

January 27, 2023
File: PE4999-LET.02

Richcraft Homes

2280 St. Laurent Boulevard, Suite 201
Ottawa, Ontario
K1G 4K1

Attention: **Mr. Patrick Gaudreault**

Subject: **Soil Remediation Program
Trail's Edge – Phase 4 (South)
Part of 2284 Mer Bleue Road
Ottawa, Ontario**

Consulting Engineers

9 Auriga Drive
Ottawa, Ontario
K2E 7T9
Tel: (613) 226-7381

Geotechnical Engineering
Environmental Engineering
Hydrogeology
Materials Testing
Building Science
Rural Development Design
Retaining Wall Design
Noise and Vibration Studies

patersongroup.ca

Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) carried out a soil remediation program at the aforementioned property (the subject site). The findings of the remediation program are detailed below.

Background Information

The subject site is located on the southwest side of the intersection of Mer Bleue Road and Brian Coburn Boulevard, in the City of Ottawa, Ontario. The property is currently occupied with an abandoned metal workshop building and storage shed, whereas the remainder of the subject site consists primarily of vacant grassland.

Recent Engineering Work

2020 Phase I – Environmental Site Assessment Update

In August 2020, Paterson completed a Phase I - Environmental Site Assessment (Phase I ESA) Update for the subject site. According to the historical information reviewed, the subject site was first developed with a metal workshop building sometime in the late-1980's. Fill material of unknown quality was also suspected to have been placed on the subject site at the rear of the metal workshop building. These two activities were considered to represent on-site PCAs, resulting in APECs with respect to the subject site.



The neighbouring properties have historically consisted of residential and commercial lands and no environmental concerns were identified with respect to the neighbouring properties.

2020 Phase II – Environmental Site Assessment

In September, October, and November 2020, a Phase II ESA was conducted for the subject site to address the two aforementioned APECs on the property. The subsurface investigation consisted of drilling three boreholes (BH4-20, BH5-20, and BH6-20) encircling the metal shop, all of which were equipped with groundwater monitoring wells. Five additional test pits (TP10-20 to TP14-20) were also excavated in the rear yard behind the metal shop.

Soil samples were submitted for laboratory analysis of benzene, ethylbenzene, toluene, and xylenes (BTEX); petroleum hydrocarbons, fractions 1 through 4 (PHCs F₁-F₄); polycyclic aromatic hydrocarbons (PAHs); and/or various metal parameters. Based on the analytical test results, the concentration of various PAH parameters identified in the surficial fill material at TP14-20 were in excess of the MECP Table 2 Coarse-Grained Commercial Soil Standards selected for the subject site.

Groundwater samples were also recovered from the monitoring wells installed on-site and submitted for laboratory analysis of volatile organic compounds (VOCs) and PHCs F₁-F₄ parameters. Based on the analytical results, no contaminated groundwater was identified beneath the subject site.

Based on the findings of the Phase II ESA, contaminated fill material was identified within the southwestern portion of the subject site, located to the rear of the metal workshop building. It was recommended that the impacted fill material be remediated by means of removal from the subject site and disposed at an approved waste disposal facility.

Remedial Excavation Program

The soil excavation program was carried out on December 15, 2022. At that time, a representative from Paterson was on-site to monitor the soil excavation program, which was carried out by ASL Agrodrain Limited (ASL) using a hydraulic shovel.

The remediation program consisted of excavating the fill material in the vicinity of TP14-20 and temporarily stockpiling it elsewhere on-site, pending future transfer to a waste disposal facility at a later date. The excavation pit measured approximately 12 m long, 12 m wide, and 0.5 m deep, and was terminated on the underlying native silty clay soil surface. The location of the remedial excavation is shown on Drawing PE4999-13 – Site Remediation Plan, appended to this report.



During the excavation, it was observed by field personnel that asphaltic concrete debris was intermixed within the soil/fill matrix, likely contributing to the excessive PAH parameter readings measured in the fill from this area.

