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#### **Consulting Engineers**

154 Colonnade Road South Ottawa, Ontario Canada, K2E 7J5 Tel: (613) 226-7381 Fax: (613) 226-6344

September 22, 2017 File: PE4106-LET.01

**Reichmann Seniors Housing Development Corporation** 

22 St. Clair Avenue East, Suite 1200 Toronto, Ontario M4T 2S3

Attention: Ms. Victoria Lucas

Subject: Phase I Environmental Site Assessment Update

412 Sparks Street Ottawa, Ontario

Dear Ms. Lucas,

Geotechnical Engineering Environmental Engineering Hydrogeology Geological Engineering Materials Testing Building Science Archaeological Studies

www.patersongroup.ca

Further to your request, Paterson Group (Paterson) conducted a Phase I Environmental Site Assessment (ESA) Update for the aforementioned property. This report updates a Phase I prepared by DST Consulting Engineers, dated August 19, 2010, and is intended to meet the requirements for a Phase I ESA as per the MOECC standard O.Reg. 153/04 as amended by O.Reg. 269/11. It should be noted that the previous reports covered a larger parcel of land than the current site area. This report is to be read in conjunction with the previous reports.

#### Site Information

The subject site is located on the south side of Sparks Street, approximately 55 m west of Bay Street, in the City of Ottawa, Ontario. The subject site is approximately at grade with Sparks Street. The subject site is relatively flat, with regional topography sloping downward to the north and north west. The subject site is used for parking, is finished with gravel and has no permanent building structures. Site drainage primarily consists of infiltration and sheet flow to catch basins along Sparks Street, although one (1) catch basin was noted on the subject site. The configuration of the subject site is shown on Drawing PE4106-1 - Site Plan, appended to this report.

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#### **Records Review**

#### Phase I ESA Study Area Determination

A radius of approximately 250 m was determined to be appropriate as a Phase I ESA study area for this assignment. Properties outside the 250 m radius are not considered to have the potential to impact the subject site, based on their separation distance.

#### **First Developed Use Determination**

According to the Title Search completed by DST, the site has been registered to the Christ Church Cathedral (Episcopal Church) since 1834. The subject site is depicted in the 1878 fire insurance plan (FIP) as having two (2) residences (formerly addressed 446 and 448 Sparks Street) and is first listed in the city directories as a residence in 1885/86. For the purposes of this report, the first developed use of the subject land is considered to have been for residential purposes.

#### **Previous Environmental Reports**

'Phase I Environmental Site Assessment, Christ Church Cathedral Site, Ottawa, Ontario', prepared by DST Consulting Engineers Inc. dated August 19, 2010. Note that this report included the current subject site, as well as, 439, 441, 443 and 445 Queen Street, and 71 Bronson Avenue, all lands west of the subject property.

The historical research indicated that the subject site has belonged to Christ Church Cathedral since 1834 and that the property has been primarily used for residential purposes for the majority of that time. Information was requested from the MOECC, TSSA and Environment Canada regarding any environmental concerns with respect to the subject site. Responses from these entities indicated that no environmental records exist for the subject site. An EcoLog ERIS report was also obtained for the subject site and a surrounding radius area of 250 m, and also determined no environmental records exist for the subject site. The ERIS report identified ninety-seven (97) environmental records associated with properties within the 250 m search radius, however, due to the distance from the subject site, size of the incident and/or inferred groundwater flow direction, the identified records were considered unlikely to pose a potential for environmental impacts at the subject site. A request to the City of Ottawa was made for Historical Land Use Inventory (HLUI) information and the findings were also not considered to pose a potential for environmental impacts at the subject site.

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The current subject site of 412 Sparks Street was observed at that time to exist as a parking lot, remaining as such today. No specific concerns were identified on the subject site.

#### **Previous Geotechnical Report**

Geotechnical Investigation, Proposed Multi-Storey Buildings, Cathedral Hall - Queen Street, Ottawa, Ontario', prepared by Paterson Group Inc. dated February 15, 2011.

In December 2010, Paterson completed a geotechnical investigation at the subject site. A total of nine (9) boreholes were advanced throughout the larger property with four (4) boreholes being placed on the subject land, to a maximum depth of 9.47 m. Bedrock on the subject land was encountered between 1.19 and 1.75 m below ground surface. Overburden soils consisted of fill (consisting of a combination of silty sand, concrete, gravel, organic material and slag) over silty sand with gravel. Borehole 1 was cored into bedrock and groundwater was encountered in the bedrock unit at approximately 2.4 m below ground surface. Groundwater was not encountered within the overburden soils.

Throughout the geotechnical investigation, soil and bedrock samples recovered from the boreholes were inspected for any visual or olfactory evidence of contamination. No evidence of contamination or deleterious fill materials were observed in any of the boreholes during the geotechnical investigation.

#### Plan of Survey

It has been reported to Paterson that a current plan of survey for the subject site is being prepared. The plan of survey was unavailable at the time of issuance of this report.

#### **Environment and Climate Change Canada**

A search of the National Pollutant Release Inventory (NPRI) was conducted electronically on September 15, 2017. The subject site and adjacent properties were not listed in the NPRI database. Records were identified for pollutant release to air involving carbon monoxide and nitrogen oxides, from Cliff Central Heating and Cooling Plant at 1 Fleet Street, approximately 250 m west of the subject site. This site was also identified in the ERIS Report requested by DST in 2010.

Based on the nature of the releases, it is not considered to pose a potential for environmental impact at the subject site.

