



Hamilton

COMMITTEE OF ADJUSTMENT

City Hall, 5th floor, 71 Main Street West, Hamilton, ON L8P 4Y5

Telephone (905) 546-2424, ext. 4221

E-mail: cofa@hamilton.ca

NOTICE OF PUBLIC HEARING
Minor Variance

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
-

APPLICATION NO.:	FL/A-22:248	SUBJECT PROPERTY:	394 Old Brock Road, Flamborough
ZONE:	Settlement Residential (R2-14-H)	ZONING BY-LAW:	Zoning By-law former Town of Flamborough 90-145-Z, as Amended

APPLICANTS: Owner: Tracy Kowalchuk
 Applicant: Urban in Mind c/o Terrance Glover

The following variances are requested:

1. A minimum lot area of 7,415.57 m² shall be provided for the portion of the lands to be conveyed instead of the minimum required lot area of 8,000 m².
2. A maximum of 20% lot coverage shall be provided for the portion of the lands to be conveyed instead of the required 10% lot coverage.

PURPOSE & EFFECT: To permit a severance of a lot containing a existing single detached dwelling on the lands to be retained and a proposed single detached dwelling on the lands to be conveyed.

Notes:

- i. Please note this application is to be heard in conjunction with Severance Application FL/B-22:72.
- ii. Insufficient information has been provided to determine parking space size and location within proposed Single Detached Dwelling. Should the parking indicated on the site plan, within the building envelope as indicated by the applicant, not meet the requirements of Flamborough Zoning By-Law 90-145z, additional variances may be required.
- iii. Please note this property is located within a holding zone. Under section 4.5 of Flamborough Zoning By-Law 90-145z, where the zone symbol on Schedules A-1 to A-48 inclusive has the suffix (H), no lot shall be used or no building or structure shall be erected, located or used therein except for the following purposes until the suffix (H) has been removed from the zone symbol by a by-law passed

FL/A-22:248

pursuant to Sections 34 and 35(4) of the Planning Act, R.S.O. 1983, Chapter 1. As such, regarding the proposed Single Detached Dwelling, no development shall occur until the requirements have been met to remove the holding provision from the lands.

This Notice must be posted by the owner of any land which contains seven or more residential units so that it is visible to all residents.

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

DATE:	Tuesday, September 24, 2024
TIME:	2:10 p.m.
PLACE:	Via video link or call in (see attached sheet for details)
	City Hall Council Chambers (71 Main St. W., Hamilton)
	To be streamed (viewing only) at www.hamilton.ca/committeeofadjustment

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

- Visit www.hamilton.ca/committeeofadjustment
- Visit Committee of Adjustment staff at 5th floor City Hall, 71 Main St. W., Hamilton

PUBLIC INPUT

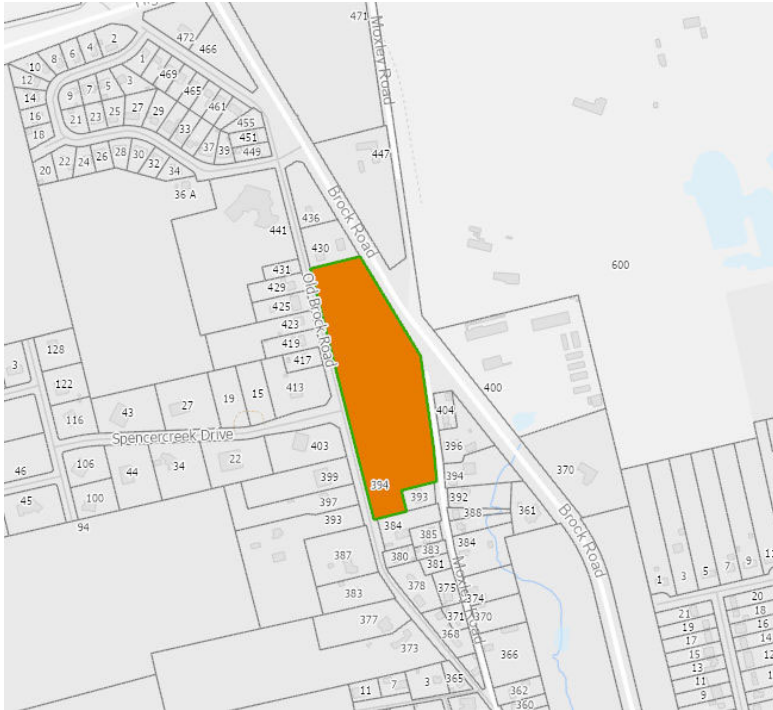
Written: If you would like to submit written comments to the Committee of Adjustment you may do so via email or hardcopy. Please see attached page for complete instructions, written comments must be received no later than noon September 20, 2024

Orally: If you would like to speak to this item at the hearing you may do so via video link, calling in, or attending in person. Please see attached page for complete instructions, registration to participate virtually must be received no later than noon September 23, 2024

FURTHER NOTIFICATION

If you wish to be notified of future Public Hearings, if applicable, regarding FL/A-22:248, you must submit a written request to cofa@hamilton.ca or by mailing the Committee of Adjustment, City of Hamilton, 71 Main Street West, 5th Floor, Hamilton, Ontario, L8P 4Y5.

If you wish to be provided a Notice of Decision, you must attend the Public Hearing and file a written request with the Secretary-Treasurer by emailing cofa@hamilton.ca or by mailing the Committee of Adjustment, City of Hamilton, 71 Main Street West, 5th Floor, Hamilton, Ontario, L8P 4Y5.



 Subject Lands

DATED: September 5, 2024

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, and may include posting electronic versions.



Hamilton

COMMITTEE OF ADJUSTMENT

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Telephone (905) 546-2424, ext. 4221

E-mail: cofa@hamilton.ca

PARTICIPATION PROCEDURES

Written Submissions

Members of the public who would like to participate in a Committee of Adjustment meeting are able to provide comments in writing advance of the meeting. Comments can be submitted by emailing cofa@hamilton.ca or by mailing the Committee of Adjustment, City of Hamilton, 71 Main Street West, 5th Floor, Hamilton, Ontario, L8P 4Y5. **Comments must be received by noon on the date listed on the Notice of Public Hearing.**

Comments are available the Friday prior to the Hearing and are available on our website: www.hamilton.ca/committeeofadjustment

Oral Submissions

Members of the public are also able to provide oral comments regarding Committee of Adjustment Hearing items by participating Virtually through Webex via computer or phone or by attending the Hearing In-person. Participation Virtually requires pre-registration in advance. Please contact staff for instructions if you wish to make a presentation containing visual materials.

1. Virtual Oral Submissions

Interested members of the public, agents, and owners **must register by noon on the day listed on the Notice of Public Hearing** to participate Virtually.

To register to participate Virtually by Webex either via computer or phone, please contact Committee of Adjustment staff by email cofa@hamilton.ca. The following information is required to register: Committee of Adjustment file number, hearing date, name and mailing address of each person wishing to speak, if participation will be by phone or video, and if applicable the phone number they will be using to call in.

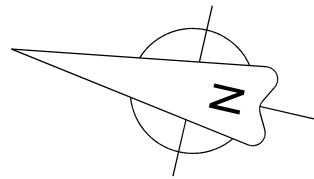
A separate registration for each person wishing to speak is required. Upon registering for a meeting, members of the public will be emailed a link for the Webex meeting one business day before the Hearing. Only those registered will be called upon to speak.

2. In person Oral Submissions

Interested members of the public, agents, and owners who wish to participate in person may attend Council Chambers on the date and time listed on the Notice of Public Hearing. Please note, you will be required to provide your name and address for the record. It is advised that you arrive **no less than 10 minutes** before the time of the Public Hearing as noted on the Notice of Public Hearing.

We hope this is of assistance and if you need clarification or have any questions, please email cofa@hamilton.ca.

Please note: Webex (video) participation requires either a compatible computer or smartphone and an application (app/program) must be downloaded by the interested party in order to participate. It is the interested party's responsibility to ensure that their device is compatible and operating correctly prior to the Hearing.



CONCEPT SEVERANCE SKETCH

394 OLD BROCK ROAD

EXISTING ZONING R2-14-H	
SEVERED LANDS PROPOSED ZONING R2-14-H	
RETAINED LANDS TO REMAIN R2-14-H	
TOTAL LOT AREA (394 OLD BROCK RD)	48,710.45 m ²
ROAD WIDENING (MOXLEY RD)	860.40 m ²
ROAD WIDENING (OLD BROCK RD)	1,034.48 m ²
NEW LOT AREA (394 OLD BROCK RD)	46,815.57 m ²
PROPOSED SEVERANCE AREA	7,441.71 m ²
1 FOOT RESERVE -PROPOSED SEVERANCE	26.14 m ²
NEW SEVERANCE LOT AREA	7,415.57 m ²
RETAINED LOT AREA (394 OLD BROCK RD)	39,400.0 m ²

ZONING R2-14-H	REQUIRED	SEVERED	RETAINED
MIN. LOT AREA	8,000m ²	7,415.57 m ²	39,400.0 m ²
MIN. LOT FRONTAGE	35.0 m	79.5 m	344.0 m
MAX. HEIGHT	11.0 m	11.0 m	11.0 m
MAX. LOT COVERAGE	10 %	20 %	10 %
MIN. FRONT YARD	7.5 m	12.0 m	10.32m
MIN. REAR YARD	10 m	52.92m	29.91m
MIN. INT. SIDE YARD	1.8 m	16.55m & 21.33m	17.94m
MIN. EXT. SIDE YARD	7.5 m	N/A	N/A
MIN. LANDSCAPED O.S	N/A	N/A	N/A


ACCESSORY BUILDING			
MAX. LOT COVERAGE	5%	4.51%	N/A
MAX. BUILDING HEIGHT	4.6 m	4.6 m	N/A
MIN. INT. SIDE YARD	>1 m	7.44 m	35.04 m
MIN. REAR YARD	>1 m	29.55 m	15.81 m

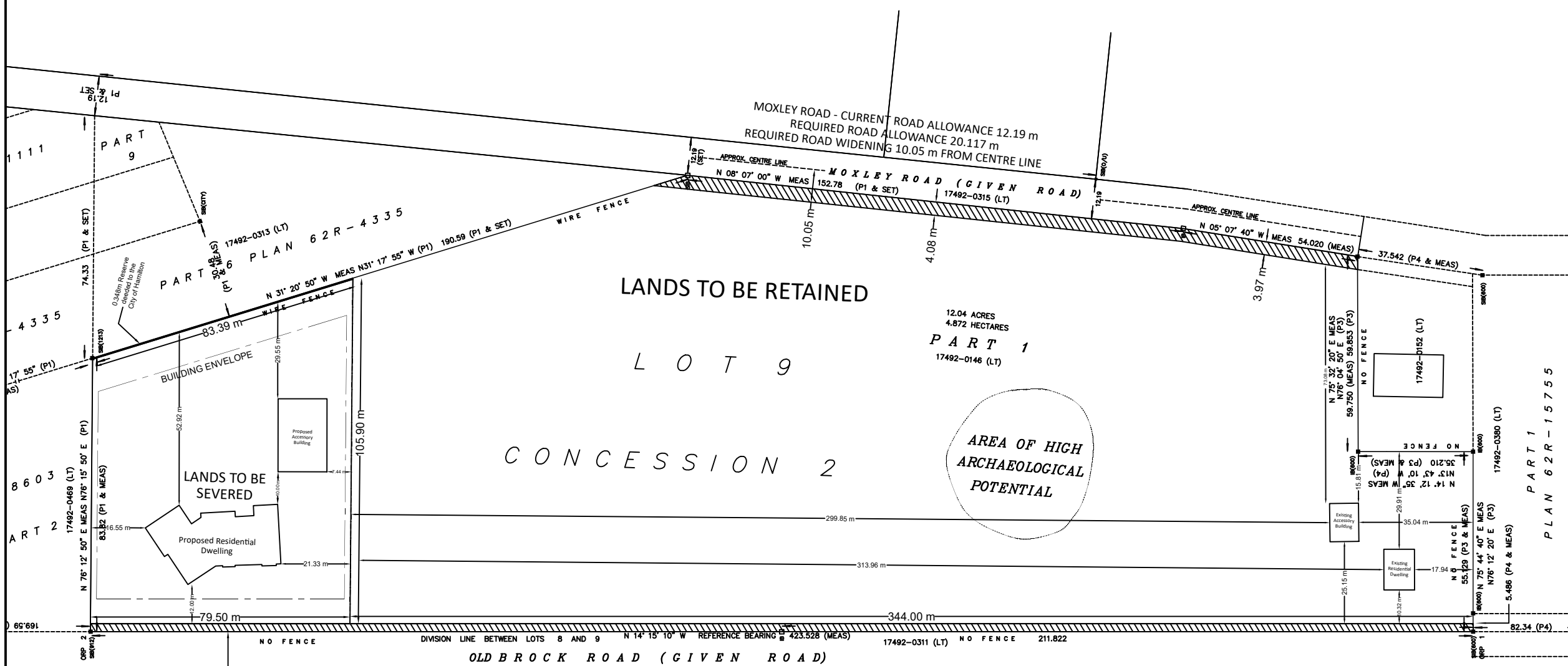
- NOTE:
- RESIDENTIAL PARKING TO BE PROVIDED AT A MINIMUM RATE OF 1 SPACE / DWELLING UNIT.
 - PARKING TO BE ACCOMMODATED WITHIN ILLUSTRATED BUILDING ENVELOPE
 - MEASUREMENTS ON SEVERED AND RETAINED LOT ARE APPROXIMATE
 - MEASUREMENTS ARE CALCULATED AFTER ROAD WIDENING

REVISION CHART
12/03/21 - REVISIONS AS PER CITY COMMENTS DATED FEBRUARY 2021
04/01/22 - ADDED ARCHAEOLOGICAL POTENTIAL AREA
07/04/22 - SITE PLAN REVISION PER STAFF COMMENTS

SURVEY INFORMATION FROM: FILE REF # 16-1014
 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

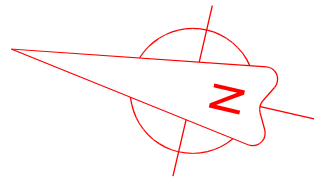
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CONCEPT 1 - SEVERANCE	 <small>WWW.URBANINMIND.CA</small>
SCALE: 1 : 1500 WHEN PRINTED ON 11 X 17	
DATE: JULY 4, 2022	
DRAWN BY: P.O. REVIEWED BY: T.G.	



OLD BROCK ROAD - DESIGNATED LOCAL ROADWAY
 CURRENT ROAD ALLOWANCE 15.24 m
 REQUIRED ROAD ALLOWANCE 20.117 m
 REQUIRED ROAD WIDENING 10.059 m FROM CENTRE LINE

DIVISION LINE BETWEEN NORTH AND SOUTH HALVES OF LOT 9
 PLAN 62R-15755



CONCEPT SEVERANCE SKETCH

394 OLD BROCK ROAD

EXISTING ZONING R2-14-H	
SEVERED LANDS PROPOSED ZONING R2-SPECIAL	
RETAINED LANDS TO REMAIN R2-14-H	
TOTAL LOT AREA (394 OLD BROCK RD)	48,710.45 m ²
ROAD WIDENING (MOXLEY RD)	860.40 m ²
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ZONING R2-SPECIAL	REQUIRED	SEVERED	RETAINED
MIN. LOT AREA	8,000m ²	7,415.57 m ²	39,400.0 m ²
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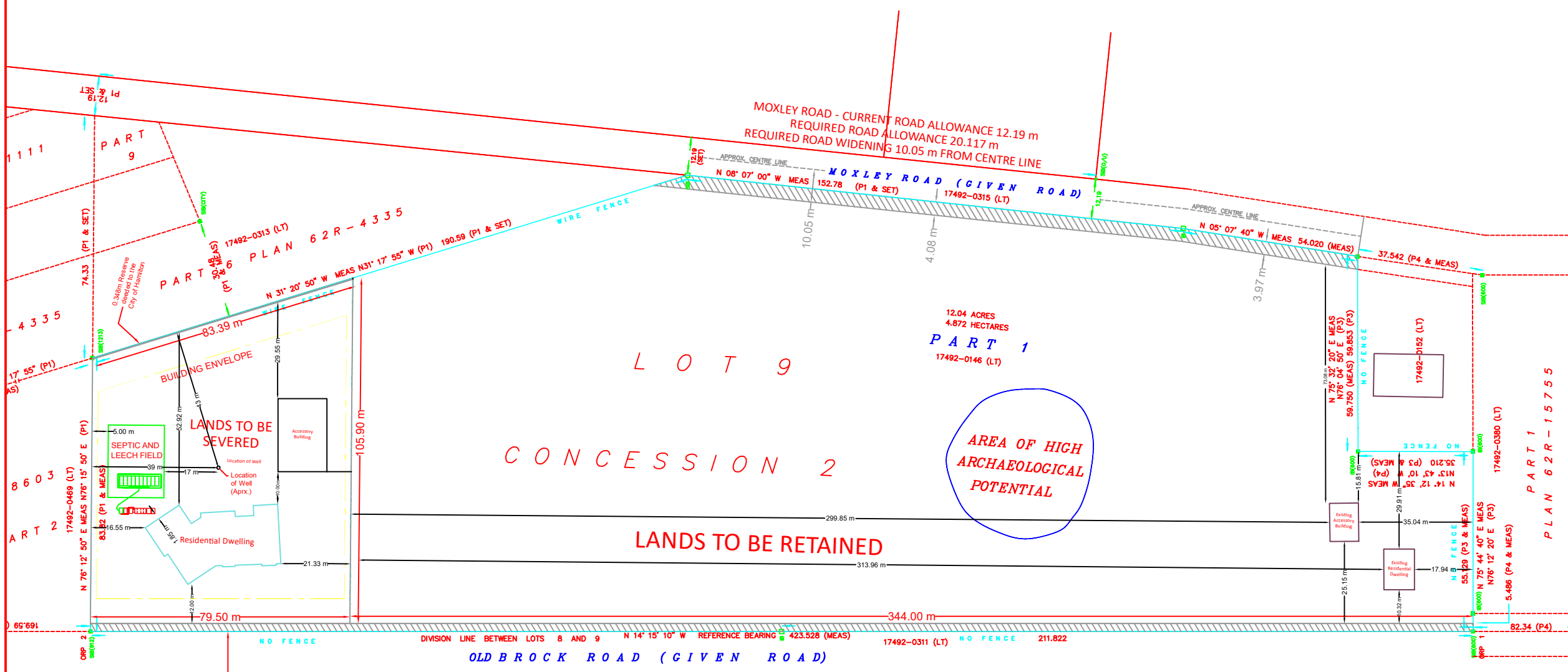
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REVISION CHART	
12/03/21	- REVISIONS AS PER CITY COMMENTS DATED FEBRUARY 2021
04/01/22	- ADDED ARCHAEOLOGICAL POTENTIAL AREA
07/04/22	- SITE PLAN REVISION PER STAFF COMMENTS
03/04/23	- ADDED SEPTIC AND LEECH BED (I.T.)
11/07/24	- ADDED APPROXIMATE WELL LOCATION (I.T.)

SURVEY INFORMATION FROM: FILE REF # 16-1014

NOTE: DRAWING IS FOR DISCUSSION PURPOSES ONLY

CONCEPT 1 - SEVERANCE	
SCALE: 1 : 1500 WHEN PRINTED ON 11 X 17	
DATE: JULY 4, 2022	
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OLD BROCK ROAD - DESIGNATED LOCAL ROADWAY
 CURRENT ROAD ALLOWANCE 15.24 m
 REQUIRED ROAD ALLOWANCE 20.117 m
 REQUIRED ROAD WIDENING 10.059 m FROM CENTRE LINE

PLANNING JUSTIFICATION REPORT MINOR VARIANCE AND CONSENT APPLICATION

REVISED JULY 6TH 2022

394 OLD BROCK ROAD, HAMILTON, ON (GREENSVILLE)



— Subject Property

Prepared by:

Urban in Mind,
Professional Urban Planning, Land Development & CPTED Consultants

www.UrbanInMind.ca

(905) 320-8120





MDS SETBACKS
394 OLD BROCK ROAD

BASE IMAGERY FROM CITY OF
 HAMILTON INTERACTIVE MAPPING

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SCALE: 15,000
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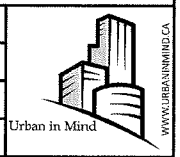


TABLE OF CONTENTS

1.0 INTRODUCTION	4
1.1 Purpose of the Report	4
2.0 SUBJECT PROPERTY AND SURROUNDING AREA.....	4
2.1 Site Overview	4
2.2 Neighbourhood Character.....	6
2.3 Transportation.....	8
3.0 PROPOSED DEVELOPMENT & PLANNING APPLICATION.....	8
3.1 Consent/Severance	8
3.2 Minor Variance.....	9
3.3 Impact of Proposed Development.....	11
4.0 EXISTING PLANNING POLICY AND REGULATORY FRAMEWORK.....	11
4.1 Planning Act, R.S.O. 1990, c. P.13.....	11
4.2 Provincial Policy Statement (PPS) (2020).....	12
4.3 Growth Plan for the Greater Golden Horseshoe (2019).....	16
4.4 Greenbelt Plan (2017).....	18
4.5 Niagara Escarpment Plan (2017).....	21
4.6 Ministry of Transportation (MTO)	21
4.7 Hamilton Conservation Authority (HCA).....	21
4.8 City of Hamilton Rural Official Plan	21
4.9 City of Hamilton Zoning By-Law.....	36
5.0 Planning Justification.....	40
5.1 Site Suitability.....	40
5.2 Provincial Policy Statement (PPS) (2020).....	41
5.3 Growth Plan for the Greater Golden Horseshoe (2019).....	41
5.4 Greenbelt Plan (2017).....	42
5.5 City of Hamilton Rural Official Plan	42
5.6 City of Hamilton Zoning By-Law.....	43
6.0 Four Tests of a Minor Variance	44
7.0 Severance Justification	45
8.0 Conclusion.....	45

LIST OF FIGURES

Figure 1 – Aerial View of 394 Old Brock Road.....	5
Figure 2 – Street View of Existing Property at 394 Old Brock Road	5
Figure 3 – Agricultural Lands of 394 Old Brock Road	6
Figure 4 – North of Subject Property – 430 Old Brock Road	7
Figure 5 – East of Subject Property – Brock Road and Residential Homes.....	7
Figure 6 – South of Subject Property – 384 Old Brock Road.....	7
Figure 7 – West of Subject Property – Multiple Residential Lots.....	8
Figure 8 – Concept Severance Sketch.....	9
Figure 9 – Archaeological Avoidance Area	41

LIST OF Tables

Figure 1 – Site Statistics and Variances	10
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LIST OF APPENDICES

Appendix ‘A’ – Existing Condition Survey – Subject Property	47
Appendix ‘B’ – Growth Plan for the Greater Golden Horseshoe – Schedule 4.....	48
Appendix ‘C’ – Greenbelt Plan – Greenbelt Plan Area.....	49
Appendix ‘D’ – Niagara Escarpment Plan – Development Control Area.....	50
Appendix ‘E’ – Hamilton Conservation Authority – Regulated Area.....	51
Appendix ‘F’ – City of Hamilton Rural Official Plan – Schedule A.....	52
Appendix ‘G’ – City of Hamilton Rural Official Plan – Schedule B.....	53
Appendix ‘H’ – City of Hamilton Rural Official Plan – Schedule C.....	54
Appendix ‘I’ – City of Hamilton Rural Official Plan – Schedule C-1	55
Appendix ‘J’ – City of Hamilton Rural Official Plan – Schedule D.. ..	56
Appendix ‘K’ – City of Hamilton Rural Official Plan – Appendix F-2.....	57
Appendix ‘L’ – Greensville Rural Settlement Area Plan – Map 8a.....	58
Appendix ‘M’ – Greensville Rural Settlement Area Plan – Map 8b.....	59
Appendix ‘N’ – Former Town of Flamborough – Zoning Map.....	60

1.0 INTRODUCTION:

Urban in Mind has been retained by the Owner of 394 Old Brock Road in the city of Hamilton to submit and obtain a severance and related minor variance application. The proposed minor variance will facilitate the creation of one new single-detached residential lot from the retained lands of 394 Old Brock Road (**Appendix 'A'**).

1.1 Purpose of the Report:

The purpose of this **Planning Justification Report** is to outline the proposed **consent** (severance) and related **minor variance** applications, evaluate the proposal in context with applicable planning policies and regulations, and to provide sound justification for the approval of required planning applications.

2.0 SUBJECT PROPERTY AND SURROUNDING AREA:

2.1 Site Overview:

The subject property is municipally known as 394 Old Brock Road in Hamilton, Ontario. It is located within the rural community of Greensville in the former Town of Flamborough which has been amalgamated into the City of Hamilton.

Greensville predominantly consists of single-detached homes, local commercial and institutional uses, and agricultural farm lots. These agricultural parcels, located within the settlement area boundary, are being targeted by the City of Hamilton for residential development in accordance with the Greensville Rural Settlement Area Plan as supported by the density instruction outlined in the Growth Plan.

The subject property is generally flat and can visually be divided into two portions, the north portion being agricultural and the south portion being existing rural residential. The northern portion of the property, which makes up the majority of the total lot area, consists of a large field used for agricultural production (cash crops). The southern portion contains existing 1.5 storey single-detached home, a garage and mature residential landscaping.

Since the majority of the land is in agricultural production, there are very few trees on site. As is typical with agricultural properties, a tree wind break is located along the roadway and is planned to be maintained. These mature trees offer privacy for the landowner in addition to limiting the impacts of the prevailing winds helping to lessen soil erosion. This treeline is proposed to be maintained.

The subject property and all surrounding settlement residential lots are serviced by private water and wastewater services.

Figure 1: Aerial View of 394 Old Brock Road – *Subject Property*



Figure 2: Street View of Existing Property at 394 Old Brock Road



Figure 3: Agricultural Lands of 394 Old Brock Road (View of Proposed Lot Location)



2.2 Neighbourhood Character:

The subject property consists of a single-detached rural dwelling and associated agricultural lands located within the Greensville Settlement Area Boundary. The settlement area of Greensville is fairly spread out and contains an array of social services from churches to schools, to a library and small commercial businesses, all intermingled with greenspace, houses, and mature trees.

The immediate surrounding area can be characterized as a generally stable, growing low density rural residential neighbourhood. The neighbourhood is predominantly composed of single-detached homes on large lots with a mix of architectural styles, mature trees and some remnant (yet active) agricultural fields. Recent approvals for single detached residential subdivision developments in the immediate area have changed the rural feel of the area to a more urban residential environment. It is expected that this transition will continue as new dwellings and infill development are realized.

The immediate surrounding area includes the following:

Figure 4: North of Subject Property – 430 Old Brock Road (1.5 Storey Single-Detached Home)



Figure 5: East of Subject Property – Brock Road and Residential Homes



Figure 6: South of Subject Property – 384 Old Brock Road (Hardy Renovations)



Figure 7: West of Subject Property – Multiple Residential Lots (393 – 431 Old Brock Road)



2.3 Transportation

Old Brock Road is considered a 'Local' roadway with an ultimate right-of-way width of 20.117 metres. A road widening will be required along the entire frontage of the property along Old Brock Road. Bounding the property to the east are Brock Road and Moxley Road, which are considered 'Arterial' and 'Collector' roads respectively. Moxley Road comes to a dead end adjacent to the subject property and does not provide a connection to Brock Road directly. No road widening will be required along the subject property that runs parallel to Brock Road (as confirmed by City Staff), but a one-foot reserve will likely be necessary to prevent access to Brock Road. Finally, a minor road widening will also be required along the frontage of Moxley Road.

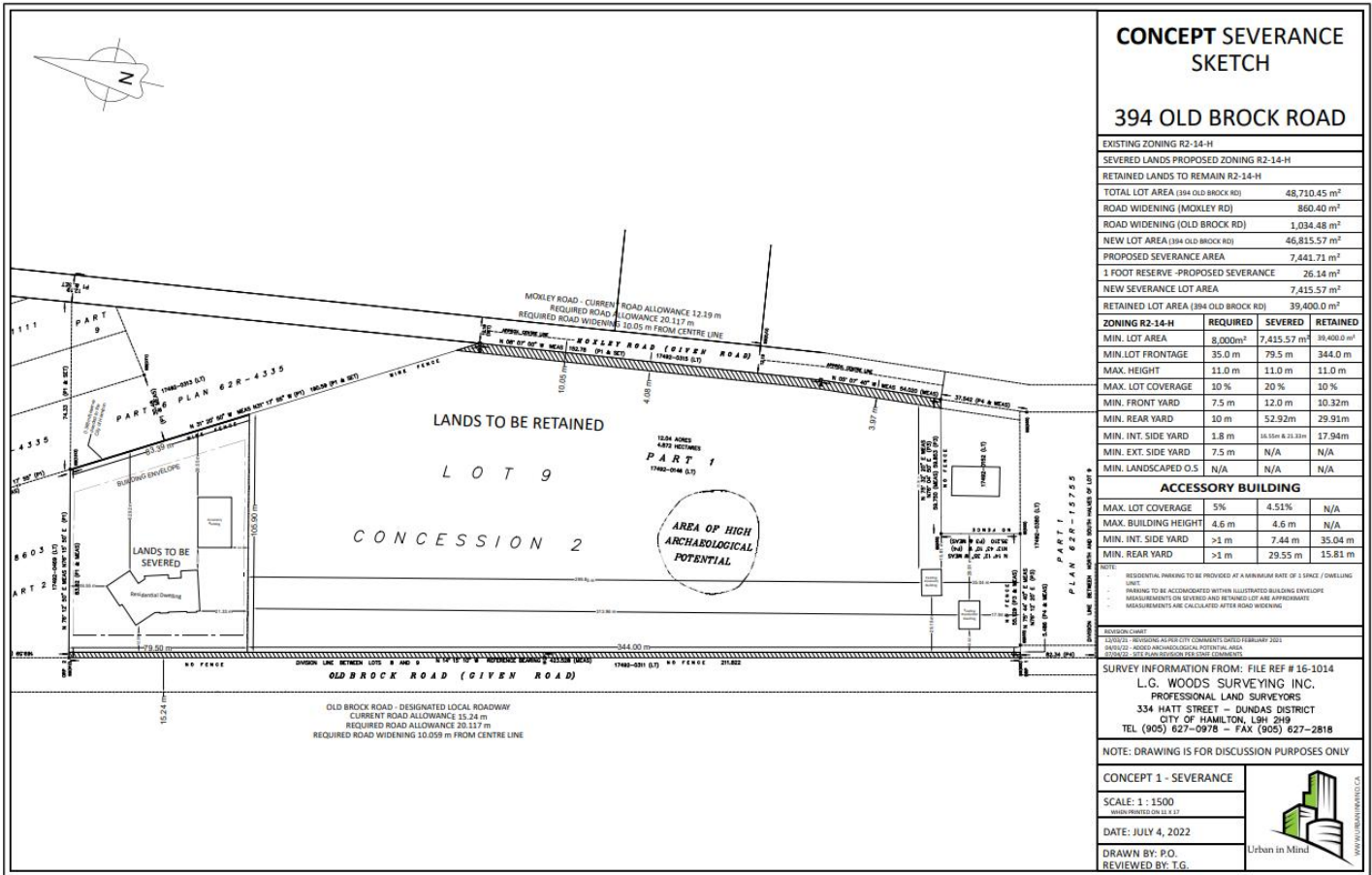
Within the community of Greenville, vehicular movement is the predominant mode of transportation as no public transit services operate within the community. The addition of one single-detached residential lot on Old Brock Road should have little to no impact on the capacity and function of this local roadway.

3.0 PROPOSED DEVELOPMENT & PLANNING APPLICATION:

3.1 Consent/Severance:

The proposed application is to sever one (1) single-detached residential lot of sufficient size to meet the requirement of private water and septic services as required for one single-detached dwelling. A related minor variance for reduced lot area will also be required to support the severance application.

Figure 8: Concept Severance Sketch



3.2 Minor Variance:

A minor variance is required to facilitate the consent application allowing for the creation of a new lot at a slightly reduced minimum lot area of 1.83 acres (7,415.57 m²). This requested reduction is a direct result of the ‘ACTUAL’ area required for a traditional septic system (1.8ac), versus the ‘OLD’ cookie-cutter size (2ac). In fact, modern septic systems can now operate on lots as small as 0.25ac with current technologies. Regardless, given the local area character and traditional septic usage, 1.8 acres is being proposed under this application. We also understand that any septic system would need to meet City Health and Safety standards and obtain necessary building permits.

In addition, the current 10% lot coverage falls under the old “Site Specific” zoning provision R2-14 (see Section 4.9 of this report). The R2-14 zone directs the reader to provisions of the R2-9 zone that was originally added due to the large agricultural lots, and to further scrutinize/limit development due to groundwater issues in this area, however, since that time area groundwater issues have been controlled by way of development limitations typically applied to subdivision development. As this proposal is for one (1) single detached lot, we feel the zoning for this site should be applied in the same manner as the rest of the R2 zones in the area, (i.e. being 20% coverage). As the ‘building’(s) development on the proposed severed lot is conceptual at this point, we are not yet sure what the actual lot coverage will end up being, hence the request to be fairly treated as the

other R2 zones in the area. Furthermore, no change or development is proposed for the retained lot, and as such, no change is requested at this time for the larger retained lot.

Given the size and dimension of the proposed lot (created through the subject consent application), all other zoning provisions of the 'R2' Zone can be easily met when a new home is built on the site.

These proposed minor variances will only be applicable to the severed lands of the consent application, as no change is proposed to the retainer lot at this time:

- **To permit a reduction in the required lot area from the current 8,000m² to a new 7,415.57m².**
- **To permit an increase of lot coverage from the current site specific 10% to the standard 20%.**

The subject property also has a historic holding provision attached. It is understood that this holding provision is a remnant of the Town of Flamborough planning policies which have since been rectified through previous studies, and it is no longer applicable to the subject lands. Removal of the holding provision can occur at the City of Hamilton's discretion during the planning approval process and can be achieved via condition of Committee Approval (if necessary). The retained portion of the subject property will remain zoned R2-14 (with the addition of a reduced lot area provision).

Table 1: Site Statistics and Requested Variances

Zoning R2-14-H	Required	Severed	Retained
Minimum Lot Area	8,000 m ²	7,415.57 m²	39,400.0 m ²
Minimum Lot Frontage	35.0 m	79.5 m	344.0 m
Maximum Height	11.0 m	11.0 m	11.0 m
Maximum Lot Coverage	10% Site Specific R2-14 (20% standard R2 Zone)	20%**	10%
Minimum Front Yard	7.5 m	12.0 m	10.32 m
Minimum Rear Yard	10 m	52.92 m	29.91 m
Minimum Interior Side Yard	1.8 m	16.55 m & 21.33 m	17.94 m
Minimum Exterior Side Yard	7.5 m	N/A	N/A
Minimum Landscaped Open Space	N/A	N/A	N/A
Accessory Building			
Maximum Lot Coverage	5%	4.51%	N/A
Maximum Building Height	4.6 m	4.6 m	N/A

Minimum Interior Side Yard	>1 m	7.44 m	35.04 m
Minimum Rear Yard	>1 m	29.55 m	15.81 m

**It should be noted that the actual proposed lot coverage for the severed lands is 13.2%, but because the building on the severed property is conceptual, the applicant is requesting 20% lot coverage for the severed lands as it is unknown what building(s) will eventually be proposed.

The **Justification** for the proposed minor variances can be found in **Section 5.0** of this report.

3.3 Impact of Proposed Development:

The creation of one new single-detached rural residential lot through a consent and minor variance application(s) should have little to no impact on the surrounding neighbourhood. It is the intent of the owner to add one (1) new residential single-detached building lot that generally meets the Official Plan and Secondary Plan policy requirements and is of a scale and design that fits within the Greensville Secondary Plan community. Being a single new lot, there should be no significant impacts on traffic, groundwater, or the ability of private servicing.

4.0 EXISTING PLANNING POLICY AND REGULATORY FRAMEWORK:

4.1 Planning Act, R.S.O. 1990, c. P.13:

The Planning Act is the leading provincial legislation that sets out the rules for land use planning in Ontario. The Planning Act ensures that matters of provincial interest are met and guides planning policy to protect citizen rights and the natural environment.

Applicable provisions from the Planning Act have been included as follows:

“Powers of Committee

45 (1) The committee of adjustment, upon the application of the owner of any land, building or structure affected by any by-law that is passed under section 34 or 38, or a predecessor of such sections, or any person authorized in writing by the owner, may, despite any other Act, authorize such minor variance from the provisions of the by-law, in respect of the land, building or structure or the use thereof, as in its opinion is desirable for the appropriate development or use of the land, building or structure, if in the opinion of the committee the general intent and purpose of the by-law and of the official plan, if any, are maintained. R.S.O. 1990, c. P.13, s. 45 (1); 2006, c. 23, s. 18 (1); 2009, c. 33, Sched. 21, s. 10 (11).

Part VI Subdivision of Land

50 (1) In this section and in section 53,

“consent” means,

(a) where land is situate in a lower-tier municipality, a consent given by the council of the upper-tier municipality,

- (b) where land is situate in a single-tier municipality that is not in a territorial district, a consent given by the council of the single-tier municipality,
- (c) where land is situate in a prescribed single-tier municipality that is in a territorial district, a consent given by the council of the single-tier municipality, and
- (d) except as otherwise provided in clauses (a), (b) and (c), a consent given by the Minister. 2002, c. 17, Sched. B, s. 18.

Subdivision control

- (3) No person shall convey land by way of a deed or transfer, or grant, assign or exercise a power of appointment with respect to land, or mortgage or charge land, or enter into an agreement of sale and purchase of land or enter into any agreement that has the effect of granting the use of or right in land directly or by entitlement to renewal for a period of twenty-one years or more unless,
 - (f) a consent is given to convey, mortgage or charge the land, or grant, assign or exercise a power of appointment in respect of the land or enter into an agreement in respect of the land.”

Summary:

Section 45(1) of the Planning Act allows for the Committee of Adjustment to permit variances from the provisions of the Zoning By-Law. The criteria used to evaluate variances are based on the following four tests:

- *Do the requested variances maintain the general intent and purpose of the Official Plan?*
- *Do the requested variances maintain the general intent and purpose of the Zoning By-Law?*
- *Are the requested variances desirable and appropriate for the lands?*
- *Are the requested variances minor in nature*

The proposed development and Minor Variance Application will be judged against the ‘Four Tests’. An explanation as to how each one of these tests are met is described in **Section 5.0** of this Report.

In addition, the severance of land falls under **Section 50(3)(f)** of the Planning Act, which requires that any severance be considered land division under the umbrella of Subdivision. As such, land division must not be premature, and must generally meet the intent of the Provincial policies and City Official Plan.

4.2 Provincial Policy Statement (2020):

The Provincial Policy Statement (PPS) for the Province of Ontario was recently updated in May 2020. It provides Provincial Policy direction on matters of Provincial interest related to land development under the Planning Act. The Goal of the PPS is to enhance the quality of life for all people living, working and/or playing in Ontario.

Simply put, when municipal governments contemplate land use policies (e.g. Official Plan, Secondary Plan, Zoning By-law, Site Plan, etc.) or consider planning applications under these policies, the PPS must be considered.

These applicable PPS policies have already been incorporated into the City's Official Plan, and therefore by way of the current policies (and minor variance application), have been considered.

Applicable excerpts from the Provincial Policy Statement are as follows:

“Part V: Policies

1.0 Building Strong Healthy Communities

1.1 Managing and Directing Land Use to Achieve Efficient and Resilient Development and Land Use Patterns

1.1.1 Healthy, liveable and safe communities are sustained by:

- a) promoting efficient development and land use patterns which sustain the financial well-being of the Province and municipalities over the long term;
- b) accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;
- c) avoiding development and land use patterns which may cause environmental or public health and safety concerns;
- d) avoiding development and land use patterns that would prevent the efficient expansion of settlement areas in those areas which are adjacent or close to settlement areas;
- h) promoting development and land use patterns that conserve biodiversity;

1.1.3 Settlement Areas

1.1.3.1 Settlement areas shall be the focus of growth and development.

1.1.3.2 Land use patterns within settlement areas shall be based on densities and a mix of land uses which:

- a) efficiently use land and resources;
- b) are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
- e) support active transportation;

1.1.3.4 Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while avoiding or mitigating risks to public health and safety.

1.1.4 Rural Areas in Municipalities

1.1.4.1 Healthy, integrated and viable rural areas should be supported by:

- a) building upon rural character, and leveraging rural amenities and assets;
- b) promoting regeneration, including the redevelopment of brownfield sites;
- c) accommodating an appropriate range and mix of housing in rural settlement areas;
- d) encouraging the conservation and redevelopment of existing rural housing stock on rural lands;

1.1.4.2 In rural areas, rural settlement areas shall be the focus of growth and development and their vitality and regeneration shall be promoted.

1.1.4.3 When directing development in rural settlement areas in accordance with policy 1.1.3, planning authorities shall give consideration to rural characteristics, the scale of development and the provision of appropriate service levels.

1.4 Housing

1.4.1 To provide for an appropriate range and mix of housing options and densities required to meet projected requirements of current and future residents of the regional market area, planning authorities shall:

- a) maintain at all times the ability to accommodate residential growth for a minimum of 15 years through residential intensification and redevelopment and, if necessary, lands which are designated and available for residential development; and
- b) maintain at all times where new development is to occur, land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans.

Upper-tier and single-tier municipalities may choose to maintain land with servicing capacity sufficient to provide at least a five-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans.

1.4.3 Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by:

- b) permitting and facilitating:
 - 1. all housing options required to meet the social, health, economic and well-being requirements of current and future residents, including special needs requirements and needs arising from demographic changes and employment opportunities; and
 - 2. all types of residential intensification, including additional residential units, and redevelopment in accordance with policy 1.1.3.3;
- d) promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation and transit in areas where it exists or is to be developed;

1.6 Infrastructure and Public Service Facilities

1.6.6 Sewage, Water and Stormwater

1.6.6.4 Where municipal sewage services and municipal water services or private communal sewage services and private communal water services are not available, planned or feasible, individual on-site sewage services and individual on-site water services may be used provided that site conditions are suitable for the long-term provision of such services with no negative impacts. In settlement areas, individual on-site sewage services and individual on-site water services may be used for infilling and minor rounding out of existing development.

At the time of the official plan review or update, planning authorities should assess the long-term impacts of individual on-site sewage services and individual on-site water services on the environmental health and the character of rural settlement areas. Where planning is conducted by an upper-tier municipality, the upper-tier municipality should work with lower-tier municipalities at the time of the official plan review or update to assess the long-term impacts of individual on-site sewage services and individual on-site water services on the environmental health and the desired character of rural settlement areas and the feasibility of other forms of servicing set out in policies 1.6.6.2 and 1.6.6.3.

1.6.6.7 Planning for stormwater management shall:

- a) be integrated with planning for sewage and water services and ensure that systems are optimized, feasible and financially viable over the long term;
- b) minimize, or, where possible, prevent increases in contaminant loads;
- c) minimize erosion and changes in water balance, and prepare for the impacts of a changing climate through the effective management of stormwater, including the use of green infrastructure;
- d) mitigate risks to human health, safety, property and the environment;
- e) maximize the extent and function of vegetative and pervious surfaces; and
- f) promote stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development.

1.7 Long-Term Economic Prosperity

1.7.1 Long-term economic prosperity should be supported by:

- a) promoting opportunities for economic development and community investment-readiness;
- b) encouraging residential uses to respond to dynamic market-based needs and provide necessary housing supply and range of housing options for a diverse workforce;
- e) encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including built heritage resources and cultural heritage landscapes;
- k) minimizing negative impacts from a changing climate and considering the ecological benefits provided by nature;

2.0 Wise Use and Management of Resources

2.6 Cultural Heritage and Archaeology

2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.

2.6.2 Development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved.

2.6.3 Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.

2.6.4 Planning authorities should consider and promote archaeological management plans and cultural plans in conserving cultural heritage and archaeological resources.

2.6.5 Planning authorities shall engage with Indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.”

4.3 Growth Plan for the Greater Golden Horseshoe (2019):

The Growth Plan for the Greater Golden Horseshoe (Growth Plan) is a Provincial Policy that aims to control growth and development within the Greater Golden Horseshoe Area in a way that supports economic prosperity, protects the environment and improves the quality of life for all residents. The Growth Plan also encourages intensification by directing a significant portion of new growth to the built-up areas of communities, thus protecting agricultural areas from encroaching development and incompatible land uses.

The Growth Plan update (2019) further enhances the provincial direction to locate new growth within settlement areas, support urban intensification, create complete communities, maximize utility efficiency, and encourage transit usage.

The subject property is located within the ‘**Growth Plan**’ designation (**Appendix ‘B’**), as well as located within a rural settlement area of the City of Hamilton.

Applicable excerpts from the related Growth Plan policy are as follows:

“2 Where and How to Grow

2.2 Policies for Where and How to Grow

2.2.1 Managing Growth

2. Forecasted growth to the horizon of this Plan will be allocated based on the following:

b) growth will be limited in settlement areas that:

i. are rural settlements;

ii. are not serviced by existing or planned municipal water and wastewater systems; or

iii. are in the Greenbelt Area;

4. Applying the policies of this Plan will support the achievement of complete communities that:

a) feature a diverse mix of land uses, including residential and employment uses, and convenient access to local stores, services, and public service facilities;

b) improve social equity and overall quality of life, including human health, for people of all ages, abilities, and incomes;

- c) provide a diverse range and mix of housing options, including additional residential units and affordable housing, to accommodate people at all stages of life, and to accommodate the needs of all household sizes and incomes;
- e) provide for a more compact built form and a vibrant public realm, including public open spaces;

2.2.6 Housing

1. Upper- and single-tier municipalities, in consultation with lower-tier municipalities, the Province, and other appropriate stakeholders, will:
 - a) support housing choice through the achievement of the minimum intensification and density targets in this Plan, as well as the other policies of this Plan by:
 - i. identifying a diverse range and mix of housing options and densities, including additional residential units and affordable housing to meet projected needs of current and future residents;
2. Notwithstanding policy 1.4.1 of the PPS, 2020, in implementing policy 2.2.6.1, municipalities will support the achievement of complete communities by:
 - a) planning to accommodate forecasted growth to the horizon of this Plan;
 - b) planning to achieve the minimum intensification and density targets in this Plan;
 - c) considering the range and mix of housing options and densities of the existing housing stock; and
 - d) planning to diversify their overall housing stock across the municipality.

2.2.9 Rural Areas

1. Municipalities are encouraged to plan for a variety of cultural and economic opportunities within rural settlements to serve the needs of rural residents and area businesses.
6. New multiple lots or units for residential development will be directed to settlement areas, but may be allowed on rural lands in site-specific locations with approved zoning or designation in an official plan that permitted this type of development as of June 16, 2006.

4 Protecting What is Valuable

4.2 Policies for Protecting What is Valuable

4.2.7 Cultural Heritage Resources

1. Cultural heritage resources will be conserved in order to foster a sense of place and benefit communities, particularly in strategic growth areas.

2. Municipalities will work with stakeholders, as well as First Nations and Métis communities, in developing and implementing official plan policies and strategies for the identification, wise use and management of cultural heritage resources.
3. Municipalities are encouraged to prepare archaeological management plans and municipal cultural plans and consider them in their decision making.”

4.4: Greenbelt Plan (2017):

The Greenbelt Act is legislation that enables the ‘Greenbelt Plan’. The Greenbelt Plan is a provincial policy that aims to preserve agricultural lands and environmental natural areas to encourage a prosperous and sustainable Ontario.

The Greenbelt Plan works together with the Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan, and the Growth Plan for the Greater Golden Horseshoe.

The subject property is within the ‘**Outer Boundary**’ of the Greenbelt Plan Area, and as such, the policies of the Greenbelt Plan will apply (**Appendix ‘C’**). However, the lands have also been identified by the City of Hamilton as a Rural Settlement Area (Greensville), as such, given the ‘A Place to Grow’ policies and the City’s Official Plan (under Section 3.4.4 of the Greenbelt Plan) are available for development.

Applicable excerpts from the Greenbelt Plan have been included as follows:

- “1 **Introduction**
 - 1.2 **Vision and Goals**
 - 1.2.2 **Protected Countryside Goals**
 - 4. **Settlement Areas**
- a) Support for a strong rural economy by allowing for the social, economic and service functions through the residential, institutional and commercial/industrial uses needed by the current and future population within the Greenbelt, particularly within settlement areas;
 - b) Sustaining the character of the countryside and rural communities;
 - c) Support for the achievement of complete communities that promote and enhance human health and social well-being, are economically and environmentally sustainable, moving towards low-carbon communities, with the long-term goal of net-zero communities; and
 - d) Serving as centres for the development of community hubs where compatible services are co-located to address local needs in convenient locations that are accessible by active transportation and, where available, transit.

3 Geographic-Specific Policies in the Protected Countryside

3.4 Settlement Areas

The settlement areas have been placed into two categories: Towns/Villages and Hamlets. These settlement areas vary significantly in both spatial and population size, economic activity, diversity/intensity of uses, the type(s) of water and sewage services and the role they play within their municipalities. Settlement areas of all types are found throughout the Protected Countryside. Towns/Villages and Hamlets are identified on Schedule 1. To determine the precise settlement area boundaries, reference should be made to official plans.

Towns/Villages have the largest concentrations of population, employment and development within the Protected Countryside and tend to be the central settlement area(s) for their respective municipalities. Although most have full municipal water and sewer services, some only have a municipal water service and/or a combination of private and municipal water services. Towns/Villages are the focus of development and related economic and social activity.

Hamlets are substantially smaller than Towns/Villages and play a significantly lesser role in accommodating concentrations of residential, commercial, industrial and institutional development. Further, they are typically serviced with individual on-site sewage and water services and thus are not locations to which growth should be directed.

3.4.2 General Settlement Area Policies

- 2.** Municipalities shall incorporate policies in their official plans to facilitate the development of community hubs that:
 - d)** Enable the adaptive reuse of existing facilities and spaces in settlement areas, where appropriate.
- 3.** Municipalities shall collaborate and consult with service planning, funding and delivery sectors to facilitate the co-ordination and planning of community hubs and other public service facilities.
- 7.** Municipal planning policies and relevant development proposals shall incorporate best practices for the management of excess soil generated and fill received during development or site alteration, including infrastructure development, to ensure that:
 - a)** Any excess soil is reused on-site or locally to the maximum extent possible and, where feasible, excess soil reuse planning is undertaken concurrently with development planning and design;
 - c)** Fill quality received and fill placement at a site will not cause an adverse effect with regard to the current or proposed use of the property or the natural environment, and is compatible with adjacent land uses.

4.4 Hamlet Policies

For lands within Hamlets in the Protected Countryside, the following policy shall apply:

1. Hamlets are subject to the policies of the Growth Plan and continue to be governed by official plans and related programs or initiatives and are not subject to the policies of this Plan, save for the policies of sections 3.1.5, 3.2.3, 3.2.6, 3.3 and 3.4.2. Limited growth is permitted through infill and intensification of Hamlets subject to appropriate water and sewage services.”

4.5: Niagara Escarpment Plan (2017):

The Niagara Escarpment Planning and Development Act is legislation that enables the Niagara Escarpment Plan. The Niagara Escarpment Plan aims to maintain the Niagara Escarpment and land in its vicinity as a continuous natural environment and to ensure that only development that is compatible with that natural environment is permitted.

According to the updated Niagara Escarpment Plan (2017), although the subject property is in close proximity, it **is not located** within the Niagara Escarpment Development Control Area (**Appendix ‘D’**). as such, the policies of the Niagara Escarpment Plan **do not apply** to the subject property.

4.6: Ministry of Transportation (MTO):

The subject property is not recognized as an ‘MTO Controlled Area’ according to the Ministry of Transportation. As such, a Ministry of Transportation Development Permit will not be required for any development or redevelopment of the subject lands.

4.7: Hamilton Conservation Authority (HCA):

The subject property **is not located** within the jurisdiction of the Hamilton Conservation Authority. **and no portion of the subject property is situated within an area regulated by the authority (Appendix ‘E’)**.

As such a Conservation Development Permit **should not** be required for any proposed redevelopment of the subject site.

4.8: Rural City of Hamilton Official Plan (2013):

The current and in effect version of the Official Plan (OP) for the City of Hamilton was approved in 2011 and amended several times with the most recent office consolidation being in 2019.

The OP is the leading planning document for guiding growth, land use and development within the City of Hamilton. The document addresses matters such as infrastructure, population growth, servicing, transit, natural heritage, cultural heritage, and administrative municipal policies.

The following Rural City of Hamilton Official Plan designations apply to the subject property:

- The subject property is located within the **'Hamlets'** designation (**Appendix 'F'**)
- The subject property is located within the **'Greenbelt Protected Countryside'** (**Appendix 'G'**).
- The segment of Old Brock Road that fronts the subject property is classified as a **'Local Road'** (**Appendix 'H'**).
- The segment of Old Brock Road and Moxley Road are required to allocate a **'Future Right-of-Way Dedication'** to bring the total R.O.W. to 20.117 m (**Appendix 'I'**).
- The subject property is located within the **'Rural Settlement Area'** designation (**Appendix 'J'**).
- The subject property is located on lands that have **'Archaeological Potential'** (**Appendix 'K'**).
- The subject property is located within the **'Greensville Rural Settlement Plan'** and is classified as being within the **'Settlement Residential'** land use designation and **'Major Development Area A'** (**Appendices 'L'** and **'M'**).

Applicable excerpts from the Rural Hamilton Official Plan are as follows:

"CHAPTER B – COMMUNITIES

B.2.0 DEFINING OUR COMMUNITIES

2.1 Communities in the rural area of the City of Hamilton can be defined in multiple ways. Land use definitions of communities include:

- b) rural settlement area boundaries which set the limits for residential, non-farm, and non-resource-based growth. Rural settlement area boundaries shall not be expanded.

3.2.2 General Policies for Rural Housing

3.2.2.1 Small scale housing with supports, including residential care facilities, shall be permitted as a stand-alone use in the form of a single detached dwelling in accordance with Policies C.3.1.2 c), C.5.1, and Volume 2, A.1.3.1.

3.2.2.2 The existing stock of housing in the rural areas shall be retained wherever possible and kept in a safe and adequate condition through use of the City's Property Standards by-law and incentive programs financed by the City or by senior levels of government. (OPA 26)

3.2.2.3 Where dwellings are demolished without being replaced on the same site or are demolished and moved to another part of an agricultural parcel, the proponent shall be required to rehabilitate the land to the same average soil quality as any adjacent agricultural lands. 3.3 Design Policies (OPA 5)

3.4 Cultural Heritage Resources Policies (OPA 5)

3.4.2 General Cultural Heritage Policies

- 3.4.2.1** The City of Hamilton shall, in partnership with others where appropriate:
- a) Protect and conserve the tangible cultural heritage resources of the City, including archaeological resources, built heritage resources, and cultural heritage landscapes for present and future generations.
 - d) Avoid harmful disruption or disturbance of known archaeological sites or areas of archaeological potential.
 - g) Ensure the conservation and protection of cultural heritage resources in planning and development matters subject to the Planning Act either through appropriate planning and design measures or as conditions of development approvals.
 - h) Conserve the character of areas of cultural heritage significance, including designated heritage conservation districts and cultural heritage landscapes, by encouraging those land uses, development and site alteration activities that protect, maintain and enhance these areas.
 - i) Use all relevant provincial legislation, particularly the provisions of the Ontario Heritage Act, the Planning Act, the Environmental Assessment Act, the Municipal Act, the Niagara Escarpment Planning and Development Act, the Cemeteries Act, the Greenbelt Act, the Places to Grow Act, and all related plans and strategies to appropriately manage, conserve and protect Hamilton's cultural heritage resources.

- 3.4.2.2** The City consists of many diverse districts, communities, and neighbourhoods, each with their own heritage character and form. The City shall recognize and consider these differences when evaluating development proposals to maintain the heritage character of individual areas.

3.4.4 Archaeology Policies

The City shall require the protection, conservation, or mitigation of sites of archaeological value and areas of archaeological potential as provided for under the Planning Act, the Environmental Assessment Act, the Ontario Heritage Act, the Municipal Act, the Cemeteries Act, or any other applicable legislation.

Archaeological Assessment Requirements

- 3.4.4.2** In areas of archaeological potential identified on Appendix F-2 – Rural Archaeological Potential, an archaeological assessment shall be required and submitted prior to or at the time of application submission for the following planning matters under the Planning Act:

- a) official plan amendment or rural settlement plan amendment unless the development proposed in the application in question or other applications on the same property does not involve any site alteration or soil disturbance;
- b) zoning by-law amendments unless the development proposed in the application in question or other applications on the same property does not involve any site alteration or soil disturbance; and,
- c) plans of subdivision.

3.4.4.3 In areas of archaeological potential identified on Appendix F-2 – Rural Archaeological Potential, an archaeological assessment:

- a) may be required and submitted prior to or at the time of application submission for the following planning matters under the Planning Act when they involve soil disturbance or site alteration:
 - i) site plan applications; and,
 - ii) plans of condominium.
- b) may be required for the following planning matters under the Planning Act when they involve soil disturbance or site alteration:
 - i) minor variances; and,
 - ii) consents / severances.
- c) Shall only be required for the lands on which soil will be disturbed or site alteration will be conducted as a direct result of the proposal.

3.4.4.4 Archaeological assessments shall be prepared in accordance with any applicable guidelines and Policy F.3.2.5 – Archaeological Assessments.

3.4.4.5 Prior to site alteration or soil disturbance relating to a Planning Act application, any required archaeological assessment must be approved, in writing by the City, indicating that there are no further archaeological concerns with the property or concurring with the final resource management strategy to be implemented. The City may require a higher standard of conservation, care and protection for archaeological resources based on prevailing conditions and circumstances within the City and the results of any dialogue with First Nations and their interests.

3.4.4.7 To conserve these resources, avoidance and protection in situ shall be the preferred conservation management strategies. Where it has been demonstrated in an archaeological assessment by a licensed archaeologist that avoidance is not a viable option, alternative mitigation measures shall be agreed upon by the Province and the City and in accordance with the Archaeology Management Plan.

- 3.4.4.8** The City may use all relevant provisions of the Planning Act to prohibit the use of land and the placement of buildings and structures in order to protect and conserve sites or areas of significant archaeological resources.

CHAPTER C – CITY WIDE SYSTEMS AND DESIGNATIONS

C.4.0 INTEGRATED TRANSPORTATION NETWORK

4.5 Roads Network

Functional Classification

4.5.2 The road network shall be planned and implemented according to the following functional classifications and right-of-way widths:

- b) Arterial roads, subject to the following policies:
 - i) The primary function of an arterial road in the rural area is to carry relatively high volumes of intra-municipal and inter-regional traffic through the rural area in association with other types of roads.
 - ii) Land accesses shall be permitted but are a secondary consideration to the function of the road.
 - iii) The maximum basic right-of-way width for arterial roads shall generally be 36.567 metres, but in certain circumstances a right-of-way width of 45.720 may be required, unless otherwise specifically described in Schedule C-1 – Future Right-of-Way Dedications (Rural). (OPA 18)
 - iv) Arterial roads in the rural area shall generally be organized in a grid pattern.
 - v) Paved shoulders may be provided to accommodate farm vehicles and equipment, pedestrians, and cyclists.

- c) Collector roads shall be subject to the following policies:
 - i) The function of a collector road in the rural area is equally shared between carrying moderate volumes of intra- municipal and interregional traffic through the rural area and providing direct land access.
 - ii) The maximum basic right-of-way widths for collector roads in the rural area shall be 36 metres, unless otherwise specifically described in Schedule C-1 – Future Right-of-Way Dedications (Rural). (OPA 18)
 - iii) Collector roads in the rural area shall generally be connected with local, collector and arterial roads.
 - iv) Wider lanes or paved shoulders may be in place to accommodate farm vehicles and equipment, pedestrians, and cyclists.

- v) Separate facilities may be in place to accommodate cyclists and pedestrians.
 - vi) Sidewalks may be provided on both sides of the street in Rural Settlement Areas.
- d) Local roads, subject to the following policies:
- i) The primary function of a local road in the rural area is providing direct property access, while the secondary function is to move low volumes of traffic to collector roads.
 - ii) The maximum basic right-of-way widths for local roads in the rural area shall be 36 metres, unless otherwise specifically described in Schedule C-1 – Future Right-of-Way Dedications (Rural). (OPA 18)
 - iii) Local roads shall generally be connected with other local and collector roads.
 - iv) Sidewalks should be provided on one or both sides of the street in Rural Settlement Areas, but cycling facilities are generally not required.
 - v) The minimum right of way width for local road classifications shall be 20.117 metres. Right-of-Way Dedications (OPA 18)

4.5.6 The City may reserve or obtain land for future right-of-way dedications for rights of-way as described in Schedule C-1 – Future Right-of-Way Dedications (Rural). Where a future right-of-way dedication is not described in Schedule C-1 – Future Right-of-Way Dedications (Rural), the City may reserve or obtain land for right of-way dedications for rights-of-way as described in Section C.4.5.2. The aforesaid right-of-way land conveyances may be reserved or obtained through subdivision approval, condominium approval, land severance consent, site plan approval or by gift, bequeathment, purchase or through expropriation where necessary and feasible.

4.5.6.1 The City may require, as a condition of site plan approval, subdivision approval, condominium approval and land severance consent, sufficient lands to be conveyed to provide for a road right-of-way in accordance with the designated widths as set out in Section C.4.5.2 or Schedule C-1 – Future Right-of Way Dedications (Rural).

4.5.6.2 Land conveyances for future right-of-way dedications obtained though land severance or consent shall be taken from both the severed and retained parcels of land unless in the opinion of the City obtaining the land conveyance from both parcels would not be practicable or feasible. 4.5.6.5 Notwithstanding Policies C.4.5.6, C.4.5.6.1, C.4.5.6.3, and C.4.5.7, and in addition to Policies C.4.5.3, the City may waive or accept less lands to be dedicated than the maximum right-of-way dedication and/or daylighting triangle requirements where, in the opinion of the City:

- a) It is determined through a development planning approval process that due to significant adverse impacts on:

- i) existing built form;
- ii) natural heritage features;
- iii) an existing streetscape; and,
- iv) a known cultural heritage resource; it is not feasible or desirable to widen an existing road allowance to the maximum right-of-way dedication or provide the full daylight triangle as set out in Section C.4.5.2, Schedule C-1 – Future Right-of-Way Dedications (Rural), or Section C.4.5.7, and that the City’s objectives for sustainable infrastructure, complete streets and mobility can be achieved; or,
- b) An alternative road width or daylight triangle size has been deemed appropriate through a City initiated environmental assessment, streetscape master plan, area master plan, secondary planning study, or other transportation or planning study approved by Council, and provided it does not affect the safe and planned operation of the roadway. (OPA 12)

4.5.6.6 Where a right-of-way width less than the maximum road allowance or a reduced daylight triangle is established in accordance with Policy C.4.5.6.5, the City may require the establishment of an easement for the installation and maintenance of municipal infrastructure. (OPA 12)

4.5.6.7 Notwithstanding Section C.4.5.6 and C.4.5.7, the City shall interpret the required right-of-way widths detailed in Section C.4.5.2 and Schedule C-1 – Future Right of-Way Dedications (Rural), where applicable to denote only the basic requirement for the section of the road. Additional right-of-ways may be required at intersections to provide for exclusive turning lanes, daylight triangles and other special treatments to accommodate the optimum road/intersection geometric design. There may also be additional requirements for right-of-ways to provide lands for environmental considerations, the construction of bridges, overpasses, earth filled ramps, grade separations, depressed sections of roads, pathways, roundabouts, and traffic control in accordance with Section C.4.5.7. Any such additional right-of-way requirements shall be determined at the time of design of the road facilities and shall become part of the total required right of-way.

Access Management

4.5.8.3 Private access to arterial and collector roads shall be designed to minimize the number of driveways where feasible.

4.5.8.4 New development or redevelopment shall only be permitted on a property that has direct frontage on a publicly assumed road constructed to municipal standards.

C.5.0 INFRASTRUCTURE

C.5.1 Private Water and Wastewater Services

5.1.1 No draft, conditional, or final approval of development proposals shall be granted by the City for any development in Rural Hamilton that could impact existing private services or involves proposed private services until the development proposal has complied with all of the following:

- c) The minimum size for a new lot proposed in an application for a severance, lot addition or draft plan of subdivision with an existing or proposed private water system and/or existing or proposed private sewage disposal system shall:
 - i) be the size required to accommodate the water system and sewage disposal system with acceptable on-site and off-site impacts;
 - ii) shall include sufficient land for a reserve discharge site or leaching bed, as determined by the requirements in Policies C.5.1.1 a) and b); and,
 - iii) not be less than 0.4 hectare (one acre) in size. The maximum lot size shall be in accordance with Policy F.1.14.2.1 f). (OPA 26)
- d) Development of a new land use or a new or replacement building on an existing lot that require(s) water and/or sewage servicing, may only be permitted where it has been determined by the requirements of Policies C.5.1.1 a) and b) that the soils and size of the lot are sufficient to accommodate the water system and sewage disposal system within acceptable levels of on-site or off-site impacts including nitrate impact, and shall include sufficient land for a reserve discharge site or leaching bed. The maximum lot size shall be in accordance with F.1.14.2.1 f). (OPA 26)
- e) The private water supply and sewage disposal systems shall be capable of sustaining the proposed and existing uses within acceptable levels of on-site and off-site water quantity and quality impacts, including nitrate impact;
- f) The existing or proposed wastewater system shall not include a sewage disposal holding tank.
- g) The existing or proposed water supply system shall include a well with sufficient quantity of water and with potable water supply to sustain the use. A cistern system that meets current accepted standards, may, to the satisfaction of the City, be an additional component of the water supply system. (OPA 26)
- h) Notwithstanding Policy C.5.1.1 g), a cistern that meets current accepted standards may be used as a primary water source in the following circumstances: (OPA 18)
 - i) the building of a dwelling on an existing lot in accordance with Policy F.1.12.6, where insufficient water supply is due to the impacts of dewatering for mineral aggregate extraction as demonstrated by a quarry area of influence study, approved by the Province and provided by the proponent.
 - ii) redevelopment of an existing use, on an existing lot, which is serviced by an existing water cistern, provided there is no negative impact of the proposal on the cistern.

- iii) new development on an existing lot if it is demonstrated by an applicant, through the submission of evidence in the form of a well test, hydrogeological study or other, that groundwater quality or quantity is inadequate to support the use, to the satisfaction of the City.
- iv) the severance of an existing dwelling in accordance with Section F.1.14.2, serviced by an existing water cistern, provided there is no negative impact on the cistern.

5.1.3 The landowner shall be responsible for the maintenance and repair of all private water supply and sewage disposal systems in accordance with all applicable legislation.

CHAPTER D – RURAL SYSTEMS, DESIGNATIONS AND RESOURCES

D.5.0 RURAL SETTLEMENT AREAS

The Rural Settlement Area designation on Schedule D – Rural Land Use Designations, designates those areas where a variety of land uses and developments have clustered together on a small scale outside the designated Urban Area. These areas are intended to be residential and service centres that serve the immediate community and the surrounding rural area. Nineteen (19) Rural Settlement Areas have been identified and designated on Schedule D – Rural Land Use Designations. Lands designated Rural Settlement Area shall be subject to Rural Settlement Area general policies and Secondary Plan policies for each Rural Settlement Area set out in Volume 2 of this Plan.

5.1 Other Provisions

5.1.1 Development proposed within a provincial plan area identified on Schedule A – Provincial Plans shall comply with Section C.1.0, Provincial Plans, of this Plan.

CHAPTER F – IMPLEMENTATION

1.2 Rural Settlement Area Plans

Secondary Plans and Rural Settlement Area Plans are used to provide detailed and community specific guidance to growth and change in smaller geographic areas of the City. They identify more detailed land uses densities, design requirements, infrastructure requirements and other implementing actions appropriate for the community. These Plans are not intended to repeat the policies in Volume 1 of this Plan, but to supplement Volume 1 policy directions and land use designations. Once Secondary Plans are completed, they are adopted as amendments to this Plan. Volume 2 of this Plan contains the Secondary Plans and Rural Settlement Area Plans. Rural Settlement Area Plans have been completed for communities outside the Urban Area. Rural Settlement Area Plans have the same function as Secondary Plans in the Urban Area.

1.2.1 Secondary Plans and Rural Settlement Area Plans may be prepared as needed for planning districts, neighbourhoods, nodes, corridors or any other area of the City, and in particular:

- a) Large tracts of vacant or underutilized land to ensure the appropriate and orderly use of land, co-ordinate local development with City-wide planning infrastructure strategies and ensure the efficient provision of infrastructure;

1.2.2 The individual Secondary Plan and Rural Settlement Area Plan policies and designations are contained in Volume 2 of this Plan. Secondary Plan designations shall be identified on the maps appended to the specific Secondary Plan areas. It is intended the Secondary Plan policies are to be read in conjunction with the policies and designations contained in Volume 1. However, should there be a discrepancy between the policies and/or designations, the policies and designations of the Secondary Plan shall prevail.

1.8 Holding By-laws

There are instances where the intended use and zoning is known for lands, but development should not take place until the planned details and phasing of development is determined, and/or facilities are in place or conditions for development are met. Under the Planning Act, Council may pass a "Holding" By-law that places an "H" symbol over the zoning of land and specifies the conditions that shall be met before the "H" symbol is removed and the lands can be developed.

1.8.1 Council may use the Holding "H" symbol in conjunction with the Zoning By-law pursuant to the provisions of the Planning Act to identify the ultimate use of land but to limit or to prevent the ultimate use in order to achieve orderly, phased development and to ensure that servicing and design criteria established in this Plan have been met prior to the removal of the "H" symbol.

1.8.2 A Holding symbol may be applied under any or all of the following circumstances:

- a) Where development is contingent upon other related matters occurring first, such as (but not limited to):
 - i) Completion of required site or area specific studies;
 - ii) Consolidation of land ownership of abutting properties to ensure orderly development and phasing of development;
 - iii) Fulfillment of financial obligations;
 - iv) Securement of funding agreements on necessary infrastructure or services; and
 - v) Fulfillment of conditions imposed by the City through other Planning Act tools;
- b) Where phasing is necessary in order to ensure orderly development and/or achieve one or more objectives of this Plan;
- c) Where municipal infrastructure is not adequate or yet installed to support the ultimate use; and

- d) Where environmental constraints currently preclude development or redevelopment without planned mitigative or remediated measures.

1.8.3 Until such time as the Holding “H” symbol is removed, the By-law may permit interim land uses which may include an existing use or another use that is permitted by the Zoning By-law and does not jeopardize the land for the intended land uses.

1.8.4 Council shall pass a By-law to remove the Holding “H” symbol for all or part of the property only when the City is satisfied all the conditions of:

- a) The “H” zone have been fulfilled; and
- b) The provisions of this Plan are met.

1.14 Division of Land

Development of lands may require further subdivision of existing lots or tracts of land.

1.14.2 Lot Creation (OPA 5)

Lot Creation within Designated Rural Settlement Areas

1.14.2.4 Within designated Rural Settlement Areas all proposed severances that create a new lot and proposed lot additions shall:

- a) comply with the policies of this Plan including a rural settlement area plan where one exists;
- b) be compatible with and not hinder surrounding agricultural operations;
- c) conform to the Zoning By-law;
- d) be permitted only when both severed and retained lots have frontage on a public road;
- e) meet Minimum Distance Separation requirements; and,
- f) meet the requirements of Section C.5.1, Private Water and Wastewater Services, except as permitted in F.1.14.2.7 d). (OPA 18)

VOLUME 2, CHAPTER A – RURAL SETTLEMENT AREA PLANS

A.1.0 GENERAL POLICIES

1.2 General Policies

1.2.2 The following policies apply to all nineteen Rural Settlement Areas identified and designated on Schedule D – Rural Land Use Designations.

1.2.3 The predominant use of land in Rural Settlement Areas shall be single detached residential development. Small scale commercial uses, parks, institutional uses serving the rural

community, such as schools and places of worship, may also be permitted, as set out in the following policies, and Schedules and Maps of Volume 2 this Plan.

1.2.4 Development in Rural Settlement Areas shall proceed in accordance with the specific policies and designations for each Rural Settlement Area and subject to the following conditions:

- a) Within the Rural Settlement Areas, development shall be of a height, density, area and nature to be compatible with the existing built environment;
- b) All development shall be required to obtain approval from the City for servicing. Any development shall be serviced in accordance with Section C.5.1, Sustainable Private Water and Wastewater Services of Volume 1 of this Plan, and in no case shall a proposed new lot be less than one acre; and (OPA 26)
- c) The development shall comply with the Natural Heritage System Policies, Section C.2.0, Volume 1 of this Plan.

1.2.7 Where policies of the Copetown and Greensville Rural Settlement Area Plans conflict with the policies of Volume 2, Section A.1.0, General Policies, the policies of the Rural Settlement Area Plans shall prevail.

1.2.8 To maintain and protect the distinct form and historical character of Rural Settlement Areas designated in this Plan, any application pursuant to the Planning Act or other legislation shall seek to conserve cultural heritage resources, cultural heritage landscapes, areas of archaeological potential, archaeological sites and the overall settlement character.

1.2.9 To conserve the settlement character, construction of new buildings or renovation of existing buildings shall be sympathetic to and consistent with the existing heritage attributes of the Rural Settlement Area, including, but not limited to, consideration of traditional minimum lot sizes and setbacks in accordance with Section C.5.1 of Volume 1, building massing and orientation, and preservation of views, open spaces, and landmarks.

A.3.0 FLAMBOROUGH RURAL SETTLEMENT AREA PLANS

3.5 Greensville Rural Settlement Area Plan

3.5.3 General Development Policies

3.5.3.1 New development in the Greensville Rural Settlement Area Plan Area shall be integrated and compatible with the existing community through the following general policies which apply to all land use designations.

3.5.3.2 The predominant land use of newly developable areas shall be single detached dwellings. Related community facilities such as parks, schools and libraries shall be provided as required on lands designated appropriately.

3.5.3.3 Development shall generally occur through the subdivision process. Infilling of a minor nature may also be permitted through consent.

3.5.3.5 Development shall take place in accordance with Map 8a of this Rural Settlement Area Plan. Regard shall also be had to the other Schedules and relevant policies in other sections of this Plan.

3.5.3.6 New development shall conform to Section C.2, Natural Heritage System policies in Volume 1 of this Plan.

3.5.5 Settlement Residential

Those lands designated Settlement Residential on Map 8a may be permitted to be developed for residential purposes in accordance with the following policies:

3.5.5.1 In order to provide guidelines to determine the extent and density of residential development that can be sustained without degradation of the ground and surface waters within and outside the Rural Settlement Area Plan boundary, a Comprehensive Servicing Study shall be undertaken. The study shall include a comprehensive examination of the quality and quantity of ground and surface water and shall establish future growth of Greensville. The study shall review the existing information available and update that information to meet present day awareness of water resource impacts.

3.5.5.2 The Terms of Reference for such a study shall be developed by the City in consultation with the Ministry of the Environment, the Niagara Escarpment Commission, the Ministry of Natural Resources and the Hamilton Conservation Authority. This does not commit public agencies to funding the study. Funding may come partially or totally from landowners who benefit from the study. In the interim, development shall take place in accordance with Section A.3.5.13, of Volume 2.

3.5.5.3 The predominant form of residential development shall continue to be the single detached dwelling.

3.5.5.4 Residential development in the Rural Settlement Area Plan area shall predominantly take place by registered Plan of Subdivision. Plans of Subdivision shall comply with the land use designations and policies of this Rural Settlement Area Plan. Infilling by the consent process may be permitted where the size and location of a property precludes it from being developed by Plan of Subdivision or in conjunction with another Plan of Subdivision and where it will not interfere with existing or future development.

3.5.5.5 Development of residential areas shall be integrated with parks, open space and school sites. To achieve this integration, consideration shall be given, in the development process, to potential walking and bicycle trails to connect residential areas with parks, open space and schools.

3.5.5.6 The division of land by consent may be considered when it is clear that a Plan of Subdivision is not necessary. When the severance of land by consent is deemed

appropriate, regard shall be had to the other policies of this Rural Settlement Area Plan and Volume 1 of this Plan.

3.5.5.7 New residential development shall be integrated and compatible with the existing residential character. In this respect, when development occurs adjacent to or as infilling in existing areas, the bulk, mass and height shall be similar to that of existing residential uses. In addition, consideration shall be given to the use of increased setbacks, screening and buffering to minimize any adverse impacts on existing development.

3.5.5.11 In accordance with appropriate provincial regulations and guidelines, distance separations and/or warning clauses and any other measures identified in the reports may be required through the subdivision or consent approval process.

3.5.11 Transportation

3.5.11.4 Arterial roads, such as Brock Road provide access to provincial highways and other parts of the City. Direct access for residential lots onto arterial roads will be discouraged. The City shall give consideration to reverse frontage lots and joint accesses in development plans. The minimum right-of-way for arterial roads shall be 32 metres (105 feet).

3.5.11.5 Municipal roads consist of collector roads and local streets.

- a) Collector roads gather the traffic from residential areas and distribute it to the provincial and arterial roads. Collector roads may be constructed in the Rural Settlement Area Plan area at locations shown on Schedule B.16-2 of the former Town of Flamborough Official Plan. Minor alterations to these roads shall not require an amendment to this Plan. The City shall endeavour to secure a minimum right-of-way width of 26 metres (86 feet) for collector roads.
- b) Local streets provide access to individual residential lots. The location of local streets shall be determined as Plans of Subdivision are approved. The minimum right-of-way shall be 20 metres (66 feet). Of particular importance to the phasing of development in the Rural Settlement Area Plan area shall be the provision of adequate access points of local roads to both arterial and collector roads.

3.5.12 Storm Water Management

3.5.12.1 It is the intent of this Rural Settlement Area Plan that existing storm water drainage systems continue to serve the Rural Settlement Area Plan area and that a master storm water drainage study be completed. A master storm water drainage study can become part of the comprehensive servicing study.

3.5.12.2 The City shall give consideration to the impact the proposed development may have on the existing storm drainage systems, on existing or other proposed development up or down stream, and the effects of peak flows on major watercourses and

ecological systems. The master storm water drainage study shall have regard to the possible impacts upon Spencer Creek, which contains a significant warm-water fishery. Methods described in the drainage study shall ensure that the Department of Fisheries and Oceans objective of no net loss of fish habitat shall be applied.

- 3.5.12.3** A master storm water drainage plan shall be completed for the Rural Settlement Area Plan area by an independent engineer and approved by the City. Alternatively, storm water drainage plans may be prepared for the Major Development Areas shown on Map 8b in consultation with the Ministry of Natural Resources.
- 3.5.12.4** Storm water drainage shall be provided in accordance with the conclusions of the master storm water drainage study or alternative storm water drainage plans. New development, prior to the preparation of a master drainage plan, will be required to have site specific storm water management plan including details of water quality and peak flows. In any event, storm water management works for all development will be subject to approval pursuant to the Ontario Water Resources Act.
- 3.5.12.5** Channelization and drainage work required shall be the financial responsibility of the affected landowner. Any proposed work must be submitted for approval under the Lakes and Rivers Improvement Act of the Ministry of Natural Resources.
- 3.5.12.6** A limited amount of development may be considered on a site specific basis prior to the completion of a storm water management plan, provided that such development is incorporated into the storm water management plan when it is completed.

3.5.13 Servicing

- 3.5.13.1** It is the intent of this Rural Settlement Area Plan that development of the Rural Settlement Area Plan area be based on private or communal water and private sewage disposal systems, and with Municipal solid waste collection.
- 3.5.13.2** Development in the Rural Settlement Area Plan area may occur on the basis of private water supply or a communal water system, approved by the City.
- 3.5.13.3** Development shall take place on private sewage disposal systems.
- 3.5.13.4** Residential development, by Plan of Subdivision or by consent to sever, shall be based upon a professional hydrogeologic and soils study, prepared and reported to the satisfaction of the Province, the City, and the Niagara Escarpment Commission. Such a hydrogeologic study shall include, but not necessarily be limited to, the percolation rate and grain size distribution of the soil, the amount of overburden to the depth of at least seven feet, the depth of the water table if less than 10 feet, and an impact assessment of the proposed subdivision or consent on the local water resources. The assessment must consider both on-site and off-site impacts related to the quantity and quality of water. All development shall be permitted only in accordance with the results of the study and on lots capable of accommodating a Class 4 (septic tank and tile bed) or Class 6 (aerobic) septic system including and area equal to the original tile bed area which is left free of development or hard

surfaces to provide for a replacement tile bed in the event of failure to the original system, as determined by the City. Residential development is subject to conformity with policies in Sections A.3.5.12.5 to A.3.5.12.9 inclusive, and A.3.5.13, Volume 2 of this Plan.

- 3.5.13.5** The purpose of the study outlined in Section A.3.5.12.4 Volume 2 is to ensure that an adequate supply of potable water is available to service the proposed development, and that there will be no unacceptable adverse effect on the quality and quantity of ground and surface waters as a result of the proposed development. In this regard, test wells shall be established and these wells along with existing wells shall be monitored for a period of two years after 10 out of the 12 units are occupied, (or a shorter period as determined by the Ministry of the Environment and the City).
- 3.5.13.6** A monitoring program for test wells and existing wells as determined by the Province shall include, but not necessarily be limited to existing conditions before construction, conditions during the construction process as specified in the subdivision agreement and for a period of two years after 10 out of 12 of the units are occupied, (or for a shorter period as determined by the Province and the City).
- 3.5.13.7** If the monitoring program of the wells reveals detrimental impacts on the water supply in the surrounding area, mitigation measures to minimize such impacts will be proposed by the developer. The mechanisms for implementing the mitigation measures will be identified and carried out to the satisfaction of the City, the Province, and the Niagara Escarpment Commission. The monitoring program shall include, where deemed necessary by the Province, the impacts of development on the quality of down gradient streams and waterbodies.
- 3.5.13.8** The carrying out of the monitoring program work shall be the responsibility of property owners/developers.
- 3.5.13.9** The City shall encourage electrical, telephone, cable and gas servicing to be placed underground.
- 3.5.13.10** Consideration shall be given to the effects of the installation of utilities, roads and services on buildings, sites and areas of historical, architectural, scenic or archaeological importance prior to the approval of such installation.

3.5.16 Implementation

- 3.5.16.3** Map 8a and Map 8b of this Secondary Plan, and B.16-2 of the former Town of Flamborough Official Plan, constitute part of the Rural Settlement Area Plan and must be read in conjunction with the textual policies.

3.5.17 Interpretation and Boundaries

- 3.5.17.1** The boundaries separating land use designations on Map 8a are approximate except where they coincide with roads, water courses or other clearly identifiable features.

Minor adjustments to these boundaries shall not require an amendment to the Rural Settlement Area Plan where the general intent of the Plan is upheld. Similarly, all figures used in the text are approximate and no amendment shall be needed for minor variances from these figures.”

4.9 Town of Flamborough Zoning By-Law 90-145-Z:

The subject property falls within the jurisdiction of the former Town of Flamborough Zoning By-Law 90-145-Z.

The site is currently zoned ‘R2-14-H’, **Settlement Residential Exception 14** within Zoning By-Law 90-145-Z, and is subject to a historic **Holding Provision** which restricts development on the property until specified conditions are met (**Appendix ‘N’**).

Applicable excerpts from Zoning By-Law 90-145-Z, as amended, give context to the planning permissions currently affecting the subject property.