Following the excavation and stockpiling of the contaminated fill material, confirmatory soil samples were collected from the walls and base of the excavation pit, and subjected to a preliminary soil screening program. Four (4) soil samples, one from each wall of the excavation pit, were submitted to Paracel Laboratories in Ottawa, Ontario for analytical testing of PAH parameters. Based on the test results, the sample obtained from the eastern wall of the excavation pit (Sample EW3) contained several PAH parameters in excess of the selected MECP Table 2 Coarse-Grained Commercial Soil Standards. A copy of the analytical test results have been appended to this letter.

A return visit to the subject site was carried out on December 21, 2022 to further remediate the remaining contaminated soil by excavating and extending the eastern wall of the pit. The excavation was extended eastwards and terminated upon reaching the area of TP11-20, where the soil previously tested at this location during the 2020 Phase II ESA complied with the site standards. Upon completion, the excavation pit measured approximately 32 m long, 12 m wide, and 0.5 m deep.

Following the excavation of the contaminated soil, a visual assessment was carried out which did not identify any significant pockets of asphaltic concrete remaining in the walls of the pit. Based on the lab testing data, as well as our visual observations, no additional soil testing was deemed necessary. Given that the original PAH contaminant concentrations were considered to be associated with asphaltic concrete fragments in the fill, it was not deemed necessary to test the underlying native soil.

ASL later returned to the subject site on January 16, 2023 to remove the stockpiled fill material and haul it to the Waste Connections of Canada Landfill in Ottawa, Ontario for disposal. According to the weigh scale tickets, 384 metric tonnes (192 m³) of contaminated soil was removed from the subject site in total.

Assessment

Paterson Group was retained by Richcraft Homes to monitor the excavation and removal of contaminated fill material from the property located at 2284 Mer Bleue Road, in the City of Ottawa, Ontario. The remedial program was carried out on December 15 and December 21, 2022, at which time the contaminated fill material identified in the vicinity of TP14-20 was excavated and temporarily stockpiled on-site. Later, on January 16, 2023, the contaminated soil stockpiles were hauled away from the site and disposed of at a licensed waste disposal facility. In total, approximately 384 metric tonnes (192 m³) of contaminated soil were removed from the site during the course of this remediation.



Conclusion

Based on our field observations in conjunction with the analytical test results and previous subsurface investigation, it is our opinion that the remediation program was successful in removing the identified impacted fill material from the subject site. **As a result, it is our opinion that no further remedial activities are required at this time.**

Statement of Limitations

The results of the sampling program are based on our field observations and analytical test results obtained at specific test locations which can only be extrapolated to an undefined limited area around each location. The test results may not reflect conditions at other locations or areas beyond the extent of the excavations.

This report was prepared for the sole use of Richcraft Homes. Permission and notification from Richcraft Homes and this firm will be required to release this report to any other party

We trust that this submission will satisfy your present requirements. If you have any questions regarding this report, please contact our office.

Paterson Group Inc.

Nick Sullivan, B.Sc.

Mark D'Arcy, P.Eng., QP_{ESA}



Report Distribution:

- ☐ Richcraft Homes
- ☐ Paterson Group Inc.

Attachments:

- ☐ Weigh Scale Tickets
- ☐ Laboratory Certificates of Analysis
- ☐ Drawing No. PE4999-13 – Site Remediation Plan





**WASTE CONNECTIONS OF CANADA
OTTAWA LANDFILL**

3354 NAVAN ROAD
OTTAWA, ON K4B 1H9
(613) 824-7289

010301

ASL AGRODRAIN SYSTEMS LIMITED
3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

CONTRACT: VC603-2284 MER BLEUE-OTTAWA-ASL AGRODRAIN

INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197771		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 8:04 am	1/16/23 8:18 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		29,870 kg	Scale In	ZONE: D-18		
TARE		14,210 kg	Scale Out	BOL:		
NET		15,660 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
15.66	MT	Contaminated Soil		\$48.60	98.94	\$ 860.02
1.00		Carbon Emissions Recovery		1.88%	1.86	\$ 16.17
		HST# 866808298RT0004				

