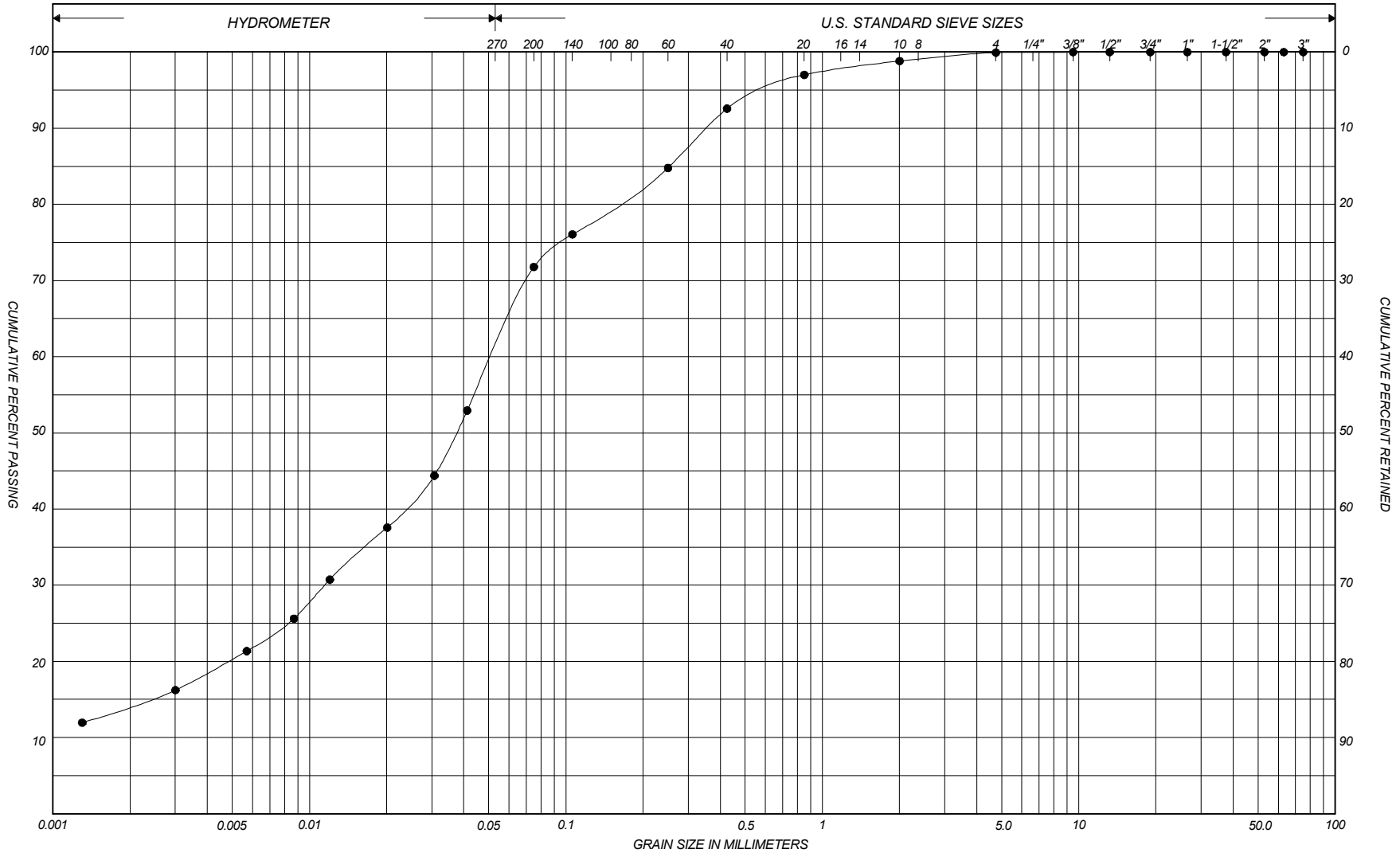
PROJECT NO. 17HX016

FIGURE NO. 3

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL		COB BLES	UNIFIED
			SAND						
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL		COBBLES	M.I.T.
	SILT			SAND						
CLAY	SILT		V. FINE	FINE	MED.	COARSE	GRAVEL			U.S. BUREAU
			SAND							

REMARKS: Test Pit 2, Sample 3, Depth 0.7 - 2.3 m

SILT, SOME SAND AND CLAY

Nitrate Loading Calculations

Figure 4

Use/Notes	Use/# Units	Sewage flow volume (L)	Total L/day	
Land to be Retained/Severed (3 bedroom dwelling)	1	1000	1000	
TOTAL Volume			1000	
Water Budget Calculation	388.15	mm		
Infiltration factors				
topo.	0.2			
soil	0.3			
cover	0.1			
	0.6			
Infiltration=Infiltration factor*water budget balance	232.9	mm/year		
Infiltration area	0.42	ha		
	4,176	m^2		
days in year	365			
Infiltration Volume =Infiltration* area/365 days	2664.8	L/day		
Background - Maximum Nitrate Results from SGS	2.97	mg/L		
Note: Nitrate volume < 10 mg/L required				
nitrate loading (per MOE)	40	mg/L		
nitrate concentration for site equals:	11.7	mg/L N	>10	
nitrate loading*flow volume				
vol.infiltration+flow volume				

Nitrate Loading Calculations

Figure 5

Use/Notes	Use/# Units	Sewage flow volume (L)	Total L/day	
Land to be Retained/Severed	1	1000	1000	
TOTAL Volume			1000	
Water Budget Calculation	388.15	mm		
Infiltration factors				
topo.	0.2			
soil	0.3			
cover	0.1			
	0.6			
Infiltration=Infiltration factor*water budget balance	232.9	mm/year		
Infiltration area	0.42	ha		
	4,176	m^2		
days in year	365			
Infiltration Volume =Infiltration* area/365 days	2664.8	L/day		
Background - Maximum Nitrate Results from SGS	2.97	mg/L		
Note: Nitrate volume < 10 mg/L required				
nitrate loading (18% reduction)	33	mg/L		
nitrate concentration for site equals:	9.8	mg/L N	<10	
nitrate loading*flow volume				
vol.infiltration+flow volume				

LIST OF ABBREVIATIONS

PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

CONSISTENCY	N (blows/0.3 m)	c (kPa)	DENSENESS	N (blows/0.3 m)
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		

WTPL	Wetter Than Plastic Limit
APL	About Plastic Limit
DTPL	Drier Than Plastic Limit

TYPE OF SAMPLE

SS	Split Spoon	TW	Thinwall Open
WS	Washed Sample	TP	Thinwall Piston
SB	Scraper Bucket Sample	OS	Oesterberg Sample
AS	Auger Sample	FS	Foil Sample
CS	Chunk Sample	RC	Rock Core
ST	Slotted Tube Sample		

PH	Sample Advanced Hydraulically
PM	Sample Advanced Manually

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

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LOG OF TEST PIT NO. 1

17T 581085E 4791555N

PROJECT Hydrogeological Investigation — ***PML REF.*** 17HX016

LOCATION 13 Herbert Place, Hamilton (Dundas), Ontario — ***EXCAVATION DATE*** October 12, 2017 — ***ENGINEER*** K. Furbacher

EXCAVATION METHOD John Deere 410J Rubber Tire Backhoe — ***TECHNICIAN*** K. Pettitt

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L; WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS; GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION 229.94						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0 / 229.94	TOPSOIL FILL: 210 mm dark brown sandy silt topsoil fill, damp		1	GS				○		
0.21 / 229.73	FILL: Brown sand fill, some silt and gravel, moist		2	GS				○		
0.45 / 229.49	SILT: Light brown silt, trace gravel, sand, and clay, moist		3	GS		229		○		8 4 81 7
			4	GS		228		○		
2.5 / 227.4	with reddish brown layers		5	GS		227		○		
3.0 / 226.9	TEST PIT TERMINATED AT 3.0 m									Upon completion of excavation, no seepage, no cave
4.0										
5.0										

NOTES

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LOG OF TEST PIT NO. 2

17T 581109E 4791540N

PROJECT Hydrogeological Investigation — ***PML REF.*** 17HX016

LOCATION 13 Herbert Place, Hamilton (Dundas), Ontario — ***EXCAVATION DATE*** October 12, 2017 — ***ENGINEER*** K. Furbacher

EXCAVATION METHOD John Deere 410J Rubber Tire Backhoe — ***TECHNICIAN*** K. Pettitt

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ● (50 100 150 200; 20 40 60 80)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30 40)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION 228.28									
228.23	TOPSOIL: 50 mm dark brown sandy silt topsoil, trace gravel, damp; occasional rootlets		1	GS						
	SILT: Grey silt, some clay and sand, damp; occasional roots		2	GS		228		○		
0.68 / 227.60	becoming brown sandy silt, some clay, moist		3	GS		227		○		0 28 58 14
			4	GS		226		○		
3.0 / 225.3	TEST PIT TERMINATED AT 3.0 m		5	GS				○		Upon completion of excavation, no seepage, no cave

NOTES

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LOG OF TEST PIT NO. 3

17T 581091E 4791525N

PROJECT Hydrogeological Investigation — ***PML REF.*** 17HX016

LOCATION 13 Herbert Place, Hamilton (Dundas), Ontario — ***EXCAVATION DATE*** October 12, 2017 — ***ENGINEER*** K. Furbacher

EXCAVATION METHOD John Deere 410J Rubber Tire Backhoe — ***TECHNICIAN*** K. Pettitt

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
		SURFACE ELEVATION 228.83						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0	228.72	TOPSOIL FILL: 110 mm dark brown sandy silt topsoil fill, trace gravel and clay, damp; occasional rootlets		1	GS						
		FILL: Dark brown silt fill, some clay and gravel, damp; occasional rootlets, cobbles, metal and shale fragments		2	GS				○		
0.45	228.38	brown to dark brown sand fill, some silt and gravel, moist		3	GS		228		○		
1.0				4	GS				○		
1.1	227.7	SILT: Brown silt, some sand and clay, trace gravel, moist		5	GS		227		○		
2.0				6	GS		226		○		
3.0	225.8	TEST PIT TERMINATED AT 3.0 m									Upon completion of excavation, no seepage, no cave
4.0											
5.0											

NOTES

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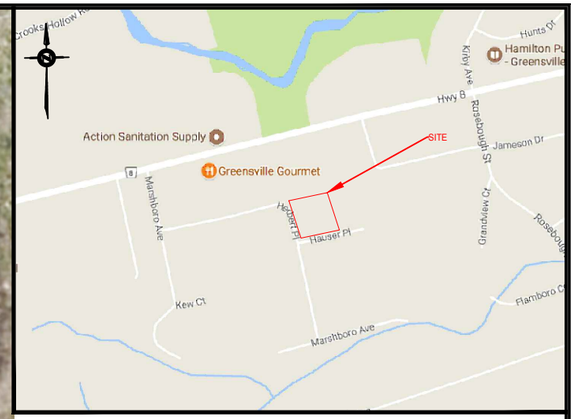
LOG OF TEST PIT NO. 4

17T 581118E 4791511N

PROJECT Hydrogeological Investigation
PML REF. 17HX016
LOCATION 13 Herbert Place, Hamilton (Dundas), Ontario
EXCAVATION DATE October 12, 2017
ENGINEER K. Furbacher
EXCAVATION METHOD John Deere 410J Rubber Tire Backhoe
TECHNICIAN K. Pettitt

DEPTH / ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION 227.20						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0	TOPSOIL: 240 mm grey clayey silt topsoil, some sand, trace gravel, DTPL; occasional rootlets		1	GS		227		○		
0.24 / 226.96	SILT: Brown sandy silt, trace gravel, moist									
1.0						226				
			2	GS				○		
2.0						225				
2.7 / 224.5	SAND: Brown silty sand, trace gravel, wet		3	GS				○		
3.0 / 224.2	TEST PIT TERMINATED AT 3.0 m									Upon completion of excavation, no seepage, no cave
4.0										
5.0										

NOTES



KEY PLAN
HAMILTON, ONTARIO

LEGEND:

- SITE LIMITS
- LANDS TO BE RETAINED
- LANDS TO SEVERED
- TP 4 EL. 227.2 — PML TEST PIT (TP) LOCATION, PML Ref.: 17HX016
- TEMPORARY BENCHMARK (TBM)

TEMPORARY BENCHMARK:

TOP OF CULVERT LOCATED ON THE WEST SIDE OF HERBERT PLACE, APPROXIMATELY 20 m NORTH OF HAUSERR PLACE
ELEVATION: 229.3 m (GEODETIC)

REFERENCE:

PLAN PRODUCED FROM A SURVEY FILE: 17-1039-TOPO, TITLED "PLAN OF SURVEY OF LOT 1, PLAN 62M-883, IN THE CITY OF HAMILTON" BY L.G. WOODS SURVEYING INC., DATED 2016, AND FROM GIS INFORMATION FROM THE CITY OF HAMILTON ONLINE INTERACTIVE MAPPING SERVICE.

NOTE:

THE INFERRED STRATIGRAPHY REFERRED TO IN THE REPORT IS BASED ON THE DATA FROM THESE TEST PITS SUPPLEMENTED BY GEOLOGICAL EVIDENCE. THE ACTUAL STRATIGRAPHY BETWEEN THE TEST PITS MAY VARY.

0m 5 10 15 20 25 30

SCALE
(1:500)

MR. LUKE HEWITT

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON, ON

TEST PIT LOCATION PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	KP/TF	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	KF	JUNE 2018	AS SHOWN	17HX016	1
APPROVED	MAK				

Appendix A

Water Well Records

Lands to Be Retained
(Well No. 6813459)

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.

WENTWORTH

11 (1–2) **6813459** Municipality 68006 (10–14) Con. CON (15–22) 01 (23–24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
HAMILTON - WENTH	WEST FLAMBORO	CON 1	3

Address [redacted]

Date completed (48-53): 27 day 3 month 01 year

21 (1–2) | UTM (10) | Northing (12–17) | (18–24) | RC (25) | Elevation (26) | RC (30) | Basin Code (31) | ii | iii | iv (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
BILLED TO	LACCHETTA HOMES, 462 RICE RD.		WELLAND, ONT. L3C 2V8		
BROWN	SANDY CLAY		LOOSE	0	18
GREY	SANDY CLAY		LOOSE	18	48
GREY	LIMESTONE		HARD	48	50
BROWN	SAND & GRAVEL		LOOSE	50	52
GREY	LIMESTONE		HARD	52	60

31 (10–14)
32 (15–21) | (32–43) | (54–65) | (75–80)

41 WATER RECORD

Water found at - feet	Kind of water
50 (10-13)	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (14)
56 (15-18)	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (19)
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (24)
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (29)
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (34)

(60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
(10-11) 6	1 ☒ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188		(13-16)
(17-18)	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic			(20-23)
(24-25)	1 ☐ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	(30)

61 PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
(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): 30 GPM
Duration of pumping (15-16) Hours (17-18) Mins

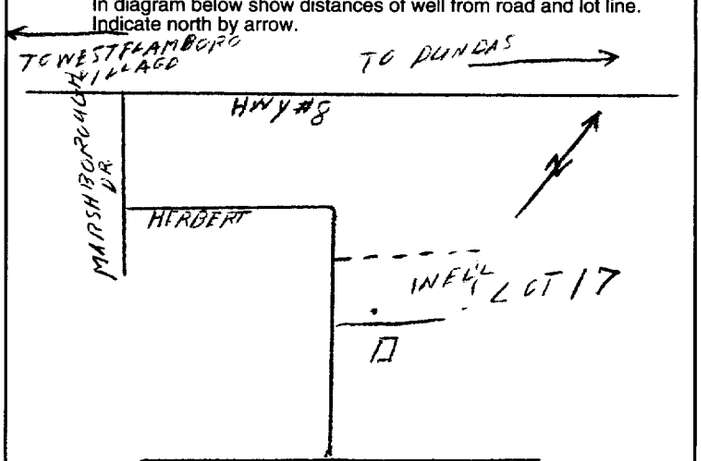
Static level	Water level end of pumping	Water levels during (25): 1 ☐ Pumping 2 ☒ Recovery			
15 (19-21) feet	30 (22-24) feet	15 minutes (26-28) 15 feet	30 minutes (29-31) 15 feet	45 minutes (32-34) 15 feet	60 minutes (35-37) 15 feet

