SOIL-MAT ENGINEERS & CONSULTANTS LTD.
401 Grays Road · Hamilton, ON · L8E 2Z3
www.soil-mat.ca info@soil-mat.ca 905.318.7440 / 800.243.1922 (toll free) 905.318.7455

PROJECT NO.: SM 220069-E June 19, 2023

CENTENNIAL CONSTRUCTION AND CONTRACTING (NIAGARA) INC.
353 Townline Road
Niagara on the Lake, Ontario
L0S 1J0

Attention: Mr. Joseph Candeloro

ENVIRONMENTAL CONSIDERATIONS – SOIL CHARACTERISATION
RIVERFRONT – CHIPPAWA PARKWAY
NIAGARA FALLS, ONTARIO

Dear Mr. Candeloro,

Further to your request, SOIL-MAT ENGINEERS & CONSULTANTS LTD. [SOIL-MAT ENGINEERS] is pleased to provide the following environmental considerations with respect to environmental characterisation of the on-site soils on the above noted property. The comments provided in this brief report are based on prior Phase One and Two ESA investigation and reporting conducted on the property by Wood Environment & Infrastructure Solutions, which have been provided to our office. The purpose of this brief report is to provide comments on the environmental condition of the on-site soils, based on the current data, including the proposed on-site reuse. These comments are further to those presented in

It is noted that the subject lands do not appear to have ever been developed. Given this, the proposed residential redevelopment would not represent a change in land use to a more sensitive case. As such, there would not be a mandatory requirement for a Record of Site Condition [RSC] filing under Regulation 153/04 [as amended]. Given this, environmental assessment would be appropriately focused on characterisation of the on-site soils for reuse on the development lands, and potentially export for off-site reuse.

EXISTING CONDITIONS

The prior assessment and reporting by Wood included Phase One and Two ESA. The Phase One ESA report by Wood identified two Areas of Potential Environmental Concern [APEC] on the site. APEC1 is noted as fill of unknown quality, and is identified over the majority of the site. APEC2 is associated with the rail lines along the north border of the site.

The most recent Phase Two ESA reporting by Wood presents the results of a reasonable scope of sampling and testing to address the noted APECs. These results were reported in comparison to a site condition standard of Table 3, which would be considered appropriate based on the intended land use [a municipally serviced residential development].

The reported environmental testing results showed no issues within the groundwater, and no issues in soil in most cases. There are noted isolated exceptions as follows:

- Electrical Conductivity [EC] in Soil
  Several of the soil samples reported elevated levels of EC, in particular within the fill present on the east portion of the site [East Pod]. Elevated EC is associated with the effects of de-icing salt, and so elevated levels within the east pod are consistent with the understood history of fill placement. EC is generally an aesthetic parameter, non-hazardous to human and animal health, bit rather tends to render the soil environment less supportive of plant growth and potentially more corrosive to buried metal pipe. There are specific exemptions with the Regulation to allow for reuse on a development property. As such, this is not considered to be a significant item of concern.

- Thallium in Soil Thallium levels above the applicable Table 3 Standards were reported.
  - BH101 – 0.1 to 1.5m depth – 1.2ppm vs the Standard of 1.0ppm [West Pod]
  - BH103 – 0.1 to 0.5m depth – 1.2ppm vs the Standard of 1.0ppm [East Pod]

- Antimony levels above the applicable Table 3 Standards were reported.
  - BH429 – 1.5 to 2.1m depth – 9.8ppm vs the Standard of 7.5ppm [East Pod]

The elevated Thallium and Antimony values appear to be isolated results, and warrant further assessment to determine if these are in fact representative results. As such, as focused scope of supplemental sampling and analytical testing was warranted.

SAMPLING AND ANALYSIS

Soil-Mat Engineers conducted a soil sampling and analysis program for the east pod exceedances at Borehole Nos 429 and 103 which had exceedances for Antimony and Thallium respectively. Four in situ samples were collected within an approximate 2 metre radius of the prior reported elevated results, and analysed for each of the above noted impacts. The secured soil samples were submitted to AGAT Laboratories, an accredited Canadian Environmental Laboratory for bulk laboratory analysis of the specific parameters noted above. Specifically, samples 1A, 1B, 1C and 1D were collected at the location of Borehole No. 429 and subject to testing for Antimony, while samples 3A, 3B, 3C and 3D were collected at the location of Borehole No. 103 and subjected to testing for Thallium.

The results of this testing are presented in AGAT certificate of analysis [22T959963], appended to the end of this report.