Applicable excerpts from the City of Hamilton Zoning By-law are as follows:

“Section 4 – Zones

4.5 HOLDING ZONES (H)

Notwithstanding any other provisions of this By-law, where the zone symbol on Schedules A-1 to A-48 inclusive has the suffix (H), no lot shall be used or no building or structure shall be erected, located or used therein except for the following purposes until the suffix (H) has been removed from the zone symbol by a by-law passed pursuant to Sections 34 and 35(4) of the Planning Act, R.S.O. 1983, Chapter 1, as amended from time to time:

- (a) Existing Uses; and,
- (b) General provisions in accordance with the provisions of Section 5 hereof.

4.6 EXCEPTION TO THE ZONE PROVISIONS

Where a symbol on Schedules A-1 to A-48 inclusive is followed by a dash and a number (for example R1-7), the lot, buildings and structures shall be subject to all the regulations of the zone except as otherwise provided by the regulations specified in an exception number to that zone.

4.8 MINIMUM DISTANCE SEPARATION FORMULAE #07-112

That all development within the City of Hamilton be subject to the Minimum Distance Separation (MDS) formulae as established by the Ministry of Agriculture, Food and Rural Affairs, as amended from time to time.

Section 5 – General Provisions

5.14 LOT AREA AND FRONTAGE REQUIREMENTS

All lots without either municipal water service or sanitary sewers or both shall be subject to the requirements of the Regional Department of Health Services for the minimum lot area, provided that if the requirements of the Regional Department of Health Services are less than the requirements of this By-law, this By-law shall prevail.

5.17 MINIMUM DISTANCE SEPARATION

The following setbacks shall apply to any agricultural use and any adjacent use:

- (a) no dwelling unit, recreational use or institutional use shall be established or enlarged adjacent to a lot containing any buildings or structures used for livestock, excluding a dwelling unit on the same lot as the livestock use, except in accordance with the requirements of the Minimum Distance Separation Formula One included in Appendix A attached to this By-law; and,
- (b) no building or structure used or intended to be used for the raising of livestock shall be established or enlarged on a lot except in accordance with the requirements of the Minimum Distance Separation Formula Two included in Appendix A attached to this By-law.

5.21 PARKING REGULATIONS

5.21.1 Parking Space Requirements

The owner of any building, structure or use shall provide and maintain parking spaces on the same lot and within the same zone, in accordance with the following:

Type of Use:

Residential

- (a) Single detached, Semi-detached, Duplex, Triplex and Converted dwellings Street Townhouses and farm related residences

Minimum Number of Parking Spaces Required:

1 parking space per dwelling unit

SECTION 7 – Settlement Residential Zone R2

No person shall use any lot or erect, alter or use any building or structure within any Settlement Residential Zone - R2 except in accordance with the following provisions or as otherwise specified in the provisions of Subsection 7.3.

7.1 PERMITTED USES

- (a) Single Detached Dwelling

7.2 ZONE PROVISIONS

- (a) Lot Area (minimum).....2000 square metres (0.2 ha)
- (b) Lot Frontage (minimum)30 metres
- (c) Height (maximum)11 metres
- (d) Lot Coverage (maximum)**20%**
- (e) Front Yard (minimum)7.5 metres
- (f) Rear Yard (minimum)10 metres
- (g) Interior Side Yard (minimum)1.8 metres
- (h) Exterior Side Yard (minimum).....7.5 metres
- (i) Landscaped Open Space (minimum).....No Minimum
- (j) General Provisions - in accordance with the provisions of Section 5 hereof.

7.3 EXCEPTION NUMBERS

7.3.9 **R2-9 (See Schedule Numbers A-37 and A-43)**

Permitted Uses:

- (a) Subsection 7.1 shall apply.

ZONE PROVISIONS

- (c) Height (maximum)11 metres
- (d) Lot Coverage (maximum)**10%**
- (e) Front Yard (minimum)7.5 metres
- (f) Rear Yard (minimum)10 metres
- (g) Interior Side Yard (minimum)3 metres
- (h) Exterior Side Yard (minimum).....7.5 metres
- (i) Landscaped Open Space (minimum).....No Minimum
- (j) General Provisions - in accordance with the provisions of Section 5 hereof.

7.3.14 **R2-14 (See Schedule Numbers A-36, A-37 and A-43) #19-079 (H Removal)**

Permitted Uses:

- (a) Subsection 7.1 shall apply.

Zone Provisions:

- (a) Lot Area (minimum).....8000 square metres (0.8 ha)
- (b) Lot Frontage (minimum).....35 metres
- (c) All other zone provisions of Subsection 7.3.9 shall apply.”

5.0 PLANNING JUSTIFICATION:

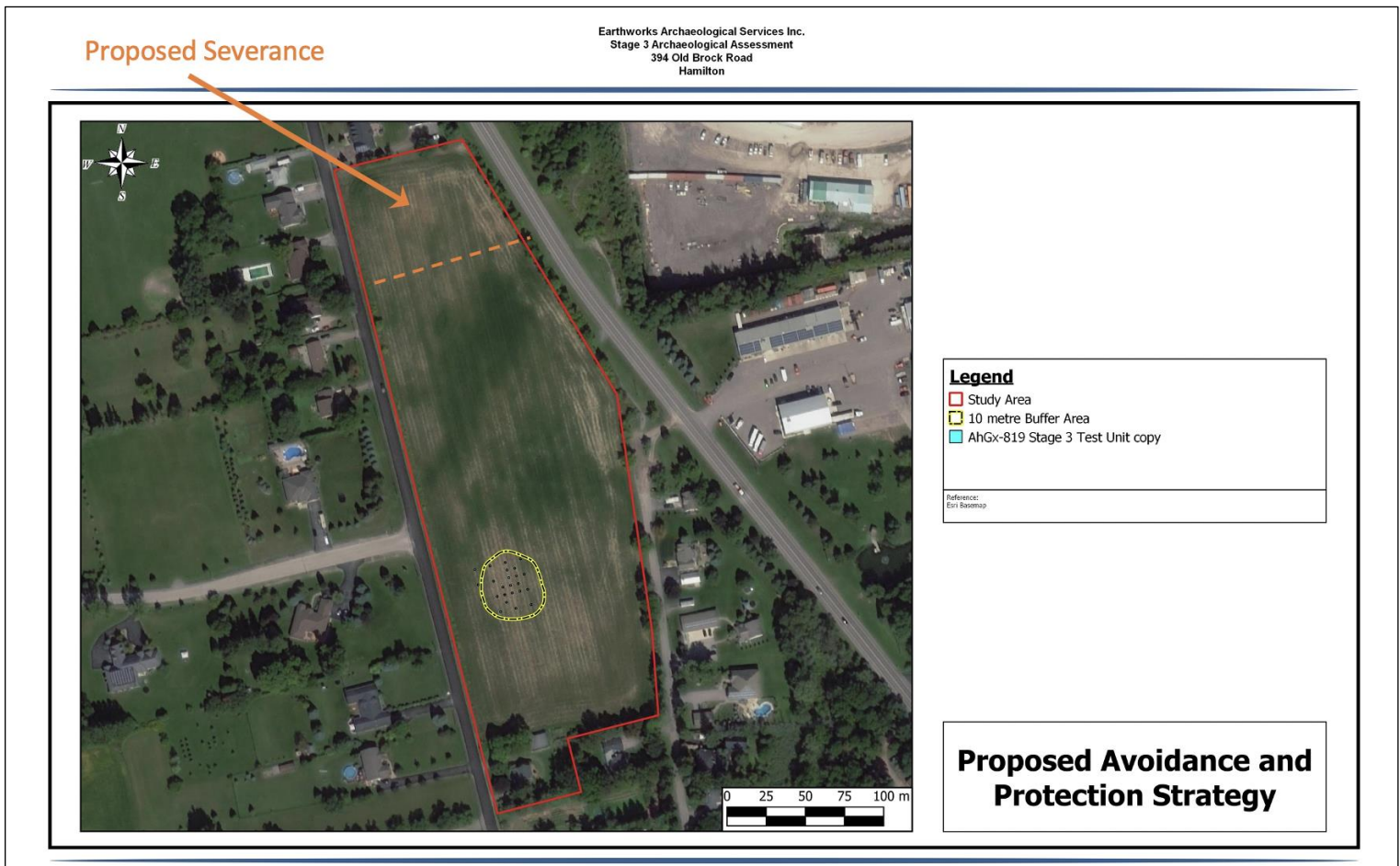
5.1 Site Suitability:

The subject property is located within the Greensville Rural Settlement Area, which is intended by the City of Hamilton to be an area of focus for residential infill/intensification. It is also designated ‘Settlement Residential’ and ‘Major Development Area A’ within the Greensville Secondary Plan.

The subject property is ideally located with access to Old Brock Road and has a generally flat topography. The property contains no natural heritage features and limited mature trees (at its boundary). This surrounding rural hamlet community predominantly features large rural residential lots with single-detached homes similar to the lot proposed through this consent / minor variance application.

The current overall property contains an identified Cultural Heritage site near the central south side of the property, as noted in the Stage 3 Archaeological Assessment by Earthworks Archaeological Services Inc. Since the proposed severance is at the extreme north side of the property, there is no conflict with this avoidance area, and this area will be identified with construction fencing for extra security.

Figure 9: Archeological Avoidance Area – to be fenced (with construction fencing)



5.2 Provincial Policy Statement (PPS) (2020):

The community of Greensville is made up of a mix of older agricultural remnant parcels, rural residential development, and newer urban type residential subdivisions. The subject property and many of the surrounding agricultural parcels are designated as settlement residential and located within the settlement boundary. This is important as the development of the remaining agricultural remnant parcels within the settlement area boundary are not designated agricultural, and therefore are permitted to be developed and shall be the focus of growth and development (1.1.3.1).

The principal severances (i.e. infill/intensification) within settlement areas will encourage long-term economic prosperity (1.7.1), the wise use of the available land resource to meet dynamic market-based needs within the housing supply (1.7.1 (b)), and increase the supply of housing options.

As such, the proposed development is consistent with the objectives of the Provincial Policy Statement.

5.3 Growth Plan for the Greater Golden Horseshoe (2019):

According to the policies of the Growth Plan, the subject property is defined as being within the 'Greenbelt Plan Area', however, the lands have also been identified by the City of Hamilton as a Rural Settlement Area (Greensville), and as such are available for development. Residential intensification within the Greensville Settlement Area will contribute to the City of Hamilton's intensification target of 50% of all development occurring within a delineated built-up area (**2.2.2.1(a)**), and in turn will lessen the housing pressure on non-settlement areas for new development.

As such, the proposed development conforms with the objectives of the Growth Plan for the Greater Golden Horseshoe.

5.4 Greenbelt Plan (2017):

According to the policies of the Greenbelt Plan, the subject property is technically defined as being within the 'Protected Countryside', however, the lands have also been identified by the City of Hamilton as a Rural Settlement Area (Greensville). Given the policies of the Growth Plan and the City's Rural Official Plan (under Section 3.4.4 of the Greenbelt Plan), the subject lands are available for development. Settlement Areas within the protected countryside are to be the focus of growth and development which sustain the character of the rural landscape (**1.2.2.4**).

As such, the proposed development conforms with the policies of the Greenbelt Plan.

5.5 City of Hamilton Official Plan (2013):

The subject property is designated '**Rural Settlement Area**' within the Rural Hamilton Official Plan. Rural Settlement Areas are delineated by a settlement area boundary which separates agricultural and non-agricultural uses (**B.2.1.b**). The proposed severance complies with the policies of the rural settlement area plan and meets the requirements for provision of private water and wastewater services (**C.5.1 & F.1.14.2.4**).

As designated within the Greensville Rural Settlement Area Plan (**V.2 3.5.3**), the proposed severance application is for the creation of one (1) new single detached residential lot (**V.2 3.5.3.2**). Since the proposed consent is for the creation of one (1) new development lot, the application can be considered minor in nature and permitted through the policies of the settlement area plan (**V.2 3.5.3.3**) which is the predominant land use.

Within the Greensville Settlement Area, the supply of potable water is continuously monitored through the development application process. Edmond & Associates (P.Eng) has reviewed the existing on-site water supply, as well as neighbouring well records, and has established sufficient potable water quality and quantity. The water availability is more than sufficient to meet the needs of one (1) new single-detached residential home, as per the guidelines (**V.2 3.5.5.1**). The proposed development of a single-detached residential home on the lot created through the proposed consent application will be serviced through on-site septic design (**V.2 3.5.13.3**). An evaluation of private septic services for the potential consent was also carried out by Edmond & Associates (P.Eng) and it was determined that the area is suitable for accommodating a private septic system (**V.2 3.5.13.4**) on the proposed lot area.

The subject property is within an area recognized as having a ‘high potential’ for the existence of archeological resources. As such, a complete assessment of the subject lands was carried out by Earthworks Archeological Services, according to the standards of the official plan (**B.3.4.4**). As previously noted, the proposed severance has been proven not to have any impact on the site’s archeological avoidance area, and the identified area (away from the severance site), will be fenced with highly visible construction fencing for extra security.

The proposed severance requires access via Old Brock Road which is considered a local roadway (**4.5.2 d**) and is an appropriate selection (**V.2 3.5.11.5 b**) given the other two roadways abutting the subject lands are considered collector roads which limit private access (**4.5.2 c**).

As outlined by municipal staff, a right-of-way dedication is required and is proposed as part of this severance application along two road frontages abutting the subject property, as well as a one-foot reserve along Brock Road. The ultimate right-of-way as identified by municipal staff is 20.117 metres for both Moxley Road and Old Brock Road, and the one-foot reserve will be located along the Brock Road frontage.

As such, the proposed development conforms with the policies of the City of Hamilton Rural Official Plan.

5.6 Former City of Flamborough Zoning By-Law 90-145-Z:

The proposed severance application will create one new single-detached rural residential lot within the rural community of Greensville. The proposed minor variance will be applicable to the proposed severed lands, while the retained lands will maintain the current zoning designation of ‘Settlement Residential’ (R2-14). In addition, a minor increase to the maximum lot coverage is also proposed to allow a variety of single-detached built forms that include on-site septic and well construction (that are included within the lot coverage calculation). All other provisions of the Settlement Residential (R2-14 zoning) can be met as demonstrated in Table 1 below.

Table 1: Site Statistics and Requested Variances

R2-14 Zone	Required	Severed	Retained
Minimum Lot Area**	8000 m ²	7,415.57 m ²	39,400.0 m ²
Minimum Lot Frontage	35.0 m	79.5 m	344.0 m
Maximum Height	11.0 m	11.0 m	11.0 m
Maximum Lot Coverage	10.0%	20.0%**	10.0%
Minimum Front Yard	7.5 m	12.0 m	10.32 m
Minimum Rear Yard	10.0 m	52.92 m	29.91 m
Minimum Interior Side Yard	1.8 m	16.55 m & 21.33 m	17.94 m
Minimum Exterior Side Yard	7.5 m	N/A	N/A
Landscape Open Space	No Minimum Required	N/A	N/A
Accessory Building			

Maximum Lot Coverage	5%	4.51%	N/A
Maximum Building Height	4.6 m	4.6 m	N/A
Minimum Interior Side Yard	>1 m	7.44 m	35.04 m
Minimum Rear Yard	>1 m	29.55 m	15.81 m

**As per R2-14 zone provisions

**It should be noted that the actual proposed lot coverage for the severed lands is 13.2%, but because the building on the severed property is conceptual, the applicant is requesting 20% lot coverage for the severed lands.

NOTE: Since the subject property currently has a historic ‘Holding Provision’ on it as previously discussed, it is understood that as a condition of approval, the Holding Provision will technically need to be removed.

6.0 Four Tests of a Minor Variance

Section 45(1) of the Planning Act states that the Committee of Adjustment may authorize variances from the provisions of the Zoning By-Law provided that the four tests are met. This section provides an analysis that evaluates the proposal’s required variances within the context of the four tests as follows:

1. Do the requested variances maintain the general intent and purpose of the Official Plan?

The City of Hamilton Official Plan recognizes the need for intensification and infill development mandated by the Growth Plan provincial policy, as well as its own rationalized consideration of its municipal future (**Section 5.7 of this report**). As such, the City’s Official Plan generally permits new development such as the proposed single-detached residential lot. Furthermore the Greensville Secondary Plan anticipates appropriate residential development in this area (and on these subject lands), and therefore it is the Author’s opinion that the proposed minor variance meets the general intent of the Official Plan policies.

2. Do the requested variances maintain the general intent and purpose of the Zoning By-Law?

The City of Hamilton (Flamborough) Zoning By-Law is designed in a manner that generally supports intensification and redevelopment within prescribed areas/zones. Given the development constraints of the subject property (required on-site septic and well design), feasible development of the proposed lot will require slight variation from the prescribed zoning provisions for lot coverage. In addition, a minor reduction in lot area is proposed to respect a more compact lotting design resulting from recent septic design innovations, while reserving the retained lands for future development potential (*not currently contemplated under this application*). The reduced lot area is also supported by City Staff through their Formal Consultation comments.

All provisions of the R2-14 Zone can be met thorough the proposed design with the exception of the proposed minor variances (**Table 1**). As such, the proposed minor variance for reduced lot area and increased lot coverage will see the site developed with one single-detached residential use. Finally, the current Holding Provision is a technical matter that is easily resolved as a condition of severance or minor variance approval.

As such, in the Author's opinion, the proposed minor variance(s) met the general intent of the City's Zoning By-Law No. 90-145-Z, as amended.

3. *Are the requested variances desirable and appropriate for the lands?*

The requested minor variance(s) will facilitate the development of one (1) new infill development rural lot that is in character with the surrounding lot sizes, maintains an existing density of the area, and promotes the compatible development of the Greensville settlement area.

As such, in the Author's opinion, the proposed minor variance is both appropriate and desirable.

4. *Are the requested variances minor in nature?*

The proposed development is seeking to create a (1) single new residential rural lot for one (1) single-detached dwelling. The proposed lot and associated dwelling will maintain the character, density, and intent of the Greensville Secondary Plan Area, while also utilizing currently non-developed lands within the settlement area.

As such, in the Author's opinion, the proposed minor variance is minor in nature.

7.0 Severance Justification

The proposed severance will result in the creation of one new lot (and one retained lot) in a location that has proven to be capable to being privately serviced, is appropriately sized (Section C.5.1, 5.1.1C, iii – City Official Plan), and suitable for limited new low-density development. The proposed redevelopment of the lot will be compatible with the surrounding neighbourhood, building sizes, and local streetscape as well as the prevailing built form and block patterns of Old Brock Road. As such, the proposed severance is aligned with the consent regulations of the Planning Act, and generally conforms with the Provincial, Regional, and Local planning policies.

8.0 CONCLUSION

It is the Author's professional planning opinion as a Registered Professional Planner, that given the respective policies, surrounding conditions, including the current Official Plan, Secondary Plan, and Zoning designations on the subject property, the proposed consent application and minor variance(s) are considered to be of '**Good Planning**', that is in the public interest, is consistent with the Provincial Policy Statement, the Growth Plan for the Greater Golden Horseshoe, conforms with City of Hamilton Official Plan and maintains and complements the character of the surrounding Greensville Settlement Area.

Furthermore, given the City's expectation for residential development on these lands, and the proposal for one (1) single new lot on private services with access to an existing improved roadway, the severance application is not considered premature.

As such, the proposed consent and minor variance(s) applications should be approved.

Given the analysis presented in this Justification Report, there is enough merit to support the two (2) variances, that meet the four tests, as well as appropriate support for the proposed severance for the single new rural lot.

I hereby certify that this Planning Justification Report was prepared and reviewed by Registered Professional Planner (RPP), within the meaning of the Canadian Institute of Planners and the *Ontario Professional Planners Institute Act, 1994*.

Prepared by:



Victoria Colantonio, BURPI

Planner/Development Coordinator

Urban in Mind, Professional Urban Planning, Land Development & CPTED Consultants

Reviewed by:



Terrance Glover, RPP, CPT

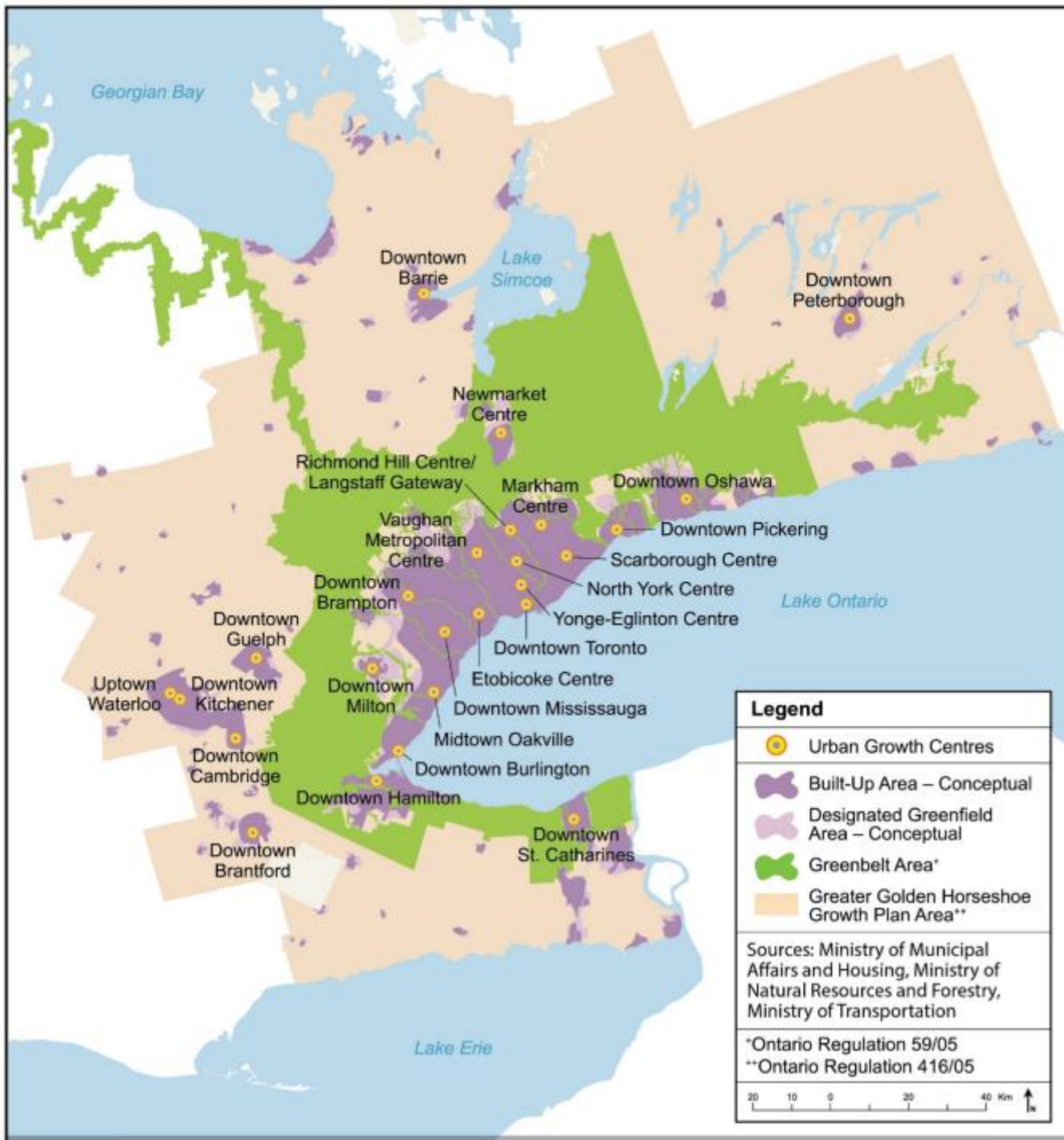
Principal

Urban in Mind, Professional Urban Planning, Land Development & CPTED Consultants

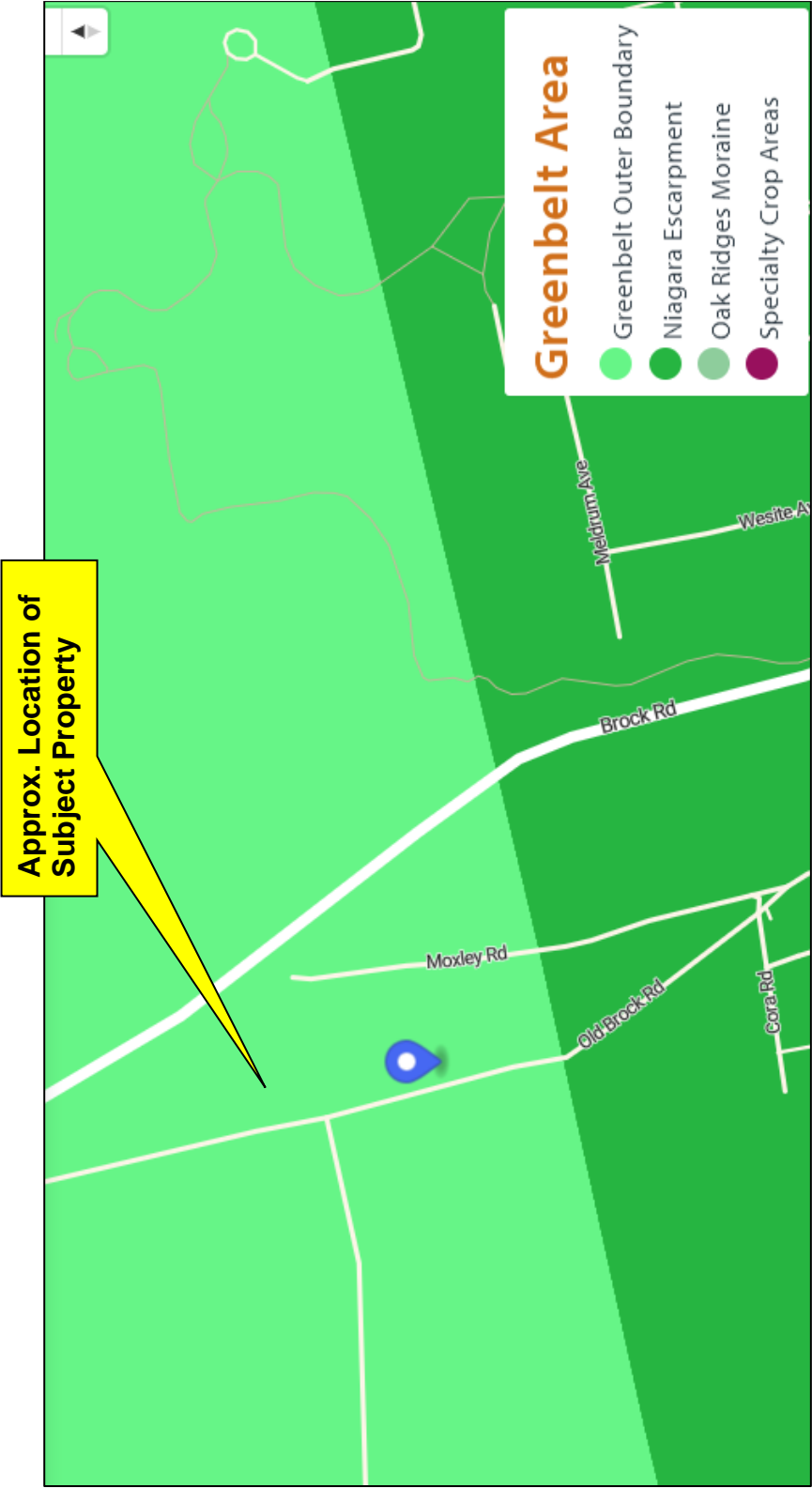


Appendix 'B':

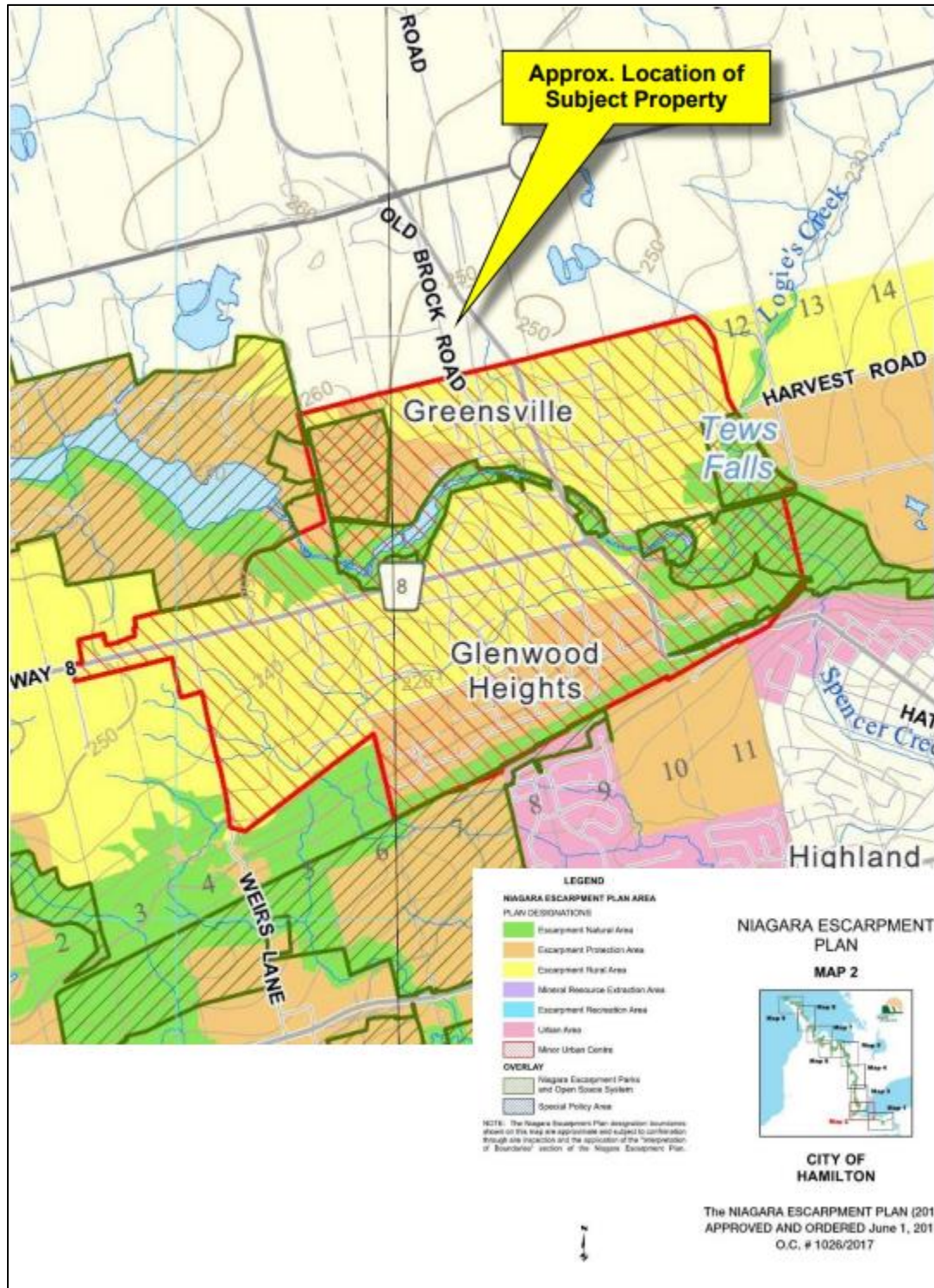
(Growth Plan for the Greater Golden Horseshoe – Schedule 4 – Urban Growth Centres)



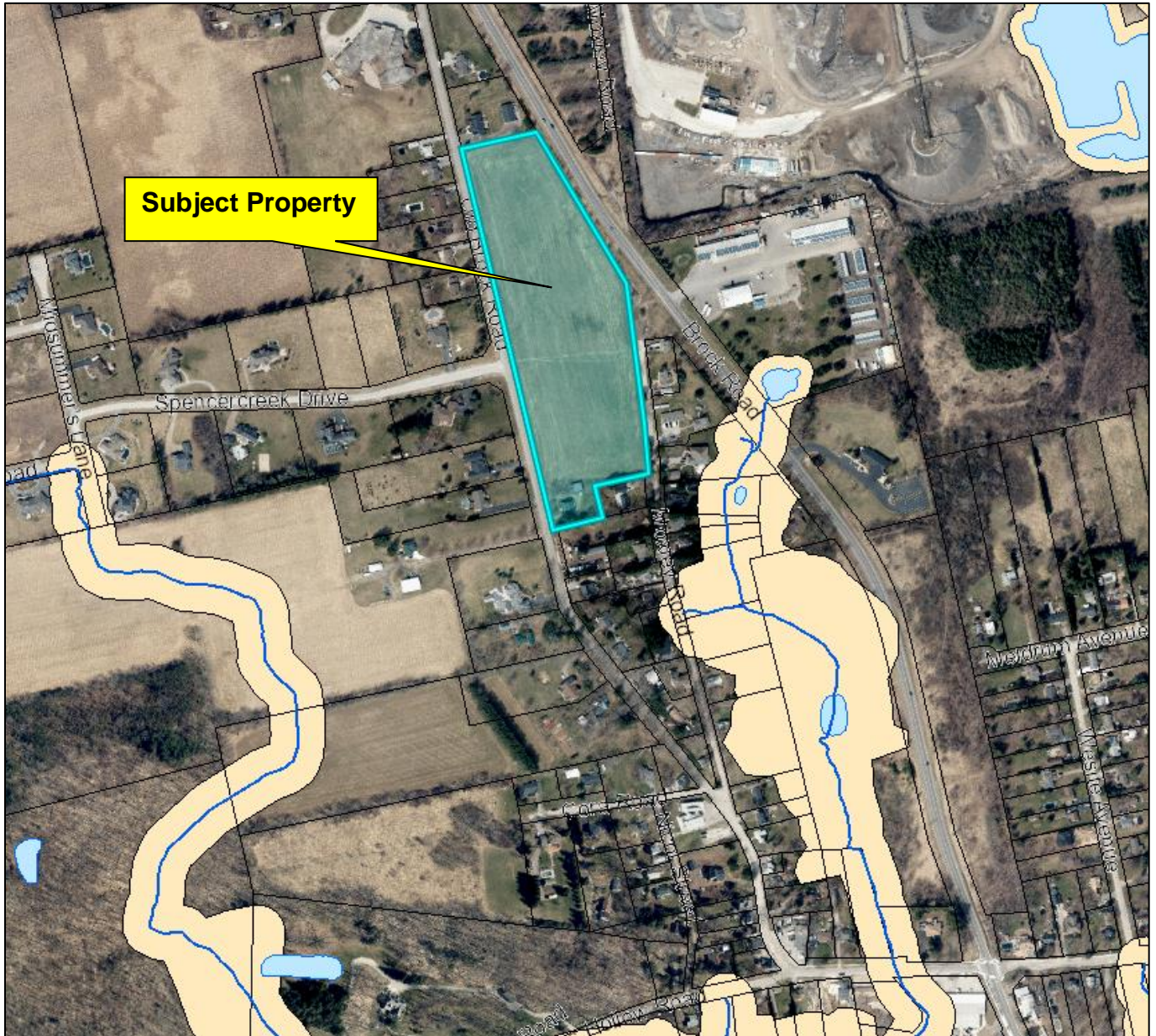
**Appendix 'C':
(Greenbelt Plan – Greenbelt Plan Area)**



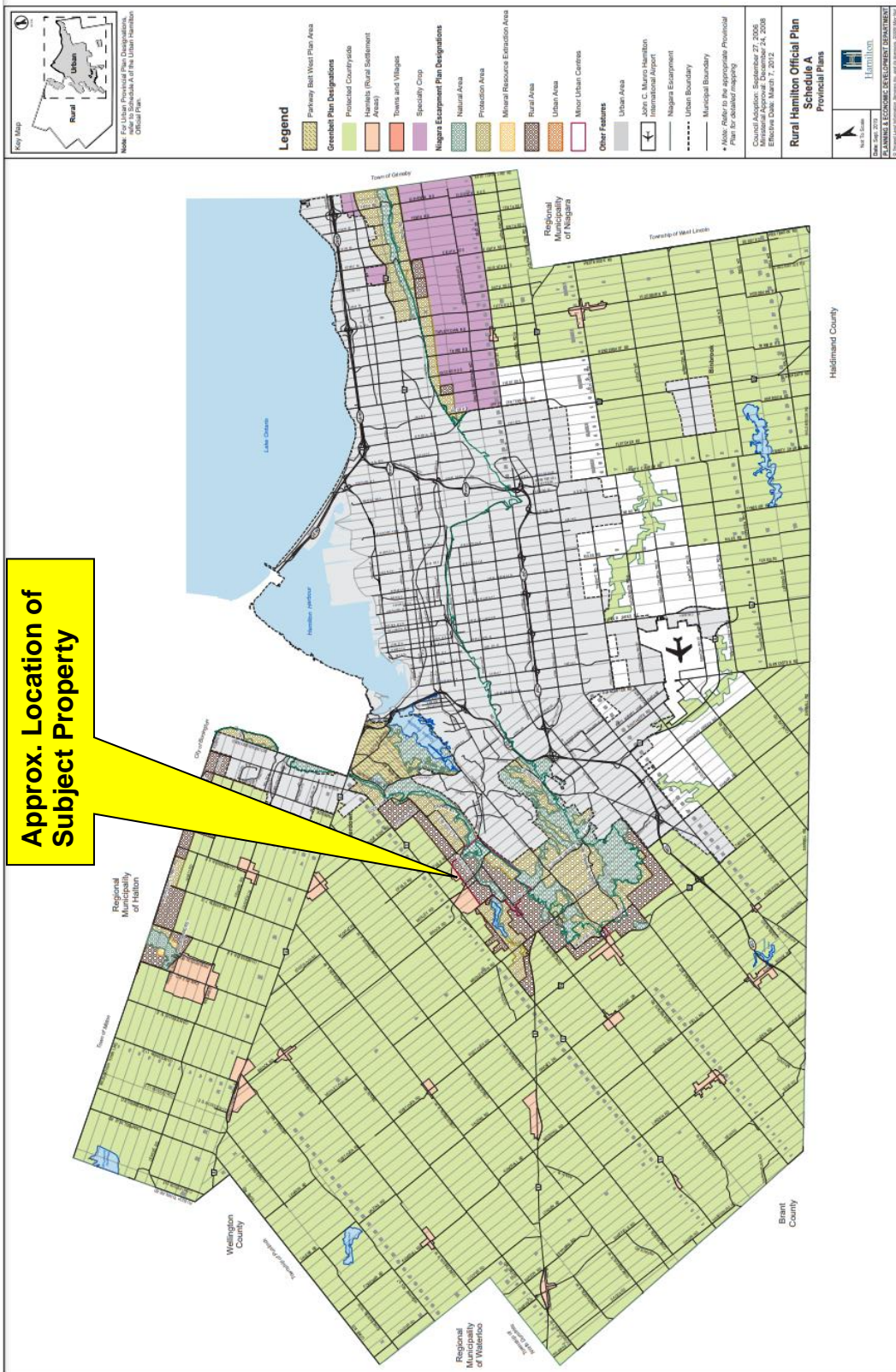
Appendix 'D':
(Niagara Escarpment Plan – Development Control Area)



**Appendix 'E':
(Hamilton Conservation Authority – Regulated Area)**

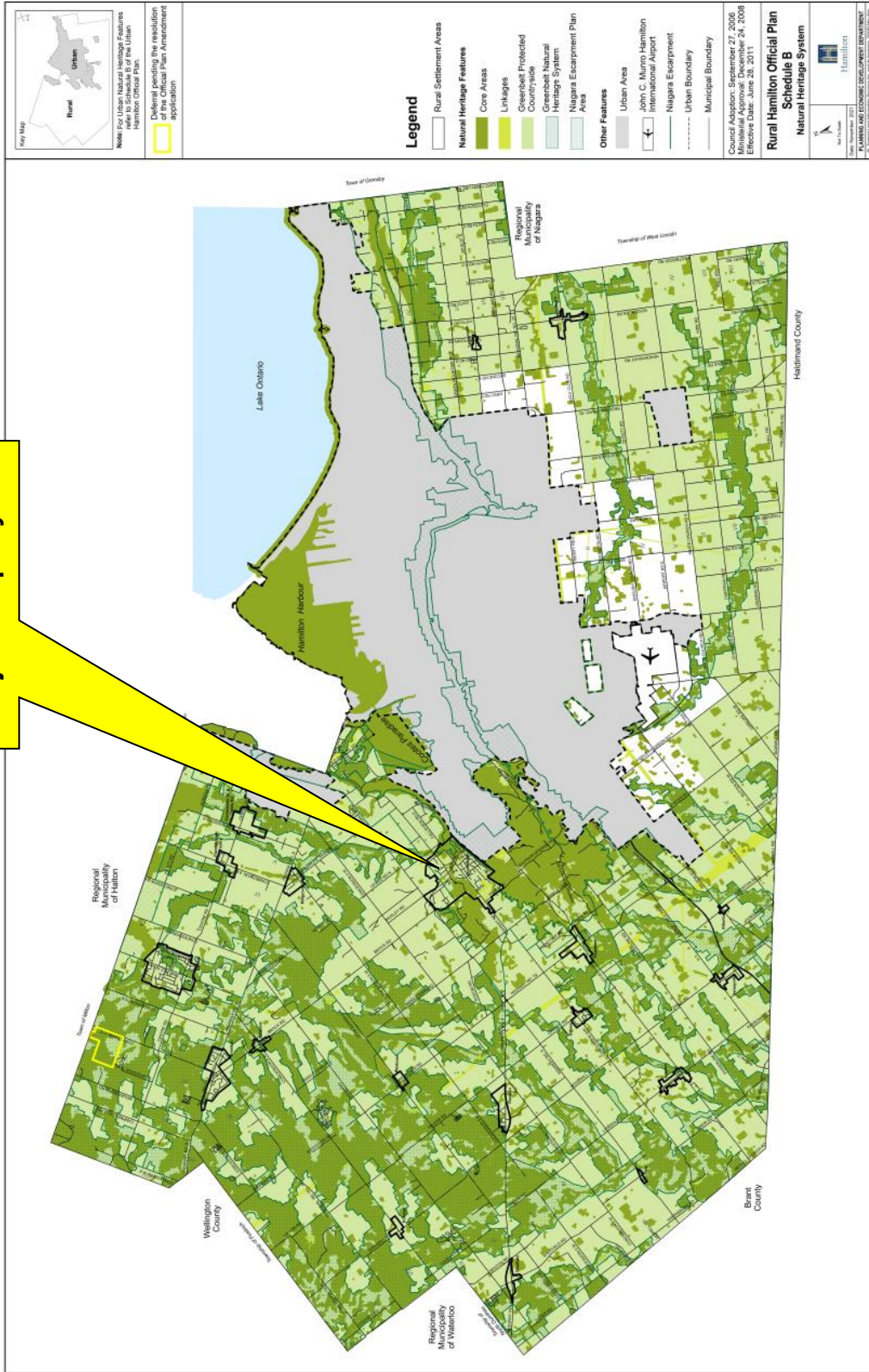


Appendix 'F': (City of Hamilton Rural Official Plan – Schedule A)



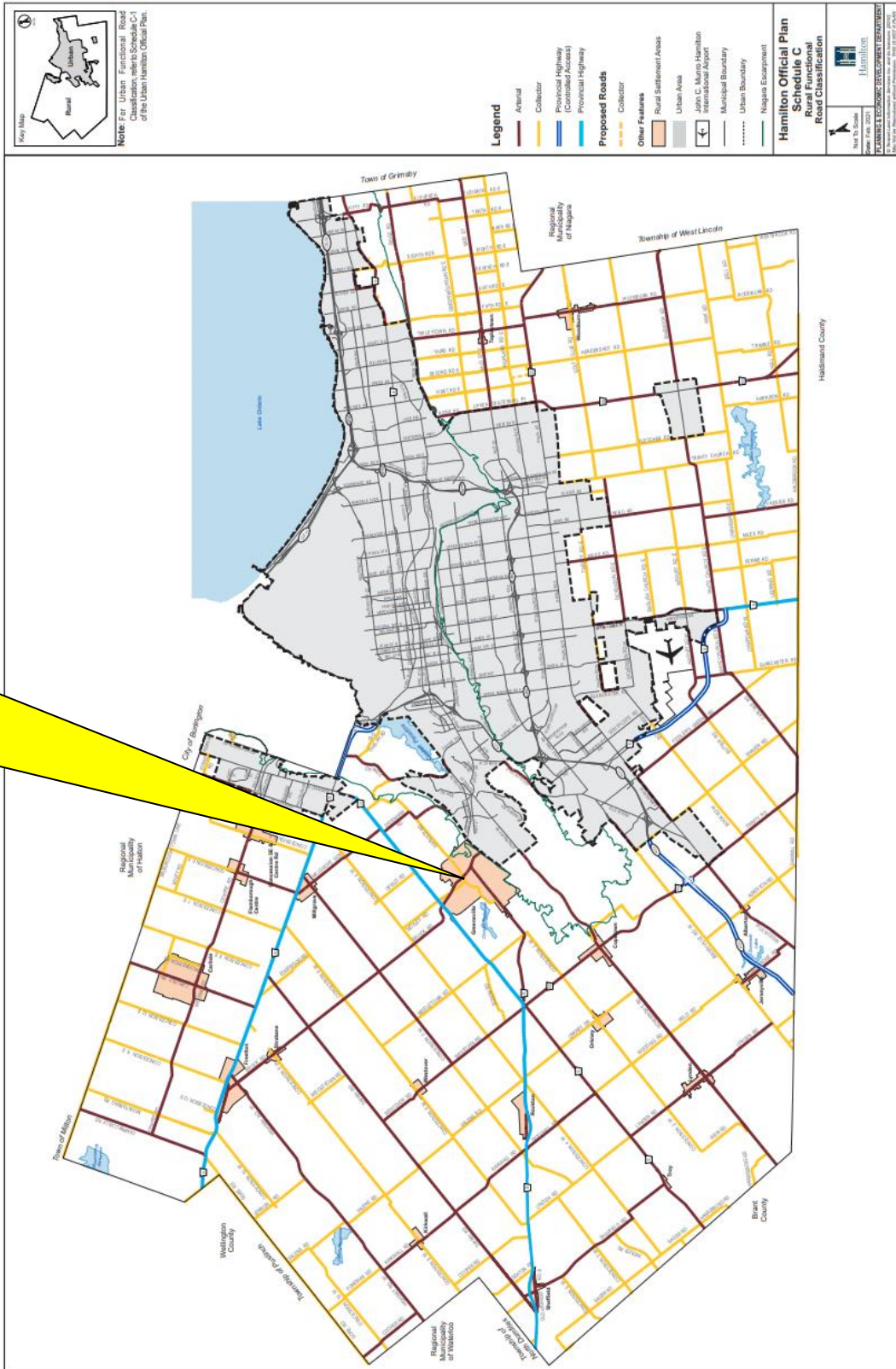
Appendix 'G': (City of Hamilton Rural Official Plan – Schedule B)

Approx. Location of Subject Property



Appendix 'H': (City of Hamilton Rural Official Plan – Schedule C)

Approx. Location of Subject Property

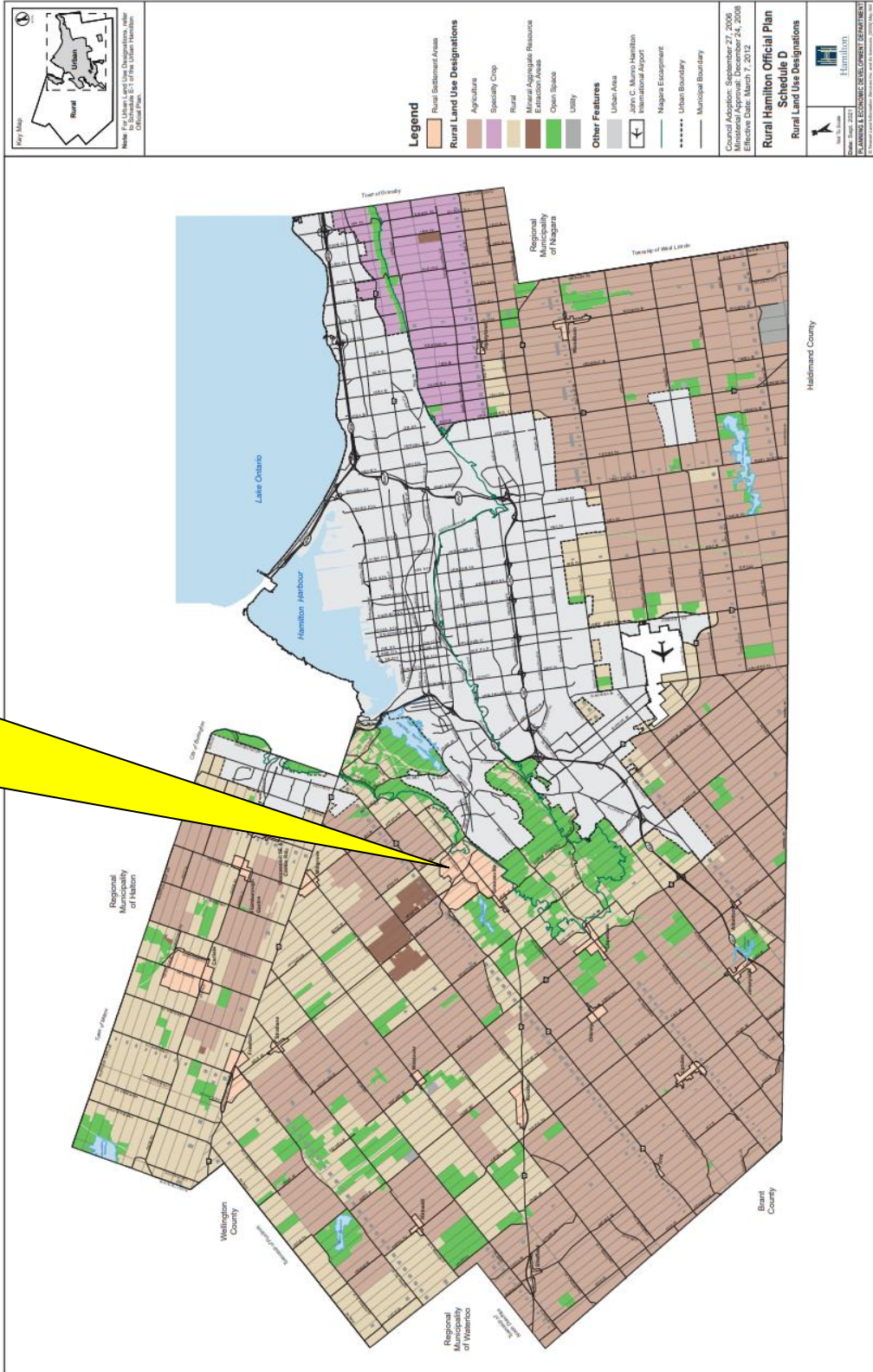


Appendix 'I':
(City of Hamilton Rural Official Plan – Schedule C-1)

Road	From	To	Future Right-of-Way Width (metres)
2nd Con. Road W.	West of Weir Road	South Dumfries Boundary	20.117
Ainsley Road	5th Con Road W.	Lynden Road	20.117
Airport Road	Butter Road	Glancaster Road	30.480
Airport Road West	Glancaster Road	Highway 6	26.213
Alderson Road	Carlisle Road	Remaining Length	20.117
Barton Street	Urban boundary	Fifty Road	36.576
Binbrook Road	Trinity Church Road	Fletcher Road	30.480
Blackheath Road	Highway # 56	Haldibrook Road	26.213
Blagden Road	Progreston Road	Remaining Length	20.117
Brock Road	South of Harvest Road	Highway 8	26.213
Brock Road	North of Harvest Road	Highway 5	30.480
	Highway 5	Freelton Road	26.213
Butter Road	Airport Road	Fiddlers Green	26.213
Campbellville Road	Highway 6	Milborough Line	26.213
Carlisle Road	Highway 6	Milborough Line	26.213
Carluke Road	Glancaster Road	Sawmill Road	30.480
Centre Road	Parkside Drive	305 m North of Carlisle Road	36.576
	305 m North of Carlisle Road	Campbellville Road	30.480
Collinson Road	Highway 5	Highway 5	20.117
Cooper Road	Highway 8	8th Con. Road W.	20.117
Cooper Road	Regional Road 97	Gore Road	30.480
Cora Road	Old Brock Road	Remaining Length	20.117
Crooks Hollow Road	Old Brock Road	Highway 8	20.117
Dickenson Road East	Nebo Road	Upper James Street	36.576
Eleventh Con E	Freelton Road	Highway 6	26.213
Eleventh Road East	Ridge Road	Mud Street	26.213
Evans Road	Parkside Drive	Dundas Street	26.213
Fifty Road	Urban boundary	Ridge Road	26.213
Fletcher Road	Kirk Road West	Binbrook Road	26.213

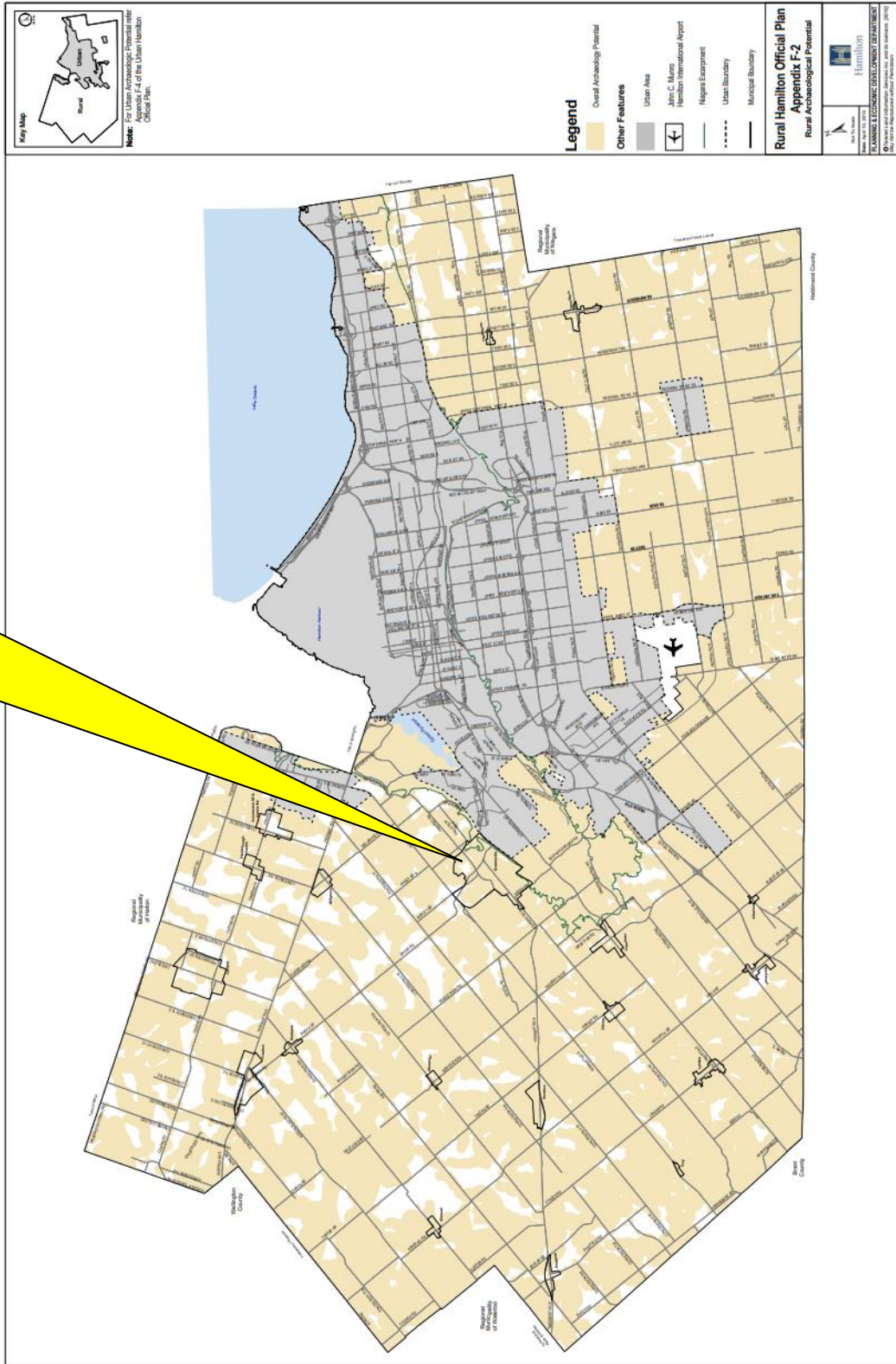
Appendix 'J': (City of Hamilton Rural Official Plan – Schedule D)

Approx. Location of Subject Property

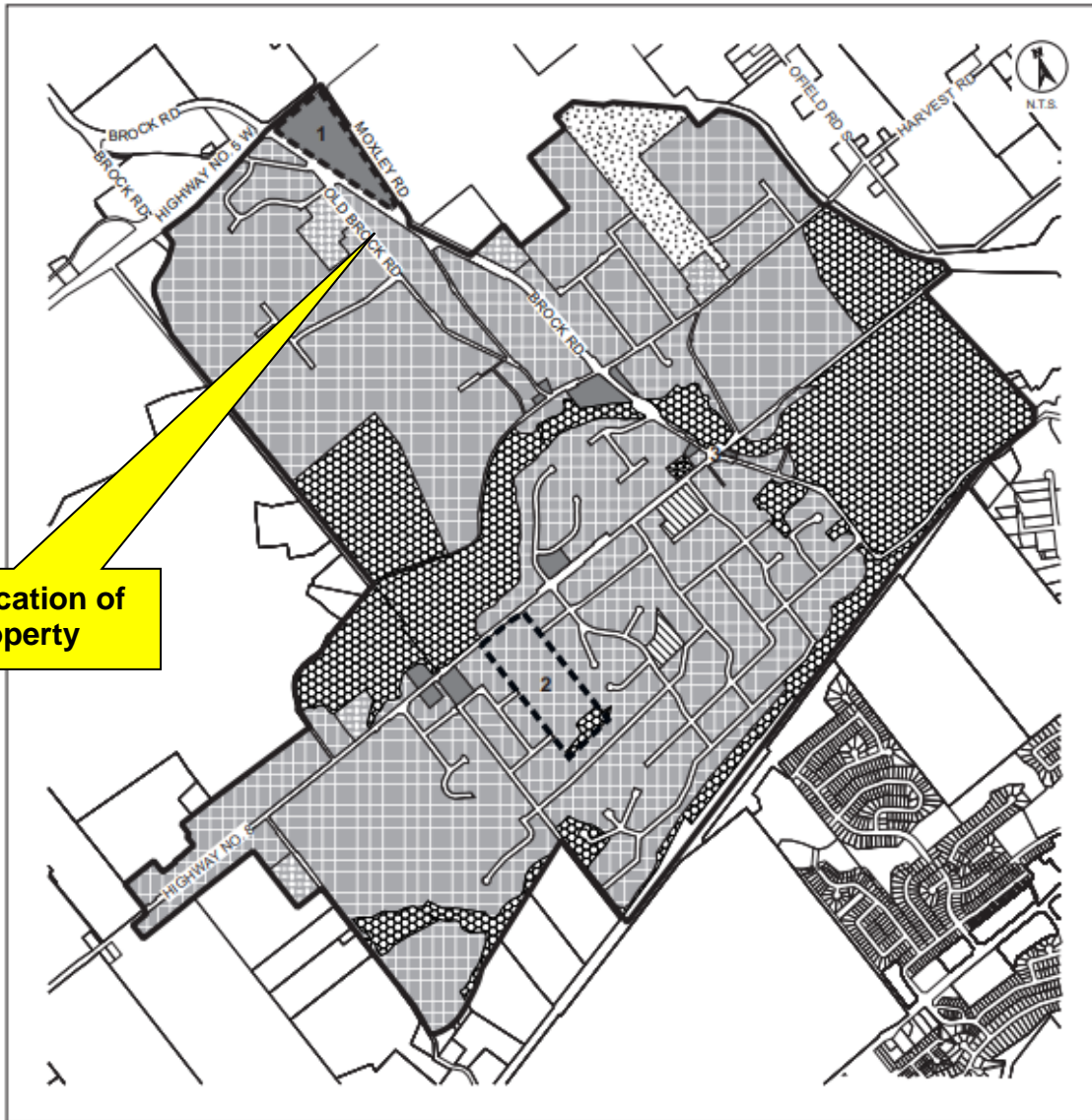


Appendix 'K': (City of Hamilton Rural Official Plan – Appendix F-2)

Approx. Location of
Subject Property



**Appendix 'L':
(Greenville Rural Settlement Area Plan – Volume 2: Map 8a)**



**Approx. Location of
Subject Property**

Legend

- Settlement Area Boundary
- Site Specific Area

LAND USE DESIGNATIONS

- Settlement Residential
- Settlement Commercial
- Settlement Institutional

Open Space and Parks Designations

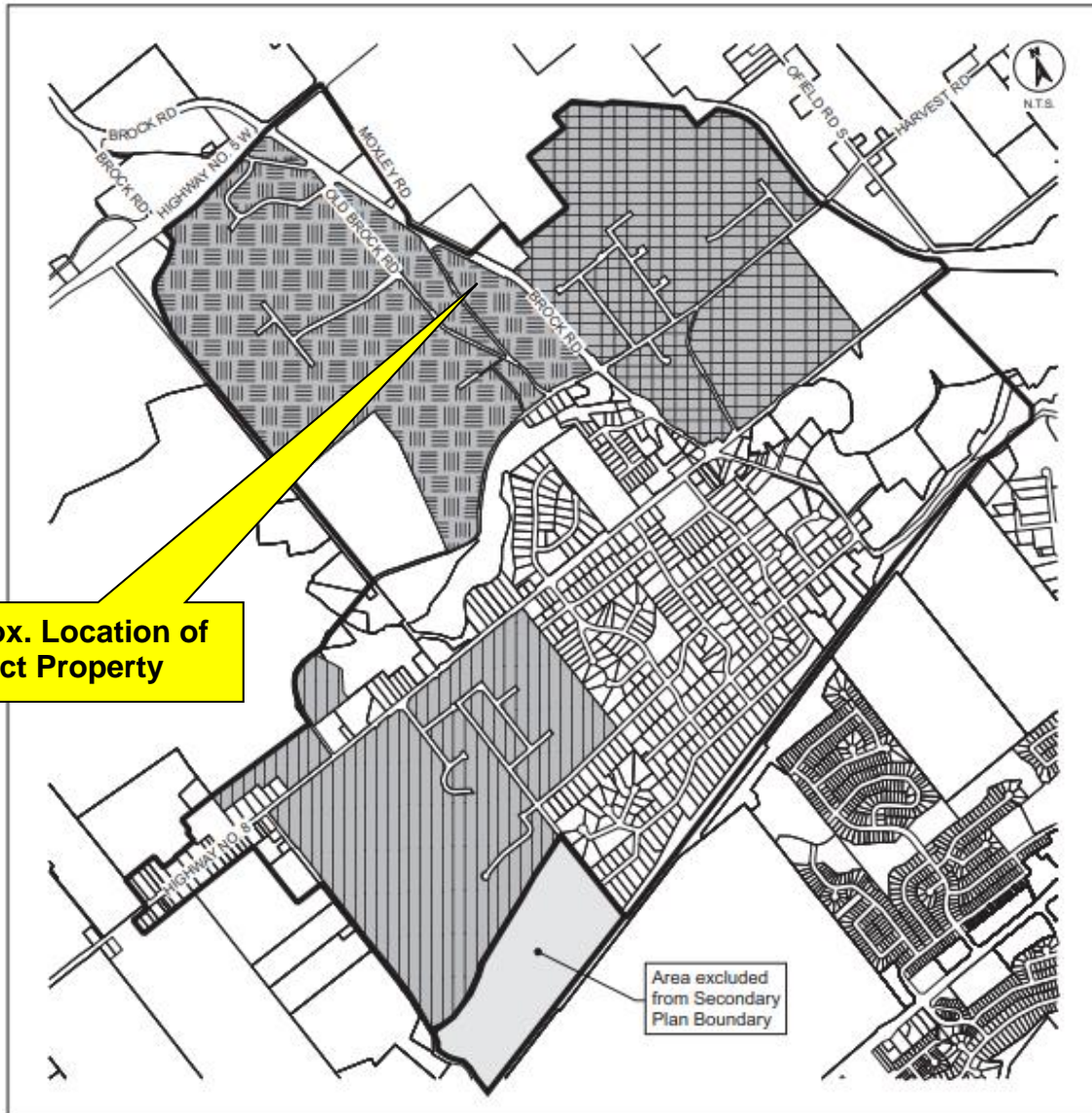
- Community Park
- General Open Space
- Natural Open Space (Hazard Lands)
- Neighbourhood Park

**Volume 2: Map 8a
Greenville Rural Settlement Area Plan
Rural Hamilton Official Plan**

Council Adoption: September 27, 2006
Ministerial Approval: December 24, 2008
Effective Date: November 2021



**Appendix 'M':
(Greenville Rural Settlement Area Plan – Volume 2: Map 8b)**



Approx. Location of Subject Property

**Volume 2: Map 8b
Greenville Major Development Areas
Rural Settlement Area Plan**

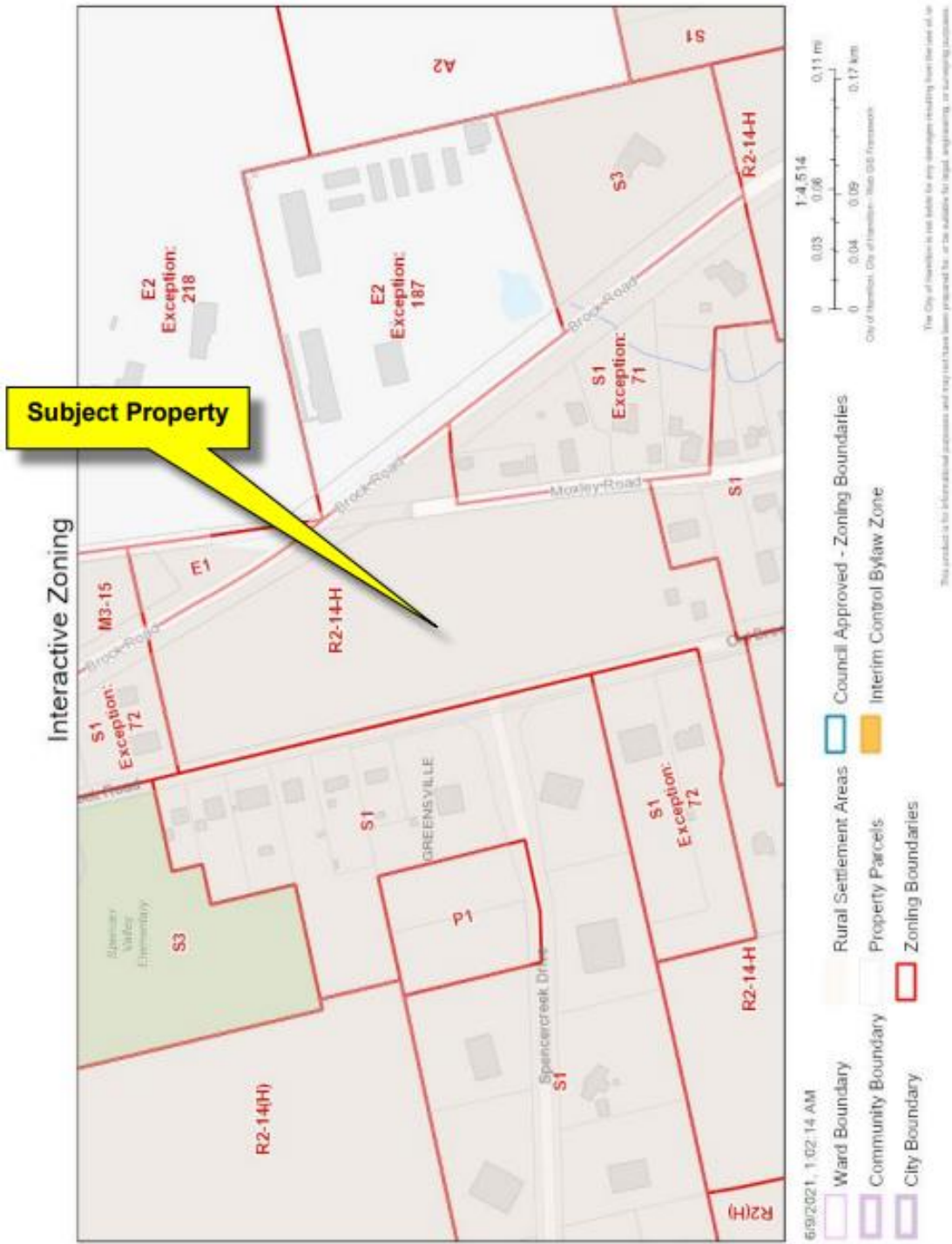
- Legend:**
- Settlement Area Boundary
 - Site Specific Area 1
 - Area Excluded from Secondary Plan Boundary
 - Major Development Area A
 - Major Development Area B
 - Major Development Area C

Rural Hamilton Official Plan
Council Adoption: September 27, 2006
Ministerial Approval: December 24, 2008
Effective Date: March 7, 2012



Note: This map is unchanged from Schedule B.16-3 of the former Town of Flamborough Official Plan.

Appendix 'N': (Former Town of Flamborough Zoning By Law – Interactive Map)





Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Groundwater Studies
Geochemistry
Phase I / II
Regional Flow Studies
Contaminant Investigations
OMB Hearings
Water Quality Sampling
Monitoring
Groundwater Protection
Studies
Groundwater Modelling
Groundwater Mapping

Our File: 2317

March 12, 2024

Tracy Kowalchuk
394 Old Brock Road
Greensville, Ontario

Dear Tracy:

**Re: Hydrogeology Report
394 Old Brock Road, City of Hamilton**

We are pleased to submit this additional supporting documentation for the severance of 394 Old Brock Road in the City of Hamilton. We have attached documentation from Monica Lee from April 27, 2023 based on a previous report submitted for this site (Appendix A). This report is an update and confirms the following;

- a) As indicated by Monica Lee as having acceptance from the City of Hamilton, the owners are proposing to sever a 1.83 acre parcel of land (0.7406 hectares).
- b) A new well has been drilled at the site and has been tested for water quality and quantity.

In order to complete this report we conducted the following assessments;

- 1) Nitrate Analysis for Minimum Lot Size Planning
- 2) Review of Physical Setting
- 3) Pumping test and water quality test at 394 Old Brock Road new water well TAG A382320 drilled on December 15, 2023.

1.0 Background Information

Figures 1 through 4 show the lands to be severed and the remaining lands.

The local topography of the area is shown on Figure 5. The site is relatively flat and has an elevation ranging from approximately 252 m AMSL at Old Brock Road to 249 m AMSL at Brock Road to the east.



The floor of the nearby quarry east of the site has an elevation of 236 m AMSL and southeast of the site, the land surface is steeply incised by a tributary of Spencer Creek. Spencer Creek is found at an elevation of approximately 210 m AMSL.

Although the site is in the northeastern extremity of the Norfolk Sand Plain, the physiographic feature at the site is a Till Moraine (Figure 6). The quaternary geology is mapped as lacustrine sand (Figure 7).

The bedrock is identified as the Guelph Formation, underlain by the Lockport formation (Figure 8).

1.1 Local Water Supply

The water supply in this area is mainly derived from the limestone aquifer. Well yields in local wells are reported to range from 11.4 L/min to 38 L/min. Table 1 provides details on water well records located within 500 metres of the proposed lands to be severed. Table 2 provides the stratigraphy of water well records located within 500 metres of the proposed lands to be severed. The well locations are shown on Figure 9.

The local water supply is exclusively obtained from the bedrock aquifer. For the water well records that are available, here are the details of the immediate neighbour's wells.

Table 3: Summary of Nearby Well Information

Address	Record Number	Details	Available Water in the Well (m)
431 Old Brock Road	6805890	Total depth of 12.1 metres. Bedrock at 8.2 metres	6.4
423 Old Brock Road	6805943	Total Depth of 20.4 metres, bedrock at 7.3 metres.	13.4
417 Old Brock Road	6808333	Total depth of 13.4 metres. Rock at 6.1 metres	7.3`
430 Old Brock Road		Total Depth of 25 metres	14

The bedrock is the only aquifer in this area. In general wells are drilled to a shallow depth.

2.0 Installation of Water Well at 394 Old Brock Road

On December 15, 2023 a water well with TAG A382320 was completed by WRC Purifying Ltd. on the proposed lands to be severed at 394 Old Brock Road. The well location is shown on Figure 4 and the well record is provided in Appendix B.



The well was drilled to a depth of 27.74 metres obtaining water from the limestone aquifer. Top of bedrock occurs at 5.49 metres. The overburden from ground surface to 5.49 metres is described on the well record as clay.

The well installation consists of a 152mm inside diameter steel casing from 0.88 metres above ground surface to 6.10 metres below ground surface. From 6.10 metres to 27.74 metres it is a 152mm diameter open hole.

The initial pumping test completed by the drillers found that at a pumping rate of 1.58 L/s (25 US gallons per minute) the water level fell by only 2.4 metres.

2.1 Pumping Test for Quantity 394 Old Brock Road

On February 8, 2024 Harden Environmental Services Ltd. conducted a six hour pumping test on water well A382320. Initial measurements are shown in Table 4.

Table 4: Measurements Obtained February 8, 2024 Well A382320

Static Water Level	18.19 mbct (17.07 mbgs)
Stick-up	0.88 m
Easting (NAD83 Zone 17)	581411
Northing (NAD83 Zone 17)	4793281
Pumping Rate	18 Liters Per Minute
Test Duration	6 hours
Total Drawdown	0.35 metres

Permission was not granted to monitor water levels in the nearest private well at 430 Old Brock Road. However, given the very modest total drawdown of 0.35 metres, there is no possibility of off-site impact to any private well as seen by the availability of water shown for the nearby wells in Table 3.

The pumping rate was set at 18 liters per minute (LPM) using a graduated pail and stopwatch to measure the yield. Pumping of the well occurred from 9:29:30am to 3:29:30pm with the yield being checked on an hourly basis.

The pumping drawdown curve and recovery is shown on Figure 10. A total of 6,480 liters were removed from the well. Total drawdown was 0.35 metres. The well achieved 50% water level recovery thirty seconds after pump stoppage and is capable of providing enough water for domestic purposes.

2.2 Water Quality Testing 394 Old Brock Road

A water sample was obtained February 8, 2024 from well A382320 after 5.5 hours of pumping at 18 LPM. The sample bottles were labelled "W1".



Required parameters included those shown in Appendix C on all parameters in Tables 1, 2, 4 and for Radiological Parameters only Gross Alpha and Gross Beta.

Water quality results are provided in Appendix C. All parameters tested were below the Ontario Drinking Water Standards Maximum Acceptable Concentration (MAC) with the exception of those listed below.

Total Coliforms	Result was 1 CFU/100mL	MAC is 0 CFU/100mL
Total Sodium*	Result was 338 mg/L	MAC is 20 mg/L

**The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L, so that this information may be passed on to local physicians. The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. Sodium is not toxic. (Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, June 2003, Revised June 2006)*

All parameters tested were below the Ontario Drinking Water Standards Aesthetic Objectives (AO) and Operational Guidelines (OG) with the exception of those listed below.

Total Dissolved Solids	Result was 1110 mg/L	AO is 500 mg/L
Chloride	Result was 441 mg/L	AO is 250 mg/L
Hardness (as CaCO ₃)	Result was 408 mg/L	OG is 80-100 mg/L

A reverse osmosis water treatment unit is recommended for the drinking water tap in the proposed residence.

3.0 Public Works Department: Source Protection Planning

Our evaluation of the rate of infiltration is as follows;

Desktop Infiltration Rate Estimation

A desktop study found that the infiltration rate used by the Tier 2 groundwater model for the area around 394 Old Brock Road was between 0.100 and 0.150 metres per year. This infiltration rate was assigned by the Tier 2 study for the Till Moraine physiographic region.

The Infiltration Factor found in the MOEE Hydrogeological Technical Information Requirements for Land Development Applications (April 1995) is calculated to be 0.5 based on Flat Land (0.3) plus Tight Soils (0.1) plus Cultivated Lands (0.1). The precipitation for the site is estimated to be 860 mm/year (Environment Canada, climatic normal for Millgrove, Ontario, 1981-2010).



A Thornthwaite and Mather water budget (Table 5, following the text) has been prepared for climate normal data obtained for the Millgrove site for the period 1981 to 2010. The total amount of annual precipitation is 860 mm/year. The Potential Evapotranspiration is estimated to be 606 mm/year and the Actual Evapotranspiration is estimated to be 568 mm/year based on a 100 mm holding capacity of the soil.

Given these values, the potential infiltration is estimated to be 146 mm/year.

3.1 Nitrate Impact Assessment

Using the rate of infiltration of 146 mm/year, a maximum lot size of 0.74 hectares is required to meet the maximum concentration of 10 mg/L of nitrate at the property boundary (Table 6). Only dilution from infiltration on the entire lot and effluent volume is used in the calculation.

Table 6: Minimum Lot Size with Nitrate Concentration of 40 mg/L in Effluent

Parameter	Value	Units
Area	0.74	Hectares
Infiltration Rate	0.146	m/year
Effluent Volume	1,000	L/day
Nitrate Concentration	40	mg/L
Total Infiltration	1,080,400	L/year
Total Effluent	365,000	L/year
Total Nitrogen Loading	14,600,000	mg/Year
Final Nitrate Concentration	10	mg/L

4.0 Summary

- 1) There is sufficient water quantity for a single-family dwelling on the proposed severance.
- 2) The water quality meets Ontario Drinking Water Quality Standards maximum acceptable concentrations with the exception of total coliforms and sodium. Aesthetic Objectives and Operational Guidelines are exceeded for chloride, hardness and total dissolved solids.

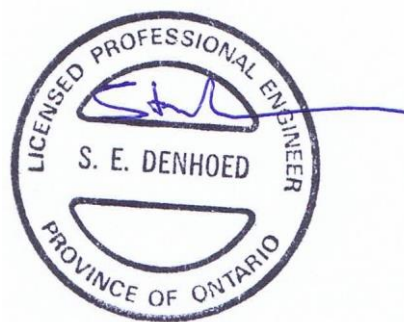


- 3) The nitrate concentration based on calculation methodology in *The City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services* will be less than 10 mg/L at the downgradient property boundary for a minimum lot size of 0.74 hectares.
- 4) Reverse osmosis treatment of drinking water is recommended to remove the sodium and chloride from the well water. We recommend shock chlorination of the well following pump installation to eliminate the coliform bacteria.

Sincerely,
Harden Environmental Services Ltd.

A handwritten signature in black ink, appearing to read 'S. Denhoed', written over a light blue background.