If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☐ Clear ☐ Cloudy
Recommended pump type: ☐ Shallow ☐ Deep	Recommended pump setting (43-45) feet	Recommended pump rate (46-49) GPM

(50-53)

LOCATION OF WELL

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



226986

FINAL STATUS OF WELL (54)

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

WATER USE (55-56)

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

METHOD OF CONSTRUCTION (57)

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

Name of Well Contractor	Well Contractor's Licence No.
O'CONNOR WELL DRILLING LTD.	4005
Address: RR#1 MILLGROVE, ONT. L0R 1V0	
Name of Well Technician: W. HOWE	Well Technician's Licence No.: T 518
Signature of Technician/Contractor: J.B. O'Connor	Submission date: day mo yr

MINISTRY USE ONLY

Data source (58) | Contractor (59-62): 4005 | Date received (63-68): APR 05 2001 (80)
Date of inspection | Inspector
Remarks

CSS.ES1

2 - MINISTRY OF THE ENVIRONMENT COPY

0506 (07/00) Front Form 9

Wells Within 500 m Radius of Site

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(003)	17 581099 4791428[W]	2000/06 4005	06 06	FR 0046	010 / 011 020 / 1:0	DO		6813342 (212243) BRWN CLAY SNDY 0042 GREY LMSN 0043 BRWN GRVL SAND 0044 GREY LMSN 0050
WEST FLAMBOROUGH TOW CON 01(003)	17 581148 4791328[W]	2000/06 4005	06 06	FR 0043 FR 0046	008 / 009 020 / 1:0	DO		6813343 (212241) BRWN CLAY SNDY 0015 BRWN SAND 0037 GREY LMSN 0038 BRWN GRVL 0040 GREY LMSN 0050
WEST FLAMBOROUGH TOW CON 01(003)	17 581148 4791221[W]	2000/08 4005	06 06	FR 0042 FR 0046	006 / 008 025 / 1:0	DO		6813370 (212263) BRWN CLAY SNDY 0031 BRWN SAND GRVL 0038 BLCK LMSN 0050
WEST FLAMBOROUGH TOW CON 01(003)	17 581078 4791212[W]	2000/09 4005	06 06	FR 0048 UK 0046	009 / 016 015 / 1:0	DO		6813389 (212317) BRWN CLAY SNDY 0010 BRWN SAND 0034 BRWN SAND GRVL 0040 GREY LMSN 0052
WEST FLAMBOROUGH TOW CON 01(003)	17 581176 4791234[W]	2000/10 4005	06 06	FR 0043 FR 0046	008 / 012 018 / 1:0	DO		6813391 (212327) BRWN CLAY SNDY LOOS 0030 BRWN GRVL SAND LOOS 0040 GREY LMSN 0050
WEST FLAMBOROUGH TOW CON 01(003)	17 581005 4791372[W]	2000/11 4005	06 06	FR 0056	021 / 040 015 / 0:0	DO		6813410 (212310) BRWN CLAY SNDY LOOS 0025 GREY CLAY LOOS 0042 BRWN GRVL SAND LOOS 0053 GREY LMSN HARD 0060
WEST FLAMBOROUGH TOW CON 01(003)	17 580819 4791380[W]	2001/10 4005	06	FR 0043 FR 0048 FR 0055	015 / 030 025 / 1:0	DO		6813564 (227127) BRWN CLAY SNDY 0022 BRWN SAND GRVL 0035 BRWN GRVL SAND 0040 GREY LMSN 0060
WEST FLAMBOROUGH TOW CON 01(003)	17 581113 4791215[W]	2000/11 4005	06 06	FR 0044 UK 0056	012 / 035 020 / :0	DO		6813411 (212311) BRWN CLAY SNDY LOOS 0030 BRWN SAND GRVL LOOS 0040 GREY LMSN HARD 0060
WEST FLAMBOROUGH TOW CON 01(003)	17 581085 4791488[W]	2001/03 4005	06	FR 0056 FR 0054	015 / 030 030 / :0	DO		6813459 (226986) BRWN CLAY SNDY LOOS 0018 GREY CLAY SNDY LOOS 0048 GREY LMSN HARD 0050 BRWN SAND GRVL LOOS 0052 GREY LMSN HARD 0060
WEST FLAMBOROUGH TOW CON 01(005)	17 580460 4791322[W]	1953/08 4810	06 06	FR 0090	057 / 001 / :0	DO		6805510 () MSND CLAY 0063 LMSN 0093
WEST FLAMBOROUGH TOW CON 01(005)	17 580475 4791525[W]	1965/04 2803	06 06	FR 0142	095 / 120 010 / 1:0	DO		6805519 () BRWN CLAY 0015 BLUE CLAY 0099 LMSN 0145
WEST FLAMBOROUGH TOW CON 01(006)	17 580778 4791336[W]	2009/06 7184						7125850 (Z91290) A080318
WEST FLAMBOROUGH TOW CON 01(006)	17 580638 4791588[W]	1950/04 2309	06	FR 0104	075 / 082 004 / 2:0	DO		6805523 () BRWN MSND 0020 BLUE CLAY 0040 YLLW CLAY 0050 QSND 0080 FSND 0094 CSND 0104
WEST FLAMBOROUGH TOW CON 01(006)	17 580610 4791428[W]	1951/08 4810	06 06	FR 0075	024 / / :0	DO		6805524 () CLAY 0015 STNS GRVL 0045 MSND 0050 LMSN 0078
WEST FLAMBOROUGH TOW CON 01(006)	17 580714 4791573[W]	1953/04 4810	06 06	SU 0123	045 / 125 / 0:10	DO		6805525 () CLAY GRVL 0030 BLDR 0032 CLAY MSND 0055 MSND 0109 LMSN 0125

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(006)	17 580720 4791511[W]	1953/04 4810	06 06	SU 0120	042 / / 0:10	DO		6805526 () CLAY GRVL 0030 CLAY MSND 0070 MSND 0102 LMSN 0120
WEST FLAMBOROUGH TOW CON 01(006)	17 580754 4791363[W]	1953/05 4810	06 06	FR 0080	036 / 036 / :0	DO		6805527 () CLAY GRVL 0040 MSND 0054 LMSN 0082
WEST FLAMBOROUGH TOW CON 01(006)	17 580750 4791408[W]	1953/05 4810	06 06	FR 0078	028 / / :0	DO		6805528 () CLAY 0015 STNS 0025 MSND 0052 LMSN 0080
WEST FLAMBOROUGH TOW CON 01(006)	17 580832 4791423[W]	1953/06 4810	06 06	SU 0105	040 / 005 / :0	DO		6805529 () CLAY GRVL 0040 CLAY 0105 LMSN 0110
WEST FLAMBOROUGH TOW CON 01(006)	17 580699 4791601[W]	1954/10 4810	06	FR 0069	049 / 050 010 / :0	IN		6805531 () BLDR 0020 CLAY GRVL 0050 MSND GRVL 0069
WEST FLAMBOROUGH TOW CON 01(006)	17 580619 4791403[W]	1955/10 4810	06 06	FR 0095	044 / 054 012 / :0	DO		6805532 () CLAY 0020 GRVL 0070 CLAY 0081 LMSN 0098
WEST FLAMBOROUGH TOW CON 01(006)	17 580724 4791445[W]	1957/11 5417	06					6805533 () PRDG 0042 BLUE CLAY MSND 0101 CLAY LMSN 0103 GREY LMSN 0120
WEST FLAMBOROUGH TOW CON 01(006)	17 580784 4791493[W]	1958/03 5417	06	FR 0018 FR 0008	004 / 013 001 / 0:20	NU		6805534 () RED LOAM MSND 0018 GREY CLAY MSND 0027
WEST FLAMBOROUGH TOW CON 01(006)	17 580722 4791393[W]	1958/03 5417	06 06	FR 0073	036 / 062 004 / 0:45	DO		6805535 () RED LOAM MSND 0017 RED LOAM MSND FSND 0040 BLUE CLAY 0052 GREY LMSN 0076
WEST FLAMBOROUGH TOW CON 01(006)	17 580739 4791333[W]	1958/03 5417	06 06	FR 0075	027 / 072 018 / 0:30	DO		6805536 () RED LOAM MSND 0020 RED LOAM MSND GRVL 0035 GREY CLAY MSND 0055 GREY LMSN 0077
WEST FLAMBOROUGH TOW CON 01(006)	17 580709 4791583[W]	1958/04 5417	06 06	SU 0125	057 / 113 001 / 1:0	DO		6805537 () RED LOAM MSND 0018 GREY CLAY 0111 GREY LMSN 0127
WEST FLAMBOROUGH TOW CON 01(006)	17 580728 4791435[W]	1958/10 5417	06 06	FR 0090 FR 0079	036 / 045 021 / 0:30	DO		6805538 () BRWN LOAM 0012 BRWN LOAM MSND GRVL 0030 GREY CLAY 0077 LMSN 0091
WEST FLAMBOROUGH TOW CON 01(006)	17 580854 4791629[W]	1958/10 5417	06	FR 0051	046 / 049 011 / 0:30	DO		6805539 () BRWN LOAM MSND GRVL 0042 GRVL CLAY 0051 GRVL CSND 0057
WEST FLAMBOROUGH TOW CON 01(006)	17 580714 4791465[W]	1958/12 5417	06 06	SU 0114	042 / 105 001 / 1:0	DO		6805540 () BRWN LOAM MSND 0019 GREY CLAY MSND GRVL 0031 GREY CLAY SILT MSND 0042 GREY CLAY 0100 GREY LMSN 0115
WEST FLAMBOROUGH TOW CON 01(006)	17 580804 4791351[W]	1959/02 5417	06 06	FR 0078	042 / 070 006 / 0:30	DO		6805541 () BRWN LOAM MSND 0008 BRWN CLAY GRVL 0012 RED CLAY GRVL 0026 GREY CLAY 0065 GREY CLAY GRVL 0073 GREY LMSN 0080

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(006)	17 580824 4791377[W]	1959/02 5417	06	FR 0090	042 / 062 020 / 0:30	DO		6805542 () BRWN LOAM MSND 0007 RED CLAY GRVL 0031 GREY CLAY 0090 GREY LMSN GRVL 0092
WEST FLAMBOROUGH TOW CON 01(006)	17 580849 4791361[W]	1959/02 5417	06 06	SU 0150	054 / 142 002 / 0:45	DO		6805543 () BRWN LOAM MSND 0010 BRWN CLAY GRVL 0020 GREY CLAY GRVL 0036 GREY CLAY 0098 GREY LMSN 0152
WEST FLAMBOROUGH TOW CON 01(006)	17 580856 4791343[W]	1959/03 5417	06	FR 0032	026 / 028 005 / 0:30	DO		6805544 () BRWN LOAM MSND 0013 BRWN CLAY GRVL 0025 GREY CLAY 0032 MSND GRVL 0038
WEST FLAMBOROUGH TOW CON 01(006)	17 580799 4791329[W]	1959/03 5417	06	FR 0030	019 / 022 008 / 0:30	DO		6805545 () BRWN LOAM MSND 0008 BRWN CLAY GRVL 0014 GREY CLAY GRVL 0022 GRVL BLDR 0026 RED CLAY MSND GRVL 0032
WEST FLAMBOROUGH TOW CON 01(006)	17 580789 4791323[W]	1959/03 5417	06	FR 0078	032 / 069 008 / 1:0	DO		6805546 () BRWN LOAM MSND 0015 GREY CLAY GRVL 0028 GREY GRVL 0036 GREY CLAY MSND 0052 GREY CLAY 0078 GRVL LMSN 0079 LMSN 0080
WEST FLAMBOROUGH TOW CON 01(006)	17 580879 4791373[W]	1959/03 5417	06 06	SU 0122	057 / 113 002 / 0:45	DO		6805547 () BRWN LOAM MSND 0014 RED CLAY MSND GRVL 0026 GREY CLAY GRVL 0035 BRWN CLAY GRVL 0044 GREY CLAY 0101 GREY LMSN 0123
WEST FLAMBOROUGH TOW CON 01(006)	17 580762 4791288[W]	1959/03 5417	06 06	FR 0023 FR 0083	030 / 074 008 / 0:30	DO		6805548 () BRWN LOAM 0005 BRWN CLAY 0019 GREY CLAY 0023 GREY CLAY GRVL 0029 RED CLAY MSND GRVL 0040 GREY CLAY 0054 GREY LMSN 0084
WEST FLAMBOROUGH TOW CON 01(006)	17 580762 4791268[W]	1959/03 5417	06 06	FR 0027 FR 0076	025 / 066 005 / 0:30	DO		6805549 () BRWN LOAM 0008 BRWN CLAY 0014 BRWN CLAY GRVL 0019 GRVL 0024 GREY CLAY GRVL 0040 GREY CLAY 0050 0076
WEST FLAMBOROUGH TOW CON 01(006)	17 580769 4791241[W]	1959/03 5417	06 06	FR 0069	024 / 056 005 / 0:45	DO		6805550 () BRWN LOAM MSND 0007 BRWN CLAY GRVL 0020 RED CLAY GRVL 0035 GREY CLAY GRVL 0050 GREY LMSN 0070
WEST FLAMBOROUGH TOW CON 01(006)	17 580700 4791267[W]	1959/09 5417	06 06	FR 0064	038 / 057 007 / 0:45	DO		6805551 () BRWN LOAM MSND 0008 GREY CLAY MSND 0032 GREY CLAY 0050 GREY LMSN 0067
WEST FLAMBOROUGH TOW CON 01(006)	17 580818 4791363[W]	1967/12 3001	36	FR 0023	023 / 025 010 / 1:0	DO		6805552 () BRWN CLAY STNS 0007 BLUE CLAY 0010 BRWN CLAY STNS 0020 BLUE CLAY STNS 0027 STNS 0029
WEST FLAMBOROUGH TOW CON 01(006)	17 580854 4791373[W]	1969/04 1620	06					6807047 () BRWN CLAY 0018 GREY CLAY 0100 LMSN 0102