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#### Ontario Ministry of the Environment (MOECC) Instruments

A request was submitted to the MOECC Freedom of Information office for information with respect to certificates of approval, permits to take water, certificates of property use or any other similar MOECC issued instruments for the site. At the time of issuance of this report, a response had not been received from the MOECC. A copy of the response will be forwarded to the client if it contains any pertinent information

#### **MOECC Incident Reports**

A request was submitted to the MOECC Freedom of Information office for information with respect to records concerning e requesting a search into regulatory infractions, legal undertakings against the property, spill occurrences, existing waste generator numbers, and waste registrations at the subject property and neighbouring sites. At the time of issuance of this report, a response had not been received from the MOECC. A copy of the response will be forwarded to the client if it contains any pertinent information

#### **Areas of Natural Significance**

A search for areas of natural significance and features within the Phase I study area was conducted on the web site of the Ontario Ministry of Natural Resources (MNR) on September 15, 2017. The search did not reveal any natural features or areas of natural significance within the Phase I study area.

#### **Technical Standards and Safety Authority (TSSA)**

The TSSA, Fuels Safety Branch in Toronto was contacted electronically on September 15, 2017 to inquire about current and former underground storage tanks, spills and incidents for the site and neighbouring properties. No records were found for the subject site or neighbouring properties.

#### **City of Ottawa Landfill Document**

The document entitled "Old Landfill Management Strategy, Phase I - Identification of Sites, City of Ottawa", was reviewed. No former waste disposal sites were located within the Phase I study area.

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#### **Aerial Photographs**

The latest aerial photograph within the DST report is from 2008. A review of aerial photographs from 2011 and 2014 show no change to the subject site. Major redevelopment has occurred approximately 25 m west of the subject site but no other significant changes have occurred to properties within the Phase I study area.

#### **Topographic Maps**

Topographic maps were obtained from Natural Resources Canada - The Atlas of Canada website. The topographic map depicts the subject site as a developed area, with an approximate elevation of 73 m above sea level (asl). Regionally, the topographic map indicates a slope down to the northwest, towards the Ottawa River. The referenced topographic map is presented in Figure 2 - Topographic Map, appended to this report.

#### Physiographic Maps

A physiographic map was reviewed from Natural Resources Canada's Atlas of Canada web site. According to the physiographic map, the site is located in the St. Lawrence Lowlands. According to the mapping description provided: "The lowlands are plain-like areas that were all affected by the Pleistocene glaciations and are therefore covered by surficial deposits and other features associated with ice sheets." The subject site is located in the Central St. Lawrence Lowland, which is generally less than 150 m above sea level.

#### **Water Well Records**

A search of the MOECC's web site for all drilled well records within 250 m of the subject site was conducted on September 15, 2017. The search returned sixteen (16) water well records, all of which are described as monitoring wells that were installed between 2006 and 2016. Copies of the water well records are appended to this report. Note that not all water well records provided were available for download.

#### **Property Owner Representative Interview**

Ms. Victoria Lucas of Reichmann Seniors Housing Development Corporation was interviewed via email as part of this assessment. The interview was conducted prior to the Phase I ESA site visit on September 18, 2017 Ms. Lucas was not aware of any environmental concerns with respect to the subject site.

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#### Site Reconnaissance

Our site reconnaissance visit was conducted on September 18, 2017. Weather conditions were sunny, with a temperature of approximately 25° C. Mr. Greg van Loenen from the Environmental Department of Paterson Group conducted the site inspection. In addition to the site, the uses of neighbouring properties within the Phase I study area were also assessed at the time of the site visit.

The subject site currently exists as a gravel parking lot. During the site visit, the ground surface was examined and no evidence of significant spills, staining, or stressed vegetation were noted. No evidence of former buildings, truck or rail loading areas were noted. The surrounding properties were also observed during the site visit and are shown on Drawing PE4106-2 - Surrounding Land Use Plan.

#### **Review and Evaluation of Information**

#### **Land Use History**

The following table indicates the current and past uses of the site as well as any associated potentially contaminating activities dating back to the first developed use of the site.

Table 1 - Land Use History								
Time Period	Land Use	Potentially Contaminating Activities	Areas of Potential Environmental Concern					
Prior 1878	Residential	No PCAs identified on site.	None					
1878 - 1991*	Residential	No PCAs identified onsite	None					
1991 - present	Parking lot	No	None					

<sup>\*</sup>It could not be determined exactly when the building structure was removed from 412 Sparks Street, although aerial photos suggest between 1991 and 1999.

#### **Potentially Contaminating Activities (PCAs)**

No potentially contaminating activities (PCAs) were identified at the subject site. PCAs outside of the subject property but within the Phase I study area are shown on Drawing PE4106-2 - Surrounding Land Use Plan.

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#### **Areas of Potential Environmental Concern (APEC)**

PCAs within the Phase I study area are not considered to have result in APECs at the subject site based on their separation distance and/or location downgradient or cross-gradient of the subject site.

#### **Contaminants of Potential Concern (CPCs)**

No contaminants of potential concern (CPCs) were identified on the subject site as no APECs were identified on the subject property.

#### **Conceptual Site Model**

#### Geological and Hydrogeological Setting

Based on the results of the subsurface investigation conducted at the subject site in 2010, site soils consist of sand, gravel and crushed stone over silty sand with gravel. Bedrock was shallow, generally encountered between 1.19 and 1.75 m below ground surface. Borehole 1 was cored into bedrock and groundwater was encountered at 2.3 m below ground surface.

#### **Contaminants of Potential Concern**

No contaminants of potential concern were identified on the subject property.

#### **Existing Buildings and Structures**

The subject site has no existing buildings or permanent structures.

#### **Water Bodies**

There are no water bodies on the subject site or within the Phase I study area. The closest water body is an unnamed canal approximately 250 m west of the subject site. The canal is associated with the Ottawa River which is located approximately 350 m to the north of the subject site.

#### **Areas of Natural Significance**

No areas of natural significance were identified on the subject site or within the Phase I study area.

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#### **Drinking Water Wells**

The results of the MOECC water well record search are discussed above. No active drinking water wells were identified within the Phase I study area.

#### **Neighbouring Land Use**

Neighbouring land use in the Phase I study area is commercial, institutional and residential. Land use is shown on Drawing PE4106-2 - Surrounding Land Use Plan.

