PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT & DELINEATION

of

4280 Fourth Avenue, Niagara Falls, ON

For:
1274505 Ontario Ltd.

EON Environmental Consulting Ltd.

May 1st, 2023
Project: E-22-32-2a

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Prepared by **Hallex Environmental Ltd**. on behalf of:

1274505 Ontario Ltd.

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EXECUTIVE SUMMARY

INTRODUCTION

Hallex Environmental Ltd. was retained by 1274505 Ontario Ltd. to conduct a Phase Two Environmental Site Assessment (ESA) at 4280 Fourth Ave., Niagara Falls, Ontario following the Phase One ESA completed by Hallex on August 11th, 2022 that identified the following Potentially Contaminating Activities (PCA)/Areas of Potential Environmental Concern (APEC):

- **PCA-1/APEC-1: #28 – Gasoline and Associated Products Storage in Fixed Tanks** – The 1965 FIP illustrated one (1) Underground Storage Tank (UST) of unknown size and with unknown substance on-site, approximately 20m eat of Fourth Avenue behind the current office building. The presence of a UST represents an on-site PCA creating an on-site APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) to have impacted the study sites soil and groundwater.
- ***PCA-2/APEC-2: #46 Rail Yards, Tracks and Spurs.*** According to FIPs a CN rail spur was located along the northern portion of the study site prior to 1934 until 1965 when it was decommissioned. The historic presence of the on-site railway tracks represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), PHCs, BTEX, and PAHs to have impacted the study sites' soil and/or groundwater.
- ***PCA-3/APEC-3: #10 Commercial Autobody Shops***. Vernon's City Directories and the site reconnaissance revealed that the south adjacent land use has been an auto repair garage since at least 1970s until current day. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Volatile Organic Compound (VOCs) Metals, PHCs, and PAHs to have impacted the study sites soil and/or groundwater.
- ***PCA-4/APEC-4: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles***. The FIPs revealed that the east adjacent land use has been an auto repair garage. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Metals, PHCs, VOCs and PAHs to have impacted the study sites soil and/or groundwater.
- ***PCA-5/APEC-5: #8 Chemical Manufacturing, Processing and Bulk Storage.*** The 1916 FIP noted "Calcium Carbide Plant" at the east adjacent property (4290 Third Avenue) and removed by 1932. This Plant represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), VOCs, and PAHs in the study sites soil and groundwater.

- ***PCA-6/APEC-6: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles***. The FIPs, Google Street view and Vernon's Street Directory revealed that the western land use has been an auto repair garage from 1975 to 2018. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Metals, PHCs, VOCs and PAHs to have impacted the study sites soil and/or groundwater.
- ***PCA-7/APEC-7: #46 Rail Yards, Tracks and Spurs.*** According to FIPs a cluster of CN railway lines ran from the eastern portion of the study area to Cyanamid and running along the north adjacent property. The historic presence of the off-site railway tracks represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), PHCs, BTEX, and PAHs to have impacted the study sites' soil and/or groundwater.

The objectives of the Phase Two ESA were to determine the presence/absence of potential contaminants of concern within the soil. The presence of contaminants in the soil, if detected, would determine the need for further sampling and analyses of soil to delineate the extent of impact, and to satisfy the requirements of Ontario Regulation (O. Reg.) 153/04, amended by O. Reg. 511/09.

PHASE 2 ESA METHODS

Eight (8) boreholes, BH-1 to BH-8 were advanced on November 9th, 2022. Soil samples were collected at depth intervals of 0.15m and 0.9 m until they reached the maximum depth of 5.1 mbgs. All eight (8) boreholes were converted into eight (8) monitoring wells for groundwater sampling. Thirteen (13) samples were submitted to Paracel Laboratories Ltd. for analyses of Metals (by ICP), PAHs, PHCs, BTEX, EC/SAR/pH and Grain Size Analysis.

FINDINGS

The general overburden stratigraphy observed in boreholes BH-1 to BH-8 consisted of:

Depth (avg.)	Description
0 - 0.2 mbgs	Sand and Gravel
0.2 – 0.9 mbgs	Brown to black FILL with some gravel to Sand and Gravel FILL
1.5 – 5.18 mbgs	Brown Silty Clay

Notes:

- Black Sand FILL encountered at all borehole locations.
- Bedrock was not encountered at borehole maximum depth of 5.18 mbgs.
- Moisture increased below 0.6 mbgs.
- Colour changed gradually from brown to greyish brown at 3.5 to 4.5 mbgs, increasing grey with depth.
- Petroleum odour was noted in core samples from boreholes BH-1, BH-2, BH-3, BH-4, & BH-5, to depths of approximately 1.5 mbgs.