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(006)	17 580556 4791359[W]	1973/04 2801	07 06	SU 0146 FR 0106	052 / 084 016 / 4:30	PS		6808718 () BRWN CLAY STNS 0013 GREY CLAY 0016 GREY GRVL SAND 0018 BRWN CLAY 0023 GREY CLAY 0033 GREY CLAY LMSN 0038 GREY CLAY CLAY SILT 0053 BRWN LMSN 0071 BRWN LMSN 0078 BRWN LMSN 0082 BRWN LMSN 0091 BLCK LMSN 0101 GREY LMSN 0107 BLCK LMSN SHLE CLAY 0125 BRWN LMSN 0129 GREY LMSN 0137 GREY SHLE CLAY LMSN 0141 BRWN LMSN 0147 GREY LMSN 0150 BRWN LMSN 0153 BRWN LMSN 0158 BRWN LMSN 0160 GREY LMSN 0166
WEST FLAMBOROUGH TOW CON 01(006)	17 580867 4791528[W]	1974/05 3030	36	FR 0055		DO		6808822 () BRWN LOAM 0001 BRWN CLAY STNS 0015 BRWN SAND CLAY LYRD 0045 BRWN CLAY 0055 BRWN SAND 0067
WEST FLAMBOROUGH TOW CON 01(006)	17 580830 4791524[W]	1974/09 3030	30 24	FR 0066	066 / / :0	DO		6808943 () BRWN CLAY BLDR 0015 BRWN GRVL 0030 BRWN SAND BLDR 0060 BRWN GRVL 0072
WEST FLAMBOROUGH TOW CON 01(006)	17 580899 4791551[W]	1975/07 2803	06	FR 0078	068 / 068 012 / 1:0	DO		6809359 () PRDG 0062 BRWN CLAY 0076 GREY GRVL 0078
WEST FLAMBOROUGH TOW CON 01(006)	17 580794 4791503[W]	1977/10 2803	06	FR 0072	057 / 059 020 / 1:0	DO		6809745 () LOAM 0004 BRWN CLAY STNY 0070 GREY GRVL 0072
WEST FLAMBOROUGH TOW CON 01(006)	17 580774 4791463[W]	1979/02 4005	06	SU 0116	040 / 115 004 / 2:0	DO		6809927 () BRWN CLAY SNDY LOOS 0020 BRWN SAND BLDR LOOS 0025 BRWN CLAY SNDY LOOS 0085 GREY CLAY LOOS 0100 BRWN CLAY SNDY LOOS 0106 GREY LMSN HARD 0118
WEST FLAMBOROUGH TOW CON 01(006)	17 580889 4791267[W]	1974/12 3637	30 32 21	FR 0071	067 / 016 / 2:0	ST		6810384 () BRWN CLAY SAND HARD 0027 GREY CLAY SAND HARD 0043 BRWN MSND 0067 BLCK CSND LOOS 0070 BLCK MSND 0080
WEST FLAMBOROUGH TOW CON 01(007)	17 581100 4791427[W]	2002/04 4005	06 06	FR 0076 FR 0087	032 / 080 015 / 1:0	DO		6813631 (241262) BRWN CLAY SNDY 0056 GREY SAND GRVL 0060 GREY LMSN SAND LOOS 0063 GREY LMSN HARD 0092
WEST FLAMBOROUGH TOW CON 01(007)	17 581194 4791123[W]	1983/05 4208	06	FR 0061	021 / 025 030 / 1:0	DO		6810623 () BRWN CLAY 0015 GREY CLAY 0057 GREY LMSN 0063
WEST FLAMBOROUGH TOW CON 01(007)	17 581254 4791143[W]	1983/04 4208	06	FR 0059	026 / 050 025 / 1:0	DO		6810622 () BRWN CLAY SNDY 0015 GREY CLAY 0056 GREY LMSN 0061
WEST FLAMBOROUGH TOW CON 01(007)	17 581254 4791143[W]	1981/11 2803	06	FR 0059	035 / 049 015 / 1:0	DO		6810379 () LOAM 0004 BRWN CLAY SNDY 0040 BLUE CLAY 0057 GREY LMSN 0060
WEST FLAMBOROUGH TOW CON 01(007)	17 581359 4791255[W]	1981/07 2803	06	FR 0047	033 / 040 015 / 1:0	DO		6810378 () LOAM 0006 BRWN CLAY SNDY 0044 BRWN SHLE STNS 0047

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(007)	17 581354 4791203[W]	1981/07 2803	06	FR 0035	020 / 024 020 / 1:0	DO		6810377 () LOAM 0005 BRWN CLAY SNDY 0033 BRWN LMSN 0035 UNKN 0044
WEST FLAMBOROUGH TOW CON 01(007)	17 580934 4791623[W]	1980/04 3030	36	FR 0040	040 / / :0	DO		6810119 () BRWN LOAM 0001 BRWN CLAY SNDY 0010 BRWN GRVL 0012 BLUE CLAY 0020 BRWN SAND DRY 0025 BRWN CLAY 0032 BRWN SAND 0035 BRWN SAND DRY 0037 BRWN CLAY SNDY 0044 BLUE SILT 0055
WEST FLAMBOROUGH TOW CON 01(007)	17 581314 4791663[W]	1976/07 4005	06	FR 0076		DO		6809465 () BRWN CLAY LOOS 0076 BRWN SAND GRVL LOOS 0078 BRWN CLAY LOOS 0097
WEST FLAMBOROUGH TOW CON 01(007)	17 581225 4791185[W]	1974/05 1620	06	FR 0046	010 / 030 025 / 1:0	DO		6808897 () BRWN CLAY 0028 SAND GRVL 0042 LMSN 0046
WEST FLAMBOROUGH TOW CON 01(007)	17 581254 4791483[W]	1971/12 2309	06	FR 0110	055 / 108 004 / 2:0	DO		6808004 () BRWN CLAY 0030 GRVL 0045 MSND 0070 MSND 0082 CLAY MSND 0112
WEST FLAMBOROUGH TOW CON 01(007)	17 581194 4791213[W]	1971/05 2309	06 06	FR 0040	010 / 014 035 / 26:0	DO		6807808 () BRWN CLAY MSND 0032 BRWN FSND 0034 BRWN ROCK 0043
WEST FLAMBOROUGH TOW CON 01(007)	17 581032 4791678[W]	1954/07 4810	06 06	SU 0130	058 / 006 / :0	DO		6805559 () CLAY 0101 LMSN 0140
WEST FLAMBOROUGH TOW CON 01(007)	17 581216 4791160[W]	1989/10 4005	06	UK 0057	029 / 042 020 / 1:0	DO		6811794 (55681) BRWN CLAY LOOS 0017 BRWN CLAY GRVL LOOS 0045 GREY LMSN HARD 0060
WEST FLAMBOROUGH TOW CON 01(007)	17 581229 4791707[W]	2006/11 4005	06	0120	059 / 120 004 / 1:0	DO		6814593 (Z37908) A034344 BRWN CLAY SNDY 0038 BLDR 0039 BRWN CLAY SLTY 0060 BRWN SILT SNDY 0078 GREY CLAY 0095 GREY LMSN 0125
WEST FLAMBOROUGH TOW CON 01(007)	17 581175 4791379[W]	2011/04 7329						7163034 (Z111329)
WEST FLAMBOROUGH TOW CON 01(007)	17 580899 4791611[W]	1952/05 4810	06	FR 0063	016 / 021 020 / :0	DO		6805554 () CLAY STNS MSND 0063
WEST FLAMBOROUGH TOW CON 01(007)	17 581180 4791429[W]	1953/08 4810	06 06	FR 0032	016 / / :0	DO		6805558 () CLAY 0020 LMSN 0035
WEST FLAMBOROUGH TOW CON 01(008)	17 581324 4791673[W]	1964/10 2803	06 06	FR 0115	050 / 128 / 2:0	DO		6805672 () BRWN CLAY 0015 BLUE CLAY 0091 LMSN 0128
WEST FLAMBOROUGH TOW CON 01(008)	17 581324 4791658[W]	1962/08 2803	06	FR 0060	050 / 070 008 / 2:0	DO	66 4	6805661 () BRWN CLAY 0006 CLAY MSND 0060 MSND 0070
WEST FLAMBOROUGH TOW CON 01(008)	17 581379 4791679[W]	1959/07 1620	06	FR 0073	060 / 060 005 / 0:30	DO		6805641 () BRWN CLAY 0030 FSND 0060 FSND GRVL 0075
WEST FLAMBOROUGH TOW CON 01(008)	17 581354 4791628[W]	1959/04 2309	06 06	SU 0110 SU 0140	060 / 110 008 / 1:0	DO		6805639 () BRWN CLAY 0050 CLAY MSND 0080 FSND 0095 LMSN 0142

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 01(008)	17 581412 4791773[W]	1949/07 4810	06	FR 0088	078 / 083 010 / :0	DO		6805594 () CLAY 0080 GRVL 0088
WEST FLAMBOROUGH TOW CON 01(008)	17 581354 4791703[W]	1969/06 2519	30	FR 0037	038 / 047 003 / 1:0	DO		6807096 () BRWN CLAY MSND 0016 GREY CLAY BLDR 0037 BRWN MSND 0042 GREY CLAY STNS 0050
WEST FLAMBOROUGH TOW CON 01(008)	17 581374 4791793[W]	1967/07 2803	06 06	SU 0126	050 / 128 002 / 2:0	DO		6805706 () BRWN CLAY 0010 BLUE CLAY 0097 LMSN 0128
WEST FLAMBOROUGH TOW CON 01(008)	17 581396 4791643[W]	1967/04 2803	06	FR 0076	056 / 062 010 / 3:0	DO		6805700 () BRWN CLAY 0010 BLUE CLAY 0070 GRVL 0076
WEST FLAMBOROUGH TOW CON 01(008)	17 581402 4791465[W]	1966/07 1620	06					6805694 () LOAM MSND 0030 BLUE CLAY 0062 CSND 0063 BLUE CLAY 0081
WEST FLAMBOROUGH TOW CON 01(008)	17 581422 4791699[W]	1965/03 3001	36	FR 0069	068 / 072 005 / 0:30	DO		6805688 () BRWN MSND CLAY 0012 GREY MSND SHLE 0050 HPAN 0053 STNS MSND 0069 FSND 0077
WEST FLAMBOROUGH TOW CON 01(008)	17 581316 4791695[W]	1965/02 2803	06 06	SU 0119	050 / 120 001 / 1:0	DO		6805674 () BRWN CLAY 0010 BLUE CLAY 0070 CLAY MSND 0080 BLUE CLAY 0101 LMSN 0120
WEST FLAMBOROUGH TOW CON 01()	17 580836 4791470[W]	2000/06 4207		SU 0107 SU 0140	057 / 110 002 / 5:0	DO		6813435 (211032) PRDR 0021 GREY CLAY 0104 GREY LMSN 0144
WEST FLAMBOROUGH TOW CON 02(006)	17 580511 4791601[W]	1958/01 1643	06 06	SU 0147	040 / 090 004 / 1:0	PS		6805873 () CLAY 0040 QSND 0138 GREY LMSN 0147
WEST FLAMBOROUGH TOW CON 02(006)	17 580633 4791968[W]	1965/06 1205	06 06	FR 0041	015 / 041 002 / 0:30	DO		6805875 () FILL 0004 LMSN 0043
WEST FLAMBOROUGH TOW CON 02(006)	17 580703 4792104[W]	1965/07 4602	06 06	FR 0026	018 / 032 005 / 1:0	DO		6805876 () SILT 0003 BRWN LMSN 0032
WEST FLAMBOROUGH TOW CON 02(006)	17 580796 4792063[W]	1967/02 4602	06 06	FR 0024	006 / 035 002 / 1:30	DO		6805877 () SILT 0003 LMSN 0035
WEST FLAMBOROUGH TOW CON 02(006)	17 580741 4792027[W]	2002/11 4005		UK 0076	/ 128 003 / 1:0	DO		6813753 (241390) BRWN CLAY SNDY 0008 GREY LMSN 0060 GREY LMSN 0136
WEST FLAMBOROUGH TOW CON 02(006)	17 580504 4791980[W]	1990/09 2803	06	FR 0030	010 / 028 003 / 1:0	DO		6811964 (61783) LOAM 0005 GREY SHLE ROCK 0032
WEST FLAMBOROUGH TOW CON 02(006)	17 580481 4791983[W]	1990/09 2803	06	FR 0029	010 / 029 003 / 1:0	DO		6811965 (61781) LOAM 0002 GREY SHLE ROCK 0032
WEST FLAMBOROUGH TOW CON 02(006)	17 580720 4791973[W]	1997/08 4207	06 06	UK 0025	015 / 030 004 / 1:0	DO		6812955 (186200) BRWN CLAY STNS 0006 GREY LMSN 0030

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 02(006)	17 580694 4792103[W]	1983/08 4005		FR 0022	015 / 030 005 / 1:0	DO		6810532 () BRWN LOAM LOOS 0001 GREY LMSN HARD 0035
WEST FLAMBOROUGH TOW CON 02(007)	17 581151 4791776[W]	1961/11 4810	06 06	SU 0130	072 / 130 007 / 1:30	DO		6805878 () BRWN CLAY 0030 BRWN CLAY STNS 0090 BLUE CLAY 0109 GREY LMSN 0133
WEST FLAMBOROUGH TOW CON 02(007)	17 580934 4791745[W]	1967/10 2803	06	FR 0094	084 / 086 010 / 2:0	DO		6805880 () BRWN CLAY STNS 0030 BLUE CLAY 0085 GRVL 0094
WEST FLAMBOROUGH TOW CON 02(007)	17 580964 4791753[W]	1967/11 2803	06	FR 0084	078 / 080 010 / 2:0	DO		6805881 () BRWN CLAY STNS 0032 BLUE CLAY 0082 GRVL 0090
WEST FLAMBOROUGH TOW CON 02(007)	17 581249 4791823[W]	1967/03 2803	06	FR 0093	078 / 083 010 / 2:0	DO		6805935 () BRWN CLAY STNS 0025 BLUE CLAY STNS 0083 GRVL 0093
WEST FLAMBOROUGH TOW CON 02(007)	17 581274 4791813[W]	1969/05 2803	06	FR 0092	078 / 080 010 / 2:0	DO		6807150 () BRWN CLAY 0023 BLUE CLAY 0090 GRVL 0092
WEST FLAMBOROUGH TOW CON 02(007)	17 580994 4791963[W]	1972/10 1620	06	FR 0032	018 / 036 002 / 1:0	PS		6808293 () LOAM 0002 SHLE 0004 LMSN 0036
WEST FLAMBOROUGH TOW CON 02(007)	17 581034 4791783[W]	1979/07 4005	06	FR 0092	075 / 082 010 / 2:0	DO		6809965 () BRWN CLAY BLDR SNDY 0045 BRWN SAND BLDR LOOS 0060 GREY CLAY SNDY LOOS 0092 GREY GRVL PCKD 0093
WEST FLAMBOROUGH TOW CON 02(007)	17 580954 4791723[W]	1979/08 4005	06	FR 0072	035 / 065 009 / 1:0	DO		6809982 () BRWN CLAY SNDY LOOS 0015 BRWN SAND LOOS 0050 GREY CLAY LOOS 0068 GREY LMSN HARD 0074
WEST FLAMBOROUGH TOW CON 02(007)	17 580914 4791803[W]	1979/10 4005	06	SU 0085 SU 0088 SU 0071	035 / 081 009 / 1:0	DO		6810004 () PRDR 0069 GREY LMSN HARD 0090
WEST FLAMBOROUGH TOW CON 02(008)	17 581329 4791881[W]	2007/05 6865	05 06	FR 0108	080 / 094 001 / 1:0	DO	99 -30	7045912 (Z74751) A034706 BRWN SAND 0023 CLAY SAND 0055 GREY CLAY 0070 SAND 0077 SAND 0084 CLAY SAND STNS 0094 GRVL CLAY 0104 CLAY 0110
WEST FLAMBOROUGH TOW CON 02(008)	17 581414 4791983[W]	1981/08 4208	06	FR 0097	056 / 100 004 / 1:0	DO		6810349 () GREY CLAY 0092 GREY LMSN 0100
WEST FLAMBOROUGH TOW CON 02(008)	17 581319 4791818[W]	1955/05 2309	06 06	SU 0120	080 / / :0			6805893 () GRVL BLDR 0032 GREY CLAY 0074 GREY FSND CLAY 0087 GRVL 0091 HPAN 0112 GREY CLAY MSND 0118 SLTE 0140
WEST FLAMBOROUGH TOW CON 02(008)	17 581402 4791831[W]	1964/05 2803	06 05	FR 0114	050 / 128 001 / 4:0	DO	113 3	6805927 () BRWN CLAY 0010 BLUE CLAY 0100 BLUE MSND 0116 LMSN 0128