Stan Denhoed, M.Sc., P. Eng.
Senior Hydrogeologist



encl:

- Table 5: Thornthwaite and Mather Water Budget
- Figures 1-10
- Appendix A: Correspondence
- Appendix B: Water Well Record A382320
- Appendix C: Water Quality Results

Table 1: Water Well Records Within 500m

Well ID	Date Completed	Depth (m)	Static Water Level (m)	Recommended Pump Depth (m)	Recommended Rate (LPM)	TAG	Final Status	Use 1	Use 2
6805882	1967-09-18	35.7	21.3	35.1	3.8		Water Supply	Domestic	
6805885	1950-05-02	12.2	6.1		11.4		Water Supply	Domestic	
6805886	1950-06-12	13.1	7.6				Water Supply	Domestic	
6805888	1952-06-06	10.7	3.7				Water Supply	Domestic	
6805889	1953-09-16	8.5	4.6				Water Supply	Domestic	
6805890	1954-03-10	12.2	5.8				Water Supply	Domestic	
6805891	1950-07-14	13.4	7.3				Water Supply	Domestic	
6805894	1955-04-15	14.3	7.0				Water Supply	Domestic	
6805895	1957-05-25	10.1	3.0				Water Supply	Domestic	
6805896	1957-07-17	10.1	3.4				Water Supply	Domestic	
6805897	1957-07-10	10.1	4.3				Water Supply	Domestic	
6805898	1957-10-30	19.8	6.1				Water Supply	Domestic	
6805899	1958-04-15	7.9	4.6				Water Supply	Domestic	
6805900	1958-06-26	21.3	6.4				Water Supply	Domestic	
6805901	1958-06-27	11.0	4.6				Water Supply	Domestic	
6805902	1958-07-17	13.1	7.0				Water Supply	Domestic	
6805903	1958-07-24	17.7	3.0				Water Supply	Domestic	
6805904	1958-08-28	18.3	6.1				Water Supply	Domestic	
6805905	1958-10-31	17.7	4.0				Water Supply	Domestic	
6805906	1958-12-04	12.2	6.1	6.1	18.9		Water Supply	Domestic	
6805907	1958-12-06	15.2	5.8				Abandoned-Supply	Not Used	
6805908	1958-12-09	15.8	5.8	12.2	3.8		Water Supply	Domestic	
6805909	1959-01-14	19.2	6.1	15.2	3.8		Water Supply	Domestic	
6805910	1959-01-22	10.4	6.1	6.7	18.9		Water Supply	Domestic	
6805911	1959-01-28	14.6	7.0	10.7	3.8		Water Supply	Domestic	
6805912	1959-02-13	21.9	7.6	21.9	3.8		Water Supply	Domestic	
6805913	1959-05-11	19.8	7.6	14.9	7.6		Water Supply	Domestic	
6805914	1959-09-17	12.2	6.1	6.1	3.8		Water Supply	Domestic	
6805916	1960-10-13	11.0	8.2	8.2	18.9		Water Supply	Domestic	
6805917	1961-03-17	19.5	7.6	15.2	3.8		Water Supply	Domestic	
6805921	1961-12-07	24.4	10.7	23.8			Water Supply	Domestic	
6805922	1962-01-25	18.3	7.0	15.2	18.9		Water Supply	Domestic	
6805923	1963-10-10	11.3	7.6	10.4	11.4		Water Supply	Domestic	
6805924	1963-12-20	19.2	12.8	18.9	11.4		Water Supply	Domestic	
6805925	1964-01-10	26.2	7.6	25.3	7.6		Water Supply	Domestic	
6805926	1964-02-07	19.8	7.6	19.2	3.8		Water Supply	Domestic	

Table 1: Water Well Records Within 500m

Well ID	Date Completed	Depth (m)	Static Water Level (m)	Recommended Pump Depth (m)	Recommended Rate (LPM)	TAG	Final Status	Use 1	Use 2
6805928	1964-07-21	19.8	9.1	19.2	189.3		Water Supply	Domestic	
6805929	1964-07-22	24.4	10.7	23.8	3.8		Water Supply	Domestic	
6805930	1964-08-14	18.6	6.4	18.0	18.9		Water Supply	Domestic	
6805934	1966-12-06	25.6	9.1	24.4	3.8		Water Supply	Domestic	
6805936	1967-04-04	18.3	12.2	16.8	15.1		Water Supply	Domestic	
6805940	1967-08-04	27.4	10.7	26.8	3.8		Water Supply	Domestic	
6805942	1967-12-16	22.9	7.3	21.9	75.7		Water Supply	Public	
6805943	1967-10-20	20.4	7.0	19.8	18.9		Water Supply	Domestic	
6805947	1953-05-15	17.1	7.3				Water Supply	Domestic	
6805954	1958-12-09	13.7	4.6				Water Supply	Domestic	
6805955	1959-06-08	11.9	4.6	7.6	7.6		Water Supply	Domestic	
6805959	1962-05-26	10.1	3.7	9.1	7.6		Water Supply	Domestic	
6805960	1962-05-29	11.9	4.3	10.7	18.9		Water Supply	Domestic	
6805961	1962-05-31	8.5	3.7	7.3	18.9		Water Supply	Domestic	
6805962	1962-06-13	11.9	5.5	10.7	18.9		Water Supply	Domestic	
6805963	1963-10-31	24.1	10.4	22.3	15.1		Water Supply	Domestic	
6805964	1963-10-31	12.8	5.5	12.2	11.4		Water Supply	Domestic	
6806797	1968-03-16	27.4	18.3	25.9	18.9		Water Supply	Domestic	
6807346	1969-10-30	13.7	6.1	12.5	15.1		Water Supply	Domestic	
6808097	1972-01-10	25.0	12.2	24.4	3.8		Water Supply	Domestic	
6808333	1972-07-03	13.4	6.1	12.5	11.4		Water Supply	Domestic	
6808641	1973-10-19	5.8	3.4	5.5	37.9		Water Supply	Commerical	Domestic
6809009	1974-09-05	11.0	4.6	9.1	18.9		Water Supply	Domestic	
6809932	1979-04-24	7.3	3.7		49.2		Water Supply	Commerical	
6810180	1980-11-24	22.6	19.2	21.9	30.3		Water Supply	Commerical	Domestic
6811022	1986-07-15	6.1	3.0	5.5	37.9		Water Supply	Industrial	
6811186	1987-04-01	29.0	19.8	28.3	37.9		Water Supply	Domestic	
6811582	1989-01-03	22.9	12.8	21.3	37.9		Water Supply	Commerical	
6811875	1989-07-10	12.2	5.5	11.0	18.9		Water Supply	Domestic	Livestock
6811876	1989-07-20	7.6	3.0	5.2	18.9		Water Supply	Domestic	Livestock
6812442	1994-03-17	25.0	7.9	23.5	7.6		Water Supply	Domestic	
6813356	2000-07-13	18.3	4.6	15.2	37.9		Water Supply	Irrigation	
6813386	2000-10-05	16.8	9.8				Water Supply	Domestic	
6813452	2000-11-06	37.8	13.7	33.5	26.5		Water Supply	Public	
6813550	2000-12-27	22.9	9.1	21.3	7.6		Water Supply	Domestic	
6813663	2002-04-10	22.9	10.7	21.3	56.8		Water Supply	Domestic	

Table 1: Water Well Records Within 500m

Well ID	Date Completed	Depth (m)	Static Water Level (m)	Recommended Pump Depth (m)	Recommended Rate (LPM)	TAG	Final Status	Use 1	Use 2
6813664	2002-07-24	22.9	14.6	21.3	30.3		Water Supply	Domestic	
6813710	2002-09-01	25.6					Not A Well	Not Used	
6813711	2002-09-03	22.9	10.7				Water Supply	Domestic	
6813805	2003-02-11	29.9	17.7				Water Supply	Domestic	
6813831	2003-04-15	25.9	14.9	24.4	22.7		Water Supply	Domestic	
6813924	2003-08-20	14.3	6.7	13.7	56.8		Water Supply	Domestic	
6814005	2004-04-08	27.5	14.9	27.0	25.0	A008242	Water Supply	Domestic	
6814031	2004-04-16	28.0	14.0	16.5	45.0	A008244	Water Supply	Domestic	
6814270	2005-07-28	24.4	12.8	23.0	18.2	A022053	Water Supply		
6814327	2005-08-23	18.3	3.7			A022079	Water Supply	Domestic	
6814348	2005-09-27	22.9	5.0	21.5	54.5	A021997	Water Supply	Domestic	
6814349	2005-09-28	22.9	17.3	21.0	68.2	A021998	Water Supply	Domestic	
7040674	2006-12-11	10.4				A052567	Observation Wells		
7044115	2007-04-30		4.9	8.5	20.0	A021958	Water Supply	Domestic	
7105914	2008-01-07	22.9	6.4	21.0	13.6	A064560	Water Supply	Domestic	
7121255	2009-01-30	6.9		5.8	30.3	A081457	Water Supply	Public	
7131165	2009-09-18	23.2	14.3	22.5	13.6	A082118	Water Supply	Domestic	
7131451	2009-09-10	38.4	16.6	37.5	40.9	A082116	Water Supply	Domestic	
7134803	2009-08-24	25.0	18.6	22.9	26.5	A081716	Water Supply	Domestic	
7273848	2016-08-30					A162454	Observation Wells	Monitoring	
7307695	2017-02-09		17.6	35.0	18.0	A201338	Test Hole	Test Hole	
7333191	2018-12-11		6.4	9.1	15.1	A256282	Water Supply	Domestic	
7361224	2018-07-17					A238560	Water Supply		
7385570	2021-04-14					A310990			
7395989	2021-08-04					A316763			

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6805882	6.10	BROWN	CLAY	MEDIUM SAND		6.10
6805882	8.53	BLUE	CLAY			14.63
6805882	21.03		LIMESTONE			35.66
6805883	0.91	BROWN	CLAY			0.91
6805883	5.18	BROWN	CLAY	MEDIUM SAND		6.10
6805883	3.96	BLUE	CLAY			10.06
6805883	19.51		LIMESTONE			29.57
6805885	4.57		TOPSOIL	MEDIUM SAND		4.57
6805885	7.62		LIMESTONE			12.19
6805886	3.05		MEDIUM SAND	CLAY		3.05
6805886	4.57	BLUE	CLAY	MEDIUM SAND	GRAVEL	7.62
6805886	5.49	GREY	LIMESTONE			13.11
6805888	5.18		GRAVEL	MEDIUM SAND		5.18
6805888	5.49		LIMESTONE			10.67
6805889	6.10		MEDIUM SAND			6.10
6805889	2.44		LIMESTONE			8.53
6805890	3.66		CLAY	MEDIUM SAND		3.66
6805890	4.57		MEDIUM SAND			8.23
6805890	3.96		LIMESTONE			12.19
6805891	3.05		CLAY	MEDIUM SAND		3.05
6805891	4.57	BLUE	CLAY	MEDIUM SAND	GRAVEL	7.62
6805891	5.79	BLUE	LIMESTONE			13.41
6805892	0.61		TOPSOIL			0.61
6805892	4.88		MEDIUM SAND			5.49
6805892	2.44		LIMESTONE			7.92
6805894	6.71		TOPSOIL	MEDIUM SAND		6.71
6805894	2.13		COARSE SAND			8.84
6805894	5.49		LIMESTONE			14.33
6805895	7.01		TOPSOIL	MEDIUM SAND		7.01
6805895	3.05		LIMESTONE			10.06
6805896	7.01		TOPSOIL	MEDIUM SAND		7.01
6805896	3.05		LIMESTONE			10.06
6805897	3.35	BROWN	TOPSOIL	MEDIUM SAND		3.35
6805897	2.13	BLUE	CLAY			5.49
6805897	2.44		LIMESTONE			7.92
6805897	2.13	GREY	LIMESTONE			10.06
6805898	7.01		CLAY	MEDIUM SAND		7.01
6805898	12.80	GREY	LIMESTONE			19.81
6805899	1.22		TOPSOIL			1.22
6805899	5.49		TOPSOIL	MEDIUM SAND		6.71
6805899	1.22		LIMESTONE			7.92
6805900	0.91	YELLOW	TOPSOIL	MEDIUM SAND		0.91
6805900	3.96	BROWN	TOPSOIL	MEDIUM SAND		4.88
6805900	3.66	GREY	CLAY			8.53
6805900	12.80	GREY	LIMESTONE			21.34
6805901	1.22		TOPSOIL			1.22
6805901	6.40		CLAY	MEDIUM SAND		7.62
6805901	3.35		LIMESTONE			10.97
6805902	1.22	YELLOW	TOPSOIL	MEDIUM SAND		1.22
6805902	6.10	BROWN	TOPSOIL	MEDIUM SAND		7.32
6805902	1.22	GREY	CLAY			8.53
6805902	4.57		LIMESTONE			13.11
6805903	7.62		CLAY			7.62

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6805903	10.06		LIMESTONE			17.68
6805904	7.32		CLAY	MEDIUM SAND		7.32
6805904	10.97	GREY	LIMESTONE			18.29
6805905	8.23		TOPSOIL	CLAY		8.23
6805905	9.45		LIMESTONE			17.68
6805906	8.84	BROWN	TOPSOIL	MEDIUM SAND		8.84
6805906	3.35	GREY	LIMESTONE			12.19
6805907	5.49	BROWN	TOPSOIL	MEDIUM SAND		5.49
6805907	3.05	GREY	CLAY	GRAVEL		8.53
6805907	6.71	GREY	LIMESTONE			15.24
6805908	8.53	BROWN	TOPSOIL	MEDIUM SAND		8.53
6805908	7.32	GREY	LIMESTONE			15.85
6805909	0.91	RED	TOPSOIL	MEDIUM SAND		0.91
6805909	4.27	BROWN	TOPSOIL	MEDIUM SAND	GRAVEL	5.18
6805909	2.44	GREY	CLAY			7.62
6805909	11.58	GREY	LIMESTONE			19.20
6805910	6.10	BROWN	TOPSOIL	MEDIUM SAND		6.10
6805910	2.44	BROWN	CLAY	MEDIUM SAND	GRAVEL	8.53
6805910	1.83	GREY	LIMESTONE			10.36
6805911	3.35	BROWN	TOPSOIL	MEDIUM SAND		3.35
6805911	2.74	GREY	CLAY	GRAVEL		6.10
6805911	2.13	GREY	CLAY			8.23
6805911	6.40	GREY	LIMESTONE			14.63
6805912	1.22		TOPSOIL			1.22
6805912	7.32		TOPSOIL	MEDIUM SAND		8.53
6805912	13.41		LIMESTONE			21.95
6805913	1.83		TOPSOIL			1.83
6805913	5.49	RED	SHALE			7.32
6805913	12.50		LIMESTONE			19.81
6805914	1.22		TOPSOIL			1.22
6805914	7.32	BLUE	CLAY			8.53
6805914	3.66		LIMESTONE			12.19
6805915	10.97		CLAY			10.97
6805915	13.41		LIMESTONE			24.38
6805916	8.84	BROWN	TOPSOIL	MEDIUM SAND		8.84
6805916	2.13	GREY	LIMESTONE			10.97
6805917	3.66	BROWN	TOPSOIL	MEDIUM SAND		3.66
6805917	3.05	GREY	CLAY			6.71
6805917	12.80	GREY	LIMESTONE			19.51
6805921	1.22	BROWN	CLAY			1.22
6805921	7.32	BLUE	CLAY			8.53
6805921	15.85		LIMESTONE			24.38
6805922	8.23		PREVIOUSLY DUG			8.23
6805922	10.06	GREY	LIMESTONE			18.29
6805923	2.13	BROWN	CLAY			2.13
6805923	5.49		CLAY	MEDIUM SAND		7.62
6805923	3.66		LIMESTONE			11.28
6805924	13.72		PREV. DRILLED			13.72
6805924	5.49	GREY	LIMESTONE			19.20
6805925	10.06		PREV. DRILLED			10.06
6805925	16.15	GREY	LIMESTONE			26.21
6805926	5.79	BROWN	CLAY	MEDIUM SAND		5.79
6805926	14.02		LIMESTONE			19.81

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6805928	4.57	BROWN	CLAY			4.57
6805928	3.05	BLUE	CLAY			7.62
6805928	12.19		LIMESTONE			19.81
6805929	4.88	BROWN	CLAY			4.88
6805929	5.79	BLUE	CLAY			10.67
6805929	13.72		LIMESTONE			24.38
6805930	7.01	BROWN	MEDIUM SAND			7.01
6805930	11.58	BROWN	LIMESTONE			18.59
6805932	4.57	BROWN	CLAY			4.57
6805932	6.71	BLUE	CLAY			11.28
6805932	17.37		LIMESTONE			28.65
6805933	4.57	BROWN	CLAY			4.57
6805933	8.84	BLUE	CLAY			13.41
6805933	15.85		LIMESTONE			29.26
6805934	1.83	BROWN	CLAY			1.83
6805934	5.49	BROWN	CLAY	MEDIUM SAND		7.32
6805934	18.29		LIMESTONE			25.60
6805936	6.10	BROWN	CLAY	STONES		6.10
6805936	7.62	BLUE	CLAY	STONES		13.72
6805936	4.57		LIMESTONE			18.29
6805937	3.05	BROWN	CLAY			3.05
6805937	4.88	BLUE	CLAY			7.92
6805937	19.51		LIMESTONE			27.43
6805938	3.05	BROWN	CLAY	MEDIUM SAND		3.05
6805938	5.18	BLUE	CLAY			8.23
6805938	19.20		LIMESTONE			27.43
6805940	3.05	BROWN	CLAY			3.05
6805940	7.62	BLUE	CLAY			10.67
6805940	16.76		LIMESTONE			27.43
6805941	6.10	BROWN	CLAY	MEDIUM SAND		6.10
6805941	2.13	BLUE	CLAY			8.23
6805941	19.20		LIMESTONE			27.43
6805942	0.91	BROWN	CLAY			0.91
6805942	5.18	BROWN	CLAY	MEDIUM SAND		6.10
6805942	16.76		LIMESTONE			22.86
6805943	7.32		CLAY	MEDIUM SAND		7.32
6805943	13.11		LIMESTONE			20.42
6805947	12.19		CLAY	GRAVEL		12.19
6805947	1.83		MEDIUM SAND	GRAVEL		14.02
6805947	3.05		LIMESTONE			17.07
6805954	4.57		PREVIOUSLY DUG			4.57
6805954	2.13		CLAY	MEDIUM SAND	GRAVEL	6.71
6805954	7.01		LIMESTONE			13.72
6805955	5.49	BROWN	TOPSOIL	MEDIUM SAND		5.49
6805955	1.22	GREY	CLAY			6.71
6805955	5.18	GREY	LIMESTONE			11.89
6805958	2.74	BROWN	TOPSOIL	MEDIUM SAND		2.74
6805958	7.32		MEDIUM SAND	GRAVEL	CLAY	10.06
6805958	9.45	GREY	LIMESTONE			19.51
6805959	4.88		PREVIOUSLY DUG			4.88
6805959	2.44	RED	MEDIUM SAND	GRAVEL		7.32
6805959	2.74	GREY	LIMESTONE			10.06
6805960	5.49		PREVIOUSLY DUG			5.49

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6805960	1.52	RED	TOPSOIL	MEDIUM SAND	GRAVEL	7.01
6805960	4.88	GREY	LIMESTONE			11.89
6805961	5.49	RED	TOPSOIL	MEDIUM SAND		5.49
6805961	1.22	RED	MEDIUM SAND	GRAVEL		6.71
6805961	1.83	GREY	LIMESTONE			8.53
6805962	6.40		PREVIOUSLY DUG			6.40
6805962	2.13	BROWN	TOPSOIL	MEDIUM SAND		8.53
6805962	3.35	GREY	LIMESTONE			11.89
6805963	4.27	BROWN	TOPSOIL	MEDIUM SAND		4.27
6805963	0.91	GREY	CLAY	GRAVEL		5.18
6805963	18.90	GREY	LIMESTONE			24.08
6805964	0.30		TOPSOIL			0.30
6805964	2.44		TOPSOIL	MEDIUM SAND		2.74
6805964	5.79		MEDIUM SAND			8.53
6805964	4.27		LIMESTONE			12.80
6805973	1.22	BROWN	CLAY			1.22
6805973	6.40	BROWN	CLAY	MEDIUM SAND		7.62
6805973	10.67		LIMESTONE			18.29
6805997	3.05		CLAY			3.05
6805997	7.62		MEDIUM SAND	CLAY		10.67
6805997	9.75		LIMESTONE			20.42
6806012	3.05	BROWN	CLAY			3.05
6806012	13.11		COARSE SAND			16.15
6806012	10.06	GREY	LIMESTONE			26.21
6806797	4.57		CLAY	GRAVEL		4.57
6806797	3.66		CLAY			8.23
6806797	19.20		LIMESTONE			27.43
6807146	5.49	BROWN	CLAY			5.49
6807146	4.27	BLUE	CLAY			9.75
6807146	19.51		LIMESTONE			29.26
6807346	5.49	BROWN	MEDIUM SAND			5.49
6807346	4.27	BROWN	MEDIUM SAND	GRAVEL	STONES	9.75
6807346	3.96	GREY	LIMESTONE			13.72
6808097	8.53	BROWN	CLAY			8.53
6808097	16.46		LIMESTONE			24.99
6808101	0.30		TOPSOIL			0.30
6808101	3.05	BROWN	CLAY	BOULDERS		3.35
6808101	1.22	GREY	ROCK			4.57
6808101	14.02	BROWN	ROCK			18.59
6808102	0.30	BROWN	TOPSOIL			0.30
6808102	12.80	BROWN	CLAY	GRAVEL		13.11
6808102	17.98	BROWN	ROCK			31.09
6808102	10.67	GREY	ROCK			41.76
6808102	0.61	BLUE	SHALE			42.37
6808333	1.22		TOPSOIL			1.22
6808333	4.88	BROWN	CLAY	SAND		6.10
6808333	7.32	GREY	LIMESTONE			13.41
6808641	5.79	GREY	LIMESTONE			5.79
6809009	10.36	BROWN	CLAY	SAND	STONES	10.36
6809009	0.61	GREY	LIMESTONE	HARD		10.97
6809514	9.14	GREY	LIMESTONE			9.14
6809932	1.22	GREY	GRAVEL	FILL	LOOSE	1.22
6809932	6.10	GREY	LIMESTONE	HARD		7.32

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6810180	3.35	BROWN	CLAY	LOOSE		3.35
6810180	19.20	GREY	LIMESTONE	HARD		22.56
6811022	6.10	GREY	LIMESTONE	HARD		6.10
6811186	3.05	BROWN	SAND	LOOSE		3.05
6811186	2.13	BROWN	SAND	FINE GRAVEL	LOOSE	5.18
6811186	0.61	BROWN	SAND	GRAVEL	LOOSE	5.79
6811186	23.16	GREY	LIMESTONE	HARD		28.96
6811582	3.66	BROWN	CLAY	SANDY	LOOSE	3.66
6811582	19.20	GREY	LIMESTONE	HARD		22.86
6811875	7.32	BROWN	CLAY	SAND	SANDY	7.32
6811875	4.88	GREY	SAND	ROCK	SHALE	12.19
6811876	4.57	BROWN	TOPSOIL	SAND	SANDY	4.57
6811876	3.05	GREY	ROCK	HARD		7.62
6812442	3.96	BROWN	CLAY	SAND	LOOSE	3.96
6812442	3.35	GREY	CLAY			7.32
6812442	16.46	GREY	LIMESTONE	HARD		23.77
6812442	1.22	BLACK	ROCK	HARD		24.99
6813356	1.22		CLAY	GRAVEL		1.22
6813356	17.07	GREY	LIMESTONE			18.29
6813386	3.66	BROWN	CLAY	SANDY	LOOSE	3.66
6813386	3.05	BROWN	SAND	LOOSE		6.71
6813386	4.88	BROWN	CLAY	SANDY	LOOSE	11.58
6813386	5.18	BROWN	LIMESTONE	HARD		16.76
6813452	7.01	BROWN	CLAY			7.01
6813452	1.22	BROWN	SAND	STONES		8.23
6813452	10.97	BROWN	LIMESTONE			19.20
6813452	18.59	GREY	LIMESTONE	LAYERED		37.80
6813498	24.38	GREY	LIMESTONE	HARD		24.38
6813533	8.84	BROWN	TILL	CLAY	SILTY	8.84
6813533	0.61		BOULDERS			9.45
6813533	0.30		GRAVEL			9.75
6813533	21.64		DOLOMITE			31.39
6813550	7.01	BROWN	CLAY	SILT		7.01
6813550	15.85	GREY	LIMESTONE			22.86
6813663	7.62	BROWN	CLAY	STONES		7.62
6813663	8.23	GREY	GRAVEL	CLAY		15.85
6813663	7.01	GREY	LIMESTONE			22.86
6813664	13.72	BROWN	CLAY	SILT		13.72
6813664	2.74	GREY	GRAVEL	CLAY		16.46
6813664	6.40	GREY	LIMESTONE			22.86
6813710	5.49	BROWN	SAND	GRAVEL	CLAY	5.49
6813710	9.14	BROWN	CLAY	SANDY		14.63
6813710	10.97	GREY	LIMESTONE			25.60
6813711	5.49	BROWN	SAND	GRAVEL		5.49
6813711	6.71	BROWN	CLAY	SANDY		12.19
6813711	10.67	GREY	LIMESTONE			22.86
6813805	3.05	RED	CLAY			3.05
6813805	3.66	BROWN	SAND			6.71
6813805	12.19	BROWN	CLAY	STONES		18.90
6813805	10.97	BROWN	LIMESTONE	DARK-COLOURED		29.87
6813831	12.19	BROWN	CLAY	SILT		12.19
6813831	7.62	GREY	CLAY			19.81
6813831	6.10	GREY	LIMESTONE			25.91

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
6813924	5.49	BROWN	CLAY	SILT		5.49
6813924	6.71	GREY	SAND	GRAVEL	SILT	12.19
6813924	2.13	BROWN	LIMESTONE			14.33
6814005	18.60	BROWN	CLAY	STONES	GRAVEL	18.60
6814005	8.90	GREY	LIMESTONE			27.50
6814031	18.30	BROWN	CLAY	STONES	GRAVEL	18.30
6814031	9.70	GREY	LIMESTONE			28.00
6814270	2.74	BROWN	CLAY			2.74
6814270	21.64	GREY	LIMESTONE			24.38
6814327	4.26	BROWN	SAND			4.26
6814327	1.22	BROWN	GRAVEL	SAND		5.48
6814327	12.80	GREY	LIMESTONE			18.28
6814348	10.97	BROWN	CLAY	SANDY		10.97
6814348	2.74	BROWN	GRAVEL	SAND		13.71
6814348	9.15	GREY	LIMESTONE			22.86
6814349	14.63	BROWN	CLAY	SANDY		14.63
6814349	2.13	BROWN	SAND	GRAVEL		16.76
6814349	6.10	GREY	LIMESTONE			22.86
7040674	4.57	BROWN	SILT			4.57
7040674	2.74	GREY	CLAY			7.32
7040674	3.05	GREY	LIMESTONE			10.36
7043874	3.65	BROWN	CLAY	SANDY		3.65
7043874	3.97	BROWN	CLAY	SANDY	STONES	7.62
7043874	0.91	BROWN	GRAVEL	SAND		8.53
7043874	1.83	GREY	LIMESTONE			10.36
7043874	1.83	GREY	LIMESTONE			12.19
7105914	3.65	BROWN	CLAY	SANDY		3.65
7105914	19.21	GREY	LIMESTONE			22.86
7121255	0.30	BROWN	TOPSOIL			0.30
7121255	0.91	BROWN	SAND			1.22
7121255	2.44	BROWN	SAND			3.66
7121255	3.20	BROWN	COARSE SAND			6.86
7131165	7.01	BROWN	CLAY			7.01
7131165	16.15	GREY	LIMESTONE			23.16
7131451	12.80	BROWN	CLAY		SANDY	12.80
7131451	3.04	GREY	CLAY			15.84
7131451	22.56	GREY	LIMESTONE			38.40
7131452	9.44	BROWN	CLAY		SANDY	9.44
7131452	5.19	GREY	CLAY			14.63
7131452	22.55	GREY	LIMESTONE			37.18
7134803	4.57	BROWN	CLAY	GRAVEL		4.57
7134803	20.42	GREY	LIMESTONE			24.99
7153247	12.19	BROWN	SAND	CLAY		12.19
7153247	2.59	GREY	SAND	CLAY		14.78
7153247	21.79	GREY	LIMESTONE			36.57
7270229						
7273847	9.20		OVERBURDEN			9.20
7273847	6.45		ROCK			15.65
7273848						
7276723	1.52	GREY	GRAVEL	SAND		1.52
7276723	1.52	BROWN	SAND	SILT	LOOSE	3.05
7276723	0.30	BROWN	SAND	GRAVEL	HARD	3.35
7276723	0.30	GREY	BOULDERS		HARD	3.66

Table 2: Stratigraphy of Water Well Records Within 500m

Well ID	Thickness (m)	Colour	Material 1	Material 2	Material 3	Depth (m)
7276723	2.44	GREY	BOULDERS		HARD	6.10
7276723	1.22	BROWN	SAND	GRAVEL	LOOSE	7.32
7276723			ROCK			
7307695						
7361224						

Table 6: Thornthwaite and Mather Components - Millgrove 1981-2010

Based on Thornthwaite's Soil Moisture Balance Approach with a Soil Moisture Retention of 100 mm
Climate data from Brantford Millgrove Climate Station (1981 - 2010)

POTENTIAL EVAPOTRANSPIRATION CALCULATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Average Temperature (Degree C) ¹	-5.5	-4.6	0	6.8	12.9	18.2	20.8	20.0	15.9	9.4	3.4	-2.4	7.9
Precipitation (P) ¹	34	35	46	77	94	85	95	82	97	82	90	44	860
Heat index: $i = (t/5)^{1.514}$	0.00	0.00	0	1.59	4.20	7.07	8.66	8.16	5.76	2.60	0.56	0.00	38.6
Adjusting Factor for U (Latitude 43 N)	0.81	0.82	1.02	1.12	1.26	1.28	1.29	1.2	1.04	0.95	0.81	0.77	
Unadjusted Daily Potential Evapotranspiration U (mm)	0	0	0	30	61	89	103	98	76	43	14	0	
Adjusted Potential Evapotranspiration PET (mm)	0	0	0	33	76	114	133	118	79	41	11	0	606
P - PET	34	35	46	43	18	-28	-38	-37	17	42	79	44	254
APWL	0	0	0	0	0	-28	-66	-103	0	0	0	0	
Soil Moisture Storage max 100 mm	134	135	146	100	100	75	51	35	52	94	100	144	
Soil Moisture Deficit max 100 mm	0	0	0	0	0	3	14	21	0	0	0	0	
Change in Soil Moisture Storage	0	0	0	0	0	-25	-24	-16	17	42	6		
Actual Evapotranspiration (AET) (mm)	0	0	0	33	76	110	119	98	79	41	11	0	568
Surplus Water (P-AET) (mm) - for infiltration or runoff	34	35	46	43	18	0	0	0	0	0	73	44	292
Potential Infiltration (based on MOE methodology ² ; independent of temperature)	17	18	23	22	9	0	0	0	0	0	36	22	146
Potential Direct Surface Water Runoff (independent of temperature)	17	18	23	22	9	0	0	0	0	0	36	22	146
IMPERVIOUS COMPONENTS - WATER SURPLUS (RUNOFF AND EVAPORATION)													
Precipitation (P) (mm)	34	35	46	77	94	85	95	82	97	82	90	44	860
Potential Evaporation (PE); Assume 15% (mm)	5	5	7	11	14	13	14	12	15	12	13	7	129
Potential Surface Water Runoff (P-PE) (mm)	29	30	39	65	80	72	81	69	82	70	76	37	731

Assume January storage is 100% of Soil Moisture Storage
Soil Moisture Storage ³ - shallow rooted crops clay loam

100 mm

MOE SWM infiltration calculations ⁴

topography - flat	0.3
soils -tight	0.1
cover - cultivated land	0.1
Infiltration factor	0.5

Latitude of site (or climate station) 43 ° N

Notes:

1. Environment Canada Climate Normals (Millgrove Climate Station 1981-2010)
2. Lorente, J.M. 1961. Pg. 206 "Adjusting Factors for U".
3. MOE SWMPDM. 2003. Table 3.1 "Water Holding Capacity" values.
4. MOE SWMPDM. 2003. Table 3.1 "Infiltration Factors" values.



Source: MNRF



Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
Proposed Severance, 394 Old Brock Road
City of Hamilton
WEST FLAMBOROUGH LOT 9 CON 2

Figure 1: Location of Subject Lands



Source: MECP



Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
 Proposed Severance, 394 Old Brock Road
 City of Hamilton
 WEST FLAMBOROUGH LOT 9 CON 2

Figure 2: Lots and Concessions

Source: MNRF




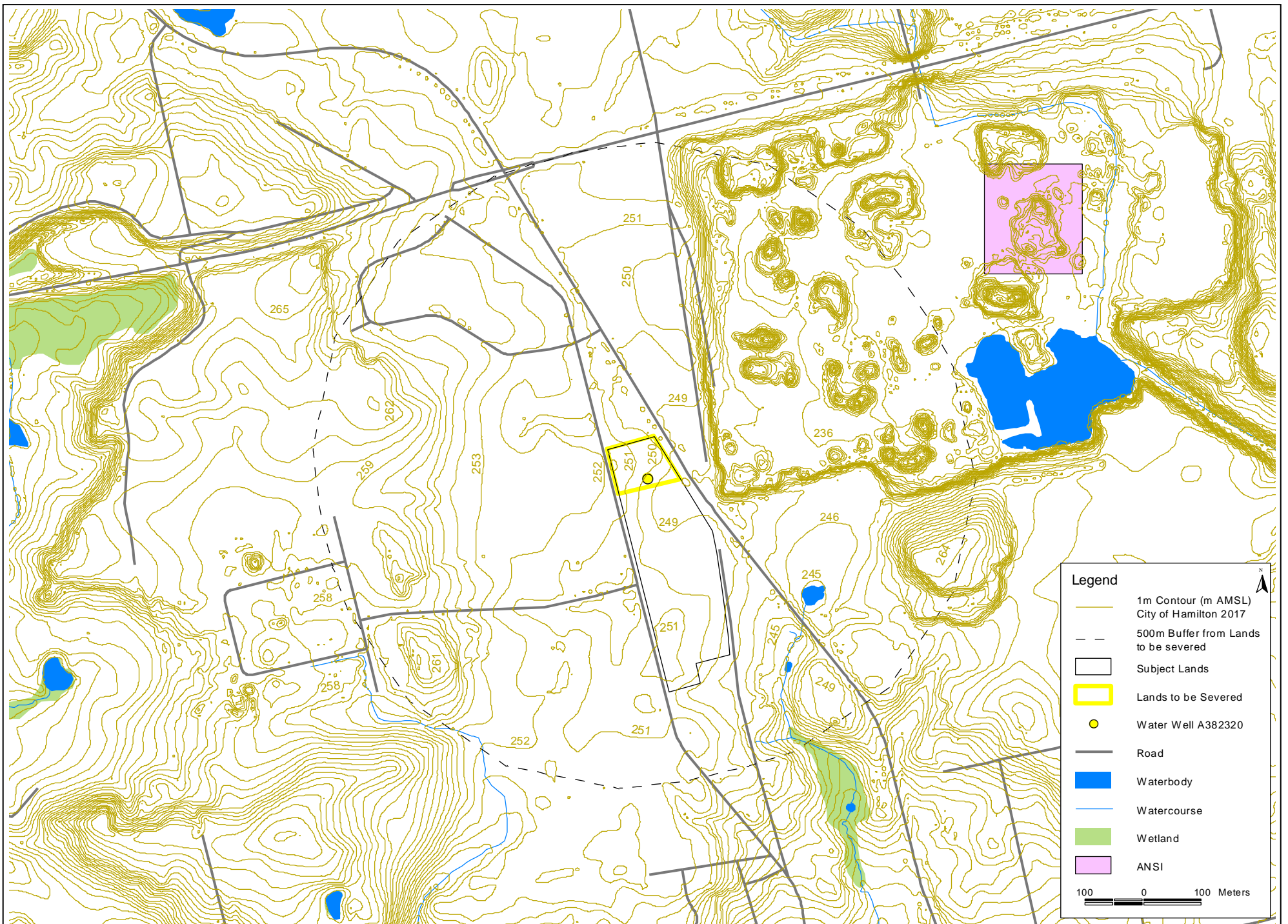
Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
 Proposed Severance, 394 Old Brock Road
 City of Hamilton
 WEST FLAMBOROUGH LOT 9 CON 2

Figure 3: Civic Addresses



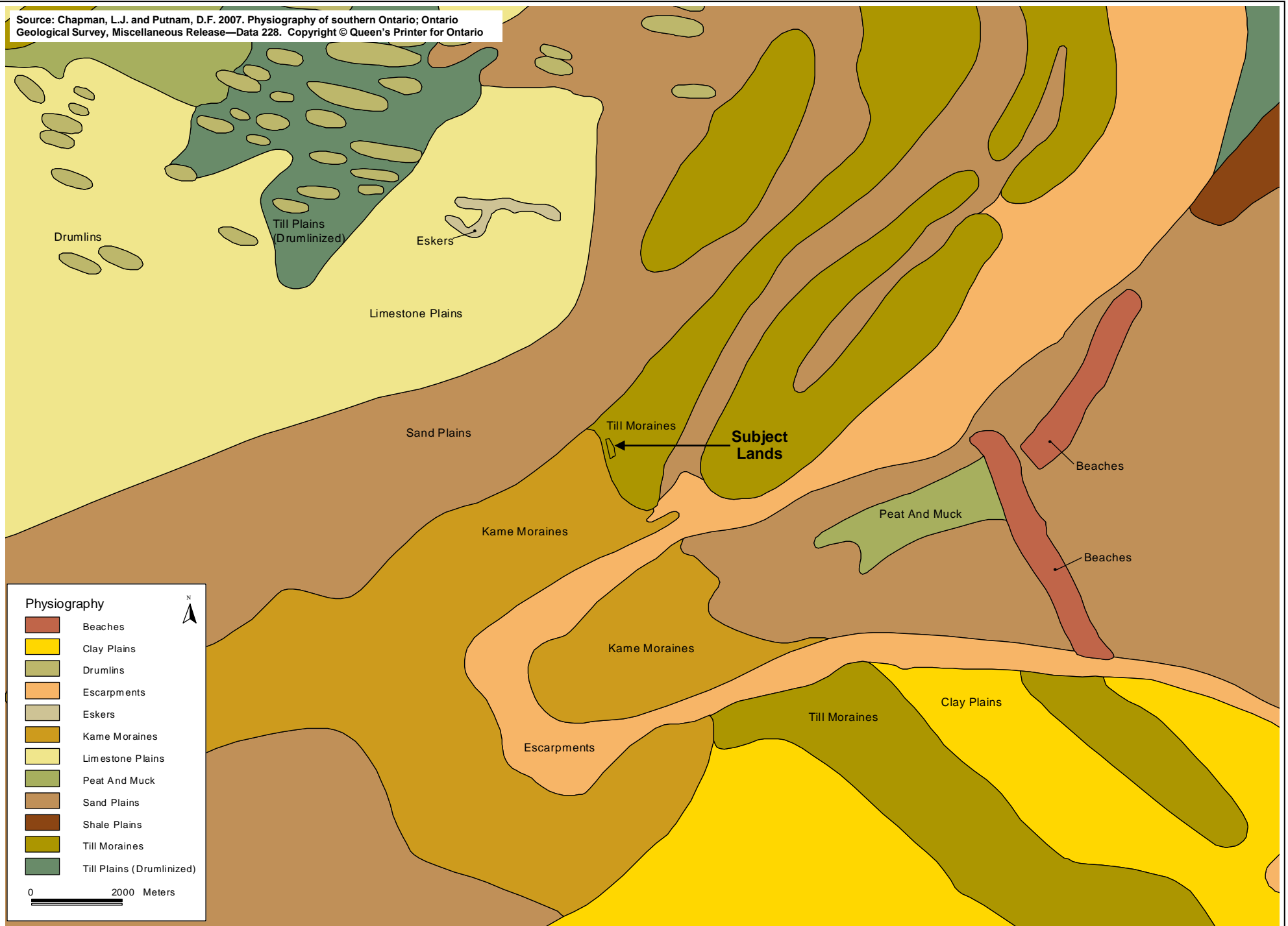
	Project No: 2317	Hydrogeological Assessment Proposed Severance, 394 Old Brock Road City of Hamilton WEST FLAMBOROUGH LOT 9 CON 2	Figure 4: Water Well Location
	Date: Mar 2024		
	Drawn By: AR		

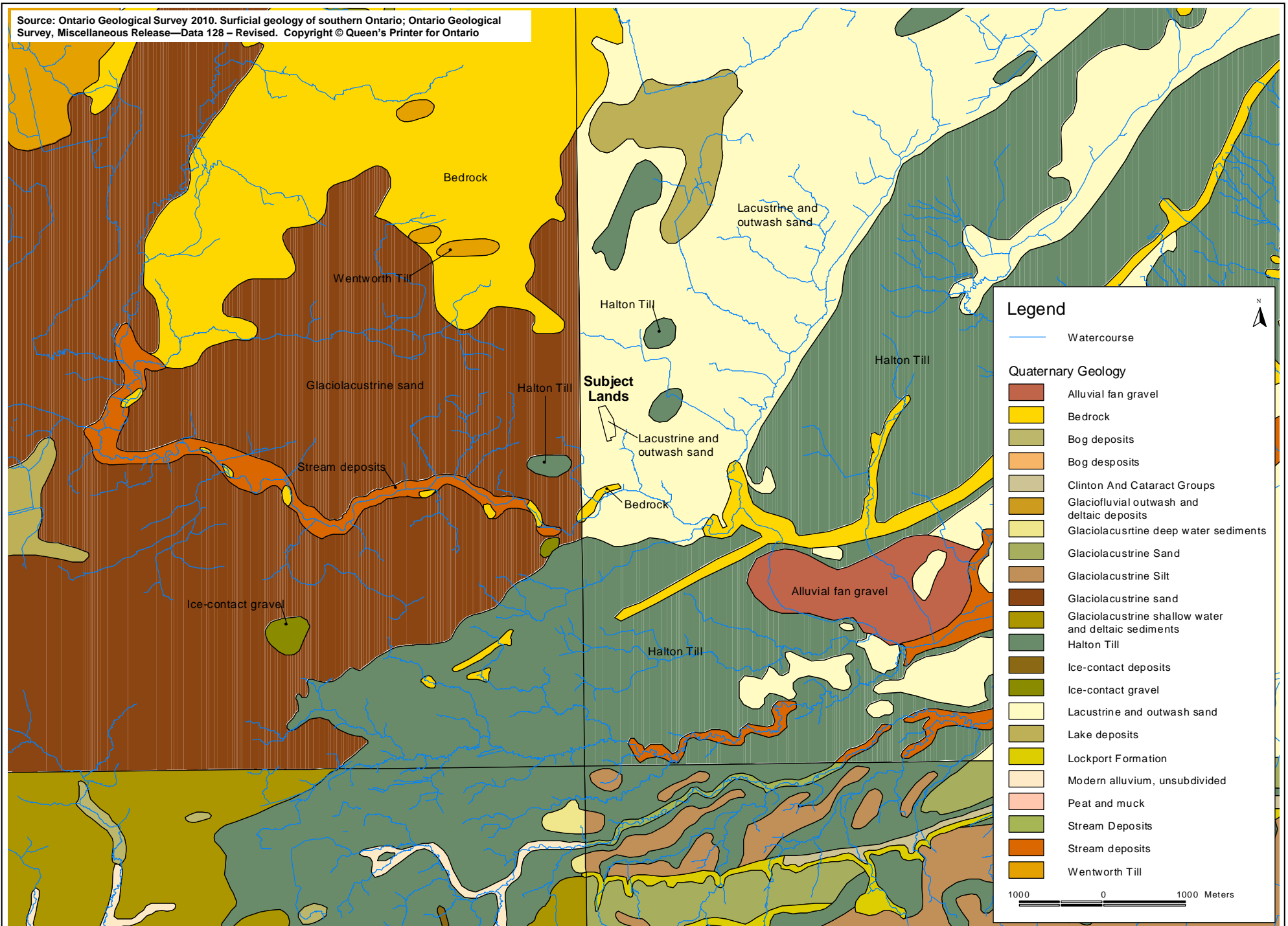


Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
 Proposed Severance, 394 Old Brock Road
 City of Hamilton
 WEST FLAMBOROUGH LOT 9 CON 2

Figure 5: Environmental Features





Legend

— Watercourse

Quaternary Geology

- Alluvial fan gravel
- Bedrock
- Bog deposits
- Bog deposits
- Clinton And Cataract Groups
- Glaciofluvial outwash and deltaic deposits
- Glaciolacustrine deep water sediments
- Glaciolacustrine Sand
- Glaciolacustrine Silt
- Glaciolacustrine sand
- Glaciolacustrine shallow water and deltaic sediments
- Halton Till
- Ice-contact deposits
- Ice-contact gravel
- Lacustrine and outwash sand
- Lake deposits
- Lockport Formation
- Modern alluvium, unsubdivided
- Peat and muck
- Stream Deposits
- Stream deposits
- Wentworth Till

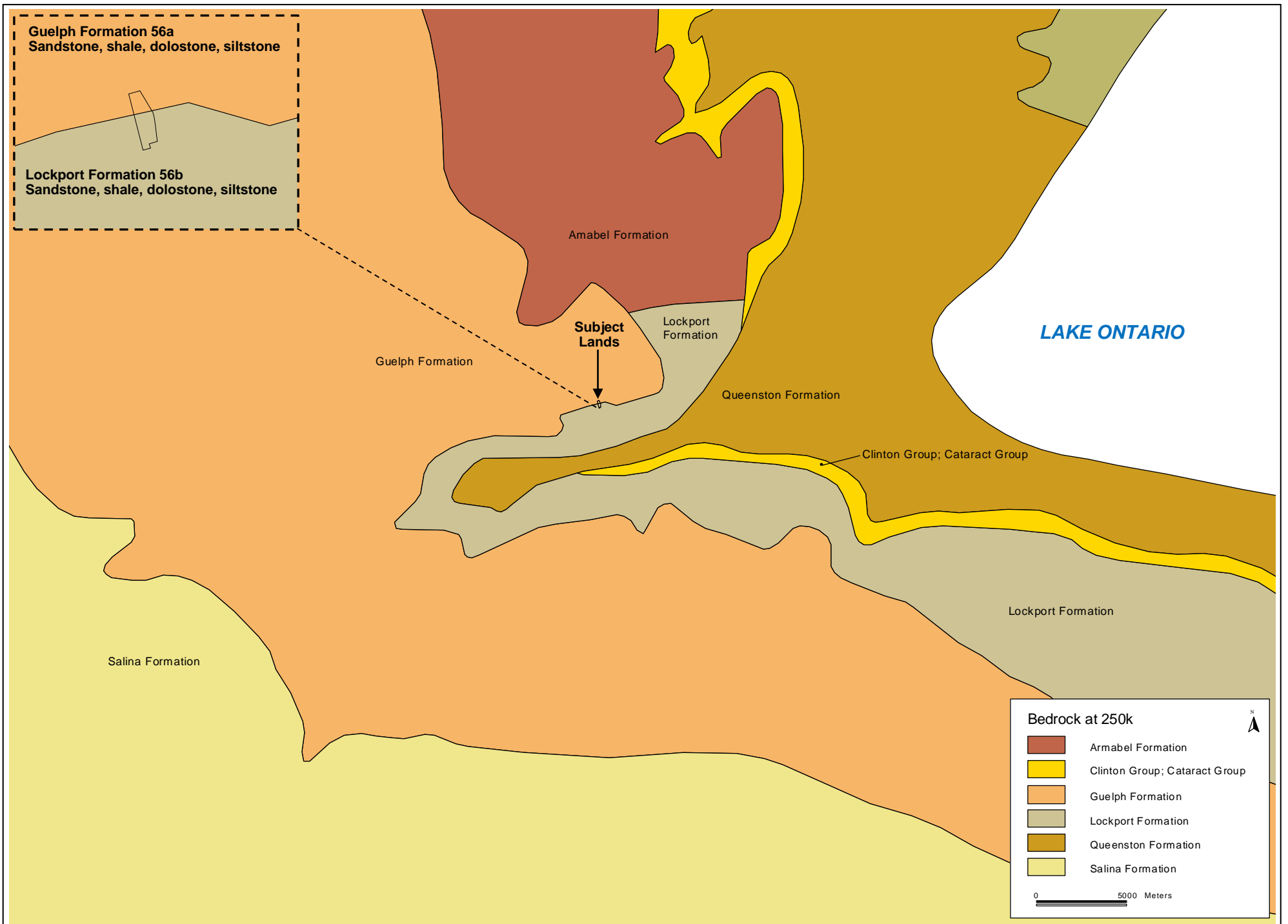
1000 0 1000 Meters



Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
 Proposed Severance, 394 Old Brock Road
 City of Hamilton
 WEST FLAMBOROUGH LOT 9 CON 2

Figure 7: Quaternary Geology

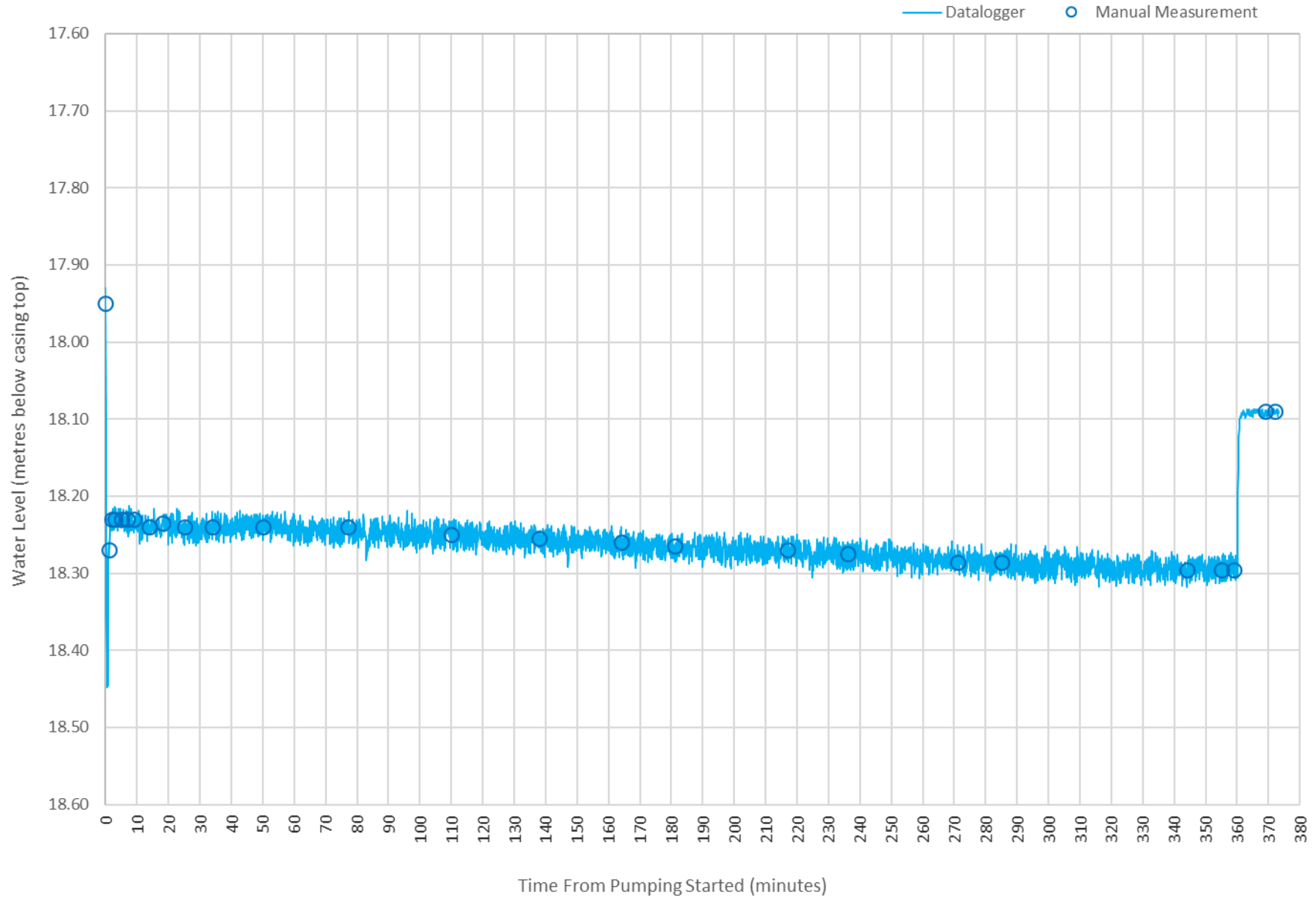


Project No: 2317
Date: Mar 2024
Drawn By: AR

Hydrogeological Assessment
 Proposed Severance, 394 Old Brock Road
 City of Hamilton
 WEST FLAMBOROUGH LOT 9 CON 2

Figure 8: Bedrock Geology

Pumping Test at 18 LPM Water Well A382320



Project No: 2317

Date: Mar 2024

Drawn By: AR

Hydrogeological Assessment
Proposed Severance, 394 Old Brock Road

City of Hamilton
WEST FLAMBOROUGH LOT 9 CON 2

Figure 10: Pumping Test Water Well A382320

Appendix A

Correspondence with City of Hamilton

Appendix A: Correspondence with City of Hamilton

From: Lee, Monica <Monica.Lee@hamilton.ca>
Sent: Thursday, April 27, 2023 4:28 PM
To: Development Engineering Approvals <DevEngApprovals@hamilton.ca>; Toman, Charlie <Charlie.Toman@hamilton.ca>; Gowans, Morgan <Morgan.Gowans@hamilton.ca>
Cc: HW Approvals <hwapprovals@hamilton.ca>; Vega, Carmen <Carmen.Vega@hamilton.ca>; Sarwar, Ahmad <Ahmad.Sarwar@hamilton.ca>; McArthur, Helen <Helen.McArthur@hamilton.ca>; Lee, Alex <Alex.Lee@hamilton.ca>; Korah, Binu <Binu.Korah@hamilton.ca>
Subject: Source Protection Planning Comments - 394 Old Brock Road

Hi all,

Please see below for comments for 394 Old Brock Road. The original email from the sender is attached for reference:

Source Protection Planning understands that the applicant is seeking to sever the northern portion of the lot located at 394 Old Brock Road, Flamborough. The proposed severed lot is planned to be sold for future development and the retained lot would continue to be used for agricultural purposes. We have reviewed the following reports / information provided by the applicant:

- “*Nitrate Testing, 394 Old Brock Road, Greensville, Ontario*” by Egmond Associates Ltd., dated Dec 13, 2022, File No.: 30719 B (‘Nitrate Report’)
- “*Hydrogeology Report, 394 Old Brock Road, Hamilton*” by Harden Environmental Services Ltd., dated March 28, 2023, File No.: 2317 (‘Hydrogeology Report’)
- “*Concept Severance Sketch, 394 Old Brock Road*” by L.G. Woods Surveying Inc., dated July 4, 2022, File No.: 16-1014 (‘Site Plan’)

Our comments are as follows:

1. The Hydrogeology Report indicates that the well was pumped at an average rate of 11.4 L/min and ended up cavitating at 53 minutes. During the pump test, a total of 604 L was pumped. The applicant has assumed that three full cycles per day would yield 1,812 L of water to service the property. Given that the well cavitated within 53 minutes, the applicant shall complete three 1-hour pump test during a 24-hour period to confirm that the well is able to adequately supply sufficient potable water required to service the proposed dwelling.
 2. The water quality samples collected from the water well at 430 Old Brock Road did not include the full list of requested parameters. In our previous comments, Source Protection Planning requested analysis for e. coli, total coliform, general chemistry, major cations/anions, metals and a pesticide scan. It is noted that the applicant tested only for dissolved metals and not total metals. The applicant
-

shall test for total metals and not dissolved metals. It is also noted that the pesticide scan was not completed as part of this current analytical testing. The applicant shall ensure that all requested parameters are tested.

3. The applicant has noted that the water quality from the test well exceeded for chloride, total dissolved solids and hardness against the ODWQS aesthetic objective and/or operating guideline. The applicant shall confirm how will the exceeding parameters will be treated to be within the ODWQS criteria.

4. As the sodium concentration exceeded 20 mg/L, this water quality should be reported to the Medical Officer of Health as per ODWQS criteria so that this information can be communicated to local physicians for their use with patients on sodium restricted diets. The purchaser of the Site should be made aware of this information.

5. In regard to the applicant's nitrate loading assessment, we have the following comments:

- Based on our previous comment, we indicated that a proposed area of **1.83 acres (0.7 ha)** for the severed lot would be acceptable. It is unclear why the applicant has completed an updated nitrate loading assessment in the current Hydrogeology Report, and in support of a 0.4 ha lot. The applicant shall confirm the reason for the updated nitrate loading assessment.
- It is unclear what the area of the proposed severed lot will be. In the Hydrogeology Report and the previous Site Plan (dated Dec 21, 2020), it is indicated that the severed lot size would be 0.4 ha, whereas in the Nitrate Report and the new Site Plan (dated July 4, 2022), the severed lot area would be 0.7 ha. The applicant shall confirm the correct lot size that is proposed to be severed.
- The applicant is reminded that Hamilton Water does not permit any consent to sever applications that relies on a tertiary treatment system to justify an undersized lot. The lot size must be adequate enough without relying on a tertiary treatment system. As such, the proposed lot size of 0.4 ha will not be supported by Hamilton Water

6. A review of the new Site Plan (dated July 4, 2022), the following details were not shown relative to OBC Section 8 Clearance requirements:

- Location of proposed water well
- Location or reserve area bed
- Distance between the septic system / leeching bed and the proposed dwelling

7. Information Only: The applicant is advised that since a surrogate well is being used for this analysis, a well installed on the subject property may be able to provide more supportive well testing results for this application.

8. Information Only: Hamilton Water would support the use of a cistern as a secondary source of water to service the property. It should be noted that the cistern cannot be relied upon as the primary source for water supply.

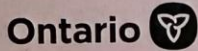
Best Regards,

Monica Lee

Water Resources Technologist
Public Works
Hamilton Water, City of Hamilton
(905) 546-2424 Ext.4010

Appendix B

Well Record A382320



Tag#: A382320

Measurements recorded in: Metric Imperial

Page 1 of 1

Well Owner's Information

First Name: TRACY, Last Name/Organization: KOWALCHUK, Mailing Address: 394 OLD BROCK RD, Municipality: DUNDAS, Province: ONTARIO, Postal Code: L9H 6A8, Telephone No.: 905 975 3261

Well Location

Address of Well Location: 394 OLD BROCK RD, Township: DUNDAS, Lot: P1 lot 9, Concession: 2, City/Town/Village: DUNDAS, Province: Ontario, Postal Code: L9H 6A8

Overburden and Bedrock Materials/Abandonment Sealing Record

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (m/ft) From, To. Rows include CLAY, GREY LIMESTONE, BROWN LIMESTONE, GREY LIMESTONE.

Annular Space table with columns: Depth Set at (m/ft) From, To; Type of Sealant Used; Volume Placed (m³/ft³). Row: 0 to 20, GROUT, 11.591 ft³.

Method of Construction and Well Use checkboxes. Method: DUAL ROTARY. Well Use: Domestic.

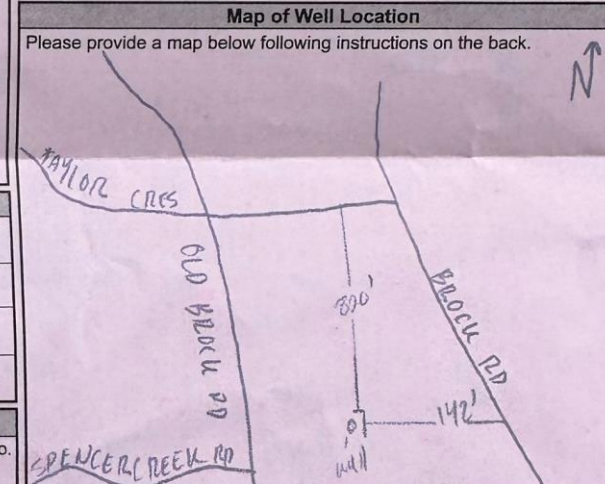
Construction Record - Casing table with columns: Inside Diameter, Open Hole OR Material, Wall Thickness, Depth (m/ft) From, To. Row: 6", STEEL, 0.219, 12, 89.

Construction Record - Screen table with columns: Outside Diameter, Material, Slot No., Depth (m/ft) From, To.

Water Details and Hole Diameter tables. Water found at 87, 0, 20 m/ft. Hole diameters: 10", 6".

Well Contractor and Well Technician Information. Business Name: WRC PUMPING LTD, Well Contractor's Licence No.: 618124, Well Technician: VAN MOURIK, TANNER.

Results of Well Yield Testing table with columns: Time (min), Water Level (m/ft), Recovery Time (min), Water Level (m/ft). Includes draw down and recovery data.



Ministry Use Only section with Audit No. 2411274 and Well owner's information package delivered status.

Appendix C

Water Quality Results Well A382320

TABLE 1 – MICROBIOLOGICAL STANDARDS	
PARAMETER	MAC
<i>Escherichia coli</i> (<i>E. coli</i>)	not detectable
Fecal Coliform	not detectable
Total Coliform	not detectable
General bacteria population expressed as background colony counts on the total coliform membrane filter	200 colony forming units (CFU) per 100 millilitres
General bacteria population expressed as colony counts on a heterotrophic plate count	500 colony forming units (CFU) per millilitre

TABLE 2 – CHEMICAL STANDARDS		
PARAMETER	MAC (mg/L)	IMAC (mg/L)
Alachlor		0.005
Aldicarb	0.009	
Aldrin + Dieldrin	0.0007	
Antimony		0.006
Arsenic		0.025
Atrazine + N-dealkylated metabolites		0.005
Azinphos-methyl	0.02	
Barium	1	
Bendiocarb	0.04	
Benzene	0.005	
Benzo(a)pyrene	0.00001	
Boron		5
Bromate		0.01
Bromoxynil		0.005
Cadmium	0.005	
Carbaryl	0.09	
Carbofuran	0.09	
Carbon Tetrachloride	0.005	
Chloramines	3	
Chlordane (Total)	0.007	

TABLE 2 – CHEMICAL STANDARDS		
PARAMETER	MAC (mg/L)	IMAC (mg/L)
Chlorpyrifos	0.09	
Chromium	0.05	
Cyanazine		0.01
Cyanide(free)	0.2	
Diazinon	0.02	
Dicamba	0.12	
1,2-Dichlorobenzene	0.2	
1,4-Dichlorobenzene	0.005	
Dichlorodiphenyltrichloroethane (DDT)+metabolites	0.03	
1,2-Dichloroethane		0.005
1,1-Dichloroethylene(vinylidene chloride)	0.014	
Dichloromethane	0.05	
2,4-Dichlorophenol	0.9	
2,4-Dichlorophenoxy acetic acid(2,4-D)		0.1
Diclofop-methyl	0.009	
Dimethoate		0.02
Dinoseb	0.01	
Dioxin and Furan		0.000000015 ^a
Diquat	0.07	
Diuron	0.15	
Fluoride	1.5 ^b	
Glyphosate		0.28
Heptachlor + Heptachlor Epoxide	0.003	
Lead	0.01 ^c	
Lindane (Total)	0.004	
Malathion	0.19	
Mercury	0.001	
Methoxychlor	0.9	
Metolachlor		0.05
Metribuzin	0.08	
Monochlorobenzene	0.08	

TABLE 2 – CHEMICAL STANDARDS		
PARAMETER	MAC (mg/L)	IMAC (mg/L)
Microcystin-LR	0.0015	
Nitrate (as nitrogen)	10.0 ^d	
Nitrite (as nitrogen)	1.0 ^d	
Nitrate + Nitrite (as nitrogen)	10.0 ^d	
Nitrilotriacetic Acid (NTA)	0.4	
N-Nitrosodimethylamine (NDMA)		0.000009
Paraquat		0.01
Parathion	0.05	
Pentachlorophenol	0.06	
Phorate		0.002
Picloram		0.19
Polychlorinated Biphenyls (PCB)		0.003
Prometryne		0.001
Selenium	0.01	
Simazine		0.01
Temephos		0.28
Terbufos		0.001
Tetrachloroethylene (perchloroethylene)	0.03	
2,3,4,6-Tetrachlorophenol	0.1	
Triallate	0.23	
Trichloroethylene	0.05	
2,4,6-Trichlorophenol	0.005	
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	0.28	
Trifluralin		0.045
Trihalomethanes	0.100 ^e	
Uranium	0.02	
Vinyl Chloride	0.002	

Short forms:
mg/L - milligrams per litre

Footnotes:

- a) Total toxic equivalents when compared with 2,3,7,8-TCDD (tetrachlorodibenzo-p-dioxin).
- b) Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5 - 0.8 mg/L the

Technical Support Document for Ontario Drinking-water Quality Standards, Objectives and Guidelines

optimum level for control of tooth decay. Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

- c) This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.
- d) Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).
- e) This standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system.

TABLE 3 – RADIONUCLIDE STANDARDS					
NATURAL RADIONUCLIDES					
PARAMETER	MAC (Bq/L)	PARAMETER	MAC (Bq/L)	PARAMETER	MAC (Bq/L)
Beryllium-7	4000	Radium-226	0.6	Thorium-234	20
Bismuth -210	70	Radium-228	0.5	Uranium-234	4
Lead-210	0.1	Thorium-228	2	Uranium-235	4
Polonium-210	0.2	Thorium-230	0.4	Uranium-238	4
Radium-224	2	Thorium-232	0.1		
ARTIFICIAL RADIONUCLIDES					
PARAMETER	MAC (Bq/L)	PARAMETER	MAC (Bq/L)	PARAMETER	MAC (Bq/L)
Americium-241	0.2	Iodine-125	10	Selenium-75	70
Antimony-122	50	Iodine-129	1	Silver-108m	70
Antimony-124	40	Iodine-131	6	Silver-110m	50
Antimony-125	100	Iron-55	300	Silver-111	70
Barium-140	40	Iron-59	40	Sodium-22	50
Bromine-82	300	Manganese-54	200	Strontium-85	300
Calcium-45	200	Mercury-197	400	Strontium-89	40
Calcium-47	60	Mercury-203	80	Strontium-90	5
Carbon-14	200	Molybdenum-99	70	Sulphur-35	500
Cerium-141	100	Neptunium-239	100	Technetium-99	200
Cerium-144	20	Niobium-95	200	Technetium-99m	7000
Cesium-131	2000	Phosphorus-32	50	Tellurium-129m	40
Cesium-134	7	Plutonium-238	0.3	Tellurium-131m	40
Cesium-136	50	Plutonium-239	0.2	Tellurium-132	40
Cesium-137	10	Plutonium-240	0.2	Thallium-201	2000

TABLE 3 – RADIONUCLIDE STANDARDS					
Chromium-51	3000	Plutonium-241	10	Tritium	7000
Cobalt-57	40	Rhodium-105	300	Ytterbium-169	100
Cobalt-58	20	Rubidium-81	3000	Yttrium-90	30
Cobalt-60	2	Rubidium-86	50	Yttrium-91	30
Gallium-67	500	Ruthenium-103	100	Zinc-65	40
Gold-198	90	Ruthenium-106	10	Zirconium-95	100
Indium-111	400				

Notes on Table 3:

Radionuclide concentrations that exceed the MAC may be tolerated for a short duration, provided that the annual average concentrations remain below the MAC and the restriction (see immediately below) for multiple radionuclides is met.

Restrictions for multiple radionuclides - If two or more radionuclides are present, the following relationship based on International Commission on Radiological Protection (ICRP) Publication 26, must be satisfied and if not satisfied, it shall be considered to be exceedence of an MAC.

$$\frac{c_1}{C_1} + \frac{c_2}{C_2} + \dots + \frac{c_i}{C_i} \leq 1$$

Where, c_1 , c_2 , and c_i are the observed concentrations, and C_1 , C_2 and C_i are the maximum acceptable concentrations for each contributing radionuclide.

TABLE 4 – CHEMICAL / PHYSICAL OBJECTIVES AND GUIDELINES		
PARAMETER	AO (mg/L - unless otherwise specified)	OG (mg/L - unless otherwise specified)
1,2-Dichlorobenzene	0.003 ^a	
1,4-Dichlorobenzene	0.001 ^a	
2,4-Dichlorophenol	0.0003 ^a	
2,3,4,6-Tetrachlorophenol	0.001 ^a	
2,4,6-Trichlorophenol	0.002 ^a	
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	0.02 ^a	
Alkalinity (as CaCO ₃)		30-500
Aluminum		0.1

TABLE 4 – CHEMICAL / PHYSICAL OBJECTIVES AND GUIDELINES		
PARAMETER	AO (mg/L - unless otherwise specified)	OG (mg/L - unless otherwise specified)
Chloride	250	
Colour	5 TCU	
Copper	1	
Dissolved Organic Carbon	5	
Ethylbenzene	0.0024	
Hardness (as CaCO ₃)		80-100
Iron	0.3	
Manganese	0.05	
Methane	3L/ m ³	
Monochlorobenzene	0.03 ^a	
Odour	Inoffensive	
Organic Nitrogen		0.15
pH		6.5-8.5 (no units)
Pentachlorophenol	0.03 ^a	
Sodium	b	
Sulphate	500 ^c	
Sulphide	0.05	
Taste	Inoffensive	
Temperature	15 °C	
Toluene	0.024	
Total Dissolved Solids	500	
Turbidity	5 NTU ^d	e
Xylenes	0.3	
Zinc	5	

Short Forms:

NTU - Nephelometric Turbidity unit

Footnotes:

- a) Refer to Table 2 for standard
- b) The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health

Technical Support Document for Ontario Drinking-water Quality Standards, Objectives and Guidelines

- should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets
- c) When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people
 - d) Applicable for all waters at the point of consumption.
 - e) The Operational Guidelines for filtration processes are provided as performance criteria in the Procedure for Disinfection of Drinking Water in Ontario.



**CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
4622 NASSAGAWEYA PUSLINCH TOWNLINE
MOFFAT, ON L0P 1J0
519-826-0099**

**ATTENTION TO: Allan Rodie
PROJECT: 2317- Old Brock Road**

AGAT WORK ORDER: 24T119195

**MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead
MISCELLANEOUS ANALYSIS REVIEWED BY: Yris Verastegui, Inorganic Team Lead
TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist
ULTRA TRACE REVIEWED BY: Amar Bellahsene, Chimiste, AGAT Montréal
WATER ANALYSIS REVIEWED BY: Yris Verastegui, Inorganic Team Lead**

DATE REPORTED: Feb 21, 2024

PAGES (INCLUDING COVER): 39

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
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 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Fecal Coliforms in Water

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Fecal Coliform	CFU/100mL			0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Fecal Coliforms RDL = 1 CFU/100mL
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Nivine Basily



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AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Heterotrophic Plate Count in Water

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Heterotrophic Plate Count	CFU/1ml			55

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Heterotrophic Plate Count RDL = 5 CFU/mL

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Allan Rodie



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AGAT WORK ORDER: 24T119195

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Total Coliforms & E.Coli & Background Colony Count (Using DC Agar)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Escherichia coli - DC Agar	CFU/100mL	0		0
Total Coliforms - DC Agar	CFU/100mL	0		1
Background Colony Count - DC Agar	CFU/100mL			33

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Escherichia coli, Total Coliforms and Background Colony Count RDL = 1 CFU/100mL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Allan Rodie



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AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Base Neutrals and Acids [Water]

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
SAMPLE TYPE: Water
DATE SAMPLED: 2024-02-08
15:00
5635992

Parameter	Unit	G / S	RDL	5635992
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01
Sediment				NO
Surrogate	Unit	Acceptable Limits		
2-Fluorophenol	%	50-140		67
phenol-d6 surrogate	%	50-140		78
2,4,6-Tribromophenol	%	50-140		89
Chrysene-d12	%	50-140		88

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amounts

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Carbamate Pesticides (Water)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Carbofuran	µg/L	90	5	<5
Carbaryl	µg/L	90	5	<5
Diuron	µg/L	150	10	<10
Triallate	µg/L	230	1	<1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Results relate only to the items tested.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





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AGAT WORK ORDER: 24T119195

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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Chlorophenols by GC-MS (Water)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
2,4,6-Trichlorophenol	µg/L	5	0.2	<0.2
2,4-Dichlorophenol	µg/L		0.3	<0.3
Pentachlorophenol	µg/L	60	0.5	<0.5
2,3,4,6-Tetrachlorophenol	µg/L		0.5	<0.5
Sediment				NO
Surrogate	Unit	Acceptable Limits		
2,4,6-Tribromophenol	%	50-140		89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
 Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amount

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 24T119195

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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Diquat/Paraquat

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Diquat	µg/L	70	5	<5
Paraquat	µg/L	10	1	<1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Haloacetic Acids in Water

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1				
SAMPLE TYPE: Water				
DATE SAMPLED: 2024-02-08 15:00				
Parameter	Unit	G / S	RDL	5635992
Monobromoacetic Acid	ug/L		0.5	<0.5
Monochloroacetic Acid	ug/L		0.5	<0.5
Dichloroacetic Acid	ug/L		0.5	<0.5
Dibromoacetic Acid	ug/L		0.5	<0.5
Trichloroacetic Acid	ug/L		0.5	<0.5
Haloacetic Acids (HAA5)	ug/L	80	2.0	<2.0
Bromochloroacetic Acid	ug/L		0.5	<0.5
Surrogate	Unit	Acceptable Limits		
2-Bromopropionic Acid	%	70-130		96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Haloacetic Acids (HAA5) is a calculated parameter. The calculated value is the sum of Monobromoacetic Acid, Monochloroacetic Acid, Dichloroacetic Acid, Dibromoacetic Acid and Trichloroacetic Acid.
 Analysis performed at AGAT Toronto (unless marked by *)

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

OP Pesticides (Water)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Phorate	µg/L	2	0.5	<0.5
Dimethoate	µg/L	20	2.5	<2.5
Terbufos	µg/L	1	0.5	<0.5
Diazinon	µg/L	20	1	<1
Malathion	µg/L	190	5	<5
Chlorpyrifos	µg/L	90	1	<1
Azinphos-methyl	µg/L	20	2	<2
Surrogate	Unit	Acceptable Limits		
Triphenyl phosphate (surr)	%	50-140		78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Results relate only to the items tested.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Phenoxy Acid Herbicides (Water)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
2,4-D	µg/L	100	0.5	<0.5
2,4,5-T	µg/L		0.5	<0.5
Dicamba	µg/L	120	0.5	<0.5
Picloram	µg/L	190	0.5	<0.5
Diclofop-methyl	µg/L	9	0.5	<0.5
Bromoxynil	µg/L	5	0.3	<0.3
MCPA	µg/L		5.0	<5.0
Surrogate	Unit	Acceptable Limits		
DCAA	%	50-140		75

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>
CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie
Total PCBs (water)
DATE RECEIVED: 2024-02-08
DATE REPORTED: 2024-02-21
SAMPLE DESCRIPTION: W1
SAMPLE TYPE: Water
DATE SAMPLED: 2024-02-08
15:00
5635992

Parameter	Unit	G / S	RDL	5635992
PCBs	µg/L	3	0.1	<0.1
Surrogate	Unit	Acceptable Limits		
Decachlorobiphenyl	%	60-130		96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




Certificate of Analysis

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PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Triazine Pesticides [water]

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
Trifluralin	µg/L	45	1.0	<1.0
Simazine	µg/L	10	1.0	<1.0
Metribuzin	µg/L	80	0.25	<0.25
Prometryne	µg/L	1	0.25	<0.25
Metolachlor	µg/L	50	0.11	<0.11
Alachlor	µg/L	5	0.5	<0.5
Atrazine + N-dealkylated metabolites	µg/L	5	1	<1
Surrogate	Unit	Acceptable Limits		
Triphenyl phosphate (surr)	%	30-130		89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Results relate only to the items tested.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Volatile Organic Compounds in Water

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION:		W1		
SAMPLE TYPE:		Water		
DATE SAMPLED:		2024-02-08 15:00		
Parameter	Unit	G / S	RDL	5635992
Benzene	µg/L	1	0.2	<0.2
Bromodichloromethane	µg/L		0.2	<0.2
Bromoform	µg/L		0.1	<0.1
Carbon Tetrachloride	µg/L	2	0.2	<0.2
Chloroform	µg/L		0.2	<0.2
Dibromochloromethane	µg/L		0.1	<0.1
Ethylbenzene	µg/L	140	0.1	<0.1
1,2-Dichlorobenzene	µg/L	200	0.1	<0.1
1,4-Dichlorobenzene	µg/L	5	0.1	<0.1
1,2-Dichloroethane	µg/L	5	0.20	<0.20
1,2-Dichloroethylene	mg/L		0.0002	<0.0002
Dichloromethane	µg/L	50	0.30	<0.30
Monochlorobenzene	ug/L		1.0	<1.0
Tetrachloroethylene	mg/L	0.01	0.0001	<0.0001
Trichloroethylene	µg/L	5	0.20	<0.20
Toluene	µg/L	60	0.2	<0.2
Vinyl Chloride	µg/L	1	0.17	<0.17
m & p-Xylene	µg/L		0.2	<0.2
o-Xylene	µg/L		0.1	<0.1
Xylenes (Total)	µg/L	90	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		94
4-Bromofluorobenzene	% Recovery	50-140		100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Dioxins and Furans (Water) WHO 2005

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
SAMPLE TYPE: Water
DATE SAMPLED: 2024-02-08
15:00
5635992

Parameter	Unit	G / S	RDL	5635992
2,3,7,8-Tetra CDD	pg/L		0.1	0.3
1,2,3,7,8-Penta CDD	pg/L		0.1	0.7
1,2,3,4,7,8-Hexa CDD	pg/L		0.1	0.5
1,2,3,6,7,8-Hexa CDD	pg/L		0.1	<0.1
1,2,3,7,8,9-Hexa CDD	pg/L		0.1	<0.1
1,2,3,4,6,7,8-Hepta CDD	pg/L		0.1	0.5
Octa CDD	pg/L		0.1	9.6
2,3,7,8-Tetra CDF	pg/L		0.1	0.3
1,2,3,7,8-Penta CDF	pg/L		0.1	0.9
2,3,4,7,8-Penta CDF	pg/L		0.1	0.7
1,2,3,4,7,8-Hexa CDF	pg/L		0.1	0.6
1,2,3,6,7,8-Hexa CDF	pg/L		0.1	0.6
2,3,4,6,7,8-Hexa CDF	pg/L		0.1	<0.1
1,2,3,7,8,9-Hexa CDF	pg/L		0.1	0.7
1,2,3,4,6,7,8-Hepta CDF	pg/L		0.1	0.3
1,2,3,4,7,8,9-Hepta CDF	pg/L		0.1	0.5
Octa CDF	pg/L		0.1	1.2
Total Tetra CDD	pg/L		0.1	<0.1
Total Penta CDD	pg/L		0.1	1.3
Total Hexa CDD	pg/L		0.1	<0.1
Total Hepta CDD	pg/L		0.1	1.1
Total PCDDs	pg/L		0.1	12.0
Total Tetra CDF	pg/L		0.1	0.6
Total Penta CDF	pg/L		0.1	2.1
Total Hexa CDF	pg/L		0.1	1.9
Total Hepta CDF	pg/L		0.1	1.0
Total PCDFs	pg/L		0.1	6.7
2,3,7,8-Tetra CDD (TEQ)	pg TEQ/L			0.312
1,2,3,7,8-Penta CDD (TEQ)	pg TEQ/L			0.727

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Dioxins and Furans (Water) WHO 2005

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Parameter	Unit	G / S	RDL	5635992
1,2,3,4,7,8-Hexa CDD (TEQ)	pg TEQ/L			0.0468
1,2,3,6,7,8-Hexa CDD (TEQ)	pg TEQ/L			0
1,2,3,7,8,9-Hexa CDD (TEQ)	pg TEQ/L			0
1,2,3,4,6,7,8-Hepta CDD (TEQ)	pg TEQ/L			0.00483
Octa CDD (TEQ)	pg TEQ/L			0.00289
2,3,7,8-Tetra CDF (TEQ)	pg TEQ/L			0.0312
1,2,3,7,8-Penta CDF (TEQ)	pg TEQ/L			0.0265
2,3,4,7,8-Penta CDF (TEQ)	pg TEQ/L			0.203
1,2,3,4,7,8-Hexa CDF (TEQ)	pg TEQ/L			0.0571
1,2,3,6,7,8-Hexa CDF (TEQ)	pg TEQ/L			0.0571
2,3,4,6,7,8-Hexa CDF (TEQ)	pg TEQ/L			0
1,2,3,7,8,9-Hexa CDF (TEQ)	pg TEQ/L			0.0675
1,2,3,4,6,7,8-Hepta CDF (TEQ)	pg TEQ/L			0.00268
1,2,3,4,7,8,9-Hepta CDF (TEQ)	pg TEQ/L			0.00519
Octa CDF (TEQ)	pg TEQ/L			0.000358
Total PCDDs and PCDFs (TEQ)	pg TEQ/L			1.54

Certified By:



[Handwritten Signature]



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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 CANADA L4Z 1Y2
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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Dioxins and Furans (Water) WHO 2005

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-02-08
 15:00
 5635992

Surrogate	Unit	Acceptable Limits	5635992
13C-2,3,7,8-TCDF	%	30-140	87
13C-1,2,3,7,8-PeCDF	%	30-140	101
13C-2,3,4,7,8-PeCDF	%	30-140	93
13C-1,2,3,4,7,8-HxCDF	%	30-140	100
13C-1,2,3,6,7,8-HxCDF	%	30-140	103
13C-2,3,4,6,7,8-HxCDF	%	30-140	102
13C-1,2,3,7,8,9-HxCDF	%	30-140	97
13C-1,2,3,4,6,7,8-HpCDF	%	30-140	97
13C-1,2,3,4,7,8,9-HpCDF	%	30-140	87
13C-2,3,7,8-TCDD	%	30-140	92
13C-1,2,3,7,8-PeCDD	%	30-140	93
13C-1,2,3,4,7,8-HxCDD	%	30-140	105
13C-1,2,3,6,7,8-HxCDD	%	30-140	102
13C-1,2,3,4,6,7,8-HpCDD	%	30-140	100
13C-OCDD	%	30-140	93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 LDR = LDE = Estimated Detection Limit
 TEQ = Toxicity Equivalent
 Toxicity Equivalency Factors (TEF) based on WHO 2005.
 The results were corrected based on the surrogate percent recoveries.
 The isotopic ratio of 2,3,7,8-TCDD, and 1,2,3,4,7,8-HxCDD failed; they are quantified, but not included in the totals.