#### Potentially Contaminating Activities and Areas of Potential Environmental Concern

Potentially Contaminating Activities (PCAs) within the Phase I ESA study area are shown on Drawing PE4106-2 - Surrounding Land Use Plan. None of these PCAs were considered to have resulted in APECs on the subject site.

#### Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of this Phase I ESA is considered to be sufficient to conclude that PCAs existed in the Phase I study area, however, none are considered to represent APECs. The presence of PCAs was confirmed by a variety of independent sources. As such, the conclusions of this report are not affected by uncertainty which may be present with respect to individual sources.

#### **Conclusions**

As a result of the additional historical research and follow-up site visit undertaken as part of this assessment in order to meet the requirements of O.Reg. 153/04 as amended by O.Reg. 269/11, it is our opinion that a Phase II ESA is not required for the subject site.

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#### Statement of Limitations

This Phase I - Environmental Site Assessment Update report has been prepared in general accordance with the agreed scope-of-work and O.Reg. 153/04. The conclusions presented herein are based on information gathered from a historical review and field inspection program. The findings of the Phase I ESA Update are based on a review of readily available geological, historical and regulatory information and a cursory review made at the time of the field assessment.

Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment. This report was prepared for the sole use of Reichmann Seniors Housing Development Corporation. Permission and notification from Reichmann and this firm will be required to release this report to any other party.

We trust that this submission satisfies your current requirements. Should you have any questions please contact the undersigned.

#### Paterson Group Inc.

Greg van Loenen, B.Eng.

Mark S. D'Arcy, P.Eng.

# M.S. D'ARCY 90377839

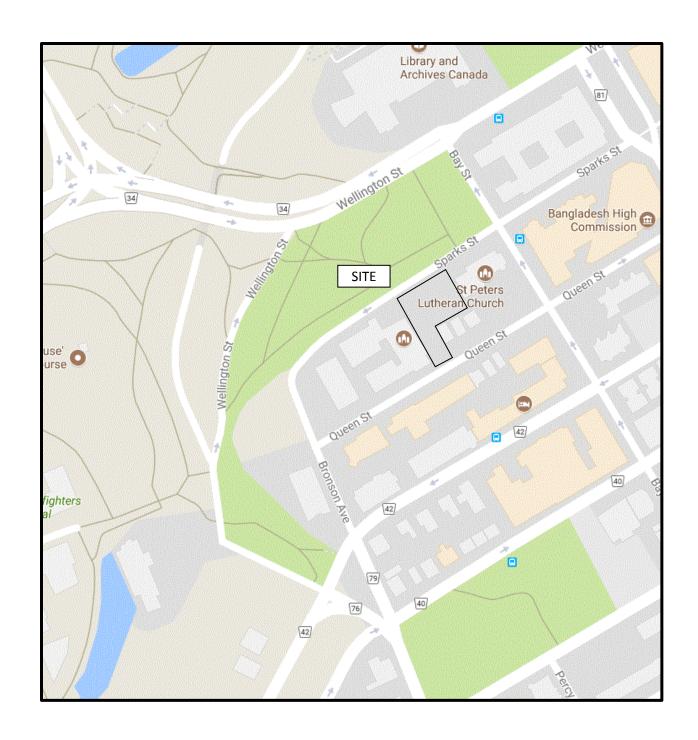
#### **Report Distribution:**

Reichmann Senior Housing Development Corporation (1 copy
Paterson Group (1 copy)

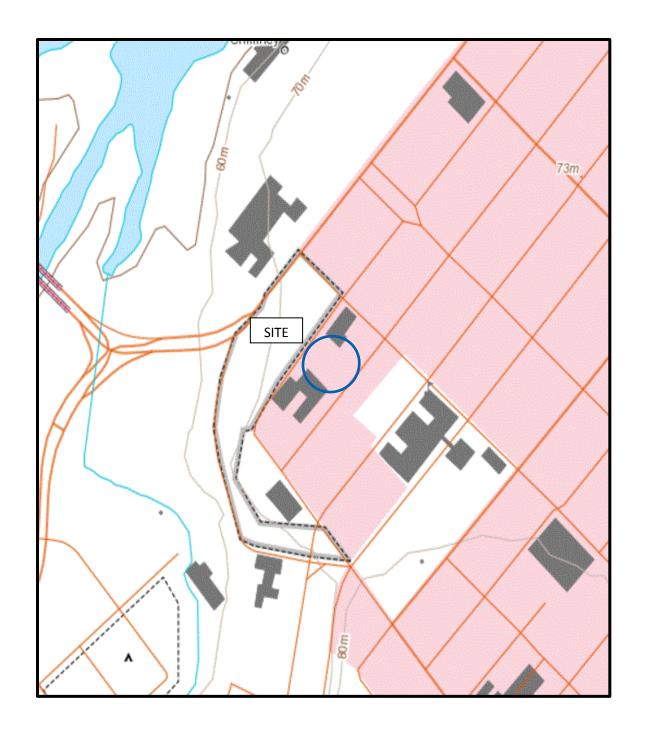
#### Attachments:

Figure 1 - Key Plan
Figure 2 - Topographic Map
Drawing PE4106-1 - Site Plan
Drawing PE4106-2 - Surrounding Land Use Plan
MOECC Well Records