All samples collected were noted to be below the reported detection limit fore each of the tested parameters. Assessment of this data considering single point compliance, with samples within a 2 metre radius considered to be one sample location, shows the average in both cases to be within the Table 1 Standards. This demonstrates the initial results as anomalies and not considered to exceed the Standards.

SOIL REUSE CONSIDERATIONS

Given the above, the data from the prior Phase Two ESA work and the current supplemental testing, has demonstrated the soil within the subject lands to be within the Table 3 Residential, Parkland, Institutional [RPI] Standards. The noted exception being the area of BH101, at the northwest corner of the west pod.

The on-site fill and native soils, reasonably shown to be within the applicable Standards for the site, would be appropriate to remain on site for reuse as needed in grading and earthworks for the proposed development. It is understood that the present plan anticipates a surplus of soil from the east pod, which would be appropriately relocated for use on the west pod. This would include topsoil present on the site that can be utilised elsewhere on the development lands.

Based on recent discussion with the project team, it is not expected that the site will have a surplus of fill, with the site grading for the overall development ideally able to achieve a balanced condition. As such, the need for off-site removal and reuse is not expected to be required for the project. This is considered good practice, to coordinate the grading works to make use of available soil, and avoid creating excess soil which would need to be move off-site. In the even that through the course of final design and construction any volume of material is determined to be excess to the site requirement, it is recommended that first options be considered to facilitate reuse on the development lands. Where this is not feasible and material is deemed surplus, it would then be warranted to undertake additional sampling and testing to support off-site reuse in accordance with the requirements of Ontario Regulation 406/19 [as amended].

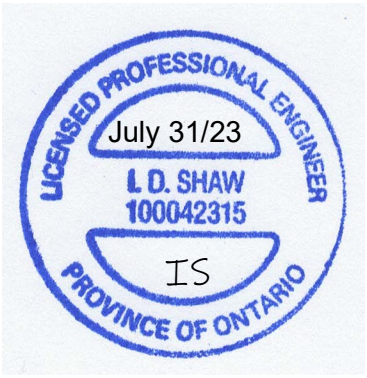
GENERAL COMMENTS

The material in this report reflects SOIL-MAT ENGINEERS' best judgement in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SOIL-MAT ENGINEERS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this is satisfactory for your purposes. Please feel free to contact our Office if you have any questions, or we may be of further service to you.

Yours very truly,
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

Kevin Reid, B. Eng, EIT
Junior Engineer



Ian Shaw, P.Eng., QP_{ESA}
Senior Engineer

Enclosures: Drawing No. 1, Location Plan
AGAT Certificate of Analysis [22T959963]

Distribution: Centennial Contracting and Construction (Niagara) Inc. [1, plus pdf]

AGAT Laboratories

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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401 GRAYS ROAD
HAMILTON, ON L8E 2Z3
(905) 318-7440

ATTENTION TO: Ian Shaw

PROJECT: 220069

AGAT WORK ORDER: 22T959963

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Oct 26, 2022

PAGES (INCLUDING COVER): 7

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.*

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Certificate of Analysis

AGAT WORK ORDER: 22T959963

PROJECT: 220069

CLIENT NAME: SOIL MAT ENGINEERS & CONSULTANTS LT

ATTENTION TO: Ian Shaw

SAMPLING SITE:Chippawa Parkway, Niagara Falls

SAMPLED BY:NS

O. Reg. 153(511) - Metals (Sb) (Soil)

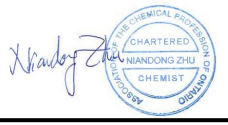
DATE RECEIVED: 2022-10-20 **DATE REPORTED: 2022-10-26**

		SAMPLE DESCRIPTION:		1A	1B	1C	1D
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2022-10-20	2022-10-20	2022-10-20	2022-10-20
Parameter	Unit	G / S	RDL	4438720	4438721	4438722	4438723
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8	<0.8

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg. 406/19 TABLE 1: Full Depth Background Site Condition - RPIC
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:



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Certificate of Analysis

AGAT WORK ORDER: 22T959963

PROJECT: 220069

CLIENT NAME: SOIL MAT ENGINEERS & CONSULTANTS LT

ATTENTION TO: Ian Shaw

SAMPLING SITE:Chippawa Parkway, Niagara Falls

SAMPLED BY:NS

O. Reg. 153(511) - Metals (Tl) (Soil)

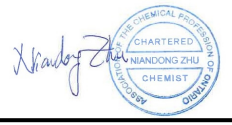
DATE RECEIVED: 2022-10-20 **DATE REPORTED: 2022-10-26**