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE[2] CNTR[3]	CASING DIA[4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 02(008)	17 581329 4791863[W]	1973/04 2801						6808507 () BRWN CLAY BLDR 0006 BRWN CLAY GRVL 0012 BRWN GRVL SAND CLAY 0023 BRWN CLAY GRVL 0063 GREY CLAY 0067 GREY CLAY 0075 BRWN CLAY 0080 GREY CLAY SAND 0114 GREY LMSN 0125 BLCK LMSN 0129 GREY LMSN 0147 GREY LMSN 0157 BRWN LMSN 0168 GREY LMSN 0197
WEST FLAMBOROUGH TOW CON 02(008)	17 581394 4792043[W]	1976/07 4208	06	FR 0091	065 / 090 008 / 3:0	DO		6809505 () BRWN CLAY GRVL 0045 GREY CLAY 0085 GREY GRVL CLAY HPAN 0091
WEST FLAMBOROUGH TOW CON 02(008)	17 581414 4792083[W]	1976/07 4208	06	FR 0083	055 / 080 004 / 4:0	DO		6809507 () BRWN CLAY GRVL 0030 GREY CLAY GRVL STNS 0075 GREY GRVL CMTD 0083
WEST FLAMBOROUGH TOW CON 02(008)	17 581374 4791943[W]	1976/09 4208	05 06	UK 0073	070 / 073 020 / 1:0	DO	73 3	6809513 () BRWN CLAY GRVL 0022 GREY CLAY 0070 BRWN SAND GRVL 0073 BRWN GRVL 0076 BRWN CLAY 0090
WEST FLAMBOROUGH TOW CON 02(008)	17 581374 4791983[W]	1976/09 4208	06	FR 0102	077 / 100 008 / 1:0	DO		6809516 () BRWN CLAY 0050 GREY CLAY 0096 BRWN SAND GRVL 0102
WEST FLAMBOROUGH TOW CON 02(008)	17 581374 4791983[W]	1976/07 4208	06	SU 0144	115 / 150 004 / 1:0	DO		6809524 () BRWN CLAY GRVL 0050 GREY CLAY 0114 GREY LMSN 0150
WEST FLAMBOROUGH TOW CON 02(008)	17 581354 4791863[W]	1977/07 4005	06	SU 0143	100 / 143 002 / 2:30	DO		6809619 () BRWN CLAY SNDY LOOS 0020 BRWN CLAY GRVL SNDY 0045 BRWN CLAY GRVL BLDR 0052 BRWN CLAY LOOS 0075 GREY CLAY LOOS 0090 BRWN SAND LOOS 0113 GREY CLAY LOOS 0115 BRWN FSND LOOS 0119 FSND FGVL 0145
WEST FLAMBOROUGH TOW CON 02(008)	17 581414 4791923[W]	1979/11 4005	06	FR 0121	078 / 114 008 / 2:0	DO		6810013 () BRWN SAND LOOS 0041 GREY SAND LOOS 0049 GREY CLAY LOOS 0054 GREY CLAY SAND LOOS 0066 GREY CLAY LOOS 0093 BRWN FSND LOOS 0115 GREY SAND GRVL PCKD 0121
WEST FLAMBOROUGH TOW CON 02(008)	17 581414 4791903[W]	1980/05 4005	06	FR 0122	096 / 114 / 3:0	DO		6810099 () BRWN SAND LOOS 0043 GREY SAND LOOS 0050 GREY CLAY LOOS 0090 GREY SAND LOOS 0113 GREY SAND GRVL LOOS 0118 GREY CLAY LOOS 0121 GREY GRVL PCKD 0122
WEST FLAMBOROUGH TOW CON 02(008)	17 581414 4792003[W]	1980/08 4208	06	FR 0107	065 / 110 007 / 2:0	DO		6810223 () GREY CLAY SAND GRVL 0104 GREY LMSN 0110
WEST FLAMBOROUGH TOW CON 02(008)	17 581354 4791823[W]	1981/08 4208	06 05	FR 0080	070 / 090 001 / 2:0	DO	81 4	6810350 () BRWN CLAY STNY 0030 GREY CLAY 0080 GREY SAND GRVL MUCK 0090

TOWNSHIP CONCESSION (LOT)	UTM[1]	DATE [2] CNTR [3]	CASING DIA [4]	WATER[5,6] DETAIL	STAT LVL/PUMP LVL[7] RATE[8]/TIME HR:MIN	WATER USE[9]	SCREEN INFO[10]	WELL # (AUDIT#) WELL TAG # DEPTHS TO WHICH FORMATIONS EXTEND[5,11]
WEST FLAMBOROUGH TOW CON 03(001)	17 581108 4791395[W]	2000/08 4005	06 06	UK 0042 UK 0056	015 / 018 015 / 1:0	DO		6813368 (212265) BRWN CLAY SNDY 0032 BRWN SAND GRVL 0034 GREY LMSN 0036 BRWN SAND GRVL 0037 GREY LMSN LOOS 0038 BRWN LMSN HARD 0060
WEST FLAMBOROUGH TOW CON 03(001)	17 581011 4791341[W]	2000/08 4005	06 06	FR 0052	015 / 016 015 / 1:0	DO		6813369 (212271) BRWN CLAY SNDY 0032 BRWN GRVL SAND 0040 GREY CLAY 0048 GREY LMSN 0050 BLCK LMSN 0056
WEST FLAMBOROUGH TOW 02()	17 581265 4791834[W]	2008/06 4207	63	FR 0098	081 / 095 009 / 1:0	DO		7114174 (Z79380) A070616 BRWN CLAY SILT 0095 BRWN GRVL 0098
WEST FLAMBOROUGH TOW ()	17 581141 4791550[W]	2006/11 4005	06	0071 0065	010 / 034 008 / 1:0	DO		6814594 (Z37909) A034345 BRWN CLAY SLTY 0018 GREY CLAY STNS 0024 GREY CLAY 0045 GREY LMSN 0075
WEST FLAMBOROUGH TOW ()	17 581322 4791392[W]	2006/11 7238	02			NU	32 7	7039015 (Z50665) A045284 BRWN SILT SAND CLAY 0029 GREY LMSN 0038
DUNDAS TOWN (061)	17 581424 4791500[W]	2007/09 3030	36	0055 0060 0068	054 / / :0	DO		7050827 (Z68298) A054901 BRWN LOAM 0001 BRWN CLAY SNDY 0016 GREY SILT 0055 GREY SILT STNS 0060 GREY SAND 0067 GREY SAND 0072

Notes:
1. UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
2. Date Work Completed
3. Well Contractor Licence Number
4. Casing diameter in inches
5. Unit of Depth in Feet
6. See Table 4 for Meaning of Code
7. STAT LVL: Static Water Level in Feet ; PUMP LVL: Water Level After Pumping in Feet
8. Pump Test Rate in GPM, Pump Test Duration in Hour : Minutes
9. See Table 3 for Meaning of Code
10. Screen Depth and Length in feet
11. See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

Code	Description	…	Code	Description	…	Code	Description	…	Code	Description	…	Code	Description
BLDR	BOULDERS		FCRD	FRACTURED		IRFM	IRON FORMATION		PORS	POROUS		SOFT	SOFT
BSLT	BASALT		FGRD	FINE-GRAINED		LIMY	LIMY		PRDG	PREVIOUSLY DUG		SPST	SOAPSTONE
CGRD	COARSE-GRAINED		FGVL	FINE GRAVEL		LMSN	LIMESTONE		PRDR	PREV. DRILLED		STKY	STICKY
CGVL	COARSE GRAVEL		FILL	FILL		LOAM	TOPSOIL		QRTZ	QUARTZITE		STNS	STONES
CHRT	CHERT		FLDS	FELDSPAR		LOOS	LOOSE		QSND	QUICKSAND		STNY	STONEY
CLAY	CLAY		FLNT	FLINT		LTCL	LIGHT-COLOURED		QTZ	QUARTZ		THIK	THICK
CLN	CLEAN		FOSS	FOSILIFEROUS		LYRD	LAYERED		ROCK	ROCK		THIN	THIN
CLYY	CLAYEY		FSND	FINE SAND		MARL	MARL		SAND	SAND		TILL	TILL
CMTD	CEMENTED		GNIS	GNEISS		MGRD	MEDIUM-GRAINED		SHLE	SHALE		UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE		GRNT	GRANITE		MGVL	MEDIUM GRAVEL		SHLY	SHALY		VERY	VERY
CRYS	CRYSTALLINE		GRSN	GREENSTONE		MRBL	MARBLE		SHRP	SHARP		WBRG	WATER-BEARING
CSND	COARSE SAND		GRVL	GRAVEL		MSND	MEDIUM SAND		SHST	SCHIST		WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED		GRWK	GREYWACKE		MUCK	MUCK		SILT	SILT		WTHD	WEATHERED
DLMT	DOLOMITE		GVLY	GRAVELLY		OBDN	OVERBURDEN		SLTE	SLATE			
DNSE	DENSE		GYPS	GYPSUM		PCKD	PACKED		SLTY	SILTY			
DRTY	DIRTY		HARD	HARD		PEAT	PEAT		SNDS	SANDSTONE			
DRY	DRY		HPAN	HARDPAN		PGVL	PEA GRAVEL		SNDY	SANDY			

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Water Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial		
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

UTM [ ] E
[5] R [ ] N
Elev [ ] R [ ]
Basin [24] [ ]

The Ontario Water Resources Commission Act

WATER WELL RECORD

68 № 5880

County or District Wentworth Township, Village, Town or City W. Flamboro

Con. 11 Lot 7 Date completed 30 (day) Oct. (month) 1967 (year)

[redacted] dress 300 Mohawk E. Hamilton

Casing and Screen Record

Inside diameter of casing 6 1/4

Total length of casing 94

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 6 1/4

Pumping Test

Static level 84

Test-pumping rate 10 G.P.M.

Pumping level 86

Duration of test pumping 2 hrs.

Water clear or cloudy at end of test Clear

Recommended pumping rate 5 G.P.M.

with pump setting of 90 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)
Brown Stony clay	0	30	94	fresh
Blue clay	30	85		
Course Gravel	85	94		

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

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

Drilling or Boring Firm

Address

Licence Number 3326

Name of Driller or Borer Frank Snare

Address 175 Aldercrest Ave.

Date Oct. 30, Hamilton Ont.

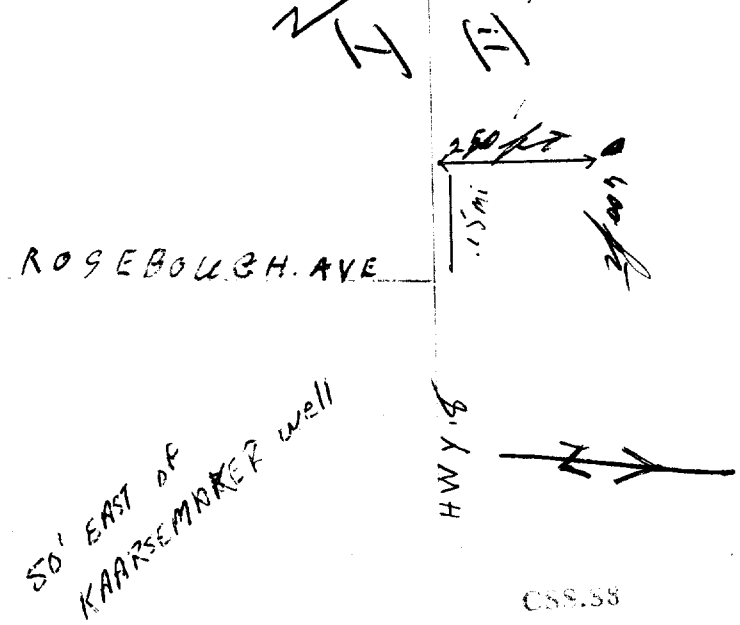
(Signature of Licensed Drilling or Boring Contractor)

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.



CSS.55

Ministry of the Environment
Ontario

(25)

The Ontario Water Resources Act

40P18a

WATER WELL RECORD

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

(11) 6810119 MUNICIP. 68006 CON. CON 01

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: W. FLAMBORO
CON., BLOCK, TRACT, SURVEY, ETC.: ONE
LOT: 007
ADDRESS OF WELL LOCATION (STREET AND NUMBER): [redacted] 255 GOLD AP 302
DATE COMPLETED: DAY 23 MO 04 YR 80
(21) 4 (10) (12) (17) (18) 791400 (24) N (25) ELEVATION 0890 (26) RC 14 (30) BASIN CODE 24 (31)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOP SOIL			0	1
BROWN	SANDY	CLAY		1	10
BROWN	GRAVEL		MOIST	10	12
BLUE	CLAY			12	20
BROWN	SAND		DRY	20	25
BROWN	CLAY			25	32
BROWN	SAND			32	35
BROWN	SAND		DRY	35	37
BROWN	SANDY	CLAY	MOIST	37	44
BRWN	SILT		MOIST	44	55

(31) 00016102 00106581 00126111 00203105 00256268 00326105 1
(32) 00356128 00376268 00446581 00553106

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0040 (10-13)	1 ☐ FRESH 3 ☐ SULPHUR (14)
4055	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)	1 ☐ STEEL (12)			(13-16)
36	2 ☐ GALVANIZED	3	0	55
	3 ☑ CONCRETE			
	4 ☐ OPEN HOLE			
(17-18)	1 ☐ STEEL (19)			(20-23)
	2 ☐ GALVANIZED			
	3 ☐ CONCRETE			
	4 ☐ OPEN HOLE			
(24-25)	1 ☐ STEEL (26)			(27-30)
	2 ☐ GALVANIZED			
	3 ☐ CONCRETE			
	4 ☐ OPEN HOLE			

SCREEN

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

(61) PLUGGING & SEALING RECORD

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

(71) PUMPING TEST

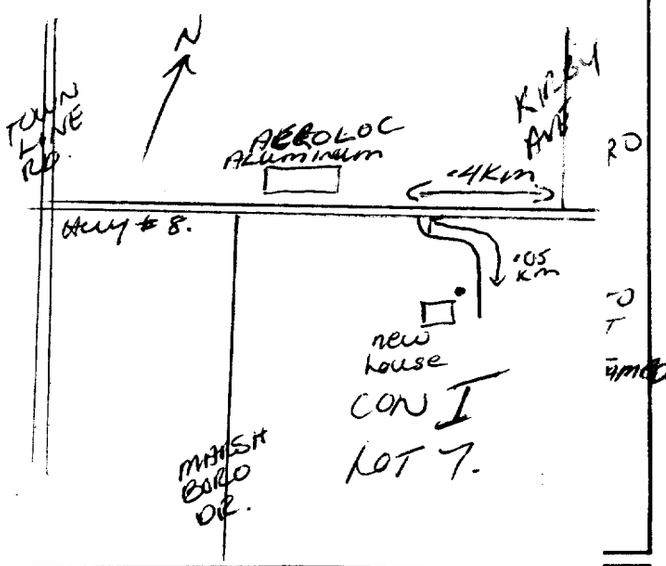
PUMPING TEST METHOD (10): 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE (11-14): GPM
DURATION OF PUMPING (15-16) HOURS (17-18) MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (25) 1 ☐ PUMPING 2 ☐ RECOVERY: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
(19-21) 040 FEET	(22-24) FEET	(26-28) FEET	(29-31) FEET	(32-34) FEET	(35-37) FEET

IF FLOWING, GIVE RATE (38-41) GPM
PUMP INTAKE SET AT FEET
WATER AT END OF TEST (42): 1 ☐ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☑ DEEP
RECOMMENDED PUMP SETTING (43-45): 051 FEET
RECOMMENDED PUMPING RATE (46-49): 0003 GPM
(50-53)

LOCATION OF WELL

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



FINAL STATUS OF WELL (54): 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 (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): 6

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: Johnson Bros Well Boring Co Ltd
LICENCE NUMBER: 3030
ADDRESS: RR1 Mt Pleasant Ont.
NAME OF DRILLER OR BORER: John Bath - Rick Smith
LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: John Bath
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58): 1
CONTRACTOR (59-62): 3030
DATE RECEIVED (63-66): 3107 80 (80)
DATE OF INSPECTION
INSPECTOR
REMARKS: CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

UTM Z E
R N
Elev. R
Basin 24

541'

ONTARIO

RECEIVED
JUN 19 1952
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

68 No 5534

The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

[redacted] Village, Town or City W. Flamboro
Town or City)
West Flamboro Ont.
Date Completed 24 (day) May (month) 1952 Cost of Well (excluding pump)

Pipe and Casing Record

Casing diameter(s) 6"
Length(s) of casing(s) 63
Type of screen
Length of screen
Distance from top of screen to ground level
Is well a gravel-wall type?