SOIL RESULTS (Initial Phase Two)

Metals

Exceedances were noted in samples from three (3) boreholes (BH-3, BH-5, and BH-8) within the fill material from depth ranges 0.05 – 1.5 mbgs, and two (2) test pits within the fill material from depth ranges 0.07 – 0.75 mbgs, for target contaminant group Metals (Arsenic, Cadmium, Lead).

Parameter	O. Reg. 153/04 (2011) Table 3 Residential, fine	BH3-AS1	BH5-AS1	BH8-SS1	TP2-SS1	TP3-SS1
Metals						
Arsenic	18 ug/g dry	**22.2**	**26.7**	**19.0**	6.0	7.4
Cadmium	1.2 ug/g dry	0.8	**1.7**	**2.5**	0.6	ND
Lead	120 ug/g dry	23.2	44.6	77.2	**175**	**250**

ND: Not Detected, N/A: Not Applicable, Highlights indicate exceedance to applicable regulation.

VOCs

Soil laboratory analytical data was compared with MECP Site Condition Standards (2011) Table 2: Residential land use in a Potable Groundwater Situation, fine textured soil. Exceedances were noted in three (3) boreholes (BH-1, BH-3, and BH-5) and a presence was noted in one (1) borehole and two (2) test pits (BH8, TP2 and TP3) all within the fill material from depth ranges 0.07–1.4 mbgs, for target contaminants Benzene and Trichloroethylene.

Parameter	O. Reg. 153/04 (2011) Table 3 Residential, fine	BH1-SS2	BH3-AS1	BH5-AS1	BH8-SS1	TP2-SS1	TP3-SS1
Volatiles							
Benzene	0.17 ug/g dry	**0.32**	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	30 ug/g dry	ND	0.92	ND	ND	N/A	N/A
Ethylbenzene	15 ug/g dry	0.46	ND	ND	ND	ND	ND
Hexane	34 ug/g dry	1.03	ND	ND	ND	N/A	N/A
Toluene	6 ug/g dry	0.50	ND	ND	0.32	ND	ND
Trichloroethylene	0.52 ug/g dry	ND	**0.85**	**0.65**	ND	N/A	N/A
Xylenes, total	25 ug/g dry	2.68	ND	ND	0.38	0.25	0.05

ND: Not Detected, N/A: Not Applicable, Red highlights indicate exceedance to applicable regulation and blue highlights indicates results below regulation.

Polycyclic Aromatic Hydrocarbons (PAHs)

PAH exceedances were noted in one (1) borehole (BH8-SS1) depth of 0.05–0.6 mbgs, and in one (1) test pit (TP2-SS1) depth of 0.07-0.70 mbgs, both in fill material.

Parameter	O. Reg. 153/04 (2011) Table 3 Residential, fine	BH8-SS1	TP2-SS1
Semi-Volatiles			
Benzo[a]anthracene	0.63 ug/g dry	0.37	**0.90**
Benzo[a]pyrene	0.3 ug/g dry	**0.37**	**0.60**
Benzo[b]fluoranthene	0.78 ug/g dry	0.32	**0.80**
Dibenzo[a,h]anthracene	0.1 ug/g dry	0.06	**0.13**
Fluoranthene	0.69 ug/g dry	0.67	**1.45**
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.23	**0.52**

Red highlights indicate exceedance to applicable regulation and blue highlights indicate results below regulation.

DELINEATION

Ten (10) additional boreholes were advanced between March 9th and 10th, 2023, and all converted into monitoring wells (MW-101, MW-102, MW-103, MW-104, MW-105, MW-106a, MW-106b, MW-107, MW-108, and MW-109) delineate the extent of soil and groundwater contamination across the site. Borehole drilling and monitoring well installation was consistent with methods outlined in the above section 2.0.

SOIL RESULTS (Delineation)

Metals

Exceedances were noted from two (2) boreholes, MW-104 and MW-106b, for Metals (by ICP) and from a depth range of 0.76 to 1.37 mbgs. A metal presence was noted in three (3) additional boreholes, MW-101, MW-108 and MW-109 and a lower sample from MW-104.