Qualifications of Assessors

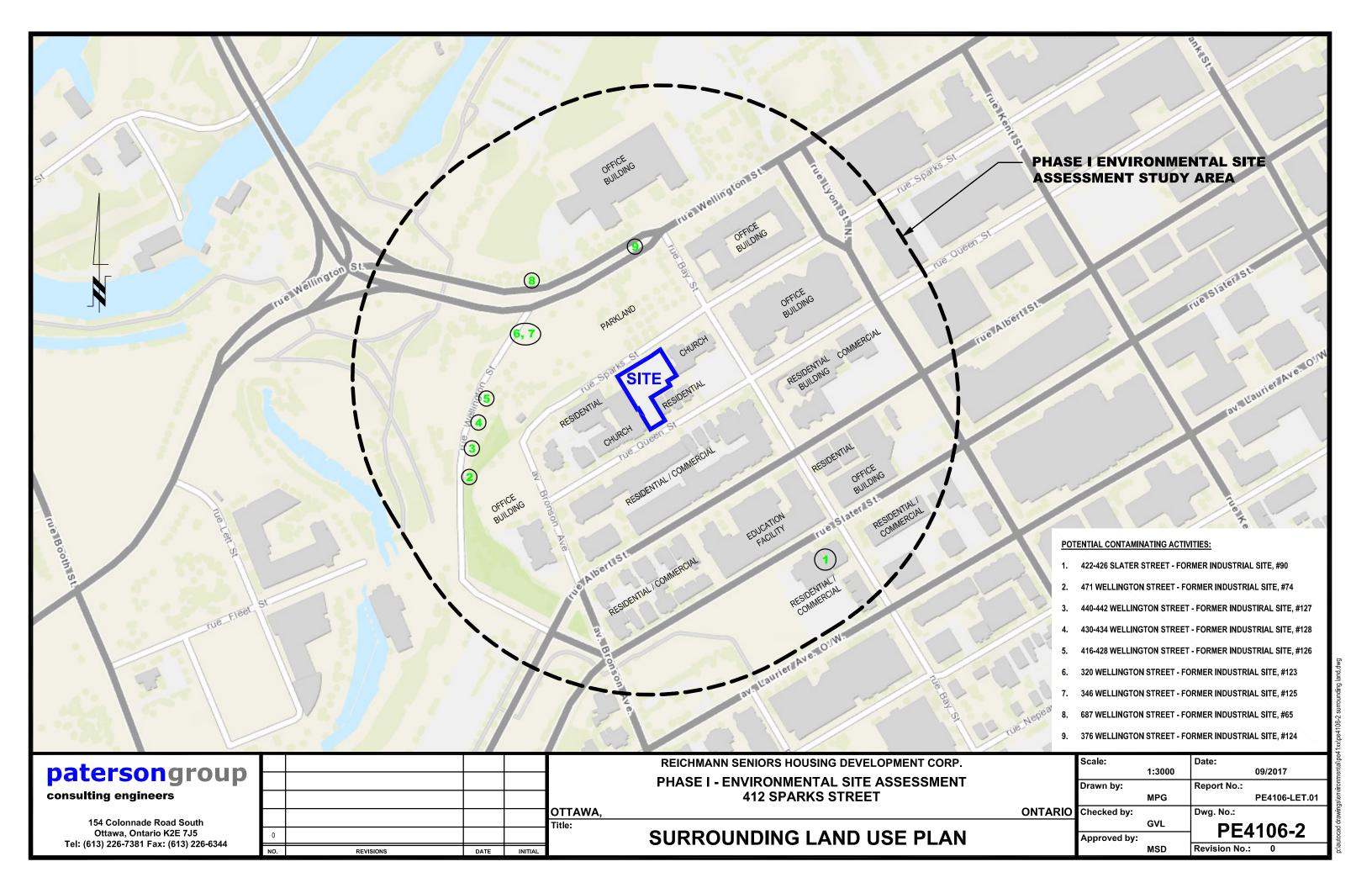


## FIGURE 1 KEY PLAN



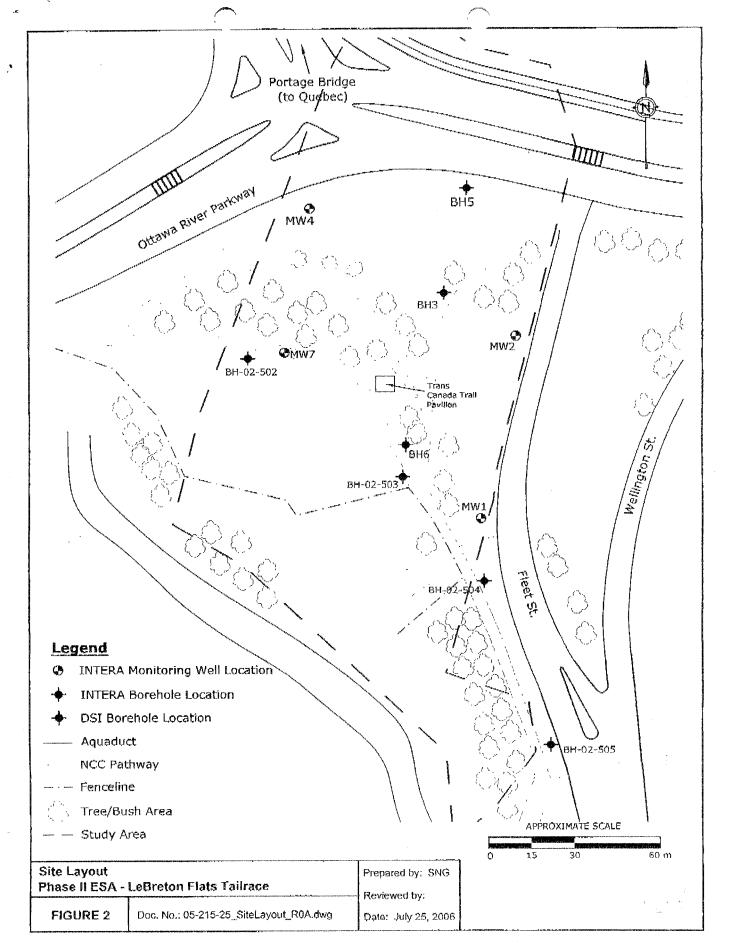
# FIGURE 2 TOPOGRAPHIC MAP

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Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify  Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify  Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify  Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify  Well Contractor and Well Technician Information  Business Name of Well Contractor  Struta Drilling Group Talk Municipality  Province Postal Code Business E-mail Address  Province Postal Code Business E-mail Address  Unit in Cody Jamiles  Well owner's information  Well owner's information  Well owner's information  Date Package Delivered information  Well owner's information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  Well owner's information  Well owner's information  Date Work Completed Opackage delivered information  Well owner's information  No Date Package Delivered information  No Date Package Delivered Opackage Date Work Completed Opackage delivered Opackage delivered O	Water Details	Hole Diameter		5m	13	
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Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify    Well Contractor and Well Technician Information				1-3m	1 7	
Well Contractor and Well Technician Information  Business Name of Well Contractor  Struta Drilling Group 7 2 4 6  Business Address (Street Number/Name)  Province Postal Code Business E-mail Address  LuBi Cb Wreco Strute Soil Com  Business Code Business E-mail Address  LuBi Cb Wreco Strute Soil Com  Business Address (Street Number/Name)  Well owner's information package Delivered information package delivered  Well owner's Date Package Delivered information package delivered delivered  Well owner's information package delivered delivered  Well owner's Date Package Delivered Date Work Completed Tyes  Well owner's Information package delivered delivered  Well owner's Information package delivered delivered  No No Received 111 14 2012	(m/ft) Gas Other, specify	7			12	_
Well Contractor and Well Technician Information  Business Name of Well Contractor  Struta Drilling Group 7 2 4 1  Business Address (Street Number/Name)  Province Postal Code Business E-mail Address  LyB/Cb Wrecond Date Manuel (Last Name)  Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name)  Plos 7 by 9 3 by Manuel Technician (Last Name, First Name)  Well owner's Information package delivered information package delivered  No Date Work Completed  Yes Date Work Completed  Yes Date Work Completed  No Received 111 1 2012			Stails	T		
Business Address (Street Number/Alame) Province Postal Code Business E-mail Address LyB/Cb Wrecons Ostrata Soil.com Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name) Well Technician's Licence No. Signature of Technician-and/or Contractor Date Submitted  3 6 5 No  Well owner's information package delivered information package delivered Yes No  Well owner's information package delivered Yes No  Received 13 6 23	Well Contractor and Well Technicia		8 16	77		
Business Address (Street Number/Name)  Province Postal Code Business E-mail Address  L	- · · · / · · · /		Joans	J 1 .		
Province Postal Code Business E-mail Address L 4 B / Cb Wrecords Ostrack Soil.com  Bus. Telephone No. (inc. area code) Name of Well Technician (Last Name, First Name)  Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted  Well owner's information package delivered Date Work Completed Yes No  No  Well owner's information package delivered No. (inc. area code) No. (inc. are	Business Address (Street Number/Name)	Municipality	Comments:			