Pumping Test

Date
Static level 16'
Pumping level 21'
Pumping rate 20 gal. per minute
Duration of test
Distance from cylinder or bowls to ground level

Water Record

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

Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
63	fresh	

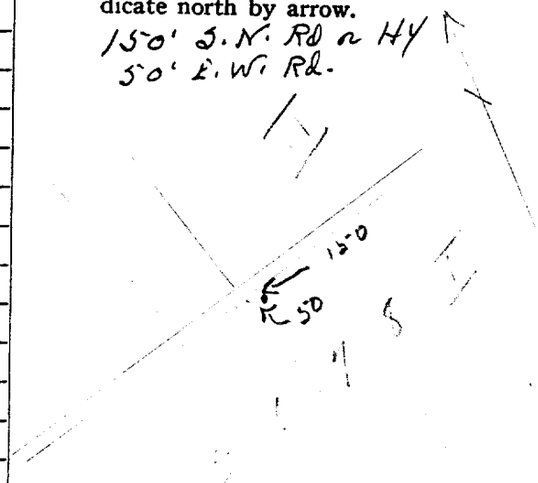
Well Log

Overburden and Bedrock Record	From	To
	0 ft.	....ft.
Clay & Stones & Sand	0	63

Location of Well

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

150' S. N. Rd & HY
50' E. W. Rd.



Situation: Is well on upland, in valley, or on hillside?
Drilling Firm Ray Swazey
Address R.R. # 5 Dundas
Name of Driller Same Address Same
Date June 18-52 Licence Number 271
Ray Swazey
Signature of Licensee

FORM 5

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 | 6809359 | MUNICIP. 68006 | CON. E&N | 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
WENTWORTH	WEST FLAMBORO	Con I	006
[redacted]	DUNDAS		

DATE COMPLETED: DAY 16 MO. 07 YR. 75

RC. 4 | ELEVATION 794 | RC. 4 | BASIN CODE 24 | AUG 09, 1977 | 315

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	DUG WELL			0	62
BROWN	CLAY			62	76
GREY	GRAVEL			76	78

31 | 0062 23 | 0076 05 | 0078 11

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0078	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	78
06				0078
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0012 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
068 FEET	068 FEET	1 ☐ PUMPING 2 ☐ RECOVERY	— FEET	— FEET	— FEET	— FEET

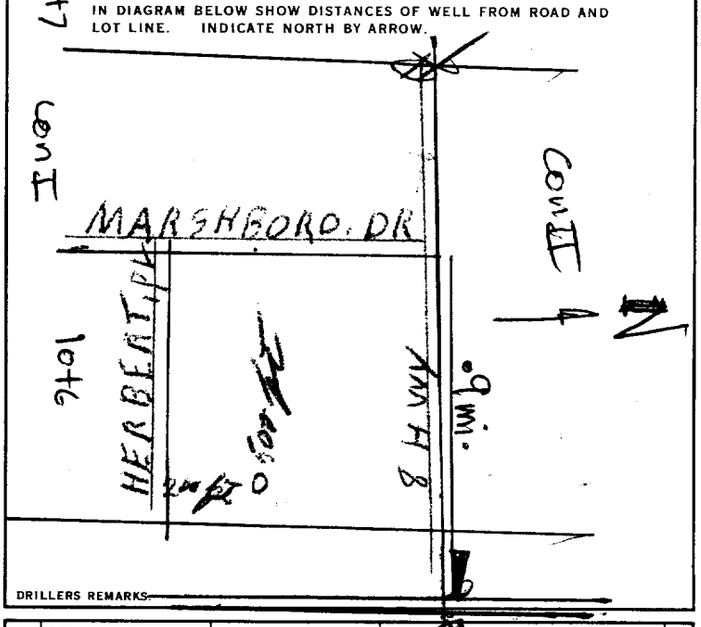
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING
☐ SHALLOW ☒ DEEP	076 FEET	0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 8091

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



DRILLERS REMARKS

FINAL STATUS OF WELL 54: 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 55-56: 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 57: 1	1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Frank Ince | LICENCE NUMBER: 2803

ADDRESS: 175 Aldercrest Ave. Hamilton

NAME OF DRILLER OR BORER | LICENCE NUMBER

SIGNATURE OF CONTRACTOR: Frank Ince | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 2803 | DATE RECEIVED 63-68: 050476 | 80

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.58

P 15

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MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

40P18a

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

11 6809982 MUNICIP 68006 CON. C&N 02

COUNTY OR DISTRICT: WENTWORTH
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: WEST FLAMBORO
CON., BLOCK, TRACT, SURVEY, ETC: CON. 2
LOT: 007
[redacted] # 1 DUNDAS ONT.
DATE COMPLETED: DAY 15 MO 08 YR 79
79/500 RC 4 ELEVATION 0740 RC 4 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	SANDY CLAY		LOOSE	0	15
BROWN	SAND		LOOSE	15	50
GREY	CLAY		LOOSE	50	68
GREY	LIMESTONE		HARD	68	74

31 0015 605 81 77 | 00506 28 77 | 0068 20577 | 0074 21573
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0072	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	+1	0068
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		68	0074
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

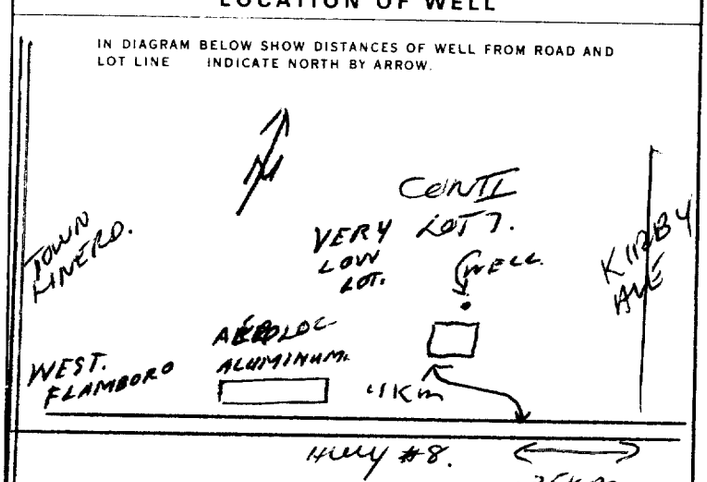
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 0009 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS
STATIC LEVEL: 035 FEET
WATER LEVEL END OF PUMPING: 065 FEET
WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY

15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
039 FEET	035 FEET	035 FEET	035 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: 071 FEET
RECOMMENDED PUMP RATE: 0010 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL: 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: O'CONNOR WELL DRILLING LTD.
LICENCE NUMBER: 4005
ADDRESS: RR # 1 MILLGROVE ONT. LOR 1W0
NAME OF DRILLER OR BORER: W. HOWE
LICENCE NUMBER:
SIGNATURE OF CONTRACTOR:
SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE: 1
CONTRACTOR: 4005
DATE RECEIVED: 170879
DATE OF INSPECTION:
INSPECTOR:
May 28/82
REMARKS:
CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

#55 Nelson

Top Ba

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

11

6808822 | MUNICIP. 68006 | CON. CdN | 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
WENTWORTH	WEST FLAMBORO	CON 1	6

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
MARLATT CONSTRUCTION	N. 2 Highway + DUNDAS	DAY 30 MO. 05 YR. 74

ZONE | EASTING | NORTHING | RC. | ELEVATION | RC. | BASIN CODE | II | III | IV

6808822 17 580853 4791305 4 792 4 24 AUG 09, 1977 315

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOP SOIL			0	1'
BROWN	CLAY	STONES	Solid	1	15'
BROWN	SAND + CLAY seams			15	45
BROWN	~~SAND~~ CLAY			45	55
BROWN	SAND			55	67

31 0001602 | 0015605 12 | 00456280574 | 0055605 | 0067628

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0055	1 ☒ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
36"	1 ☒ STEEL / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☐ OPEN HOLE	3"	0	~~56~~ 0056
	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: ~~Gravel Pack~~ | 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	

Bullocks corners

71 PUMPING TEST

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

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
FEET	FEET	42 FEET	~~29~~ FEET	~~dangerous~~ FEET	FEET

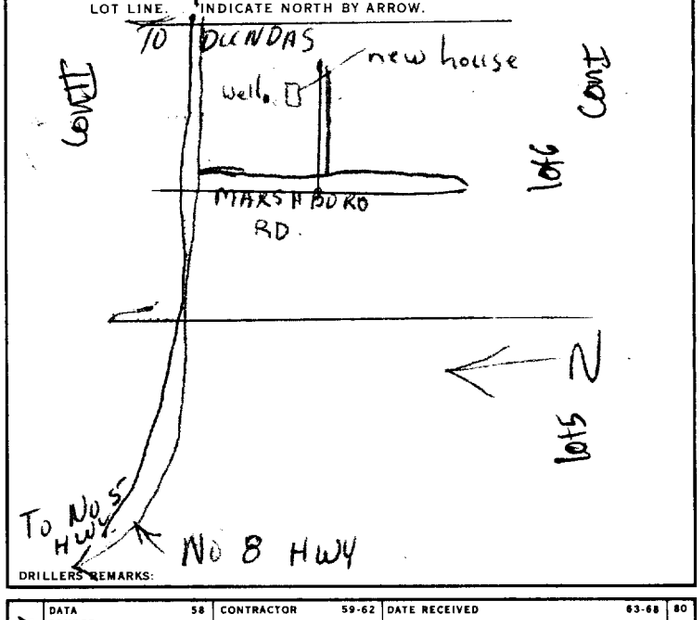
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM.	FEET	1 ☐ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED RATE
☐ SHALLOW ☑ DEEP	064 FEET	~~150~~ 008 GPM.

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 8091

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 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 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: 6

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
Johnson + Buck Well Boring	3030
ADDRESS: 240 King Geo Rd Brantford Ont	
NAME OF DRILLER OR BORER: G Buck	LICENCE NUMBER
SIGNATURE OF CONTRACTOR: G Buck	SUBMISSION DATE: DAY 30 MO. 5 YR. 74

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68
1	3030	170674

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.S8

P 15
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MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Appendix B

SGS Canada Inc., Certificate of Analysis

FINAL REPORT

CA14348-OCT17 R

17HX016

Prepared for

Peto MacCallum Ltd

FINAL REPORT

CA14348-OCT17 R

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	Peto MacCallum Ltd	Project Specialist	Deanna Edwards, B.Sc, C.Chem
		Laboratory	SGS Canada Inc.
Address	45 Buford Rd Hamilton, ON N2C 1R4.	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Karel Furbacher	Telephone	705-652-2000
Telephone	905-561-2231	Facsimile	705-652-6365
Facsimile	905-561-6366	Email	deanna.edwards@sgs.com
Email	kfurbacher@petomaccallum.com	SGS Reference	CA14348-OCT17
Project	17HX016	Received	10/12/2017
Order Number		Approved	10/18/2017
Samples	Non-Reportable (6)	Report Number	CA14348-OCT17 R
		Date Reported	10/18/2017

COMMENTS

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

Temperature of Sample upon Receipt: 8 degrees C
Cooling Agent Present: Yes
Custody Seal Present:Yes

SIGNATORIES

Deanna Edwards, B.Sc, C.Chem

TABLE OF CONTENTS

RESULTS

Sample Number			5	6	7	8
Sample Name			MAC	Half MAC	AO/OG	MDL
Sample Matrix			Non-Reportable	Non-Reportable	Non-Reportable	Non-Reportable
Parameter	**Units**	**RL**	**Result**	**Result**	**Result**	**Result**
Anions by IC						
Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001						
Nitrite (as N)	as N mg/L	0.003	1	---	-	0.003
Nitrate (as N)	as N mg/L	0.006	10	---	-	0.006
Nitrate + Nitrite (as N)	as N mg/L	0.006	---	---	-	0.006
Mercury by CVAAS						
Method: SM3112/EPA 245 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004						
Mercury	µg/L	0.01	1	0.5	-	0.01
Metals in aqueous samples - ICP-MS						
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006						
Arsenic	µg/L	0.2	25	12.5	-	0.2
Barium	µg/L	0.02	1000	500	-	0.01
Boron	µg/L	2	5000	2500	-	2
Cadmium	µg/L	0.003	5	2.5	-	0.003
Chromium	µg/L	0.03	50	25	-	0.03
Antimony	µg/L	0.02	6	3	---	0.02
Selenium	µg/L	0.04	50	25	-	0.04
Uranium	µg/L	0.002	20	10	---	0.002
pH						
Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006						
pH	units	0.05	-	---	6.5-8.5	0.05
Turbidity						
Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003						
Turbidity	NTU	0.10	1	---	5	0.10

RESULTS

Sample Number	9	10	
Sample Name	NR 13 Herbert Place	NR 51 Marshboro Avenue	
Sample Matrix	Non-Reportable	Non-Reportable	
Sampled By	Kurtis P	Kurtis P	
Sample Date	12/10/2017	12/10/2017	

Parameter	Units	RL	Result	Result	
Anions by IC					
Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001					
Nitrite (as N)	as N mg/L	0.003	0.038	<0.003	
Nitrate (as N)	as N mg/L	0.006	0.253	2.41	
Nitrate + Nitrite (as N)	as N mg/L	0.006	0.291	2.41	
Mercury by CVAAS					
Method: SM3112/EPA 245 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004					
Mercury	µg/L	0.01	< 0.01	---	
Metals in aqueous samples - ICP-MS					
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006					
Arsenic	µg/L	0.2	< 0.2	---	
Barium	µg/L	0.02	59.4	---	
Boron	µg/L	2	308	---	
Cadmium	µg/L	0.003	0.006	---	
Chromium	µg/L	0.03	0.12	---	
Antimony	µg/L	0.02	0.04	---	
Selenium	µg/L	0.04	0.11	---	
Uranium	µg/L	0.002	0.218	---	
Metals in aqueous samples - ICP-OES					
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-003					
Hardness	mg/L as CaCO3	0.05	903	---	
Microbiology					
Method: SM 9222D | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-006					
E. Coli	cfu/100mL	-	0	---	
Total Coliform	cfu/100mL	-	< 2↑	---	
pH					
Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006					
pH	units	0.05	6.63	---	
Turbidity					
Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003					
Turbidity	NTU	0.10	3.39	---	

HOLDING TIME SUMMARY

Sample Name	QC Batch Reference	Sample Number	Sampled	Received	Extracted/ Prepared	Analysed	Holding Time	Approved
Anions by IC								
Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001								
MAC		5		10/12/2017	10/14/2017	10/14/2017		10/17/2017
AO/OG		7		10/12/2017	10/14/2017	10/14/2017		10/17/2017
MDL	NA	8		10/12/2017	10/14/2017	10/14/2017		10/17/2017
NR 13 Herbert Place	DIO0248-OCT17	9	10/12/2017	10/12/2017	10/14/2017	10/14/2017	10/19/2017	10/17/2017
NR 51 Marshboro Avenue	DIO0220-OCT17	10	10/12/2017	10/12/2017	10/14/2017	10/14/2017	10/19/2017	10/17/2017
Mercury by CVAAS								
Method: SM3112/EPA 245 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004								
MAC		5		10/12/2017	10/16/2017	10/16/2017		10/16/2017
Half MAC		6		10/12/2017	10/16/2017	10/16/2017		10/16/2017
AO/OG		7		10/12/2017	10/16/2017	10/16/2017		10/16/2017
MDL	EHG0024-OCT17	8		10/12/2017	10/16/2017	10/16/2017		10/16/2017
NR 13 Herbert Place	EHG0024-OCT17	9	10/12/2017	10/12/2017	10/16/2017	10/16/2017	11/09/2017	10/16/2017
Metals in aqueous samples - ICP-MS								
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006								
MAC	NA	5		10/12/2017	10/17/2017	10/17/2017		10/18/2017
Half MAC	NA	6		10/12/2017	10/17/2017	10/17/2017		10/18/2017
AO/OG		7		10/12/2017	10/17/2017	10/17/2017		10/18/2017
MDL	EMS0100-OCT17	8		10/12/2017	10/17/2017	10/17/2017		10/18/2017
NR 13 Herbert Place	EMS0100-OCT17	9	10/12/2017	10/12/2017	10/17/2017	10/17/2017	12/11/2017	10/18/2017
Metals in aqueous samples - ICP-OES								
Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-003								
NR 13 Herbert Place	EMS0100-OCT17	9	10/12/2017	10/12/2017	10/17/2017	10/17/2017	11/09/2017	10/18/2017
Microbiology								
Method: SM 9222 | Internal ref.: ME-CA-[ENV]MIC-LAK-AN-003								
NR 13 Herbert Place	BAC9220-OCT17	9	10/12/2017	10/12/2017	10/13/2017	10/13/2017	10/14/2017	10/16/2017
pH								
Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006								
MAC		5		10/12/2017	10/13/2017	10/13/2017		10/16/2017
AO/OG		7		10/12/2017	10/13/2017	10/13/2017		10/16/2017
MDL		8		10/12/2017	10/13/2017	10/13/2017		10/16/2017
NR 13 Herbert Place	EWL0204-OCT17	9	10/12/2017	10/12/2017	10/13/2017	10/13/2017	10/19/2017	10/16/2017
Turbidity								
Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003								
MAC		5		10/12/2017	10/12/2017	10/12/2017		10/13/2017
AO/OG		7		10/12/2017	10/12/2017	10/12/2017		10/13/2017