\$876.19

\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

\$0.00

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3976 NIXON DRIVE
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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197784		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 8:50 am	1/16/23 8:57 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		29,300 kg	Manual In	ZONE: D-18		
TARE		14,200 kg	Scale Out	BOL:		
NET		15,100 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
15.10	MT	Contaminated Soil		\$48.60	95.40	\$ 829.26
1.00		Carbon Emissions Recovery		1.88%	1.79	\$ 15.59
		HST# 866808298RT0004				

\$844.85

\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197788		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 9:18 am	1/16/23 9:26 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		30,830 kg	Scale In	ZONE: D-18		
TARE		14,160 kg	Scale Out	BOL:		
NET		16,670 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.67	MT	Contaminated Soil		\$48.60	105.32	\$ 915.48
1.00		Carbon Emissions Recovery		1.88%	1.98	\$ 17.21
		HST# 866808298RT0004				

\$932.69
\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197795		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 9:49 am	1/16/23 9:58 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		30,790 kg	Scale In	ZONE: D-18		
TARE		14,020 kg	Scale Out	BOL:		
NET		16,770 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.77	MT	Contaminated Soil		\$48.60	105.95	\$ 920.97
1.00		Carbon Emissions Recovery		1.88%	1.99	\$ 17.31
		HST# 866808298RT0004				

\$938.28

\$0.00

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unauthorized hazardous waste.

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\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197802		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 10:19 am	1/16/23 10:25 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		30,470 kg	Scale In	ZONE: D-18		
TARE		14,140 kg	Scale Out	BOL:		
NET		16,330 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.33	MT	Contaminated Soil		\$48.60	103.17	\$ 896.81
1.00		Carbon Emissions Recovery		1.88%	1.94	\$ 16.86
		HST# 866808298RT0004				

\$913.67

\$0.00

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unauthorized hazardous waste.

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR	
05	1197812		SANDREWS	
IN	OUT	TRUCK	CONT.	LICENCE
1/16/23 10:44 am	1/16/23 10:51 am	603		
REFERENCE			ORIGIN	
53 AL			EAST END	

GROSS		30,010 kg	Scale In	ZONE: D-18		
TARE		14,140 kg	Scale Out	BOL:		
NET		15,870 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
15.87	MT	Contaminated Soil		\$48.60	100.27	\$ 871.55
1.00		Carbon Emissions Recovery		1.88%	1.89	\$ 16.39
		HST# 866808298RT0004				

\$887.94

\$0.00

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\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197819		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 11:11 am	1/16/23 11:18 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		31,090 kg	Scale In	ZONE: D-18		
TARE		14,140 kg	Scale Out	BOL:		
NET		16,950 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.95	MT	Contaminated Soil		\$48.60	107.09	\$ 930.86
1.00		Carbon Emissions Recovery		1.88%	2.01	\$ 17.50
		HST# 866808298RT0004				

\$948.36

\$0.00

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unauthorized hazardous waste.

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\$0.00

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3976 NIXON DRIVE
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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197830		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 11:40 am	1/16/23 11:56 am	603			
REFERENCE			ORIGIN		
53 AL			EAST END		

GROSS		30,530 kg	Scale In	ZONE: D-18		
TARE		14,110 kg	Scale Out	BOL:		
NET		16,420 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.42	MT	Contaminated Soil		\$48.60	103.74	\$ 901.75
1.00		Carbon Emissions Recovery		1.88%	1.95	\$ 16.95
		HST# 866808298RT0004				

\$918.70

\$0.00

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unauthorized hazardous waste.

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\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197786		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 9:08 am	1/16/23 9:16 am	603			
REFERENCE			ORIGIN		
19-03 ZAK			EAST END		

GROSS		29,960 kg	Scale In	ZONE: D-18		
TARE		13,540 kg	Scale Out	BOL:		
NET		16,420 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
16.42	MT	Contaminated Soil		\$48.60	103.74	\$ 901.75
1.00		Carbon Emissions Recovery		1.88%	1.95	\$ 16.95
		HST# 866808298RT0004				

\$918.70

\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

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\$0.00

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OSGOODE, ON K0A 2W0

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR	
05	1197793		SANDREWS	
IN	OUT	TRUCK	CONT.	LICENCE
1/16/23 9:36 am	1/16/23 9:45 am	603		
REFERENCE			ORIGIN	
19-03 ZAK			EAST END	

GROSS		30,820 kg	Scale In	ZONE: D-18		
TARE		13,520 kg	Scale Out	BOL:		
NET		17,300 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
17.30	MT	Contaminated Soil		\$48.60	109.30	\$ 950.08
1.00		Carbon Emissions Recovery		1.88%	2.06	\$ 17.87
		HST# 866808298RT0004				

\$967.95

\$0.00

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unauthorized hazardous waste.