Analysis performed at AGAT Montréal (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

(Water) Inorganic Chemistry

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
SAMPLE TYPE: Water
DATE SAMPLED: 2024-02-08
15:00
5635992

Parameter	Unit	G / S	RDL	5635992
Alkalinity (as CaCO3)	mg/L		5	357
pH	pH Units		NA	7.09
Total Dissolved Solids	mg/L		10	1110
Turbidity	NTU		0.5	1.8
Dissolved Organic Carbon	mg/L		0.5	1.3
True Colour	TCU		2.50	<2.50
Cyanide, WAD	mg/L	0.2	0.002	<0.002
Fluoride	mg/L	1.5	0.05	<0.05
Nitrate as N	mg/L	10.0	0.05	4.91
Nitrite as N	mg/L	1.0	0.05	<0.05
Chloride	mg/L		0.24	441
Sulphate	mg/L		0.10	67.8
Sulphide	mg/L		0.01	<0.01
Lab Filtration DOC				2024/02/09

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5635992 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Jris Veraistegui



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

5835 COOPERS AVENUE
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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Hardness in Water (Total Metals) (mg/L)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

SAMPLE DESCRIPTION: W1
SAMPLE TYPE: Water
DATE SAMPLED: 2024-02-08
15:00
5635992

Parameter	Unit	G / S	RDL	5635992
Hardness (as CaCO3) (Calculated)	mg/L		0.5	408

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Total Metals in Water (including Sodium) (mg/L)

DATE RECEIVED: 2024-02-08

DATE REPORTED: 2024-02-21

Parameter	Unit	SAMPLE DESCRIPTION:		
		G / S	RDL	5635992
		W1		
		Water		
		2024-02-08 15:00		
Total Aluminum	mg/L		0.010	0.020
Total Antimony	mg/L	0.006	0.003	<0.003
Total Arsenic	mg/L	0.01	0.003	<0.003
Total Barium	mg/L	1.0	0.002	0.156
Total Boron	mg/L	5.0	0.010	0.076
Total Cadmium	mg/L	0.005	0.0001	<0.0001
Total Chromium	mg/L	0.05	0.003	<0.003
Total Copper	mg/L		0.002	0.002
Total Iron	mg/L		0.050	<0.050
Total Lead	mg/L	0.010	0.0005	0.0009
Total Manganese	mg/L		0.002	0.003
Total Selenium	mg/L	0.01	0.002	<0.002
Total Uranium	mg/L	0.02	0.0005	0.0023
Total Zinc	mg/L		0.020	0.058
Total Mercury	mg/L	0.001	0.0001	<0.0001
Total Sodium	mg/L	20	0.10	338

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Jris Veraistegui



Exceedance Summary

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
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CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Allan Rodie

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5635992	W1	ON 169/03 MAC/IMAC	Total Coliforms & E.Coli & Background Colony Count (Using DC Agar)	Total Coliforms - DC Agar	CFU/100mL	0	1
5635992	W1	ON 169/03 MAC/IMAC	Total Metals in Water (including Sodium) (mg/L)	Total Sodium	mg/L	20	338

Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
PROJECT: 2317- Old Brock Road
SAMPLING SITE:

AGAT WORK ORDER: 24T119195
ATTENTION TO: Allan Rodie
SAMPLED BY: Allan Rodie

Microbiology Analysis

RPT Date: Feb 21, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E.Coli & Background Colony Count (Using DC Agar)

Escherichia coli - DC Agar	5635992	5635992	0	0	NA								
Total Coliforms - DC Agar	5635992	5635992	1	1	0.0%								
Background Colony Count - DC Agar	5635992	5635992	33	32	3.1%								

Comments: NA - % RPD Not Applicable

Heterotrophic Plate Count in Water

Heterotrophic Plate Count	5635992	5635992	55	45	20%	<	NA		NA			NA	
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Comments: NA - % RPD Not Applicable

Fecal Coliforms in Water

Fecal Coliform	5635992	5635992	0	0	NA	<	NA		NA			NA	
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Comments: NA - % RPD Not Applicable

Certified By:



Nivine Basily

Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

Trace Organics Analysis															
RPT Date: Feb 21, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total PCBs (water)															
PCBs	5639107		< 0.1	< 0.1	NA	< 0.1	106%	50%	140%	89%	50%	140%	82%	50%	140%
Volatile Organic Compounds in Water															
Benzene	5635245		<0.2	<0.2	NA	< 0.2	102%	50%	140%	89%	60%	130%	97%	50%	140%
Bromodichloromethane	5635245		<0.2	<0.2	NA	< 0.2	76%	50%	140%	81%	60%	130%	79%	50%	140%
Bromoform	5635245		<0.1	<0.1	NA	< 0.1	66%	50%	140%	78%	60%	130%	57%	50%	140%
Carbon Tetrachloride	5635245		<0.2	<0.2	NA	< 0.2	71%	50%	140%	78%	60%	130%	72%	50%	140%
Chloroform	5635245		<0.2	<0.2	NA	< 0.2	119%	50%	140%	109%	60%	130%	90%	50%	140%
Dibromochloromethane	5635245		<0.1	<0.1	NA	< 0.1	95%	50%	140%	95%	60%	130%	90%	50%	140%
Ethylbenzene	5635245		<0.1	<0.1	NA	< 0.1	82%	50%	140%	94%	60%	130%	87%	50%	140%
1,2-Dichlorobenzene	5635245		<0.1	<0.1	NA	< 0.1	111%	50%	140%	107%	60%	130%	108%	50%	140%
1,4-Dichlorobenzene	5635245		<0.1	<0.1	NA	< 0.1	113%	50%	140%	101%	60%	130%	107%	50%	140%
1,2-Dichloroethane	5635245		<0.20	<0.20	NA	< 0.20	108%	50%	140%	114%	60%	130%	113%	50%	140%
1,2-Dichloroethylene	5635245		<0.0002	<0.0002	NA	< 0.0002	89%	50%	140%	102%	60%	140%	85%	60%	130%
Dichloromethane	5635245		<0.30	<0.30	NA	< 0.30	105%	50%	140%	102%	60%	130%	91%	50%	140%
Monochlorobenzene	5635245		<1.0	<1.0	NA	< 1.0	85%	70%	130%	95%	130%	130%	102%	60%	140%
Tetrachloroethylene	5635245		<0.0001	<0.0001	NA	< 0.0001	96%	50%	140%	84%	60%	130%	110%	50%	140%
Trichloroethylene	5635245		<0.20	<0.20	NA	< 0.20	117%	50%	140%	107%	60%	130%	104%	50%	140%
Toluene	5635245		0.3	0.3	NA	< 0.2	101%	50%	140%	88%	60%	130%	96%	50%	140%
Vinyl Chloride	5635245		<0.17	<0.17	NA	< 0.17	84%	50%	140%	76%	50%	140%	74%	50%	140%
m & p-Xylene	5635245		0.3	0.3	NA	< 0.2	84%	50%	140%	107%	60%	130%	94%	50%	140%
o-Xylene	5635245		0.1	0.1	NA	< 0.1	88%	50%	140%	107%	60%	130%	98%	50%	140%
OP Pesticides (Water)															
Phorate			< 0.5	< 0.5	NA	< 0.5	78%	50%	140%	89%	50%	140%	77%	50%	140%
Dimethoate			< 2.5	< 2.5	NA	< 2.5	89%	50%	140%	90%	50%	140%	78%	50%	140%
Terbufos			< 0.5	< 0.5	NA	< 0.5	90%	50%	140%	94%	50%	140%	83%	50%	140%
Diazinon			< 1	< 1	NA	< 1	94%	50%	140%	97%	50%	140%	86%	50%	140%
Malathion			< 5	< 5	NA	< 5	88%	50%	140%	98%	50%	140%	82%	50%	140%
Chlorpyrifos			< 1	< 1	NA	< 1	93%	50%	140%	88%	50%	140%	89%	50%	140%
Azinphos-methyl			< 2	< 2	NA	< 2	90%	50%	140%	90%	50%	140%	89%	50%	140%
Carbamate Pesticides (Water)															
Carbofuran	1	TW	< 5	< 5	NA	< 5	89%	50%	140%	90%	50%	140%	90%	50%	140%
Carbaryl	1	TW	< 5	< 5	NA	< 5	95%	50%	140%	92%	50%	140%	89%	50%	140%
Diuron	1	TW	< 10	< 10	NA	< 10	79%	50%	140%	88%	50%	140%	101%	50%	140%
Triallate	1	TW	< 1	< 1	NA	< 1	87%	50%	140%	100%	50%	140%	90%	50%	140%
Triazine Pesticides [water]															
Trifluralin			< 1.0	< 1.0	NA	< 1.0	67%	50%	140%	78%	50%	140%	90%	50%	140%
Simazine			< 1.0	< 1.0	NA	< 1.0	78%	50%	140%	75%	50%	140%	88%	50%	140%
Metribuzin			< 0.25	< 0.25	NA	< 0.25	78%	50%	140%	84%	50%	140%	91%	50%	140%

Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
PROJECT: 2317- Old Brock Road
SAMPLING SITE:

AGAT WORK ORDER: 24T119195
ATTENTION TO: Allan Rodie
SAMPLED BY: Allan Rodie

Trace Organics Analysis (Continued)

RPT Date: Feb 21, 2024			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Prometryne			< 0.25	< 0.25	NA	< 0.25	79%	50%	140%	88%	50%	140%	83%	50%	140%	
Metolachlor			< 0.11	< 0.11	NA	< 0.11	89%	50%	140%	80%	50%	140%	86%	50%	140%	
Alachlor			< 0.5	< 0.5	NA	< 0.5	97%	50%	140%	90%	50%	140%	89%	50%	140%	
Phenoxy Acid Herbicides (Water)																
2,4-D		TW	< 0.5	< 0.5	NA	< 0.5	92%	50%	140%	90%	50%	140%	80%	50%	140%	
2,4,5-T		TW	< 0.5	< 0.5	NA	< 0.5	90%	50%	140%	75%	50%	140%	77%	50%	140%	
Dicamba		TW	< 0.5	< 0.5	NA	< 0.5	90%	50%	140%	90%	50%	140%	90%	50%	140%	
Picloram		TW	< 0.5	< 0.5	NA	< 0.5	94%	50%	140%	85%	50%	140%	79%	50%	140%	
Diclofop-methyl		TW	< 0.5	< 0.5	NA	< 0.5	92%	50%	140%	104%	50%	140%	104%	50%	140%	
Bromoxynil		TW	< 0.3	< 0.3	NA	< 0.3	95%	50%	140%	87%	50%	140%	NA	50%	140%	
MCPA		TW	< 5.0	< 5.0	NA	< 5.0	90%	50%	140%	90%	50%	140%	88%	50%	140%	
Haloacetic Acids in Water																
Monobromoacetic Acid	5634686	5634686	1.85	2.01	NA	< 0.5	103%	70%	130%	61%	60%	130%	70%	70%	130%	
Monochloroacetic Acid	5634686	5634686	< 0.5	< 0.5	NA	< 0.5	103%	70%	130%	61%	60%	130%	70%	70%	130%	
Dichloroacetic Acid	5634686	5634686	5.26	5.48	4.1%	< 0.5	96%	70%	130%	83%	60%	130%	118%	70%	130%	
Dibromoacetic Acid	5634686	5634686	< 0.5	< 0.5	NA	< 0.5	104%	70%	130%	78%	60%	130%	86%	70%	130%	
Trichloroacetic Acid	5634686	5634686	6.0	6.08	1.3%	< 0.5	93%	70%	130%	73%	60%	130%	86%	70%	130%	
Bromochloroacetic Acid	5634686	5634686	1.11	1.23	NA	< 0.5	118%	70%	130%	91%	60%	130%	100%	70%	130%	
Chlorophenols by GC-MS (Water)																
2,4,6-Trichlorophenol			< 0.2	< 0.2	NA	< 0.2	78%	50%	140%	89%	50%	140%	89%	50%	140%	
2,4-Dichlorophenol			< 0.3	< 0.3	NA	< 0.3	89%	50%	140%	75%	50%	140%	90%	50%	140%	
Pentachlorophenol			< 0.5	< 0.5	NA	< 0.5	90%	50%	140%	76%	50%	140%	93%	50%	140%	
2,3,4,6-Tetrachlorophenol			< 0.5	< 0.5	NA	< 0.5	90%	50%	140%	78%	50%	140%	83%	50%	140%	
Base Neutrals and Acids [Water]																
Benzo(a)pyrene			< 0.01	< 0.01	NA	< 0.01	89%	50%	140%	90%	50%	140%	93%	50%	140%	

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____



Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie

Ultra Trace Analysis

RPT Date: Feb 21, 2024			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Dioxins and Furans (Water) WHO 2005																
2,3,7,8-Tetra CDD	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	100%	70%	130%	NA	70%	130%	
1,2,3,7,8-Penta CDD	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	103%	70%	130%	NA	70%	130%	
1,2,3,4,7,8-Hexa CDD	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	98%	70%	130%	NA	70%	130%	
1,2,3,6,7,8-Hexa CDD	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	104%	70%	130%	NA	70%	130%	
1,2,3,7,8,9-Hexa CDD	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	98%	70%	130%	NA	70%	130%	
1,2,3,4,6,7,8-Hepta CDD	1	NA	NA	NA	NA	0.4	NA	70%	130%	101%	70%	130%	NA	70%	130%	
Octa CDD	1	NA	NA	NA	NA	0.6	NA	70%	130%	100%	70%	130%	NA	70%	130%	
2,3,7,8-Tetra CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	110%	70%	130%	NA	70%	130%	
1,2,3,7,8-Penta CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	94%	40%	130%	NA	70%	130%	
2,3,4,7,8-Penta CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	99%	70%	130%	NA	70%	130%	
1,2,3,4,7,8-Hexa CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	98%	70%	130%	NA	70%	130%	
1,2,3,6,7,8-Hexa CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	101%	70%	130%	NA	70%	130%	
2,3,4,6,7,8-Hexa CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	102%	70%	130%	NA	70%	130%	
1,2,3,7,8,9-Hexa CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	99%	70%	130%	NA	70%	130%	
1,2,3,4,6,7,8-Hepta CDF	1	NA	NA	NA	NA	0.2	NA	70%	130%	105%	70%	130%	NA	70%	130%	
1,2,3,4,7,8,9-Hepta CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	115%	70%	130%	NA	70%	130%	
Octa CDF	1	NA	NA	NA	NA	< 0.1	NA	70%	130%	95%	70%	130%	NA	70%	130%	
13C-2,3,7,8-TCDF	1	NA	NA	NA	0.0%	75	NA	30%	140%	81%	30%	140%	NA	30%	140%	
13C-1,2,3,7,8-PeCDF	1	NA	NA	NA	0.0%	89	NA	30%	140%	95%	30%	140%	NA	30%	140%	
13C-2,3,4,7,8-PeCDF	1	NA	NA	NA	0.0%	87	NA	30%	140%	89%	30%	140%	NA	30%	140%	
13C-1,2,3,4,7,8-HxCDF	1	NA	NA	NA	0.0%	88	NA	30%	140%	91%	30%	140%	NA	30%	140%	
13C-1,2,3,6,7,8-HxCDF	1	NA	NA	NA	0.0%	91	NA	30%	140%	93%	30%	140%	NA	30%	140%	
13C-2,3,4,6,7,8-HxCDF	1	NA	NA	NA	0.0%	87	NA	30%	140%	92%	30%	140%	NA	30%	140%	
13C-1,2,3,7,8,9-HxCDF	1	NA	NA	NA	0.0%	87	NA	30%	140%	89%	30%	140%	NA	30%	140%	
13C-1,2,3,4,6,7,8-HpCDF	1	NA	NA	NA	0.0%	85	NA	30%	140%	85%	30%	140%	NA	30%	140%	
13C-1,2,3,4,7,8,9-HpCDF	1	NA	NA	NA	0.0%	77	NA	30%	140%	71%	30%	140%	NA	30%	140%	
13C-2,3,7,8-TCDD	1	NA	NA	NA	0.0%	80	NA	30%	140%	86%	30%	140%	NA	30%	140%	
13C-1,2,3,7,8-PeCDD	1	NA	NA	NA	0.0%	90	NA	30%	140%	88%	30%	140%	NA	30%	140%	
13C-1,2,3,4,7,8-HxCDD	1	NA	NA	NA	0.0%	92	NA	30%	140%	97%	30%	140%	NA	30%	140%	
13C-1,2,3,6,7,8-HxCDD	1	NA	NA	NA	0.0%	89	NA	30%	140%	93%	30%	140%	NA	30%	140%	
13C-1,2,3,4,6,7,8-HpCDD	1	NA	NA	NA	0.0%	90	NA	30%	140%	88%	30%	140%	NA	30%	140%	
13C-OCDD	1	NA	NA	NA	0.0%	82	NA	30%	140%	84%	30%	140%	NA	30%	140%	

Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:
SAMPLED BY: Allan Rodie

Ultra Trace Analysis (Continued)

RPT Date: Feb 21, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: NA : Non applicable.

If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

NA as the percentage of recovery for the matrix spike indicates that the result is not provided due to the heterogeneity of the sample or the spiked analyte concentration was lower than the matrix contribution.

NA in the spike blank or CRM indicates that it is not required by the procedure.

Presence of a small contamination in the method blank. The method blank has been subtracted from the samples.

Certified By:


Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
PROJECT: 2317- Old Brock Road
SAMPLING SITE:

AGAT WORK ORDER: 24T119195
ATTENTION TO: Allan Rodie
SAMPLED BY: Allan Rodie

Water Analysis															
RPT Date: Feb 21, 2024			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Metals in Water (including Sodium) (mg/L)															
Total Aluminum	5644257		0.222	0.240	7.8%	< 0.010	94%	70%	130%	94%	80%	120%	94%	70%	130%
Total Antimony	5644257		<0.003	<0.003	NA	< 0.003	105%	70%	130%	108%	80%	120%	106%	70%	130%
Total Arsenic	5644257		<0.003	<0.003	NA	< 0.003	98%	70%	130%	98%	80%	120%	94%	70%	130%
Total Barium	5644257		0.130	0.133	2.3%	< 0.002	101%	70%	130%	109%	80%	120%	112%	70%	130%
Total Boron	5644257		0.439	0.436	0.7%	< 0.010	107%	70%	130%	110%	80%	120%	99%	70%	130%
Total Cadmium	5644257		0.0001	0.0006	NA	< 0.0001	99%	70%	130%	97%	80%	120%	90%	70%	130%
Total Chromium	5644257		<0.003	<0.003	NA	< 0.003	98%	70%	130%	92%	80%	120%	83%	70%	130%
Total Copper	5644257		0.007	0.012	NA	< 0.002	99%	70%	130%	91%	80%	120%	78%	70%	130%
Total Iron	5644257		4.11	4.74	14.2%	< 0.050	103%	70%	130%	100%	80%	120%	95%	70%	130%
Total Lead	5644257		0.0085	0.0090	5.7%	< 0.0005	97%	70%	130%	99%	80%	120%	89%	70%	130%
Total Manganese	5644257		0.470	0.527	11.4%	< 0.002	94%	70%	130%	92%	80%	120%	89%	70%	130%
Total Selenium	5644257		0.002	0.002	NA	< 0.002	101%	70%	130%	87%	80%	120%	92%	70%	130%
Total Uranium	5644257		0.0022	0.0023	NA	< 0.0005	98%	70%	130%	109%	80%	120%	102%	70%	130%
Total Zinc	5644257		0.025	<0.020	NA	< 0.020	98%	70%	130%	82%	80%	120%	86%	70%	130%
Total Mercury	5634668		<0.0001	<0.0001	NA	< 0.0001	103%	70%	130%	102%	80%	120%	92%	70%	130%
Total Sodium	5644257		75.3	82.3	8.9%	< 0.10	101%	70%	130%	108%	80%	120%	113%	70%	130%
(Water) Inorganic Chemistry															
Alkalinity (as CaCO3)	5634767		80	81	1.2%	< 5	105%	80%	120%						
pH	5634767		6.49	6.60	1.7%	NA	99%	90%	110%						
Total Dissolved Solids	5634769		124	122	1.6%	< 10	90%	80%	120%						
Turbidity	5634767		0.9	<0.5	NA	< 0.5	89%	80%	120%						
Dissolved Organic Carbon	5637427		3.1	3.1	0.0%	< 0.5	92%	90%	110%	96%	90%	110%	91%	80%	120%
True Colour	5630894		13.2	13.3	0.8%	< 2.5	104%	90%	110%						
Cyanide, WAD	5639107		<0.002	<0.002	NA	< 0.002	105%	70%	130%	102%	80%	120%	110%	70%	130%
Fluoride	5634016		<0.05	<0.05	NA	< 0.05	105%	70%	130%	104%	80%	120%	95%	70%	130%
Nitrate as N	5634016		16.9	17.4	2.9%	< 0.05	91%	70%	130%	98%	80%	120%	83%	70%	130%
Nitrite as N	5634016		<0.05	<0.05	NA	< 0.05	92%	70%	130%	86%	80%	120%	77%	70%	130%
Chloride	5634016		38.7	40.2	3.8%	< 0.10	94%	70%	130%	102%	80%	120%	99%	70%	130%
Sulphate	5634016		224	231	3.1%	< 0.10	92%	70%	130%	100%	80%	120%	NA	70%	130%
Sulphide	5659047		<0.01	<0.01	NA	< 0.01	98%	90%	110%	101%	90%	110%	98%	80%	120%

Comments: NA signifies Not Applicable.
 Duplicate NA: results are under 5X the RDL and will not be calculated.
 Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: _____

Joris Verastegui

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie

RPT Date: Feb 21, 2024										REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits									
			Lower	Upper		Lower	Upper		Lower	Upper								

Volatile Organic Compounds in Water

Monochlorobenzene	85%	70%	130%	95%	130%	130%	102%	60%	140%
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Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Fecal Coliform	MIC-93-7000	SM 9222 D	MF/INCUBATOR
Heterotrophic Plate Count	MIC-93- 7020	SM 9215 C	INCUBATOR
Escherichia coli - DC Agar	MIC-93-7010	MOE Method E3407	MF/INCUBATOR
Total Coliforms - DC Agar	MIC-93-7010	EPA 1604	MF/INCUBATOR
Background Colony Count - DC Agar	MIC-93-7010	MOE Method E3407	MF-Incubator

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzo(a)pyrene	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
2-Fluorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
phenol-d6 surrogate	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Chrysene-d12	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Sediment			N/A
Carbofuran	ORG-91-5101	EPA 632 531.1 & MOE E3158	HPLC
Carbaryl	ORG-91-5101	EPA 632 531.1 & MOE E3158	HPLC
Diuron	ORG-91-5101	EPA 632 531.1 & MOE E3158	HPLC
Triallate	ORG-91-5101	EPA 632 531.1 & MOE E3158	HPLC
2,4,6-Trichlorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
2,4-Dichlorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Pentachlorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
2,3,4,6-Tetrachlorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Diquat	ORG-91-5102	EPA 549.1	HPLC
Paraquat	ORG-91-5102	EPA 549.1	HPLC
Monobromoacetic Acid	ORG-91-5121	EPA 552.3	GC ECD
Monochloroacetic Acid	ORG-91-5121	EPA 552.3	GC ECD
Dichloroacetic Acid	ORG-91-5121	EPA 552.3	GC ECD
Dibromoacetic Acid	ORG-91-5121	EPA 552.3	GC ECD
Trichloroacetic Acid	ORG-91-5121	EPA 552.3	GC ECD
Haloacetic Acids (HAA5)	ORG-91-5121	EPA 552.3	GC ECD
Bromochloroacetic Acid	ORG-91-5121	EPA 552.3	GC/ECD
2-Bromopropionic Acid	ORG-91-5121	EPA 552.3	GC/ECD
Phorate	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Dimethoate	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Terbufos	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Diazinon	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Malathion	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Chlorpyrifos	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Azinphos-methyl	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
Triphenyl phosphate (surr)	ORG-91-5103	modified from EPA SW-846 3510C, 8141B & 8270E	GC/MS
2,4-D	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
2,4,5-T	ORG 5510	EPA SW846 8151A	GC/ECD

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dicamba	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
Picloram	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
Diclofop-methyl	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
Bromoxynil	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
MCPA	ORG-91-5110	modified from EPA 515.2, EPA SW-846 8151A	GC/ECD
DCAA	ORG-91-5110	EPA SW-846 8151	GC/ECD
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Trifluralin	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Simazine	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Metribuzin	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Prometryne	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Metolachlor	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Alachlor	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Atrazine + N-dealkylated metabolites	ORG 5504	EPA SW-846 3510c & 8270 & MOE E3121	GC/MS
Triphenyl phosphate (surr)	ORG-91-5104	EPA SW-846 3510C, 8270D & MOE E3121	GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Bromoform	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Dibromochloromethane	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Dichloromethane	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Monochlorobenzene		EPA 8260B & EPA 5030B	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS



Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
m & p-Xylene	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
o-Xylene	VOL 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Ultra Trace Analysis			
2,3,7,8-Tetra CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8-Penta CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8-Hexa CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,6,7,8-Hexa CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8,9-Hexa CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,6,7,8-Hepta CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Octa CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,7,8-Tetra CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8-Penta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,4,7,8-Penta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8-Hexa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,6,7,8-Hexa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,4,6,7,8-Hexa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8,9-Hexa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,6,7,8-Hepta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8,9-Hepta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Octa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Tetra CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Penta CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Hexa CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Hepta CDD	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total PCDDs	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Tetra CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Penta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Hexa CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total Hepta CDF	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total PCDFs	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
AGAT WORK ORDER: 24T119195
PROJECT: 2317- Old Brock Road
ATTENTION TO: Allan Rodie
SAMPLING SITE:
SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2,3,7,8-Tetra CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8-Penta CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8-Hexa CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,6,7,8-Hexa CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8,9-Hexa CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,6,7,8-Hepta CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Octa CDD (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,7,8-Tetra CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8-Penta CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,4,7,8-Penta CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8-Hexa CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,6,7,8-Hexa CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
2,3,4,6,7,8-Hexa CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,7,8,9-Hexa CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,6,7,8-Hepta CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
1,2,3,4,7,8,9-Hepta CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Octa CDF (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
Total PCDDs and PCDFs (TEQ)	HR-151-5400F	CEAEQ MA.400-DF 1.1; USEPA 1613,1311; EPSI/RM/19	APGC
13C-2,3,7,8-TCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,7,8-PeCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-2,3,4,7,8-PeCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,4,7,8-HxCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,6,7,8-HxCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-2,3,4,6,7,8-HxCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,7,8,9-HxCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,4,6,7,8-HpCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,4,7,8,9-HpCDF	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-2,3,7,8-TCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
13C-1,2,3,7,8-PeCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,4,7,8-HxCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,6,7,8-HxCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-1,2,3,4,6,7,8-HpCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC
13C-OCDD	HR-151-5400F	CEAEQ MA.400 - DF 1.0; USEPA 1613	APGC



Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T119195

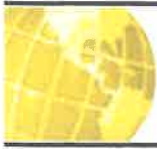
PROJECT: 2317- Old Brock Road

ATTENTION TO: Allan Rodie

SAMPLING SITE:

SAMPLED BY: Allan Rodie

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Alkalinity (as CaCO ₃)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Turbidity	INOR-93-6000	modified from SM 2130 B	PC TITRATE
Dissolved Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Cyanide, WAD	INOR-93-6052	modified from ON MOECC E3015, SM 4500-CN- I, G-387	SEGMENTED FLOW ANALYSIS
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphide	INOR-93-6054	modified from SM 4500 S2- D	SPECTROPHOTOMETER
Lab Filtration DOC	SR-78-9001		FILTRATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS



AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
web@earth.agatlabs.com

Laboratory Use Only

Work Order #: 24T119195

Cooler Quantity: 2 large + 1 med
Arrival Temperatures: 9.2 9.5 9.4
9.3, 8.9, 8.1, 9.1 9.7 9.8

Custody Seal Intact: Yes No N/A
Notes: no ice

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: HARDEN ENVIRONMENTAL SERVICES LTD.
Contact: Allan Rodie
Address: 4622 NASSAGAWEYA-PUSLINCH TOWNLINE
MOFFAT, ON L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099
Reports to be sent to:
1. Email: arodie@hardenv.com
2. Email: sdenhoed@hardenv.com

Regulatory Requirements:

No Regulatory Requirement
(Please check all applicable boxes)
 Regulation 153/04
 Sewer Use
 Regulation 558
Table Sanitary CCME
 Ind/Com Storm Prov. Water Quality
 Res/Park Agriculture Objectives (PWQO)
 Agriculture Storm Other
Soil Texture (Check One) Region: MISA
 Coarse Fine MISA
 Fine MISA
ODWS
Indicate One

Turnaround Time (TAT) Required:

Regular TAT 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
 3 Business Days 2 Business Days Next Business Day
OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays
For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 2317 - OLD BROCK ROAD
Site Location:
Sampled By: Allan Rodie
AGAT Quote #: 16868917566 PO:
Please note: if quotation number is not provided, client will be billed full price for analysis.

Is this submission for a Record of Site Condition?

Yes No

Report Guideline on Certificate of Analysis

Yes No

Sample Matrix Legend

B Blots
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CYM

O. Reg 153	
Metals and Inorganics	<input type="checkbox"/> All Metals <input type="checkbox"/> 153 Metals (excl. Hydroides) <input type="checkbox"/> Hydroide Metals <input type="checkbox"/> 153 Metals (incl. Hydroides)
ORPs:	<input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <input type="checkbox"/> CN <input type="checkbox"/> Cl ⁺ <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR
Full Metals Scan	
Regulation/Custom Metals	
Nutrients:	<input type="checkbox"/> TP <input type="checkbox"/> NH ₄ <input type="checkbox"/> TN <input type="checkbox"/> NO ₃ <input type="checkbox"/> NO ₂ <input type="checkbox"/> NO ₃ +NO ₂
Volatiles:	<input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM
PHCs F1 - F4	
ABNS	
PAHs	
PCBs:	<input type="checkbox"/> Total <input type="checkbox"/> Aroclors
Organochlorine Pesticides	
TCUP:	<input type="checkbox"/> MMA <input type="checkbox"/> MMS <input type="checkbox"/> ABNS <input type="checkbox"/> B(e)P <input type="checkbox"/> PCBs
Sewer Use	<input type="checkbox"/> Sewer Use

City of Hamilton Water Supply

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/Special Instructions	Y/N	Metals and Inorganics	ORPs:	Full Metals Scan	Regulation/Custom Metals	Nutrients:	Volatiles:	PHCs F1 - F4	ABNS	PAHs	PCBs:	Organochlorine Pesticides	TCUP:	Sewer Use
<u>W1</u>	<u>2-8-24</u>	<u>1500</u>	<u>49</u>	<u>GW</u>	<u>See attached NO quote for analysis required</u>	<u>NO</u>													

Sample Relinquished By (Print Name and Sign): <u>Allan Rodie</u>	Date: <u>2-8-24</u>	Time: <u>1640</u>	Samples Received By (Print Name and Sign): <u> </u>	Date: <u>Feb 8</u>	Time: <u>4:50 PM</u>
Sample Relinquished By (Print Name and Sign):	Date:	Time:	Sample Received By (Print Name and Sign):	Date:	Time:
Sample Relinquished By (Print Name and Sign):	Date:	Time:	Sample Received By (Print Name and Sign):	Date:	Time:

Page 1 of 1



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

27-February-2024

AGAT Laboratories - Mississauga

Attn : Gurleen Nanuan

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2, Canada

Phone: 905-712-5100
Fax:

Date Rec. : 12 February 2024
LR Report: CA13496-FEB24
Reference: PO#: 219686 - AGAT Job #: 24T119195

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: AO/OG	7: MDL	8: NR W1-5635992
Sample Date & Time								08-Feb-24 15:00
Temperature Upon Receipt [°C]	---	---	---	---	---	---	---	4.0
Bromate [mg/L]	13-Feb-24	08:56	21-Feb-24	13:03	0.01	---	0.005	<0.005
Chlorite [mg/L]	13-Feb-24	08:56	21-Feb-24	13:03	1	---	0.01	<0.01
Chlorate [mg/L]	22-Feb-24	07:59	26-Feb-24	16:45	1	---	0.01	0.02
Nitrosodimethylamine (NDMA) [ug/L]	16-Feb-24	08:40	21-Feb-24	12:59	0.009	---	0.0009	<0.0009
Nitritotriacetic acid (NTA) [mg/L]	20-Feb-24	06:40	22-Feb-24	10:24	0.4	---	0.03	<0.03
Total Kjeldahl Nitrogen (N) [mg/L]	12-Feb-24	22:04	13-Feb-24	10:38	---	---	0.05	< 0.05
Ammonia+Ammonium (N) [mg/L]	13-Feb-24	17:06	14-Feb-24	11:09	---	---	0.04	< 0.04
Organic Nitrogen [mg/L]	12-Feb-24	22:04	14-Feb-24	11:09	---	0.15	0.05	< 0.05
Glyphosate [ug/L]	13-Feb-24	12:35	15-Feb-24	15:24	280	---	1	<1
Methane [L/m3]	13-Feb-24	07:50	13-Feb-24	12:36	---	3	0.02	<0.02
Microcystin (Quantitative) [ug/L]	14-Feb-24	10:25	15-Feb-24	14:45	1.5	---	0.1	<0.1

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit
NR - Not regulated under applicable Provincial drinking water regulations as per client.

Method Descriptions

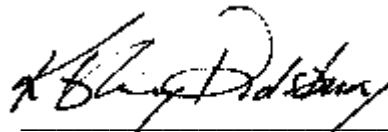
Parameter	Description	SGS Method Code	Reference Method Code
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - drinking water to MDL	ME-CA-[ENV]SFA-LAK-AN-007	SM 4500
Bromate	Bromate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-006	EPA317
Chlorate	Chlorate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-006	EPA317
Chlorite	Chlorite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-006	EPA317
Glyphosate	Glyphosate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-003	EPA547
Methane	Methane wtr	ME-CA-[ENV]GC-LAK-AN-014	In-House
Microcystin (Quantitative)	Microcystin (quantitative using ELISA)	ME-CA-[ENV]MIC-LAK-AN-014	OMOE MCYST-3469
Nitritotriacetic acid (NTA)	NTA wtr	ME-CA-[ENV]GC-LAK-AN-007	In-House
Nitrosodimethylamine (NDMA)	NDMA wtr - low level - 2L	ME-CA-[ENV]IC-LAK-AN-011	EPA 521

SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : CA13496-FEB24

Parameter	Description	SGS Method Code	Reference Method Code
Organic Nitrogen	TKN-NH3 = Org N	calculation	
Total Kjeldahl Nitrogen (N)	Tot. kjeldahl Nitrogen by Skalar - drinking wate	ME-CA-[ENV]SFA-LAK-AN-002	SM 4500-N C/4500-NO3- F



Kimberley Didsbury
Project Specialist,
Environment, Health & Safety



Quality Control Report

Organic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Glyphosate - QCBatchID: DIO0287-FEB24</i>													
Glyphosate	1	ug/L	<1			ND	30	102	70	130	112	70	130
<i>Methane - QCBatchID: GCM0172-FEB24</i>													
Methane	0.02	L/m3	< 0.02			ND	30	97	70	130	NSS	70	130
<i>NDMA - QCBatchID: DIO6003-FEB24</i>													
Nitrosodimethylamine (NDMA)	0.0009	ug/L	<0.0009			0.4	30	108	70	130			
<i>NTA - QCBatchID: GCM0261-FEB24</i>													
Nitritotriacetic acid (NTA)	0.03	mg/L	< 0.03			ND	30	112	80	120			
Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Ammonia by SFA - QCBatchID: SKA0111-FEB24</i>													
Ammonia+Ammonium (N)	0.04	mg/L	<0.04			ND	10	101	90	110	83	75	125
<i>Disinfection Byproducts by IC - QCBatchID: DIO0277-FEB24</i>													
Bromate	0.005	mg/L	<0.005			ND	20	99	80	120	87	75	125
Chlorite	0.01	mg/L	<0.01			ND	20	96	80	120	105	75	125
<i>Disinfection Byproducts by IC - QCBatchID: DIO0503-FEB24</i>													
Chlorate	0.01	mg/L	<0.01			10	20	92	80	120	79	75	125
<i>Total Nitrogen - QCBatchID: SKA0099-FEB24</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			2	10	95	90	110	75	75	125
Microbiological													
Parameter	Method Blank		Duplicate										
<i>Microbiology - QCBatchID: BAC9178-FEB24</i>													
Microcystin (Quantitative)	0.1#<MDL		ND										



Your P.O. #: 219677
 Your Project #: 24T119195
 Your C.O.C. #: n/a

Attention: Gurleen Nanuan

AGAT Laboratories
 5835 Coopers Ave
 Mississauga, ON
 CANADA L4Z 1Y2

Report Date: 2024/02/29
 Report #: R8047613
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C440528

Received: 2024/02/09, 10:37

Sample Matrix: Water
 # Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity Extracted	Analyzed		
Gross Alpha and Gross Beta	1	N/A	2024/02/26 BQL SOP-00008	GFPC

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.



Your P.O. #: 219677
Your Project #: 24T119195
Your C.O.C. #: n/a

Attention: Gurleen Nanuan

AGAT Laboratories
5835 Coopers Ave
Mississauga, ON
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Report Date: 2024/02/29
Report #: R8047613
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C440528

Received: 2024/02/09, 10:37

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Mayank Nigam, Project Manager
Email: Mayank.Nigam@bureauveritas.com
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Bureau Veritas Job #: C440528
Report Date: 2024/02/29

AGAT Laboratories
Client Project #: 24T119195
Your P.O. #: 219677

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		YIM332		
Sampling Date		2024/02/08 15:00		
COC Number		n/a		
	UNITS	W1 - 5635992	RDL	QC Batch
Gross Alpha	Bq/L	0.20	0.10	9232335
Gross Beta	Bq/L	<0.10	0.10	9232335
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



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Report Date: 2024/02/29

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GENERAL COMMENTS

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9232335	JK2	Spiked Blank	Gross Alpha	2024/02/26		108	%	60 - 140
			Gross Beta	2024/02/26		87	%	70 - 130
9232335	JK2	Method Blank	Gross Alpha	2024/02/26	<0.10		Bq/L	
			Gross Beta	2024/02/26	<0.10		Bq/L	
9232335	JK2	RPD	Gross Alpha	2024/02/26	NC		%	N/A
			Gross Beta	2024/02/26	NC		%	N/A

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).




BUREAU
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Bureau Veritas Job #: C440528
Report Date: 2024/02/29

AGAT Laboratories
Client Project #: 24T119195
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:




Danish Samad, MSc., C.Chem, Miss.-Kitimat, Laboratory Supervisor

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York-Durham Regional Environmental Laboratory

901 McKay Road
Pickering, ON L1W 3A3
Phone (905)686-0041 Fax (905)686-0664



LABORATORY ANALYSIS REPORT

Work Order #: 118527 **Work ID:** REL24-542

Description: 24T119195

Client: AGAT Labs **Report To:** Gurleen Nunuan
AGAT Labs

Profile: AGAT Mississauga

Sampled By: Andy Tran

Sample Count: 1

Authorized by: Jennifer Koene-Fenton, Laboratory Superintendent

Analytical Results

Lab ID: 11852701	Sample ID: W1	Criteria: N/A	Date Received: 2/9/2024
Matrix: Water	Location: 5635992 zq		Date Collected: 2/8/2024
Type: Ground Water	Description:		

Parameter	Results	Units	MDL	RDL	DF	Limit	Prepared	Analyzed	C
GEOMIB (RELO-36)									
2,3,6-Trichloroanisole	<5	ng/L	1	5	1		02/09/2024	02/09/2024	
2,4,6-Trichloroanisole	<5	ng/L	1	5	1		02/09/2024	02/09/2024	
2-isobutyl-3-methoxypyrazine	<5	ng/L	0.7	5	1		02/09/2024	02/09/2024	
2-isopropyl-3-methoxypyrazine	<5	ng/L	1	5	1		02/09/2024	02/09/2024	
Geosmin	<2	ng/L	0.9	2	1		02/09/2024	02/09/2024	
MIB (2-methylisoborneol)	<2	ng/L	1	2	1		02/09/2024	02/09/2024	

The results pertain to the items tested and apply to the sample as received. This report shall not be reproduced, except in full, without the written consent of York-Durham Regional Environmental Laboratory. All supporting analytical information including measurement uncertainty is available upon request. The statement of conformity is based on simple acceptance, whether the result is within or outside the acceptance limits. The uncertainty is not taken into account in the statement of conformity. The end user is responsible for determining conformity.

Legend: MDL = Method Detection Limit; RDL = Reporting Detection Limit; MU = Measurement Uncertainty; < or ND = Less Than or Non-detect; ^ = Result outside limit; Limit = MAC; DF = Dilution Factor; OG = Operational Guideline; AO = Aesthetic Objective; HC = Health Canada; C = Comment; * = Comment Present



York-Durham Regional Environmental Laboratory

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LABORATORY ANALYSIS REPORT

Work Order #: 118527

Work ID:

REL24-542

York-Durham Regional Environmental Laboratory
901 McKay Road, Pickering ON L1W 3A3 Toll Free: 1-877-551-8877 Local: 905-686-0041
Fax: 905-686-0664 Email: rel@durham.ca Web: www.durham.ca

REL24-542

Non-regulated Water, Wastewater, Biosolid, Soil Chain of Custody Form

Client Information				Invoice To (leave blank if same as Client)				Report to (email address)									
Company Name: AGAT Laboratories				Company:				1) ramnarain@agatlabs.com *									
Facility Name: AGAT Laboratories				Quote #:				2) Nanvan@agatlabs.com *									
Facility Address: 5835 Coopers Avenue, MISS, ON L4Z 1Y2				PO #:				3)									
Facility Contact: Gurleen Nanuan; Neil Ramnarain				Tel: 905-712-5062				4)									
Email: nanuan@agatlabs.com; ramnarain@agatlabs.com				Standard Turnaround Time (TAT) is 10 business days <input type="checkbox"/> *RUSH				*Rush TAT requires lab approval in advance. Surcharge will apply.									
Project Information (if applicable)				Description: 24T119195													
Sample(s) Information				Collection				Container				Chlorine	Apply Criteria (Y/N) (*1)				
Lab ID (lab use only)	Field ID	Location/Description/Comment(s)	Matrix	Type	mm-dd-yy	HH:MM	Test Group(s)	Type	Sent	Rec'd	Free	Total					
01	W1	5635992 2-3	W	GW	02-08-24 24-08-24	15:00	Taste and Odour	120mL Amber Glass		1				N			
* See email in LIMS confirming report recipients JC 02/12/24																	
Sampled By: Andy Tran				Relinquished By (Print/Sign): Andy Tran <i>Andy Tran</i>				Date/Time: 02/09/2024				(1) Select One Applicable Criteria			Provide Municipality / City / Description		
<input type="checkbox"/> Sanitary Sewer Use By-law <input type="checkbox"/> Storm Sewer Use By-law <input type="checkbox"/> New Water Main <input type="checkbox"/> Other																	
LABORATORY USE ONLY																	
Delivery Method: Courier <input type="checkbox"/> Drop Off <input type="checkbox"/> YDREL Pickup <input checked="" type="checkbox"/>				Sorted by: Labeled by: <i>JV</i>				Checked by: <i>DO</i> Proved by: _____				WO #: 118527			Barcode: 118527		
REL-COC-NONREG-NOV-2019-REV-1				red Date/Time: FEB 9 2024 11:10				red By: <i>JV</i>				Comments: Received in AGAT amber glass bottle, confirm with Marco <i>JV Feb 09/24</i>					

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Legend: MDL = Method Detection Limit; RDL = Reporting Detection Limit; MU = Measurement Uncertainty; < or ND = Less Than or Non-detect; ^ = Result outside limit; Limit = MAC; DF = Dilution Factor; OG = Operational Guideline; AO = Aesthetic Objective; HC = Health Canada; C = Comment; * = Comment Present



Stage 3 Archaeological Assessment

AhGx-819 & AhGx-820
394 Old Brock Road
Part of Lot 9, Concession 2
Geographic Township of West Flamborough
City of Hamilton

Prepared for:
Tracy Kowalchuk
394 Old Brock Road
Hamilton, Ontario
L9H 5L4

Licensee: Michael Golloher
PIFs:
P1037-0085-2021
P1037-0091-2021
Original Report



Earthworks Archaeological Services Inc.
2365 Watts Road,
Haliburton, Ontario
K0M 1S0

February 21, 2022

Executive Summary

Earthworks Archaeological Services Inc. was retained to conduct Stage 3 archaeological assessment of Precontact Indigenous archaeological sites AhGx-819 and AhGx-820 located at 394 Old Brock Road, part of Lot 9, Concession 2, Geographic Township of West Flamborough, City of Hamilton, historically part of Wentworth County, Ontario. The assessment was undertaken in support of a future severance application and was conducted as part of the requirements defined in defined in Section 3.4.4. of the *Rural Hamilton Official Plan*, which requires an archaeological assessment to be undertaken when a proposed development, site alteration, or redevelopment of lands has the potential to adversely affect areas of archaeological potential

The study area contains evidence of archaeological potential. The location of the study area in close proximity to AhHa-176, a registered archaeological site, indicates the potential for Pre-Contact Indigenous archaeological material to be identified and recovered. In summary, a Stage 2 archaeological assessment was determined to be required in order to identify and document any archaeological material that may be present. A portion of the study area is a ploughed agricultural field, and as a result, a combined test pit and pedestrian survey was determined to be required.

The Stage 3 archaeological assessments of AhGx-819, and AhGx-820 were conducted between November 5 and November 11, 2021 under professional license P1037, issued to Michael Golloher, M.Sc. (P1037) At no time were weather or lighting conditions detrimental to the observation or recovery of archaeological material

A total of 32 test units were placed and excavated across both sites at a 5 and 10 metre interval based established datum points. Each unit was excavated by hand, into the first five centimetres of subsoil. Depth varied from 20-48 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of 6 millimetre width. As per Section 3.2.2 Standard 7 of the *Standards and Guidelines for Consultant Archaeologists*, one unit in AhGx-820, amounting to 10% of the total number of units, was screened through wire mesh of three millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown loam topsoil horizon overlaying an orange loam subsoil.

Based on the results of the Stage 3 archaeological assessment, the study area contains an archaeological site that has further cultural heritage value and interest. Therefore, a Stage 4 site specific archaeological mitigation is recommended AhGx-819.

The preferred method of Stage 4 mitigation is through avoidance and protection. Discussions with the proponent determined that the area is not integral to development and can be avoided. As a result, Stage 4 mitigation by avoidance and protection for AhGx-819 is recommended.

The protected area will consist of the site location and an associated 10 metre buffer. If grading or other soil disturbing activities caused by the development project extent to the edge of the area to be avoided, the proponent must erect a temporary barrier around the area to be avoided, and “no go” instructions will be issued to all on-site construction crews, engineers,



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

architects or others involved in the day-to-day decisions during construction. The location of the area to be avoided will be shown on all contract drawings, and will include explicit instructions to avoid that area.

During grading and other soil disturbing activities, the area to be avoided must be inspected and monitored by a licensed archaeologist to verify the effectiveness of the avoidance strategies. If alteration of the archaeological site is observed at any time during construction, the Ministry of Heritage, Sport, Tourism and Culture Industries must be notified immediately.

After completion of the grading and other soil disturbing activities, the protected area must be inspected, and a report will be required to be submitted to the Ministry on the effectiveness of the strategy in ensuring the area to be avoided remains intact.

No additional archaeological assessments are recommended for AhGx-820.

The Ministry of Heritage, Sport, Tourism and Culture Industries is requested to review this report and provide a letter indicating their satisfaction that the fieldwork and reporting for this archaeological assessment are consistent with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports



Table of Contents

1.0	Project Context	1
1.1	Development Context	1
1.2	Historic Context	2
1.2.1	Pre-Contact Indigenous History	2
1.2.2	Post Contact Indigenous History	3
1.2.3	European Settlement History	3
1.2.4	Land Use History of Study Area	4
1.2.5	Historic Plaques	4
1.3	Archaeological Context	4
1.3.1	Current Conditions	4
1.3.2	Natural Environment	5
1.3.3	Known Archaeological Sites.....	5
1.3.4	Previous Archaeological Assessments	8
1.3.5	Adjacent Archaeological Assessments	8
2.0	Field Methods	10
2.1	AhGx-819	10
2.2	AhGx-820	11
3.0	Record of Finds	12
3.1	Terms of Reference	13
3.1.1	Lithic Artifact Categories	13
3.1.2	Lithic Material Types	13
3.2	AhGx-819	14
3.3	AhGx-820	14
3.4	Artifact Catalogues.....	15
4.0	Analysis and Conclusions	19
4.1	AhGx-819	19
4.2	AhGx-820	19
5.0	Recommendations	20
6.0	Advice on Compliance with Legislation	21
7.0	References	22
8.0	Images	27
9.0	Maps	32



Project Personnel

Managing Director:	Anthony Butler, M.Sc. (P310)
Project Manager:	Shane McCartney, M.A. (P321)
Licensed Archaeologist:	Michael Golloher, M.Sc. (P1037)
Licensed Field Director:	Justina Zivic, M.Sc. (R1312)
Field Technicians:	Kelsea Dawn, GIS(PG) Kia Ohora, B.A. (R1303) Kyle Robinson Jordie Steinmann (A1221)
Artifact Analysis:	Jordie Steinmann (A1221)
Report Production:	Shane McCartney, M.A. (P321)



1.0 Project Context

1.1 Development Context

Earthworks Archaeological Services Inc. (Earthworks) was retained by Tracy Kowalchuck to conduct a Stage 3 archaeological assessment of Precontact Indigenous archaeological sites AhGx-819 and AhGx-820 located at 394 Old Brock Road, part of Lot 9, Concession 2, Geographic Township of West Flamborough, City of Hamilton, historically part of Wentworth County, Ontario (Map 1). The assessment was undertaken in support of a future severance application and was conducted as part of the requirements defined in defined in Section 3.4.4. of the *Rural Hamilton Official Plan*, which requires an archaeological assessment to be undertaken when a proposed development, site alteration, or redevelopment of lands has the potential to adversely affect areas of archaeological potential (City of Hamilton 2019:B.3-11).

The objectives of the Stage 3 archaeological assessment, as outlined by the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), are as follows:

- To determine the extent of AhGx-819 and AhGx-820 and the characteristics of the artifacts
- To collect a representative sample of artifacts
- To assess the cultural heritage value or interest of the archaeological site
- To determine the need for mitigation of development impacts and recommend appropriate strategies and future conservation.

Permission to access the property was provided by the proponent.



1.2 Historic Context

1.2.1 Pre-Contact Indigenous History

Table 1 provides a breakdown of the general culture history of southern Ontario, as based on Ellis and Ferris (1990)

Table 1: Pre-Contact Indigenous Culture History of Southern Ontario

Culture Period	Diagnostic Artifacts	Time Span (Years B.P.)	Detail
Early Paleo-Indian	Fluted Projectile Points	11,000-10,400	Nomadic caribou hunters
Late Paleo-Indian	Hi-Lo, Holcombe, Plano Projectile Points	10,400-10,000	Gradual population increase
Early Archaic	Nettling and Bifurcate Points	10,000-8,000	More localized tool sources
Middle Archaic	Brewerton and Stanly-Neville Projectile Points	8,000-4,500	Re-purposed projectile points and greater amount of endscrapers
Narrow Point Late Archaic	Lamoka and Normanskill Projectile Points	4,000-3,800	Larger site size
Broad Point Late Archaic	Genessee, Adder Orchard Projectile Points	3,800-3,500	Large bifacial tools. First evidence of houses
Small Point Late Archaic	Crawford Knoll, Innes Projectile Points	3,500-3,100	Bow and Arrow Introduction
Terminal Archaic	Hind Projectile Points	3,100-2,950	First evidence of cemeteries
Early Woodland	Meadowood Points, Cache Blades, and pop-eyed birdstones	2,950-2,400	First evidence of Vinette I Pottery
Middle Woodland	Pseudo-scallop shell	2,450-1550	Burial Mounds
	Princess Point pottery	1550-1100	First evidence of corn horticulture
Late Woodland	Levanna Point	1,100-700	Early longhouses
	Saugeen Projectile Points	700-600	Agricultural villages
	Nanticoke Notched Points	600-450	Migrating villages, tribal warfare



1.2.2 Post Contact Indigenous History

The surrounding area enters the historic record in 1626, when Father Daillon, a French missionary, spent three months in the Hamilton region attempting to conclude a trading alliance with the Neutral Confederacy. These negotiations ultimately failed due to opposition from Huron allies (White 1978:409). By 1638, the Neutral had expanded east to the Niagara River in response to a void left by the Wenro migrating to Huronia and the Erie migrating southwest. By the early 1640s, the Neutrals were engaged in large scale warfare with the Assistaeronons to the west while maintaining a neutral stance between the Huron and the League of Five Nations Iroquois. European influence in the region was generally restricted to the beaver pelt trade, and Aboriginal groups practiced a way of life that did not differ significantly from the pre-Contact period. By the late 1640's, the increasing scarcity of beaver pelts prompted the invasion of the Neutral by the League of Five Nations Iroquois. By 1651, the Neutral were destroyed and either moved west out of Ontario or they were absorbed into the League of Five Nations (Trigger 1994:57).

The region appears to have been relatively unpopulated by permanent settlements in the latter half of the seventeenth century, with much of southern Ontario used as a hunting territory by the Iroquois. However, Ojibwa groups previously thought to have settled along the northern shores of Georgian Bay and Lake Superior gradually migrated into southern Ontario, and by the late seventeenth/early eighteenth century the Mississauga had settled in the Hamilton region (Rogers 1978:761).

By 1784, the British government purchased from the Mississauga over a million hectares of land between Lake Ontario and Lake Erie, which became known as the Between the Lakes Purchase (Surtees 1994:102). The Mississauga eventually relocated to the Grand River at New Credit in 1847.

1.2.3 European Settlement History

The study area is located in the historic township of Flamborough, which was first surveyed in 1791 by Augustus Jones following the purchase of the land from the Mississauga, although some lots had already been settled by United Empire Loyalists prior to that point (Winearls 1991:500; Page and Smith 1875:11). Flamborough was divided into East and West townships in 1854 and assigned to Wentworth County following a mid nineteenth century reorganization of the county system. West Flamborough township was notable for the presence of Spencer Creek, which provided power for a number of mills, and the settlement of Crook's Hollow became a major industrial centre in early nineteenth century. Following the establishment of the towns of Dundas and Hamilton, regional economic activity gradually concentrated in these areas and Crook's Hollow fell into decline. The township has remained as a low residential



density agricultural area since that point, and was amalgamated into the City of Hamilton in 2001.

1.2.4 Land Use History of Study Area

The study area is located on Lot 9, Concession 2 in the Geographic Township of West Flamborough, which was first granted to Angus McDonell in 1797, and who sold it to John Green in 1801. Mr. Green was a United Empire Loyalist from New Jersey who had arrived in the Niagara Peninsula in 1796 before moving to West Flamborough Township and becoming a prominent proponent of early regional industry with the establishment of several mills. The Green family owned the property for several decades, gradually selling off parcels. In 1843, a 50 acre parcel that included the current study area was sold to John Marble, who sold it to James Hamilton in 1845 and who subsequently sold it to Orlando Moxley in 1848. The 1851 census lists Orlando Moxley as an American farmer of German origin residing in a one storey log house, having cleared all of his available 50 acres for agriculture (Government of Canada 1853:29,93). The Moxley family is shown as owners of the study area in the 1859 Surtees map of Wentworth County, and subsequent agricultural censuses in 1861 and 1871 also record Orlando Moxley as the owner. Thomas Dunkin was granted a mortgage for the northern section of the study area in 1874, and is listed as the owner in the 1879 *Illustrated Historical Atlas of the County of Wentworth*. The study area remained in the Moxley family until 1887, when it was sold to Joseph Randell. Analysis of historic topographic maps indicate the study area remained as agricultural land throughout the twentieth century through to the present day.

1.2.5 Historic Plaques

As per Section 1, Standard 1.1 of the *Standards and Guidelines for Consultant Archaeologists*, Earthworks consulted local historical plaques in order to inform archaeological potential and assessment strategies. No local plaques were found which related to the history of the current study area.

1.3 Archaeological Context

1.3.1 Current Conditions

The study area consists of an agricultural field with a residential lot in the southern tip.



1.3.2 Natural Environment

The study area is situated within a till moraine of the Norfolk Sand Plain Physiographic Region, a sand and silt plain deposited as a delta in glacial Lakes Whittlesey and Warren and built up during the meltwater discharge of the Grand River as the glaciers withdrew (Chapman and Putnam 1984:154). Surficial geological mapping indicates the study area consists of glaciolacustrine sand, and the soil map of the region indicates the soil of the study area consists of Grimsby Sandy Loam, a water deposited medium and fine sand belonging to the Gray-Brown Podzolic Great Soil Group (Presant et al. 1965:31)

The nearest water source is Spencer Creek, located approximately 600 metres south of the study area. Spencer Creek empties into , which runs through the centre of the study area, and drains into Spencer Creek approximately three kilometres to the southwest, which then empties into Lake Ontario approximately 7 kilometres southeast of the study area.

The study area is located within the Grimsby District of the Lake Ontario – Lake Erie Ecoregion, which itself is situated within the Mixedwood Plains Ecozone. This region encompasses 2,185,845 hectares, and contains a diverse array of flora and fauna. It characterized by a mix of Carolinian forest remnants of tulip-tree, black gum, sycamore, Kentucky coffee-tree, pawpaw, various oaks and hickories, and common hackberry, in addition to the more widespread sugar maple, American beech, white ash, eastern hemlock, and eastern white pine:

Typical mammals inhabiting this ecoregion include white-tailed deer, northern raccoon, striped skunk, and the Virginia opossum which has increased its distribution and abundance since the latter half of the 20th century. Characteristic birds include green heron, Virginia rail, Cooper's hawk, eastern kingbird, willow flycatcher, brown thrasher, yellow warbler, common yellowthroat, northern cardinal, and savannah sparrow. Wild turkey has been re-introduced into the ecoregion. Herpetofauna, is diverse, including several provincially rare species (e.g., spiny softshell turtle), as well as more frequent species such as eastern red-backed salamander, American toad, eastern gartersnake, and Midland painted turtle. Longnose gar, channel catfish, smallmouth bass, yellow perch, walleye, northern hogsucker, banded killifish, and spottail shiner are among the fish species found in the lakes and rivers in this ecoregion.

Crins et al. 2009:52

1.3.3 Known Archaeological Sites

A search of registered archaeological sites within the MHSTCI Archaeological Sites Database was conducted. A total of 30 registered archaeological sites were located within one kilometre of the study area, and AhHa-176 located within 300 metres of the study area. A summary of archaeological sites is included in Table 2.



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Table 2: Summary of Registered Archaeological Sites located within one kilometre of Study Area

Borden Number	Site Name	Time Period	Affinity	Site Type
Archaeological Sites Located within Boundary of Study Area				
AhGx-818		Pre-Contact	Aboriginal	scatter
AhGx-819		Archaic, Middle	Aboriginal	camp / campsite
AhGx-820		Archaic, Early	Aboriginal	findspot
AhGx-821		Pre-Contact	Aboriginal	scatter
AhGx-822		Pre-Contact	Aboriginal	scatter
AhGx-823		Pre-Contact	Aboriginal	scatter
AhGx-824		Archaic, Late	Aboriginal	findspot
Archaeological Sites Located within 300 metres of Study Area				
AhHa-176		Pre-Contact	Aboriginal	findspot
Remaining Archaeological Sites Located within 1 kilometre of Study Area				
AhGx-393	Greenworld	Pre-Contact	Aboriginal	findspot
AhGx-394		Pre-Contact	Aboriginal	Othercamp/campsite
AhGx-631		Pre-Contact	Aboriginal	findspot
AhGx-691	Coulson Site	Post-Contact		homestead
AhGx-692	AhGx-692-P2	Archaic, Late	Aboriginal	findspot
AhGx-693		Archaic, Middle, Woodland, Early		scatter
AhGx-694	AhGx-694-P4			



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Borden Number	Site Name	Time Period	Affinity	Site Type
AhGx-695	AhGx-695-P5	Woodland, Middle	Aboriginal	findspot
AhGx-696		Pre-Contact		scatter
AhGx-732		Post-Contact	Euro-Canadian	hamlet
AhGx-766	Location 1	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Unknown, scatter
AhGx-767	Location 2	Pre-Contact	Aboriginal	scatter
AhGx-768	Location 3	Pre-Contact	Aboriginal	scatter
AhGx-769	Location 6	Pre-Contact	Aboriginal	scatter
AhGx-770	Filman	Post-Contact	Euro-Canadian	farmstead
AhHa-122	Darnley Mill	Post-Contact	Euro-Canadian	mill
AhHa-175	John Green	Post-Contact	Euro-Canadian	cabin
AhHa-249	Ripani 1	Post-Contact	Euro-Canadian	residential
AhHa-250	Ripani 2	Archaic, Middle	Aboriginal	camp / campsite
AhHa-251	Ripani 4	Pre-Contact	Aboriginal	scatter
AhHa-252	Ripani 6	Pre-Contact	Aboriginal	camp / campsite
AhHa-253	Ripani 8	Archaic, Early	Aboriginal	scatter



1.3.4 Previous Archaeological Assessments

The study area was subject to a Stage 1 & 2 archaeological assessment by Earthworks in 2021 under PIF #: P321-0262-2021. A combined Stage 2 pedestrian and test pit survey was undertaken, resulting in the identification of 13 Pre-Contact Indigenous archaeological site locations. Archaeological sites AhGx-819 and AhGx-820 were recommended for a Stage 3 archaeological assessment. The recommendations are cited in full below:

The Stage 3 site-specific assessments of AhGx-819 and AhGx-820 will consist of the excavation of one metre test units placed on a 5 metre grid established over the sites, and based on a permanent datum to at least the accuracy of transit and tape measurements. Placing test units in unmeasured, estimated locations will not be acceptable. Additional test units, amounting to 20% of the grid unit total will be placed and excavated, focusing on areas of interest within the site extent.

Test units will be excavated by hand, in systematic levels into the first 5 centimetres of the subsoil layer, unless excavation uncovers a cultural feature. If test excavation uncovers a feature, the feature's plan will be recorded, and geotextile fabric will be placed over the unit floor prior to backfilling the test unit.

All excavated soil will be screened through mesh with an aperture of no greater than 6 millimetres, and all artifacts will be collected and recorded according to their corresponding grid unit designation. As per Section 3.2.2 Standard 7 of the Standards and Guidelines for Consultant Archaeologists, 20% of the total number of units required for AhGx-820 will need to be screened through wire mesh of 3 millimetre width.

(Earthworks 2021:19)

1.3.5 Adjacent Archaeological Assessments

The lot immediately to the west was subject to a number of archaeological assessments as part of a development of an estate subdivision. It was subject to a Stage 2 archaeological survey in 1997 by Material Culture Management Inc. under PIF #:97-052, who identified 15 isolated find spots and two historic Euro-Canadian scatters. The first scatter was considered late historic and not recommended for further assessment. The second site was registered as the John Green Site (AhHa-175) and identified as a mid-nineteenth century homestead and recommended for additional assessment (MCMI 1997:7).

In July 2014 a Controlled Surface Plot (CSP) was conducted at the John Green Site (AhHa-175) site by New Directions Archaeology Ltd Under PIF #: P018-0682-2014. This resulted in the recovery of 191 artifacts from 113 locations across the site. The surface area of AhHa-175 was



Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton

measured as 35m north-south by 75m east-west. The artifacts recovered were dominated by foodways artifacts - mainly ceramics but also a small amount of architectural debris such as glass and brick, one piece of mammal bone and a small number of clay pipe fragments.

Ceramics included fine earthenware, porcelain, refined white earthenware (RWE), vitrified white earthenware, coarse or red earthenware, stoneware and yellow ware. Decorative patterns on RWE included: edged, impressed, painted in early and late palettes, sponged and transfer printed in blue black, red and violet (NDA 2014).

In April 2015, a test unit excavation of the John Green Site (AhHa-175) site was conducted by Detritus Consulting Ltd. Under PIF #: P017-0362-2015 A total of 16 grid units were excavated at 10 metre intervals across the surface scatter, with an additional 10 units excavated in areas of interest as infill. These excavations resulted in the recovery of 517 historic Euro-Canadian artifacts and was dominated by refined white earthenware. An analysis of the artifacts from the site yielded a date of 1852, and there was sufficient cultural heritage value and interest to recommend for Stage 4 mitigation (Detritus Consulting 2015:23-24)

In June and July of 2015, a Stage 4 mitigation of the John Green Site (AhHa-175) was undertaken by Earthworks under PIF #: P310-0080-2015. A total of 35 units were block excavated, followed by mechanical topsoil removal. A total of 2254 artifacts were recovered, and 4 subsurface cultural features were identified, recorded and excavated. Excavations resulted in the conclusion that the John Green Site (AhHa-175) was associated with a structure documented in the 1875 *Illustrated Historical Atlas of Wentworth County* and owned by Frances Morden, with the artifact date range suggesting a log cabin that dated to the 1840s (Earthworks 2015).



2.0 Field Methods

The Stage 3 archaeological assessments of AhGx-819, and AhGx-820 were conducted between November 5 and November 11, 2021 under professional license P1037, issued to Michael Golloher, M.Sc. Table 3 provides a summary of Stage 3 field work conducted. The weather at the time was a mix of sun and cloud and warm. At no time were weather or lighting conditions detrimental to the observation or recovery of archaeological material. Test unit excavation followed the recommendations of the Stage 2 report cited in Section 1.3.4.

Table 3: Summary of Archaeological Fieldwork Dates

Date of Stage 3 Test Unit Excavation	PIF Number	Site
November 5, 2021	P1037-0085-2021	AhGx-820
November 9, 2021	P1037-0091-2021	AhGx-819
November 10, 2021	P1037-0091-2021	AhGx-819
November 11, 2021	P1037-0091-2021	AhGx-819

2.1 AhGx-819

Following the relocation of the surface scatter using GPS coordinates, permanent datum points were established for AhGx-819, oriented along the western boundary of the site area.

A network of five by five metre grid blocks were established across the extent of the site as determined by the extent of the surface scatter. The grid squares are referred to by the intersection coordinates of their southwest corner. Each five metre block was further subdivided into 25 one metre sub-squares and labelled sub-square 1 to 25 based on their position in relation to the southwest corner of the block. GPS UTM coordinates were recorded employing the North American Datum 83 using a Trimble Catalyst GPS unit with a sub-precision RTK subscription that allowed for a stated accuracy of 1-2 centimetres.

A total of 15 test units were placed and excavated across the site at a 10 metre interval based on the datum points (Images 1 and 2). Preliminary analysis of the recovered artifacts clearly indicated that the level of cultural heritage value or interest of the site would result in a recommendation to proceed to Stage 4 mitigation. As a result, the field work strategy was altered to follow the appropriate test unit excavation strategy in Table 3.1 of the *Standards and Guidelines for Consultant Archaeologists*, and an additional nine test units, amounting to more than 40% of the grid unit total, were placed within the areas of interest or high artifact concentration

Each unit was excavated by hand, into the first five centimetres of subsoil (Images 3 and 4). Depth varied from 20-48 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of six millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown clay topsoil horizon overlaying a reddish clay subsoil

The results of the Stage 3 archaeological assessment of AhGx-819 are presented in Map 2.



2.2 AhGx-820

Following the relocation of the surface scatter using GPS coordinates, permanent datum points were established for AhGx-820, oriented along the western boundary of the site area.

A network of five by five metre grid blocks were established across the extent of the site as determined by the extent of the surface scatter. The grid squares are referred to by the intersection coordinates of their southwest corner. Each five metre block was further subdivided into 25 one metre sub-squares and labelled sub-square 1 to 25 based on their position in relation to the southwest corner of the block. GPS UTM coordinates were recorded employing the North American Datum 83 using a Trimble Catalyst GPS unit with a sub-precision RTK subscription that allowed for a stated accuracy of 1-2 centimetres.

A total of six test units were placed and excavated across the site at a 5 metre interval based on the datum points (Images 5 and 6). An additional two test units, amounting to more than 20% of the grid unit total, were placed within the areas of interest or high artifact concentration

Each unit was excavated by hand, into the first five centimetres of subsoil (Images 7 and 8). Depth varied from 27-35 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of 6 millimetre width. As per Section 3.2.2 Standard 7 of the *Standards and Guidelines for Consultant Archaeologists*, one unit, amounting to 10% of the total number of units, was screened through wire mesh of three millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown loam topsoil horizon overlaying an orange loam subsoil.

The results of the Stage 3 archaeological assessment of AhGx-820 are presented in Map 3.



3.0 Record of Finds

Table 4 provides an inventory of the documentary record generated in the field.

Table 4: Information Inventory of Documentary Record

Document	Location	Description
Field Notes	Earthworks Office Project File	2 pages of notes
Photographs	Earthworks Office Project File	28 digital photographs,
Field Map	Earthworks Office Project File	2 pages
UTM Coordinates	Earthworks Office Digital File	4 Coordinates in excel file

The recovered artifacts were washed, catalogued, and analyzed and are currently stored in one banker's box, measuring 40.0 x 31.5 x 25 centimetres at the Earthworks Corporate Storage Unit. The artifacts and documents will be stored by Earthworks until arrangements can be made to transfer them to an MHSTCI approved storage facility.

The Parks Canada's *Database Artifact Inventory Guide* was used as a template during the cataloguing phase of artifact analysis and was modified accordingly. This guide classifies artifacts according to specific functional classes, subgroups, and types. Classes are intended to reflect related behaviour and general function-related activities. For example, Classes used include "Foodways" and include artifacts related to all aspects of food preparation, storage and consumption. Likewise, the "Architectural" class is a catch-all category for items such as brick, nails, window glass, etc. These Classes are further subdivided into Groups reflecting more specialized activities. The "Architectural" class, for example, includes groups such as construction materials, nails and window glass. Groups are then further refined into "Types", defined by attributes that are either functionally or temporally diagnostic, and so on. By classifying archaeological material in this manner, general trends can be discerned concerning on how an area was used in the past. Lithic analysis was modelled on established morphological classification systems (Andrefsky 2005; Fisher 1989), and lithic material types were identified through the use of a low-powered stereo microscope at 40 times magnification in conjunction with macroscopic analysis. A sample of artifacts recovered from the Stage 2 survey are presented in Images 9 and 10.



3.1 Terms of Reference

This section provides definitions of the artifact terms utilized in the site artifact catalogues and descriptions.

3.1.1 *Lithic Artifact Categories*

Informal Lithic Tool: Improvised tools manufactured from expedient lithic material. Includes utilized flakes, wedges, flake burins, spurs, cores, non-diagnostic bifaces and unifaces etc.

Lithic Debitage: Represents the waste material that is discarded during the manufacture of lithic tools such as projectile points or bifaces, and can be divided into subcategories based on the lithic reduction stage:

Tertiary Flakes: representing a switch from decortication to biface thinning, these flakes are represented by small striking platforms at a 90 degree angle, with no cortex present and a large amount of dorsal scarring.

Biface thinning flakes are smaller and much thinner than initial tertiary flakes, the main difference being the acute angle of the striking platform, which can be between 40 and 60 degrees.

Flake Fragment: this is assigned to a piece of debitage that does not contain the proximal end of the flake and is missing the striking platform.

Shatter: usually consists of thick, blocky pieces of chert which lack striking platforms and ventral flake surface attributes.

3.1.2 *Lithic Material Types*

Ancaster chert: a moderate quality chert that outcrops from the Lockport Formation near Hamilton, with secondary deposits found as far east as Grimsby (Eley and von Bitter 1989).

Haldimand chert: a relatively high quality chert found within the Bois Blanc Formation which is located underneath the Onondaga Escarpment between Dunnville and Hagersville (Eley and von Bitter 1989; Fox 2009; Telford and Tarrant 1975).

Onondaga chert: a high quality chert that forms part of the Onondaga Formation, and outcrops along the north shore of Lake Erie and along the Onondaga Escarpment between Cayuga and Hagersville (Telford and Tarrant 1975). This material can also be recovered from secondary, glacial deposits across much of southwestern Ontario (Eley and von Bitter 1989; Fox 2009:361-362).



3.2 AhGx-819

The Stage 3 assessment of AhGx-819 resulted in the recovery of 216 Pre-Contact Indigenous artifacts and one faunal element from test unit excavations. Table 5 provides a summary of artifacts recovered

Table 5: Summary of Artifacts recovered from AhGx-819

Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	%	
Indigenous	Informal Lithic Tool	<i>Core</i>	Ancaster Chert	1	0.46	
		<i>Utilized Flake</i>	Onondaga Chert	1	0.46	
	Subtotal				2	0.92
	Lithic Debitage	<i>Tertiary Flake</i>	Ancaster Chert	18	8.29	
			Burnt Ancaster Chert	1	0.46	
		<i>Biface Thinning Flake</i>	Onondaga Chert	8	3.69	
			Ancaster Chert	6	2.76	
		<i>Shatter</i>	Ancaster Chert	1	0.46	
		<i>Flake Fragment</i>	Onondaga Chert	14	6.45	
			Burnt Onondaga Chert	2	0.92	
			Ancaster Chert	162	74.65	
	Burnt Ancaster Chert		1	0.46		
		Haldimand Chert	1	0.46		
	Subtotal				214	98.62
TOTAL				221	101.84	
Faunal	Bone	<i>Mammalian, Long Bone Fragment</i>		1	0.46	
TOTAL				1	0.46	
GRAND TOTAL				217	100.00	

3.3 AhGx-820

The Stage 3 assessment of AhGx-820 resulted in the recovery of 23 Pre-Contact Indigenous artifacts. Table 6 provides a summary of artifacts recovered

Table 6: Summary of Artifacts recovered from AhGx-820

Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	%
Indigenous	Lithic Debitage	<i>Tertiary Flake</i>	Ancaster Chert	2	8.70
		<i>Biface Thinning Flake</i>	Onondaga Chert	1	4.35
		<i>Flake Fragment</i>	Onondaga Chert	2	8.70
	Ancaster Chert		18	78.26	
Subtotal				23	100.00
TOTAL				23	100.00



3.4 Artifact Catalogues

Table 7: AhGx-819 Stage 3 Artifact Catalogue

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
1	315	495	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	8	
2	315	495	1	1	0-18	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
3	325	500	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
4	325	500	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	9	
5	325	500	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
6	320	510	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
7	320	510	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
8	300	500	1	1	0-15	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
9	300	500	1	1	0-15	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
10	310	510	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
11	310	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
12	310	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
13	315	490	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	12	
14	315	490	1	1	0-23	Indigenous	Lithic Debitage	Tertiary Flake	Burnt Ancaster Chert	1	
15	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	10	
16	320	495	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
17	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Burnt Onondaga Chert	1	
18	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	2	
19	330	500	1	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
20	330	500	1	1	0-24	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
21	330	500	1	1	0-24	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
22	325	505	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
23	320	490	1	1	0-21	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
24	320	490	1	1	0-21	Indigenous	Informal Lithic Tool	Core	Ancaster Chert	1	exhausted
25	320	490	1	1	0-21	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	3	
26	320	490	1	1	0-21	Indigenous	Informal Lithic Tool	Utilized Flake	Onondaga Chert	1	
27	320	490	1	1	0-21	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
28	310	480	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
29	310	480	1	1	0-25	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
30	310	480	1	1	0-25	Indigenous	Lithic Debitage	Shatter	Ancaster Chert	1	
31	320	500	1	1	0-20	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	4	
32	320	500	1	1	0-20	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
33	320	500	1	1	0-20	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	
34	320	500	1	1	0-20	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
35	300	510	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
36	300	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
37	300	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
38	310	490	1	1	0-43	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
39	310	490	1	1	0-43	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
40	310	490	1	1	0-43	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
41	315	485	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
42	315	485	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Haldimand Chert	1	
43	300	490	1	1	0-22	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
44	330	480	1	1	0-19	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
45	330	480	1	1	0-19	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
46	330	480	1	1	0-19	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
47	330	480	1	1	0-19	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
48	320	480	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
49	320	505	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	18	
50	330	510	1	1	0-25	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
51	330	510	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
52	330	510	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Burnt Onondaga Chert	1	
53	330	510	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
54	325	495	1	1	0-23	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
55	325	495	1	1	0-23	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
56	325	495	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	2	
57	325	495	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	18	
58	325	495	1	1	0-23	Faunal	Bone	Mammalian, Long Bone Fragment		1	extremely weathered
59	330	490	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	2	
60	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Burnt Ancaster Chert	1	
61	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	3	
62	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	10	
63	310	500	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
64	310	500	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Table 8: AhGh-820 Stage 3 Artifact Catalogue

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
1	300	500	13	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
2	300	500	13	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
3	300	500	13	1	0-24	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
4	305	505	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
5	305	505	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
6	305	500	13	1	0-29	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
7	310	500	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
8	310	500	1	1	0-22	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
9	310	505	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
10	310	505	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	
11	300	500	1	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
12	305	500	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	



4.0 Analysis and Conclusions

4.1 AhGx-819

AhGx-819 consists of a diffuse scatter of lithic tools and debitage and indicates the presence of a small Middle Archaic campsite dating to between 7000 and 6500 B.P., based on the recovery of a Kirk Stemmed projectile point during the Stage 2 assessment of the study area (Ellis et al. 1990:81). Similar small campsites dating to the Middle Archaic have been identified on neighbouring properties, indicating a repeated occupation and use of the surrounding landscape (Earthworks 2016, 2017). The presence of informal lithic tools lithic debitage suggests a diverse array of activities took place at the site, including resource processing lithic reduction and lithic retouch activities. Additionally, the recovery of Ancaster, Onondaga, and Haldimand cherts indicates a relatively local occupation with a limited range of mobility and resource exploitation. Based on the recovered Pre-Contact Indigenous archaeological material, it is determined that AhGx-819 contains further cultural heritage value or interest. As a result, a Stage 4 archaeological mitigation is required.

4.2 AhGx-820

The Stage 3 archaeological assessment of AhGx-820 resulted in the recovery of lithic debitage associated with a potential campsite dating to the Early Archaic period circa 8900-8000 B.P. based on the recovery of a Bifurcate projectile point during the Stage 2 assessment of the study area (Ellis et al. 1990:78; Justice 1995:91). A similar projectile point was recovered during excavations at Ripani 2 (AhHa-250) on a neighbouring property, indicating the region was extensively utilized by early Indigenous inhabitants. The presence of lithic debitage suggests a diverse array of activities took place at the site, including lithic reduction and lithic retouch activities. Consultation of Section 3.4 of the *Standards and Guidelines for Consultant Archaeologists* indicates that AhGx-820 does not meet the criteria for additional cultural heritage value or interest, and no additional archaeological assessments are required.



5.0 Recommendations

Based on the results of the Stage 3 archaeological assessment, the study area contains an archaeological site that has further cultural heritage value and interest. Therefore, a Stage 4 site specific archaeological mitigation is recommended AhGx-819.

The preferred method of Stage 4 mitigation is through avoidance and protection. Discussions with the proponent determined that the area is not integral to development and can be avoided. As a result, Stage 4 mitigation by avoidance and protection for AhGx-819 is recommended.

The protected area will consist of the site location and an associated 10 metre buffer. If grading or other soil disturbing activities caused by the development project extent to the edge of the area to be avoided, the proponent must erect a temporary barrier around the area to be avoided, and “no go” instructions will be issued to all on-site construction crews, engineers, architects or others involved in the day-to-day decisions during construction. The location of the area to be avoided will be shown on all contract drawings, and will include explicit instructions to avoid that area.

During grading and other soil disturbing activities, the area to be avoided must be inspected and monitored by a licensed archaeologist to verify the effectiveness of the avoidance strategies. If alteration of the archaeological site is observed at any time during construction, the Ministry of Heritage, Sport, Tourism and Culture Industries must be notified immediately.

After completion of the grading and other soil disturbing activities, the protected area must be inspected, and a report will be required to be submitted to the Ministry on the effectiveness of the strategy in ensuring the area to be avoided remains intact.

No additional archaeological assessments are recommended for AhGx-820.

The MHSTCI is requested to review this report and provide a letter indicating their satisfaction that the fieldwork and reporting for this archaeological assessment are consistent with the Ministry’s 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.



6.0 Advice on Compliance with Legislation

This report is submitted to the Ministry of Heritage Sport Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage Sport Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.



7.0 References

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8.0 Images



Image 1: AhGx-819 Stage 3 Test Unit Excavation in Progress. Facing Southeast.



Image 2: AhGx-819 Stage 3 Test Unit Excavation in Progress. Facing Southeast.





Image 3: AhGx-819 Stage 3 Test Unit Stratigraphy. Facing Grid North.



Image 4: AhGx-819 Stage 3 Test Unit Stratigraphy. Facing Grid East.





Image 5: AhGx-820 Stage 3 Test Unit Excavation in Progress. Facing Southwest.



Image 6: AhGx-820 Stage 3 Test Unit Excavation in Progress. Facing Northwest.





Image 7: AhGx-820 Stage 3 Test Unit Stratigraphy. Facing Grid West.



Image 8 AhGx-820 Stage 3 Test Unit Stratigraphy. Facing Grid North.



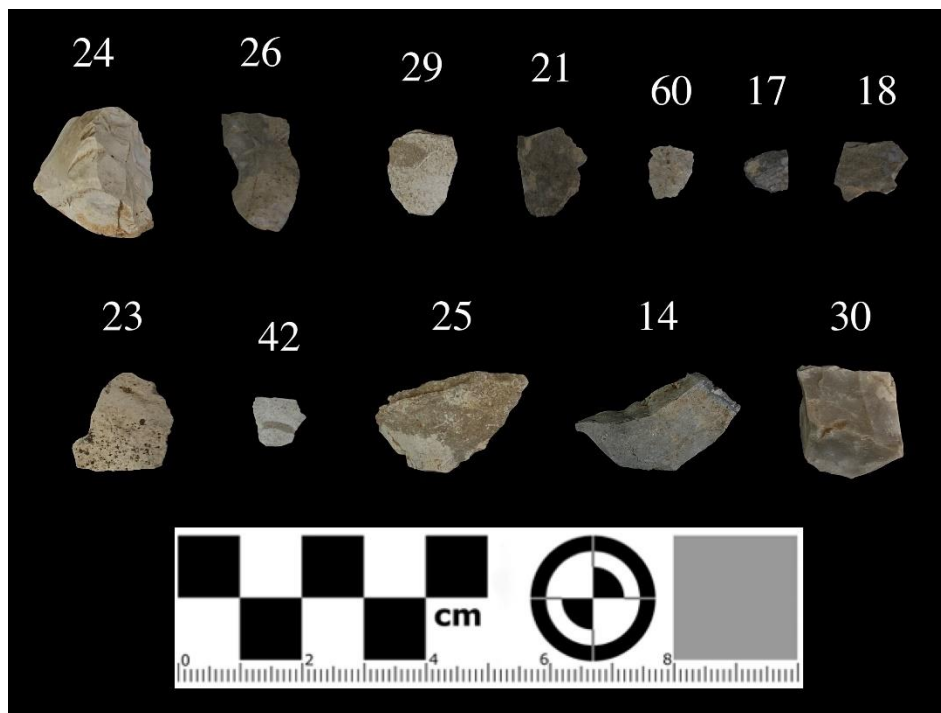


Image 9: Sample of Artifacts recovered from AhGx-819.

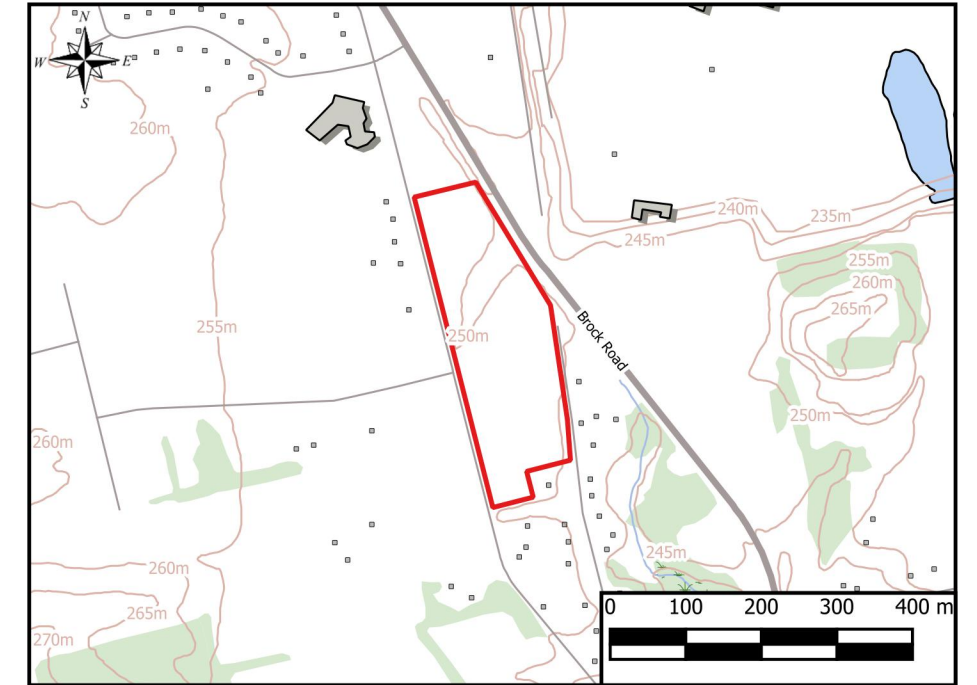
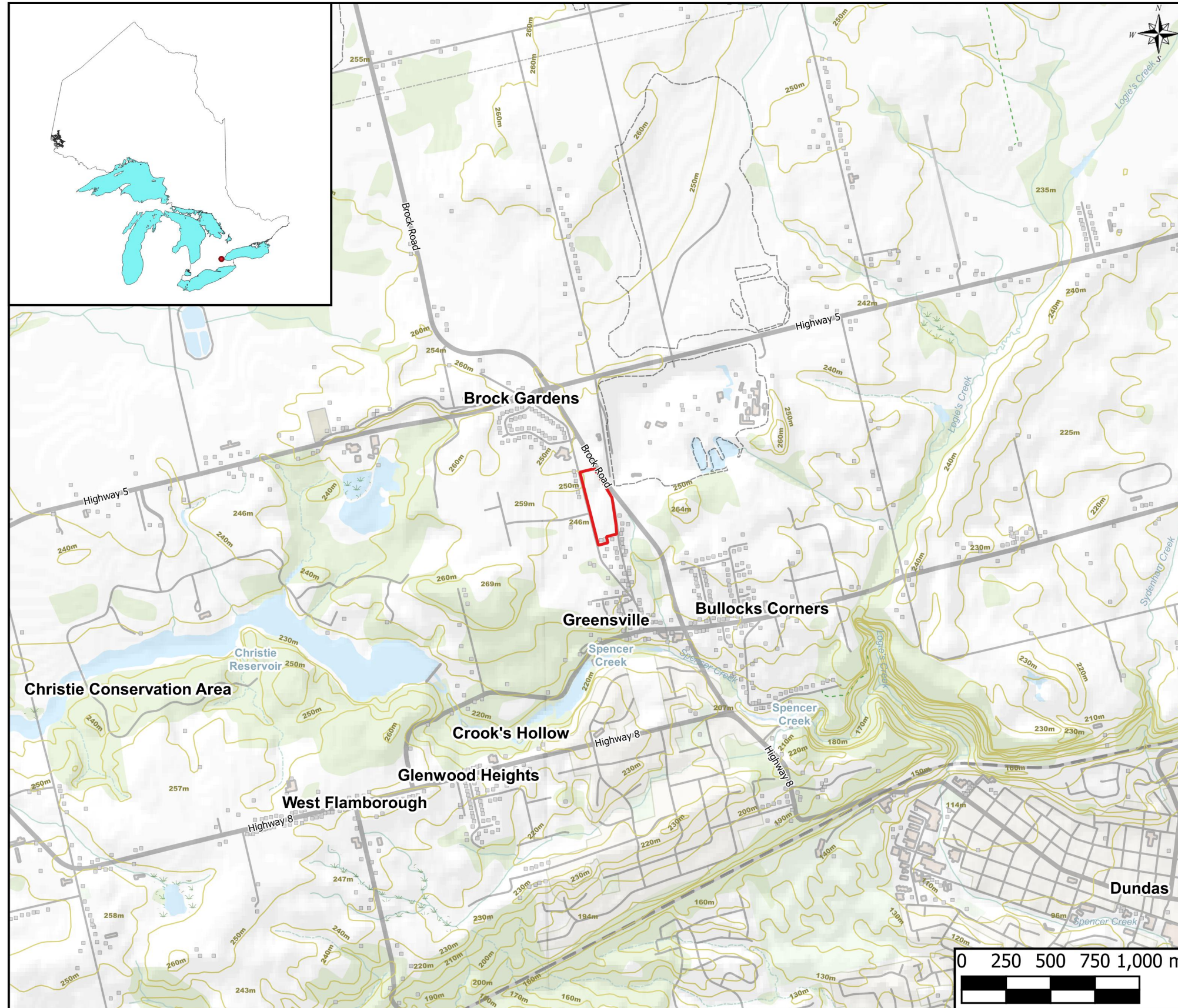


Image 10: Sample of Artifacts recovered from AhGx-820.