HOLDING TIME SUMMARY

Sample Name	QC Batch Reference	Sample Number	Sampled	Received	Extracted/ Prepared	Analysed	Holding Time	Approved
Turbidity (continued)								
Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003								
MDL	NA	8		10/12/2017	10/12/2017	10/12/2017		10/13/2017
NR 13 Herbert Place	EWL0197-OCT17	9	10/12/2017	10/12/2017	10/12/2017	10/12/2017	10/14/2017	10/13/2017

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
Nitrate + Nitrite (as N)	DIO0220-OCT17	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0220-OCT17	mg/L	0.003	<0.003	ND	20	101	80	120	93	75	125
Nitrate (as N)	DIO0220-OCT17	mg/L	0.006	<0.006	0	20	102	80	120	105	75	125
Nitrate + Nitrite (as N)	DIO0248-OCT17	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0248-OCT17	mg/L	0.003	<0.003	ND	20	103	80	120	104	75	125
Nitrate (as N)	DIO0248-OCT17	mg/L	0.006	<0.006	ND	20	103	80	120	104	75	125

Mercury by CVAAS

Method: SM3112/EPA 245 | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
Mercury	EHG0024-OCT17	ug/L	0.01	<0.01	ND	20	99	90	110	87	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Arsenic	EMS0100-OCT17	ug/L	0.2	< 0.2	ND	20	108	90	110	104	70	130
Barium	EMS0100-OCT17	ug/L	0.02	< 0.01	ND	20	103	90	110	99	70	130
Boron	EMS0100-OCT17	ug/L	2	< 2	ND	20	99	90	110	NV	70	130
Cadmium	EMS0100-OCT17	ug/L	0.003	< 0.003	ND	20	98	90	110	105	70	130
Chromium	EMS0100-OCT17	ug/L	0.03	< 0.03	ND	20	104	90	110	98	70	130
Antimony	EMS0100-OCT17	ug/L	0.02	< 0.02	ND	20	95	90	110	NV	70	130
Selenium	EMS0100-OCT17	ug/L	0.04	< 0.04	ND	20	94	90	110	91	70	130
Uranium	EMS0100-OCT17	ug/L	0.002	< 0.002	ND	20	93	90	110	88	70	130

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-IENVIMIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9220-OCT17	cfu/100mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9220-OCT17	cfu/100mL	-	ACCEPTED	ACCEPTED							

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
pH	EWL0204-OCT17	no unit	0.05	NA	0		100			NA		

Turbidity

Method: SM 2130 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High	Spike Recovery (%)	Recovery Limits (%) Low	Recovery Limits (%) High
Turbidity	EWL0197-OCT17	NTU	0.10	< 0.10	8	10	98	90	110	NA		

QC SUMMARY

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Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

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RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

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LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
↑ Reporting limit raised.
↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY

No:

Page ____ of ____

SGS Environment, Health and Safety
- Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com

Received By: Stephanie Borcherie
Received Date: 10\12\17 (mm\dd\yy)
Received Time: 3:00 am / (pm) (circle)

Laboratory Information Section - Lab use only
Received By (signature): [signature]
Custody Seal Present: Y / N (circle)
Custody Seal Intact: Y / N
Cooling Agent Present: (Y) / N Type: ice pack
Temperature Upon Receipt (°C): 8.1, 8.2, 8.3, 8.9, 8.2 10X3
LAB LIMS #: Oct 14348

REPORT INFORMATION

Company: PETO MACCALLUM LTD.
Contact: KAREL FURBACHER
Address: 45 BURFORD ROAD, HAMILTON
Phone: 905-561-2231
Fax: 905 561-6366
Email: kfurbacher@petomaccallum.com

INVOICE INFORMATION

☒ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email:

PROJECT INFORMATION

Quotation #:
P.O. #:
Project #: 17HX016
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☒ Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 3pm or on weekends : TAT begins the next business day

RUSH TAT (Additional Charges May Apply) ☐ 1 Day ☐ 2 Days ☐ 3-4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date: Rush Confirmation ID:

REGULATIONS

Regulation 153 (2011):
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium
☐ Table 3 ☐ Agri/Other ☐ Fine
☐ Table ____

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☒ Other:
☐ MISA O.Reg. 169/03

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

DRINKING WATER SAMPLES (POTABLE WATER FOR HUMAN CONSUMPTION) MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	ANALYSIS REQUESTED: pH	E. Coli	Total Coliform	Nitrate	Turbidity	Hardness	Schedule 23 (O.Reg 170/03)						COMMENTS: Field Filtered (F) Preserved (P)
1	13 HERBERT PLACE	OCTOBER 12, 2017	9:15 A.M.	5	WATER	X	X	X	X	X	X	X						
2	51 MARSHBORO AVENUE	↓	10:00 P.M.	1	↓				X									
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Observations/Comments/Special Instructions

Sampled By (NAME): KURTIS PETTITT Signature: [signature] Date: 10/12/17 (mm/dd/yy) Pink Copy - Client

Relinquished by (NAME): KAREL FURBACHER Signature: [signature] Date: 10/12/17 (mm/dd/yy) Yellow & White Copy - SGS

Revision #: 1.1
Date of Issue: 25 July, 2016

FINAL REPORT

CA14667-OCT17 R1

17HX016

Prepared for

Peto MacCallum Ltd

FINAL REPORT

CA14667-OCT17 R1

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	Peto MacCallum Ltd	Project Specialist	Deanna Edwards, B.Sc, C.Chem
		Laboratory	SGS Canada Inc.
Address	45 Buford Rd Hamilton, ON N2C 1R4.	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Karel Furbacher	Telephone	705-652-2000
Telephone	905-561-2231	Facsimile	705-652-6365
Facsimile	905-561-6366	Email	deanna.edwards@sgs.com
Email	kfurbacher@petomaccallum.com	SGS Reference	CA14667-OCT17
Project	17HX016	Received	10/23/2017
Order Number		Approved	10/26/2017
Samples	Non-Reportable (4)	Report Number	CA14667-OCT17 R1
		Date Reported	10/26/2017

COMMENTS

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

Temperature of Sample upon Receipt: 10 degrees C
Cooling Agent Present: Yes
Custody Seal Present: No

SIGNATORIES

Deanna Edwards, B.Sc, C.Chem

TABLE OF CONTENTS

RESULTS

	Sample Number		5	6	7	8
	Sample Name		MAC	MDL	NR 45 Marshbolo Avenue	NR 48 Marshbolo Avenue
	Sample Matrix		Non-Reportable	Non-Reportable	Non-Reportable	Non-Reportable
	Sampled By		---		T Feather	T Feather
	Sample Date				20/10/2017	20/10/2017
Parameter	**Units**	**RL**	**Result**	**Result**	**Result**	**Result**
Anions by IC						
Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001						
Nitrite (as N)	as N mg/L	0.003	1	0.003	<0.003	0.013
Nitrate (as N)	as N mg/L	0.006	10	0.006	2.97	2.23
Nitrate + Nitrite (as N)	as N mg/L	0.006	---	0.006	2.97	2.24

HOLDING TIME SUMMARY

Sample Name	QC Batch Reference	Sample Number	Sampled	Received	Extracted/ Prepared	Analysed	Holding Time	Approved
Anions by IC								
Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001								
MAC	NA	5		10/23/2017	10/24/2017	10/24/2017		10/25/2017
MDL	NA	6		10/23/2017	10/24/2017	10/24/2017		10/25/2017
NR 45 Marshbolo Avenue	DIO0359-OCT17	7	10/20/2017	10/23/2017	10/24/2017	10/24/2017	10/27/2017	10/25/2017
NR 48 Marshbolo Avenue	DIO0359-OCT17	8	10/20/2017	10/23/2017	10/24/2017	10/24/2017	10/27/2017	10/25/2017

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrate + Nitrite (as N)	DIO0359-OCT17	mg/L	0.006	<0.006	NA		NA			NA		
Nitrite (as N)	DIO0359-OCT17	mg/L	0.003	<0.003	4	20	100	80	120	100	75	125
Nitrate (as N)	DIO0359-OCT17	mg/L	0.006	<0.006	1	20	101	80	120	103	75	125

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

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LEGEND

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RL Reporting Limit.
↑ Reporting limit raised.
↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environment, Health and Safety

- Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com

No:

Page 1 of 1

Received By: ENOCK ADSEI
Received Date: 10/23/17 (mm\dd\yy)
Received Time: 12:10 am / pm (circle)

Laboratory Information Section - Lab use only

Received By (signature):
Custody Seal Present: Y / N (circle)
Custody Seal Intact: Y / N

Cooling Agent Present: Y / N Type: ICE
Temperature Upon Receipt (°C): 3.8-4.8 10x3

LAB LIMS #: CA 14606-Oct 17

REPORT INFORMATION

Company: Peto MacCallum LTD.
Contact: Karel FurBacher
Address: 45 Burford Rd, Hamilton

Phone: 905-561-2231
Fax: 905-561-5363
Email: kfurbacher@petomaccallum.ca

INVOICE INFORMATION

☒ (same as Report Information)
Company:
Contact:
Address:

Phone:
Email:

PROJECT INFORMATION

Quotation #:
P.O. #:
Project #: 17HX016
Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 3pm or on weekends : TAT begins the next business day

RUSH TAT (Additional Charges May Apply) ☐ 1 Day ☐ 2 Days ☐ 3-4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date: Rush Confirmation ID:

DRINKING WATER SAMPLES (POTABLE WATER FOR HUMAN CONSUMPTION) MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

Regulation 153 (2011):
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium
☐ Table 3 ☐ Agri/Other ☐ Fine
☐ Table

Other Regulations:
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☐ PWQO ☐ MMER
☐ CCME ☒ Other: O.Reg 169/03
☐ MISA

Sewer By-Law:
☐ Sanitary
☐ Storm
Municipality:

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Nitrates	COMMENTS: Field Filtered (F) Preserved (P)
1	95 Marshboro Avenue	Oct. 20, 2017	12:00pm	1	Water	X	
2	98 Marshboro Avenue	↓	12:15pm	1	↓	X	
3							
4							
5							
6							
7							
8							
9							
10							

Observations/Comments/Special Instructions

Sampled By (NAME): Timothy Feather Signature: Timothy Feather Date: 10/20/17 (mm/dd/yy) Pink Copy - Client

Relinquished by (NAME): Timothy Feather Signature: Date: 10/23/17 (mm/dd/yy) Yellow & White Copy - SGS

Revision #: 1.1
Date of Issue: 25 July, 2016

SGS

SAMPLE INTEGRITY REPORT

Project Number: 17HX016

ONTARIO REGULATION 153/04

SGS Sample ID CA14667-OCT17

Date / Time Sampled OCT 20/17

Client Sample ID See CofC

	ALL
Sample Submission General Sample Integrity Violations	
Temperature >10 C upon receipt if not sampled same day	☐
No evidence of cooling trend initiated if sampled same day	☐
Chain of Custody not submitted	☐
Chain of Custody incomplete	☐
Chain of Custody not signed / dated	☐
Chain of Custody not a current version	☐
Bottles / Samples listed on CoC but not received	☐
Bottles / Samples received but not listed on the CoC	☐
Sample container received empty	☐

Sample Specific Sample Integrity Violations								
Sample received past hold time	☐	☐	☐	☐	☐	☐	☐	
Incorrect preservation (including no preservation where required)	☐	☐	☐	☐	☐	☐	☐	
Headspace present in VOC vial (aqueous)	☐	☐	☐	☐	☐	☐	☐	
Sample(s) received frozen	☐	☐	☐	☐	☐	☐	☐	
Bottle(s) broken or damaged in transport	☐	☐	☐	☐	☐	☐	☐	
Discrepancy between sample label and chain of custody	☐	☐	☐	☐	☐	☐	☐	
Analysis requirements absent / unclear	☐	☐	☐	☐	☐	☐	☐	
Missing or incorrect sample label(s)	☐	☐	☐	☐	☐	☐	☐	
Inappropriate sample container used	☐	☐	☐	☐	☐	☐	☐	
Insufficient number of bottles received	☐	☐	☐	☐	☐	☐	☐	
Insufficient sample volume	☐	☐	☐	☐	☐	☐	☐	
Sample contains multiple phases	☐	☐	☐	☐	☐	☐	☐	
Sediment Log								
Groundwater samples contain visible sediment / particulate	☐	☐	☐	☐	☐	☐	☐	
Groundwater contains greater than 1cm of sediment / particulate matter in bottle	☐	☐	☐	☐	☐	☐	☐	

Additional Comments/Remarks:

No issues upon receipt ☑ Initials: KH

Peto MacCallum Ltd.
CONSULTING ENGINEERS

August 21, 2019 PML Ref.: 17HX016

Mr. Luke Hewitt
13 Herbert Place
Hamilton (Dundas), Ontario
L9H 5E1

Dear Mr. Hewitt

Hydrogeological Investigation
13 Herbert Place
Hamilton (Dundas), Ontario

This letter provides our response to the comments from the City of Hamilton (City) on the report titled "Hydrogeological Investigation, 13 Herbert Place, Hamilton (Dundas), Ontario" dated April 30, 2019 completed by Peto MacCallum Ltd. (PML) (PML Ref.: 17HX016, Report 1). The subject property is referred to herein as the "Site".

This letter specifically addresses the comments received from the City of Hamilton Water Division - Source Protection Planning as outlined in an email dated May 31, 2019 from Mike Christie, Project Manager, Source Water Protection and as detailed in the peer review report by Cambium Inc. dated May 31, 2019.

The following section provides the City of Hamilton/peer review comment in bold, followed by our corresponding response.

Comment 1: The water quality sampling program was limited and did not include water quality parameters inclusive of Tables 1 through 4 of the ODWQS as per the City of Hamilton's Guidelines for Hydrogeological Studies and Technical Standards for Private Services (City Guidelines). The supply well at 13 Herbert should be re- sampled for the required sample parameters (all of Reg 169/03, except that only Gross Alpha and Gross Beta scans can be done initially under Table 3). The data should be summarised in a table format with any exceedances clearly outlined. The closest overburden wells should be sampled for septic related parameters (nutrients, bacteria, and DOC), before treatment if possible, to determine the existing overburden quality, or a shallow well installed on site to provide the same. A representative sample of the overburden aquifer is necessary given it supplies the majority of adjacent residences.

It is understood that sampling potable water at the Site is required for approval of the lot severance, which is recommended in our report. Water sampling and analysis will occur at a later date once the balance of the comments have been resolved and approval for the lot severance will proceed.

Comment 2: Groundwater flow in both aquifers is reportedly in both the north and south directions, this should be clarified in terms of what wells were relied upon and where they were screened, a figure showing the contours as per the Guideline would be useful.

Refer to the appended Site Plans depicting the ground water flow direction in the Overburden Aquifer (Drawing 2) and in the Bedrock Aquifer (Drawing 3).

45 Burford Road, Hamilton, Ontario L8E 3C6
Tel: (905) 561-2231 Fax: (905) 561-6366
E-mail: hamilton@petomaccallum.com
BARRIE, COLLINGWOOD, HAMILTON, KITCHENER, LONDON, TORONTO

Comment 3: The predictive assessment for characterizing water quality impacts from the proposed septic system should be recalculated with 40 mg/L effluent, 1000 L/day sewage flow for a 3 bedroom home (increase 200 L per additional bedroom), 194 mm/a infiltration rate, along with a reduction in available infiltration area given impermeable surfaces onsite.