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\$0.00

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3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197798		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 10:04 am	1/16/23 10:14 am	603			
REFERENCE			ORIGIN		
19-03 ZAK			EAST END		

GROSS		31,370 kg	Scale In	ZONE: D-18		
TARE		13,510 kg	Scale Out	BOL:		
NET		17,860 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
17.86	MT	Contaminated Soil		\$48.60	112.84	\$ 980.84
1.00		Carbon Emissions Recovery		1.88%	2.12	\$ 18.44
		HST# 866808298RT0004				

\$999.28

\$0.00

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unauthorized hazardous waste.

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\$0.00

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR	
05	1197806		SANDREWS	
IN	OUT	TRUCK	CONT.	LICENCE
1/16/23 10:33 am	1/16/23 10:42 am	603		
REFERENCE			ORIGIN	
19-03 ZAK			EAST END	

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GROSS		31,850 kg	Scale In	ZONE: D-18		
TARE		13,510 kg	Scale Out	BOL:		
NET		18,340 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
18.34	MT	Contaminated Soil Carbon Emissions Recovery		\$48.60	115.87	\$ 1,007.19
1.00				1.88%	2.18	\$ 18.94
		HST# 866808298RT0004				

\$1,026.13

\$1,026.13
\$0.00

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OSGOODE, ON K0A 2W0

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197817		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 11:00 am	1/16/23 11:08 am	603			
REFERENCE			ORIGIN		
19-03 ZAK			EAST END		

GROSS		31,010 kg	Scale In	ZONE: D-18		
TARE		13,480 kg	Scale Out	BOL:		
NET		17,530 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
17.53	MT	Contaminated Soil		\$48.60	110.75	\$ 962.71
1.00		Carbon Emissions Recovery		1.88%	2.08	\$ 18.10
		HST# 866808298RT0004				

\$980.81
\$0.00

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unauthorized hazardous waste.

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\$0.00

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3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

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INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197834		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 11:52 am	1/16/23 11:59 am	603			
REFERENCE			ORIGIN		
1903 ZAK			EAST END		

GROSS		24,830 kg	Scale In	ZONE: D-18		
TARE		13,480 kg	Scale Out	BOL:		
NET		11,350 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
11.35	MT	Contaminated Soil		\$48.60	71.71	\$ 623.32
1.00		Carbon Emissions Recovery		1.88%	1.35	\$ 11.72
		HST# 866808298RT0004				

\$635.04
\$0.00

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INVOICE
INBOUND

SITE		TICKET #		OPERATOR	
05		1197779		SANDREWS	
IN	OUT	TRUCK		CONT.	LICENCE
1/16/23 8:38 am	1/16/23 8:47 am	603			
REFERENCE				ORIGIN	
19-03 ZAK				EAST END	

GROSS		29,520 kg	Scale In	ZONE: D-18		
TARE		13,580 kg	Scale Out	BOL:		
NET		15,940 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
15.94	MT	Contaminated Soil		\$48.60	100.71	\$ 875.39
1.00		Carbon Emissions Recovery		1.88%	1.89	\$ 16.45
		HST# 866808298RT0004				

\$891.84

\$0.00

I hereby certify that this load does not contain any
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3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

CONTRACT: VC603-2284 MER BLEUE-OTTAWA-ASL AGRODRAIN

INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197768		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 7:59 am	1/16/23 8:15 am	603			
REFERENCE			ORIGIN		
1903 ZAK			EAST END		

GROSS		27,330 kg	Scale In	ZONE: D-18		
TARE		13,480 kg	Scale Out	BOL:		
NET		13,850 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
13.85	MT	Contaminated Soil		\$48.60	87.50	\$ 760.61
1.00		Carbon Emissions Recovery		1.88%	1.64	\$ 14.29
		HST# 866808298RT0004				