9.0 Maps



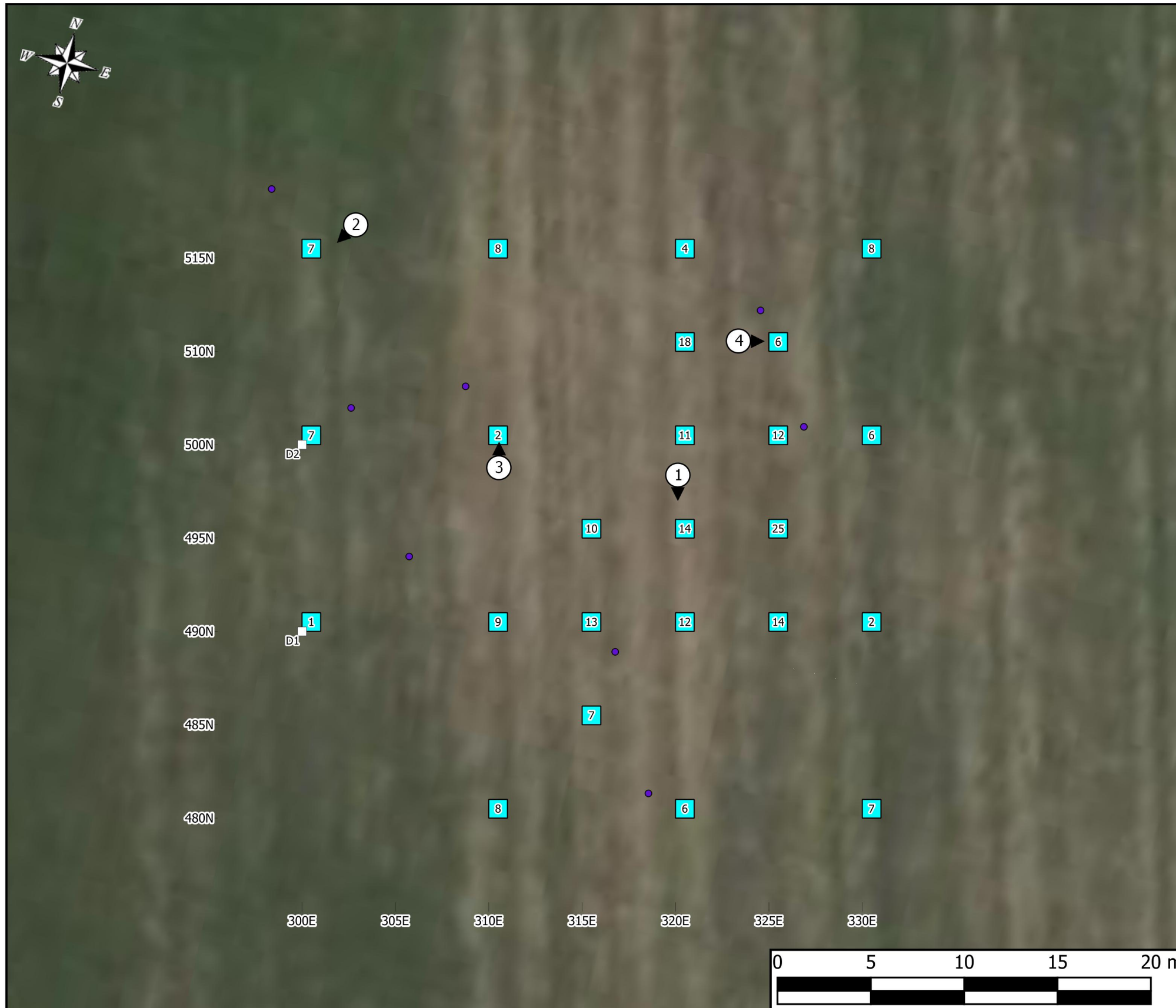


Legend

 Study Area

Reference:
 Canvec Data. Scale 1:50000
 Ontario Basic Mapping. Scale 1:10000
 Esri Basemap

Map 1: Regional Map

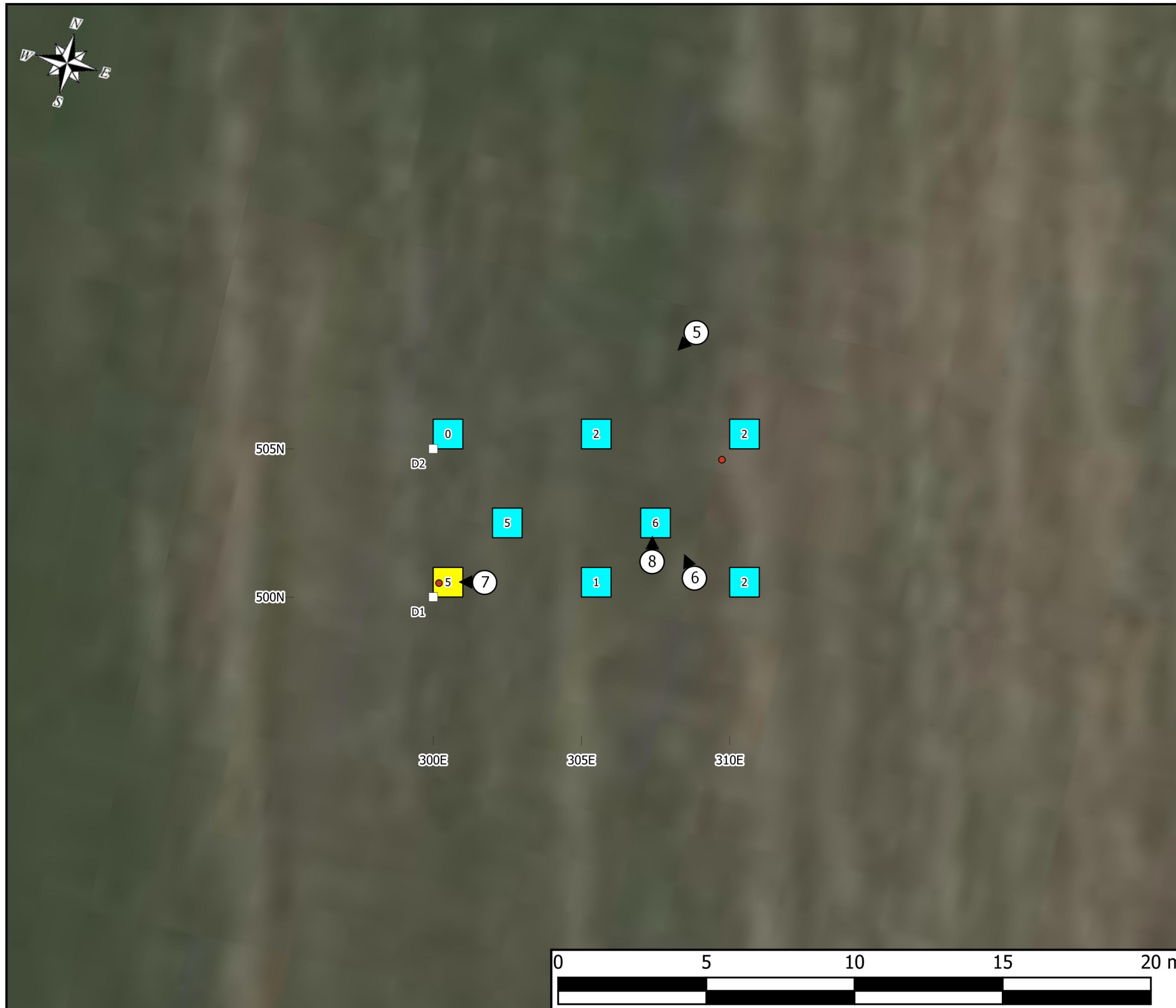


Legend

- Grid Datums
- Stage 3 Test Unit
- Stage 2 Surface Artifact
- ⊙ # Photo Location and Direction

Reference:
Esri Basemap

Map 2: AhGx-819 Stage 3 Assessment Results



Legend

- Grid Datums
- Stage 2 Surface Artifact
- Stage 3 Test Unit
- Stage 3 Test Unit - 3 millimetre Mesh Screening
- ⊙ Photo Location and Direction

Reference:
Esri Basemap

Map 3: AhGx-820 Stage 3 Assessment Results

394 Old Brock Road, Hamilton - Response Matrix

Urban in Mind Planning Consultants

This Response Matrix has been prepared by Urban in Mind to keep track of past staff comments from the Consolidation Report dated August 25th, 2022 on files FL/A-22:248 and FL/B-

August 19, 2024

File No.	Conditions	Responsible	Addressed
	Development Planning		
1	It cannot be confirmed whether the proposed lot area is sufficient to support private water and wastewater services until a Hydrogeological Study Report has been submitted and reviewed.	Harden Environmental Services Ltd.	<p>Complete - see <i>Hydrogeology Report 394 Old Brock Road, Hamilton</i> dated <i>March 12, 2024</i>.</p> <p>"1) There is sufficient water quantity for a single-family dwelling on the proposed severance.</p> <p>2) The water quality meets Ontario Drinking Water Quality Standards maximum acceptable concentrations with the exception of total coliforms and sodium. Aesthetic Objectives and Operational Guidelines are exceeded for chloride, hardness and total dissolved solids.</p> <p>3) The nitrate concentration based on calculation methodology in The City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services will be less than 10 mg/L at the downgradient property boundary for a minimum lot size of 0.74 hectares."</p>
2	In order to determine the appropriate minimum lot size, it is recommended the applicant obtain background nitrate concentrations from an onsite well. Background nitrate concentrations are important to understand the pre-existing level of aquifer pollution and how future lot creation should be implemented to ensure the lot size is sustainable and meets RHOP policies pertaining to sustainable private servicing (RHOP C.5.1). This issue is especially prevalent in Greensville, where septic system pollution has increased nitrate and coliform bacteria in portions of the underlying aquifer. If no background nitrate is found from an onsite well raw water supply, based on our desktop review of local soils and typical wastewater flows from a 3 bedroom dwelling, the minimum lot size would be at least 1.83 acres.	Harden Environmental Services Ltd.	<p>Complete - see <i>Hydrogeology Report 394 Old Brock Road, Hamilton</i> dated <i>March 12, 2024</i>.</p> <p>"The total amount of annual precipitation is 860 mm/year. The Potential Evapotranspiration is estimated to be 606 mm/year and the Actual Evapotranspiration is estimated to be 568 mm/year based on a 100 mm holding capacity of the soil. Given these values, the potential infiltration is estimated to be 146 mm/year.</p> <p>Using the rate of infiltration of 146 mm/year, a maximum lot size of 0.74 hectares is required to meet the maximum concentration of 10 mg/L of nitrate at the property boundary (Table 6). Only dilution from infiltration on the entire lot and effluent volume is used in the calculation."</p>

FL/B-22:72

3	That the proponent shall carry out an archaeological assessment of the entire property and mitigate, through preservation or resource removal and documentation, adverse impacts to any significant archaeological resources found. No demolition, grading, construction activities, landscaping, staging, stockpiling or other soil disturbances shall take place on the subject property prior to the approval of the Director of Planning confirming that all archaeological resource concerns have met conservation requirements. All archaeological reports shall be submitted to the City of Hamilton concurrent with their submission to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). Should deeply buried archaeological materials be found on the property during any of the above development activities the MHSTCI should be notified immediately (416-212- 8886). In the event that human remains are encountered during construction, the proponent should immediately contact both MHSTCI and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (416-212-7499	Earthworks Archaeological Services Inc.	Complete - see <i>Stage 3 Archaeological Assessment dated February 21, 2022.</i> A Stage 3 Archaeological Assessment has been conducted, and a Stage 4 assessment has been identified to be required only on the retained lands. As the proposed severed lands will not be within the area of archaeological interest, it is being proposed that further assessment be delayed until the retained lot (containing the archaeological potential) is to be developed at a later date, and perhaps the existing holding provision is maintained on the retained lot.
4	Both the proposed severed and retained lands are subject to a Holding Provision. Staff note that while the Flamborough Zoning By-law does not establish specific criteria that must be met before the Holding may be removed; Planning staff have interpreted that it may be lifted once an applicant demonstrates that 'orderly development' is achieved, including adequate private services, access and clearance of any archaeological requirements. Should the Consent be approved, staff recommend a condition be added that the applicant must lift the Holding for the severed portion only.		Acknowledged - see <i>Stage 3 Archaeological Assessment dated February 21, 2022.</i> As the proposed severed lands do not contain any archaeological potential and is located away from the area of high potential, a removal of the holding provision on the severed lands will be requested for the severed portion only.
5	Staff note that increasing the minimum lot coverage would permit a larger dwelling to be constructed on the property and that at this time it cannot be determined whether the lot is of a sufficient size to support a private septic system required to support this size of development.		Complete - See response to #1 and 2.
Zoning			
6	The owner shall apply for a Zoning By-Law Amendment for the removal of the holding provision, indicated within the R2-14-H Zone of Flamborough Zoning By-Law 90-145z, to the Planning and Economic Development Department (Planning Division – Zoning Examination Section)		Acknowledged - Removal of the Holding symbol will only be requested for the severed lands, and the Holding Provision will be maintained on the retained lands.
7	The owner shall submit survey evidence that the lands to be severed including the location of any structure(s), parking and landscaping conform to the requirements of the Zoning By-Law or alternatively apply for and receive final approval of any variances from the requirements of the Zoning By-Law as determined necessary by the Planning and Economic Development Department (Planning Division – Zoning Examination Section)		Acknowledged - see Concept Severance Sketch by Urban in Mind based off of survey information from L.G. Woods Surveying Inc.
8	If a Condition for a road widening and/or daylight triangle dedication is required, the owner/applicant shall submit survey evidence that the lands to be retained, including the lot width, lot area, the location of any existing structure(s), parking and location of all roads (Brock Road), conform to the requirements of the Zoning By-Law or alternatively apply for and receive final approval of any variances from the requirements of the Zoning By-Law as determined necessary by the Planning and Economic Development Department (Planning Division – Zoning Examination Section)		Acknowledged - severed lot will meet all requirements except for the maximum lot coverage and the minimum lot area. Minor Variance applications have been pursued to seek permissions for these requested variances (HM/A-22:248).
9	The owner shall apply for and receive any required building permits in the normal manner to the satisfaction of the Planning and Economic Development Department (Planning Division – Zoning Examination Section)		Acknowledged - Building permit will be requested at a later date as there will not be any developments on the subject site until planning and land division is approved.
Development Engineering			
10	That, the owner submits a Hydrogeological Report prepared by a qualified professional in support of the proposed severance to the satisfaction of City's Source Protection Section.	Harden Environmental Services Ltd.	Provided - See <i>Hydrogeology Report 394 Old Brock Road, Hamilton</i> dated March 12, 2024.

11	That the Owner enter into with the City of Hamilton and register on title of the lands, a Consent Agreement, having an administrative fee of \$4,500.00 (2022 fee) to address issues including but not limited to: grading and drainage to a suitable outlet on the conveyed and retained parcels (detailed grading plan required), erosion and sediment control measures (to be included on the grading plan); cash payment requirements for items such as street trees (City policy requires one (1) street tree/lot, , stormwater management infrastructure and securities for items that may include: lot grading (\$10,000.00 grading security), driveway approaches, and any damage during construction (unknown costs at this time). Cash payments mentioned above are subject to change.		Acknowledged - will be provided as directed by the City of Hamilton.
Source Protection Planning			
12	In order to determine the appropriate minimum lot size, it is recommended the applicant obtain background nitrate concentrations from an onsite well. Background nitrate concentrations are important to understand the pre existing level of aquifer pollution and how future lot creation should be implemented to ensure the lot size is sustainable and meets RHOP policies pertaining to sustainable private servicing (RHOP C.5.1). This issue is especially prevalent in Greensville, where septic system pollution has increased nitrate and coliform bacteria in portions of the underlying aquifer. If no background nitrate is found from an onsite well raw water supply, based on our desktop review of local soils and typical wastewater flows from a 3 bedroom dwelling, the minimum lot size would be at least 1.83 acres.	Harden Environmental Services Ltd.	Complete - see response to #2 and <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 12, 2024.</i>
13	In the event the application is approved, To the satisfaction of Director, Hamilton Water, the applicant shall complete a Scoped Hydrogeological Report focusing on the applicant's private water supply (quantity and quality)	Harden Environmental Services Ltd.	Complete - See <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 12, 2024.</i> There is sufficient potential for adequate water quantity for a single-family dwelling on the proposed severance. The water quality on the adjacent lot meets Ontario Drinking Water Quality Standards health standards but Aesthetic and Operation Guidelines are exceeded for sodium, chloride, hardness and total dissolved solids.
14	That the Owner agrees to physically affix the municipal numbers or full addresses to either the buildings or on signs in accordance with the City's Sign By-law, in a manner that is clearly visible from the road		Acknowledged - will be achieved upon severance (424 Old Brock Road as per City's comments).
Transportation Planning			
15	The existing right-of-way along the frontage of Moxley Road is approximately ±12.19 metres. Approximately ±4.0 metres are to be dedicated to the right-of-way on Moxley Road, as per the Council Approved Rural Official Plan: Schedule C-1 - Future Right-of-Way Dedications. Moxley Road is to be 20.117 metres. A survey conducted by an Ontario Land Surveyor and at the Applicant's expense will determine the ultimate dimensions for the right-of-way widening(s).		Acknowledged - Survey will be obtained upon approval.
16	The existing right-of-way at the subject property is approximately ±18.5 metres. Approximately ±2.0 metres are to be dedicated to the right-of-way on Old Brock Road, as per the Council Approved Urban Official Plan: Chapter C - City Wide Systems and Designations, 4.5 Road Network Functional Classification, 4.5.2. Local Roads (Old Brock Road) are to be 20.117 metres. A survey conducted by an Ontario Land Surveyor and at the Applicant's expense will determine the ultimate dimensions for the right-of-way widening(s).		Acknowledged - Survey will be obtained upon approval.
Development Planning			

FL/A-22:248

17	It cannot be confirmed whether the proposed lot area is sufficient to support private water and wastewater services until a Hydrogeological Study Report has been submitted and reviewed.	Harden Environmental Services Ltd.	Complete - See <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 12, 2024.</i> There is sufficient potential for adequate water quantity for a single-family dwelling on the proposed severed lot.
18	In order to determine the appropriate minimum lot size, it is recommended the applicant obtain background nitrate concentrations from an onsite well. Background nitrate concentrations are important to understand the pre-existing level of aquifer pollution and how future lot creation should be implemented to ensure the lot size is sustainable and meets RHOP policies pertaining to sustainable private servicing (RHOP C.5.1). This issue is especially prevalent in Greensville, where septic system pollution has increased nitrate and coliform bacteria in portions of the underlying aquifer. If no background nitrate is found from an onsite well raw water supply, based on our desktop review of local soils and typical wastewater flows from a 3 bedroom dwelling, the minimum lot size would be at least 1.83 acres.	Harden Environmental Services Ltd.	Complete - see response to #2 and <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 12, 2024.</i>
19	That the proponent shall carry out an archaeological assessment of the entire property and mitigate, through preservation or resource removal and documentation, adverse impacts to any significant archaeological resources found. No demolition, grading, construction activities, landscaping, staging, stockpiling or other soil disturbances shall take place on the subject property prior to the approval of the Director of Planning confirming that all archaeological resource concerns have met conservation requirements. All archaeological reports shall be submitted to the City of Hamilton concurrent with their submission to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). Should deeply buried archaeological materials be found on the property during any of the above development activities the MHSTCI should be notified immediately (416-212- 8886). In the event that human remains are encountered during construction, the proponent should immediately contact both MHSTCI and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (416-212-7499)."	Earthworks Archaeological Services Inc.	Complete - severed lands outside of archaeological potential area, see <i>Stage 3 Archaeological Assessment</i> A Stage 3 Archaeological Assessment has been conducted, and a Stage 4 assessment has been identified to be required. However, as the proposed severed lands will not be within the area of archaeological interest, it is being proposed that further assessment be delayed until the retained lot (containing the archaeological potential) is to be developed at a later date.
20	Both the proposed severed and retained lands are subject to a Holding Provision. Staff note that while the Flamborough Zoning By-law does not establish specific criteria that must be met before the Holding may be removed; Planning staff have interpreted that it may be lifted once an applicant demonstrates that 'orderly development' is achieved, including adequate private services, access and clearance of any archaeological requirements. Should the Consent be approved, staff recommend a condition be added that the applicant must lift the Holding for the severed portion only.		Acknowledged. As the proposed severed lands do not contain any archaeological potential and is located away from the area of high potential, a removal of the holding provision on the severed lands will be requested.
21	Source Water Protection staff are unable to determine whether the severed lot is a sufficient size until a Hydrogeological Study is completed. As a result, planning staff do not consider this reduction in lot area to be minor in nature and desirable for the use of the subject lands until that work has been complete.		Completed - see response to #2 and <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 28, 2023.</i>
22	Staff note that increasing the minimum lot coverage would permit a larger dwelling to be constructed on the property and that at this time it cannot be determined whether the lot is of a sufficient size to support a private septic system required to support this size of development.	Harden Environmental Services Ltd.	Completed - see response to #13 and <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 28, 2023.</i> Anticipated development is for a 3-bedroom dwelling with detached garage.
Zoning			

23	Additional variances may be required if the proposed parking in the garage does not meet the minimum width of 2.6 metres and minimum length of 5.8 metres permitted		Acknowledged - Anticipated development will meet requirements.
24	A building permit is required for the construction of the proposed Single Detached Dwelling on the lot to be Conveyed		Acknowledged - Building permit will be requested at a later date as there will not be any developments on the subject site until severance is permitted.
25	Please note this property is located within a holding zone. Under section 4.5 of Flamborough Zoning By-Law 90-145z, where the zone symbol on Schedules A-1 to A-48 inclusive has the suffix (H), no lot shall be used or no building or structure shall be erected, located or used therein except for the following purposes until the suffix (H) has been removed from the zone symbol by a by-law passed pursuant to Sections 34 and 35(4) of the Planning Act, R.S.O. 1983, Chapter 1. As such, regarding the proposed Single Detached Dwelling, no development shall occur until the requirements have been met to remove the holding provision from the lands: a) Existing Uses; and, b) General provisions in accordance with the provisions of Section 5 hereof. As such, a Zoning By-Law Amendment will be required to facilitate the construction of the proposed Single Detached Dwelling on the lot to be Conveyed		Acknowledged - Removal of the holding symbol will be requested for the severed lands.
Development Engineering			
26	That, the owner submits a Hydrogeological Report prepared by a qualified professional in support of the proposed severance to the satisfaction of City's Source Protection Section.	Harden Environmental Services Ltd.	Complete - see <i>Hydrogeology Report 394 Old Brock Road, Hamilton dated March 12, 2024.</i>



Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Groundwater Studies
Geochemistry
Phase I / II
Regional Flow Studies
Contaminant Investigations
OMB Hearings
Water Quality Sampling
Monitoring
Groundwater Protection
Studies
Groundwater Modelling
Groundwater Mapping

Our File: 2317

July 31, 2024

Tracy Kowalchuk
394 Old Brock Road
Greenville, Ontario

Dear Tracy:

**Re: Response to Hamilton Review July 31, 2024
394 Old Brock Road, City of Hamilton**

We have reviewed the comments from Cambium Inc. (attached). Our responses are as follows:

1) Residual Chlorine

Harden added 2000 ml of 5% Sodium Hypochlorite to the well on the morning of May 23, 2024 and returned on the morning of May 24, 2024 to obtain the water quality sample. We used Hach Test Strips with a visual range of detection between 0 ppm and 20 ppm. The second colour of the range detects free chlorine at a concentration of 0.5 ppm and is distinctly darker than the 0 ppm indicator colour. The test strips are marketed as Hach Pool and Spa Test Strips, Aquachek 7. We removed three well volumes during the brief testing period on the 24th and detected no chlorine before or after the testing period. Neither Free chlorine nor total chlorine was detected.

It is our opinion that the well was free of residual chlorine.

2) Sodium and Bacteria Sampling from Lower Pump Level

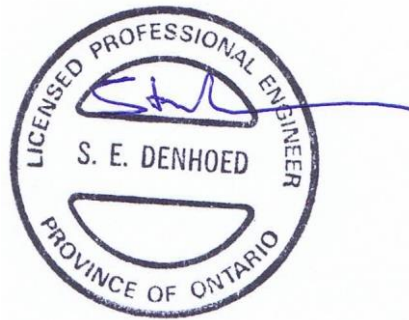
The purpose of the lower pump level sample was to see if the upper water was significantly less mineralized than the lower water. There was no significant difference. The absence of sodium in the May sampling is an oversight as we did not request a full analysis. We concur with Cambium that the sodium will be elevated similar to the previous sample. The bacteria sample is indicative of the entire well column given that there are no distinct water quality differences between the lower and upper samples. We have attached the laboratory certificates.



Sincerely,
Harden Environmental Services Ltd.

A handwritten signature in black ink, appearing to read 'S. Denhoed', is written over a light blue rectangular background.

Stan Denhoed, M.Sc., P. Eng.
Senior Hydrogeologist





Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Groundwater Studies
Geochemistry
Phase I / II
Regional Flow Studies
Contaminant Investigations
OMB Hearings
Water Quality Sampling
Monitoring
Groundwater Protection
Studies
Groundwater Modelling
Groundwater Mapping

Our File: 2317

June 17, 2024

Tracy Kowalchuk
394 Old Brock Road
Greensville, Ontario

Dear Tracy:

**Re: Response to Hamilton Review
394 Old Brock Road, City of Hamilton**

We have reviewed the comments from Cambium Inc. (attached). We are assuming that this addendum/response can be placed on file along with the original report, rather than amending the original report. Our comments are as follows:

1) Existing water Supply

The existing dwelling is serviced by a 14.3 m deep bedrock well located 250 m from the test well. There are no anticipated other uses for the retained lands other than the existing dwelling and continued farming of agricultural fields.

2) (a) Static Water Level

Our error. We added a 25 mm pipe to the well during the test to avoid cascading water issues (if any). The static water level measured from the top of the extra pipe was 18.19 m. The static water level was 17.95 m from top of steel casing.

2 (b) Recovery

The drawdown was minimal, and the recovery was rapid. The original static water level was 17.95 mbct and recovered to 18.09 mbct immediately after the test. When the pump was removed on February 12th (three days after the test) the static water level was 18.06 mbct. Our only explanation is that fractures intersected by the well developed during the pumping test and being in the area of influence of the nearby



quarry, resulted in a lower water level than originally obtained. The fact that the well maintained this level three days later suggests that this is not a delayed yield situation, i.e. dewatering of a portion of the aquifer.

When we obtained the second water sample on May 24th, the static water level was 17.76 mbct. We pumped the well at rate of 30 L/min for thirty-five minutes. The total drawdown was 0.43 m after five minutes of pumping and remained the same until the end of thirty-five minutes. The well recovered 100% in three minutes.

2(b) Potential Impact to Neighbour's Wells

Prior to attending the site, we reviewed the pumping test report from the drillers and recognized that the relatively low pumping rate during the test would have minimal impact on the water level in the test well, let alone any of the neighbours.

In addition, the impact of water level change decreases exponentially from the well and at maximum drawdown of 0.35 m, the drawdown could not be greater than 0.35 m at any of the adjacent wells. The nearest wells are located at least 90 m from the test well. We have gone through an analysis of the drawdown data and calculated an aquifer transmissivity of 59 m²/day. The graph showing the drawdown data and equation for Transmissivityⁱ is found on Figure 1. The distance-drawdown estimate is based on the non-equilibrium equation of

$$s = 0.183Q/T \log (2.25Tt / r^2S)$$

where

s – drawdown (m)

Q – pumping rate (m³/day)

T – transmissivity (m²/day)

t -time (days)

r – distance from pumping well(m)

S – Storativity (dimensionless)

We have assumed a semi-confined aquifer value for storativity of 0.001 and used a pumping time of one day. The estimated drawdown at 90 metres is approximately 0.057 m (Figure 2).

Given that continuous pumping of the well will not occur frequently, it is our opinion that there will be no interference with neighbouring wells. Even with continuous pumping of the well, any interference with an adjacent private well will be minimal.



3 Water Quality

We reinstalled the pump to obtain a second sample. On the morning of May 23rd the pump was installed and the well was chlorinated with 4.3 L of bleach (5% sodium hypochlorite). On May 24th the well was pumped at a rate of 30 L/min for a period of 35 minutes. The free chlorine was tested with newly purchased chlorine test strips and no residual chlorine was detected. No chlorine odor could be detected either. Two water samples were obtained, and the results are summarized in the following table along with the original results. The shallow pump-setting sample was obtained with the pump set at 20 metres below top of casing and the deep pump-setting sample was obtained with the pump set at 28 metres below top of casing. The purpose was to see if shallow fractures were delivering different quality water.

Sample Date/Parameter	February 2 (deep pump)	May 24 (shallow pump)	May 24 (deep pump)
Chloride (mg/L)	441	430	425
Sodium (mg/L)	338		
TDS (mg/L)	1110	1100	1130
Hardness (mg/L)	408	337	395
e. coli (CFU/100 ml)	0	0	
Total Coliform (CFU/100 ml)	1	0	

The chlorination of the well addressed the total coliform noncompliance issue, however, the testing confirmed that the water still has several parameters that exceed operational guidelines and aesthetic objectives.

4) Treatment

We approached two local water treatment firms for their comment on water treatment based on the high TDS and elevated sodium, chloride and hardness. A local firm CrystalFlow (www.crystalflow.com) responded saying that whole house Reverse Osmosis units were available and would be effective at this site given the relatively high yielding well. The whole house Reverse Osmosis unit would reduce TDS, chloride and sodium by 95%. A water softener was also recommended. The email from CrystalFlow is attached.

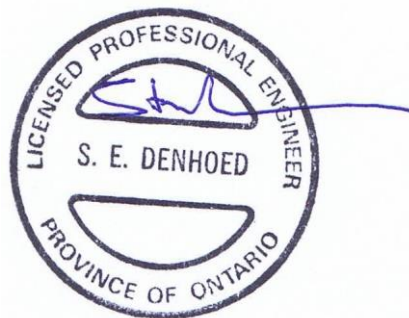
We also recommend a Ultra Violet light to eliminate future bacteria issues.



Sincerely,
Harden Environmental Services Ltd.

A handwritten signature in black ink, appearing to read 'S. Denhoed', with a long horizontal line extending to the right.

Stan Denhoed, M.Sc., P. Eng.
Senior Hydrogeologist



ⁱ Groundwater and Wells, Fletcher G. Driscoll, 1986, Johnson Screens

Drawdown

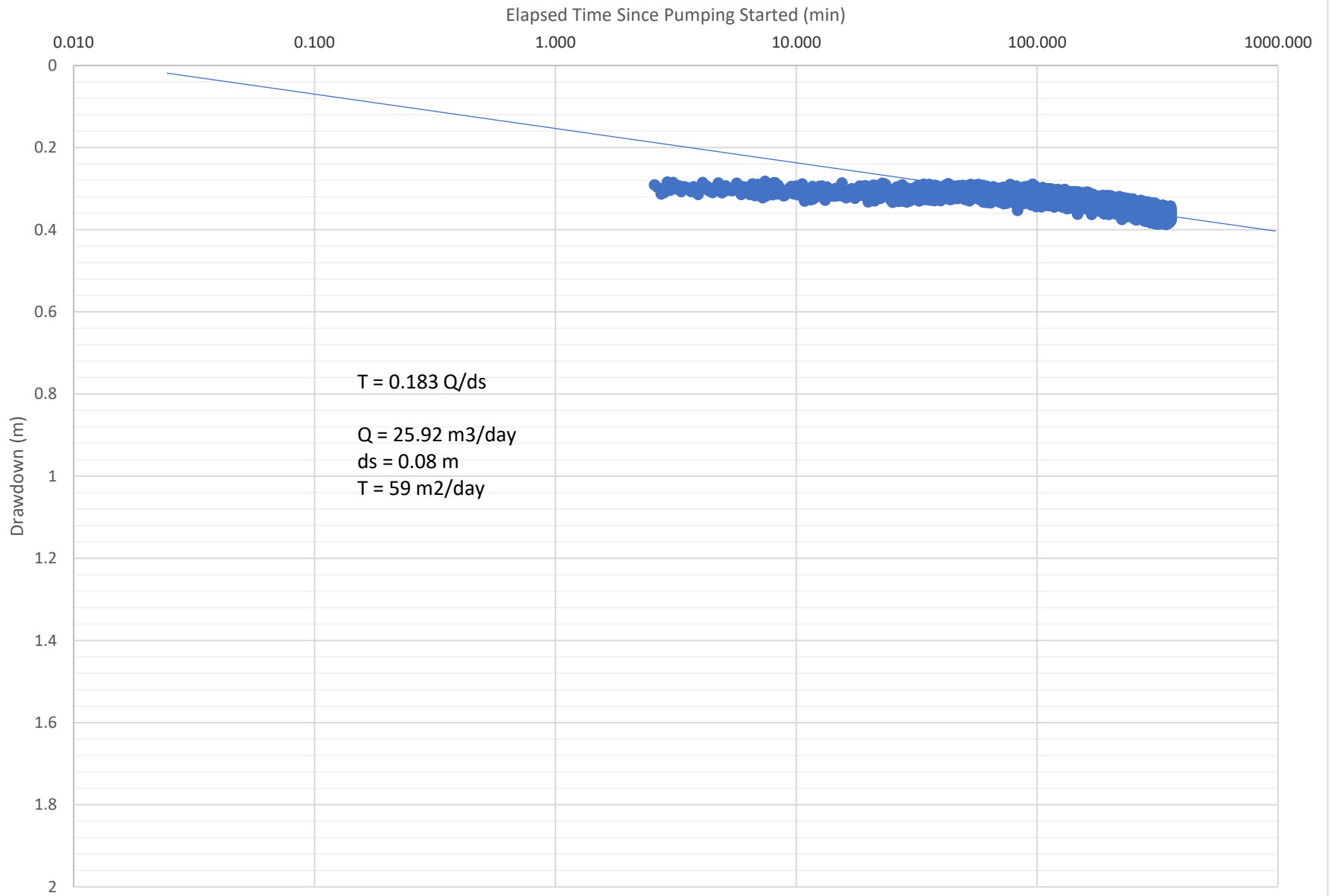
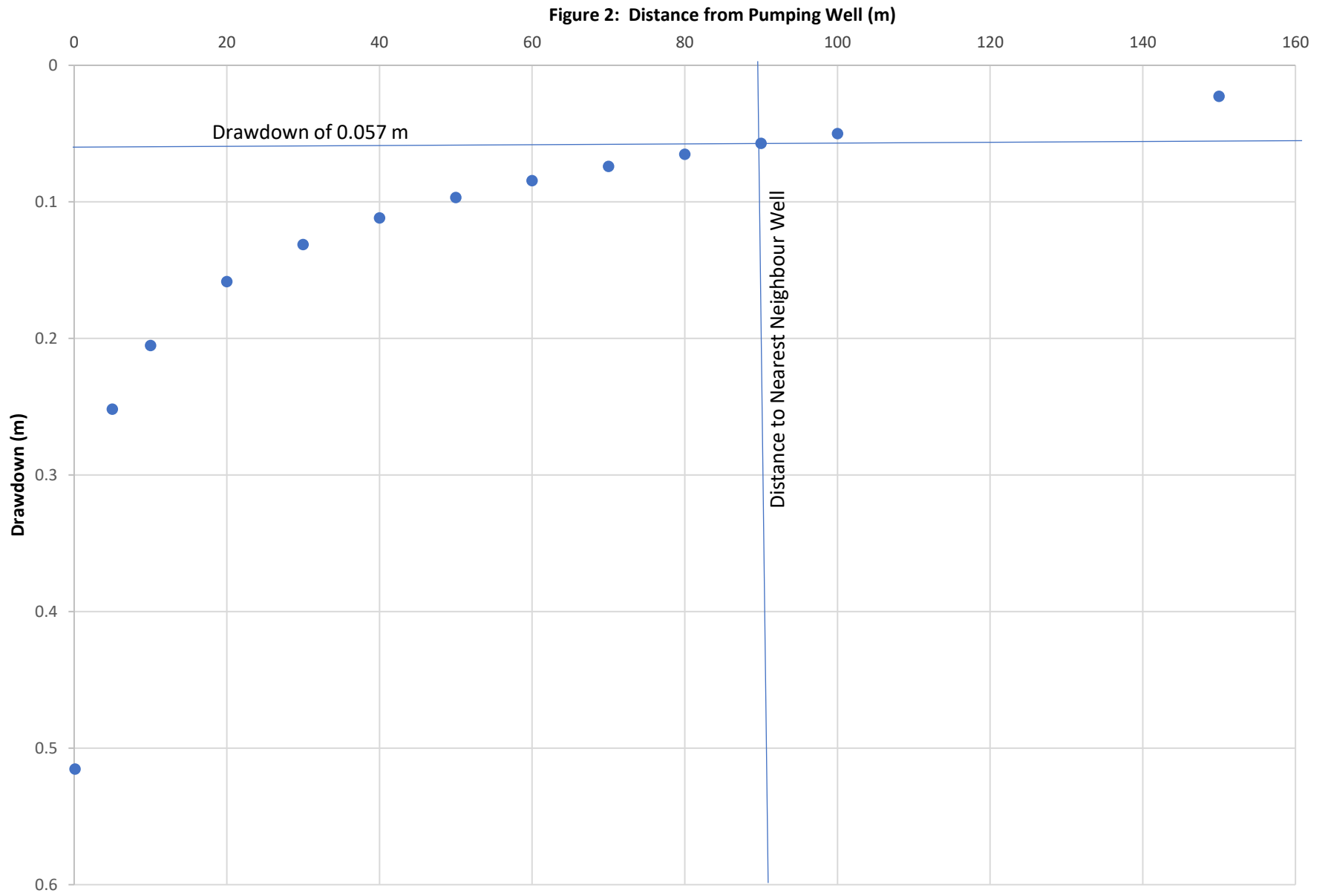


Figure 2: Distance Drawdown Estimate



Stan Denhoed

From: Mike Nelson <mike@crystalflow.com>
Sent: June 13, 2024 10:37 AM
To: Stan Denhoed
Subject: RE: Crystalflow - Stan Denhoed

Yes, we install them. It will reduce the TDS, sodium and chlorides over 95%

From: Stan Denhoed <sdenhoed@hardenv.com>
Sent: June 13, 2024 10:03 AM
To: Mike Nelson <mike@crystalflow.com>
Subject: Re: Crystalflow - Stan Denhoed

Thank you. There is no house yet but City of Hamilton wants assurance that the water can be treated. Do I understand that there are whole house RO units on the market?

Get [Outlook for iOS](#)

From: Mike Nelson <mike@crystalflow.com>
Sent: Thursday, June 13, 2024 9:10:35 AM
To: Stan Denhoed <sdenhoed@hardenv.com>
Subject: RE: Crystalflow - Stan Denhoed

Hi Stan,

The hardness is easy to fix with a water softener. The TDS, sodium, chloride would need to be removed with a reverse osmosis system. If they wanted the whole house treated, then we would use a commercial reverse osmosis with supporting treatment. I would need to have a site visit in order to quote this.

From: Stan Denhoed <sdenhoed@hardenv.com>
Sent: June 12, 2024 1:21 PM
To: Mike Nelson <mike@crystalflow.com>
Cc: gord davis <gorddavis00@gmail.com>; Tracy Kowalchuk <tracyk@sympatico.ca>
Subject: RE: Crystalflow - Stan Denhoed

Mike, here is the water quality.

From: Mike Nelson <mike@crystalflow.com>
Sent: Wednesday, June 12, 2024 12:09 PM
To: Stan Denhoed <sdenhoed@hardenv.com>
Subject: RE: Crystalflow - Stan Denhoed

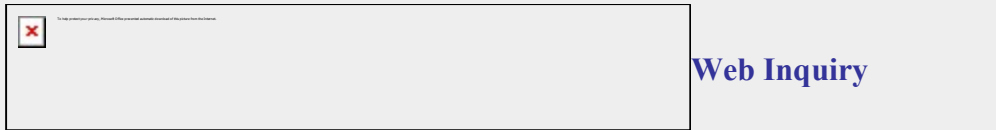
Hi Stan,

It's Mike from Crystalflow. We can definitely help with that. I will keep an eye out for the test results.

Thanks,

Mike

From: Stan Denhoed <noreply@jotform.com>
Sent: June 12, 2024 8:22 AM
To: crystalflow1@gmail.com; mike@crystalflow.com; contact-form@webresponse.ca
Subject: Re: Crystalflow - Stan Denhoed



Name	Stan Denhoed
Email	sdenhoed@hardenv.com
Phone #	5199946488
Subject	394 Old Brock Road
Message	We have a client with elevated TDS, Chloride, Hardness and Sodium. Looking for a solution. I will send results via regular email.
Get Page URL	https://crystalflow.com/contact.html#appointment

Powered by RESPONSE





CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
4622 NASSAGAWEYA PUSLINCH TOWNLINE
MOFFAT, ON L0P 1J0
519-826-0099

ATTENTION TO: Stan Denhoed
PROJECT: 394 Old Broch Road

AGAT WORK ORDER: 24T154172

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Inorganic Team Lead

DATE REPORTED: Jun 04, 2024

PAGES (INCLUDING COVER): 13

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
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- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.



Certificate of Analysis

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

5835 COOPERS AVENUE
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

Total Coliforms & E.Coli (MI-Agar)

DATE RECEIVED: 2024-05-24

DATE REPORTED: 2024-06-04

SAMPLE DESCRIPTION: 394 1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-05-24
 09:50
 5882102

Parameter	Unit	G / S	RDL	5882102
Escherichia coli	CFU/100mL			0
Total Coliforms	CFU/100mL			0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5882102 Escherichia coli, Total Coliforms RDL = 1 CFU/100mL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Ally Basch



Certificate of Analysis

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

Inorganic Chemistry (Water)

DATE RECEIVED: 2024-05-24

DATE REPORTED: 2024-06-04

Parameter	Unit	SAMPLE DESCRIPTION:		RDL	
		G / S	RDL	RDL	
			394 1		394 2
			Water		Water
			2024-05-24 09:50		2024-05-24 10:30
			5882102		5882103
Total Dissolved Solids	mg/L		10	1100	10
Chloride	mg/L		0.24	430	0.24
Sulphate	mg/L		0.10	63.5	0.10
Hardness (as CaCO3) (Calculated)	mg/L		0.5	337	0.5
Total Calcium	mg/L		0.20	101	0.40
Total Magnesium	mg/L		0.10	20.7	0.20

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5882102-5882103 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

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 MISSISSAUGA, ONTARIO
 CANADA L4Z 1Y2
 TEL (905)712-5100
 FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

Total Metals in Water (mg/L)

DATE RECEIVED: 2024-05-24

DATE REPORTED: 2024-06-04

SAMPLE DESCRIPTION: 394 1
 SAMPLE TYPE: Water
 DATE SAMPLED: 2024-05-24
 09:50
 5882102

Parameter	Unit	G / S	RDL	5882102
Total Aluminum	mg/L		0.010	0.017
Total Antimony	mg/L		0.003	<0.003
Total Arsenic	mg/L		0.003	<0.003
Total Barium	mg/L		0.002	0.143
Total Beryllium	mg/L		0.001	<0.001
Total Bismuth	mg/L		0.002	<0.002
Total Boron	mg/L		0.010	0.125
Total Cadmium	mg/L		0.0001	0.0002
Total Chromium	mg/L		0.003	<0.003
Total Cobalt	mg/L		0.0005	<0.0005
Total Copper	mg/L		0.002	0.004
Total Iron	mg/L		0.050	<0.050
Total Lead	mg/L		0.0005	0.0009
Total Lithium	mg/L		0.010	<0.010
Total Manganese	mg/L		0.002	<0.002
Total Molybdenum	mg/L		0.002	0.003
Total Nickel	mg/L		0.003	<0.003
Total Phosphorus	mg/L		0.10	<0.10
Total Selenium	mg/L		0.002	<0.002
Total Silicon	mg/L		0.200	6.81
Total Silver	mg/L		0.0001	0.0004
Total Strontium	mg/L		0.005	1.22
Total Thallium	mg/L		0.0003	<0.0003
Total Tin	mg/L		0.002	<0.002
Total Titanium	mg/L		0.010	<0.010
Total Uranium	mg/L		0.0005	0.0020
Total Vanadium	mg/L		0.002	<0.002
Total Zinc	mg/L		0.020	0.057
Total Zirconium	mg/L		0.004	<0.004

Certified By:

Jris Vera'stegui



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

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<http://www.agatlabs.com>

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

Total Metals in Water (mg/L)

DATE RECEIVED: 2024-05-24

DATE REPORTED: 2024-06-04

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Jris Vera'stegui

Quality Assurance

 CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
 PROJECT: 394 Old Broch Road
 SAMPLING SITE:

 AGAT WORK ORDER: 24T154172
 ATTENTION TO: Stan Denhoed
 SAMPLED BY: SD

Microbiology Analysis

RPT Date: Jun 04, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Total Coliforms & E.Coli (MI-Agar)												
Escherichia coli	5882146		0	0	NA							
Total Coliforms	5882146		0	0	NA							

Comments: NA - % RPD Not Applicable.

Certified By:




AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Results relate only to the items tested. Results apply to samples as received.

Quality Assurance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
 PROJECT: 394 Old Broch Road
 SAMPLING SITE:

AGAT WORK ORDER: 24T154172
 ATTENTION TO: Stan Denhoed
 SAMPLED BY:SD

Water Analysis

RPT Date: Jun 04, 2024			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Inorganic Chemistry (Water)

Total Dissolved Solids	5881762		29400	29300	0.3%	< 10	92%	80%	120%						
Chloride	5883135		55.1	56.0	1.6%	< 0.10	93%	70%	130%	99%	80%	120%	102%	70%	130%
Sulphate	5882146		23.4	23.5	0.4%	< 0.10	95%	70%	130%	100%	80%	120%	93%	70%	130%
Total Calcium	5880885		104	108	3.8%	< 0.20	103%	70%	130%	103%	80%	120%	106%	70%	130%
Total Magnesium	5880885		34.2	33.7	1.5%	< 0.10	98%	70%	130%	98%	80%	120%	116%	70%	130%

Total Metals in Water (mg/L)

Total Aluminum	5880885		0.024	0.046	NA	< 0.010	97%	70%	130%	111%	80%	120%	104%	70%	130%
Total Antimony	5880885		<0.003	<0.003	NA	< 0.003	96%	70%	130%	106%	80%	120%	111%	70%	130%
Total Arsenic	5880885		<0.003	<0.003	NA	< 0.003	96%	70%	130%	99%	80%	120%	103%	70%	130%
Total Barium	5880885		0.038	0.037	2.7%	< 0.002	100%	70%	130%	107%	80%	120%	106%	70%	130%
Total Beryllium	5880885		<0.001	<0.001	NA	< 0.001	101%	70%	130%	118%	80%	120%	120%	70%	130%
Total Bismuth	5880885		<0.002	<0.002	NA	< 0.002	97%	70%	130%	96%	80%	120%	93%	70%	130%
Total Boron	5880885		0.740	0.709	4.3%	< 0.010	99%	70%	130%	123%	80%	120%	125%	70%	130%
Total Cadmium	5880885		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	101%	80%	120%	104%	70%	130%
Total Chromium	5880885		<0.003	<0.003	NA	< 0.003	98%	70%	130%	99%	80%	120%	97%	70%	130%
Total Cobalt	5880885		<0.0005	<0.0005	NA	< 0.0005	91%	70%	130%	100%	80%	120%	94%	70%	130%
Total Copper	5880885		<0.002	<0.002	NA	< 0.002	98%	70%	130%	98%	80%	120%	92%	70%	130%
Total Iron	5880885		<0.050	<0.050	NA	< 0.050	94%	70%	130%	106%	80%	120%	100%	70%	130%
Total Lead	5880885		<0.0005	<0.0005	NA	< 0.0005	96%	70%	130%	99%	80%	120%	96%	70%	130%
Total Lithium	5880885		0.064	0.063	1.6%	< 0.010	100%	70%	130%	128%	80%	120%	130%	70%	130%
Total Manganese	5880885		<0.002	0.004	NA	< 0.002	91%	70%	130%	98%	80%	120%	100%	70%	130%
Total Molybdenum	5880885		0.004	0.003	NA	< 0.002	100%	70%	130%	98%	80%	120%	97%	70%	130%
Total Nickel	5880885		0.004	0.003	NA	< 0.003	92%	70%	130%	96%	80%	120%	95%	70%	130%
Total Phosphorus	5880885		<0.10	<0.10	NA	< 0.10	94%	70%	130%	106%	80%	120%	121%	70%	130%
Total Selenium	5880885		<0.002	<0.002	NA	< 0.002	99%	70%	130%	95%	80%	120%	96%	70%	130%
Total Silicon	5880885		0.645	0.569	NA	< 0.200	100%	70%	130%	105%	80%	120%	124%	70%	130%
Total Silver	5880885		<0.0001	<0.0001	NA	< 0.0001	92%	70%	130%	98%	80%	120%	91%	70%	130%
Total Strontium	5880885		5.27	4.51	15.5%	< 0.005	94%	70%	130%	103%	80%	120%	NA	70%	130%
Total Thallium	5880885		<0.0003	<0.0003	NA	< 0.0003	92%	70%	130%	91%	80%	120%	97%	70%	130%
Total Tin	5880885		<0.002	<0.002	NA	< 0.002	100%	70%	130%	104%	80%	120%	105%	70%	130%
Total Titanium	5880885		<0.010	<0.010	NA	< 0.010	93%	70%	130%	93%	80%	120%	120%	70%	130%
Total Uranium	5880885		0.0009	0.0008	NA	< 0.0005	98%	70%	130%	96%	80%	120%	106%	70%	130%
Total Vanadium	5880885		<0.002	<0.002	NA	< 0.002	91%	70%	130%	104%	80%	120%	99%	70%	130%
Total Zinc	5880885		<0.020	<0.020	NA	< 0.020	101%	70%	130%	98%	80%	120%	90%	70%	130%
Total Zirconium	5880885		<0.004	<0.004	NA	< 0.004	101%	70%	130%	99%	80%	120%	97%	70%	130%

Quality Assurance

 CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.
 PROJECT: 394 Old Broch Road
 SAMPLING SITE:

 AGAT WORK ORDER: 24T154172
 ATTENTION TO: Stan Denhoed
 SAMPLED BY:SD

Water Analysis (Continued)

RPT Date: Jun 04, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: NA signifies Not Applicable.
 Duplicate NA: results are under 5X the RDL and will not be calculated.
 Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
 QA Qualifier for metals – Total Boron and Total lithium: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

Certified By:



QC Exceedance

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

ATTENTION TO: Stan Denhoed

RPT Date: Jun 04, 2024		REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
			Lower	Upper		Lower	Upper		Lower	Upper

Total Metals in Water (mg/L)

Total Boron

Total Lithium

	99%	70%	130%	123%	80%	120%	125%	70%	130%
	100%	70%	130%	128%	80%	120%	130%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

QA Qualifier for metals – Total Boron and Total lithium: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Calcium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Bismuth	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lithium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Phosphorus	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silicon	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS



Method Summary

CLIENT NAME: HARDEN ENVIRONMENTAL SERVICES LTD.

AGAT WORK ORDER: 24T154172

PROJECT: 394 Old Broch Road

ATTENTION TO: Stan Denhoed

SAMPLING SITE:

SAMPLED BY:SD

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Have feedback? Scan here for a quick survey!



5835 Coopers Avenue
Mississauga, Ontario L4Z 1V2
Ph: 905 712 5100 Fax: 905 712 5122
web@earth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:
 Company: HARDEN ENVIRONMENTAL
 Contact: _____
 Address: _____
 Phone: 519 994 6488
 Reports to be sent to: sd@hardenv.com
 1. Email: _____
 2. Email: _____

Project Information:
 Project: 394 OLD BRACK ROAD
 Site Location: _____
 Sampled By: SD
 AGAT Quote #: _____
 PO: 2317

Please note: if quotation number is not provided, client will be billed full price for analysis.

Invoice Information:
 Bill To Same: Yes No
 Company: _____
 Contact: _____
 Address: _____
 Email: _____

Regulatory Requirements: (Please check all applicable boxes)

Regulation 153/04
 Regulation 406
 Regulation 406
 Agriculture
 Res/Park
 Ind/Com
 Agriculture
 Res/Park
 Agriculture
 CCME
 Regulation 558

Report Guideline on Certificate of Analysis

Is this submission for a Record of Site Condition (RSC)?
 Yes No

Other: _____
 Indicate One

Sewer Use
 Storm
 Sanitary
 Prov. Water Quality Objectives (PWQO)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N
1. 394 1	May 24 0950	AM	6	GW	GW Total Metals	N
2. 394 2	May 24 1030	PM	1	GW	GW Total Metals	N
3. 394 3		AM				
4. 394 4		AM				
5. 394 5		AM				
6. 394 6		AM				
7. 394 7		AM				
8. 394 8		AM				
9. 394 9		AM				
10. 394 10		AM				
11. 394 11		AM				

Samples Received By (Print Name and Sign): James B Date: May 24
 Samples Received By (Print Name and Sign): James B Date: May 24
 Samples Received By (Print Name and Sign): _____ Date: _____
 Samples Received By (Print Name and Sign): _____ Date: _____

No: T-155802 Page _____ of _____

Laboratory Use Only

Work Order #: 20154179
 Cooler Quantity: Large
 Arrival Temperatures: 5.4, 3.9, 14.6
 Depot Temperatures: _____
 Custody Seal Intact: Yes No N/A

Turnaround Time (TAT) Required:
 5 to 7 Business Days
 Regular TAT (Rush Charges Apply)
 3 Business Days
 2 Business Days
 Next Business Day
 OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
 *TAT is exclusive of weekends and statutory holidays
 For 'Same Day' analysis, please contact your AGAT representative



Professional Urban Planning, Land Development & CPTED Consultants

Urban in Mind

3390 South Service Road, Unit #204
Burlington, ON L7N 3J5

www.UrbaninMind.ca

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

August 19, 2024

Attn: Jamila Sheffield, Secretary Treasurer

Re: Recirculation of FL/A-22:248 and FL/B-22:72

Dear Ms. Sheffield,

Urban in Mind has been retained by Tracey Kowalchuk, owner of the property at 394 Old Brock Road, Hamilton ON. Applications FL/A-22:248 and FL/B-22:72 were previously tabled in 2022 due to the requirement of an Archaeological Assessment and Hydrogeological Report. A Stage 3 Archaeological Assessment Report was completed by Earthworks Archaeological Services Inc, and submitted to the Ministry in 2022. We have recently been informed by the Ministry that this report will now receive expedited review. We also understand that the Ministry sign-off will be a required 'condition of any severance approval', of which we agree.

A Hydrogeological Report was conducted by Harden Environmental Ltd. and submitted to the City. Upon review of this report, City Source Protection staff engaged with third party consultants at Cambium to initiate a peer review of the report. Various communications have been completed between Cambium and Harden Environmental Services to address concerns raised in Cambium's review. We understand that all Hydrogeological concerns have now been addressed.

As such, the following is a list of all revised or additional materials included in the recirculation of this application:

1. *Stage 3 Archaeological Assessment Report by Earthworks Archaeological Services Inc.*
2. *Copy of expedited review request letter signed by Tracy Kowalchuk and submitted by Earthworks.*
3. *Hydrogeological Report by Harden Environmental Services Ltd.*
4. *Revised Planning Justification Report to address new studies.*
5. *Revised severance sketch to add septic and leech bed, and approximate well location.*

Should you have any questions or difficulties recirculating these Minor Variance and Severance applications, please contact the undersigned.

Thank you for your consideration & Best Regards,

Dorothy Yeung

Planner/Development Coordinator

Urban in Mind, Professional Urban Planning, Land Development & CPTED Consultants

PHONE
(647) 782-0876

EMAIL
DYeung@urbaninmind.ca

WEB
www.UrbaninMind.ca

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

August 19, 2024

Attn: Jamila Sheffield, Secretary Treasurer

**Re: Acknowledgement of Adherence to Mitigative Measures Recommended in Stage 3
Archaeological Assessment Conducted by Earthworks Archaeological Services Inc.**

Dear Ms. Sheffield,

A Stage 3 Archaeological Assessment has been submitted to the Ministry for review in relation to the severance and minor variance applications. The Stage 3 Assessment concluded that a Stage 4 Assessment would be required for the area noted as 'AhGx-819' on the site. This area 'AhGx-819' of the site is not within, or near the proposed severed lot, and therefore any results of the Stage 4 Assessment will have NO IMPACT on the severed Lot itself. The retained lands will remain as agricultural and also maintain the Holding Provision to ensure the development is held until a Stage 4 Assessment can be completed and implemented. Other than the creation and removal of holding on the new lot, no changes to use or development rights are being made/proposed for the subject lands. A sketch has been attached to this letter showing the location of the archaeological potential in relation to the proposed severed lot (Figure 1).

For further clarification, the archaeological report states in relation to mitigation measures:

"The protected area will consist of the site location and an associated 10 metre buffer. If grading or other soil disturbing activities caused by the development project extent to the edge of the area to be avoided, the proponent must erect a temporary barrier around the area to be avoided, and "no go" instructions will be issued to all on-site construction crews, engineers, architects or others involved in the day-to-day decisions during construction."

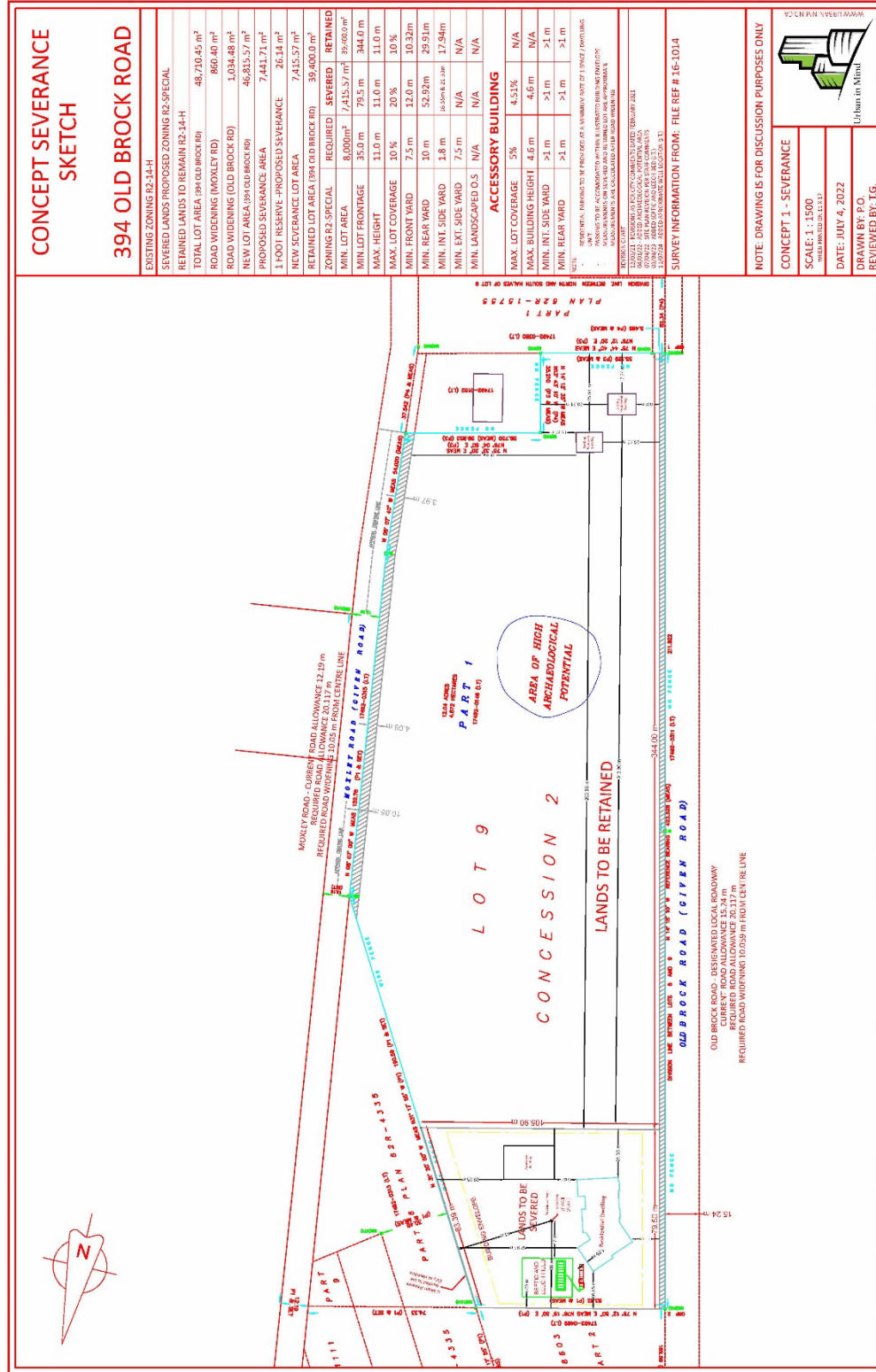
We would like to acknowledge these mitigative measures and agree to their implementation on behalf of the owner, which will be adhered to accordingly (Figure 2).

Kind regards,



Dorothy Yeung,
Planner / Development Coordinator
Urban in Mind

Figure 1: Severance Sketch



NOTE: DRAWING IS FOR DISCUSSION PURPOSES ONLY

CONCEPT 1 - SEVERANCE

SCALE: 1 : 1500

DATE: JULY 4, 2022

DRAWN BY: P.O.

REVIEWED BY: T.G.

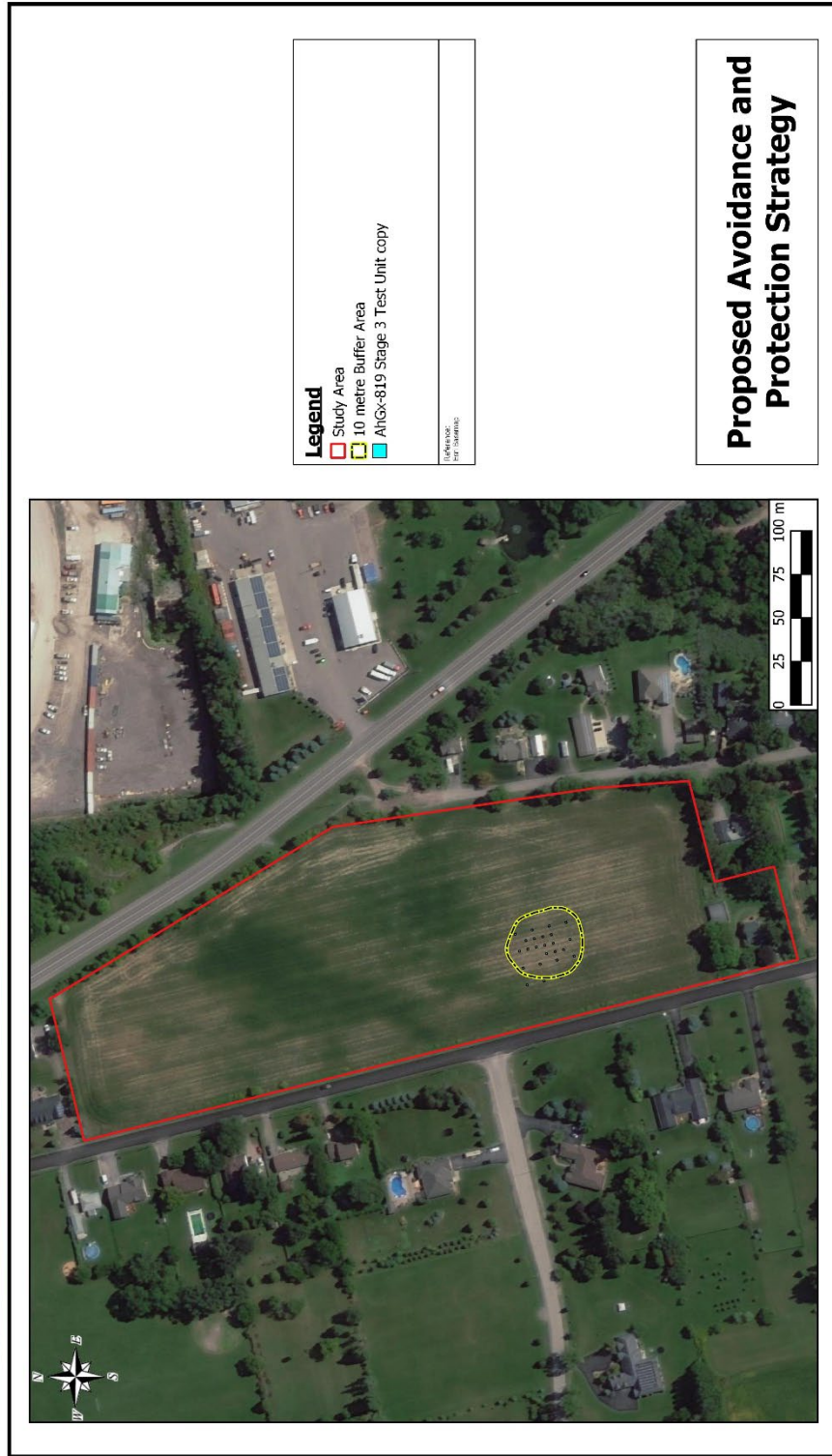
Urban in Mind

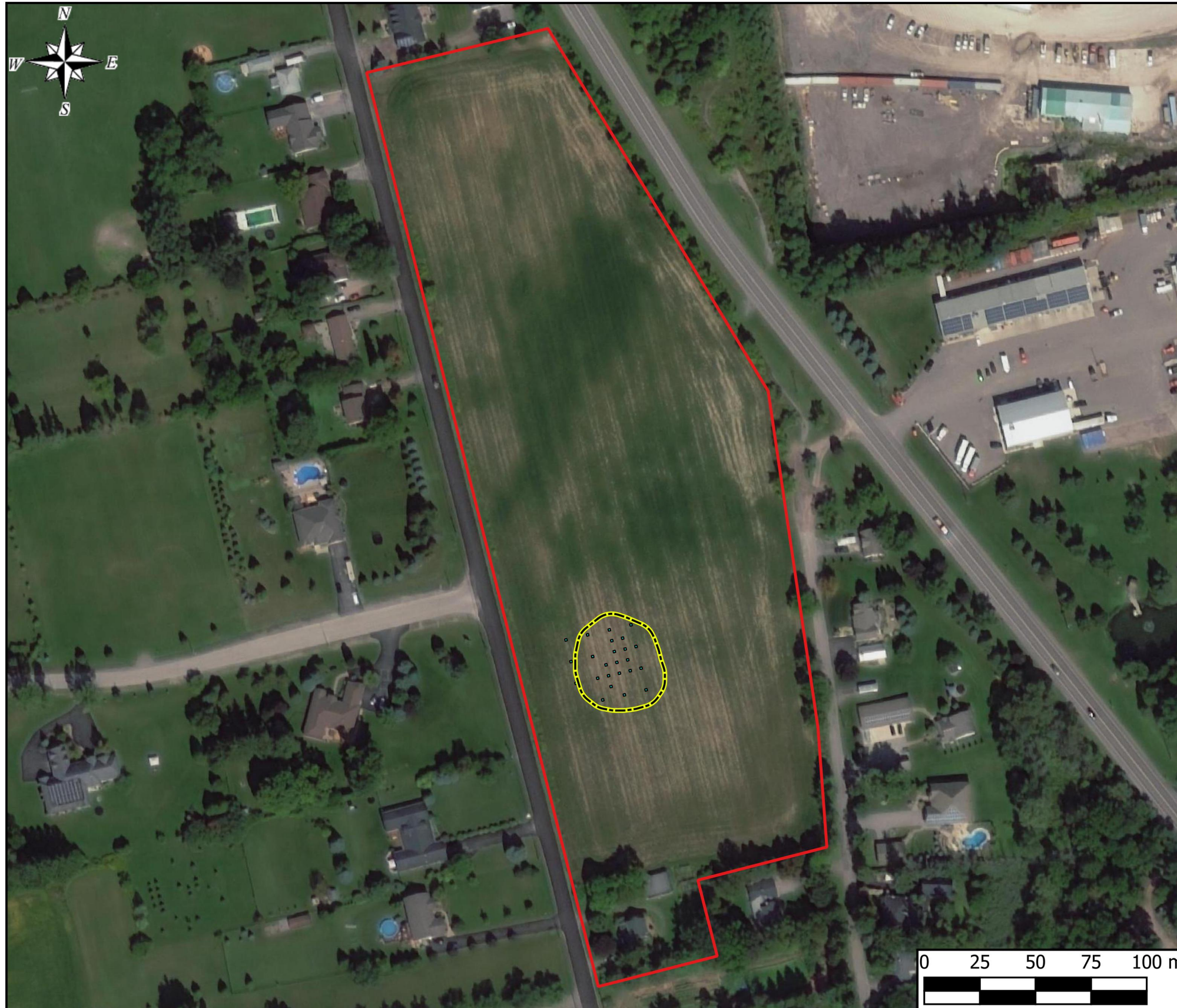


SURVEY INFORMATION FROM: FILE REF # 16-1014




Figure 2: Mitigative Measures Recommended by Earthworks Archaeological Services Inc.

Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton





Legend

-  Study Area
-  10 metre Buffer Area
-  AhGx-819 Stage 3 Test Unit copy

Reference:
Esri Basemap

**Proposed Avoidance and
Protection Strategy**

8/2/2024

Archaeology Program Unit
Ministry of Citizenship and Multiculturalism
Citizenship, Inclusion and Heritage Division | Heritage Branch
401 Bay Street, Suite 1700
Toronto, Ontario
M7A 0A7

Re: Expedited Review Request of Stage 3 Archaeological Assessment AhGx-819 & AhGx-820

394 Old Brock Road Part of Lot 9 Concession 2, Geographic Township of Flamborough City of Hamilton. PIF: P1037-0085-2021 P1037-0091-2021

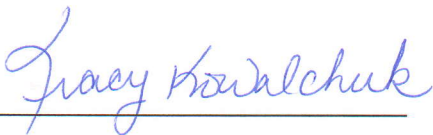
To Whom This May Concern,

This letter requests that the Ministry of Citizenship and Multiculturalism conducts an expedited review of the above archaeological assessment report completed by Earthworks Archaeological Services Inc.. The archaeological assessment report was required by the City of Hamilton Committee of Adjustment for severance and minor variance applications in 2022. The application was tabled at the time due to the need for an archaeological assessment. The City of Hamilton requires a clearance letter from the Ministry to move forward with resubmission as a complete application. All required submission materials have been obtained, and the Ministry's clearance is the remaining item that is needed for resubmission.

This application requires a Ministry clearance letter to move forward with the City. We ask that this report is reviewed by September 16, 2024.

Thank you for your assistance.

Respectfully,



Tracy Kowalchuk

Fwd: Expedited Report Review Request Granted / *

Mike G <m.golloher@gmail.com>

Tue 2024-08-13 7:41 PM

To: Dorothy Yeung <DYeung@urbaninmind.ca>

----- Forwarded message -----

From: **pastport** <pastport@ontario.ca>

Date: Tue, Aug 13, 2024, 3:45 p.m.

Subject: Expedited Report Review Request Granted / *

To: <m.golloher@gmail.com>

Cc: <PastPort@ontario.ca>

Dear Michael Golloher,

Your request for an expedited review of report number 62308 submitted under Project Information Form P1037-0085-2021 on Aug 5, 2024 has been granted and the report has been assigned for review.

Thank you for your expedited review request. This report has been entered into the Register without technical review, so this request for expedited review is cancelled.

Please do not reply to this e-mail. The message will be undeliverable, and we are unable to respond from this address.

If you have any questions about this message, email us at: Archaeology@ontario.ca

December 21, 2022

Jamila Sheffield
Secretary-Treasurer
Committee of Adjustment
City of Hamilton
71 Main St. West, 5th Floor
Hamilton, Ontario L8P 4Y5

Dear Jamila Sheffield:

**RE: Consent Application - 394 Old Brock Road, Flamborough (FL/B 22:72)
OUR FILE 9526JK**

On behalf of our Client, Lafarge Canada Inc. (Lafarge), please accept the following comments on the proposed consent located at 394 Old Brock Road, Flamborough (FL/B 22:72). It is our understanding that the proposed consent seeks to create one residential building lot along Old Brock Road.

Lafarge owns and operates the Dundas Quarry, which is located approximately 40 metres to the northeast of the proposed lot, with the existing processing area at the quarry in close proximity to the proposed lot. The Dundas Quarry is an existing 'major facility' in the context of the Provincial Policy Statement (PPS), which are defined as facilities which may require separation from sensitive land uses, such as residences.

The proposed consent would introduce a new sensitive land use (building lot to support a new residence) in close proximity to an established major facility. The PPS policies under Section 1.2.6.1 state the following:

"Major facilities and sensitive land uses shall be planned and developed to avoid, or if avoidance is not possible, minimize and mitigate any potential adverse effects from odour, noise and other contaminants, minimize risk to public health and safety, and to ensure the long-term operational and economic viability of major facilities in accordance with provincial guidelines, standards and procedures."

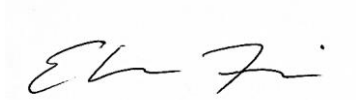
In accordance with the above policy, it is requested that land use compatibility be appropriately demonstrated through the necessary studies to confirm that the introduction of a new sensitive land use can meet the policy tests under Section 1.2.6.1 of the PPS as it relates to the existing Dundas Quarry operation. In particular, it is requested that should the application for consent proceed, that a noise study be completed and that the new lot and associated sensitive receptor be designed to satisfy all provincial requirements, including NPC-300.

It is our understanding that the application has currently been deferred and it would be appreciated if the City could please advise should a date be set for the application to return to the Committee of Adjustment.

Thank you for consideration of our comments and should you have any questions we would be more than happy to discuss.

Yours truly,

MHBC

A handwritten signature in black ink, appearing to read "Ellen Ferris".

Ellen Ferris, BSc., MSc., MCIP, RPP
Associate

cc. *Mal Wensierski | Lafarge*
Brian Zeman | MHBC



Tracy Kowalchuk (Client)
tracyk@sympatico.ca
905-975-3261

30719
Revision 1
June 15, 2021

Severance Part 1 Lot 9, Con 2 Old Brock Road, Greensville, Ontario Septic Investigation

1. INTRODUCTION

Egmond Associates Ltd (EAL) was contacted by Terrance Glover of Urban-In-Mind to conduct a well and septic investigation at 394 Old Brock Road, Greensville, Ontario, as a model for a new lot to be severed from the parcel. The client is Tracy Kowalchuk, the property owner. The investigation includes a site visit, a review of available maps and water well/geotechnical data by others, pump test data and septic evaluation of 394 Old Brock Road at the parent parcel. This report only covers the septic evaluation.

2. SCOPE

The scope of the investigation was:

- Carry out a desktop study.
- Review the on site 394 septic bed area to look for evidence of breakout and field performance.
- Using the above information, provide an opinion on septic issues for the site.

All matters, including other well, septic, environmental, surface water, geotechnical, etc. matters such as frost depth, consolidation, not set out above were and remain specifically not part of the EAL duties or responsibilities.

3. SITE

The site was located at the north end of the Parent Parcel 394 Old Brock Road, Greensville, Ontario (Figure 1). The site is primarily an agricultural field at present. The parent parcel residence is at the southern side of the parcel. The site survey shows the proposed lands to be severed on the North side of the site for a new residence (Figure 2). The proposed new parcel location and the parent parcel are not serviced by municipal water or sewer.

The site is in the community of Greensville, which is part of the City of Hamilton. A Lafarge quarry is about 70 m East of the Site.

A topographic map of the area (Figure 3) shows that the surface elevation at new parcel and the existing well (6813924) at 394 is about 250 m to 253m Above Sea Level (ASL). The existing well on the parent parcel is about 14.3m deep (base elevation 235.7 m ASL) and the static water level is about 6.45 m (243.55 m ASL). The new parcel and parent parcel are reasonably close to the same elevation across the two parcels.

844-233-7227

The elevation at the location of the proposed severed lot is about 250 m to 253m ASL. The grading on the agricultural central portion of the property appears to be concave and slopes towards the centre of the site and towards the East. The quarry to the East has a lowest elevation of about 231 m ASL.

4. SEPTIC

The septic bed at the parent parcel 394 Old Brock Road was inspected by means of a site walkover as surrogate for what might be expected at the new parcel.

The septic tank is located on the North side of the house. A rectangle of distressed vegetation and slight mound is evident above the septic tank (Figure 4) owing to soil removal from a recent tank maintenance and pumping.

The septic bed is located in front of the house on the West side (Figure 5). No evidence of breakout was noted. Grass around the septic bed looked healthy and no patterns in the vegetation outlining the location of the septic bed were visible. It appears that the septic bed is working normally.

EAL contacted the City of Hamilton Building Department for records of the septic bed. The records show that the septic bed was installed in May 2000. The current septic bed apparently replaced an existing bed which had become plugged after 50 years.

The leaching bed on the 394 Old Brock Site was designed for a total length of 84m made of 76mm diameter PVC distribution pipe. The leaching bed is laid in 5 runs and is gravity fed.

EAL hand dug three test pits on the new parcel to about 250mm deep to determine surface soil type at the location of the proposed severed lot. It was found that the surface soils appeared to be a fine brown sand.

Assuming that the soils are the same to the bottom depth of a new septic bed, a T time of 5 min/cm could be used in the design of the septic bed. At the time of new construction of a septic bed, the T time shall be determined by further investigation.

5. CONCLUSION AND RECOMMENDATIONS

EAL conducted a septic inspection, reviewed geological data by others. Using this data, soil properties were estimated.

The following comments are made respecting the new lot based on the work completed herein.

EAL witnessed what appeared to be a functioning septic system on the parent parcel.

- The upper 250mm of soil was found to be a fine sand.
- The soils near the site are generally sandy in nature in the upper 5 m or more, though clays with sand and gravel are present in wells or test holes by others near the site.
- The septic bed will normally be in the upper 1m of the soil column.

Sandy soils if present likely have a T-time of about 5min/cm. Clayey soils are likely to have T-Times that are longer (12 to 50 minutes per centimetre) would require designers to have larger septic beds if conventional septic systems are used. The same soils appear on the parent parcel near the house at 394 Old Brock Road, where the septic bed was apparently operating normally. T-Time tests should be completed at the time of design and construction.

Septic Use

Septic system use and successful operations depend to a large part on users and on construction (follow the OBC).

- The design of the septic system, should include all possible occupancies and uses/fixtures.
- An operations manual shall be provided for users in the pump and septic rooms.
- For large numbers of guests a training session may be useful.

6. CLOSURE

6.1. USE

This letter report supersedes all drafts, verbal reports, emails, and discussions of the area of concern, of the site, etc. and represents EAL's current full and entire interpretation of the matters herein.

This letter report is prepared for the use of the client and Egmond Associates Ltd. All others with an interest in the site or sites are to undertake their own investigations, etc. to determine how or if the site affects them.

6.2. TERMS AND CONDITIONS

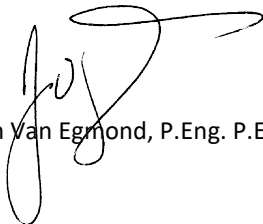
Use of this letter report is subject to the Terms and General Conditions as attached. This letter report was prepared by Egmond Associates Ltd under the direction of John Van Egmond, P.Eng. We trust that the information contained in this report is adequate for your present purposes. This report is for the use of the client, and EAL in the 2021 Site severance planning phase. All others with an interest in the site shall determine how or if the conditions of the site affect them, their costs, plans etc., and neither of EAL, nor any client will be responsible for use of this report by others.