Well owner's information package delivered   V   V   V   M   M   D   D   D   D   D   D   D   D						
Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted  3 6 5 6 No  Well Technician's Licence No. Signature of Technician and/or Contractor Date Submitted  2 1 4 8 6 2 3  Received 113 6 2 10 10 10 10 10 10 10 10 10 10 10 10 10	ON LIMBIACH Wrecords	Ostrak Soil com	information	200000000000000000000000000000000000000	stry Us	Only
Well Technician's Licence No. Signature of Technician-end/or Contractor Date Submitted    Yes		Last Name (First Name)	delivered	E0000000000000000000000000000000000000	148	3623
	Well Technician's Licence No. Signature of Technician and/or Co	ontractor Date Submitted	Yes 110,706	0311		a se se se
			<b>I</b>	TITI MECSAGE	Park Jan Ti	<u> </u>

Well Tag No. (Place Sticker and/or Print Below) Well Record Ministry of the Environment egulation 903 Ontario Water Resources Act A097305 A 097305 asurements recorded in: Metric Imperial Page 3 of 3 Well Owner's Information Last Name / Organization First Name Public Works E-mail Address Carada ☐ Well Constructed by Well Owner Municipality 6 Ha - 9 Mailing Address (Street Number/Name) Postal Code Telephone No. (inc. area code) Well Location Address of Well Location (Street Number/Name) 5+ Township Lot County/District/Municipality Olawa Province Postal Code Ontario NAD | 8 | 3 | 8 | 4 | 4 | 4 | 6 | 9 | 5 | 0 | 8 | 9 | 7 | 2 | 5 Municipal Plan and Sublot Number Other Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) m To Other Materials General Description GRY Concrete fitt, gravel 0 .31 hard shale hord Annular Space Results of Well Yield Testing Type of Sealant Used
(Material and Type)

Concrete/ flyshmount After test of well yield, water was: Depth Set at (m/ft) Volume Placed (m³/ft³) Draw Down Recovery Time Water Level Clear and sand free Time Water Level (min) Other, specify 4,27 benseal 7,62 fitter sand If pumping discontinued, give reason Level 1 1 Pump intake set at (m/ft) 2 2 3 3 Pumping rate (I/min / GPM) Method of Construction Well Use 4 4 Cable Tool Diamond Public
Domestic Commercial
Municipal ■ Not used Duration of pumping Jetting Dewatering Monitoring Rotary (Conventional) 5 5 hrs + min Rotary (Reverse) Driving Livestock Test Hole ☐ Irrigation Final water level end of pumping (m/ft) Bering ☐ Digging Cooling & Air Conditioning 10 10 Air percussion ☐ Industrial ☐ Other, specif Other, specify 15 15 If flowing give rate (I/min / GPM) Construction Record - Casing Status of Well 20 20 Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) Depth (m/ft) ☐ Water Supply Wall Recommended pump depth (m/ft) Thicknes (cm/in) Replacement Well
Test Hole 25 From To (cm/in) .356 Recommended pump rate (I/min / GPM) PVC 0 4,57 30 30 Recharge Well Dewatering Well 40 40 Observation and/or Monitoring Hole Well production (I/min / GPM) 50 50 Alteration Disinfected? (Construction) 60 60 Abandoned, Yes No Insufficient Supply Construction Record - Screen Map of Well Location Abandoned, Poor Outside Diamete (cm/in) Please provide a map below following instructions on the back Depth (m/ft) Water Quality Abandoned, other, From To specify 4.21 4.57 7.62 Other, specify Water Details Hole Diameter Water found at Depth Kind of Water: Fresh Untested Depth (m/ft) Diamete (cm/in) To (m/ft) Gas Other, specify .31 8.25 0 Water found at Depth Kind of Water: Fresh Untested 7.62 10 m (m/ft) Gas Other, specify Well Contractor and Well Technician Information Soil Sampling Inc Strata Comments 147-2 West Beaver Creek Rd Richmond Hill L 4BI C 6 Wrecords@stratasoil.com Well owner's information Date Package Delivered Ministry Use Only z113206 package delivered YYYYMMD 905-764-9304 Muit Mike Date Work Completed Yes DEL 0 8 2010 3448 mike 20101130 No Ministry's Copy