\$774.90

\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

\$0.00

DISTRICT COPY



**WASTE CONNECTIONS OF CANADA
OTTAWA LANDFILL**

3354 NAVAN ROAD
OTTAWA, ON K4B 1H9
(613) 824-7289

010301

ASL AGRODRAIN SYSTEMS LIMITED
3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

CONTRACT: VC603-2284 MER BLEUE-OTTAWA-ASL AGRODRAIN

INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197787		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 9:09 am	1/16/23 9:25 am	603			
REFERENCE			ORIGIN		
808 SIMON			EAST END		

GROSS		29,810 kg	Scale In	ZONE: D-18		
TARE		20,930 kg	Scale Out	BOL:		
NET		8,880 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
8.88	MT	Contaminated Soil		\$48.60	56.10	\$ 487.67
1.00		Carbon Emissions Recovery		1.88%	1.05	\$ 9.16
		HST# 866808298RT0004				

\$496.83

\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

\$0.00

DISTRICT COPY



**WASTE CONNECTIONS OF CANADA
OTTAWA LANDFILL**

3354 NAVAN ROAD
OTTAWA, ON K4B 1H9
(613) 824-7289

010301

ASL AGRODRAIN SYSTEMS LIMITED
3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

INVOICE
INBOUND

CONTRACT: VC603-2284 MER BLEUE-OTTAWA-ASL AGRODRAIN

SITE	TICKET #		OPERATOR	
05	1197826		SANDREWS	
IN	OUT	TRUCK	CONT.	LICENCE
1/16/23 11:30 am	1/16/23 11:38 am	603		
REFERENCE			ORIGIN	
808 SIMON			EAST END	

GROSS		31,410 kg	Scale In	ZONE: D-18		
TARE		13,230 kg	Scale Out	BOL:		
NET		18,180 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
18.18	MT	Contaminated Soil		\$48.60	114.86	\$ 998.41
1.00		Carbon Emissions Recovery		1.88%	2.16	\$ 18.77
		HST# 866808298RT0004				

\$1,017.18
\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

\$0.00

DISTRICT COPY



**WASTE CONNECTIONS OF CANADA
OTTAWA LANDFILL**

3354 NAVAN ROAD
OTTAWA, ON K4B 1H9
(613) 824-7289

010301

ASL AGRODRAIN SYSTEMS LIMITED
3976 NIXON DRIVE
OSGOODE, ON K0A 2W0

CONTRACT: VC603-2284 MER BLEUE-OTTAWA-ASL AGRODRAIN

INVOICE
INBOUND

SITE	TICKET #		OPERATOR		
05	1197818		SANDREWS		
IN	OUT	TRUCK	CONT.	LICENCE	
1/16/23 11:02 am	1/16/23 11:11 am	603			
REFERENCE			ORIGIN		
808 SIMON			EAST END		

GROSS		30,390 kg	Scale In	ZONE: D-18		
TARE		13,320 kg	Scale Out	BOL:		
NET		17,070 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
17.07	MT	Contaminated Soil		\$48.60	107.85	\$ 937.45
1.00		Carbon Emissions Recovery		1.88%	2.03	\$ 17.63
		HST# 866808298RT0004				

\$955.08

\$0.00

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

\$0.00

DISTRICT COPY

Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Nick Sullivan

Client PO: 56489
Project: PE4999
Custody:

Report Date: 19-Dec-2022
Order Date: 15-Dec-2022

Order #: 2251422

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2251422-01	NW1
2251422-02	EW3
2251422-03	WW2
2251422-04	SW3

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 19-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Dec-2022

Client PO: 56489

Project Description: PE4999

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	16-Dec-22	17-Dec-22
Solids, %	CWS Tier 1 - Gravimetric	19-Dec-22	19-Dec-22

Certificate of Analysis

Report Date: 19-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Dec-2022

Client PO: 56489

Project Description: PE4999

	Client ID:	NW1	EW3	WW2	SW3
	Sample Date:	15-Dec-22	15-Dec-22	15-Dec-22	15-Dec-22
	Sample ID:	2251422-01	2251422-02	2251422-03	2251422-04
	MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	82.2	88.8	81.5	81.2
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Semi-Volatiles