Sincerely,

Egmond Associates Ltd
Geotechnical & Environmental Engineers

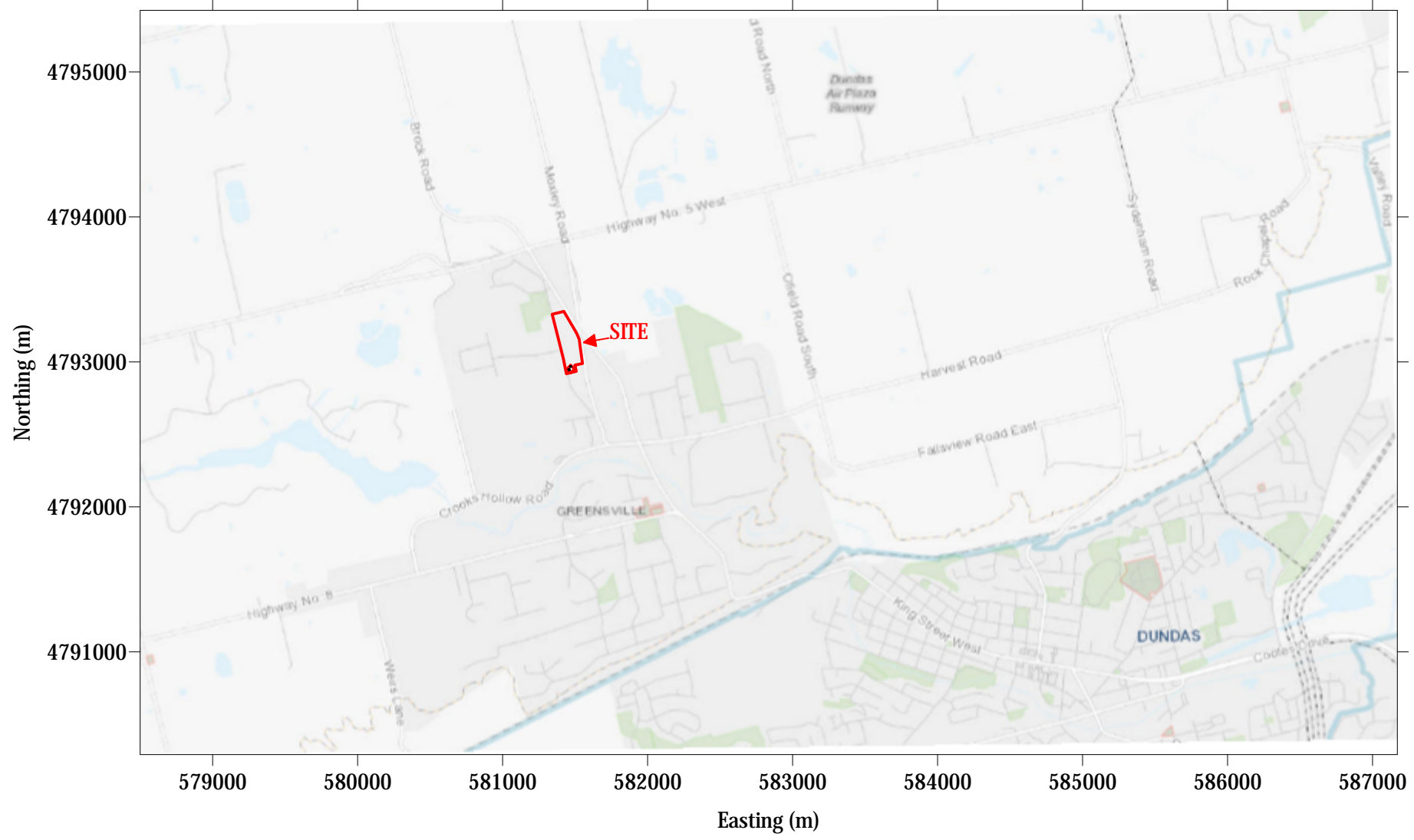


Julie VanderMeulen, B.Eng., MaSc



John Van Egmond, P.Eng. P.E., President

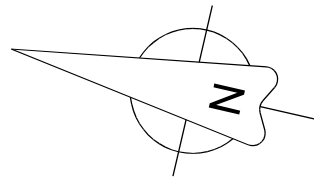




Source: City of Hamilton maps, 2021
Location overview

30719
394 Old Brock Road
Greensville, ON

FIGURE 1

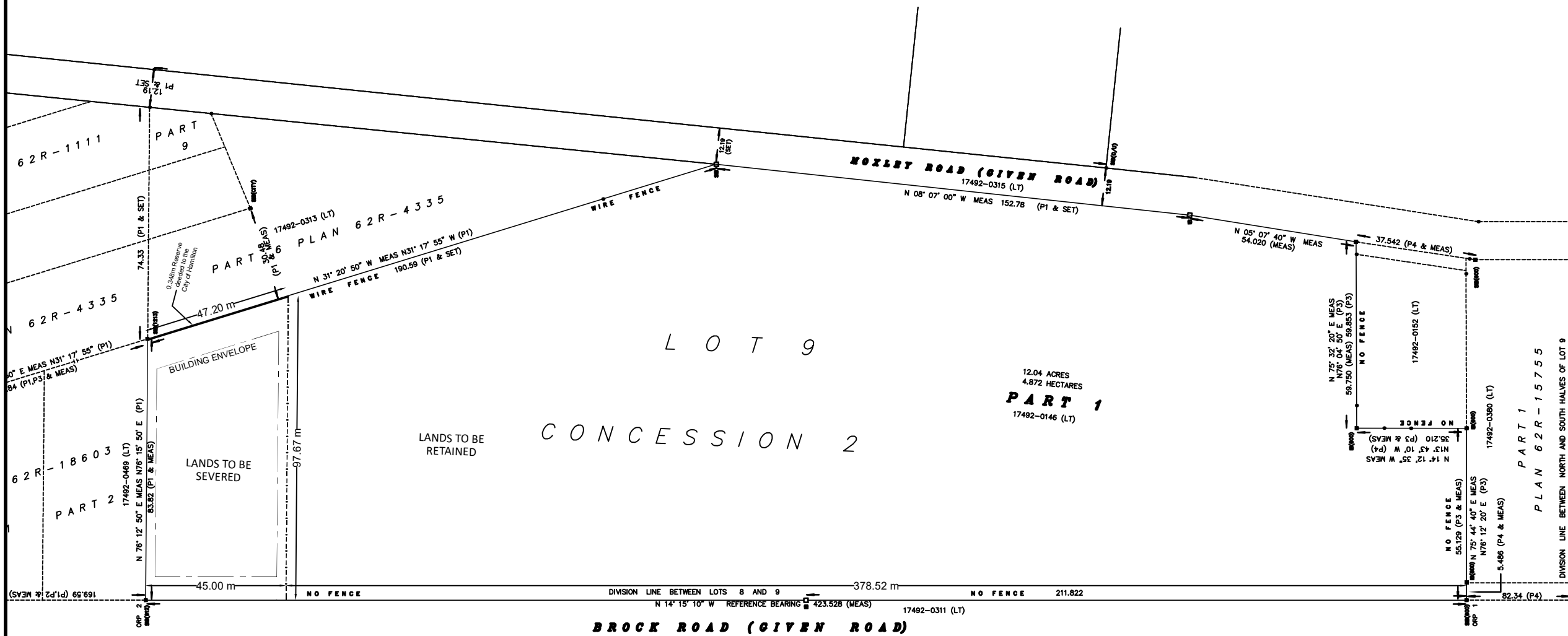


CONCEPT SEVERANCE SKETCH

394 OLD BROCK ROAD

EXISTING ZONING R2-14-H	
PROPOSED ZONING R2-SPECIAL	
TOTAL LOT AREA	48,710.45 m ²
PROPOSED SEVERANCE AREA	4,084.67 m ²
1 FOOT RESERVE -PROPOSED SEVERANCE	14.39 m ²
NEW SEVERANCE LOT AREA	4,070.28 m ²
RETAINED LOT AREA	44,625.78 m ²

	REQUIRED	SEVERED	RETAINED
MIN. LOT AREA	8,000m ²	4,070.28 m ²	44,625.78 m ²
MIN. LOT FRONTAGE	35.0 m	45.0 m	375.52 m
MAX. HEIGHT	11.0 m	11.0 m	11.0 m
MAX. LOT COVERAGE	10 %	10 %	10 %
MIN. FRONT YARD	7.5 m	7.5 m	7.5 m
MIN. REAR YARD	10 m	10 m	10 m
MIN. INT. SIDE YARD	3.0 m	3.0 m	3.0 m
MIN. EXT. SIDE YARD	7.5 m	7.5 m	7.5 m
MIN. LANDSCAPED O.S	n/a	n/a	n/a



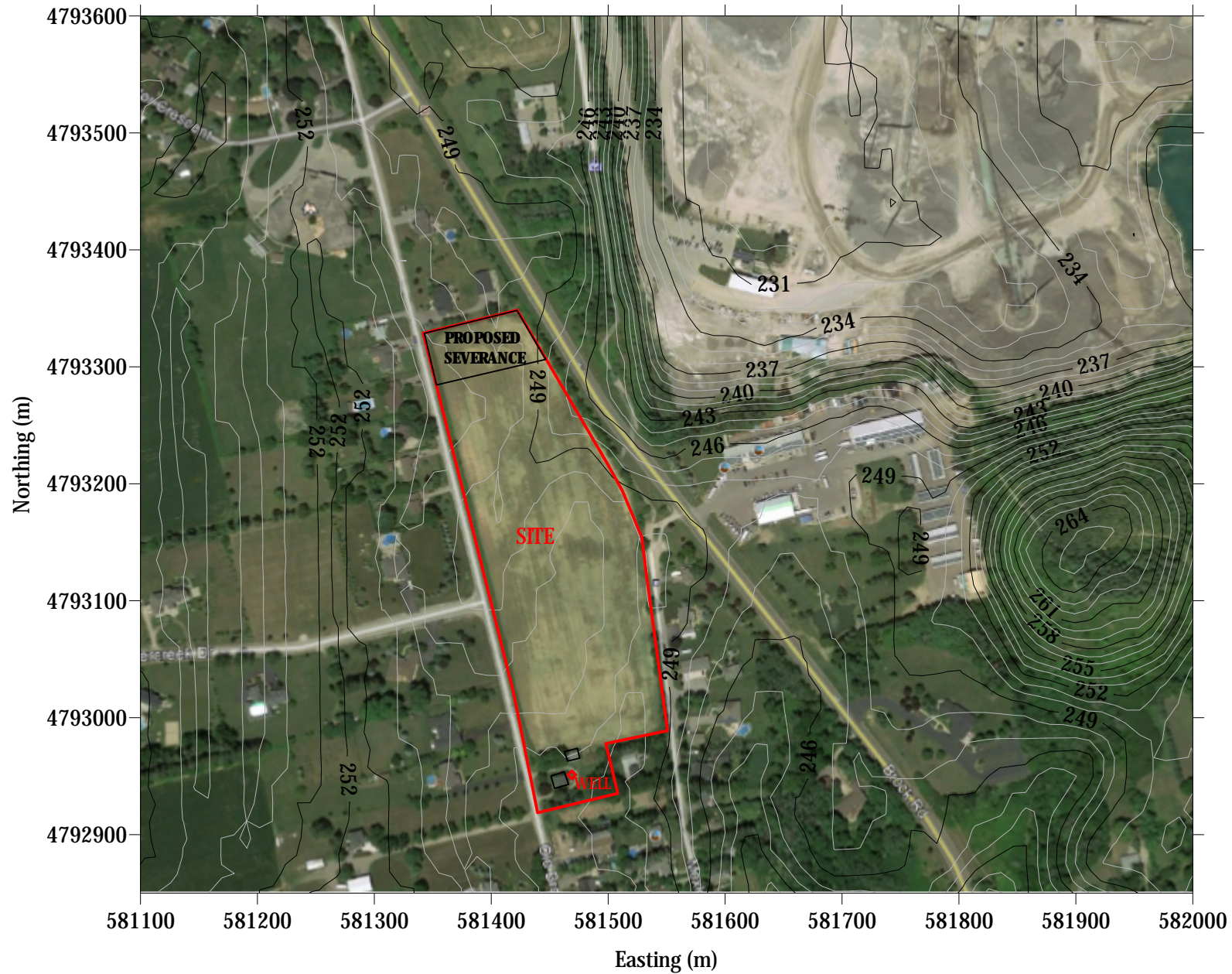
SURVEY INFORMATION FROM: FILE REF # 16-1014
L.G. WOODS SURVEYING INC.
 PROFESSIONAL LAND SURVEYORS
 334 HATT STREET – DUNDAS DISTRICT
 CITY OF HAMILTON, L9H 2H9
 TEL (905) 627-0978 – FAX (905) 627-2818

NOTE: DRAWING IS FOR DISCUSSION PURPOSES ONLY

CONCEPT 1
 SCALE: 1 : 1500
WHEN PRINTED ON 11 X 17
 DATE: DECEMBER 21, 2020
 DRAWN BY: S.C.
 REVIEWED BY: T.G.



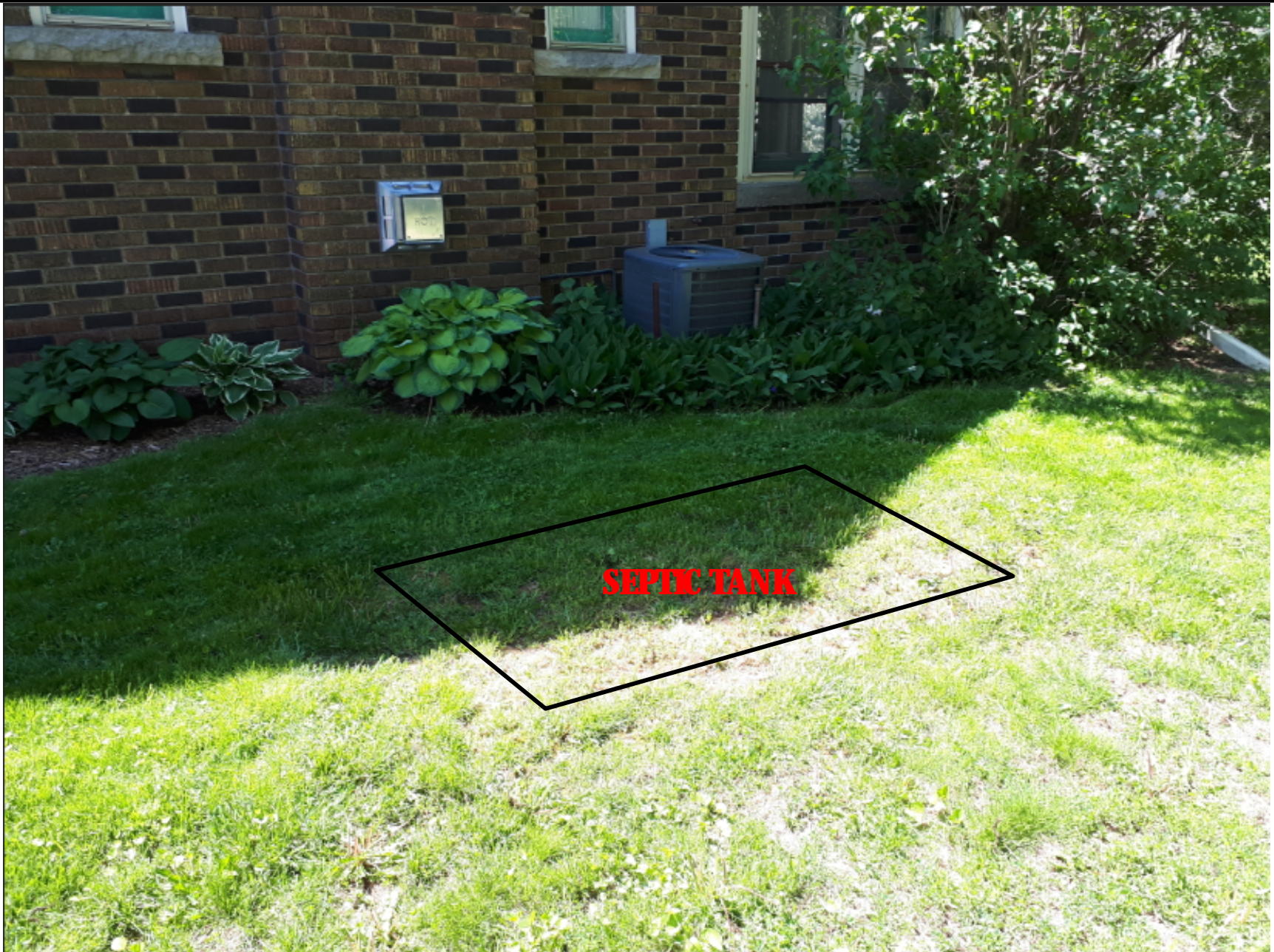
FIGURE 2



Base map: Google Earth, 2021
Topography: Toporama, 2021
Site location
Shows topography near the site. Note the quarry to the east

30719
394 Old Brock Road
Greenville, ON

FIGURE 3





Source: EAL, May 31, 2021
Location of septic bed.
Septic bed is in the front yard. No evidence of breakout noted.
No evidence of distressed vegetation.

30719
394 Old Brock Road
Greenville, ON

FIGURE 5



30719
Revision 1
June 15, 2021

APPENDIX
Septic Records

844-233-7227



USE PERMIT

For Class 4,5,6 Sewage System

Application No. WF-12-2000

39A OLD BROCK RD - FLAMBOROUGH

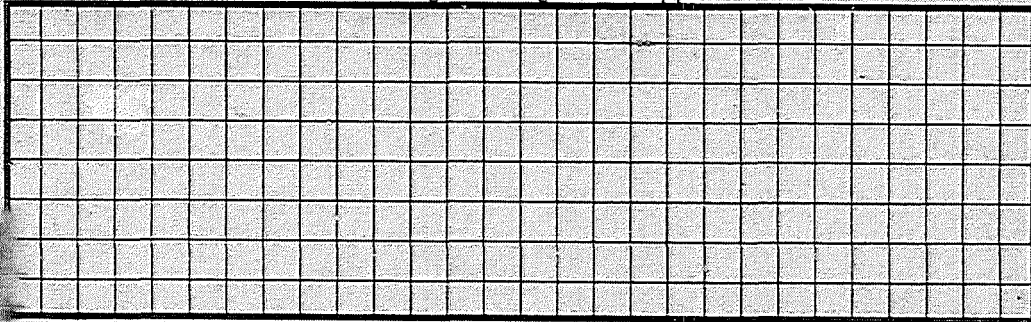
INSPECTION DETAILS	TIME: <u>12:30</u>	DATE: <u>MAY 16/2000</u>	WEATHER: <u>CLEAR</u>
REPRESENTING			

1. Work authorized by the Building Permit has been satisfactorily completed and includes:

- a) Septic tank/holding tank of working capacity of EXISTING Litres.
- b) Septic tank/holding tank constructed of Steel Concrete
 Fibre Glass On Site
 Prefabricated Type: _____
- c) Number of bedrooms/units 3
- d) Leaching bed of total 8.4 meters : of 76 mm (millimeters) diameter distribution pipe of PVC
(Type and product description e.g. manufacturer and material of pipe) laid in 5 runs and fed by GRAVITY
(gravity, siphon, pump).
- e) Proprietary Aerobic System: Manufacturer: _____ Model: _____
- f) Other Details NEW BED TO REPLACE OLD



2. Location

- a) System components installed as shown on application supporting Building Permit
- b) If located other than in a), use space below for sketch and dimensions from permanent point of reference sufficient to facilitate future location of tank and leaching bed including orientation of pipe runs.



The following work remains to be completed:-

- Backfill System and Complete
- Finish Grading to Shed Run-Off and Divert Water Around Leaching Bed
- Stabilize all Sloped Surfaces
- Other SEED OR SO2

USE PERMIT		
Under Section 2.4.1.1 of the <u>Ontario</u> Building Code, 403/97, and subject to the provisions of the Act and Regulations a Permit is hereby issued to (Owner) _____ for the use and operation of the Class <u>A</u> sewage system constructed/installed/enlarged/extended/alterd pursuant to the Building Permit issued under the above application number in accordance with the application and Building Permit with any changes indicated above and located at (location) <u>39A OLD BROCK RD</u> in the Town of Flamborough.		
Inspected and Recommended By: 	Permit Issued By:  Peter Vanderbeek, Chief Building Official	Date: <u>MAY 17/2000</u>

Note: No change can be made to any building(s) or structure(s) in connection with which this sewage system is used, if the operation or effectiveness of the sewage system will or is likely to be affected by the change, unless a new Building Permit is obtained.

WARNING: UNDER NO CIRCUMSTANCES SHOULD A HOMEOWNER ENTER A SEPTIC TANK. NOXIOUS GASES WHICH ARE HEAVIER THAN AIR REMAIN IN THE TANK AFTER THE TOP IS REMOVED, AND HAVE CAUSED DEATH BOTH TO THE ORIGINAL VICTIM AND TO THOSE WHO ATTEMPT TO RESCUE HIM FROM THE TANK



TOWN OF FLAMBOROUGH

Application Form And Building Permit For A Class 2 - 6 Sewage System

Shaded areas for office use only

2510ED

Application No.	WF-12-2000
Fee Receipt No.	11986
Date Received	MAY 11/2000

OWNER (S) NAME: [REDACTED]
STREET ADDRESS: 394 OLD BROCK ROAD
MAILING ADDRESS: SAME
CITY/ PROVINCE: GREENSVILLE ONTARIO
POSTAL CODE: L [REDACTED]
PHONE NUMBER: HOME [REDACTED]

INSTALLERS NAME: [REDACTED]
LICENSE NUMBER: [REDACTED]
STREET ADDRESS: [REDACTED]
MAILING ADDRESS: [REDACTED]
CITY/ PROVINCE: [REDACTED]
POSTAL CODE: [REDACTED]
PHONE NUMBER: [REDACTED]

PROPOSE TO REPAIR A CLASS 4 SEWAGE SYSTEM TO SERVE A SINGLE FAMILY
(Construct, install, repair etc.) (Facility: e.g. single family dwelling, motel etc.)

TAX ROLL NUMBER: 2530 200 230 18400 SEVERANCE NUMBER: 0000
LOCATION ADDRESS: LOT AREA: 12 ACRES
PLAN NUMBER: LOT NUMBER: CONCESSION:

STATE NUMBER OF:	BEDROOMS:	PEOPLE:	FLUSH TOILETS	URINALS	WASH BASINS & SINKS	SHOWERS & BATHTUBS	TOTAL FIXTURE UNITS
	3	1	1		2	1	10 1/2

WATER SUPPLY:

<input type="checkbox"/> PROPOSED OR <input checked="" type="checkbox"/> EXISTING	<input type="checkbox"/> DUG OR BORED WELL <input type="checkbox"/> OTHER	<input checked="" type="checkbox"/> DRILLED WELL	<input type="checkbox"/> MUNICIPAL
--	--	--	------------------------------------

COMPLETE SKETCH ON REVERSE OR LIST ATTACHMENTS: SEE ATTACHED DRAWINGS

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT AND THAT IF APPROVED, THE WORK WILL CONFORM TO THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAWS.

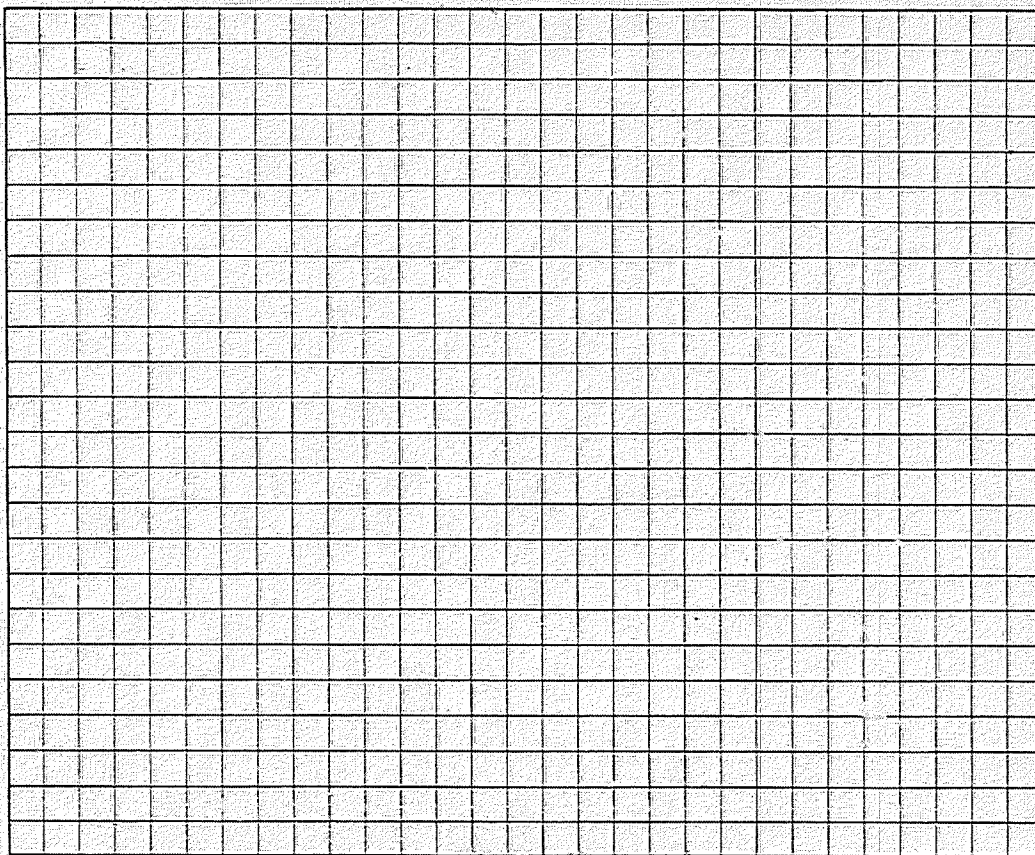
AGENTS NAME: [REDACTED]
STREET ADDRESS: [REDACTED]
CITY/ PROVINCE: [REDACTED]
POSTAL CODE: [REDACTED]

SIGNATURE: [REDACTED] DATE: May 11, 2000

LOT DIAGRAM AND SEWAGE SYSTEM PLAN: Draw diagram indicating north point and showing:

- 1) Location of sewage system components (eg. Tanks, leaching bed). Locate and show horizontal distances from system to adjacent existing or proposed buildings, water supplies (including neighbours), existing on site sewage systems, driveways, property lines, lakes, rivers, water courses, swimming pools.
- 2) Lot dimensions, topographic features (e.g. swamps, steep slopes) near system.
- 3) If any part of proposal conforms to specific standard drawing, give reference number(s).

SFD AREA 1577 SQ. FT



NOTE: PERCOLATION TEST REQUIRED OF NATIVE SOIL AT APPROXIMATE LOCATION OF BOTTOM OF TRENCH.

INSPECTORS REPORT:

INSPECTION TIME AND DATE <input checked="" type="checkbox"/> AIRM 10:00 P.M. 5/15/2000		Depth (m) Soil type
Remarks CLEAR	REQUIREMENTS 84m (275') EXISTING TANK	E-0 - 110" TOP SOIL E-0.25 - 110" - 7" SAND SILT E-0.75 - MIX DRY TO DAMP E-1.00 - FLOW SILT CONTENT E-1.25 - TEST TIME E-1.50 - 5-10 MIN.
<input checked="" type="checkbox"/> Conditions of approval and reasons (e.g. fill, grading, drainage improvements, design sewage flow) or <input type="checkbox"/> Reasons where proposal not acceptable (add additional pages if required)		
NEW BED TO REPLACE EXISTING IN SAME LOCATION, OLD CLAY TILE PLUGGED W/PI NO STONE COVER, LASTED 50 YEARS		

BUILDING PERMIT

Application approved and this Building Permit under the Ontario Building Code 40392 is issued for the proposal outlined on this application and the attachments provided that the sewage system shall be completed and a use permit figured within 12 months of the issue hereof or such extended period as the Chief Building Official allows. All construction shall conform to the Ontario Building Code. **DO NOT OPERATE THE SYSTEM UNTIL A USE PERMIT HAS BEEN ISSUED.**

Inspected and Recommended by: JAY APPELL	Issued: Peter Vanderbeek, Chief Building Official	Date: May 16 2000
---	--	----------------------

SECTION B - FOR SEWAGE SYSTEMS

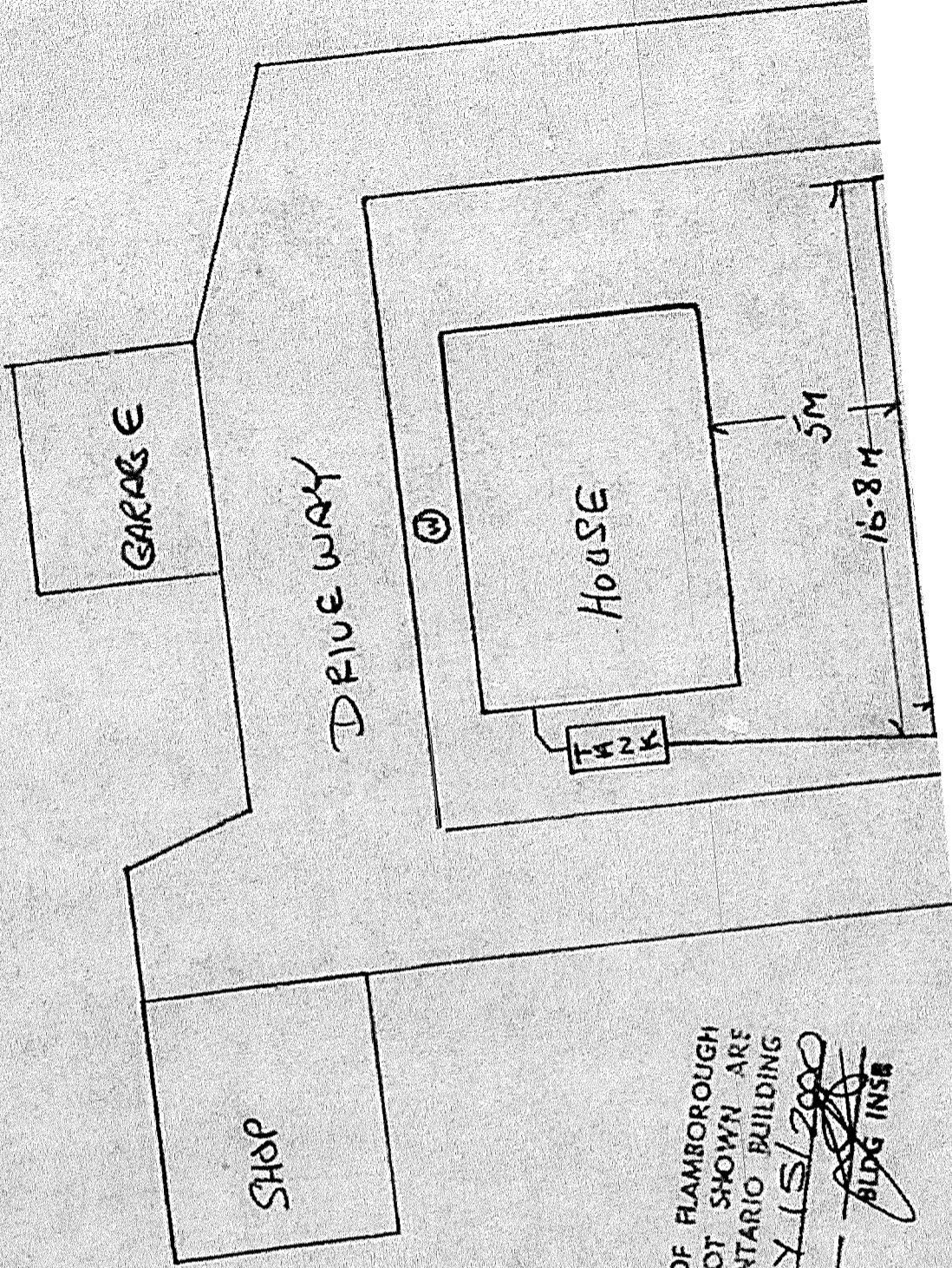
WILL MORE THAN ONE SEWAGE SYSTEM BE USED? YES NO TOTAL # OF BEDROOMS ON THE PROPERTY **3**
 TOTAL FLOOR AREA OF ALL DWELLINGS (PROVIDE COPIES OF FLOOR PLANS AS REQUIRED)
 TOTAL FIXTURE UNITS WITHIN ALL BUILDINGS ON THE PROPERTY (TAKEN FROM SECTION "A" SEE PREVIOUS PAGE) **10 1/2**
 TOTAL DAILY DESIGN FLOW RATE (EXPRESSED IN L / DAY) (DETERMINE FROM ABOVE & FROM CHARTS PROVIDED) **Q = 1600**
 DESCRIBE THE SEWAGE SYSTEM AREA VEGETATION **GRASS** SLOPE **LEVEL**
 DEPTH OF SOIL TO BEDROCK OR SANDPAN **15M** TO HIGH WATER TABLE **NONE**
 TYPE OF SOIL (E.G. MEDIUM SAND, CLAY, SANDY SILT, ETC.) **GRAVELLY SAND**
 PERCOLATION TIME OF SOIL USED IN THE BED (EXPRESSED IN MIN / CM) (REFER TO THE BUILDING CODE) **T = 10**
 DESCRIBE MANTLE (DOWNSLOPE AREA BELOW SEWAGE SYSTEM) VEGETATION **GRASS**
 PROPER SOIL IS EXISTING OR MUST BE IMPORTED DEPTH
 DESCRIBE TYPE OF SOIL TO BE USED ESTIMATED T TIME
 PROPOSE TO CONSTRUCT (REFER TO ABOVE INFO & TO THE BUILDING CODE AND/OR INFO SHEETS & CHARTS PROVIDED)
 CLASS 2 GREY-WATER PIT WALL STRUCTURE CONCRETE BLOCK ROCK OTHER
 DIMENSIONS OF PIT LENGTH WIDTH HEIGHT TYPE OF COVER
 TYPE OF CLASS 1 TO BE USED: PRIVY COMPOSTING CHEMICAL ELECTRICAL OTHER
 CLASS 4 FILTER BED PROOF OF APPROVED FILTER MATERIAL MUST BE PROVIDED
 DUG INTO EXISTING SOIL OR RAISED IF RAISED, HOW FAR ABOVE EXISTING SOILS?
 AREA OF FILTER MEDIUM (SQ. M.) # OF RUNS OF TILE HEADER OR DISTRIBUTION BOX
 USE EXISTING TANK OR NEW CSA STANDARD CONCRETE POLYETHYLENE SIZE (L)
 CLASS 4 TRENCH BED DUG INTO EXISTING SOIL OR RAISED IF RAISED, HOW FAR ABOVE EXISTING SOILS?
 TOTAL LENGTH OF TILE (M) **80** # OF RUNS OF TILE **5** HEADER OR DISTRIBUTION BOX
 USE EXISTING TANK OR NEW CSA STANDARD CONCRETE POLYETHYLENE SIZE (L)
 OTHER SEPTIC DESCRIBE
 CLASS 5 (HOLDING TANK) A PUMP OUT CONTRACT MUST BE PROVIDED STEEL POLYETHYLENE OTHER
 SIZE (L) ALARM IS AUDIO AND VISUAL DESCRIBE PLATFORM
 FOR ANY OF THE ABOVE IS A PUMP REQUIRED? YES NO IF YES HEAD RUN HORSEPOWER

CONTRACTOR'S BUSINESS LICENCE # **S 1999 3180** ON-SITE SUPERVISOR'S LICENCE # **1-1999-2210**

- ALL APPLICATIONS UNDER THIS SECTION MUST INCLUDE:
- A DETAILED SITE PLAN WHICH LOCATES ALL FEATURES & STRUCTURES WITH ALL DISTANCES INDICATED DRAWN TO SCALE
- INCLUDE THE FOLLOWING ON THE SITE PLAN:
- PROPERTY LINES & TOPOGRAPHIC FEATURES - WATER COURSES/BODIES/SWAMPS, CLIFFS, BARE ROCK, SLOPE DEGREE & DIRECTION
 - EXISTING & PROPOSED STRUCTURES - ALL BUILDINGS, DRIVEWAYS, UTILITY EASEMENTS, WELLS (STATE: DUG, BORED OR DRILLED - INCLUDE ALL NEIGHBOURS)
 - EXISTING & PROPOSED SEWAGE SYSTEM(S) - TANK & TILE FIELD ORIENTATION, DISTRIBUTION LINES, MANTLE AREA, DETAILS OF EXISTING SYSTEM IF IT REMAINS IN USE

PRIOR TO CONSTRUCTION, ARRANGE FOR AN INSPECTOR TO APPROVE THE PROPOSED SITE AND SEWAGE SYSTEM.
 FEES FOR SEWAGE SYSTEM PERMITS AND INSPECTIONS ARE DETAILED IN SCHEDULE "A" OF THE BUILDING BY-LAW.

394 OLD BRACK RD - FLAMBOROUGH.



PLANS REVIEWED BY TOWN OF FLAMBOROUGH
 BUILDING DEPARTMENT, ITEMS NOT SHOWN ARE
 TO BE IN COMPLIANCE WITH ONTARIO BUILDING
 CODE

BLDG PERMIT # _____ DATE OF ISSUE _____
 MAY 15/2000
 BLDG INSR

Severance Part 1 Lot 9, Con 2 Old Brock Road, Greensville, Ontario Well Pump Test

1. INTRODUCTION

Egmond Associates Ltd (EAL) was contacted by Terrance Glover of Urban-In-Mind to conduct a well and septic investigation at 394 Old Brock Road, Greensville, Ontario, as a model for a new lot to be severed from the parcel. The client is Tracy Kowalchuk, the property owner. The investigation includes review of available maps and water well/geotechnical data by others, a pump test and septic evaluation of 394 Old Brock Road at the parent parcel. Further a shallow seismic survey was conducted to estimate deeper soil conditions at the site.

2. SCOPE

The scope of the investigation was:

- Carry out a desktop study.
- Attend the 394 site and run a 3 hour pump test.
- Take water samples for bacteriological testing by the local health unit.
- Conduct a shallow seismic survey
- Using the above information, provide an opinion on groundwater, and geological conditions.

All matters, including other well, septic, environmental, surface water, geotechnical, etc. matters such as frost depth, consolidation, not set out above were and remain specifically not part of the EAL duties or responsibilities.

3. SITE

The site was located at the north end of the Parent Parcel 394 Old Brock Road, Greensville, Ontario (Figure 1). The site is primarily an agricultural field at present. The parent parcel residence is at the southern side of the parcel. The site survey shows the proposed lands to be severed on the North side of the site for a new residence (Figure 2). The proposed new parcel location and the parent parcel are not serviced by municipal water or sewer.

The site is in the community of Greensville, which is part of the City of Hamilton. A Lafarge quarry is about 70 m East of the Site.

A topographic map of the area (Figure 3) shows that the surface elevation at new parcel and the existing well (6813924) at 394 is about 250 m to 253m Above Sea Level (ASL). The existing well on the parent parcel is about 14.3m deep (235.7 m ASL) and the static water level is about 6.45 m (243.55 m ASL). The new parcel and parent parcel are reasonably close to the same elevation across the two parcels.

The elevation at the location of the proposed severed lot is about 250 m to 253m ASL. The grading on the agricultural central portion of the property appears to be concave and slopes towards the centre of the site and towards the East. The quarry to the East has a lowest elevation of about 231 m ASL. This elevation is below the water level identified in the well.

4. NEARBY WELLS AND GEOLOGY

EAL reviewed geology maps as well as nearby wells by others. A map of the wells in relation to the Site is shown in Figure 4. The well logs are presented in Appendix 1 based on work by others, in some cases decades ago.

The on site well number 6813924, drilled in 2003 shows the following:

Soil Description	Depth to layer (m)	Elevation at top of layer (m)
Clay: Silt, brown	0 m	250 m
Gravel: Sand, Silt, Grey	5.5m	244.5 m
Limestone: Brown	12.2 m	237.8 m
Depth water found	15.1 m	234.9 m
Static Water Level	6.7 m	243.3 m

Further, in 1953, well 6805947 was completed apparently near the middle of the parent parcel, though it was not detected in the field. EAL cannot be sure the location is reliable or on site.

Soil Description	Depth to layer (m)	Elevation at top of layer (m)
Clay, Gravel (EAL comment Clay Till?)	0	250 m
Gravel: Medium Sand	12m	238 m
Limestone	14 m	236 m
Depth water found	15.1 m	233.5 m
Static Water Level	7.3 m	242.7 m

Despite the presence of the Lafarge quarry to the East which is as deep as 231 m ASL, many of the wells in the area have a static water level at about 242 m to 244 m ASL, which is shallower than the depth of the quarry.

There appears to be a second deeper aquifer in the area that some wells access, which is at about 230 m ASL. Wells closer to the quarry tend to find this aquifer, indicating that there may be some potential for drawdown from the quarry (if it is being dewatered) to impact on such wells (EAL are not implying there will be a impact). The location of the proposed severed property is much closer to the quarry, so the aquifer also be at both the quarry and site.

The soil properties are generally clayey sand and gravel over limestone bedrock in the various wells identified herein and presented in the appendix. Limestone bedrock depth is variable in the area, but most wells show the bedrock elevation between 235m ASL and 243 m ASL.

On May 31, 2021 a seismic investigation was carried out by Julie vanderMeulen of EAL. Two lines of seismic data were recorded (Figure 5) to determine a correlation between well log depths and seismic data, so that the parent and new parcel would have further corroborative data as to the well depths.

The seismic investigation was carried out using a line of 12 geophones and a DAQLinkIII data logger. The geophones were spaced up to 8m. Seismic data can be used to determine and estimate subsurface properties and profiles. The seismic data was collected and processed using the ReMi method. The ReMi method uses passive shear and compression waves from surrounding noise such as footsteps and traffic.

The bedrock layer was interpreted by EAL to be at about 10m depth, or 240m ASL at 294 Old Brock Road and conforms reasonably to the finding at the well.

The results of the seismic analysis are in the Appendix.

5. PARENT PARCEL PUMP TEST

EAL conducted a pump test of the well at 394 Old Brock Road on May 31, 2021 as a surrogate for what is possible for a new well on the parent parcel, assuming the hydrogeology is relatively consistent. Julie vanderMeulen and John Van Egmond of Egmond Associates Ltd. carried out the test. The test involved using the house's pump system and running water from the exterior tap only at maximum volume for 3 hours. The system has an integrated pressure tank which is filled by the pump. As a result, the pump does not run constantly; rather it fills up the pressure tank then stops until the pressure tank needs to be refilled.

A Hoskin Scientific Water Level Gauge was used to measure the depth to the water table from the top of the well casing. To reduce the risk of introducing bacteriological contamination into the well, the probe and cable were washed in a 1:5 water/chlorine bleach mixture, and the well was kept closed between readings. Readings could be taken to 1mm accuracy on the tape, though EAL expect 1 cm is a more reliable measurement limit. One of the bolts holding the cap was broken loose, and the other three broke off during removal. The cap should be restored with new bolts that are not subject to seizing in the cap.

The pump test found that the average flow rate during the 3 hour test was 0.32 L/s (5.1 GPM). The flow rate over that time period varied between 0.3 L/s (4.7 GPM) and 0.37 L/s (5.8 GPM). The flow rate changed marginally over the duration of the 3 hour test with the tap running fully open.

The pump test did not find a continuous smooth drawdown curve (Figure 6). Rather, the water level went up and down over the duration. It appears that this is a result of the well recharging quickly within the periods between pumping up the pressure tank.

When comparing to the pump test in the original well log, the driller pumped at a rate of 1.2 L/s (20 GPM) for one hour. After their test completed, the well had recharged to its static level in under 15 minutes.

During the pumping test, the water temperature maintained a constant temperature of about 11°C.

6. WATER QUALITY

Two water samples were taken during the pump test for testing by the Hamilton Public Health Service.

The first sample was taken at the 1 hour mark directly from the hose being run for the test. The second sample was taken from the exterior tap at the end of the test. The test results show zero coliform and zero E.coli. This indicates that the water contains no harmful bacteria as measured by the lab test protocol and no harmful bacteria were introduced during the pump test. See Appendix for full test results.

During the test, the water would occasionally appear reddish. Occasionally the end of the water level probe would come up reddish with sediment on it. It is likely that the reddish colour may be iron oxide and the sediment was result of the sediments being stirred up from constant pumping. The home owner had no complaints about the water quality and had not reported staining laundry. It is noted that the water is hard at the site so the minerals in the water may contribute to colouring.

7. CONCLUSION AND RECOMMENDATIONS

EAL conducted a pump test, septic inspection, reviewed geological data by others and conducted other work to carry out an investigation on the probable water well conditions.

The following comments are made respecting the new lot based on the work completed herein.

Well

- EAL expect a well, that can maintain a 0.3 L/s (or nominally 5. GPM) or more should be possible based on the parent parcel tests and results at nearby wells. A new well should likely encounter bedrock within the depths of nearby wells and the well on the parent parcel. At the time of installation of a new well, a pump test shall be completed. The presence of a suitable water bearing zone seems likely but cannot be guaranteed. Sometimes wells will not find fractures or zones present in other near wells, or may find alternate zones. We expect a well should be feasible at the site.
- Wells that do not respond to near surface waters are to be preferred.
- Water maybe expected to be hardwater. If pumped for some time, it appears the water will have a temperature of about 11°C. If warmer water persists in pump tests a connection to the near surface heat may be indicated.
- EAL recommend that Ontario Drinking Water tests be conducted including metals, herbicides, pesticides, bacteria, and hardness as part of new wells.
- If wells encounter sulphurous (rotten egg smell) zones a new or deeper zone should be sought and one may need to explore if the zone is contaminated from surface by organics. EAL note there are likely two aquifers present in the area. One appears to be shallower aquifer at 6.45m depth (243.55 m ASL). The other but deeper aquifer appears to be at about 230m ASL.
- Due to proximity to the quarry, EAL consider the drilling for a future well should attempt to access the 230m ASL aquifer or deeper aquifers below the elevation of the base of the quarry.



Well Operations

New well use and successful operations depend to a large part on users and on construction (follow the OBC).

- One can by excessive water use (more than the well can provide in the short or long term) cause movement of fines into wells and well screens as high speed waters carry sediments to the wells or screens, causing loss of function. Further, when pumping large volumes, the drawdown from one well may cause unacceptable drawdown of nearby wells. Further, in this case, a quarry is nearby. Its changing operations may change the groundwater regime.
- A well may function for many years with low use and fail quickly under high use.
- The user should size the well and system according to the needs of the user during the well installation period. If a user elects to use more than one aquifer additional wells should be used to prevent damage of one water bearing zone by another.
- Hard water may be present. Metals such as Iron and Manganese, though not a health hazard, may cause reddening of clothes and other issues. Softeners, filters, and osmotic filters can be applied – though their use is often at the discretion of a user. UV filters can reduce live biological contamination, but EAL advise one deal with the source of biological contaminants or find different water supplies. At present we found the water from the parent parcel was not biologically contaminated.

8. CLOSURE

8.1. USE

This letter report supersedes all drafts, verbal reports, emails, and discussions of the area of concern, of the site, etc. and represents EAL's current full and entire interpretation of the matters herein.

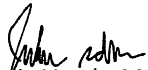
This letter report is prepared for the use of the client and Egmond Associates Ltd. All others with an interest in the site or sites are to undertake their own investigations, etc. to determine how or if the site affects them.

8.2. TERMS AND CONDITIONS

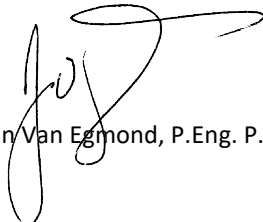
Use of this letter report is subject to the Terms and General Conditions as attached. This letter report was prepared by Egmond Associates Ltd under the direction of John Van Egmond, P.Eng. We trust that the information contained in this report is adequate for your present purposes. This report is for the use of the client, and EAL in the 2021 Site severance planning phase. All others with an interest in the site shall determine how or if the conditions of the site affect them, their costs, plans etc., and neither of EAL, nor any client will be responsible for use of this report by others.

Sincerely,

Egmond Associates Ltd
Geotechnical & Environmental Engineers

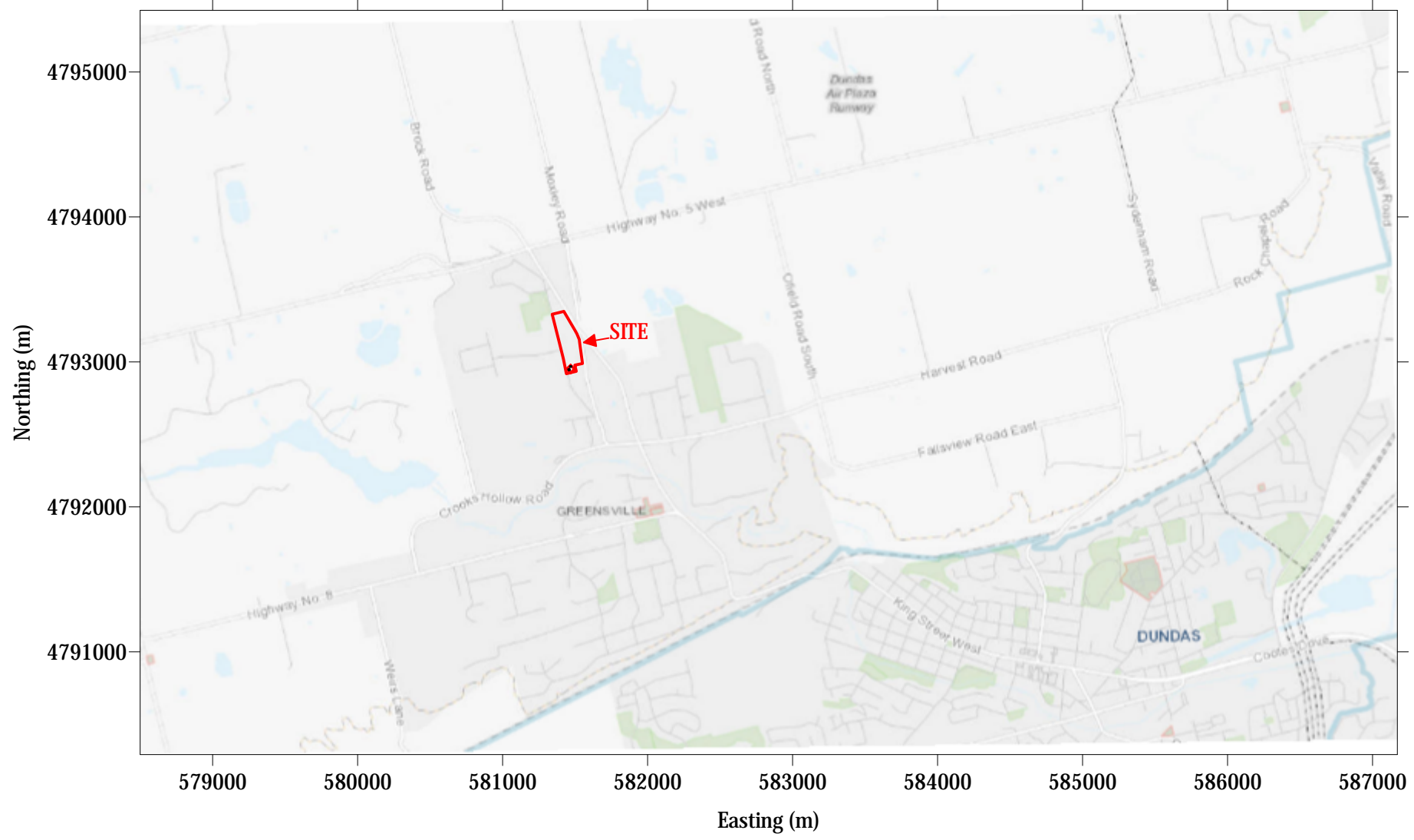


Julie VanderMeulen, B.Eng., MaSc



John Van Egmond, P.Eng. P.E., President

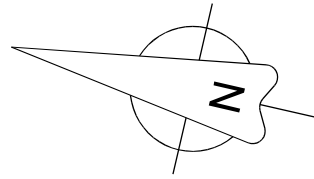




Source: City of Hamilton maps, 2021
Location overview

30719
394 Old Brock Road
Greensville, ON

FIGURE 1



CONCEPT SEVERANCE SKETCH

394 OLD BROCK ROAD

EXISTING ZONING R2-14-H	
PROPOSED ZONING R2-SPECIAL	
TOTAL LOT AREA	48,710.45 m ²
PROPOSED SEVERANCE AREA	4,084.67 m ²
1 FOOT RESERVE -PROPOSED SEVERANCE	14.39 m ²
NEW SEVERANCE LOT AREA	4,070.28 m ²
RETAINED LOT AREA	44,625.78 m ²

	REQUIRED	SEVERED	RETAINED
MIN. LOT AREA	8,000m ²	4,070.28 m ²	44,625.78 m ²
MIN. LOT FRONTAGE	35.0 m	45.0 m	375.52 m
MAX. HEIGHT	11.0 m	11.0 m	11.0 m
MAX. LOT COVERAGE	10 %	10 %	10 %
MIN. FRONT YARD	7.5 m	7.5 m	7.5 m
MIN. REAR YARD	10 m	10 m	10 m
MIN. INT. SIDE YARD	3.0 m	3.0 m	3.0 m
MIN. EXT. SIDE YARD	7.5 m	7.5 m	7.5 m
MIN. LANDSCAPED O.S	n/a	n/a	n/a

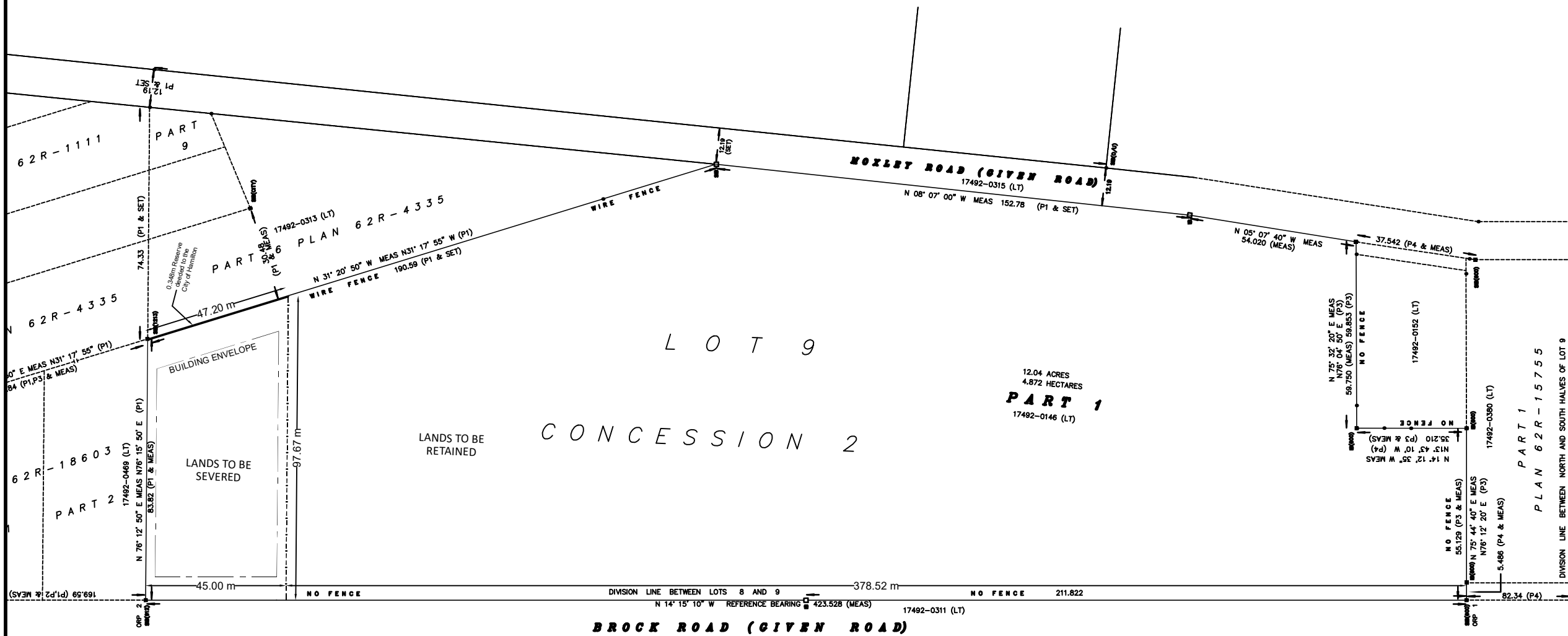


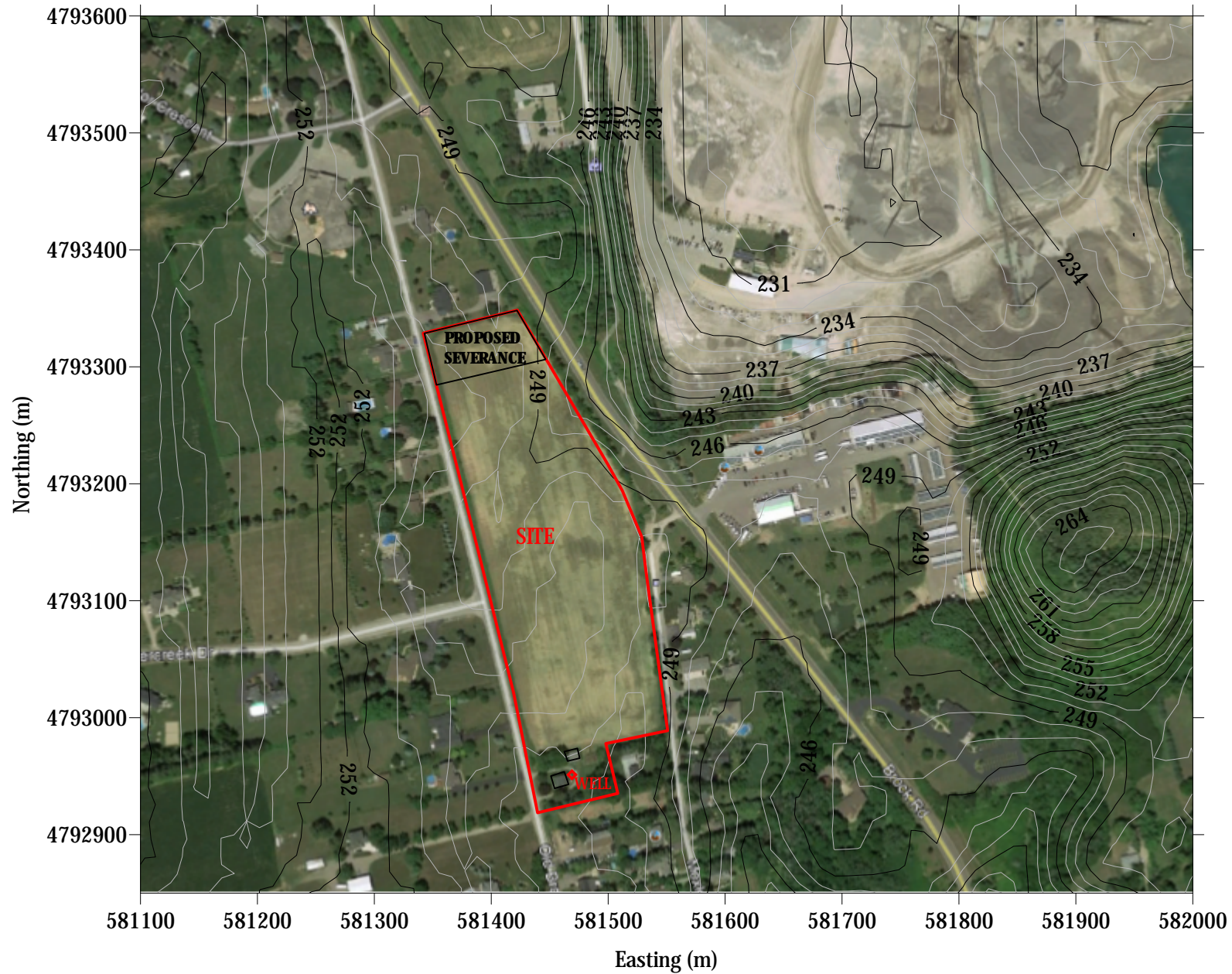
FIGURE 2

SURVEY INFORMATION FROM: FILE REF # 16-1014
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

NOTE: DRAWING IS FOR DISCUSSION PURPOSES ONLY

CONCEPT 1
 SCALE: 1 : 1500
WHEN PRINTED ON 11 X 17
 DATE: DECEMBER 21, 2020
 DRAWN BY: S.C.
 REVIEWED BY: T.G.

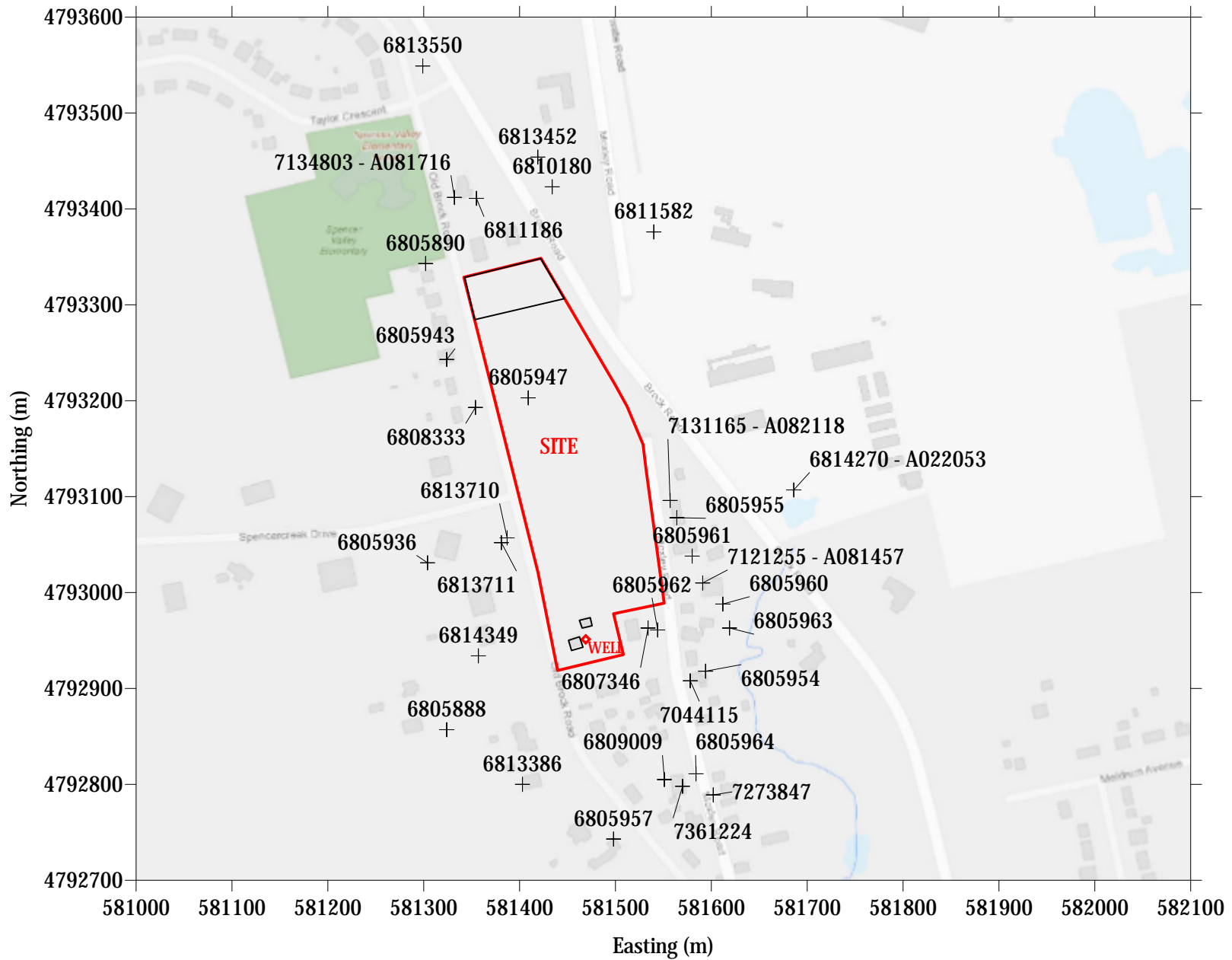




Base map: Google Earth, 2021
 Topography: Toporama, 2021
 Site location
 Shows topography near the site. Note the quarry to the east

30719
 394 Old Brock Road
 Greensville, ON

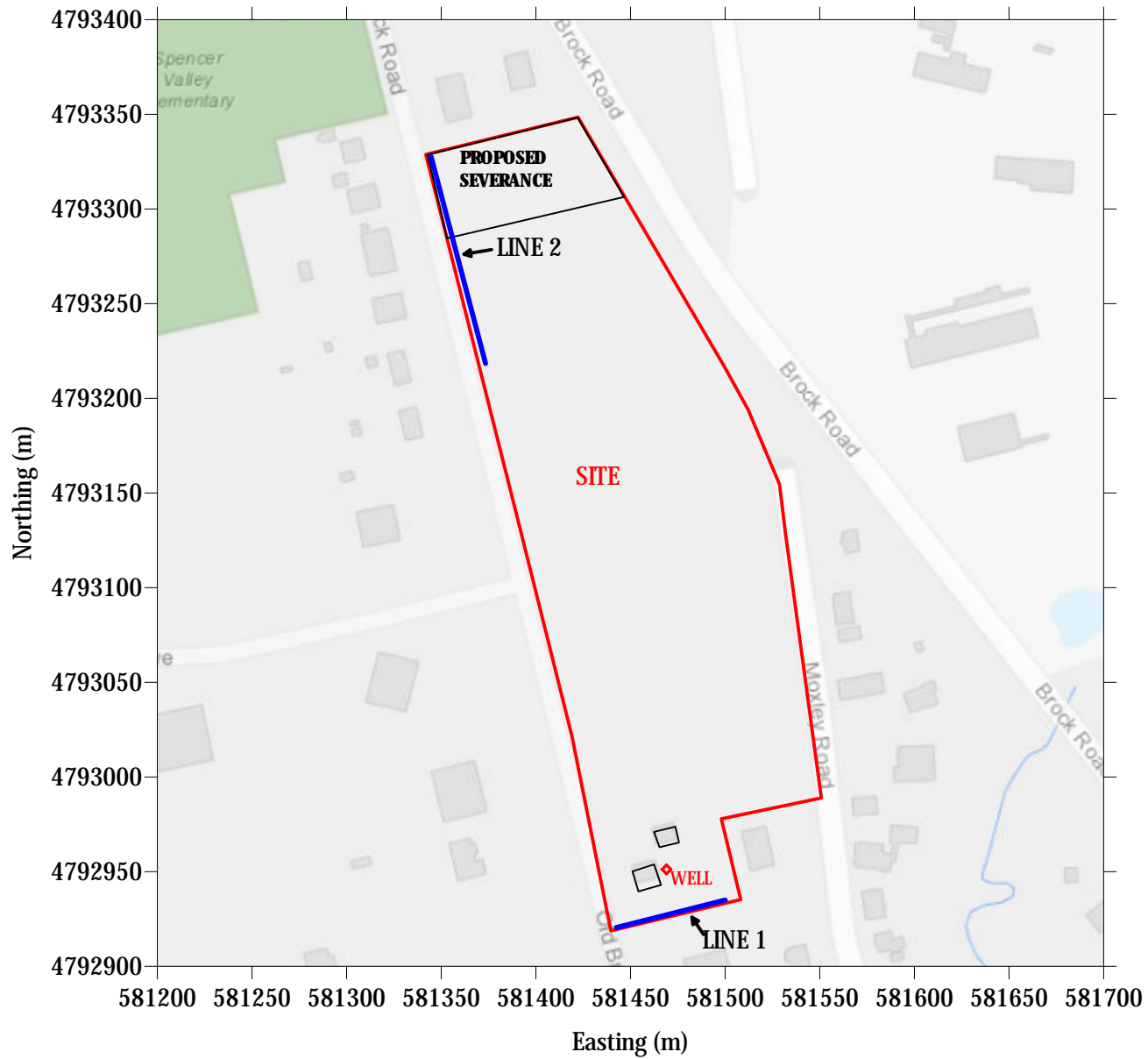
FIGURE 3

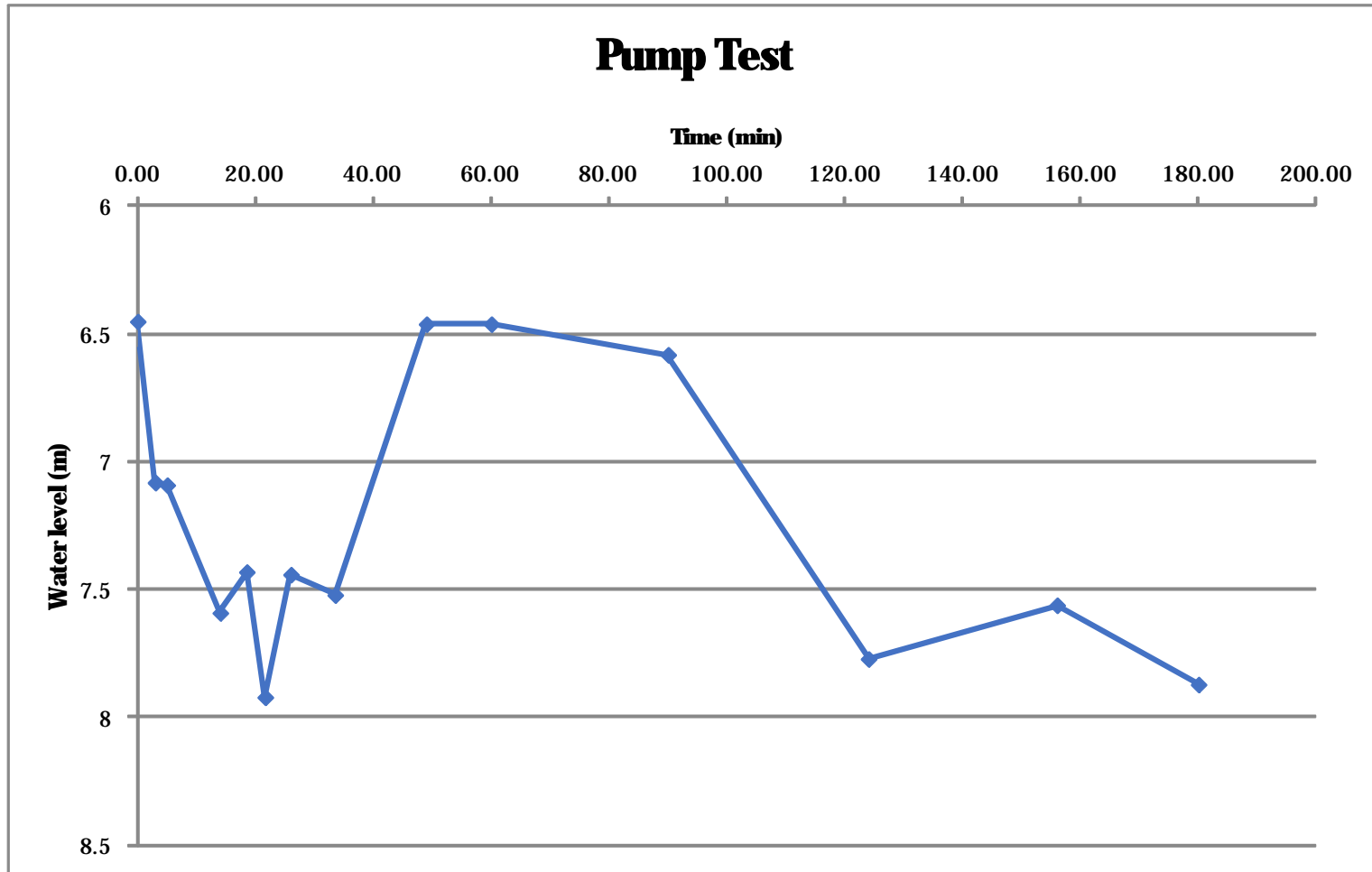


Source: Ontario Well Records
Wells surrounding the site.

30719
394 Old Brock Road
Greensville, ON

FIGURE 4





Source: EAL May 31, 2021
Pump Test data

30719
394 Old Brock Road
Greenville, ON



APPENDIX
Wells by others
Seismic Analysis
Lab results

Bacteriological Analysis of Drinking Water for Private Citizen, Single Household Only
Analyse bactériologique de l'eau potable - Particuliers, Ménages unifamiliaux seulement**Submitter's Name and Mailing Address /****Nom et adresse postale de l'auteur de la demande d'analyse**

First Name, Last Name / Prénom, Nom de famille

TRACY KOWALCHUK

Street address / Adresse municipale

**394 OLD BROCK ROAD
DUNDAS, ON L9H 6A8****Location of Water Source /****Emplacement de la source d'eau**

Lot, Concession / ou lot, concession

Emergency Locator # / 911#

Street address / Adresse municipale

**394 OLD BROCK RD
DUNDAS ON L9H6A8**County / Comté: **NOT PROVIDED**Health Unit # / # du bureau de santé: **2237****Specimen details / Détails sur l'échantillon:****Barcode / Code à barres: 011720602**Phone # / # tél.: **905 975 3261**Date/Time Collected / Date/heure du prélèvement*: **2021-05-31 11:40:00**Date/Time Received / Date/heure Reçu le*: **2021-05-31 16:29:00****Specimen Note / Note sur l'échantillon:**

This specimen was received in good condition unless otherwise stated./À moins d'avis contraire, l'échantillon était en bonne condition au moment de la réception.

Purification system used (e.g. UV, filtration, etc.)? /
Système d'épuration utilisé (p. ex. rayons UV, filtration, etc.)?**Not answered/
Pas répondu**

Authorized by / Autorisé par

Chief, Medical Microbiology or Designate**Test results / Résultats d'analyse:****Total Coliform CFU/100 mL / Coliformes totaux UFC/100 mL** 0**E.coli CFU/100 mL / E. coli UFC/100 mL** 0**Interpretation / Interprétation:**

There is no evidence of fecal contamination. If the results show the presence of coliforms it may be indicative of a contaminated water supply. Given the vulnerability of well water to external influences, it is important to test water frequently. Consult local health unit for information if required.

Il n'y a aucune preuve de contamination fécale. Si les résultats indiquent la présence de coliformes, cela peut être révélateur d'une source d'eau polluée. L'eau des puits étant susceptible d'être dégradée par des facteurs externes, il est important de la faire analyser fréquemment. Consultez le bureau local de santé publique pour plus de détails, si nécessaire.

Date of Analysis / Date de l'analyse: **2021-05-31**Date Read / Analyse effectuée le: **2021-06-01****Please Note / Prière de noter ce qui suit :**

The results apply to the sample as received/Les résultats s'appliquent à l'échantillon, tel que reçu.

These results relate only to the sample tested. / Le résultat obtenu se rapporte seulement à cet échantillon d'eau analysé.

Note: This water sample was only tested for the presence of both Total Coliforms and E. coli (ISO/IEC 17025 accredited tests) bacterial indicators of contamination by Membrane Filtration. The sample was not tested for other contaminants, including chemical contaminants, and therefore may be unsafe to drink even when there is no significant evidence of bacterial contamination. Contact your local public health unit for information on testing for other contaminants./ Remarque: Cet échantillon d'eau n'a été analysé que pour déceler (par un laboratoire accrédité conformément à la norme ISO/IEC 17025) la présence des coliformes totaux et des bactéries colibacillaires, indicateurs de contamination par filtration sur membrane. L'échantillon n'a pas été testé pour d'autres contaminants, y compris les contaminants chimiques et, par conséquent, l'eau peut être impropre à la consommation même lorsqu'il n'y a aucune preuve significative de contamination bactérienne. Veuillez communiquer avec le bureau de santé publique de votre localité pour vous renseigner au sujet de l'analyse visant à détecter la présence d'autres contaminants.

If the reported client information does not match the information you supplied on the form please contact the PHO Customer Service Centre. Telephone: 1-877-604-4567 or 416-235-6556 or E-mail: customerservicecentre@oahpp.ca. For operating hours see our website www.publichealthontario.ca/labs. / Si les informations sur le client indiquées ne correspondent pas aux informations que vous avez fournies sur le formulaire, veuillez communiquer avec le Service à la clientèle de SPO par téléphone au 1-877-604-4567 ou 416-235-6556, ou par courriel au customerservicecentre@oahpp.ca. Pour connaître les heures d'ouverture, veuillez consulter notre site Web à www.publichealthontario.ca/labs.

End of report / Fin du rapport

*All time values are EST /EDT/Toutes les heures sont exprimées en HNE ou en HAE.

Print Date / Date d'impression*: 2021-06-01

Date Reported / Date du rapport*: 2021-06-01 16:06:26

Page 1 of 1

Final

LIMS Report #: 41240278

T_SingleSampleOPHL_WATPRIVATE.rpt

Bacteriological Analysis of Drinking Water for Private Citizen, Single Household Only
Analyse bactériologique de l'eau potable - Particuliers, Ménages unifamiliaux seulement**Submitter's Name and Mailing Address /****Nom et adresse postale de l'auteur de la demande d'analyse**

First Name, Last Name / Prénom, Nom de famille

TRACY KOWALCHUK

Street address / Adresse municipale

**394 OLD BROCK ROAD
DUNDAS, ON L9H 5A8****Location of Water Source /****Emplacement de la source d'eau**

Lot, Concession / ou lot, concession

Emergency Locator # / 911#

Street address / Adresse municipale

**394 OLD BROCK RD
DUNDAS ON L9H6A8**County / Comté: **NOT PROVIDED**Health Unit # / # du bureau de santé: **2237****Specimen details / Détails sur l'échantillon:****Barcode / Code à barres: 011720875**Phone # / # tél.: **905 975 3261**Date/Time Collected / Date/heure du prélèvement*: **2021-05-31 13:38:00**Date/Time Received / Date/heure Reçu le*: **2021-05-31 16:29:00****Specimen Note / Note sur l'échantillon:**

This specimen was received in good condition unless otherwise stated. / À moins d'avis contraire, l'échantillon était en bonne condition au moment de la réception.

Purification system used (e.g. UV, filtration, etc.)? /
Système d'épuration utilisé (p. ex. rayons UV, filtration, etc.)?**No / Non**

Authorized by / Autorisé par

Chief, Medical Microbiology or Designate**Test results / Résultats d'analyse:****Total Coliform CFU/100 mL / Coliformes totaux UFC/100 mL****0****E.coli CFU/100 mL / E. coli UFC/100 mL****0****Interpretation / Interprétation:**

There is no evidence of fecal contamination. If the results show the presence of coliforms it may be indicative of a contaminated water supply. Given the vulnerability of well water to external influences, it is important to test water frequently. Consult local health unit for information if required.

Il n'y a aucune preuve de contamination fécale. Si les résultats indiquent la présence de coliformes, cela peut être révélateur d'une source d'eau polluée. L'eau des puits étant susceptible d'être dégradée par des facteurs externes, il est important de la faire analyser fréquemment. Consultez le bureau local de santé publique pour plus de détails, si nécessaire.

Date of Analysis / Date de l'analyse: **2021-05-31**Date Read / Analyse effectuée le: **2021-06-01****Please Note / Prière de noter ce qui suit :**

The results apply to the sample as received / Les résultats s'appliquent à l'échantillon, tel que reçu.

These results relate only to the sample tested. / Le résultat obtenu se rapporte seulement à cet échantillon d'eau analysé.

Note : This water sample was only tested for the presence of both Total Coliforms and E. coli (ISO/IEC 17025 accredited tests) bacterial indicators of contamination by Membrane Filtration. The sample was not tested for other contaminants, including chemical contaminants, and therefore may be unsafe to drink even when there is no significant evidence of bacterial contamination. Contact your local public health unit for information on testing for other contaminants. / Remarque: Cet échantillon d'eau n'a été analysé que pour déceler (par un laboratoire accrédité conformément à la norme ISO/IEC 17025) la présence des coliformes totaux et des bactéries colibacillaires, indicateurs de contamination par filtration sur membrane. L'échantillon n'a pas été testé pour d'autres contaminants, y compris les contaminants chimiques et, par conséquent, l'eau peut être impropre à la consommation même lorsqu'il n'y a aucune preuve significative de contamination bactérienne. Veuillez communiquer avec le bureau de santé publique de votre localité pour vous renseigner au sujet de l'analyse visant à détecter la présence d'autres contaminants.

If the reported client information does not match the information you supplied on the form please contact the PHO Customer Service Centre. Telephone: 1-877-604-4567 or 416-235-6556 or E-mail: customerservicecentre@oahpp.ca. For operating hours see our website www.publichealthontario.ca/labs. / Si les informations sur le client indiquées ne correspondent pas aux informations que vous avez fournies sur le formulaire, veuillez communiquer avec le Service à la clientèle de SPO par téléphone au 1-877-604-4567 ou 416-235-6556, ou par courriel au customerservicecentre@oahpp.ca. Pour connaître les heures d'ouverture, veuillez consulter notre site Web à www.publichealthontario.ca/labs.

End of report / Fin du rapport

*All time values are EST / EDT / Toutes les heures sont exprimées en HNE ou en HAE.

Print Date / Date d'impression*: 2021-06-01

Page 1 of 1

LIMS Report #: 41240274

Date Reported / Date du rapport*: 2021-06-01 16:06:17

T_SingleSampleOPHL_WATPRIVATE.rpt

Shear Wave Estimates for Bearing
and Related Values

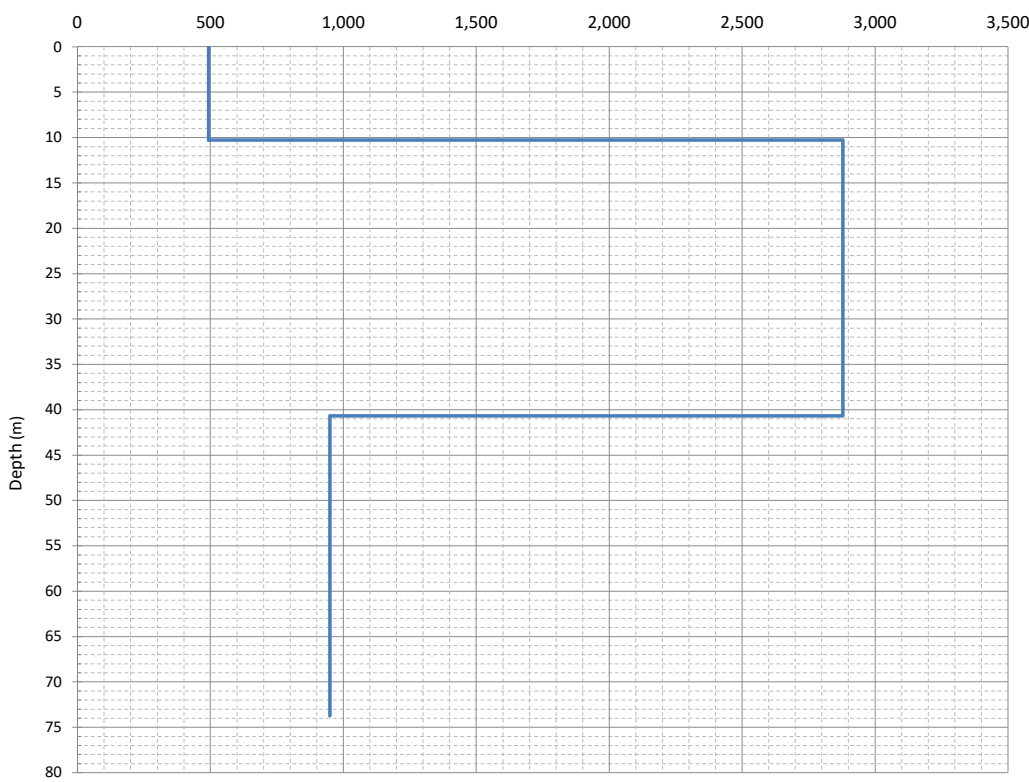


Site:	394 Old Brock Rd
Line Number:	1
Date:	14-Jun-21
By:	JVM

Method	ReMi Seismic Method ©		
Date Taken	May	31	2021

Foundation Depth (m)	Average V_s (m/s)	Site Class
0	1083	B
1	1153	B
2	1233	B
4	1431	B
6	1703	A

Shear Wave Velocity and Bearing Pressure/Parameter Estimation														
Material Description	Top of layer	Bottom of layer	Thickness H	Shear Wave Velocity V_s	Compression Wave Velocity Used	Foundation Width Used	Estimated Unit weight	Safety Factor Chosen	Estimated q_u = Bearing Capacity	Estimated Coefficient of Subgrade Reaction	Settlement Estimate Under Failure Load	Estimated Elastic Modulus	Liquefaction risk	Estimated Blow Counts N
(Soil= one or more of sand, silt, clay, gravel), Rock	m	m	m	(m/sec)	(m/sec)	m	kN/m ³		kPa	kN/m ³	mm	kPa		
Soil	0.0	10.3	10.3	493	854	1.2	17.7	4.0	195	34938	25.0	359145	No	50
Soft Weak Rock	10.3	40.7	30.4	2879	4986	1.2	28.0	2.3	3505	322072	25.0	9791959	No	50
Soft Weak Rock	40.7	73.7	33.0	949	1644	1.2	21.3	3.8	526	80804	25.0	2670564	No	50



Estimates for sites with no other values only.
Obtain Site Specific Data by direct testing where possible

Print only in spaces provided.

Mark correct box with a checkmark, where applicable.