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Ministra of	Well Tag No. (P	lace Sticker an	nd/or Print Below) ( – 1 2	620	We	II R	ecord
Ontario Ministry of the Environment	1		1 1 4				ources Act
Measurements recorded in: Metric Imperial	M3.	TUR FOUR	1 D		Page		
Well Owner's Information							
First Name   Last Name / Organization	1. 11.03	116	E-mail Address				Constructed II Owner
Mailing Address (Street Number/Name)	Municipalit	ty COMM	Province Postal Code	Te	lephone No		
#202-40 Elgin street	OHa	wh	ON KINS	Alb	(612)2	<u> 39 t</u>	5000
Well Location	Township		Lot	T C	oncession		
Address of Well Location (Street Number/Name)  389 Wellington St.	Township		Lot		7100331011		
County/District/Municipality	CHy/Town/	/Village		Province		Postal	Code
UTM Coordinates   Zone   Easting   Northing		Plan and Sublot	t Number	Ontar Other	10	-	
NAD   8   3   1   8   4   4   6   20   50   29	741	, lati and odolo	( Hambon				
Overburden and Bedrock Materials/Abandonment Sea	aling Record (see in	structions on the				Doot	h (m/ft)
General Colour Most Common Material	Other Materi	als	General Description		F	rom	h ( <i>m/ft)</i>   To
NA						***************************************	
	VAII						
				******			
			A MANIFEST AND REPORT OF THE PARTY OF THE PA				
		and the second					
Annular Space			Results of We	7			
Depth Set at (m/ft)  From To (Material and Type)		me Placed (m³/ft³)	After test of well yield, water was:  ☐ Clear and sand free	<del></del>	Down /ater Level		Water Level
O 157.31 concrete			Other, specify	(min) Static	(m/ft)	(min)	(m/ft)
31 70/54 hantonite ch	P5		If pumping discontinued, give reason:	Level			Administration of the conduction of the conducti
15474 hate a - and				1		1	
1,597,4 senjonite growt			Pump intake set at (m/ft)	2		2	
			Pumping rate (I/min / GPM)	3		3	
Method of Construction  ☐ Cable Tool ☐ Diamond ☐ Public	Well Use  Commercial	☐ Not used		4		4	
Rotary (Conventional) Jetting Domestic	☐ Municipal	Dewatering	Duration of pumping hrs + min	5		5	
☐ Rotary (Reverse) ☐ Driving ☐ Livestock ☐ Boring ☐ Digging ☐ Irrigation	☐ Test Hole ☐ Cooling & Air Cond	✓ Monitoring ditioning	Final water level end of pumping (m/ft)	10		10	
☐ Air percussion ☐ Industrial ☐ Other, specify ☐ Other, specify				15		15	
Construction Record - Casing	Stat	us of Well	If flowing give rate (I/min / GPM)				
Inside Open Hole OR Material Wall Depth	(m/ft)	er Supply	Recommended pump depth (m/ft)	20		20	
Diameter (Galvanized, Fibreglass, Concrete, Plastic, Steel) Thickness (cm/in) From	To Repl	lacement Well Hole	D	25		25	Maria Maria - y
3.45 PVC. B	1 / 1 / 1 -	harge Well	Recommended pump rate (I/min / GPM)	30		30	
	Obse	vatering Well ervation and/or	Well production (I/min / GPM)	40		40	
	Mon ☐ Alter	itoring Hole ration		50		50	
	1 1 `	nstruction) ndoned.	Disinfected?  Yes No	60		60	
Construction Record - Screen	Insu	fficient Supply ndoned, Poor	Map of W	ell Locat	ion		
Outside Material Slot No.	(m/ft) Wate	er Quality	Please provide a map below following	instruction	s on the ba	ck.	Á
(cm/in) (Plastic, Galvanized, Steel) From		Weeded		garage where the same and	an transmission of the state of		. <b>*</b>
4.03 PVC 10 4,57	/ • /	er, specify	Wellington	77		ľ	Ü
	1004-	., 0,000,	Welling ton	<b>ン</b> / 、			
Water Details	Hole Diar			CONTRACTOR			- Training
Water found at Depth Kind of Water: Fresh Untested	Depth ( <i>m/ft</i> ) From To	Diameter (cm/in)		4 m	6	, .	
(m/ft) ☐ Gas ☐ Other, specify Water found at Depth Kind of Water: ☐ Fresh ☐ Untested					TM	B	
(m/ft) Gas Other, specify						A	and the second
Water found at Depth Kind of Water: Fresh Untested					V	y	
(m/ft) Gas Other, specify  Well Contractor and Well Technicia	n Information					ر ک	,
Business Name of Well Contractor		or's Licence No.			1	T	
Strata Drilling Group	/ J	14//	Comments:	, <u>, , , , , , , , , , , , , , , , , , </u>			
Business Address (Street Number/Name)  147 Wes Beaver Clee	Wunicipality Richma	o-1 14/11	Sommond.				
Province Postal Code Business E-mail Add	lress ,	1					O-101
	Ostratasoi LastName Eirst Nam		Well owner's Date Package Deliverent information	1 1-22	Minist		
Bus.Telephone No. (inc. area code) Name of Well Technician (		,	package delivered Date Work Completed		z 1	48	3625
Well Technician's Licence No. Signature of Technician and/or Co	ontractor Date Submitt	ted 1000	☐ Yes 201206	1 st	¥	ı fi	s 2012
3 6 3 6 0506E (2007/12) © Queen's Printer for Ontario, 2007	2018 Mini	istry's Copy		D D B	ocalyan <b>y</b> V	· • • • • • • • • • • • • • • • • • • •	Sept Sept Sept Sept Sept Sept Sept Sept
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Well Tag No. (Place Sticker and/or Print Below) Well Record Ministry of Ontario the Environment Regulation 903 Ontario Water Resources Act A097303 A 097303 2 of O Page Metric | Imperial Measurements recorded in: Well Owner's Information ast Name / Organization Public Works E-mail Address First Name ☐ Well Constructed by Well Owner Telephone No. (inc. area code) Postal Code Province Mailing Address (Street Number/Name) Municipality Well Location Address of Well Location (Street Number/Name)
364 Well ing ton 57.
County/District/Municipality Township Concession City/Town/Village Postal Code OHawa Ontario NAD | 8 | 3 | 1 | 8 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 7 | 7 | 6 | 5 | Municipal Plan and Sublot Number Other Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form) Depth (m/ft) General Description Most Common Material Other Materials soft, dry Topsoil BRN BRN sand Results of Well Yield Testing Annular Space Depth Set at (m/ft)
From To Type of Sealant Used (Material and Type) Volume Placed (m³/ft³) After test of well yield, water was: Draw Down Recovery Time Water Level Clear and sand free Time Water Level (mvft) Other, specify concrete/flushmount (m/tt)31 (min) Static If pumping discontinued, give reason: 1 1 Pump intake set at (m/ft) 2 2 3 3 Pumping rate (I/min / GPM) Method of Construction Well Use 4 4 ☐ Public Cable Tool ☐ Diamond Commercial ■ Not used Duration of pumping Municipal Test Hole Dewatering Monitoring Rotary (Conventional) Jetting Domestic 5 5 hrs + min Rotary (Reverse) ☐ Driving Livestock Boring Digging ☐ Irrigation Cooling & Air Conditioning Final water level end of pumping (mvlt) 10 10 Air percussion ☐ Industrial Other, specify Other, specify 15 15 If flowing give rate (I/min / GPM) Status of Well Construction Record - Casing 20 20 Inside Diameter (cm/in) Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel) Water Supply Wall Thickness (cm/in) Depth (m/ft) Recommended pump depth (m/ft) Replacement Well 25 25 From To Test Hole PVC Recommended pump rate 3.45 .356 4.57 30 30 Recharge Well (Vmin / GPM) Dewatering Well 40 40 Observation and/or Well production (I/min / GPM) Monitoring Hole 50 50 Alteration Disinfected? (Construction) 60 60 Abandoned, Insufficient Supply Yes No Construction Record - Screen Map of Well Location Abandoned, Poor Please provide a map below following instructions on the back Outside Depth (m/ft) Water Quality Material (Plastic Galvanized Steel) Diameter (cm/in) Slot No. Abandoned, other, From To specify PVC 4,57 7.62 Other, specify Hole Diameter Water Details X5 -00 + 5 m 1/9 Depth (m/ft) Water found at Depth Kind of Water: Fresh Untested Diameter From (cm/in) 8,25 0 1.52 (m/ft) Gas Other, specify Water found at Depth Kind of Water: Fresh Untested (m/ft) Gas Other, specify Well Contractor and Well Technician Information 7121411 Strata Soil Sampling Inc Business Address (Street Number/Name) 147-2 West Beaver Creek Rd Richmond Hill L 4/B/1 C/6 Wrecords@StrataSoil.com Well owner's information Ministry Use Only Date Package Delivered Audit No. Bus. Telephone No. (inc. area code) Name of Vveil Technician (Contractor Date Submitted package delivered YYYYMMDD 13207 Date Work Completed Yes DEC 0 8 2010 Tune for 20101198 20101130 Ministry's Copy