Acenaphthene	0.02 ug/g dry	0.03	0.22	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	0.04	<0.02	<0.02
Anthracene	0.02 ug/g dry	0.03	0.54	0.02	0.05
Benzo [a] anthracene	0.02 ug/g dry	0.22	1.74	0.10	0.18
Benzo [a] pyrene	0.02 ug/g dry	0.25	1.62	0.10	0.18
Benzo [b] fluoranthene	0.02 ug/g dry	0.36	2.09	0.15	0.25
Benzo [g,h,i] perylene	0.02 ug/g dry	0.18	0.89	0.08	0.13
Benzo [k] fluoranthene	0.02 ug/g dry	0.19	1.14	0.08	0.13
Chrysene	0.02 ug/g dry	0.29	1.82	0.12	0.21
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.04	0.21	<0.02	0.03
Fluoranthene	0.02 ug/g dry	0.59	4.48	0.26	0.51
Fluorene	0.02 ug/g dry	0.03	0.25	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.17	0.83	0.07	0.13
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.03	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.06	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	0.05	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	0.39	2.65	0.10	0.26
Pyrene	0.02 ug/g dry	0.44	3.34	0.20	0.38
2-Fluorobiphenyl	Surrogate	139%	138%	98.4%	82.7%
Terphenyl-d14	Surrogate	138%	139%	112%	90.5%

Certificate of Analysis

Report Date: 19-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Dec-2022

Client PO: 56489

Project Description: PE4999

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	1.07		ug/g		80.4	50-140			
Surrogate: Terphenyl-d14	1.28		ug/g		95.8	50-140			

Certificate of Analysis

Report Date: 19-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Dec-2022

Client PO: 56489

Project Description: PE4999

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	92.3	0.1	% by Wt.	94.1			2.0	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	0.075	0.02	ug/g	0.129			52.6	40	QR-05
Anthracene	0.073	0.02	ug/g	0.109			39.6	40	
Benzo [a] anthracene	0.211	0.02	ug/g	0.369			54.7	40	QR-05
Benzo [a] pyrene	0.154	0.02	ug/g	0.310			67.3	40	QR-05
Benzo [b] fluoranthene	0.248	0.02	ug/g	0.409			48.9	40	QR-05
Benzo [g,h,i] perylene	0.101	0.02	ug/g	0.164			48.0	40	QR-05
Benzo [k] fluoranthene	0.120	0.02	ug/g	0.199			49.3	40	QR-05
Chrysene	0.247	0.02	ug/g	0.386			44.1	40	QR-05
Dibenzo [a,h] anthracene	0.022	0.02	ug/g	0.043			66.2	40	QR-05
Fluoranthene	0.482	0.02	ug/g	0.740			42.1	40	QR-05
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	0.088	0.02	ug/g	0.153			54.3	40	QR-05
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	0.099	0.02	ug/g	0.122			21.0	40	
Pyrene	0.439	0.02	ug/g	0.738			50.8	40	QR-05
Surrogate: 2-Fluorobiphenyl	2.08		ug/g		94.5	50-140			
Surrogate: Terphenyl-d14	2.15		ug/g		97.8	50-140			

Certificate of Analysis

Report Date: 19-Dec-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Dec-2022