11

6813924

Municipality
68006

Con.
60N

02

County or District Wentworth		Township/Borough/City/Town/Village West Flamboro		Con block tract survey, etc. Con 2		Lot Lot 8	
Owner's surname [Redacted]		First Name [Redacted]		Address of Well Location 394 Old Brock Rd. Greenville		Date completed 20/08/03	

21

Zone Easting Northing RC Elevation RC Basin Code

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
Brown	clay	silt	.	0	18
grey	gravel	sand silt	.	18	40
brown	limestone			40	47

31

32

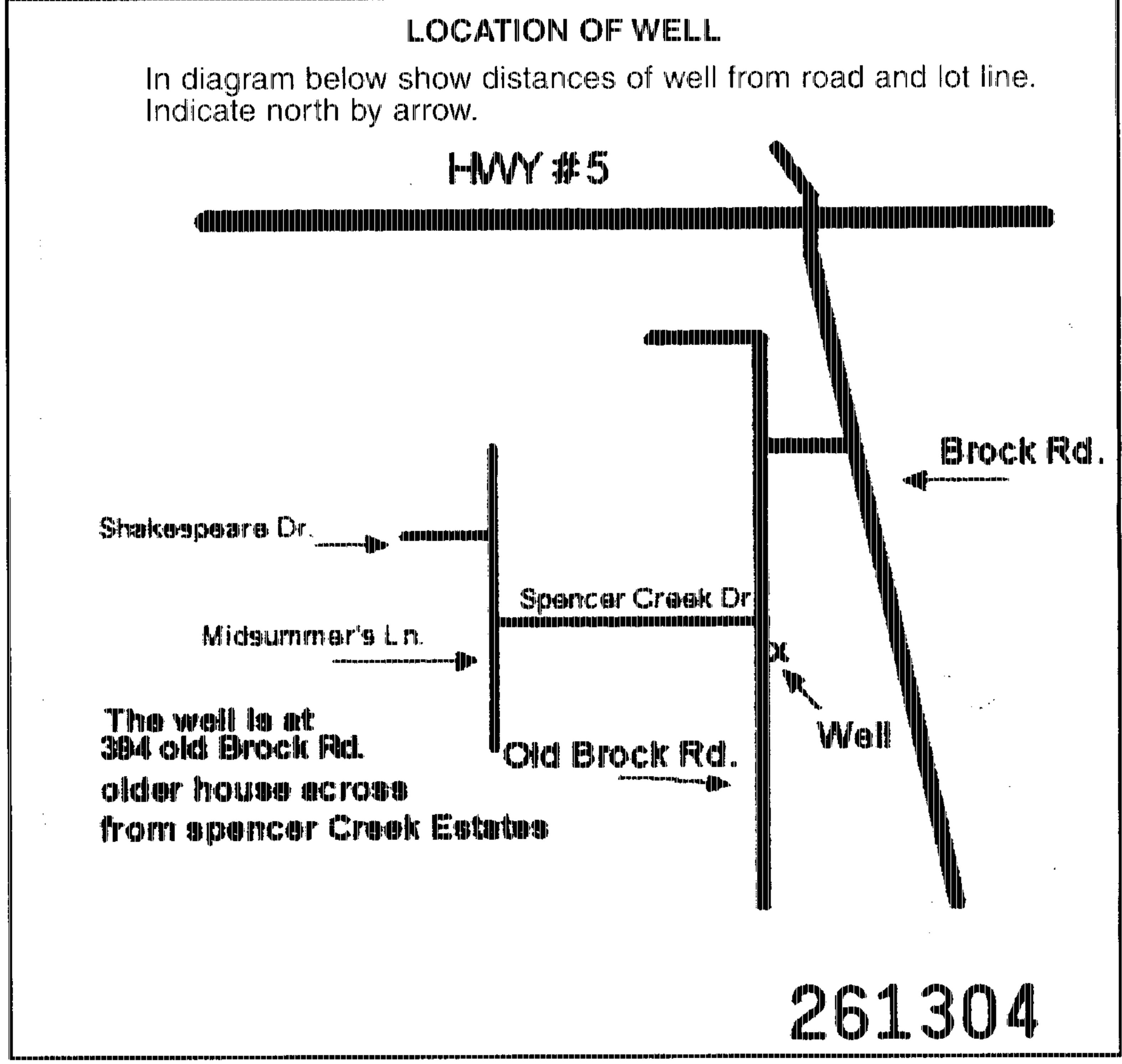
41 WATER RECORD			
Water found at - feet	Kind of water		
46	1 <input checked="" type="checkbox"/> Fresh 2 <input checked="" type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas	14
	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas	19
	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas	24
	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas	29
	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas	34

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6.25	1 <input checked="" type="checkbox"/> Steel 2 <input checked="" type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic	188	+2	40
6	1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input checked="" type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic	40	40	47
	1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic			27-30

SCREEN	Sizes of opening (Slot No.)	Diameter inches	Length feet

61 PLUGGING & SEALING RECORD			
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)	
From	To		
10-13	14-17		
18-21	22-25		
26-29	30-33		

71 PUMPING TEST					
Pumping test method	Pumping rate	Duration of pumping		Water level end of pumping	
1 <input checked="" type="checkbox"/> Pump 2 <input type="checkbox"/> Bailer	20 GPM	1 Hours 0 Mins	15-18	17-18	
Static level	Water levels during	1 <input type="checkbox"/> Pumping	2 <input checked="" type="checkbox"/> Recovery		
22 feet	47 feet	22 feet	22 feet	22 feet	22 feet
If flowing give rate	Pump intake set at	Water at end of test			
GPM	feet	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy			
Recommended pump type	Recommended pump setting	Recommended pump rate			
<input type="checkbox"/> Shallow <input checked="" type="checkbox"/> Deep	45 feet	15 GPM			



FINAL STATUS OF WELL		
1 <input checked="" type="checkbox"/> Water supply	5 <input type="checkbox"/> Abandoned, insufficient supply	9 <input type="checkbox"/> Unfinished
2 <input type="checkbox"/> Observation well	6 <input type="checkbox"/> Abandoned, poor quality	10 <input type="checkbox"/> Replacement well
3 <input type="checkbox"/> Test hole	7 <input type="checkbox"/> Abandoned (Other)	
4 <input type="checkbox"/> Recharge well	8 <input type="checkbox"/> Dewatering	

WATER USE		
1 <input checked="" type="checkbox"/> Domestic	5 <input type="checkbox"/> Commercial	9 <input type="checkbox"/> Not use
2 <input type="checkbox"/> Stock	6 <input type="checkbox"/> Municipal	10 <input type="checkbox"/> Other
3 <input type="checkbox"/> Irrigation	7 <input type="checkbox"/> Public supply	
4 <input type="checkbox"/> Industrial	8 <input type="checkbox"/> Cooling & air conditioning	

METHOD OF CONSTRUCTION		
1 <input type="checkbox"/> Cable tool	5 <input type="checkbox"/> Air percussion	9 <input type="checkbox"/> Driving
2 <input type="checkbox"/> Rotary (conventional)	6 <input type="checkbox"/> Boring	10 <input type="checkbox"/> Digging
3 <input type="checkbox"/> Rotary (reverse)	7 <input type="checkbox"/> Diamond	11 <input type="checkbox"/> Other
4 <input checked="" type="checkbox"/> Rotary (air)	8 <input type="checkbox"/> Jetting	

Name of Well Contractor Packham Well Drilling Inc,	Well Contractor's Licence No. 4207
Address R.R. # 2 Ancaster, Ont.	
Name of Well Technician Mervyn Packham	Well Technician's Licence No. T0058
Signature of Technician/Contractor <i>Mervyn Packham</i>	Submission date 20 Aug 03

MINISTRY USE ONLY	Data source 4207	Contractor 4207	Date received Dec 22 2003
	Date of inspection	Inspector	
	Remarks		

Measurements recorded in: Metric Imperial

Address of Well Location (Street Number/Name) 374 MOXLEY ROAD		Township WEST FLAMBOROUGH	Lot 9	Concession 2
County/District/Municipality GREENSBURG		City/Town/Village DUNDAS	Province Ontario	Postal Code L9M5L4
UTM Coordinates NAD 83	Zone 17	Easting 581593	Northing 4792815	Municipal Plan and Sublot Number Other

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	DRIVE POINT PIEZOMETER INSTALLED IN EXISTING WELL TILE				
	BOTTOM OF PIT = 4.75 m below ground				

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
From	To	

Method of Construction		Well Use		
<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input checked="" type="checkbox"/> Driving	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole	<input checked="" type="checkbox"/> Monitoring
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning	
<input type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial		
<input type="checkbox"/> Other, specify		<input type="checkbox"/> Other, specify		

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
			From	To	
2"	PVC PLASTIC	0.147	4.8	5.4	

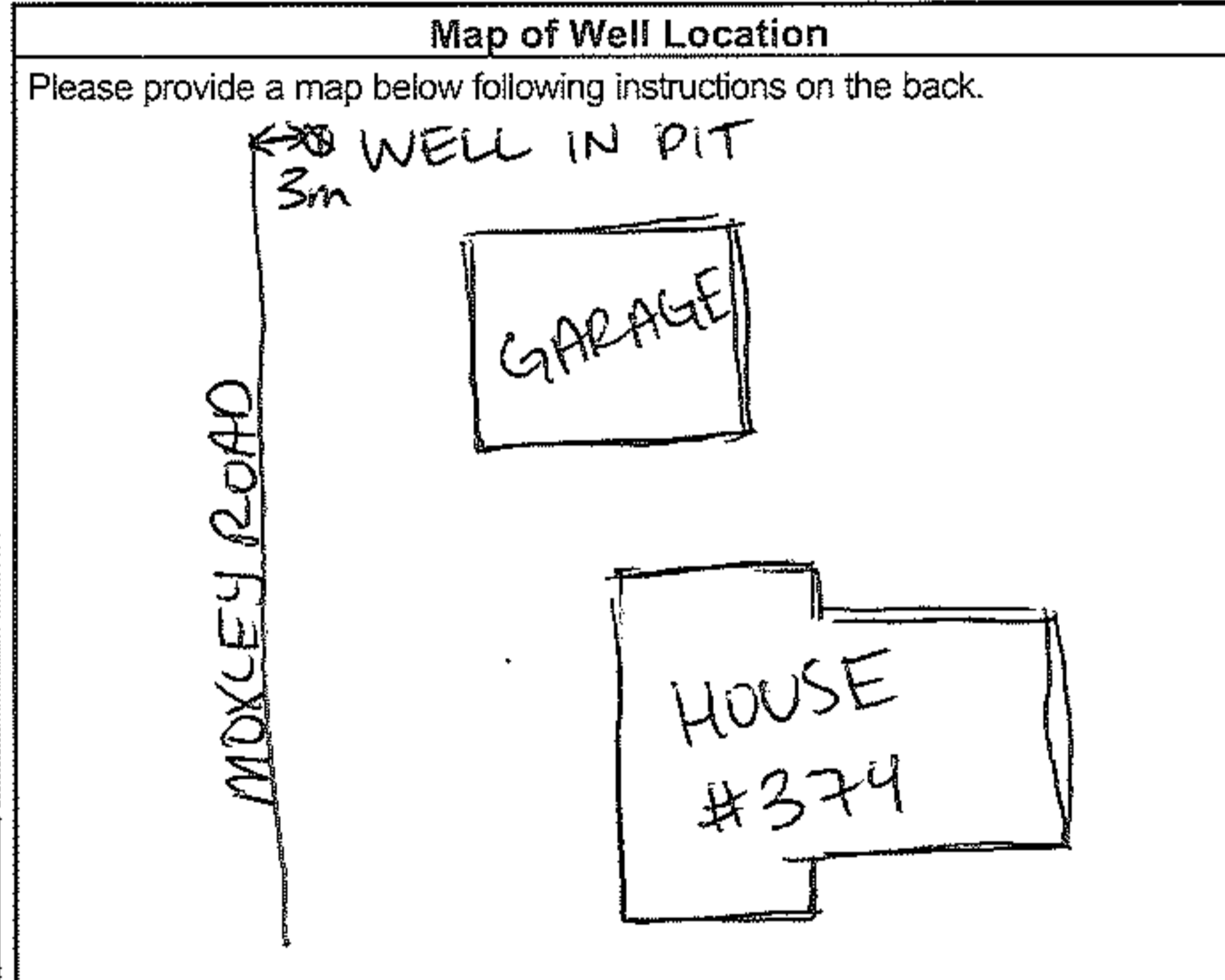
Construction Record - Screen				Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)		<input type="checkbox"/> Other, specify
			From	To	
1	STEEL	10	4.8	5.4	

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	Depth (m/ft)	Diameter (cm/in)
From	To	From	To

Well Contractor and Well Technician Information			
Business Name of Well Contractor TIM LOTIMER & ASSOC		Well Contractor's Licence No. 7426	
Business Address (Street Number/Name) 9-91 A MAIN ST E		Municipality GRIMSBY	
Province ON	Postal Code L3M1N6	Business E-mail Address TIM@TIMLOT.CA	

Bus. Telephone No. (inc. area code) 2892358387	Name of Well Technician (Last Name, First Name) LOTIMER, TIM		
Well Technician's Licence No. 0409	Signature of Technician and/or Contractor <i>[Signature]</i>	Date Submitted 20161019	

Results of Well Yield Testing				
After test of well yield, water was: <input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
Duration of pumping ____ hrs + ____ min	4		4	
Final water level end of pumping (m/ft)	5		5	
If flowing give rate (l/min / GPM)	10		10	
	15		15	
Recommended pump depth (m/ft)	20		20	
Recommended pump rate (l/min / GPM)	25		25	
Well production (l/min / GPM)	30		30	
Disinfected? <input type="checkbox"/> Yes <input type="checkbox"/> No	40		40	
	50		50	
	60		60	



Comments:		Well owner's information package delivered <input type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered	Ministry Use Only Audit No. 2187646 OCT 25 2016 Received
			Date Work Completed 20161030	

Measurements recorded in: Metric Imperial

Address of Well Location (Street Number/Name) 374 MOXLEY RD		Township WEST FLAMBOROUGH	Lot 9	Concession 2
County/District/Municipality GREENSVILLE		City/Town/Village DUNDAS	Province Ontario	Postal Code L9H1S144
UTM Coordinates	Zone 18	Easting 1758160	Northing 24792789	Municipal Plan and Sublot Number

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	INSTALLED LINER INSIDE EXISTING 6" STEEL CASING (ORIGINAL WELL IN PIT)				
	NO ORIGINAL RECORD FOUND				
			OVERBURDEN	0	~9.2
			BEDROCK	~9.2	15.65

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From: 1.2 To: 9.8	3/8" HOPE PLUG 1/4" PEL PLUG BENTONITE PELLETS	0.15

Method of Construction	Well Use
<input type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary (Conventional) <input type="checkbox"/> Rotary (Reverse) <input type="checkbox"/> Boring <input type="checkbox"/> Air percussion <input type="checkbox"/> Other, specify _____	<input type="checkbox"/> Diamond <input type="checkbox"/> Jetting <input type="checkbox"/> Driving <input type="checkbox"/> Digging <input type="checkbox"/> Public <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Livestock <input type="checkbox"/> Irrigation <input type="checkbox"/> Industrial <input type="checkbox"/> Other, specify _____

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____
			From	To	
6"	Steel		1.2	9.2	
4"	PVC LINER	0.237	0.4	9.8	

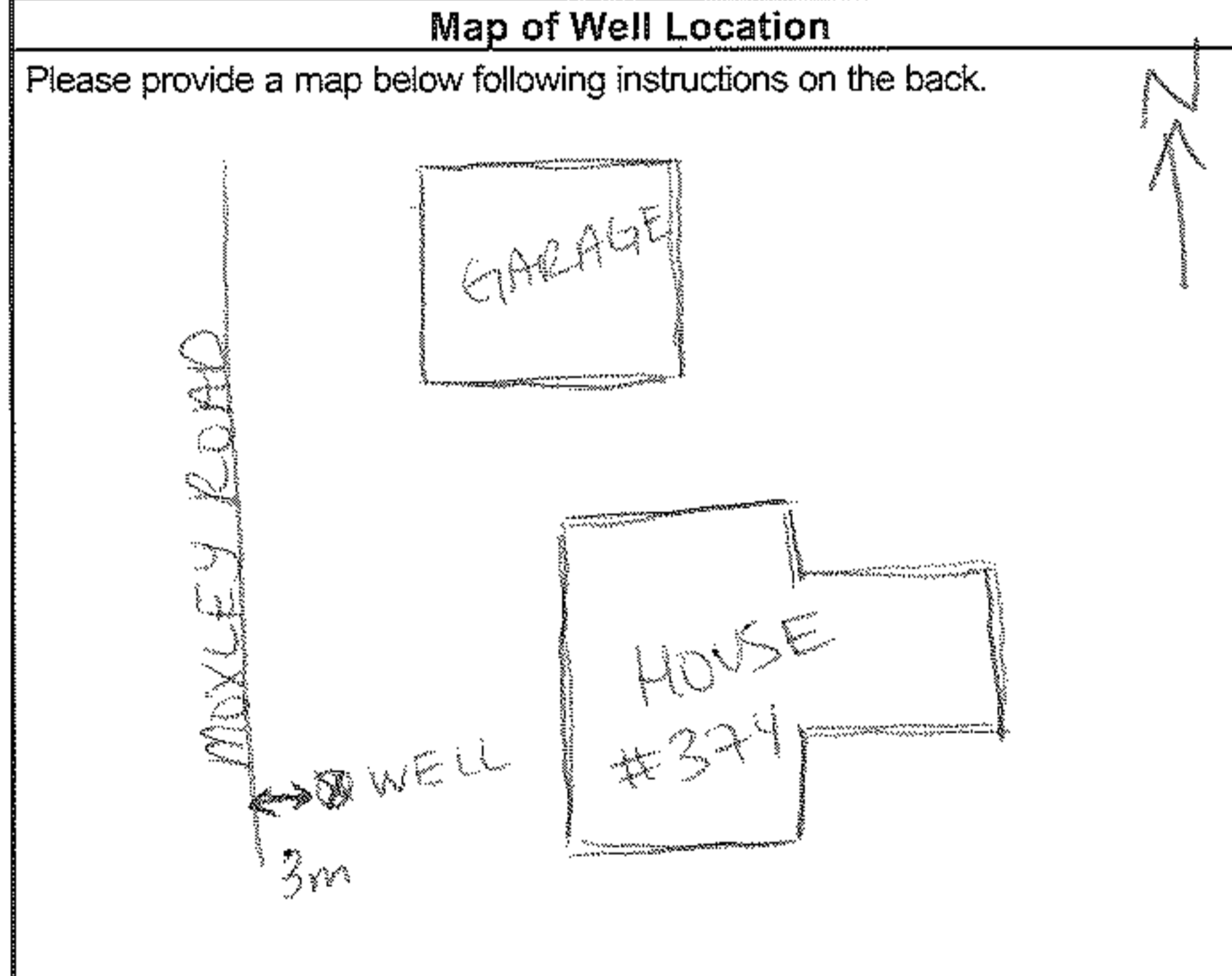
Construction Record - Screen				
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	Depth (m/ft)	Diameter (cm/in)
		From: 0.4 To: 9.8	4
		From: 9.8 To: 15.65	6

Well Contractor and Well Technician Information	
Business Name of Well Contractor TIM LOTIMER & ASSOC. INC	Well Contractor's Licence No. 7141216
Business Address (Street Number/Name) 9-91A MAIN ST E	Municipality GRIMSBY
Province ON	Postal Code L3M1N6
Business E-mail Address TIM@TIMLOT.CA	

Bus. Telephone No. (inc. area code) 28912358387	Name of Well Technician (Last Name, First Name) LOTIMER, TIM
Well Technician's Licence No. 1041019	Signature of Technician and/or Contractor <i>[Signature]</i>
	Date Submitted 2016/11/01/19

Results of Well Yield Testing				
After test of well yield, water was: <input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: Pump intake set at (m/ft) 9 Pumping rate (l/min / GPM) 20 Duration of pumping hrs + 110 min Final water level end of pumping (m/ft) 5.71 If flowing give rate (l/min / GPM) Recommended pump depth (m/ft) Recommended pump rate (l/min / GPM) Well production (l/min / GPM) Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Static Level	5.33		
	1	5.58	1	
	2	5.64	2	
	3	5.67	3	
	4	5.68	4	
	5	5.68	5	
10	5.68	10		
15	5.70	15		
20	5.71	20		
25	5.71	25		
30	5.71	30		
40	5.71	40		
50		50		
60	5.72	600	5.71	



Well owner's information package delivered <input type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered 2016/08/30	Ministry Use Only Audit No. Z187645 OCT 25 2016 Received
Date Work Completed 2016/08/30		

Address of Well Location (Street Number/Name) 436 Old Brock Rd, Dundas		Township Dundas (W Flamboro)	Lot 8	Concession 2
County/District/Municipality Hamilton/Wentworth		City/Town/Village	Province Ontario	Postal Code L9H6A8
UTM Coordinates Zone Easting Northing NAD 8 3 17581332 4793412	Municipal Plan and Sublot Number		Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)				
General Colour	Most Common Material	Other Materials	Depth (m/ft)	
			From	To
brown	clay	gravel	0 ft.	15 ft.
grey	limestone		18 ft.	82 ft.

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
0 ft. 20 ft.	Bentonite	10 cu.ft.

Method of Construction		Well Use	
<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial
<input checked="" type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Municipal
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Driving	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning
<input type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial	
<input type="checkbox"/> Other, specify _____		<input type="checkbox"/> Other, specify _____	

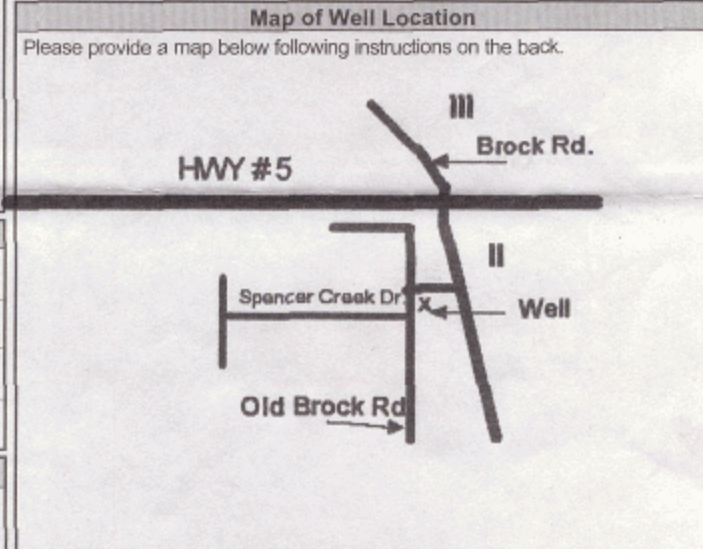
Construction Record - Casing			Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____
			From To	
6.25 in.	steel	188	+2ft. 20 ft.	
6.25 in.	open hole		20 ft 82 ft	

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

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	Depth (m/ft)	Diameter (cm/in)
		From To	
80 ft		+2 ft. 73 ft.	6.25
		20 ft 82 ft.	6.25

Well Contractor and Well Technician Information	
Business Name of Well Contractor Packham Well Drilling Inc.	Well Contractor's Licence No. 4 2 0 7
Business Address (Street Number/Name) 1235 Trinity Road	Municipality Ancaster
Province Ontario	Business E-mail Address packhamwelldrilling@gmail.com
Postal Code L9G3L1	Name of Well Technician (Last Name, First Name) Packham Mervyn
Bus. Telephone No. (inc. area code) 905 648 2909	Signature of Technician and/or Contractor <i>Mervyn Packham</i>
Well Technician's Licence No. 0058	Date Submitted 20090910

Results of Well Yield Testing				
After test of well yield, water was: <input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: Pump intake set at (m/ft) 80 ft. Pumping rate (l/min / GPM) 7 gpm. Duration of pumping hrs + min Final water level end of pumping (m/ft) 62 ft. If flowing give rate (l/min / GPM) 62 ft.	Static Level	61 ft.		
	1	63 ft.	1	62 ft.
	2	62 ft.	2	61 ft.
	3	62 ft.	3	61 ft.
	4	62 ft.	4	61 ft.
	5	62 ft.	5	61 ft.
10	62 ft.	10	61 ft.	
15	62 ft.	15	61 ft.	
20	62 ft.	20	61 ft.	
25	62 ft.	25	61 ft.	
30	62 ft.	30	61 ft.	
40	62 ft.	40	61 ft.	
50	62 ft.	50	61 ft.	
60	62 ft.	60	61 ft.	



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	20090824 20090824	Audit No. Z 93731 Received NOV 27 2009



Measurements recorded in: Metric Imperial

A 082118

Well Location

Address of Well Location (Street Number/Name) 404 MOXLEY RD, Township WEST FLAMBORO, Lot 9, Concession 2, County/District/Municipality HAMILTON - WENT., City/Town/Village GREENSVILLE, Province Ontario, Postal Code L9H 5E4, UTM Coordinates Zone Easting Northing NAD 83 175815574793096, Municipal Plan and Sublot Number, Other

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

Table with 5 columns: General Colour, Most Common Material, Other Materials, General Description, Depth (m/ft) From To. Rows include BROWN CLAY (0-23) and GREY LIMESTONE (23-76).

Annular Space table with columns: Depth Set at (m/ft) From To, Type of Sealant Used (Material and Type), Volume Placed (m³/ft³). Row: 0 to 7.01, BENTONITE SLURRY.

Results of Well Yield Testing table with columns: Draw Down (Time, Water Level), Recovery (Time, Water Level), Static Level, Pumping rate, Duration of pumping, Final water level end of pumping, If flowing give rate, Recommended pump depth, Recommended pump rate, Well production, Disinfected?.

Method of Construction and Well Use checkboxes. Method of Construction includes Air percussion (checked). Well Use includes Domestic (checked).

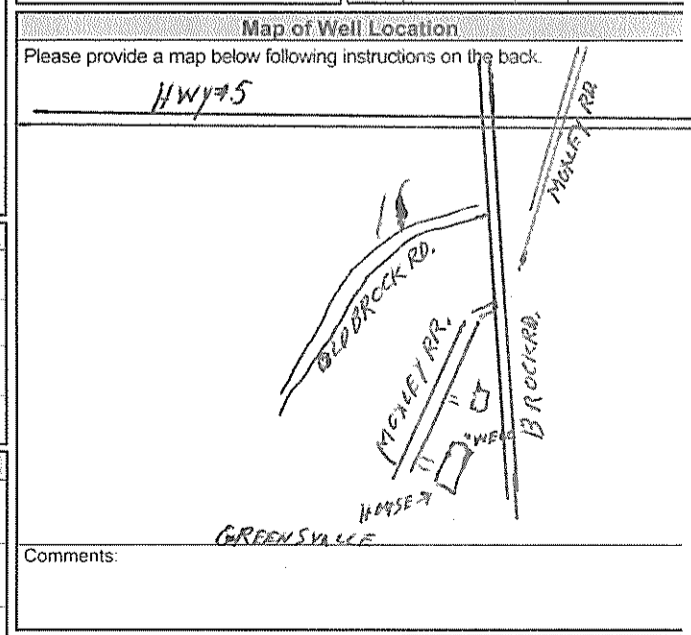
Construction Record - Casing table with columns: Inside Diameter, Open Hole OR Material, Wall Thickness, Depth (m/ft) From To, Status of Well. Row: 15.2, STEEL, 21.90, 8.45 to 7.01, Water Supply (checked).

Construction Record - Screen table with columns: Outside Diameter, Material, Slot No., Depth (m/ft) From To, Status of Well.

Water Details and Hole Diameter table. Water found at Depth 22, 25 (m/ft), Kind of Water: Fresh (checked), Untested (checked). Hole Diameter: 0-7.01 (25.4), 7.01-23.16 (15.2).

Well Contractor and Well Technician Information. Business Name: O'CONNOR WELL DRILLING LTD., Well Contractor's Licence No. 4005, Business Address: 621 CON. 6, W. RR#1, Municipality: MILLGROVE.

Well owner's information package delivered (Yes/No), Date Package Delivered (2009-09-18), Date Work Completed (2009-09-18), Well Technician's Licence No. T518, Signature of Technician and/or Contractor, Date Submitted (Y|Y|Y|W|W|D|D).



Ministry Use Only. Audit No. 2 94289, Date: OCT-06-2009.

Measurements recorded in: Metric Imperial

Page _____ of _____

Address of Well Location (Street Number/Name) **394 MOXLEY** Township **WEST FLAMBOROUGH** **UNKNOWN**

County/District/Municipality **HAMILTON** City/Town/Village **DUNDAS** Province **Ontario** Postal Code **UNKNOWN**

UTM Coordinates Zone **17** Easting **581591** Northing **4793010** Municipal Plan and Sublot Number _____ Other _____

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	BROWN TOPSOIL			0	1
	BROWN SAND			1	4
	BROWN SAND		TIGHT	4	12
	BROWN RED SAND		COARSE	12	22½
	BEDROCK OR SHALE IN BOTTOM				

Annular Space

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0 - 8	BENTONITE CHIPS	
8 - 22½	FILTER SAND	

Results of Well Yield Testing

After test of well yield, water was:	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
<input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____				
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
	4		4	
Duration of pumping _____ hrs + _____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
19	30		30	
Recommended pump rate (l/min / GPM)	40		40	
8	50		50	
Well production (l/min / GPM)	60		60	
Disinfected? <input type="checkbox"/> Yes <input type="checkbox"/> No				

Method of Construction

Cable Tool Diamond Public Commercial Not used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Driving Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air percussion Industrial
 Other, specify _____ Other, specify _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status of Well
			From	To	
36	CONCRETE	3	0	22½	<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____

Construction Record - Screen

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

Water Details

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft)	Diameter (cm/in)
11	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	0 - 22½	36
17	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____		

Well Contractor and Well Technician Information

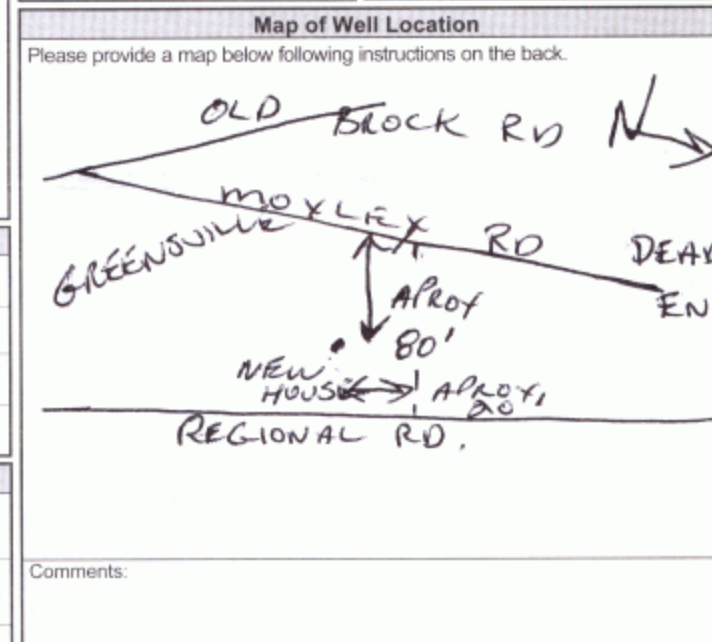
Business Name of Well Contractor **JOHNSON & BARTZ** Well Contractor's Licence No. **3030**

Business Address (Street Number/Name) **112 MCGUINNESS DRIVE** Municipality **BRANTFORD**

Province **ONT** Postal Code **N3T6K6** Business E-mail Address _____

Bus. Telephone No. (inc. area code) **5197570041** Name of Well Technician (Last Name, First Name) **BARTZ JOHN**

Well Technician's Licence No. **333** Signature of Technician and/or Contractor *John Bartz* Date Submitted _____



Comments: _____

Well owner's information package delivered Yes No

Date Package Delivered **20090130**

Date Work Completed _____

Ministry Use Only

Audit No. **Z 93591**

APR 02 2009

Well Tag: **A 021958** (see below)

A021958

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

Address of Well Location (County/District/Municipality): **HAMILTON - WESTWORTH** Township: **FLAMBOROUGH** Lot: **779** Concession: **2**

RR#/Street Number/Name: **386 Moxley Rd.** City/Town/Village: **Dundas** Site/Compartment/Block/Tract etc.:

GPS Reading: NAD **83** Zone **17** Easting **581578** Northing **4792908** Unit Make/Model: **GARMIN 15-TAXI** Mode of Operation: Undifferentiated Averaged Differentiated, specify **WATS.**

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth	
				From	To
	Well was upgraded. - casing was extended and construction meets current regulations.				

Hole Diameter

Depth	Metres	Diameter
From	To	Centimetres
9.46	10.51	15.8

Water Record

Water found at Metres / Kind of Water

m Fresh Sulphur
 Gas Salty Minerals
 Other:

m Fresh Sulphur
 Gas Salty Minerals
 Other:

m Fresh Sulphur
 Gas Salty Minerals
 Other:

After test of well yield, water was clear and sediment free Other, specify

Chlorinated Yes No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth	
			From	To
15.8	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized	0.5	1.24	10.51

Screen

Outside diam	Material	Slot No.
	<input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized	

No Casing or Screen

Open hole

Test of Well Yield

Pumping test method	Draw Down		Recovery	
	Time min	Water Level Metres	Time min	Water Level Metres
TEST SUB				
Pump intake set at (metres) 8.5	Static Level	4.87		5.49
Pumping rate (litres/min) 18.9	1	5.80	1	4.97
Duration of pumping 1 hrs + 0 min	2	5.72	2	4.90
Final water level end of pumping 3.89 metres	3	5.70	3	4.89
Recommended pump type. <input checked="" type="checkbox"/> Shallow <input type="checkbox"/> Deep	4	5.57	4	4.88
Recommended pump depth. 8.5 metres	5	5.53	5	4.87
Recommended pump rate. 20 (litres/min)	10	5.50	10	Full
If flowing give rate (litres/min)	15	5.50	15	RECOR.
	20	5.50	20	
	25	5.49	25	
If pumping discontinued, give reason.	30	5.49	30	
	40	5.49	40	
	50	5.49	50	
	60	5.49	60	

Plugging and Sealing Record Annular space Abandonment

Depth set at - Metres	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
1.24 - 1.10	BENTONITE CEMENTS - FIT BOTTOM	0.08
1.24 - 0.50	BENTONITE CEMENTS - ANNULAR	0.06

Method of Construction

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

Water Use

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

Final Status of Well

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

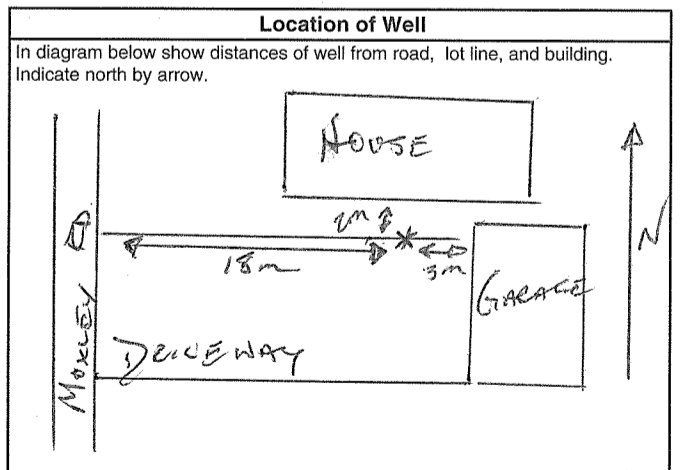
Well Contractor/Technician Information

Name of Well Contractor: **HITCHCOCK'S RAMP SERVICES** Well Contractor's Licence No.: **6170**

Business Address (street name, number, city etc.): **673 WAVERIDGE - WEST END RD, BEECHVILLE ONT**

Name of Well Technician (last name, first name): **HITCHCOCK STU** Well Technician's Licence No.: **T-1041**

Signature of Technician/Contractor: *[Signature]* Date Submitted: **2007** **MM** **DD**



Audit No. **Z 70178** Date Well Completed **2007** **MM** **DD** **04 30**

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

Ministry Use Only

Data Source: **6170** Contractor: **6170**

Date Received: **MAY 28 2007** Date of Inspection: **MM** **DD**

Remarks: **Well Record Number**

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

11

6813711

Municipality: **68006 CON** Con. **02**

Wentworth

County or District HAMILTON - WEST	Township/Borough/City/Town/Village WEST FLAMINGO	Con block tract survey, etc. CON 2	Lot 8
Address 240 HWY 7 E DUMFRIES CRT. L9H-5E1		Date completed 03 09 02	

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
BROWN	SAND	GRAVEL		0	12
BROWN	SANDY CLAY			12	43
GREY	LIMESTONE			43	75

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

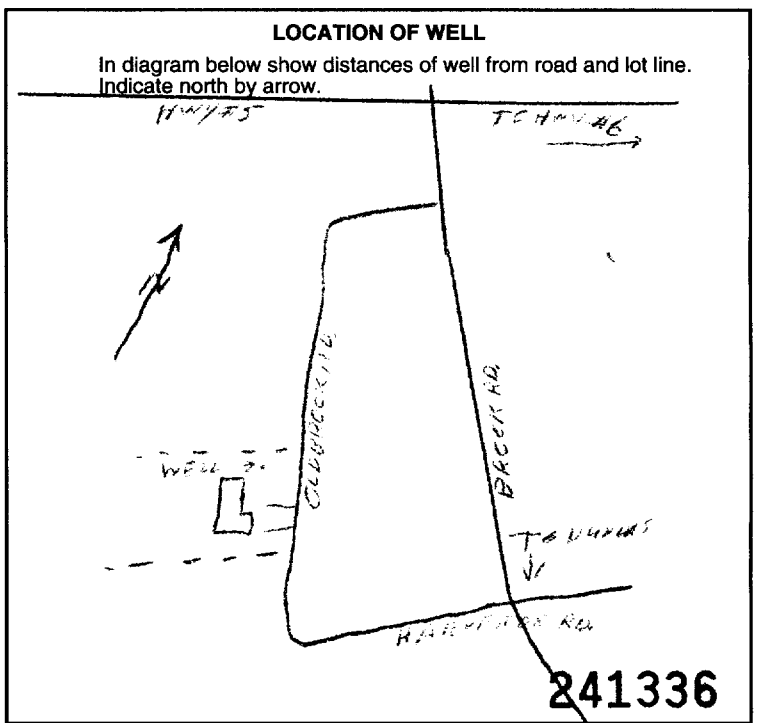
41 WATER RECORD			
Water found at - feet	Kind of water		
50 ¹⁰⁻¹³	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas	14
62 ¹⁵⁻¹⁸	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas	19
20-23	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas	24
25-28	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas	29
30-33	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty	3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas	34

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6 10-11	1 <input checked="" type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic	1.58	7	18-6
6 17-18	1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic		18-6	75
6 24-25	1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic			27-30

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

61 PLUGGING & SEALING RECORD		
<input type="checkbox"/> Annular space <input type="checkbox"/> Abandonment		
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST					
Pumping test method	Pumping rate	Duration of pumping			
1 <input checked="" type="checkbox"/> Pump 2 <input type="checkbox"/> Bailer	10 GPM	1	Hours	17-18	Mins
Static level	Water level end of pumping	Water levels during			
19-21	22-24	15 minutes	30 minutes	45 minutes	60 minutes
feet	feet	26-28	29-31	32-34	35-37
		feet	feet	feet	feet
If flowing give rate	Pump intake set at	Water at end of test			
GPM	feet	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy			
Recommended pump type	Recommended pump setting	Recommended pump rate			
<input type="checkbox"/> Shallow <input type="checkbox"/> Deep	feet	GPM			



54 FINAL STATUS OF WELL		
1 <input checked="" type="checkbox"/> Water supply	5 <input type="checkbox"/> Abandoned, insufficient supply	9 <input type="checkbox"/> Unfinished
2 <input type="checkbox"/> Observation well	6 <input type="checkbox"/> Abandoned, poor quality	10 <input type="checkbox"/> Replacement well
3 <input type="checkbox"/> Test hole	7 <input type="checkbox"/> Abandoned (Other)	
4 <input type="checkbox"/> Recharge well	8 <input type="checkbox"/> Dewatering	

55-56 WATER USE		
1 <input checked="" type="checkbox"/> Domestic	5 <input type="checkbox"/> Commercial	9 <input type="checkbox"/> Not use
2 <input type="checkbox"/> Stock	6 <input type="checkbox"/> Municipal	10 <input type="checkbox"/> Other
3 <input type="checkbox"/> Irrigation	7 <input type="checkbox"/> Public supply	
4 <input type="checkbox"/> Industrial	8 <input type="checkbox"/> Cooling & air conditioning	

57 METHOD OF CONSTRUCTION		
1 <input type="checkbox"/> Cable tool	5 <input checked="" type="checkbox"/> Air percussion	9 <input type="checkbox"/> Driving
2 <input type="checkbox"/> Rotary (conventional)	6 <input type="checkbox"/> Boring	10 <input type="checkbox"/> Digging
3 <input type="checkbox"/> Rotary (reverse)	7 <input type="checkbox"/> Diamond	11 <input type="checkbox"/> Other
4 <input type="checkbox"/> Rotary (air)	8 <input type="checkbox"/> Jetting	

Name of Well Contractor O'CONNOR WELL DRILLING LTD	Well Contractor's Licence No. 4005
Address 1401 HAMILTON RD, UNIT 2, HAMILTON, ONT L9H 5E1	
Name of Well Technician V. H. H. E.	Well Technician's Licence No. 7028
Signature of Technician/Contractor	Submission date day mo yr

MINISTRY USE ONLY	Data source 4005	Date received SEP 25 2002
	Date of inspection	Inspector
	Remarks	

CSS.ES2

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

11

6813710

Municipality **68006 CON** Con. **02**

Wentworth

County or District HAMILTON - WENTWORTH	Township/Borough/City/Town/Village WEST FRANKFORD	Con block tract survey, etc. CON 2	Lot 8
Address 240 HWY#8 DUNDAS, ONT. L9H-5E1		Date completed 01 09 02 day month year	

21

Northings RC Elevation RC Basin Code ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
BROWN	SAND	GRAVEL & CLAY		0	15
BROWN	SANDY CLAY			15	48
GREY	LIMESTONE			48	80

31

32

41 WATER RECORD

Water found at - feet	Kind of water
10-13 DRY	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
15-18	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
20-23	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
25-28	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
30-33	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
10-11	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			13-16
17-18	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			20-23
24-25	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			27-30

SCREEN

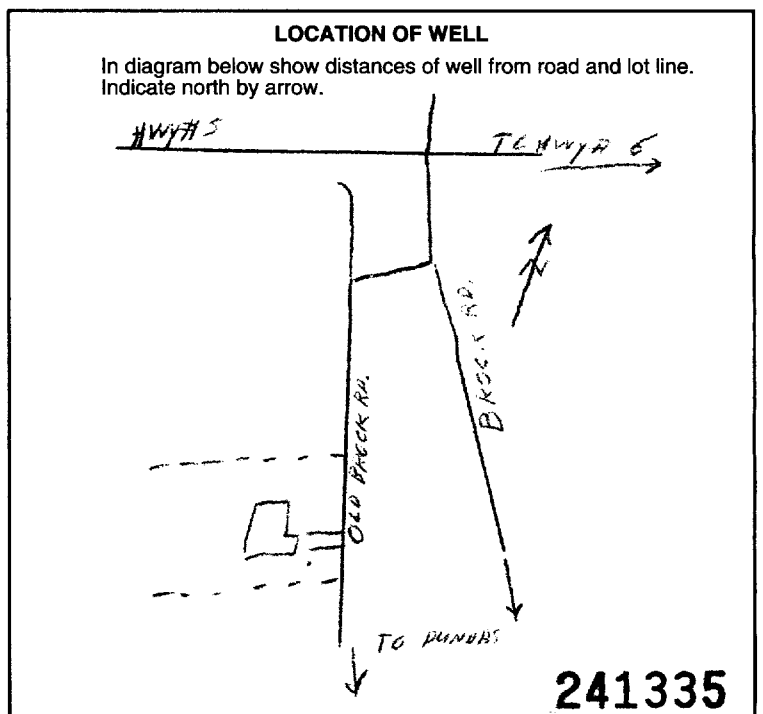
Sizes of opening (Slot No.)	Diameter	Length
	inches	feet
Material and type		Depth at top of screen
		feet

61 PLUGGING & SEALING RECORD

<input type="checkbox"/> Annular space	<input type="checkbox"/> Abandonment
Depth set at - feet	Material and type (Cement grout, bentonite, etc.)
From To	
10-13 14-17	
18-21 22-25	
26-29 30-33 80	

71 PUMPING TEST

Pumping test method <input type="checkbox"/> Pump <input type="checkbox"/> Bailer	Pumping rate GPM	Duration of pumping Hours Mins
Static level feet	Water level end of pumping feet	Water levels during <input type="checkbox"/> Pumping <input type="checkbox"/> Recovery
19-21 DRY	22-24	15 minutes 26-28 30 minutes 29-31 45 minutes 32-34 60 minutes 35-37
If flowing give rate GPM	Pump intake set at feet	Water at end of test <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy
Recommended pump type <input type="checkbox"/> Shallow <input type="checkbox"/> Deep	Recommended pump setting feet	Recommended pump rate GPM



FINAL STATUS OF WELL

<input type="checkbox"/> Water supply	<input type="checkbox"/> Abandoned, insufficient supply	<input type="checkbox"/> Unfinished
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well
<input type="checkbox"/> Test hole	<input type="checkbox"/> Abandoned (Other)	
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering	

WATER USE

<input type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not use
<input type="checkbox"/> Stock	<input type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	

METHOD OF CONSTRUCTION

<input type="checkbox"/> Cable tool	<input type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	

Name of Well Contractor O'CONNOR WELL DRILLING LTD.	Well Contractor's Licence No. 4005
Address 1871 MILL GROVE, ONT. L0R1W0	
Name of Well Technician J. HOWE	Well Technician's Licence No. 7516
Signature of Technician/Contractor	Submission date day mo yr

MINISTRY USE ONLY

Data source	Contractor 4005	Date received SEP 25 2002
Date of inspection	Inspector	
Remarks CSS.E32		

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

6813550

68006 CON

02

County or District Wentworth	Township/Borough/City/Town/Village West Flamboro	Con block tract survey, etc. 2	Lot 7
Address 430 Old Brock Rd.		Date completed 27 12 00 day month year	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
Brown	clay	silt	.	0	23
grey	Limestone	.	.	23	75
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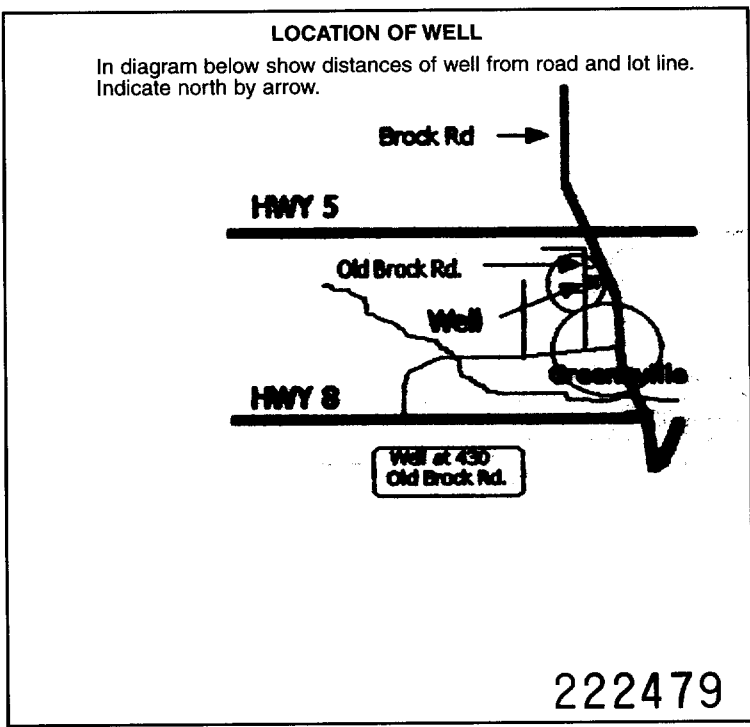
WATER RECORD	
Water found at - feet	Kind of water
70	<input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
.	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
.	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
.	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
.	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas

CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6.25	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic	188	+2	23
6	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Open hole <input type="checkbox"/> Plastic	.	23	75
.	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic	.	.	.

SCREEN	Sizes of opening (Slot No.)	Diameter inches	Length feet
	.	.	.
Material and type		Depth at top of screen feet	
.		.	

PLUGGING & SEALING RECORD		
<input type="checkbox"/> Annular space		<input type="checkbox"/> Abandonment
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	
.	.	.

PUMPING TEST	Pumping test method <input checked="" type="checkbox"/> Pump <input type="checkbox"/> Bailer	Pumping rate 2 GPM	Duration of pumping 1 Hours 0 Mins	
	Static level 30 feet	Water level end of pumping 75 feet	Water levels during	
			<input type="checkbox"/> Pumping	<input checked="" type="checkbox"/> Recovery
			15 minutes 61 feet	30 minutes 49 feet
			45 minutes 41 feet	60 minutes 35 feet
If flowing give rate - GPM		Pump intake set at - feet	Water at end of test <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy	
Recommended pump type <input type="checkbox"/> Shallow <input checked="" type="checkbox"/> Deep		Recommended pump setting 70 feet	Recommended pump rate 2 GPM	



FINAL STATUS OF WELL		
<input checked="" type="checkbox"/> Water supply	<input type="checkbox"/> Abandoned, insufficient supply	<input type="checkbox"/> Unfinished
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well
<input type="checkbox"/> Test hole	<input type="checkbox"/> Abandoned (Other)	
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering	
WATER USE		
<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not use
<input type="checkbox"/> Stock	<input type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	
METHOD OF CONSTRUCTION		
<input type="checkbox"/> Cable tool	<input type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	

Name of Well Contractor Packham Well Drilling Inc.	Well Contractor's Licence No. 4207
Address R.R. # 2 Ancaster, Ont.	
Name of Well Technician Mervyn Packham	Well Technician's Licence No. 10058
Signature of Technician/Contractor <i>Mervyn Packham</i>	Submission date 27 Dec 2000 day mo yr

MINISTRY USE ONLY	4207	NOV 20 2001

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

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Municipality
68006

Con.
CON

02

WENTWORTH

County or District HAMILTON-WENTWORTH		Township/Borough/City/Town/Village WEST FLAMBOROUGH		Con block tract survey, etc. 2 W.F.		Lot 19	
Owner's surname KINGDOM HALL OF JEH. WIT.		First Name		Address DUNDAS, ONTARIO (370 BROCK RD.)		Date completed 6 M 1 2000	

21	Zone	Easting	Northing	RC	Elevation	RC	Basin Code	ii	iii	iv
----	------	---------	----------	----	-----------	----	------------	----	-----	----

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
BRN-RED	CLAY			0	23
BROWN	SAND	STONES		23	27
BROWN	LIMESTONE			27	63
GREY	LIMESTONE	DARK LAYERS		63	124

31										
32										

41 WATER RECORD			
Water found at - feet	Kind of water		
10-13	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	14
15-18	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	19
20-23	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	24
25-28	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	29
30-33	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	34

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6-11	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic	.188	0	33
17-18	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic		33	124
24-25	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			27-30

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

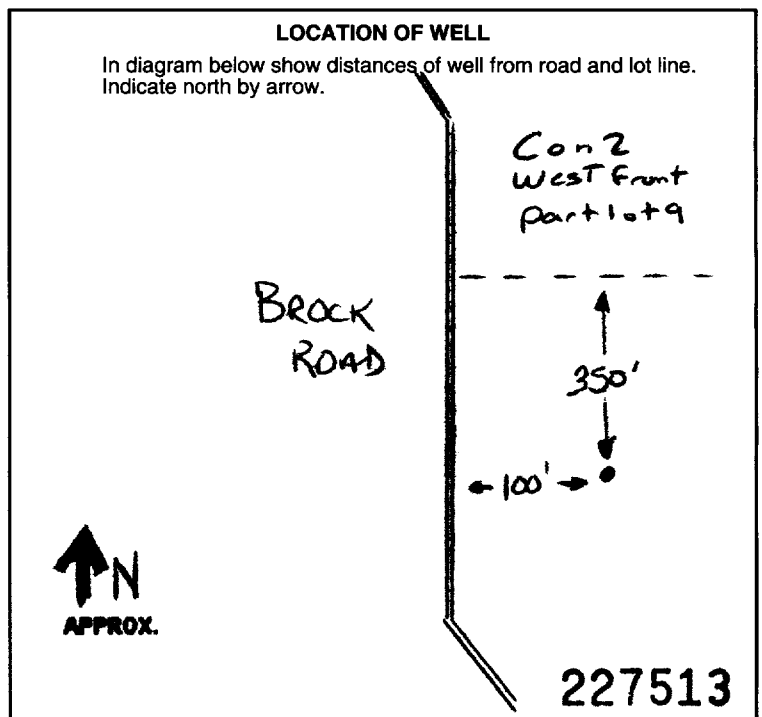
61 PLUGGING & SEALING RECORD			
<input checked="" type="checkbox"/> Annular space		<input type="checkbox"/> Abandonment	
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)	
From	To		
10-13	14-17	BEN. CLAY SLUR	
18-21	22-25		
26-29	30-33		

71 PUMPING TEST		10 Pumping test method		11-14 Pumping rate		15-16 Duration of pumping	
1 <input checked="" type="checkbox"/> Pump 2 <input type="checkbox"/> Bailer		7 GPM		1 Hours 45 Mins			
Static level	Water level end of pumping	25 Water levels during 1 <input type="checkbox"/> Pumping 2 <input checked="" type="checkbox"/> Recovery					
19-21 45 feet	22-24 110 feet	15 minutes 25-28 43 feet	30 minutes 29-31 45 feet	45 minutes 32-34 feet	60 minutes 35-37 feet		
38-41 If flowing give rate GPM		39-41 Pump intake set at feet		42 Water at end of test <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy			
50-53 Recommended pump type <input type="checkbox"/> Shallow <input checked="" type="checkbox"/> Deep		43-45 Recommended pump setting 140 feet		46-49 Recommended pump rate 7 GPM			

54 FINAL STATUS OF WELL		
<input checked="" type="checkbox"/> Water supply	<input type="checkbox"/> Abandoned, insufficient supply	<input type="checkbox"/> Unfinished
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well
<input type="checkbox"/> Test hole	<input type="checkbox"/> Abandoned (Other)	
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering	

55-56 WATER USE		
<input type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not use
<input type="checkbox"/> Stock	<input checked="" type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input checked="" type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	

57 METHOD OF CONSTRUCTION		
<input type="checkbox"/> Cable tool	<input type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	



Name of Well Contractor DURL HOPPER LIMITED	Well Contractor's Licence No. 2644
Address R.R. #7, ST. MARYS, ONTARIO N4X 1C9	
Name of Technician/Contractor DONALD HOPPER	Well Technician's Licence No. 7022
Signature of Technician/Contractor	Submitted on date 16/3/2001

MINISTRY USE ONLY		58 Contractor		59-62 Date received	
Data source		2644		MAR 26 2001	
Date of inspection		Inspector			
Remarks					

CSS.ES1

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6813386

Municipality 68006 Con. CON 02

WENTWORTH

County or District HAMILTON - WENTWORTH	Township/Borough/City/Town/Village WEST FLAMBOURGH	Con block tract survey, etc. CON 2	Lot 8
Address 373 OLD BROCK RD. GREENSVILLE, ONT. L9G 5J1		Date completed 5 10 00 day month year	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
BROWN	SANDY CLAY		LOOSE	0	12
BROWN	SAND		LOOSE	12	22
BROWN	SANDY CLAY		HARD LOOSE	22	38
BROWN	LIMESTONE		HARD	38	55

WATER RECORD

Water found at - feet	Kind of water
43	<input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
51	<input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas

CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6 1/4	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic	1.88	42	38
6	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Open hole <input type="checkbox"/> Plastic		38	55

SCREEN

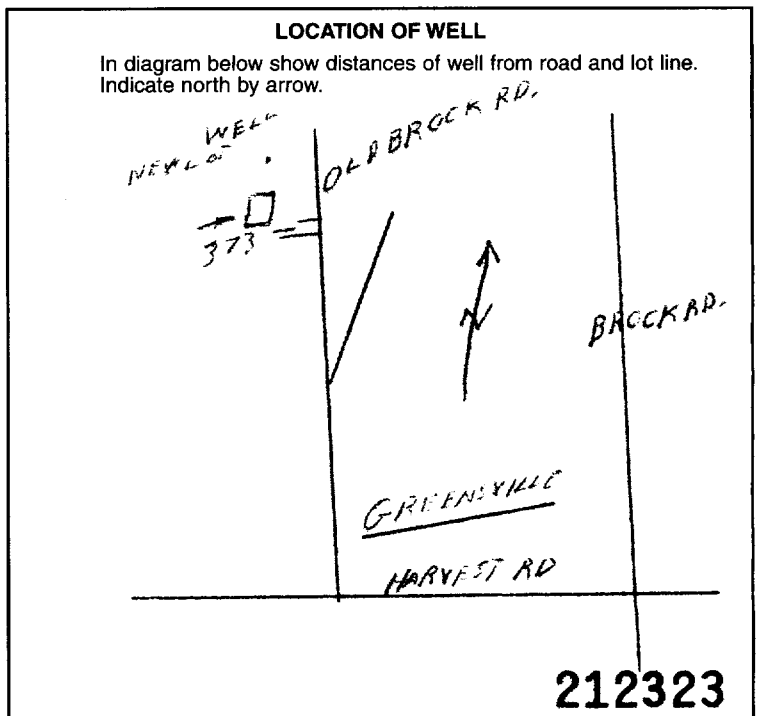
Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type		Depth at top of screen feet

PLUGGING & SEALING RECORD

<input type="checkbox"/> Annular space	<input type="checkbox"/> Abandonment	
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	

PUMPING TEST

Pumping test method <input checked="" type="checkbox"/> Pump <input type="checkbox"/> Bailer	Pumping rate 10 GPM	Duration of pumping 1 Hours 30 Mins
Static level 32 feet	Water level end of pumping 50 feet	Water levels during Pumping
		15 minutes: 50 feet 30 minutes: 50 feet 45 minutes: 50 feet 60 minutes: 50 feet
If flowing give rate GPM	Pump intake set at feet	Water at end of test <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy
Recommended pump type <input type="checkbox"/> Shallow <input type="checkbox"/> Deep	Recommended pump setting feet	Recommended pump rate GPM



FINAL STATUS OF WELL

<input checked="" type="checkbox"/> Water supply	<input type="checkbox"/> Abandoned, insufficient supply	<input type="checkbox"/> Unfinished
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well
<input type="checkbox"/> Test hole	<input type="checkbox"/> Abandoned (Other)	
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering	

WATER USE

<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not use
<input type="checkbox"/> Stock	<input type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	

METHOD OF CONSTRUCTION

<input type="checkbox"/> Cable tool	<input checked="" type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	

Name of Well Contractor O'CONNOR WELL DRILLING LTD	Well Contractor's Licence No. 4005
Address RR#1 MILLIGROVE, ONT. L0R1N0	
Name of Well Technician W. HOWE	Well Technician's Licence No. T-0518
Signature of Technician/Contractor <i>[Signature]</i>	Submission date day mo yr

MINISTRY USE ONLY

Data source	Contractor 4005	Date received OCT 16 2000
Date of inspection	Inspector	
Remarks		

CSS.ES0

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
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6811186

MUNICIPALITY: _____ CON. NO.: _____

COUNTY OR DISTRICT: **WENTWORTH** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **(WEST FLAMBORO) FLAMBORO** CON. BLOCK, TRACT, SURVEY ETC: **CON. 2** LOT: **8**

OWNER (SURNAME FIRST): **POIRIER R.J. CONSTRUCTION** ADDRESS: **RR # 1 WATERDOWN, ONT, LOR 2H0** DATE COMPLETED: DAY **1** MO **4** YR **87**

21

ZONE: _____ EASTING: _____ NORTHING: _____ RC: _____ ELEVATION: _____ RC: _____ BASIN CODE: _____

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	SAND		LOOSE	0	10
BROWN	SAND & GRAVEL	FINE GRAVEL	LOOSE	10	17
BROWN	GRAVEL	SAND	LOOSE	17	19
GREY	LIMESTONE		HARD	19	95'

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
94	1 <input checked="" type="checkbox"/> FRESH 2 <input checked="" type="checkbox"/> SALTY 3 <input type="checkbox"/> SULPHUR 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/2	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.188	1	20
	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC		20	95

SCREEN

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

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	(CEMENT GROUT LEAD PACKER, ETC.)
10-13		
19-21		
26-29		

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER

PUMPING RATE: 10 GPM

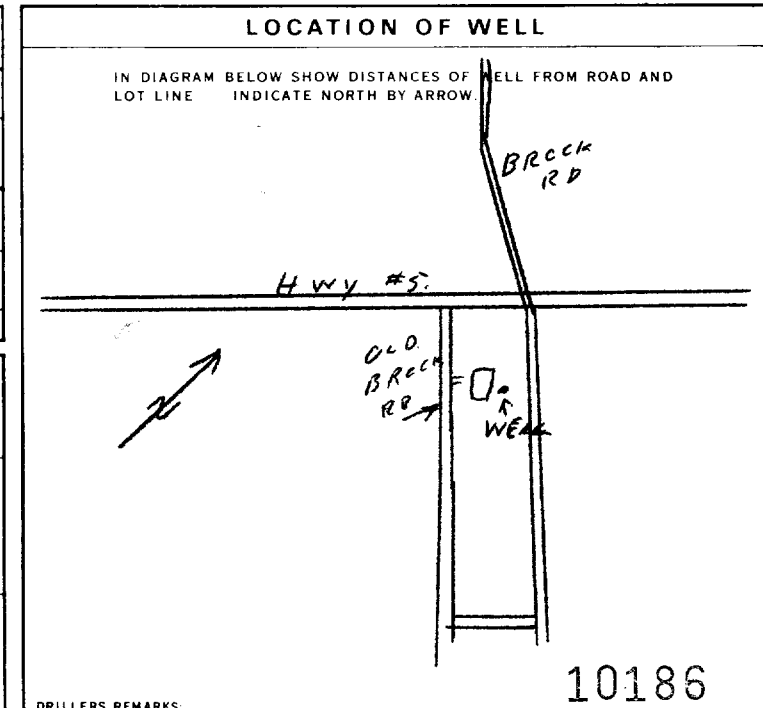
DURATION OF PUMPING: 1 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING RECOVERY			
65	83	15 MINUTES: 65	30 MINUTES: 65	45 MINUTES: 65	60 MINUTES: 65

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 93 FEET

RECOMMENDED PUMPING RATE: 10 GPM



FINAL STATUS OF WELL

1 WATER SUPPLY 2 OBSERVATION WELL 3 TEST HOLE 4 RECHARGE WELL

5 ABANDONED, INSUFFICIENT SUPPLY 6 ABANDONED POOR QUALITY 7 UNFINISHED 9 DEWATERING

WATER USE

1 DOMESTIC 2 STOCK 3 IRRIGATION 4 INDUSTRIAL

5 COMMERCIAL 6 MUNICIPAL 7 PUBLIC SUPPLY 8 COOLING OR AIR CONDITIONING 9 NOT USED

METHOD OF CONSTRUCTION

1 CABLE TOOL 2 ROTARY (CONVENTIONAL) 3 ROTARY (REVERSE) 4 ROTARY (AIR) 5 AIR PERCUSSION

6 BORING 7 DIAMOND 8 JETTING 9 DRIVING

DIGGING OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: **OCONNOR WELL DRILLING LTD.** WELL CONTRACTOR'S LICENCE NUMBER: **4005**

ADDRESS: **RR # 1 MILLGROVE, LOR 1V0**

NAME OF WELL TECHNICIAN: **B.E. OCONNOR** WELL TECHNICIAN'S LICENCE NUMBER: _____

SIGNATURE OF TECHNICIAN/CONTRACTOR: _____ SUBMISSION DATE: _____

OFFICE USE ONLY

DATA SOURCE: _____ CONTRACTOR: _____ DATE RECEIVED: **130487**

DATE OF INSPECTION: _____ INSPECTOR: _____

REMARKS: _____

CSS.ES

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11 6810180 **68006** **CON** **02**

COUNTY OR DISTRICT WENTWORTH	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE (WEST FLAMBORO) FLAMBORO	CON. BLOCK TRACT SURVEY ETC. 1001 CON. 2	LOT 009
OWNER (SURNAME FIRST) STEELY INDUSTRIES LTD.	ADDRESS MOXEY RD. RR #2 DUNDAS ONT, L9M 5E2	DATE COMPLETED DAY 24 MO 11 YR 80	
ZONE 17	EASTING 581420	NORTHING 4793200	RC 4
		ELEVATION 0820	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	TO
			WELL IS FOR NEW SALES OFFICE P.O. #14641 CANADA CRUSHED STONE		
BROWN	CLAY		LOOSE	0	11
GREY	LIMESTONE		HARD	11	74

31 **001160577** **007421573**

32

41 **WATER RECORD**

WATER FOUND AT - FEET	KIND OF WATER
10-13 0072	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 **CASING & OPEN HOLE RECORD**

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11 5 06	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	+1 0011
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		11 0074
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		

SCREEN

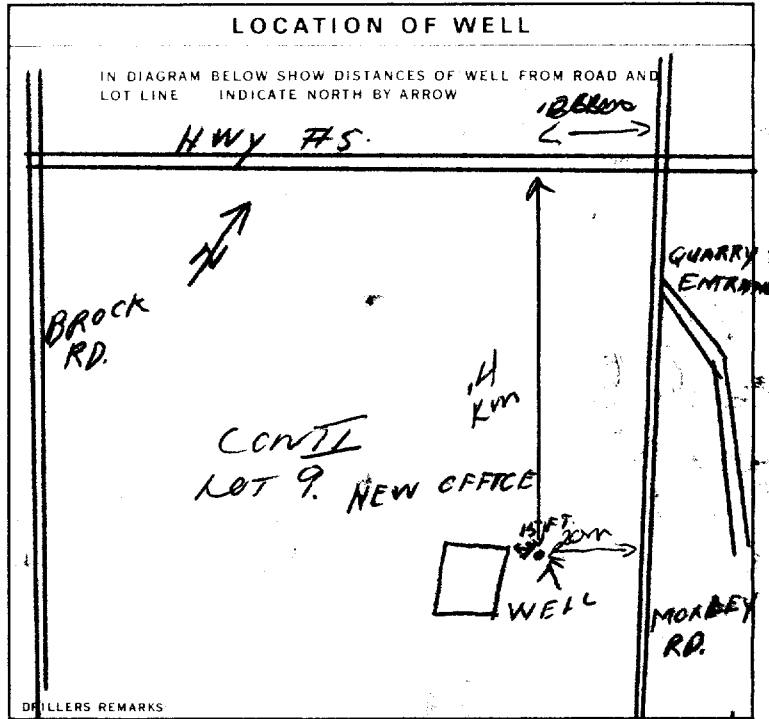
SIZE OF OPENING	DIAMETER	LENGTH
31-33	34-38	39-40
MATERIAL AND TYPE	INCHES	FEET
	DEPTH TO TOP OF SCREEN	41-44
		FEET

61 **PLUGGING & SEALING RECORD**

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

71 **PUMPING TEST METHOD**

1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	PUMPING RATE 0010 GPM	DURATION OF PUMPING 15-16 HOURS 00 MINS
STATIC LEVEL 063 FEET	WATER LEVEL END OF PUMPING 067 FEET	WATER LEVELS DURING
		15 MINUTES 063 26-28 30 MINUTES 063 29-31 45 MINUTES 063 32-34 60 MINUTES 063 35-37
IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
	GPM	FEET
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 072	RECOMMENDED PUMPING RATE 0008 GPM



FINAL STATUS OF WELL **1**

WATER USE **15**

METHOD OF DRILLING **1**

CONTRACTOR

NAME OF WELL CONTRACTOR
O'CONNOR WELL DRILLING LTD. LICENCE NUMBER **4005**

ADDRESS
RR # 1 MILLGROVE ONT. L9R 1W0

NAME OF DRILLER OR BORER
J. O'CONNOR LICENCE NUMBER

SIGNATURE OF CONTRACTOR
J. O'Connor SUBMISSION DATE

OFFICE USE ONLY

DATA SOURCE **1** CONTRACTOR **4005** DATE RECEIVED **191280**

DATE OF INSPECTION

INSPECTOR

REMARKS

CSS.S8



MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act
WATER WELL RECORD

30m 5d

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

6809009
MUNICIP. 68006
CON. GEN
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22 23 24

COUNTY OR DISTRICT: HAMILTON-WENTWORTH
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: FLAMBOROUGH
CON., BLOCK, TRACT, SURVEY, ETC.: 2
LOT 25-27: 009
GREENSVILLE
DATE COMPLETED: DAY 05 MO. 09 YR. 74

92582 4 820 4 24 OCT 13, 1977 321

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Clay	Sand & stones	packed	0	34
Grey	limestone	Hard	Hard	34	36

31 00346052812 003621573
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0034	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 14 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 19 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 24 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 29 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 34 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

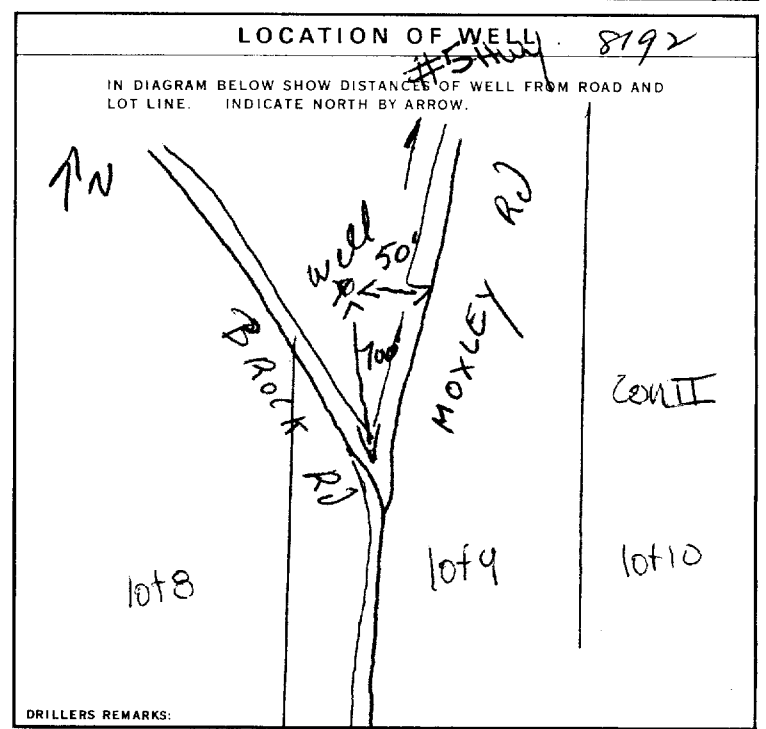
INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
06	1 <input checked="" type="checkbox"/> STEEL 12 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0	13-16
06	1 <input type="checkbox"/> STEEL 19 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		34	0036
24-25	1 <input type="checkbox"/> STEEL 26 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			27-30

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	(CEMENT GROUT, LEAD PACKER, ETC.)
FROM TO		
10-13	14-17	
18-21	22-25	
28-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER
PUMPING RATE: 0010 GPM
DURATION OF PUMPING: 02 HOURS 00 MINS
WATER LEVELS DURING PUMPING:
15 MINUTES: 015 FEET
30 MINUTES: 018 FEET
45 MINUTES: 016 FEET
60 MINUTES: 015 FEET
RECOMMENDED PUMP TYPE: SHALLOW
RECOMMENDED PUMP SETTING: 030 FEET
RECOMMENDED PUMPING RATE: 0005 GPM



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

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

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

CONTRACTOR
NAME OF WELL CONTRACTOR: S. GILL
LICENCE NUMBER: 2309
ADDRESS: 78 PRICE AVE. HAMILTON
NAME OF DRILLER OR BORER: JOHN MASLOWSKI
SIGNATURE OF CONTRACTOR: [Signature]
SUBMISSION DATE: DAY 6 MO. 10 YR. 74

OFFICE USE ONLY
DATA SOURCE: 1
CONTRACTOR: 2309
DATE RECEIVED: 071174
DATE OF INSPECTION: [Blank]
INSPECTOR: [Blank]
REMARKS: [Blank]
P/S
WI



The Ontario Water Resources Commission Act WATER WELL RECORD

30 M / 50

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED

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11

6808333

MUNICIP.

68006

CON.

94N

92

COUNTY OR DISTRICT

WENT WORTH

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE

WILLAGBORO

CON., BLOCK, TRACT, SURVEY, ETC.

II

LOT 008

DATE COMPLETED

03

MO. 07

YR. 72

92970

RC. 4

ELEVATION 0820

RC. 5

Basin Code 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	TOPSOIL			0	4
	BROWN SANDY CLAY			4	20
	GREY LIMESTONE			20	44

31	0004 92	00206528	0044 215																	
32																				

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
10-13	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

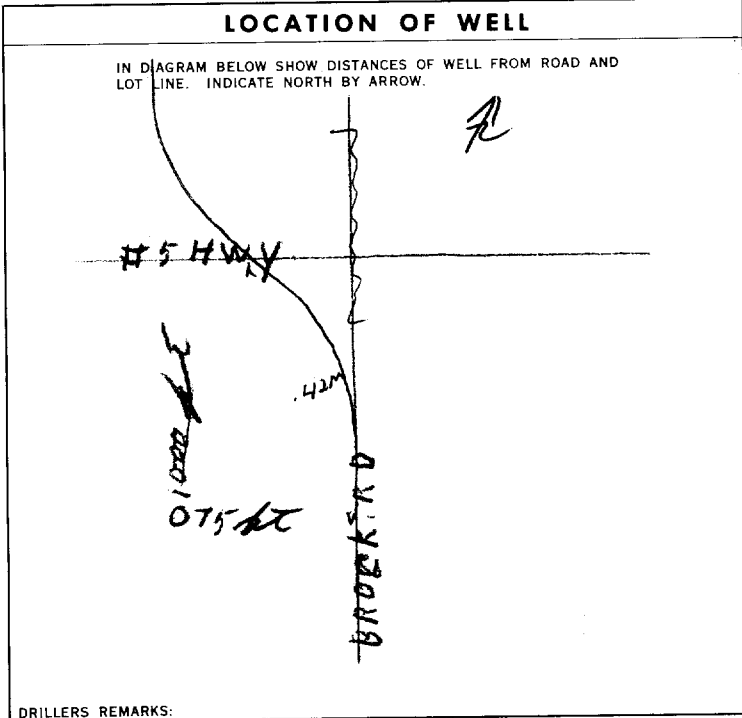
INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/4	1 <input checked="" type="checkbox"/> STEEL	1 1/8	0	21
6 1/4	2 <input type="checkbox"/> GALVANIZED			
6 1/4	3 <input type="checkbox"/> CONCRETE			
6 1/4	4 <input type="checkbox"/> OPEN HOLE			
17-18	1 <input type="checkbox"/> STEEL		21	44
17-18	2 <input type="checkbox"/> GALVANIZED			
17-18	3 <input type="checkbox"/> CONCRETE			
17-18	4 <input checked="" type="checkbox"/> OPEN HOLE			
24-25	1 <input type="checkbox"/> STEEL			
24-25	2 <input type="checkbox"/> GALVANIZED			
24-25	3 <input type="checkbox"/> CONCRETE			
24-25	4 <input type="checkbox"/> OPEN HOLE			

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input type="checkbox"/> PUMP	2 <input checked="" type="checkbox"/> BAILER	0006
15-16	GPM. 01	15-16 HOURS 00
17-18		MIN. 00
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
020	040	15 MINUTES 020
20		30 MINUTES 020
		45 MINUTES 020
		60 MINUTES 020
IF FLOWING, GIVE RATE	GPM.	RECOMMENDED PUMP SETTING
		041
RECOMMENDED PUMP TYPE	RECOMMENDED PUMPING RATE	RECOMMENDED PUMPING RATE
1 <input type="checkbox"/> SHALLOW	2 <input checked="" type="checkbox"/> DEEP	0003
50-53	000.3 GPM./FT. SPECIFIC CAPACITY	



FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input type="checkbox"/> OBSERVATION WELL	6 <input type="checkbox"/> ABANDONED, POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	

WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
<input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

METHOD OF DRILLING

1 <input checked="" type="checkbox"/> CABLE TOOL	6 <input type="checkbox"/> BORING
2 <input type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input type="checkbox"/> AIR PERCUSSION	

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Frank Force	2803
ADDRESS	
175 Glenora Ave	
NAME OF DRILLER OR BORER	LICENCE NUMBER
Tom	
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
Frank Force	DAY 14 MO. 12 YR 72

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	2803	10/27/72
DATE OF INSPECTION	INSPECTOR	
10, 5, 73		
REMARKS:		
	CSS.S8	P 7
		WI



WATER WELL RECORD

Water management in Ontario

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11

6807346

MUNICIP. 68006

CON. 009

02

COUNTY OR DISTRICT: **Westworth** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **West Flamboro** CON., BLOCK, TRACT, SURVEY, ETC.: **2** LOT: **009**

DATE COMPLETED: DAY **30** MO. **Oct** YR. **69**

RC. **2740** ELEVATION: **0.820** BASIN CODE: **24**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Sand			0	18
Brown	Sand	Gravel & large stones		18	32 1/2
Grey	Limestone			32 1/2	45

31 0018609 00326091112 0045215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
0038	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	14	
	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
0043	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	19	
	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 3/8	STEEL	219	0	33
06	GALVANIZED			0033
	CONCRETE		33	
	OPEN HOLE			0045

SCREEN

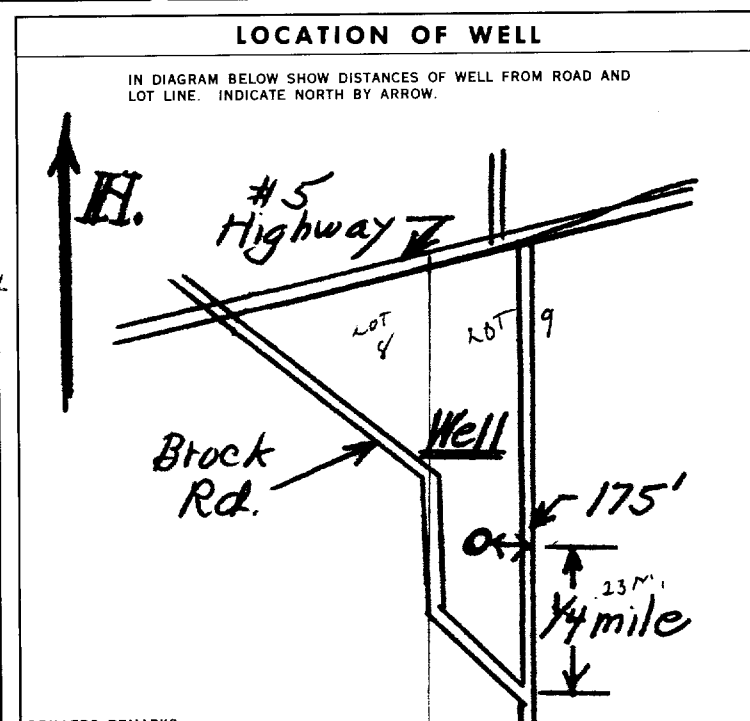
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	
18-21	
26-29	

71 PUMPING TEST

PUMPING TEST METHOD: <input type="checkbox"/> PUMP <input checked="" type="checkbox"/> BAILER	PUMPING RATE: 0006 GPM.	DURATION OF PUMPING: 01 HOURS 00 MINS.
STATIC LEVEL: 020 FEET	WATER LEVEL END OF PUMPING: 033 FEET	WATER LEVELS DURING PUMPING:
		15 MINUTES: 033 FEET
		30 MINUTES: 033 FEET
		45 MINUTES: 033 FEET
		60 MINUTES: 033 FEET



FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY

2 OBSERVATION WELL 6 ABANDONED, POOR QUALITY

3 TEST HOLE 7 UNFINISHED

4 RECHARGE WELL

WATER USE

1 DOMESTIC 5 COMMERCIAL

2 STOCK 6 MUNICIPAL

3 IRRIGATION 7 PUBLIC SUPPLY

4 INDUSTRIAL 8 COOLING OR AIR CONDITIONING

9 NOT USED

METHOD OF DRILLING

1 CABLE TOOL 6 BORING

2 ROTARY (CONVENTIONAL) 7 DIAMOND

3 ROTARY (REVERSE) 8 JETTING

4 ROTARY (AIR) 9 DRIVING

5 AIR PERCUSSION

CONTRACTOR

NAME OF WELL CONTRACTOR: **George J. Wallis** LICENCE NUMBER: **3383**

ADDRESS: **RR #2 Stoney Creek**

NAME OF DRILLER OR BORER: **Same** LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: **George J. Wallis** SUBMISSION DATE: DAY **22** MO. **11** YR. **69**

OFFICE USE ONLY

DATA SOURCE: **1** CONTRACTOR: **5417** DATE RECEIVED: **271169**

DATE OF INSPECTION: **20, 10, 70** INSPECTOR: **F.P.**

REMARKS: **CSS.S8**



The Ontario Water Resources Commission Act

WATER WELL RECORD

B

GROUND WATER BRANCH 984
 68 No. 5984
 FEB 3 1964
 ONTARIO WATER RESOURCES COMMISSION

UTM 34 R 11 E
 Elev. 019
 Basin 229

County or District WENTWORTH Township, Village, Town or City WEST FLANK BORO
 Con. 11 Lot 9 Date completed 31 OCT. 1963
 (day month year)
 Address GREENSVILLE

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 28'
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 6 1/4"

Pumping Test

Static level 18
 Test-pumping rate 5 G.P.M.
 Pumping level 35
 Duration of test pumping 2 HRS.
 Water clear or cloudy at end of test CLEAR
 Recommended pumping rate 3 G.P.M.
 with pump setting of 40 feet below ground surface

Well Log

Overburden and Bedrock Record

TOP SOIL
SANDY LOAM
SAND
LIME STONE

From ft.

To ft.

Depth(s) at which water(s) found

Kind of water (fresh, salty, sulphur)

0

1

1

9

9

28

28

42

40

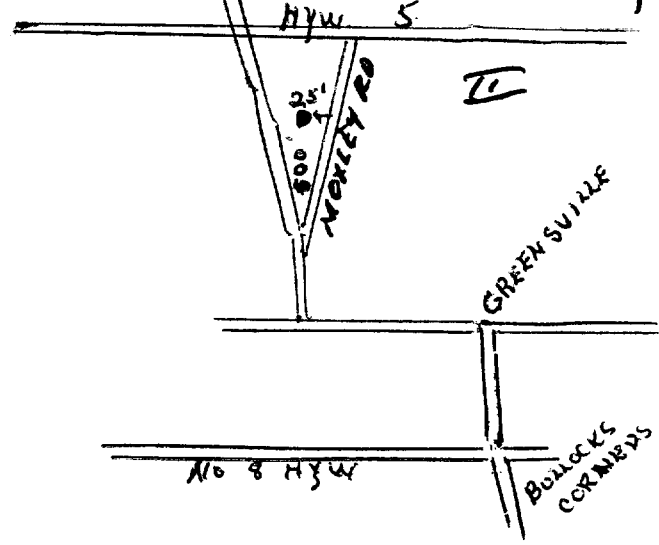
FRESH

Water Record

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 CROSS BROS.
 Address 38 KENNEDY AVE.
HAMILTON
 Licence Number 1146
 Name of Driller or Borer ARTHUR CROSS
 Address 38 KENNEDY AVE.
 Date NOV. 1 1963
Howard Cross
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM 5 R 4 RT
 Elev 290
 Basin 290



GROUND WATER BORING NO. 5963
 FEB 3 1964
 ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City W. Flamboro
 Con. 2 Lot 9 Date completed 31 Oct. 63
 (day month year)
 Address P.O. Greenville Ont.

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 17'-11"
 Type of screen -
 Length of screen -
 Depth to top of screen -
 Diameter of finished hole 6 1/4"

Pumping Test

Static level 34'
 Test-pumping rate 6 G.P.M.
 Pumping level 69
 Duration of test pumping 40 min.
 Water clear or cloudy at end of test Clear
 Recommended pumping rate 4 G.P.M.
 with pump setting of 73 feet below ground surface

Well Log

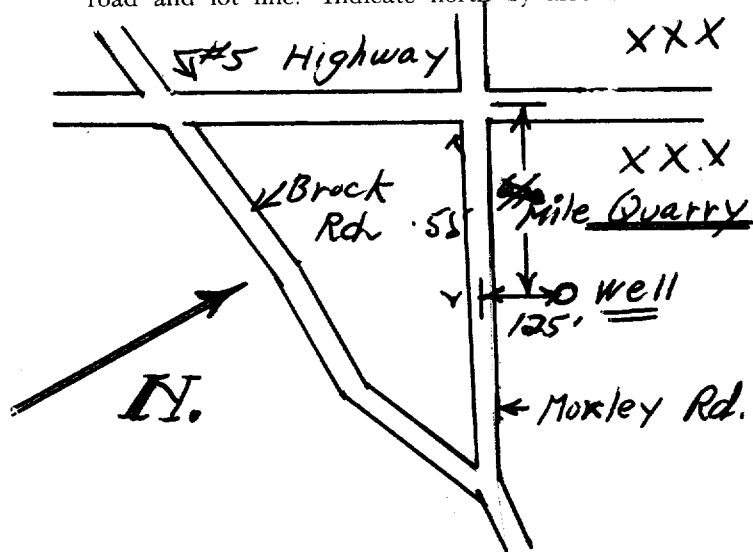
Overburden and Bedrock Record

	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Reddish Br Sandy Soil</u>	<u>0</u>	<u>14</u>		
<u>Grey Clay with Gravel</u>	<u>14</u>	<u>17</u>		
<u>Grey Limestone</u>	<u>17</u>	<u>79</u>	<u>44</u> <u>78</u>	<u>1/39 ppm</u> <u>Fresh</u>

For what purpose(s) is the water to be used? Domestic
 Is well on upland, in valley, or on hillside? Upland
 Drilling or Boring Firm G.J. Wallis
 Address RR #2
Stoney Creek.
 Licence Number 896
 Name of Driller or Borer Same
 Address _____
 Date Nov. 1/63
George J. Wallis
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM Z E
 N S
 Elev. R M
 Basin A B



GROUND WATER BRANCH
 AC 68 27 1962 5862
 ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City West Flamboro
 Con. 2 Lot 9 Date completed 13 June 62
 (day month year)
 Address P.O. Greenville Ont.