Daily Sewage Flow

It is understood that the applicant has a potential buyer and they have confirmed that a three bedroom house will be constructed on the severed lot, therefore the daily sewage flow of 1,000 L/day is appropriate. A letter of intent is included in Appendix A for reference.

Land Cover

Regarding the land cover infiltration factors; the MOEE Hydrogeological Technical Information Requirements for Land Development Applications (April 1995) provides two options, cultivated lands or woodland. Since the Site has been developed and is not woodland, the more conservative factor of 0.1 was selected.

Soil Type and Infiltration Rate

With respect to the infiltration rate of 232.9 mm/year used by PML, the description of the soil within the proposed septic bed location was based on grain size analyses and classified as silt, comprising 0 to 8% gravel, 4 to 28% sand, 58 to 81% silt, and 7 to 14% clay using the Unified Soil Classification System (USCS). PML selected a soil type infiltration factor of 0.3 since the soil was between medium combinations of clay and loam and an open sandy loam.

The MOEE Hydrogeological Technical Information Requirements for Land Development Applications does not reference USCS for soil description. In this regard, United States Department of Agriculture (USDA) Natural Resources Conservation Service soil triangle was referenced to support the soil description as used in the MOEE document. The USDA soil triangle identified the soils as follows:

Sample 1: Silt
Sample 2: Silt loam

Reference is made to Figure 1, appended. Based on Chapter 4, Table 2, of the MOEE Hydrogeological Technical Information Requirements for Land Development Applications, April 1995, this would indicate a soil infiltration description of open sandy loam to medium combination of clay and loam.

Based on testpits completed on Site, the overburden comprised surficial topsoil/fill underlain by strata of silt and sand, to bedrock at a depth of about 15 m.

Reference is also made to Appendix B for Figure 2.16 depicting recharge rates for the Hamilton Source Protection Region. The area of the Site corresponds to an average annual recharge rate of 220 to 260 mm *(source: Report on Tier 1 Water Budget and Water Quantity Stress Assessment for Halton-Hamilton Source Protection Region and Report on Tier 2 Water Budget and Water Quantity Stress Assessments for the Upper West Branch of Sixteen Mile Creek and Middle Spencer Creek Subwatersheds dated August 27, 2010).*

The infiltration rate used in the nitrate loading calculations is based on Site specific parameters as well as extensive experience we have in the area correlating the measured nitrate concentration with values predicated by the Thornwaite and Mather mass-balance procedure. The MOEE Hydrogeological Technical Information Requirements for Land Development Applications document (April 1995) acknowledge that the mass water balance procedure is conservative. In this regard, it is our opinion that an infiltration rate of 232.9 mm/year is reasonable.

Predictive Assessment vs. Monitoring Data

PML has been extensively involved in hydrogeologic assessment for other properties in the area of the Site (6 lots on Marshboro Avenue, 3 lots on Herbert Place, and 1 lot on Highway 8) and has accumulated over 15 years of monitoring data for nitrate concentrations in the ground water. Nitrate concentrations have ranged from <0.01 to 7.6 mg/L, thus demonstrating no health risks or off site impacts. It is noteworthy that the water sample for the highest value obtained from the monitoring program data was retrieved from a monitoring well located within the effluent plume of an existing septic system.

When the nitrate concentration determined using the predictive assessment calculation (11.7 mg/L) is compared to site specific measurements of actual nitrate concentrations in overburden wells closest to the Site at 12 Herbert Place (4.74, 3.86 and 7.62 mg/L), the predictive assessment / theoretical computation is shown to be conservative as demonstrated in the difference in concentrations.

Based on the above rationale, the lot severance is not likely to have an impact on the ground water resource. Furthermore, the client has agreed to install a tertiary treatment system at the lands to be retained and conditions can be placed on the severance approval to require the lands to be severed to also install tertiary treatment. Tertiary treatment systems can reduce nitrate by up to 60% and many manufacturers/suppliers have pre-paid maintenance and monitoring programs that can be implemented to ensure compliance.

Impermeable Surfaces

Regarding the infiltration area and impermeable surfaces. It is understood that the Site and surrounding area are not serviced by municipal storm sewers, the precipitation is directed from the impermeable surfaces towards on Site permeable areas through downspouts and is not being diverted off Site, therefore this will not reduce the amount of ground water recharge.

We trust this letter adequately addresses the City of Hamilton / peer reviewer comments. Please do not hesitate to contact our office should you have any questions.

Sincerely

Peto MacCallum Ltd.

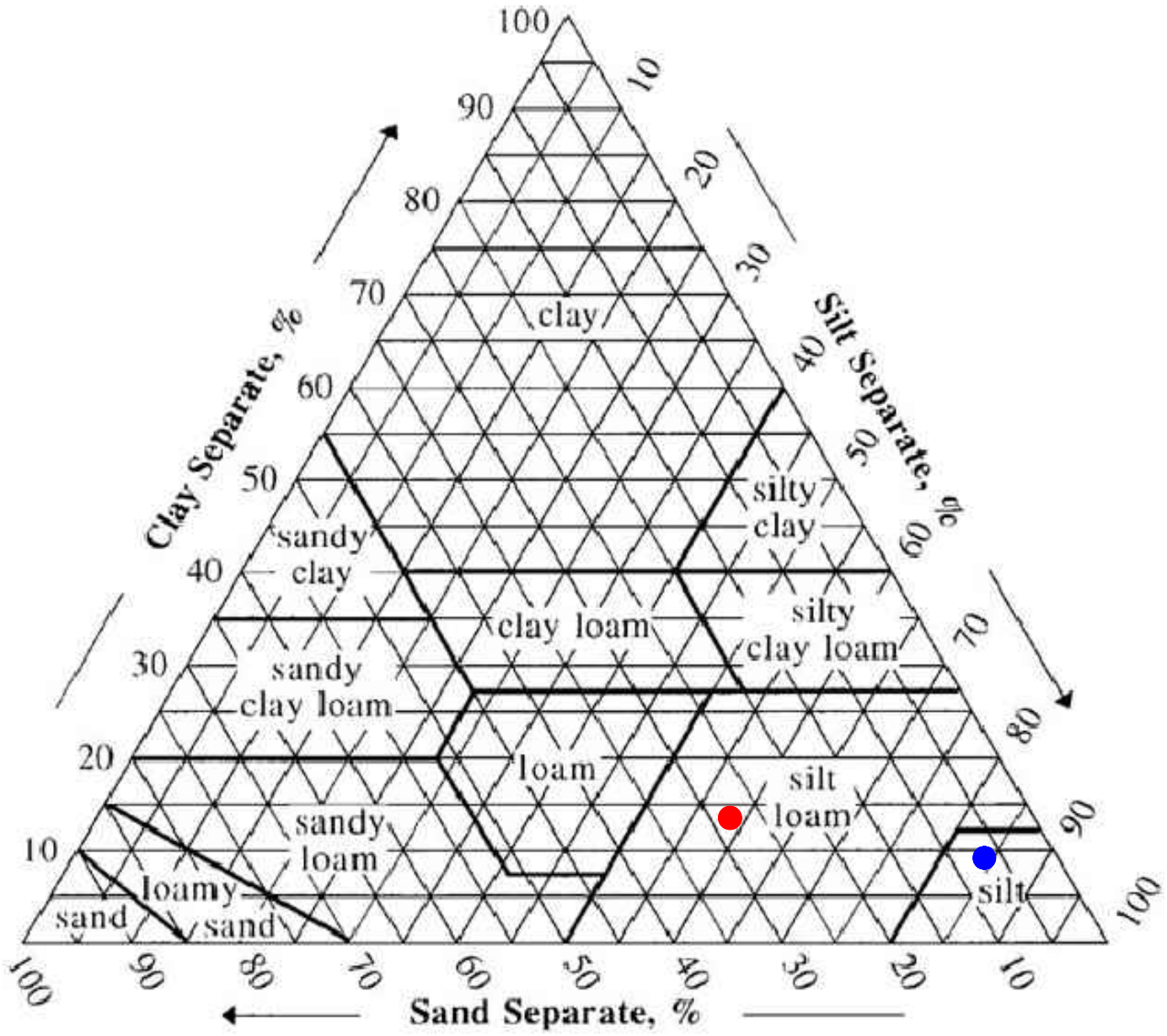
Matthew D. St Denis, P.Eng.
Associate
Manager, Geotechnical Services

Melissa King, P.Geo., QP_{ESA}
Director
Discipline Head, Geoenvironmental and Hydrogeological Services

MAK:ld

Enclosures:
Figure 1 – Soil Type
Drawing 2 - Overburden Aquifer Ground Water Flow Direction
Drawing 3 - Bedrock Aquifer Ground Water Flow Direction
Appendix A – Letter of Intent
Appendix B- Figure 2.16, Recharge Rates for the Hamilton Source Protection Region

Distribution:
1 cc: Mr. Luke Hewitt (via email)
1 cc: Mr. Joe Lakatos, BLA, MCIP, RPP (via email)
1 cc: PML Hamilton



LEGEND:

- TEST PIT 1, SAMPLE GS3, DEPTH 0.5 TO 1.5 m
- TEST PIT 2, SAMPLE GS3, DEPTH 0.7 TO 2.3 m

REFERENCE:

SOIL TEXTURE TRIANGLE RETRIEVED FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) NATURAL RESOURCES CONSERVATION SERVICE WEBSITE.

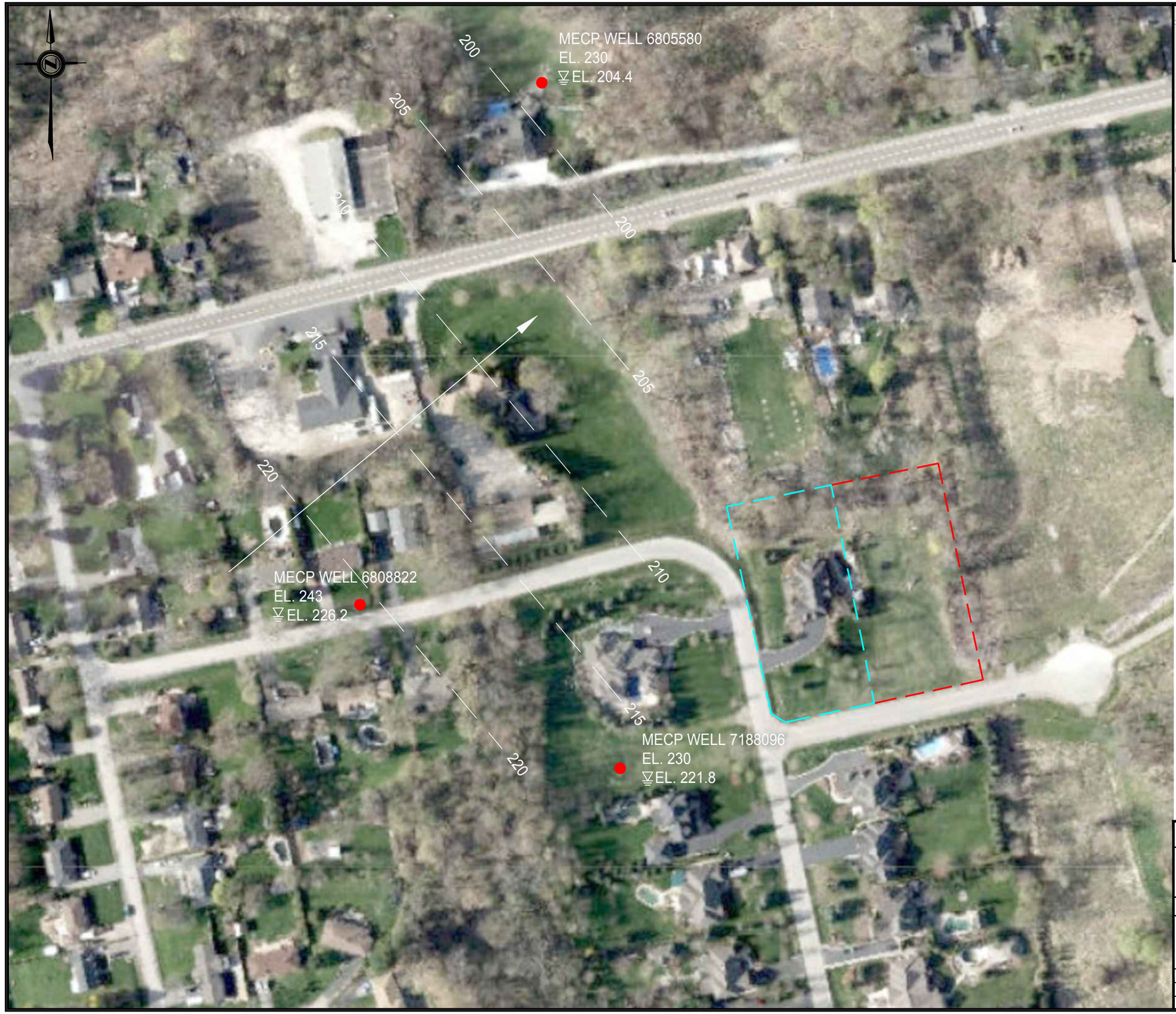
MR. LUKE HEWITT

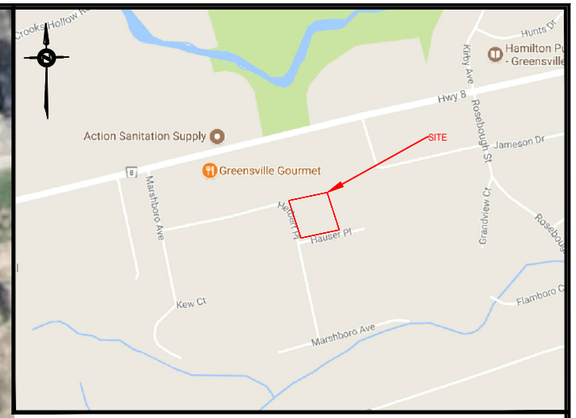
HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON, ONTARIO

SOIL TYPE

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	DD	DATE	SCALE	PML REF.	FIGURE NO.
CHECKED	MAK	JULY 2019	AS SHOWN	17HX016	1
APPROVED	MAK				





KEY PLAN
HAMILTON, ONTARIO

LEGEND:

- LANDS TO BE RETAINED
- LANDS TO BE SEVERED
- MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP) WATER WELL RECORD LOCATION
- ⏚EL. 204.4 GROUND WATER ELEVATION
- INFERRED GROUND WATER FLOW DIRECTION

REFERENCE:
PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF HAMILTON ONLINE INTERACTIVE MAPPING SERVICE.

NOTE:
GROUND WATER ELEVATION OBTAINED FROM STATIC WATER LEVEL DOCUMENTED ON MECP WELL RECORDS AND USING GOOGLE EARTH FOR APPROXIMATE ELEVATION.