Client PO: 56489

Project Description: PE4999

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Semi-Volatiles									
Acenaphthene	0.243	0.02	ug/g	ND	88.5	50-140			
Acenaphthylene	0.314	0.02	ug/g	0.129	67.5	50-140			
Anthracene	0.295	0.02	ug/g	0.109	67.8	50-140			
Benzo [a] anthracene	0.151	0.02	ug/g	ND	90.6	50-140			
Benzo [a] pyrene	0.135	0.02	ug/g	ND	80.8	50-140			
Benzo [b] fluoranthene	0.203	0.02	ug/g	ND	122	50-140			
Benzo [g,h,i] perylene	0.127	0.02	ug/g	ND	76.1	50-140			
Benzo [k] fluoranthene	0.418	0.02	ug/g	0.199	79.7	50-140			
Chrysene	0.626	0.02	ug/g	0.386	87.3	50-140			
Dibenzo [a,h] anthracene	0.196	0.02	ug/g	0.043	55.8	50-140			
Fluoranthene	0.155	0.02	ug/g	ND	92.7	50-140			
Fluorene	0.213	0.02	ug/g	ND	77.5	50-140			
Indeno [1,2,3-cd] pyrene	0.297	0.02	ug/g	0.153	52.3	50-140			
1-Methylnaphthalene	0.245	0.02	ug/g	ND	89.1	50-140			
2-Methylnaphthalene	0.258	0.02	ug/g	ND	93.7	50-140			
Naphthalene	0.249	0.01	ug/g	ND	90.5	50-140			
Phenanthrene	0.295	0.02	ug/g	0.122	63.0	50-140			
Pyrene	0.156	0.02	ug/g	ND	93.7	50-140			
Surrogate: 2-Fluorobiphenyl	1.80		ug/g		81.7	50-140			
Surrogate: Terphenyl-d14	1.88		ug/g		85.7	50-140			

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 56489

Report Date: 19-Dec-2022

Order Date: 15-Dec-2022

Project Description: PE4999

Qualifier Notes:

QC Qualifiers :

QR-05 Duplicate RPDs higher than normally accepted. Remaining batch QA\QC was acceptable. May be sample effect.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

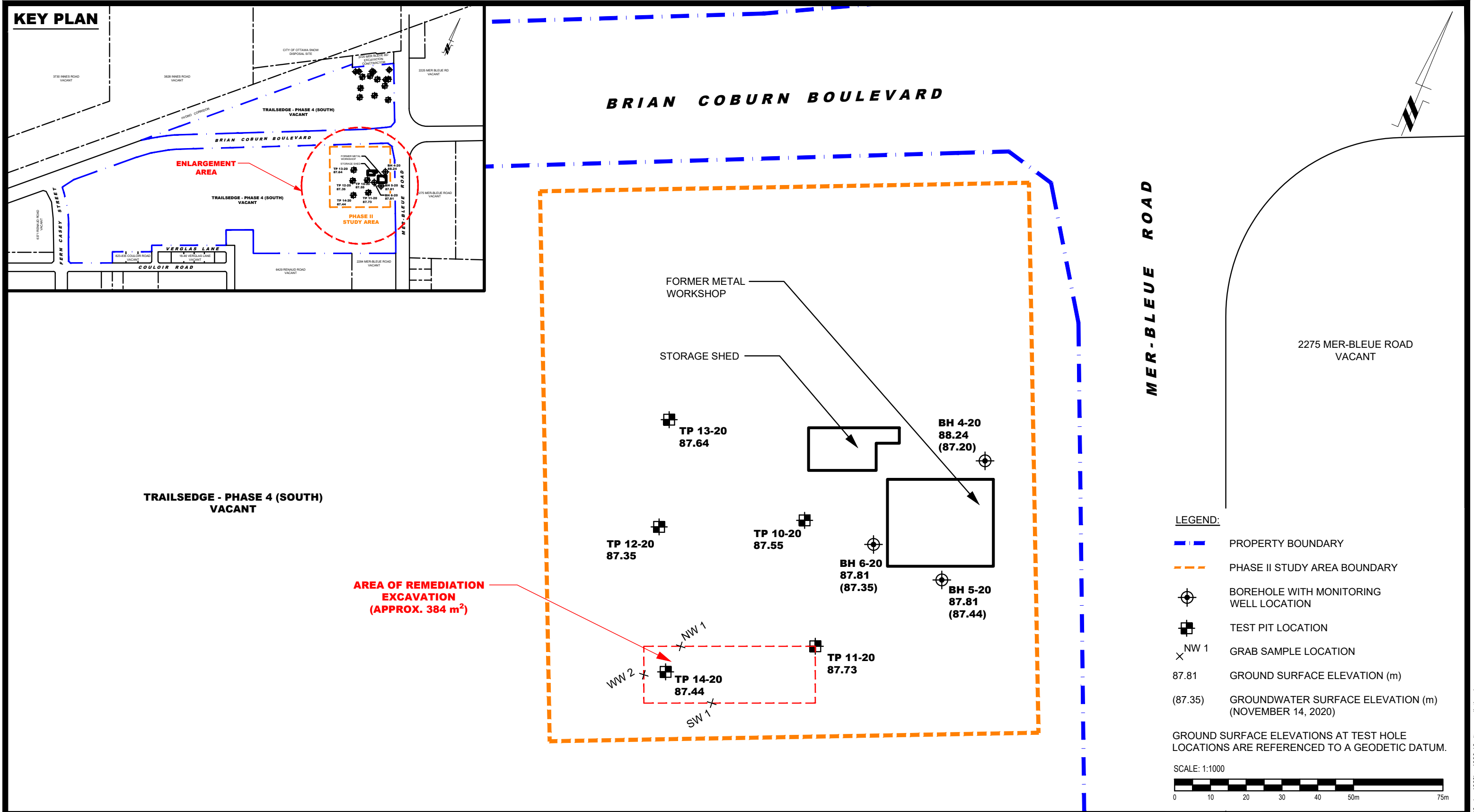
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.