Casing and Screen Record

Pumping Test

Inside diameter of casing 6 1/4"
 Total length of casing 22'
 Type of screen -
 Length of screen -
 Depth to top of screen -
 Diameter of finished hole 6 1/4"

Static level 18 1/2'
 Test-pumping rate 25 G.P.M.
 Pumping level 29'
 Duration of test pumping 40 min.
 Water clear or cloudy at end of test clear
 Recommended pumping rate 5 G.P.M.
 with pump setting of 35 feet below ground surface

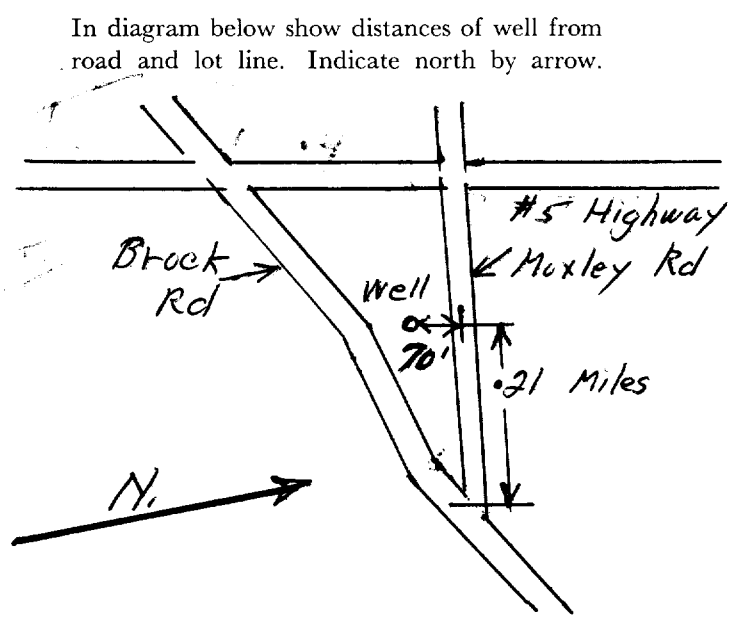
Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Dug Well</u>	<u>0</u>	<u>21</u>		
<u>Br. Sandy soil</u>	<u>21</u>	<u>28</u>		
<u>Grey Limestone</u>	<u>28</u>	<u>29</u>	<u>28</u>	<u>Fresh.</u>

For what purpose(s) is the water to be used? Domestic
 Is well on upland, in valley, or on hillside? Upland
 Drilling or Boring Firm G. J. Wallis
 Address RR#2 Stoney Creek
 Licence Number 419
 Name of Driller or Borer Same
 Address _____
 Date June 21 1962
George J. Wallis
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well



UTM z/v
5R
 Elev. 4R
 Basin 29



GROUND WATER BRANCH
 68 27 1962 5981
 ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City W. Flamboro
 Con. 2 Lot 9 Date completed 31 May 62
 (day month year)
 Address Moxley Rd Greenville

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 24'
 Type of screen -
 Length of screen -
 Depth to top of screen -
 Diameter of finished hole 6 1/4"

Pumping Test

Static level 12'
 Test-pumping rate 15 G.P.M.
 Pumping level 18'
 Duration of test pumping 40 min.
 Water clear or cloudy at end of test clear
 Recommended pumping rate 5 G.P.M.
 with pump setting of 24' feet below ground surface

Well Log

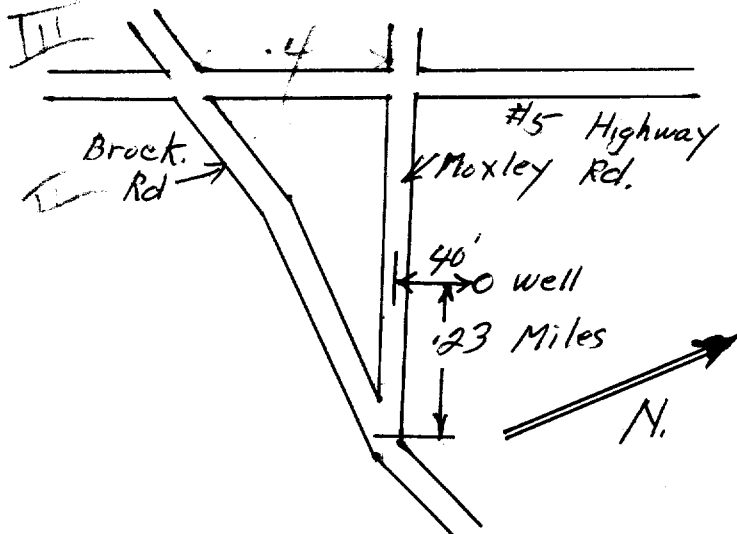
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Red Sandy soil</u>	<u>0</u>	<u>18</u>		
<u>Red Sandy & Gravel</u>	<u>18'</u>	<u>21 1/2'</u>		
<u>Grey Limestone</u>	<u>21 1/2</u>	<u>28 1/2</u>	<u>28'</u>	<u>Fresh</u>

For what purpose(s) is the water to be used? Domestic
 Is well on upland, in valley, or on hillside? Upland
 Drilling or Boring Firm C. J. Wallis
 Address RC #2 Stoney Creek
 Licence Number 419
 Name of Driller or Borer Same
 Address _____
 Date June 4/62
George J. Wallis
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM Z E
 R N
 Elev. R N
 Basin R N



GROUND WATER BRANCH
 68 No 5860
 AUG 27 1962
 ONTARIO WATER
 RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City W. Flamboro
 Lot 9 Date completed 29 May 62
 (day) (month) (year)
 Address P.O. Greensville

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 17'
 Type of screen -
 Length of screen -
 Depth to top of screen -
 Diameter of finished hole 6 1/4"

Pumping Test

Static level 14'
 Test-pumping rate 25 G.P.M.
 Pumping level 29'
 Duration of test pumping 40 min.
 Water clear or cloudy at end of test clear
 Recommended pumping rate 5 G.P.M.
 with pump setting of 35' feet below ground surface

Well Log

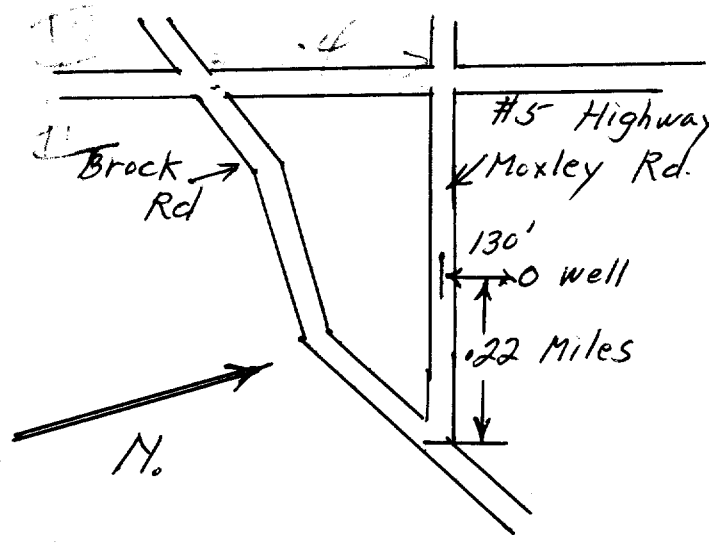
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Dug well</u>	<u>0'</u>	<u>17 1/2</u>		
<u>Red sandy soil & Gravel</u>	<u>17 1/2</u>	<u>23</u>		
<u>Grey Lime stone</u>	<u>23</u>	<u>39</u>	<u>37'</u>	<u>Fresh</u>

For what purpose(s) is the water to be used? Domestic
 Is well on upland, in valley, or on hillside? Upland
 Drilling or Boring Firm C. J. Wallis
 Address RR #2 Stoney Creek
 Licence Number 419
 Name of Driller or Borer Same
 Address
 Date June 4/62
George J. Wallis
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM 7 5 R 4 R
 Elev. 24
 Basin 24
 Lot 9



WATER 68 N^o 5955
 JUN 11 1959
 WATER
 DIVISION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City Flamboro W
 Con. 2 Lot 9 Date completed 8 June 59
 (day month year)
 Address Greenville P.O. Ont.

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 24'
 Type of screen —
 Length of screen —
 Depth to top of screen —
 Diameter of finished hole 6 1/4"

Pumping Test

Static level 15'
 Test-pumping rate 3 G.P.M.
 Pumping level 29'
 Duration of test pumping 45 minutes
 Water clear or cloudy at end of test Clear
 Recommended pumping rate 2 G.P.M.
 with pumping level of 25'

Well Log

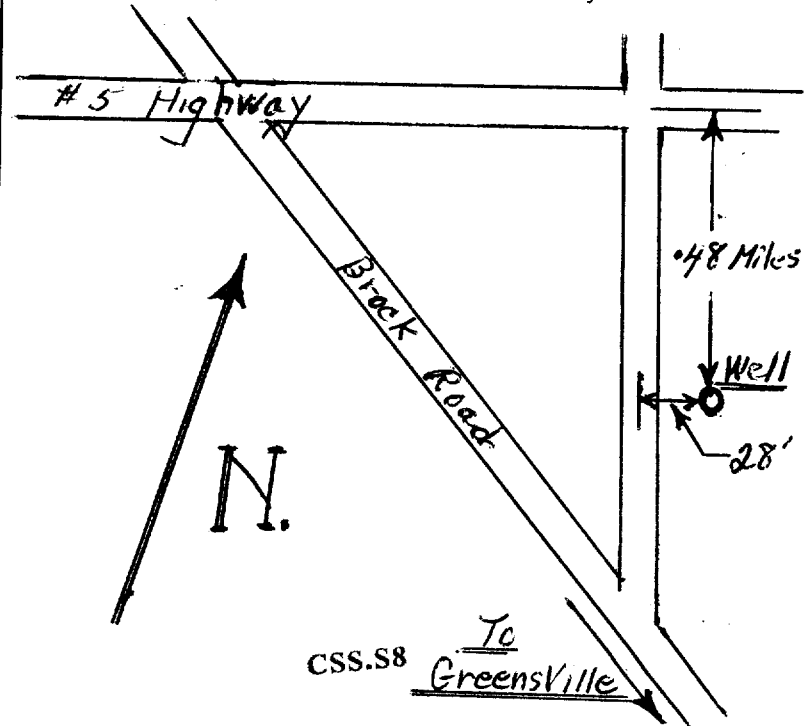
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
<u>Light Brown Sandy Soil</u>	<u>0'</u>	<u>18'</u>			
<u>Grey clay</u>	<u>18'</u>	<u>22 1/2'</u>			
<u>Grey limestone</u>	<u>22 1/2'</u>	<u>39'</u>	<u>36'</u>	<u>24</u>	<u>Fresh</u>

For what purpose(s) is the water to be used?
Domestic
 Is well on upland, in valley, or on hillside?
Upland
 Drilling Firm George J. Wallis
 Address R.R. # 5
Hamilton
 Licence Number 213
 Name of Driller Same
 Address —
 Date June 10/59
George J. Wallis
 (Signature of Licensed Drilling Contractor)

Location of Well

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



UTM 12 5 7 11 1
 Elev. 7
 Basin 24
 CON 11



68 No 5954

The Water-well Drillers Act, 1954
 Department of Mines

Water-Well Record

County or Territorial District Wentworth Township, Village, Town or City Flourville
 Village, Town or City Smithville
 Address Smithville P.O.
 Date completed 11 1958
 (day) (month) (year)

Pipe and Casing Record

Pumping Test

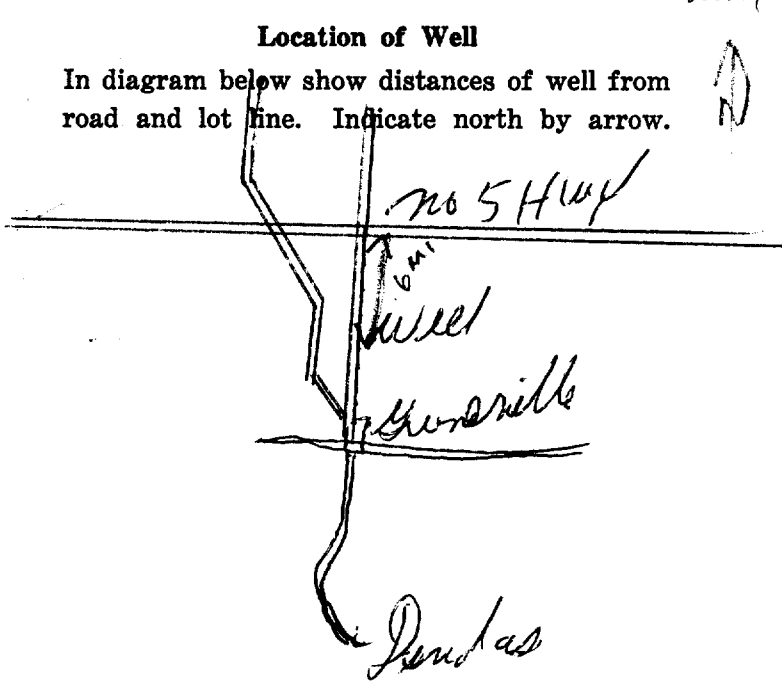
Casing diameter(s) <u>6 1/4</u>	Static level <u># 15</u>
Length(s) <u>22</u>	Pumping rate <u>60 gal per Hour</u>
Type of screen _____	Pumping level <u>35</u>
Length of screen _____	Duration of test <u>1 hr</u>

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth (s) at which water (s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
<u>Dug well</u>	<u>0</u>	<u>15</u>	<u>40</u>	<u>25</u>	<u>fresh</u>
<u>Loam clay gravel</u>	<u>15</u>	<u>22</u>			
<u>Lime Rock</u>	<u>22</u>	<u>45</u>			

For what purpose(s) is the water to be used? house
 Is water clear or cloudy? clear
 Is well on upland, in valley, or on hillside? upland
 Drilling firm Wesley Packham
 Address Smithville
 Name of Driller Wesley Packham
 Address Smithville
 Licence Number 187
 I certify that the foregoing statements of fact are true.
 Date Nov 26/58 Wesley Packham
 Signature of Licensee



6 m
well
Smithville
15 m
no 5 Hwy
Smithville
road as
40 ft E of W Rd
850 ft N of S Rd junction

UTM E
 N
 Elev.
 Basin 24



68 N^o 5948 5

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Wentworth Township, Village, Town or City W. F. Florence
 Con. 2 Lot 8 Date completed 20 Oct 67
(day month year)
 Owner [REDACTED] Address 1304 Beaufort Dr. Burlington
(print in block letters)

Casing and Screen Record

Pumping Test

Inside diameter of casing 6 1/4
 Total length of casing 24
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 6 1/4

Static level 23
 Test-pumping rate 4 G.P.M.
 Pumping level 60
 Duration of test pumping 1/2 hr
 Water clear or cloudy at end of test clear
 Recommended pumping rate 5 G.P.M.
 with pump setting of 65 feet below ground surface

Well Log

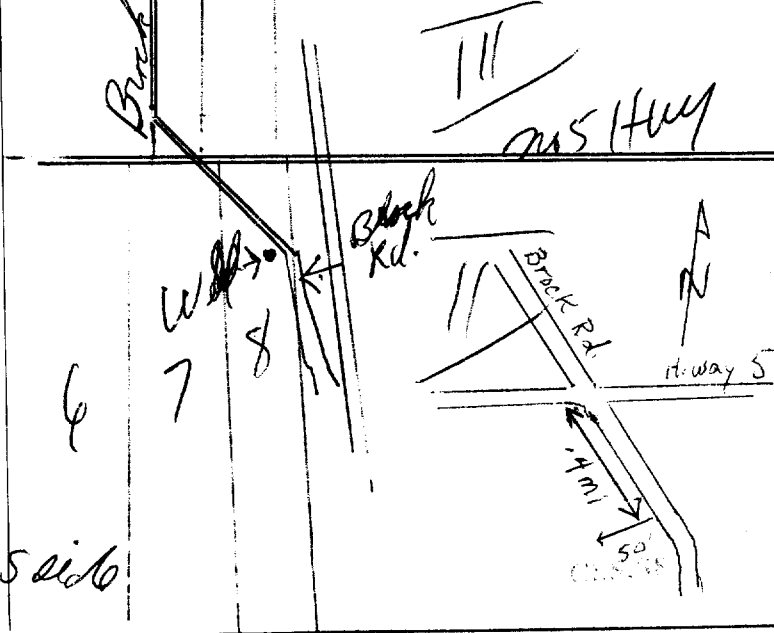
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Sandy clay</u>	<u>0</u>	<u>24</u>	<u>Develops slowly</u>	
<u>Limestone</u>	<u>24</u>	<u>67</u>	<u>From</u>	<u>26 feet</u>

For what purpose house is the water to be used?
 Is well on upland, in valley, or on hillside? upland
 Drilling or Boring Firm W Packhorn
 Address R.R. 2 Onondaga
 Licence Number 2498
 Name of Driller or Borer W Packhorn
 Address R.R. 2 Onondaga
 Date Oct 20/67
Wesley Packhorn
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7 15M-60-4138 50th W. W. F. Rd
fast new houses upon field on S side
OWRC COPY

UTM 5 7 E



WATER RESOURCES DIVISION

JUN 19 1967 5936

4 R N

Elev. 4

The Ontario Water Resources Commission Act

ONTARIO WATER RESOURCES COMMISSION

Basin 24

WATER WELL RECORD

County or District Kentworth

Township, Village, Town or City West Hamber

Con. II Lot 8

Date completed 4 April 1967
(day month year)

Address R.R. 1. Hannon

Casing and Screen Record

Inside diameter of casing 6 1/4
Total length of casing 45
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 6"

Pumping Test

Static level 48
Test-pumping rate 15 G.P.M.
Pumping level 50
Duration of test pumping 2 hrs.
Water clear or cloudy at end of test clear
Recommended pumping rate 4 G.P.M.
with pump setting of 55 feet below ground surface

Well Log

Water Record

Overburden and Bedrock Record

From ft.

To ft.

Depth(s) at which water(s) found

Kind of water (fresh, salty, sulphur)

Brown stoney clay
Blue
Limerock

0 20
20 45
45 60

55 fresh

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

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

Drilling or Boring Firm

Address

Licence Number 2633

Name of Driller or Borer Frank Ince

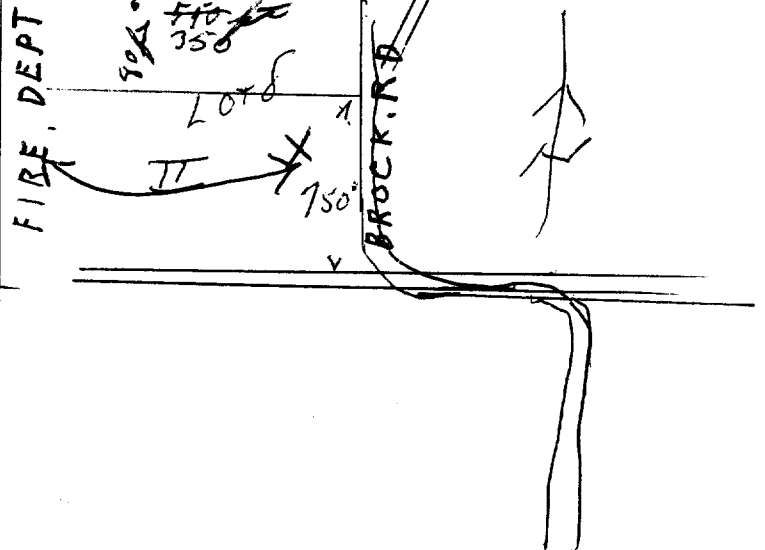
Address 175 Aldercrest Ave.

Date April 4. Hamilton

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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

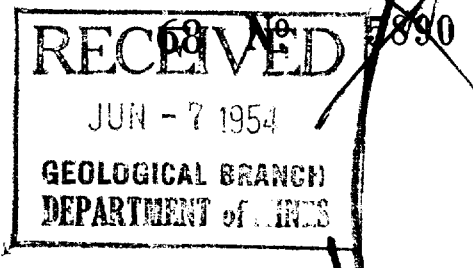


Form 7 15M-60-4138

OWRC COPY

CSS.S8

19c



ONTARIO

The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

UTM E
 N
 Elev.
 Basin

Village, Town or City *West Flanders*

wn or City) *Greenville*

Date Completed *10* (day) *March* (month) *54* (year) Cost of Well (excluding pump) *140*

Pipe and Casing Record

Pumping Test

Casing diameter(s) <i>6 1/4</i>	Date <i>10 March</i>
Length(s) of casing(s) <i>27</i>	Static level <i>19</i>
Type of screen	Pumping level <i>30</i>
Length of screen	Pumping rate <i>750 gal per hour</i>
Distance from top of screen to ground level	Duration of test <i>1 hour</i>
Is well a gravel-wall type?	Distance from cylinder or bowls to ground level <i>boiling</i>

Water Record

Kind (fresh or mineral)	Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
<i>fresh</i>	<i>35</i>	<i>fresh</i>	<i>14</i>
Quality (hard, soft, contains iron, sulphur, etc.) <i>hard</i>			
Appearance (clear, cloudy, coloured) <i>clear</i>			
For what purpose(s) is the water to be used? <i>for built</i>			
How far is well from possible source of contamination? <i>side</i>			
What is the source of contamination?			
Enclose a copy of any mineral analysis that has been made of water.			

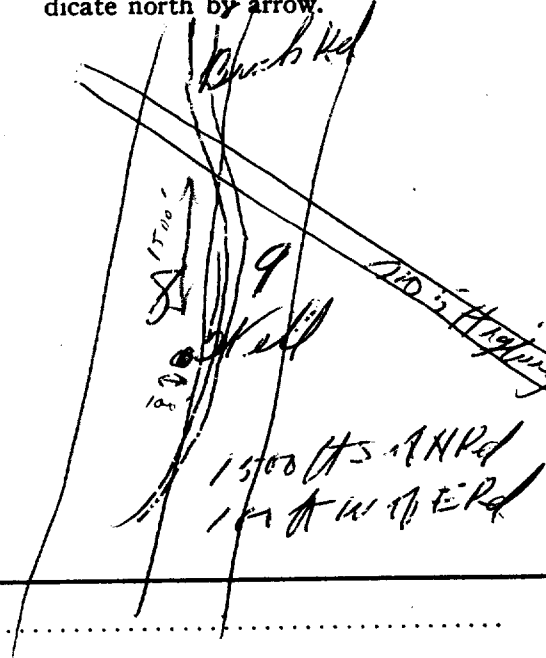
Well Log

Overburden and Bedrock Record

	From	To
<i>clay and sand</i>	<i>0 ft.</i>	<i>12 ft.</i>
<i>sand</i>	<i>12</i>	<i>27</i>
<i>Limestone</i>	<i>27</i>	<i>40</i>

Location of Well

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



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

Drilling Firm *Wesley Packham*

Address *Smithville*

Name of Driller *Wesley Packham* Address *Smithville*

Date *June 3* Licence Number *187*

Wesley Packham
Signature of Licensee



Stage 3 Archaeological Assessment

AhGx-819 & AhGx-820
394 Old Brock Road
Part of Lot 9, Concession 2
Geographic Township of West Flamborough
City of Hamilton

Prepared for:
Tracy Kowalchuk
394 Old Brock Road
Hamilton, Ontario
L9H 5L4

Licensee: Michael Golloher
PIFs:
P1037-0085-2021
P1037-0091-2021
Original Report



Earthworks Archaeological Services Inc.
2365 Watts Road,
Haliburton, Ontario
K0M 1S0

February 21, 2022

Executive Summary

Earthworks Archaeological Services Inc. was retained to conduct Stage 3 archaeological assessment of Precontact Indigenous archaeological sites AhGx-819 and AhGx-820 located at 394 Old Brock Road, part of Lot 9, Concession 2, Geographic Township of West Flamborough, City of Hamilton, historically part of Wentworth County, Ontario. The assessment was undertaken in support of a future severance application and was conducted as part of the requirements defined in defined in Section 3.4.4. of the *Rural Hamilton Official Plan*, which requires an archaeological assessment to be undertaken when a proposed development, site alteration, or redevelopment of lands has the potential to adversely affect areas of archaeological potential

The study area contains evidence of archaeological potential. The location of the study area in close proximity to AhHa-176, a registered archaeological site, indicates the potential for Pre-Contact Indigenous archaeological material to be identified and recovered. In summary, a Stage 2 archaeological assessment was determined to be required in order to identify and document any archaeological material that may be present. A portion of the study area is a ploughed agricultural field, and as a result, a combined test pit and pedestrian survey was determined to be required.

The Stage 3 archaeological assessments of AhGx-819, and AhGx-820 were conducted between November 5 and November 11, 2021 under professional license P1037, issued to Michael Golloher, M.Sc. (P1037) At no time were weather or lighting conditions detrimental to the observation or recovery of archaeological material

A total of 32 test units were placed and excavated across both sites at a 5 and 10 metre interval based established datum points. Each unit was excavated by hand, into the first five centimetres of subsoil. Depth varied from 20-48 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of 6 millimetre width. As per Section 3.2.2 Standard 7 of the *Standards and Guidelines for Consultant Archaeologists*, one unit in AhGx-820, amounting to 10% of the total number of units, was screened through wire mesh of three millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown loam topsoil horizon overlaying an orange loam subsoil.

Based on the results of the Stage 3 archaeological assessment, the study area contains an archaeological site that has further cultural heritage value and interest. Therefore, a Stage 4 site specific archaeological mitigation is recommended AhGx-819.

The preferred method of Stage 4 mitigation is through avoidance and protection. Discussions with the proponent determined that the area is not integral to development and can be avoided. As a result, Stage 4 mitigation by avoidance and protection for AhGx-819 is recommended.

The protected area will consist of the site location and an associated 10 metre buffer. If grading or other soil disturbing activities caused by the development project extent to the edge of the area to be avoided, the proponent must erect a temporary barrier around the area to be avoided, and “no go” instructions will be issued to all on-site construction crews, engineers,



architects or others involved in the day-to-day decisions during construction. The location of the area to be avoided will be shown on all contract drawings, and will include explicit instructions to avoid that area.

During grading and other soil disturbing activities, the area to be avoided must be inspected and monitored by a licensed archaeologist to verify the effectiveness of the avoidance strategies. If alteration of the archaeological site is observed at any time during construction, the Ministry of Heritage, Sport, Tourism and Culture Industries must be notified immediately.

After completion of the grading and other soil disturbing activities, the protected area must be inspected, and a report will be required to be submitted to the Ministry on the effectiveness of the strategy in ensuring the area to be avoided remains intact.

No additional archaeological assessments are recommended for AhGx-820.

The Ministry of Heritage, Sport, Tourism and Culture Industries is requested to review this report and provide a letter indicating their satisfaction that the fieldwork and reporting for this archaeological assessment are consistent with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports



Table of Contents

1.0	Project Context	1
1.1	Development Context	1
1.2	Historic Context	2
1.2.1	Pre-Contact Indigenous History	2
1.2.2	Post Contact Indigenous History	3
1.2.3	European Settlement History	3
1.2.4	Land Use History of Study Area	4
1.2.5	Historic Plaques	4
1.3	Archaeological Context	4
1.3.1	Current Conditions	4
1.3.2	Natural Environment	5
1.3.3	Known Archaeological Sites.....	5
1.3.4	Previous Archaeological Assessments	8
1.3.5	Adjacent Archaeological Assessments	8
2.0	Field Methods	10
2.1	AhGx-819	10
2.2	AhGx-820	11
3.0	Record of Finds	12
3.1	Terms of Reference	13
3.1.1	Lithic Artifact Categories	13
3.1.2	Lithic Material Types	13
3.2	AhGx-819	14
3.3	AhGx-820	14
3.4	Artifact Catalogues.....	15
4.0	Analysis and Conclusions	19
4.1	AhGx-819	19
4.2	AhGx-820	19
5.0	Recommendations	20
6.0	Advice on Compliance with Legislation	21
7.0	References	22
8.0	Images	27
9.0	Maps	32



Project Personnel

Managing Director:	Anthony Butler, M.Sc. (P310)
Project Manager:	Shane McCartney, M.A. (P321)
Licenced Archaeologist:	Michael Golloher, M.Sc. (P1037)
Licenced Field Director:	Justina Zivic, M.Sc. (R1312)
Field Technicians:	Kelsea Dawn, GIS(PG) Kia Ohora, B.A. (R1303) Kyle Robinson Jordie Steinmann (A1221)
Artifact Analysis:	Jordie Steinmann (A1221)
Report Production:	Shane McCartney, M.A. (P321)



1.0 Project Context

1.1 Development Context

Earthworks Archaeological Services Inc. (Earthworks) was retained by Tracy Kowalchuck to conduct a Stage 3 archaeological assessment of Precontact Indigenous archaeological sites AhGx-819 and AhGx-820 located at 394 Old Brock Road, part of Lot 9, Concession 2, Geographic Township of West Flamborough, City of Hamilton, historically part of Wentworth County, Ontario (Map 1). The assessment was undertaken in support of a future severance application and was conducted as part of the requirements defined in defined in Section 3.4.4. of the *Rural Hamilton Official Plan*, which requires an archaeological assessment to be undertaken when a proposed development, site alteration, or redevelopment of lands has the potential to adversely affect areas of archaeological potential (City of Hamilton 2019:B.3-11).

The objectives of the Stage 3 archaeological assessment, as outlined by the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), are as follows:

- To determine the extent of AhGx-819 and AhGx-820 and the characteristics of the artifacts
- To collect a representative sample of artifacts
- To assess the cultural heritage value or interest of the archaeological site
- To determine the need for mitigation of development impacts and recommend appropriate strategies and future conservation.

Permission to access the property was provided by the proponent.



1.2 Historic Context

1.2.1 Pre-Contact Indigenous History

Table 1 provides a breakdown of the general culture history of southern Ontario, as based on Ellis and Ferris (1990)

Table 1: Pre-Contact Indigenous Culture History of Southern Ontario

Culture Period	Diagnostic Artifacts	Time Span (Years B.P.)	Detail
Early Paleo-Indian	Fluted Projectile Points	11,000-10,400	Nomadic caribou hunters
Late Paleo-Indian	Hi-Lo, Holcombe, Plano Projectile Points	10,400-10,000	Gradual population increase
Early Archaic	Nettling and Bifurcate Points	10,000-8,000	More localized tool sources
Middle Archaic	Brewerton and Stanly-Neville Projectile Points	8,000-4,500	Re-purposed projectile points and greater amount of endscrapers
Narrow Point Late Archaic	Lamoka and Normanskill Projectile Points	4,000-3,800	Larger site size
Broad Point Late Archaic	Genessee, Adder Orchard Projectile Points	3,800-3,500	Large bifacial tools. First evidence of houses
Small Point Late Archaic	Crawford Knoll, Innes Projectile Points	3,500-3,100	Bow and Arrow Introduction
Terminal Archaic	Hind Projectile Points	3,100-2,950	First evidence of cemeteries
Early Woodland	Meadowood Points, Cache Blades, and pop-eyed birdstones	2,950-2,400	First evidence of Vinette I Pottery
Middle Woodland	Pseudo-scallop shell	2,450-1550	Burial Mounds
	Princess Point pottery	1550-1100	First evidence of corn horticulture
Late Woodland	Levanna Point	1,100-700	Early longhouses
	Saugeen Projectile Points	700-600	Agricultural villages
	Nanticoke Notched Points	600-450	Migrating villages, tribal warfare



1.2.2 Post Contact Indigenous History

The surrounding area enters the historic record in 1626, when Father Daillon, a French missionary, spent three months in the Hamilton region attempting to conclude a trading alliance with the Neutral Confederacy. These negotiations ultimately failed due to opposition from Huron allies (White 1978:409). By 1638, the Neutral had expanded east to the Niagara River in response to a void left by the Wenro migrating to Huronia and the Erie migrating southwest. By the early 1640s, the Neutrals were engaged in large scale warfare with the Assistaeronons to the west while maintaining a neutral stance between the Huron and the League of Five Nations Iroquois. European influence in the region was generally restricted to the beaver pelt trade, and Aboriginal groups practiced a way of life that did not differ significantly from the pre-Contact period. By the late 1640's, the increasing scarcity of beaver pelts prompted the invasion of the Neutral by the League of Five Nations Iroquois. By 1651, the Neutral were destroyed and either moved west out of Ontario or they were absorbed into the League of Five Nations (Trigger 1994:57).

The region appears to have been relatively unpopulated by permanent settlements in the latter half of the seventeenth century, with much of southern Ontario used as a hunting territory by the Iroquois. However, Ojibwa groups previously thought to have settled along the northern shores of Georgian Bay and Lake Superior gradually migrated into southern Ontario, and by the late seventeenth/early eighteenth century the Mississauga had settled in the Hamilton region (Rogers 1978:761).

By 1784, the British government purchased from the Mississauga over a million hectares of land between Lake Ontario and Lake Erie, which became known as the Between the Lakes Purchase (Surtees 1994:102). The Mississauga eventually relocated to the Grand River at New Credit in 1847.

1.2.3 European Settlement History

The study area is located in the historic township of Flamborough, which was first surveyed in 1791 by Augustus Jones following the purchase of the land from the Mississauga, although some lots had already been settled by United Empire Loyalists prior to that point (Winearls 1991:500; Page and Smith 1875:11). Flamborough was divided into East and West townships in 1854 and assigned to Wentworth County following a mid nineteenth century reorganization of the county system. West Flamborough township was notable for the presence of Spencer Creek, which provided power for a number of mills, and the settlement of Crook's Hollow became a major industrial centre in early nineteenth century. Following the establishment of the towns of Dundas and Hamilton, regional economic activity gradually concentrated in these areas and Crook's Hollow fell into decline. The township has remained as a low residential



density agricultural area since that point, and was amalgamated into the City of Hamilton in 2001.

1.2.4 Land Use History of Study Area

The study area is located on Lot 9, Concession 2 in the Geographic Township of West Flamborough, which was first granted to Angus McDonell in 1797, and who sold it to John Green in 1801. Mr. Green was a United Empire Loyalist from New Jersey who had arrived in the Niagara Peninsula in 1796 before moving to West Flamborough Township and becoming a prominent proponent of early regional industry with the establishment of several mills. The Green family owned the property for several decades, gradually selling off parcels. In 1843, a 50 acre parcel that included the current study area was sold to John Marble, who sold it to James Hamilton in 1845 and who subsequently sold it to Orlando Moxley in 1848. The 1851 census lists Orlando Moxley as an American farmer of German origin residing in a one storey log house, having cleared all of his available 50 acres for agriculture (Government of Canada 1853:29,93). The Moxley family is shown as owners of the study area in the 1859 Surtees map of Wentworth County, and subsequent agricultural censuses in 1861 and 1871 also record Orlando Moxley as the owner. Thomas Dunkin was granted a mortgage for the northern section of the study area in 1874, and is listed as the owner in the 1879 *Illustrated Historical Atlas of the County of Wentworth*. The study area remained in the Moxley family until 1887, when it was sold to Joseph Randell. Analysis of historic topographic maps indicate the study area remained as agricultural land throughout the twentieth century through to the present day.

1.2.5 Historic Plaques

As per Section 1, Standard 1.1 of the *Standards and Guidelines for Consultant Archaeologists*, Earthworks consulted local historical plaques in order to inform archaeological potential and assessment strategies. No local plaques were found which related to the history of the current study area.

1.3 Archaeological Context

1.3.1 Current Conditions

The study area consists of an agricultural field with a residential lot in the southern tip.



1.3.2 Natural Environment

The study area is situated within a till moraine of the Norfolk Sand Plain Physiographic Region, a sand and silt plain deposited as a delta in glacial Lakes Whittlesey and Warren and built up during the meltwater discharge of the Grand River as the glaciers withdrew (Chapman and Putnam 1984:154). Surficial geological mapping indicates the study area consists of glaciolacustrine sand, and the soil map of the region indicates the soil of the study area consists of Grimsby Sandy Loam, a water deposited medium and fine sand belonging to the Gray-Brown Podzolic Great Soil Group (Presant et al. 1965:31)

The nearest water source is a tributary of Spencer Creek, located approximately 98 metres east of the study area. Spencer Creek empties into Cootes Paradise, which drains into Lake Ontario approximately 8.5 kilometres southeast of the study area.

The study area is located within the Grimsby District of the Lake Ontario – Lake Erie Ecoregion, which itself is situated within the Mixedwood Plains Ecozone. This region encompasses 2,185,845 hectares, and contains a diverse array of flora and fauna. It is characterized by a mix of Carolinian forest remnants of tulip-tree, black gum, sycamore, Kentucky coffee-tree, pawpaw, various oaks and hickories, and common hackberry, in addition to the more widespread sugar maple, American beech, white ash, eastern hemlock, and eastern white pine:

Typical mammals inhabiting this ecoregion include white-tailed deer, northern raccoon, striped skunk, and the Virginia opossum which has increased its distribution and abundance since the latter half of the 20th century. Characteristic birds include green heron, Virginia rail, Cooper's hawk, eastern kingbird, willow flycatcher, brown thrasher, yellow warbler, common yellowthroat, northern cardinal, and savannah sparrow. Wild turkey has been re-introduced into the ecoregion. Herpetofauna, is diverse, including several provincially rare species (e.g., spiny softshell turtle), as well as more frequent species such as eastern red-backed salamander, American toad, eastern gartersnake, and Midland painted turtle. Longnose gar, channel catfish, smallmouth bass, yellow perch, walleye, northern hogsucker, banded killifish, and spottail shiner are among the fish species found in the lakes and rivers in this ecoregion.

Crins et al. 2009:52

1.3.3 Known Archaeological Sites

A search of registered archaeological sites within the MHSTCI Archaeological Sites Database was conducted. A total of 30 registered archaeological sites were located within one kilometre of the study area, and AhHa-176 located within 300 metres of the study area. A summary of archaeological sites is included in Table 2.



**Earthworks Archaeological Services Inc.
 Stage 3 Archaeological Assessment
 394 Old Brock Road
 Hamilton**

Table 2: Summary of Registered Archaeological Sites located within one kilometre of Study Area

Borden Number	Site Name	Time Period	Affinity	Site Type
Archaeological Sites Located within Boundary of Study Area				
AhGx-818		Pre-Contact	Aboriginal	scatter
AhGx-819		Archaic, Middle	Aboriginal	camp / campsite
AhGx-820		Archaic, Early	Aboriginal	findspot
AhGx-821		Pre-Contact	Aboriginal	scatter
AhGx-822		Pre-Contact	Aboriginal	scatter
AhGx-823		Pre-Contact	Aboriginal	scatter
AhGx-824		Archaic, Late	Aboriginal	findspot
Archaeological Sites Located within 300 metres of Study Area				
AhHa-176		Pre-Contact	Aboriginal	findspot
Remaining Archaeological Sites Located within 1 kilometre of Study Area				
AhGx-393	Greenworld	Pre-Contact	Aboriginal	findspot
AhGx-394		Pre-Contact	Aboriginal	Othercamp/campsite
AhGx-631		Pre-Contact	Aboriginal	findspot
AhGx-691	Coulson Site	Post-Contact		homestead
AhGx-692	AhGx-692-P2	Archaic, Late	Aboriginal	findspot
AhGx-693		Archaic, Middle, Woodland, Early		scatter
AhGx-694	AhGx-694-P4			



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Borden Number	Site Name	Time Period	Affinity	Site Type
AhGx-695	AhGx-695-P5	Woodland, Middle	Aboriginal	findspot
AhGx-696		Pre-Contact		scatter
AhGx-732		Post-Contact	Euro-Canadian	hamlet
AhGx-766	Location 1	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Unknown, scatter
AhGx-767	Location 2	Pre-Contact	Aboriginal	scatter
AhGx-768	Location 3	Pre-Contact	Aboriginal	scatter
AhGx-769	Location 6	Pre-Contact	Aboriginal	scatter
AhGx-770	Filman	Post-Contact	Euro-Canadian	farmstead
AhHa-122	Darnley Mill	Post-Contact	Euro-Canadian	mill
AhHa-175	John Green	Post-Contact	Euro-Canadian	cabin
AhHa-249	Ripani 1	Post-Contact	Euro-Canadian	residential
AhHa-250	Ripani 2	Archaic, Middle	Aboriginal	camp / campsite
AhHa-251	Ripani 4	Pre-Contact	Aboriginal	scatter
AhHa-252	Ripani 6	Pre-Contact	Aboriginal	camp / campsite
AhHa-253	Ripani 8	Archaic, Early	Aboriginal	scatter



1.3.4 Previous Archaeological Assessments

The study area was subject to a Stage 1 & 2 archaeological assessment by Earthworks in 2021 under PIF #: P321-0262-2021. A combined Stage 2 pedestrian and test pit survey was undertaken, resulting in the identification of 13 Pre-Contact Indigenous archaeological site locations. Archaeological sites AhGx-819 and AhGx-820 were recommended for a Stage 3 archaeological assessment. The recommendations are cited in full below:

The Stage 3 site-specific assessments of AhGx-819 and AhGx-820 will consist of the excavation of one metre test units placed on a 5 metre grid established over the sites, and based on a permanent datum to at least the accuracy of transit and tape measurements. Placing test units in unmeasured, estimated locations will not be acceptable. Additional test units, amounting to 20% of the grid unit total will be placed and excavated, focusing on areas of interest within the site extent.

Test units will be excavated by hand, in systematic levels into the first 5 centimetres of the subsoil layer, unless excavation uncovers a cultural feature. If test excavation uncovers a feature, the feature's plan will be recorded, and geotextile fabric will be placed over the unit floor prior to backfilling the test unit.

All excavated soil will be screened through mesh with an aperture of no greater than 6 millimetres, and all artifacts will be collected and recorded according to their corresponding grid unit designation. As per Section 3.2.2 Standard 7 of the Standards and Guidelines for Consultant Archaeologists, 20% of the total number of units required for AhGx-820 will need to be screened through wire mesh of 3 millimetre width.

(Earthworks 2021:19)

1.3.5 Adjacent Archaeological Assessments

The lot immediately to the west was subject to a number of archaeological assessments as part of a development of an estate subdivision. It was subject to a Stage 2 archaeological survey in 1997 by Material Culture Management Inc. under PIF #:97-052, who identified 15 isolated find spots and two historic Euro-Canadian scatters. The first scatter was considered late historic and not recommended for further assessment. The second site was registered as the John Green Site (AhHa-175) and identified as a mid-nineteenth century homestead and recommended for additional assessment (MCMI 1997:7).

In July 2014 a Controlled Surface Plot (CSP) was conducted at the John Green Site (AhHa-175) site by New Directions Archaeology Ltd Under PIF #: P018-0682-2014. This resulted in the recovery of 191 artifacts from 113 locations across the site. The surface area of AhHa-175 was



Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton

measured as 35m north-south by 75m east-west. The artifacts recovered were dominated by foodways artifacts - mainly ceramics but also a small amount of architectural debris such as glass and brick, one piece of mammal bone and a small number of clay pipe fragments.

Ceramics included fine earthenware, porcelain, refined white earthenware (RWE), vitrified white earthenware, coarse or red earthenware, stoneware and yellow ware. Decorative patterns on RWE included: edged, impressed, painted in early and late palettes, sponged and transfer printed in blue black, red and violet (NDA 2014).

In April 2015, a test unit excavation of the John Green Site (AhHa-175) site was conducted by Detritus Consulting Ltd. Under PIF #: P017-0362-2015 A total of 16 grid units were excavated at 10 metre intervals across the surface scatter, with an additional 10 units excavated in areas of interest as infill. These excavations resulted in the recovery of 517 historic Euro-Canadian artifacts and was dominated by refined white earthenware. An analysis of the artifacts from the site yielded a date of 1852, and there was sufficient cultural heritage value and interest to recommend for Stage 4 mitigation (Detritus Consulting 2015:23-24)

In June and July of 2015, a Stage 4 mitigation of the John Green Site (AhHa-175) was undertaken by Earthworks under PIF #: P310-0080-2015. A total of 35 units were block excavated, followed by mechanical topsoil removal. A total of 2254 artifacts were recovered, and 4 subsurface cultural features were identified, recorded and excavated. Excavations resulted in the conclusion that the John Green Site (AhHa-175) was associated with a structure documented in the 1875 *Illustrated Historical Atlas of Wentworth County* and owned by Frances Morden, with the artifact date range suggesting a log cabin that dated to the 1840s (Earthworks 2015).



2.0 Field Methods

The Stage 3 archaeological assessments of AhGx-819, and AhGx-820 were conducted between November 5 and November 11, 2021 under professional license P1037, issued to Michael Golloher, M.Sc. Table 3 provides a summary of Stage 3 field work conducted. The weather at the time was a mix of sun and cloud and warm. At no time were weather or lighting conditions detrimental to the observation or recovery of archaeological material. Test unit excavation followed the recommendations of the Stage 2 report cited in Section 1.3.4.

Table 3: Summary of Archaeological Fieldwork Dates

Date of Stage 3 Test Unit Excavation	PIF Number	Site
November 5, 2021	P1037-0085-2021	AhGx-820
November 9, 2021	P1037-0091-2021	AhGx-819
November 10, 2021	P1037-0091-2021	AhGx-819
November 11, 2021	P1037-0091-2021	AhGx-819

2.1 AhGx-819

Following the relocation of the surface scatter using GPS coordinates, permanent datum points were established for AhGx-819, oriented along the western boundary of the site area.

A network of five by five metre grid blocks were established across the extent of the site as determined by the extent of the surface scatter. The grid squares are referred to by the intersection coordinates of their southwest corner. Each five metre block was further subdivided into 25 one metre sub-squares and labelled sub-square 1 to 25 based on their position in relation to the southwest corner of the block. GPS UTM coordinates were recorded employing the North American Datum 83 using a Trimble Catalyst GPS unit with a sub-precision RTK subscription that allowed for a stated accuracy of 1-2 centimetres.

A total of 15 test units were placed and excavated across the site at a 10 metre interval based on the datum points (Images 1 and 2). Preliminary analysis of the recovered artifacts clearly indicated that the level of cultural heritage value or interest of the site would result in a recommendation to proceed to Stage 4 mitigation. As a result, the field work strategy was altered to follow the appropriate test unit excavation strategy in Table 3.1 of the *Standards and Guidelines for Consultant Archaeologists*, and an additional nine test units, amounting to more than 40% of the grid unit total, were placed within the areas of interest or high artifact concentration

Each unit was excavated by hand, into the first five centimetres of subsoil (Images 3 and 4). Depth varied from 20-48 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of six millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown clay topsoil horizon overlaying a reddish clay subsoil

The results of the Stage 3 archaeological assessment of AhGx-819 are presented in Map 2.



2.2 AhGx-820

Following the relocation of the surface scatter using GPS coordinates, permanent datum points were established for AhGx-820, oriented along the western boundary of the site area.

A network of five by five metre grid blocks were established across the extent of the site as determined by the extent of the surface scatter. The grid squares are referred to by the intersection coordinates of their southwest corner. Each five metre block was further subdivided into 25 one metre sub-squares and labelled sub-square 1 to 25 based on their position in relation to the southwest corner of the block. GPS UTM coordinates were recorded employing the North American Datum 83 using a Trimble Catalyst GPS unit with a sub-precision RTK subscription that allowed for a stated accuracy of 1-2 centimetres.

A total of six test units were placed and excavated across the site at a 5 metre interval based on the datum points (Images 5 and 6). An additional two test units, amounting to more than 20% of the grid unit total, were placed within the areas of interest or high artifact concentration

Each unit was excavated by hand, into the first five centimetres of subsoil (Images 7 and 8). Depth varied from 27-35 centimetres. Each unit was examined for stratigraphy, cultural features, or evidence of fill, and all soil was screened through wire mesh of 6 millimetre width. As per Section 3.2.2 Standard 7 of the *Standards and Guidelines for Consultant Archaeologists*, one unit, amounting to 10% of the total number of units, was screened through wire mesh of three millimetre width. All artifacts were retained and recorded by the corresponding grid unit designation. The soil stratigraphy consisted of a silty brown loam topsoil horizon overlaying an orange loam subsoil.

The results of the Stage 3 archaeological assessment of AhGx-820 are presented in Map 3.



3.0 Record of Finds

Table 4 provides an inventory of the documentary record generated in the field.

Table 4: Information Inventory of Documentary Record

Document	Location	Description
Field Notes	Earthworks Office Project File	2 pages of notes
Photographs	Earthworks Office Project File	28 digital photographs,
Field Map	Earthworks Office Project File	2 pages
UTM Coordinates	Earthworks Office Digital File	4 Coordinates in excel file

The recovered artifacts were washed, catalogued, and analyzed and are currently stored in one banker's box, measuring 40.0 x 31.5 x 25 centimetres at the Earthworks Corporate Storage Unit. The artifacts and documents will be stored by Earthworks until arrangements can be made to transfer them to an MHSTCI approved storage facility.

The Parks Canada's *Database Artifact Inventory Guide* was used as a template during the cataloguing phase of artifact analysis and was modified accordingly. This guide classifies artifacts according to specific functional classes, subgroups, and types. Classes are intended to reflect related behaviour and general function-related activities. For example, Classes used include "Foodways" and include artifacts related to all aspects of food preparation, storage and consumption. Likewise, the "Architectural" class is a catch-all category for items such as brick, nails, window glass, etc. These Classes are further subdivided into Groups reflecting more specialized activities. The "Architectural" class, for example, includes groups such as construction materials, nails and window glass. Groups are then further refined into "Types", defined by attributes that are either functionally or temporally diagnostic, and so on. By classifying archaeological material in this manner, general trends can be discerned concerning on how an area was used in the past. Lithic analysis was modelled on established morphological classification systems (Andrefsky 2005; Fisher 1989), and lithic material types were identified through the use of a low-powered stereo microscope at 40 times magnification in conjunction with macroscopic analysis. A sample of artifacts recovered from the Stage 2 survey are presented in Images 9 and 10.



3.1 Terms of Reference

This section provides definitions of the artifact terms utilized in the site artifact catalogues and descriptions.

3.1.1 *Lithic Artifact Categories*

Informal Lithic Tool: Improvised tools manufactured from expedient lithic material. Includes utilized flakes, wedges, flake burins, spurs, cores, non-diagnostic bifaces and unifaces etc.

Lithic Debitage: Represents the waste material that is discarded during the manufacture of lithic tools such as projectile points or bifaces, and can be divided into subcategories based on the lithic reduction stage:

Tertiary Flakes: representing a switch from decortication to biface thinning, these flakes are represented by small striking platforms at a 90 degree angle, with no cortex present and a large amount of dorsal scarring.

Biface thinning flakes are smaller and much thinner than initial tertiary flakes, the main difference being the acute angle of the striking platform, which can be between 40 and 60 degrees.

Flake Fragment: this is assigned to a piece of debitage that does not contain the proximal end of the flake and is missing the striking platform.

Shatter: usually consists of thick, blocky pieces of chert which lack striking platforms and ventral flake surface attributes.

3.1.2 *Lithic Material Types*

Ancaster chert: a moderate quality chert that outcrops from the Lockport Formation near Hamilton, with secondary deposits found as far east as Grimsby (Eley and von Bitter 1989).

Haldimand chert: a relatively high quality chert found within the Bois Blanc Formation which is located underneath the Onondaga Escarpment between Dunnville and Hagersville (Eley and von Bitter 1989; Fox 2009; Telford and Tarrant 1975).

Onondaga chert: a high quality chert that forms part of the Onondaga Formation, and outcrops along the north shore of Lake Erie and along the Onondaga Escarpment between Cayuga and Hagersville (Telford and Tarrant 1975). This material can also be recovered from secondary, glacial deposits across much of southwestern Ontario (Eley and von Bitter 1989; Fox 2009:361-362).



3.2 AhGx-819

The Stage 3 assessment of AhGx-819 resulted in the recovery of 216 Pre-Contact Indigenous artifacts and one faunal element from test unit excavations. Table 5 provides a summary of artifacts recovered

Table 5: Summary of Artifacts recovered from AhGx-819

Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	%	
Indigenous	Informal Lithic Tool	<i>Core</i>	Ancaster Chert	1	0.46	
		<i>Utilized Flake</i>	Onondaga Chert	1	0.46	
	Subtotal				2	0.92
	Lithic Debitage	<i>Tertiary Flake</i>	Ancaster Chert	18	8.29	
			Burnt Ancaster Chert	1	0.46	
		<i>Biface Thinning Flake</i>	Onondaga Chert	8	3.69	
			Ancaster Chert	6	2.76	
		<i>Shatter</i>	Ancaster Chert	1	0.46	
		<i>Flake Fragment</i>	Onondaga Chert	14	6.45	
			Burnt Onondaga Chert	2	0.92	
			Ancaster Chert	162	74.65	
			Burnt Ancaster Chert	1	0.46	
	<i>Flake Fragment</i>	Haldimand Chert	1	0.46		
	Subtotal				214	98.62
	TOTAL				221	101.84
Faunal	Bone	<i>Mammalian, Long Bone Fragment</i>		1	0.46	
TOTAL				1	0.46	
GRAND TOTAL				217	100.00	

3.3 AhGx-820

The Stage 3 assessment of AhGx-820 resulted in the recovery of 23 Pre-Contact Indigenous artifacts. Table 6 provides a summary of artifacts recovered

Table 6: Summary of Artifacts recovered from AhGx-820

Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	%
Indigenous	Lithic Debitage	<i>Tertiary Flake</i>	Ancaster Chert	2	8.70
		<i>Biface Thinning Flake</i>	Onondaga Chert	1	4.35
		<i>Flake Fragment</i>	Onondaga Chert	2	8.70
			Ancaster Chert	18	78.26
	Subtotal				23
TOTAL				23	100.00



3.4 Artifact Catalogues

Table 7: AhGx-819 Stage 3 Artifact Catalogue

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
1	315	495	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	8	
2	315	495	1	1	0-18	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
3	325	500	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
4	325	500	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	9	
5	325	500	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
6	320	510	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
7	320	510	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
8	300	500	1	1	0-15	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
9	300	500	1	1	0-15	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
10	310	510	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
11	310	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
12	310	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
13	315	490	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	12	
14	315	490	1	1	0-23	Indigenous	Lithic Debitage	Tertiary Flake	Burnt Ancaster Chert	1	
15	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	10	
16	320	495	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
17	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Burnt Onondaga Chert	1	
18	320	495	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	2	
19	330	500	1	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
20	330	500	1	1	0-24	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
21	330	500	1	1	0-24	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
22	325	505	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
23	320	490	1	1	0-21	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	



Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
24	320	490	1	1	0-21	Indigenous	Informal Lithic Tool	Core	Ancaster Chert	1	exhausted
25	320	490	1	1	0-21	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	3	
26	320	490	1	1	0-21	Indigenous	Informal Lithic Tool	Utilized Flake	Onondaga Chert	1	
27	320	490	1	1	0-21	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
28	310	480	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
29	310	480	1	1	0-25	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
30	310	480	1	1	0-25	Indigenous	Lithic Debitage	Shatter	Ancaster Chert	1	
31	320	500	1	1	0-20	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	4	
32	320	500	1	1	0-20	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
33	320	500	1	1	0-20	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	
34	320	500	1	1	0-20	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
35	300	510	1	1	0-18	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
36	300	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
37	300	510	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
38	310	490	1	1	0-43	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
39	310	490	1	1	0-43	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
40	310	490	1	1	0-43	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
41	315	485	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
42	315	485	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Haldimand Chert	1	
43	300	490	1	1	0-22	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
44	330	480	1	1	0-19	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	4	
45	330	480	1	1	0-19	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
46	330	480	1	1	0-19	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
47	330	480	1	1	0-19	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
48	320	480	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
49	320	505	1	1	0-18	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	18	
50	330	510	1	1	0-25	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
51	330	510	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Ancaster Chert	1	
52	330	510	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Burnt Onondaga Chert	1	
53	330	510	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
54	325	495	1	1	0-23	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	2	
55	325	495	1	1	0-23	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	2	
56	325	495	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	2	
57	325	495	1	1	0-23	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	18	
58	325	495	1	1	0-23	Faunal	Bone	Mammalian, Long Bone Fragment		1	extremely weathered
59	330	490	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	2	
60	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Burnt Ancaster Chert	1	
61	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	3	
62	325	490	1	1	0-17	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	10	
63	310	500	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
64	310	500	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	



**Earthworks Archaeological Services Inc.
Stage 3 Archaeological Assessment
394 Old Brock Road
Hamilton**

Table 8: AhGh-820 Stage 3 Artifact Catalogue

Cat. #	Easting	Northing	Sub-unit	Context (TS/SS/LOT)	Depth (cm)	Artifact Class	Artifact Group	Artifact Type	Lithic Material Type	Freq.	Comment
1	300	500	13	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
2	300	500	13	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	3	
3	300	500	13	1	0-24	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
4	305	505	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Onondaga Chert	1	
5	305	505	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
6	305	500	13	1	0-29	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	6	
7	310	500	1	1	0-22	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
8	310	500	1	1	0-22	Indigenous	Lithic Debitage	Tertiary Flake	Ancaster Chert	1	
9	310	505	1	1	0-25	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	
10	310	505	1	1	0-25	Indigenous	Lithic Debitage	Biface Thinning Flake	Onondaga Chert	1	
11	300	500	1	1	0-24	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	5	
12	305	500	1	1	0-30	Indigenous	Lithic Debitage	Flake Fragment	Ancaster Chert	1	



4.0 Analysis and Conclusions

4.1 AhGx-819

AhGx-819 consists of a diffuse scatter of lithic tools and debitage and indicates the presence of a small Middle Archaic campsite dating to between 7000 and 6500 B.P., based on the recovery of a Kirk Stemmed projectile point during the Stage 2 assessment of the study area (Ellis et al. 1990:81). Similar small campsites dating to the Middle Archaic have been identified on neighbouring properties, indicating a repeated occupation and use of the surrounding landscape (Earthworks 2016, 2017). The presence of informal lithic tools lithic debitage suggests a diverse array of activities took place at the site, including resource processing lithic reduction and lithic retouch activities. Additionally, the recovery of Ancaster, Onondaga, and Haldimand cherts indicates a relatively local occupation with a limited range of mobility and resource exploitation. Based on the recovered Pre-Contact Indigenous archaeological material, it is determined that AhGx-819 contains further cultural heritage value or interest. As a result, a Stage 4 archaeological mitigation is required.

4.2 AhGx-820

The Stage 3 archaeological assessment of AhGx-820 resulted in the recovery of lithic debitage associated with a potential campsite dating to the Early Archaic period circa 8900-8000 B.P. based on the recovery of a Bifurcate projectile point during the Stage 2 assessment of the study area (Ellis et al. 1990:78; Justice 1995:91). A similar projectile point was recovered during excavations at Ripani 2 (AhHa-250) on a neighbouring property, indicating the region was extensively utilized by early Indigenous inhabitants. The presence of lithic debitage suggests a diverse array of activities took place at the site, including lithic reduction and lithic retouch activities. Consultation of Section 3.4 of the *Standards and Guidelines for Consultant Archaeologists* indicates that AhGx-820 does not meet the criteria for additional cultural heritage value or interest, and no additional archaeological assessments are required.



5.0 Recommendations

Based on the results of the Stage 3 archaeological assessment, the study area contains an archaeological site that has further cultural heritage value and interest. Therefore, a Stage 4 site specific archaeological mitigation is recommended AhGx-819.

The preferred method of Stage 4 mitigation is through avoidance and protection. Discussions with the proponent determined that the area is not integral to development and can be avoided. As a result, Stage 4 mitigation by avoidance and protection for AhGx-819 is recommended.

The protected area will consist of the site location and an associated 10 metre buffer. If grading or other soil disturbing activities caused by the development project extent to the edge of the area to be avoided, the proponent must erect a temporary barrier around the area to be avoided, and “no go” instructions will be issued to all on-site construction crews, engineers, architects or others involved in the day-to-day decisions during construction. The location of the area to be avoided will be shown on all contract drawings, and will include explicit instructions to avoid that area.

During grading and other soil disturbing activities, the area to be avoided must be inspected and monitored by a licensed archaeologist to verify the effectiveness of the avoidance strategies. If alteration of the archaeological site is observed at any time during construction, the Ministry of Heritage, Sport, Tourism and Culture Industries must be notified immediately.

After completion of the grading and other soil disturbing activities, the protected area must be inspected, and a report will be required to be submitted to the Ministry on the effectiveness of the strategy in ensuring the area to be avoided remains intact.

No additional archaeological assessments are recommended for AhGx-820.

The MHSTCI is requested to review this report and provide a letter indicating their satisfaction that the fieldwork and reporting for this archaeological assessment are consistent with the Ministry’s 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.



6.0 Advice on Compliance with Legislation

This report is submitted to the Ministry of Heritage Sport Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage Sport Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.



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8.0 Images



Image 1: AhGx-819 Stage 3 Test Unit Excavation in Progress. Facing Southeast.



Image 2: AhGx-819 Stage 3 Test Unit Excavation in Progress. Facing Southeast.





Image 3: AhGx-819 Stage 3 Test Unit Stratigraphy. Facing Grid North.



Image 4: AhGx-819 Stage 3 Test Unit Stratigraphy. Facing Grid East.





Image 5: AhGx-820 Stage 3 Test Unit Excavation in Progress. Facing Southwest.



Image 6: AhGx-820 Stage 3 Test Unit Excavation in Progress. Facing Northwest.





Image 7: AhGx-820 Stage 3 Test Unit Stratigraphy. Facing Grid West.



Image 8 AhGx-820 Stage 3 Test Unit Stratigraphy. Facing Grid North.



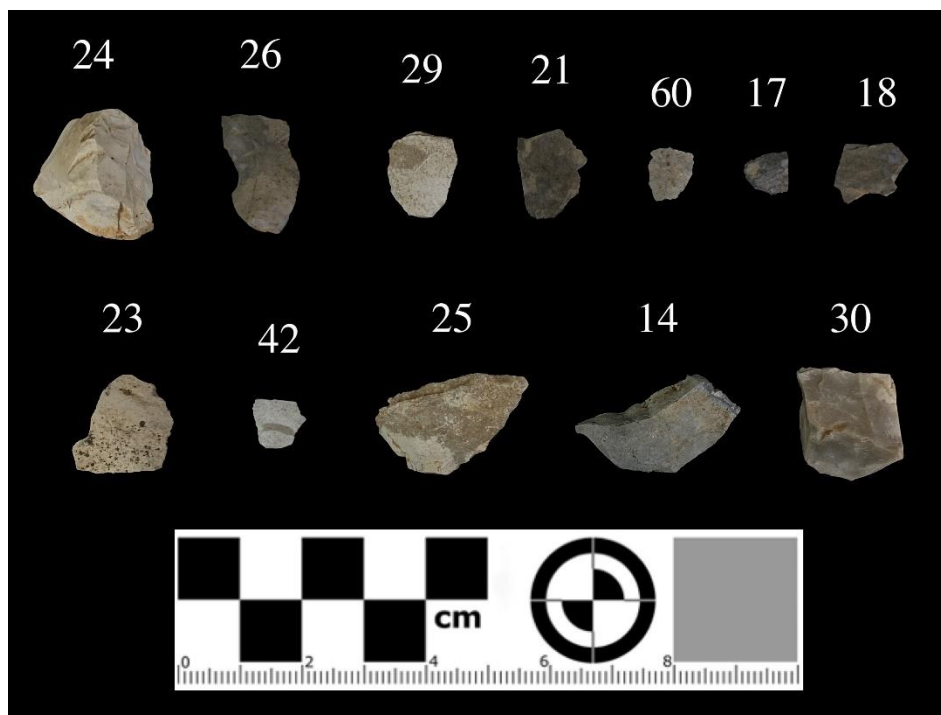


Image 9: Sample of Artifacts recovered from AhGx-819.

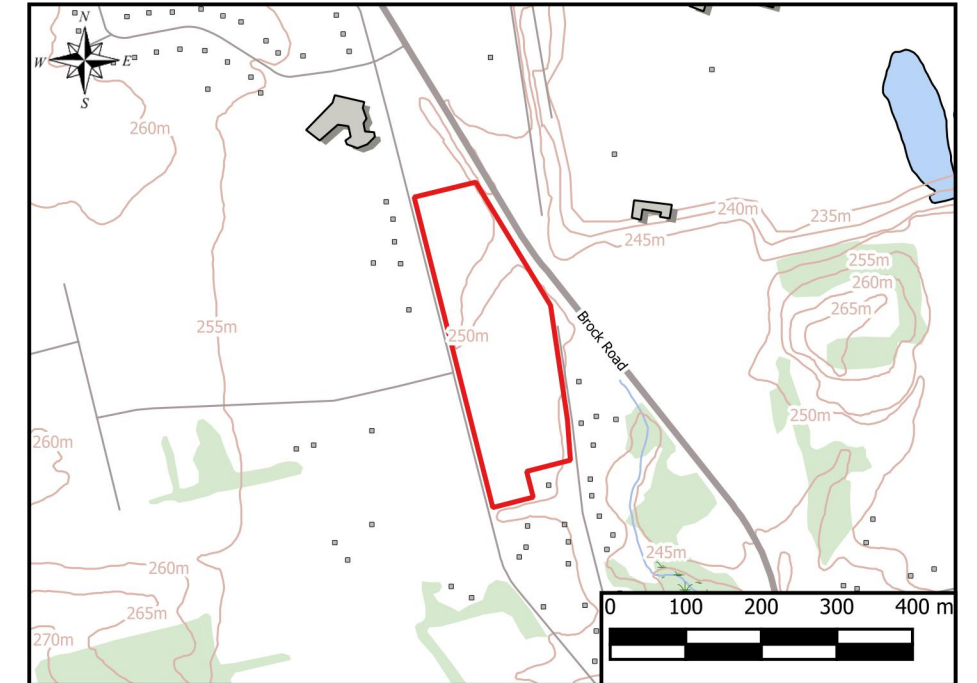
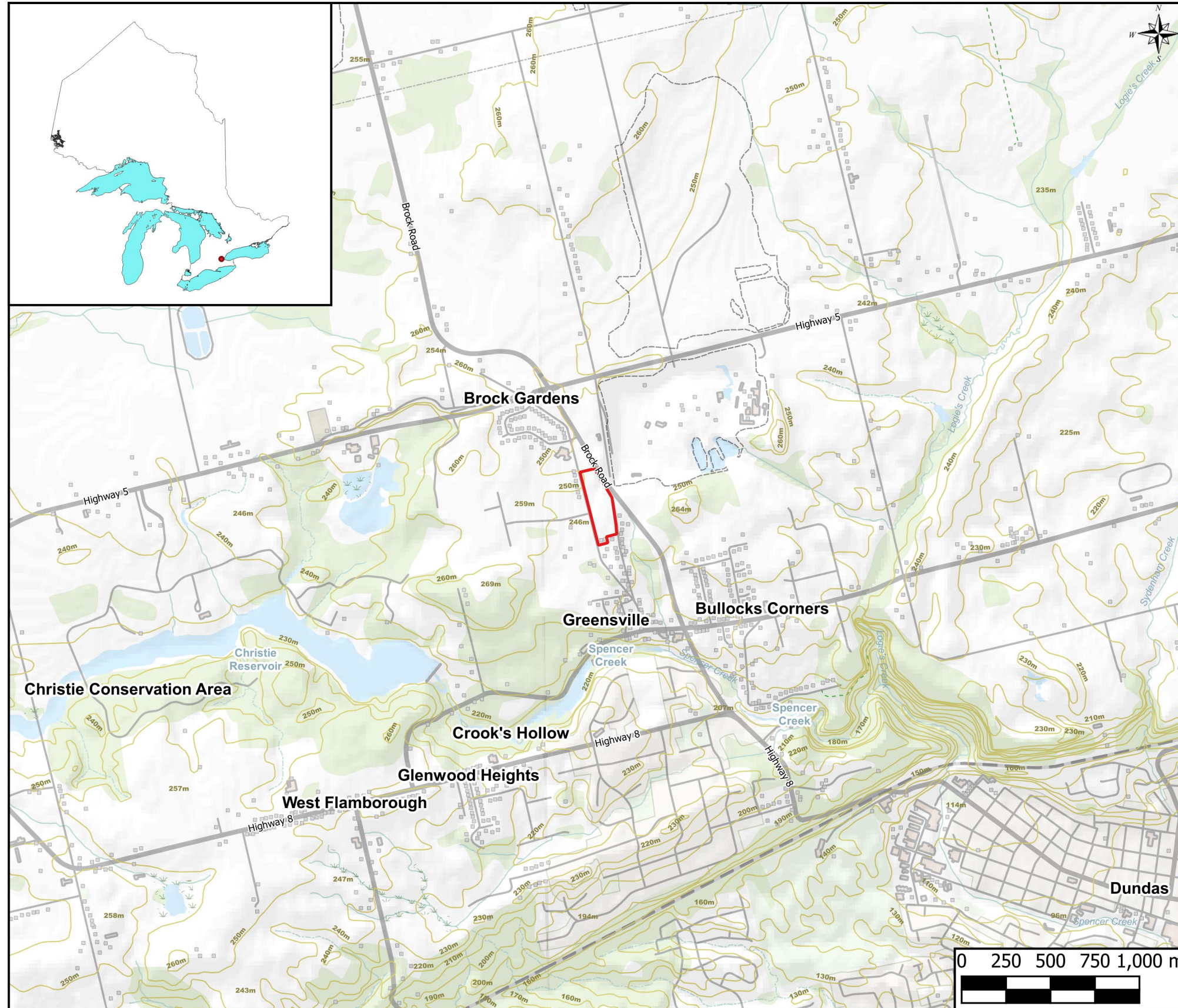


Image 10: Sample of Artifacts recovered from AhGx-820.



9.0 Maps



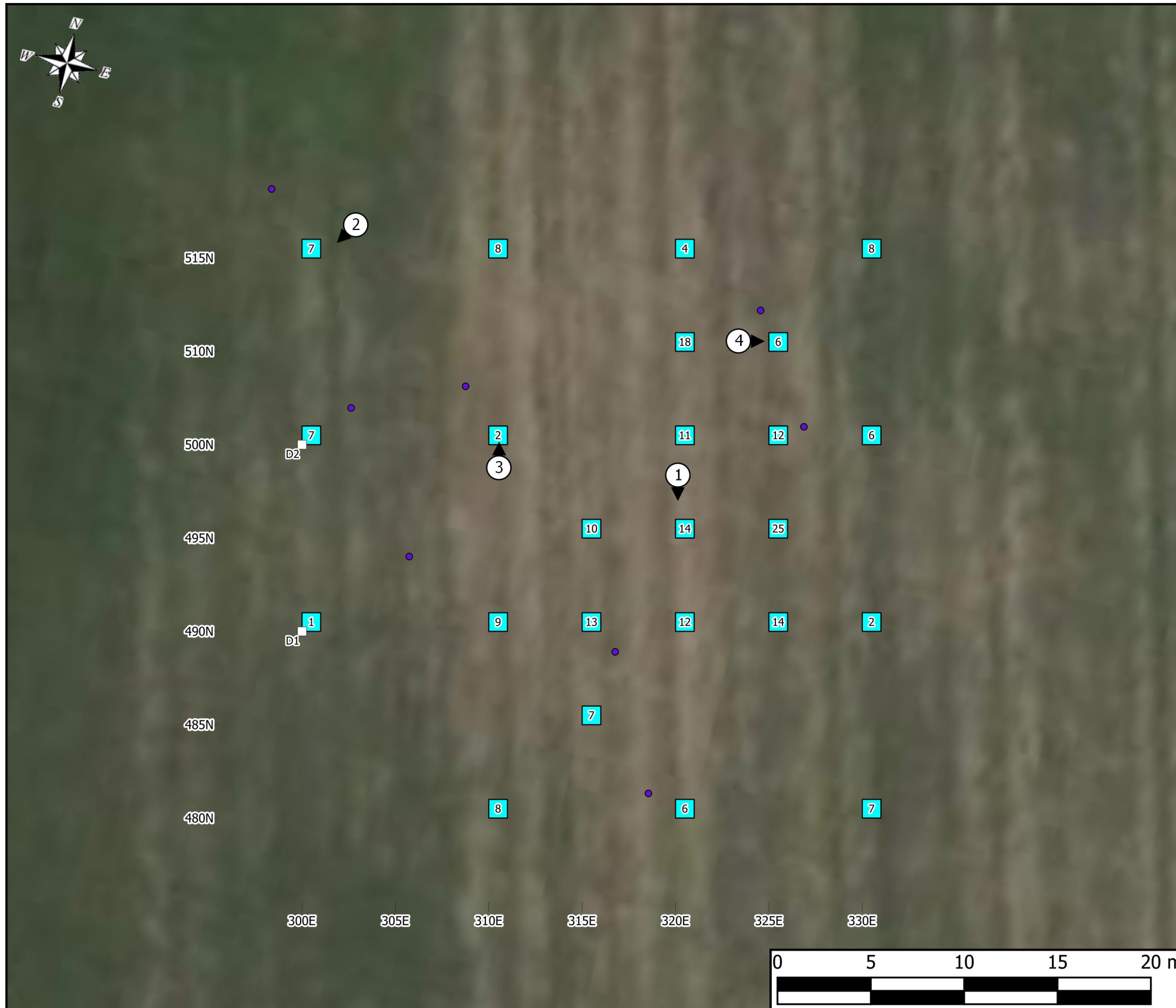


Legend

 Study Area

Reference:
 Canvec Data. Scale 1:50000
 Ontario Basic Mapping. Scale 1:10000
 Esri Basemap

Map 1: Regional Map

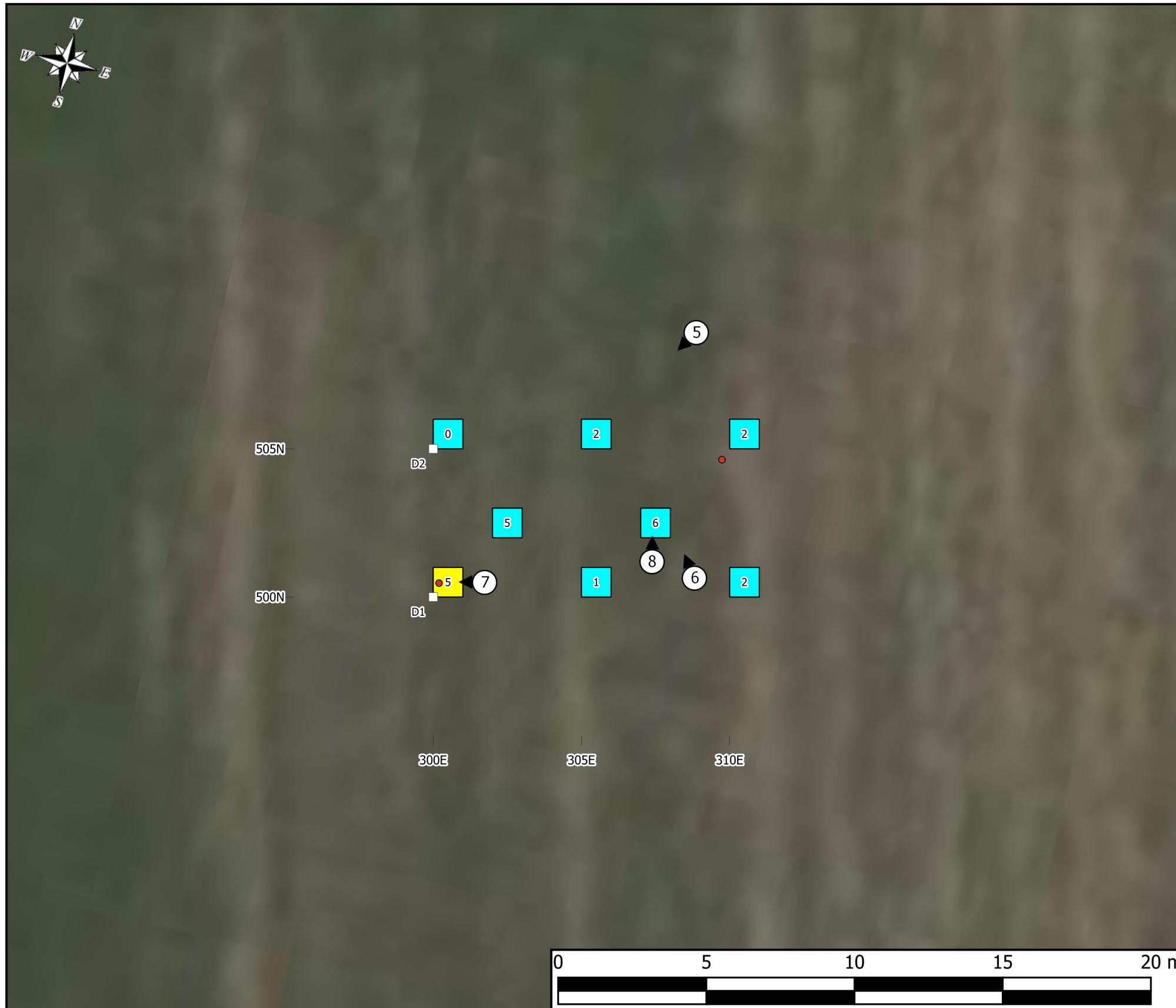


Legend

- Grid Datums
- Stage 3 Test Unit
- Stage 2 Surface Artifact
- ⊙ # Photo Location and Direction

Reference:
Esri Basemap

Map 2: AhGx-819 Stage 3 Assessment Results



Legend

- Grid Datums
- Stage 2 Surface Artifact
- Stage 3 Test Unit
- Stage 3 Test Unit - 3 millimetre Mesh Screening
- ⊙ Photo Location and Direction

Reference:
Esri Basemap

Map 3: AhGx-820 Stage 3 Assessment Results



Hamilton

Committee of Adjustment

City Hall, 5th Floor,
71 Main St. W.,
Hamilton, ON L8P4Y5

Phone: (905) 546-2424 ext. 4221

Email: cofa@hamilton.ca

APPLICATION FOR A MINOR VARIANCE

FOR OFFICE USE ONLY.	
APPLICATION NO. _____	DATE APPLICATION RECEIVED _____
PAID _____	DATE APPLICATION DEEMED COMPLETE _____
SECRETARY'S SIGNATURE _____	

The Planning Act

Application for Minor Variance or for Permission

The undersigned hereby applies to the Committee of Adjustment for the City of Hamilton under Section 45 of the *Planning Act*, R.S.O. 1990, Chapter P.13 for relief, as described in this application, from the Zoning By-law.

1, 2	NAME	MAILING ADDRESS	
Registered Owners(s)	Tracy Kowalchuk		
Applicant(s)*	Urban in Mind c/o Terrance Glover		
Agent or Solicitor			Phone:
			E-mail:

Note: Unless otherwise requested all communications will be sent to the agent, if any.

3. Names and addresses of any mortgagees, holders of charges or other encumbrances:

Additional sheets can be submitted if there is not sufficient room to answer the following questions. Additional sheets must be clearly labelled

4. Nature and extent of relief applied for:

Reduction to minimum lot area and an increase to maximum lot coverage.

Second Dwelling Unit Reconstruction of Existing Dwelling

5. Why it is not possible to comply with the provisions of the By-law?

The current zoning will not facilitate the proposed development.

6. Legal description and Address of subject lands (registered plan number and lot number or other legal description and where applicable, **street and street number**):

394 Old Brock Road, Flamborough
Lot 9 Concession 2

7. PREVIOUS USE OF PROPERTY

Residential Industrial Commercial

Agricultural Vacant

Other _____

8.1 If Industrial or Commercial, specify use _____

8.2 Has the grading of the subject land been changed by adding earth or other material, i.e. has filling occurred?

Yes No Unknown

8.3 Has a gas station been located on the subject land or adjacent lands at any time?

Yes No Unknown

8.4 Has there been petroleum or other fuel stored on the subject land or adjacent lands?

Yes No Unknown

8.5 Are there or have there ever been underground storage tanks or buried waste on the subject land or adjacent lands?

Yes No Unknown

8.6 Have the lands or adjacent lands ever been used as an agricultural operation where cyanide products may have been used as pesticides and/or sewage sludge was applied to the lands?

Yes No Unknown

8.7 Have the lands or adjacent lands ever been used as a weapon firing range?

Yes No Unknown

8.8 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

8.9 If there are existing or previously existing buildings, are there any building materials remaining on site which are potentially hazardous to public health (eg. asbestos, PCB's)?

Yes No Unknown

8.10 Is there any reason to believe the subject land may have been contaminated by former uses on the site or adjacent sites?

Yes No Unknown

8.11 What information did you use to determine the answers to 8.1 to 8.10 above?

Based on historic aerial images of the site and discussions with property owner.

8.12 If previous use of property is industrial or commercial or if YES to any of 8.2 to 8.10, 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

9. **ACKNOWLEDGEMENT CLAUSE**

I acknowledge that the City of Hamilton is not responsible for the identification and remediation of contamination on the property which is the subject of this Application – by reason of its approval to this Application.

June 8th, 2022

Date

Tracy Kowalchuk

Signature Property Owner(s)

Tracy Kowalchuk

Print Name of Owner(s)

10. Dimensions of lands affected:

Frontage	<u>423.5 m</u>
Depth	<u>N/A</u>
Area	<u>48,710.45 sq.m (without proposed road widenings)</u>
Width of street	<u>15.24 m (current)</u>

11. Particulars of all buildings and structures on or proposed for the subject lands: (Specify ground floor area, gross floor area, number of stories, width, length, height, etc.)

Existing:

Single detached dwelling (no changes requested)

Proposed

Proposed severance which will result in the creation of two lots (one severed and one retained).

12. Location of all buildings and structures on or proposed for the subject lands; (Specify distance from side, rear and front lot lines)

Existing:

Single detached dwelling is located on the retained lot and will not be changed or impacted.

Proposed:

The severed lot will eventually be used for rural residential purposes (i.e., single-detached dwelling).

13. Date of acquisition of subject lands:

14. Date of construction of all buildings and structures on subject lands:

15. Existing uses of the subject property (single family, duplex, retail, factory etc.):
Single-detached dwelling
16. Existing uses of abutting properties (single family, duplex, retail, factory etc.):

17. Length of time the existing uses of the subject property have continued:

18. Municipal services available: (check the appropriate space or spaces)
Water Private _____ Connected _____
Sanitary Sewer Private _____ Connected _____
Storm Sewers Private _____
19. Present Official Plan/Secondary Plan provisions applying to the land:
Hamlets (Rural Settlement Area), Greensville Secondary Plan
20. Present Restricted Area By-law (Zoning By-law) provisions applying to the land:
R2-14-H
21. Has the owner previously applied for relief in respect of the subject property? (Zoning By-law Amendment or Minor Variance)
 Yes No
- If yes, please provide the file number:

- 21.1 If a site-specific zoning by-law amendment has been received for the subject property, has the two-year anniversary of the by-law being passed expired?
 Yes No
- 21.2 If the answer is no, the decision of Council, or Director of Planning and Chief Planner that the application for Minor Variance is allowed must be included. Failure to do so may result in an application not being "received" for processing.
22. Is the subject property the subject of a current application for consent under Section 53 of the *Planning Act*?
 Yes No
23. Additional Information (please include separate sheet if needed)
See Planning Justification Report.
24. The applicant shall attach to each copy of this application a plan showing the dimensions of the subject lands and of all abutting lands and showing the location, size and type of all buildings and structures on the subject and abutting lands, and where required by the Committee of Adjustment such plan shall be signed by an Ontario Land Surveyor.