0m 20 40 60 80 100
SCALE

MR. LUKE HEWITT

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON, ON

OVERBURDEN GROUND WATER FLOW DIRECTION

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	JULY 2019	AS SHOWN	17HX016	2
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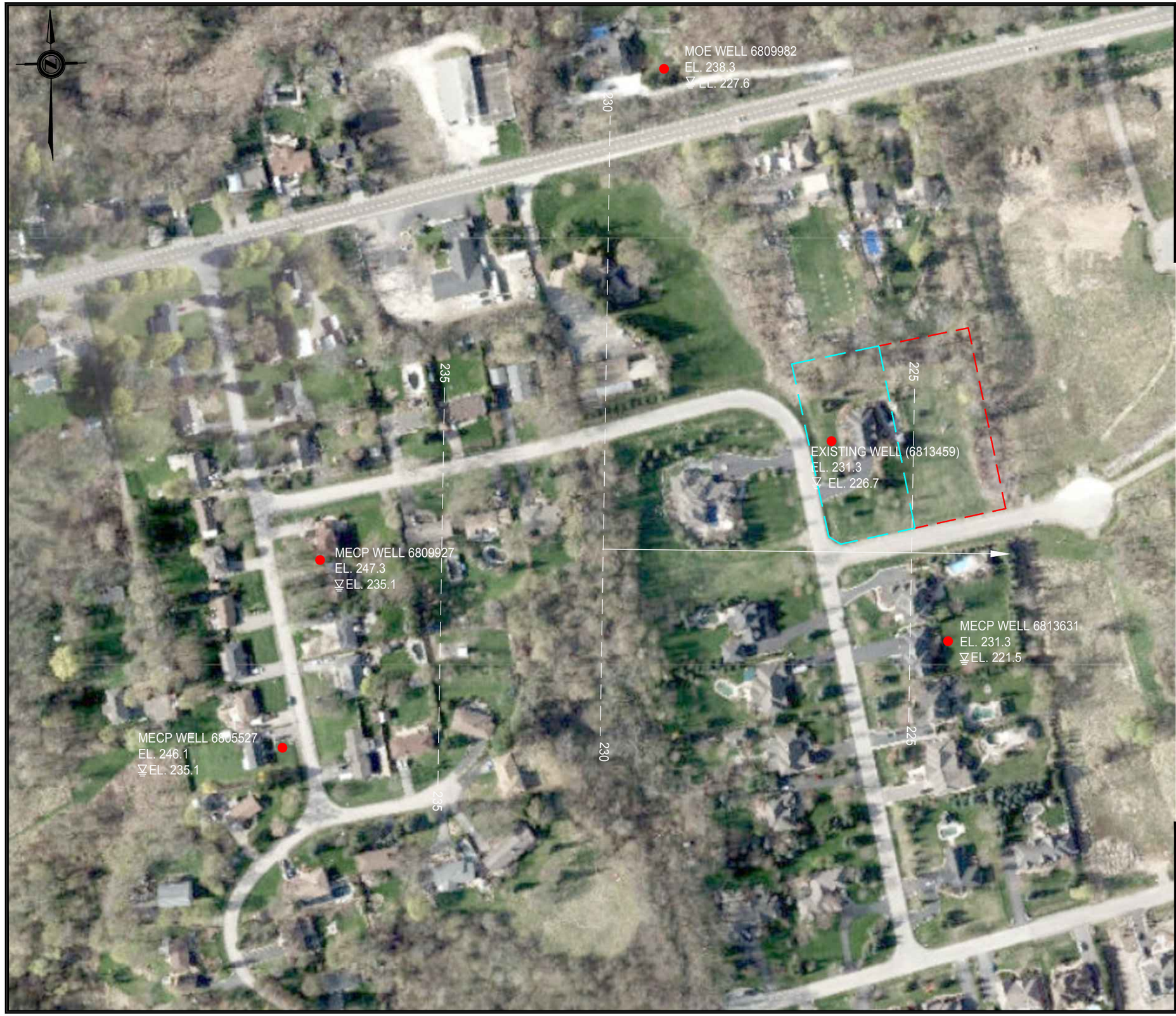
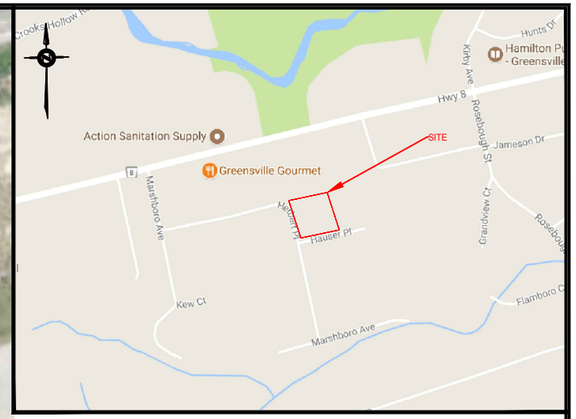
APPROVED	MAK				





KEY PLAN
HAMILTON, ONTARIO

LEGEND:

- LANDS TO BE RETAINED
- LANDS TO BE SEVERED
- MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP) WATER WELL RECORD LOCATION
- ∇EL. 204.4 GROUND WATER ELEVATION
- INFERRED GROUND WATER FLOW DIRECTION

REFERENCE:
PLAN PRODUCED FROM GIS INFORMATION FROM THE CITY OF HAMILTON ONLINE INTERACTIVE MAPPING SERVICE.

NOTE:
GROUND WATER ELEVATION OBTAINED FROM STATIC WATER LEVEL DOCUMENTED ON MECP WELL RECORDS AND USING GOOGLE EARTH FOR APPROXIMATE ELEVATION.

0m 20 40 60 80 100
SCALE

MR. LUKE HEWITT

HYDROGEOLOGICAL INVESTIGATION
13 HERBERT PLACE
HAMILTON, ON

BEDROCK GROUND WATER FLOW DIRECTION

Peto MacCallum Ltd.
CONSULTING ENGINEERS

		DATE	SCALE	PML REF.	DRAWING NO.
DRAWN	SM	JULY 2019	AS SHOWN	17HX016	3
CHECKED	MAK				
APPROVED	MAK				

APPENDIX A

LETTER OF INTENT

June 21, 2019

To Whom it may concern

Re: Intent to purchase proposed severed portion (1.03 acres) of lands municipally known as 13 Herbert Place, Hamilton (Dundas/Greensville), ON

Please be advised that we, Daryl Steven Lewis and Gayle Diane Lewis of 40 Marshboro Avenue, Hamilton (Dundas), ON have expressed interest in purchasing the proposed building lot (1.03 acres) to be severed from lands municipally known as 13 Herbert Place.

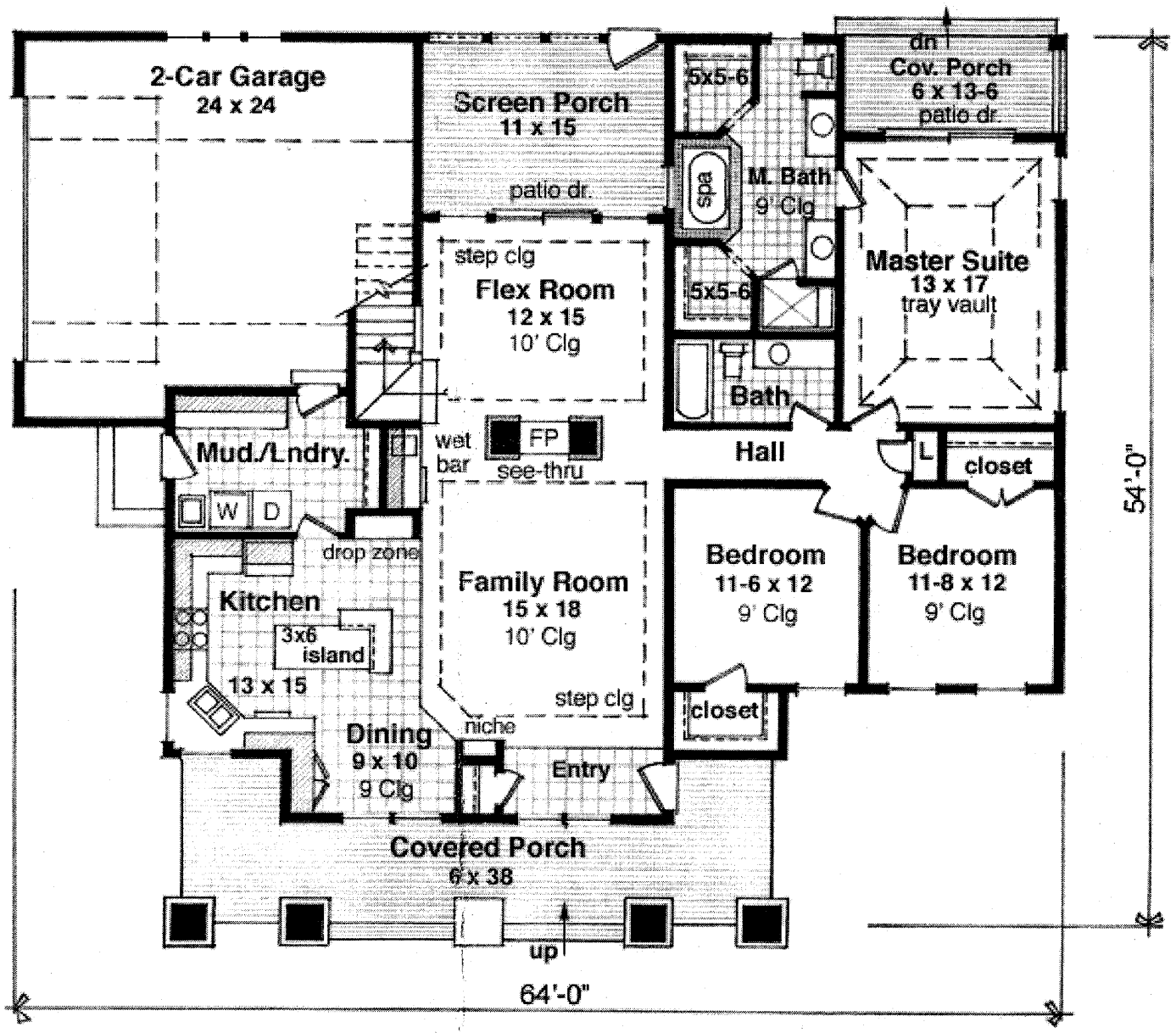
Once a successful severance of the building lot is obtained from the City of Hamilton our intent is to build a 1800-2000 sq. ft. three(3) bedroom single-family dwelling.

Regards,

Daryl Steven Lewis

Gayle Diane Lewis

40 Marshboro Avenue
Hamilton (Dundas), ON
L9H 5E1


2-Car Garage
24 x 24
Screen Porch
11 x 15
patio dr.
5x5-6
dn
Cov. Porch
6 x 13-6
patio dr.
Spa
M. Bath
9' Clg
Master Suite
13 x 17
tray vault
step clg
Flex Room
12 x 15
10' Clg
5x5-6
Bath
Hall
L
closet
wet
bar
FP
see-thru
Mud./Lndry.
W
D
drop zone
Kitchen
3x6
island
13 x 15
Family Room
15 x 18
10' Clg
step clg
niche
Dining
9 x 10
9 Clg
Entry
Bedroom
11-6 x 12
9' Clg
Bedroom
11-8 x 12
9' Clg
closet
Covered Porch
6 x 38
up
54'-0"
64'-0"

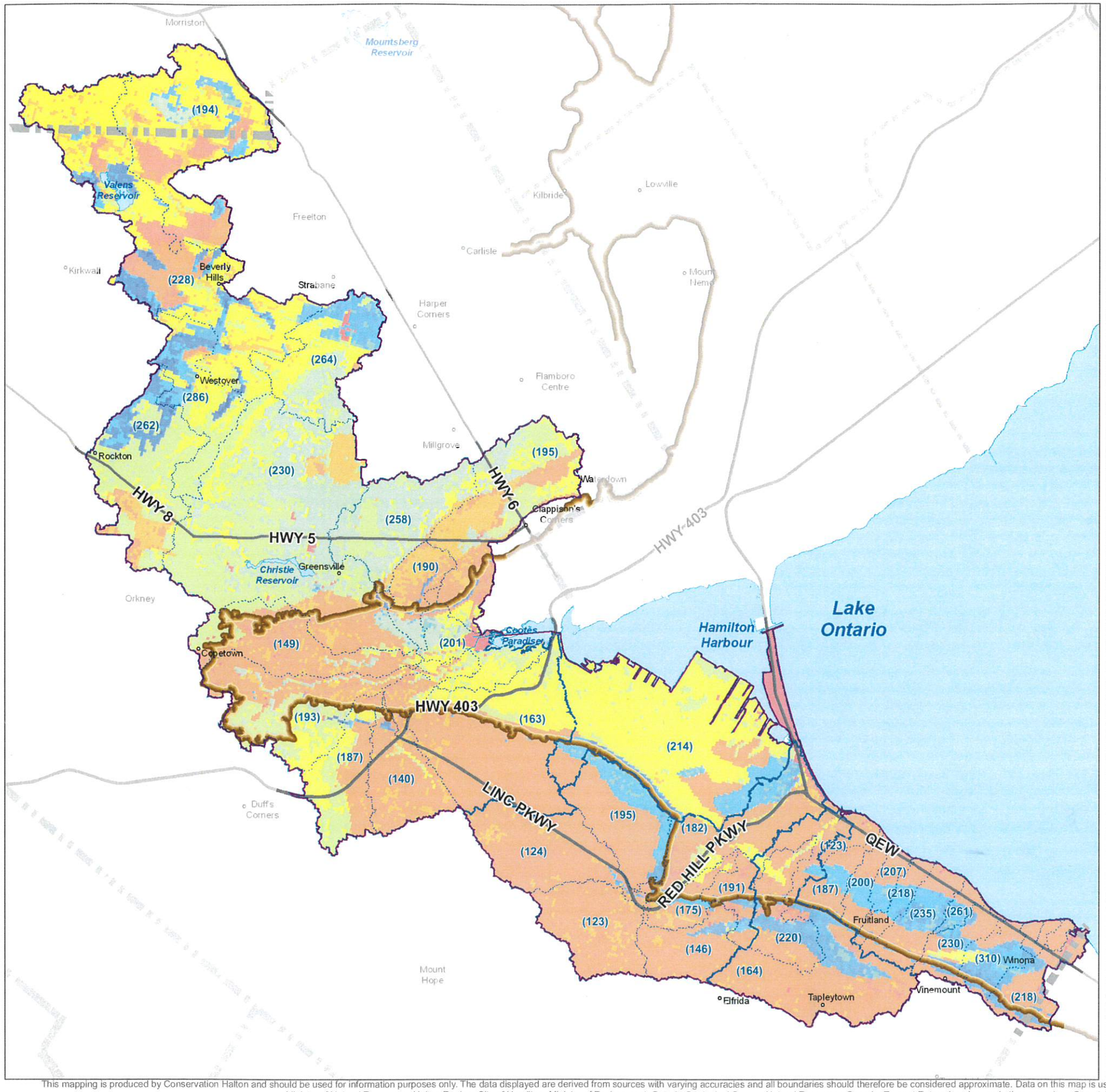
APPENDIX B

FIGURE 2.16, RECHARGE RATES FOR THE
HAMILTON SOURCE PROTECTION REGION

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER

Figure 2.16

Recharge



Legend

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- Waterbody

Annual Recharge (mm)

- < 50
- 50 - 100
- 100 - 140
- 140 - 180
- 180 - 220
- 220 - 260
- 260 - 300
- 300 - 340
- 340 - 380
- 380 - 420
- 420 - 460
- 460 - 500
- 500 - 540

Note : Label is Average Annual Recharge (mm) for the entire Subwatershed.

Source : Halton Region / City of Hamilton / Earthfx PRMS Model (2010).

Projection : UTM NAD 83 Zone 17

Date : August 27, 2010

N W E S

0 1 2 4 6

Kilometers

1:200,000

Hamilton Conservation Authority
Healthy Streams...Healthy Communities!

Ontario

A. J. Lakatos Planning Consultant

Land Use Planning and Design www.andrewjlakatos.com

Turi 1910

Land Use Planning . Site Planning . Urban Design . Landscape Design

July 31, 2020

City of Hamilton
Committee of Adjustment
Planning and Economic Development Department
71 Main Street West, 5th Floor
Hamilton, ON L8P 4Y5

ATTENTION: Secretary-Treasurer, Committee of Adjustment

RE: 13 Herbert Place, Hamilton, Consent to Sever Application

Please find enclosed a Planning Justification Brief with supporting documents pertaining to the proposed consent to sever application and the following:

- Two (2) copies of the completed Consent to Sever application form with original signatures.
- One (1) cheque in the amount of $3,234.00 payable to the City of Hamilton.
- One (1) cheque in the amount of $805.00 payable to the Hamilton Conversation Authority, if applicable.
- Two (2) copies of the Draft Reference Plan.
- Two (2) copies of the Survey Plan.
- One (1) USB with electronic copies of the above referenced documents.

We trust this package is complete. Should you have any questions, please do not hesitate to contact Joe Lakatos at 519-829-6153.

Respectfully submitted,

A.J. Lakatos, BLA, MCIP, RPP

1006-160 Macdonell, Guelph, ON, N1H 0A9 . Phone: 519.822.2272 . Cell: 519.821.6153 . email:jlakatos@andrewjlakatos.com