Client Name: <u>Paterson Group</u>	Project Ref: <u>PE4999</u>	Page <u>1</u> of <u>1</u>
Contact Name: <u>Nick Sullivan</u>	Quote #:	Turnaround Time ☐ 1 day ☐ 3 day ☒ 2 day ☐ Regular Date Required: _____
Address: <u>9 Auriga Dr.</u> <u>Ottawa, ON</u>	PO #: <u>56489</u>	
Telephone: <u>613-226-7381</u>	E-mail: <u>nsullivan@patersongroup.ca</u>	

☒ REG 153/04 ☐ REG 406/19		Other Regulation		Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)		Required Analysis															
☐ Table 1 ☐ Res/Park ☐ Med/Fine ☐ Table 2 ☒ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☐ Table _____ For RSC: ☐ Yes ☐ No		☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm Mun: _____ ☐ Other: _____				PHCS F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CMI	B (HWS)									
Sample ID/Location Name		Matrix	Air Volume	# of Containers	Sample Taken Date Time																
1	<u>NW1</u>	<u>S</u>		<u>1</u>	<u>Dec. 15.22</u>				<u>X</u>												
2	<u>EW3</u>	<u>↓</u>		<u>↓</u>	<u>↓</u>				<u>↓</u>												
3	<u>VW2</u>	<u>↓</u>		<u>↓</u>	<u>↓</u>				<u>↓</u>												
4	<u>SW3</u>	<u>↓</u>		<u>↓</u>	<u>↓</u>				<u>↓</u>												
5																					
6																					
7																					
8																					
9																					
10																					

Comments:			Method of Delivery:		
Relinquished By (Sign): <u>N. Sullivan</u>	Received By Driver/Depot:	Received at Lab: <u>Mud Fort</u>	Verified By: <u>SCF</u>		
Relinquished By (Print): <u>Nick Sullivan</u>	Date/Time:	Date/Time: <u>Dec 15/22 5:30 PM</u>	Date/Time: <u>Dec 16/22 9:43a</u>		
Date/Time: <u>Dec. 15. 22</u>	Temperature: _____ °C	Temperature: <u>9.6 °C</u>	pH Verified: ☐ By: <u>N/A</u>		



 PATERSON GROUP 9 AURIGA DRIVE OTTAWA, ON K2E 7T9 TEL: (613) 226-7381					RICHCRAFT HOMES LTD. PHASE II - ENVIRONMENTAL SITE ASSESSMENT TRAIL'S EDGE - PHASE 4 (SOUTH) PART OF 2284 MER BLEUE ROAD OTTAWA, ONTARIO	Scale: 1:1000	Date: 01/2023	
						Drawn by: YA	Report No.: PE4999-LET.02	
						Checked by: NS	Dwg. No.: PE4999-13	
						Approved by: MSD		Revision No.:
				</				

p:\autocad drawings\environmental\pe4999-13 site remediation.dwg