Ontario	Ministry of the Environment	Well Tag	g No. (Place Sticker ar	nd/or Print Below)	Regulation		<b>۷۷</b> 6 ntario Wat		Record
Measurements recorded Well Owner's Information			NU lug ron	TUV 1	<u></u>		Page_		of
First Name	Last Name / Organizat	ion tal	Commission	E-mail Address					Constructed ell Owner
Mailing Address (Street Nu		PITAL	funicipality	Prince	Postal Code	KG	elephone N	•	
Well Location Address of Well Location	Street Number/Name)	Т	ownship		Lot	0	Concession		
387 Well County/District/Municipality	ington 5t	C	city/Town/Village			Provinc	:e	Posta	I Code
UTM Coordinates Zone E	asting   Northing   1945   5   3   9   5   0   2   3	٠,	分サス〜 4 funicipal Plan and Subic	ot Number		Onta Other	rio		**************************************
Overburden and Bedroo	ck Materials/Abandonment S	ealing Reco						Der	oth ( <i>m/ft</i> )
General Colour M	lost Common Material	Oth	er Materials	Gene	ral Description			From	To To
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			Secretaria				n	***************	Watten and the same and the sam
Depth Set at (m/ft)	Annular Space Type of Sealant Used	j	Volume Placed	After test of well yield,		100000000000000000000000000000000000000	l Testing w Down	ļ	lecovery
From To	(Material and Type)		(m³/ft³)	☐ Clear and sand t☐ Other, specify	ree	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
15470	bantonie chip			If pumping discontinue	ed, give reason:	Static Level			
1.5/1.1	Jen on the	<u> </u>				1		1	
				Pump intake set at (	π/π)	2		2	<u></u>
Method of Constr	ruction	Well Us	6	Pumping rate (I/min /	GPM)	3		3	<u>, and the endings of the co</u> , and the contract of the contra
	☐ Diamond ☐ Public ☐ Domestic	Comme	al Dewatering	Duration of pumping		5		5	
	☐ Driving ☐ Livestock ☐ Digging ☐ Irrigation		le	hrs + Final water level end	min of pumping <i>(m/ft)</i>	10		10	
☐ Air percussion ☐ Other, specify	☐ Industrial ☐ Other, specif	y		If flowing give rate (I/	min / GPM)	15		15	
PARCO S DOMESTIC AND DOMESTIC AND DESCRIPTION OF THE PARCON OF THE PARCO	uction Record - Casing		Status of Well	,		20		20	
Inside Open Hole OR Diameter (Galvanized, Fi (cm/in) Qoncrete, Plas	ibreglass, Thickness	pth ( <i>m/ft)</i> To	Water Supply Replacement Well	Recommended pum	p deptn ( <i>m/nt)</i>	25		25	
B3.45 PVC	(orizin)	4,57	Test Hole Recharge Well	Recommended pum (I/min / GPM)	p rate	30		30	
		1. /	Dewatering Well Observation and/or	Well production (I/mi	n / GPM)	40		40	
			Monitoring Hole  Alteration	Disinfected?		50		50	
			(Construction)  Abandoned, Insufficient Supply	Yes No		60		60	
Outoido	truction Record - Screen	pth ( <i>m/ft</i> )	Abandoned, Poor Water Quality	Please provide a map	Map of W below following			ack.	<u> </u>
Diameter (cm/in)  Materia (Plastic, Galvani	ized, Steel) Slot No. From	То	Abandoned, other,					i	4
4.03 PUC	10 4.5	17.4	Other, specify					V	'\
					Park	wed		1	7
	<b>Water Details</b> id of Water:	ed Dep	th ( <i>m/ft</i> ) Diameter	Ottawa Rise	r Marin	ر `			
	Other, <i>specify</i> Ind of Water: Fresh Untest	From ed	To (cm/in)	11	Jelling			<u>.</u>	
(m/ft) Gas	Other, specify			w h	12/1,29	3 T "			
l	d of Water: Fresh Untest Other, specify	ea		1			110	1	
Well	Contractor and Well Technic		tion all Contractor's Licence No.	$\parallel$ / /	35m				
Business Name of Well Co	t braip		72 41	//					
Business Address (Street )	jumber/Name)	reek	inicipality Schmond Will	Comments:					
Province Posta	al Code Business E-mail	Address	tesoil.com		Package Delivere	ed 1	Minis	trv Us	e Only
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9101576141913		JAME Contractor Da		delivered Date	Work Completed		/ <u>L</u>	14	8626
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0506E (2007/12) © Queen's F	Prints for Ontario, 2007		Ministry's Copy						***