				SAMPLE DESCRIPTION:	3A	3B	3C	3D
				SAMPLE TYPE:	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2022-10-20	2022-10-20	2022-10-20	2022-10-20
Parameter	Unit	G / S	RDL		4438725	4438730	4438731	4438732
Thallium	µg/g	1	0.5		<0.5	<0.5	<0.5	<0.5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg. 406/19 TABLE 1: Full Depth Background Site Condition - RPIC
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:



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Quality Assurance

CLIENT NAME: SOIL MAT ENGINEERS & CONSULTANTS LT

AGAT WORK ORDER: 22T959963

PROJECT: 220069

ATTENTION TO: Ian Shaw

SAMPLING SITE:Chippawa Parkway, Niagara Falls

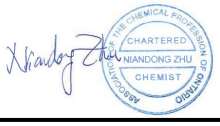
SAMPLED BY:NS

Soil Analysis

RPT Date: Oct 26, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Sb) (Soil)															
Antimony	4438720	4438720	<0.8	<0.8	NA	< 0.8	90%	70%	130%	86%	80%	120%	89%	70%	130%
O. Reg. 153(511) - Metals (Tl) (Soil)															
Thallium	4438720	4438720	<0.5	<0.5	NA	< 0.5	93%	70%	130%	99%	80%	120%	103%	70%	130%

Comments: NA Signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:



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Method Summary

CLIENT NAME: SOIL MAT ENGINEERS & CONSULTANTS LT

AGAT WORK ORDER: 22T959963

PROJECT: 220069

ATTENTION TO: Ian Shaw

SAMPLING SITE:Chippawa Parkway, Niagara Falls

SAMPLED BY:NS

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.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)

Laboratory Use Only
Work Order #: 22T959963
Cooler Quantity: 1 Lg
Arrival Temperatures: 8.1 | 7.4 | 7.6
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: Fast T.A.T

Report Information:
Company: Soil-Mat
Contact:
Address:
Phone: Fax:
Reports to be sent to:
1. Email: Ian Shaw
2. Email: Nathan Sears

Regulatory Requirements:
(Please check all applicable boxes)

☐ Regulation 153/04
Table ___ (Indicate One)
☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One) ☐ Coarse ☐ Fine

☒ Excess Soils R406
Table 1 (Indicate One)
☐ Regulation 558
☐ CCME

☐ Sewer Use ☐ Sanitary ☐ Storm
Region
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
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: 220069
Site Location: Chippawa Parkway, Niagara Falls NS
Sampled By:
AGAT Quote #: 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

Invoice Information:
Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend
B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y/N	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	PAHs	PCBs	VOC	Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐	Antimony	Thallium				Potentially Hazardous or High Concentration (Y/N)
1A	Oct 20	AM/PM	2	S														X						
1B	"	AM/PM	"	"														"						
1C	"	AM/PM	"	"														"						
1D	"	AM/PM	1	GRT																				
3A		AM/PM	1																X	X	X			
3B		AM/PM	1																"	"	"			
3C		AM/PM	1																					
3D		AM/PM	1																					
2A		AM/PM	2		HQ Dont notify													X						
2B		AM/PM	1															"						
2C	"	AM/PM	"	"														"						

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
			A. River		
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 1 of 2
N°: T - 133460

AGAT Laboratories

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webearth.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: Soil-Mat
Contact:
Address:
Phone: Fax:
Reports to be sent to:
1. Email: Ian Shaw
2. Email: Northern Seas

Project Information:

Project: 220069
Site Location: Chippawa Parkway, Niagara Falls
Sampled By: NS
AGAT Quote #: PO:
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
Table ____ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☒ Excess Soils R406
Table 1 *Indicate One*
☐ Regulation 558
☐ CCME

☐ Sewer Use
☐ Sanitary ☐ Storm
____ *Region*
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Laboratory Use Only

Work Order #:
Cooler Quantity:
Arrival Temperatures:
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: FREE ICE

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

Sample Matrix Legend

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y/N	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	PAHs	PCBs	VOC	Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ BalP ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐	Antimony	Thallium	Potentially Hazardous or High Concentration (Y/N)
2D	Oct20	AM/PM	2	S	HOLD until notified													X		
4A		AM/PM																	X	
4B		AM/PM																		
4C		AM/PM																		
4D		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

N°: T - 133461

Document ID: DIV-78-1511.022

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Date Issued: April 21, 2022