#### Mark S. D'Arcy, P. Eng.



Geotechnical Engineering

Environmental Engineering

**Hydrogeology** 

Geological Engineering

**Materials Testing** 

**Building Science** 

Archaeological Services

#### **POSITION**

Associate and Supervisor of the Environmental Division Senior Environmental/Geotechnical Engineer

#### **EDUCATION**

Queen's University, B.A.Sc.Eng, 1991 Geotechnical / Geological Engineering

#### **MEMBERSHIPS**

Ottawa Geotechnical Group Professional Engineers of Ontario

#### **EXPERIENCE**

1991 to Present

#### Paterson Group Inc.

Associate and Senior Environmental/Geotechnical Engineer Environmental and Geotechnical Division Supervisor of the Environmental Division

#### **SELECT LIST OF PROJECTS**

Mary River Exploration Mine Site - Northern Baffin Island

Agricultural Supply Facilities - Eastern Ontario

Laboratory Facility – Edmonton (Alberta)

Ottawa International Airport - Contaminant Migration Study - Ottawa

Richmond Road Reconstruction - Ottawa

Billings Hurdman Interconnect - Ottawa

Bank Street Reconstruction - Ottawa

Environmental Review - Various Laboratories across Canada - CFIA

Dwyer Hill Training Centre - Ottawa

Nortel Networks Environmental Monitoring - Carling Campus - Ottawa

Remediation Program - Block D Lands - Kingston

Investigation of former landfill sites - City of Ottawa

Record of Site Condition for Railway Lands - North Bay

Commercial Properties - Guelph and Brampton

Brownfields Remediation - Alcan Site - Kingston

Montreal Road Reconstruction - Ottawa

Appleford Street Residential Development - Ottawa

Remediation Program - Ottawa Train Yards

Remediation Program - Bayshore and Heron Gate

Gladstone Avenue Reconstruction – Ottawa

Somerset Avenue West Reconstruction - Ottawa

#### Greg van Loenen, B. Eng.

### patersongroup

Geotechnical Engineering

Environmental Engineering

**Hydrogeology** 

Geological Engineering

**Materials Testing** 

**Building Science** 

Archaeological Services

#### **POSITION**

**Environmental Consultant** 

#### **EDUCATION**

Carleton University, B.Eng., 2015 Environmental Engineering

St. Lawrence College, 2008 Environmental Technician

#### **EXPERIENCE**

2016 to Present

Paterson Group Inc.

Environmental and Geotechnical Division

**Environmental Consultant** 

2015 to 2016

Kanellos Consulting Inc.

**Environmental Consultant** 

Summers 2013 & 2014

**GFL Environmental Inc.** 

**Environmental Technician** 

2008 to 2011, summer 2012

Petroleum Enviro Services (Div. of ASM Corrosion Control)

**Environmental Consultant** 

#### **SELECT LIST OF PROJECTS**

Nortex Industrial Site - Soil and Groundwater Remediation - Kingston, ON Contaminated Soil and Groundwater Sampling - Various sites - Eastern ON Designated Substance Surveys and Reports - Various sites - Eastern ON Mould Sampling, Assessments and Reports - Various sites - Eastern ON Surcharge and Settlement Surveys - Ottawa, ON Tank Site Remediation Program - Various sites - Alberta Tank Installation Drawings (PTMAA) - Various sites - Alberta