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-101-SS2	MW-104 – SS2	MW104-SS4	MW106b – SS2	MW108 – SS2	MW109 – SS1
Metals							
Arsenic	18 ug/g dry	11.8	29.2	6	7.9	16.2	4.7
Lead	120 ug/g dry	110	12.1	N/A	240	74.2	80.7

NA: Not Applicable, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

One of the soil samples submitted for analysis as part of the December-January 2023 Phase Two ESA indicated exceedances for Arsenic and Cadmium (Sample ID BH/MW-5-AS1). According to O.Reg 153/04, s. 48(2)

"if two or more samples of soil are taken from sampling points at the same sampling location that are at the same depth in, on, or under the property, the property meets a standard mentioned in subsection (1) if the average of the sampling results meets the standard and in no other circumstances."

As such, test pit (TP-108) was advanced within 2.0 m of the initial exceedance. As shown below, the averaged result for Arsenic is 13.3 ug/g and the averaged result for Cadmium is 1.1 ug/g, which meet the applicable criteria.

Parameter	O.Reg. 153/04 (2011) – Table 3 Residential, Fine/Med	BH/MW-5-AS1	TP-108	Average
Metals				
Arsenic	18 ug/g dry	22.2 ug/g	4.4	13.3
Cadmium	1.2 ug/g dry	1.7 ug/g	0.5	1.1

Volatile Organic Compound

Exceedances and presence of VOCs were noted in samples from one (1) borehole, MW-104-SS2 and presences were noted from MW-104 in lower samples (SS4 & SS6).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-104–SS2	MW-104-SS4	MW-104-SS6
Volatiles (VOCs)				
Cis-1,-2-Dichloroethylene	30 ug/g dry	3.08	0.05	0.45
Trichloroethylene	0.52 ug/g dry	2.96	ND (0.05)	ND (0.05)

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

GROUNDWATER RESULTS (Delineation)

Metals

The Groundwater lab analytical data indicated that all samples, MW-101 to MW-109, satisfied the Site Condition Standards, Table 3, Fine texture soil, for metals in groundwater.

Volatile Organic Compounds

Exceedances of VOCs were noted in MW-104 and MW-105. The tables below highlight the groundwater exceedances with complete analytical reports provided in Appendix C. Groundwater exceedances are illustrated in Figure 4b.

Parameter	O. Reg. 153/04 (2011) Table 3, Residential, Fine	MW-102	MW-103	MW-104	MW-105	MW-106A
Volatiles						
Cis-1,2-Dichloroethylene	17 ug/L	ND (0.5)	2.0	34.2	8.8	0.8
Trichloroethylene	17 ug/L	ND (0.5)	ND (0.5)	7.2	5.0	ND (0.5)
Vinyl Chloride	1.7 ug/L	ND (0.5)	ND (0.5)	7.2	5.0	ND (0.5)

Petroleum Hydrocarbons (PHCs)

PHC presence was noted in samples from four (4) boreholes (MW-101-SS2, MW-106b-SS2, MW-108-SS2, MW-109-SS1).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-101-SS2	MW106b – SS2	MW108 – SS2	MW109 – SS1
Petroleum Hydrocarbons (PHCs)					
F3 PHCs (C16-C34)	1300 ug/g dry	20	10	89	122
F4 PHCs (C34-C50)	5600 ug/g dry	ND (6)	ND (6)	49	137

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Polycyclic Aromatic Hydrocarbons

PAH presence was noted in samples from three (3) boreholes (MW-106b-SS2, MW-108-SS2 and MW-109-SS1) and test pits (TP102-SS2 and TP103-SS2).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW106b – SS2	MW108 – SS2	MW109 – SS1
Semi-Volatiles (PAHs)				
Anthracene	0.74 ug/g dry	0.02	ND (0.02)	0.10
Benzo[a]anthracene	0.63 ug/g dry	0.08	0.05	0.11
Benzo[a]pyrene	0.3 ug/g dry	0.09	0.06	0.21
Benzo[b]fluoranthene	0.78 ug/g dry	0.07	0.05	0.19
Benzo[g,h,i]perylene	7.8 ug/g dry	0.07	0.05	0.20
Benzo[k]fluoranthene	0.78 ug/g dry	0.03	0.02	0.08
Chrysene	7.8 ug/g dry	0.09	0.06	0.12
Dibenzo[a,h]anthracene	0.1 ug/g dry	0.03	0.02	ND (0.02)
Fluoranthene	0.69 ug/g dry	0.13	0.11	0.23
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.08	0.05	0.22
1-Methylnaphthalene	3.4 ug/g dry	0.07	0.05	0.04
2-Methylnaphthalene	3.4 ug/g dry	0.07	0.06	0.04
Methylnaphthalene (1&2)	3.4 ug/g dry	0.14	0.11	0.07
Naphthalene	0.75 ug/g dry	0.04	0.04	0.02
Phenanthrene	7.8 ug/g dry	0.12	0.11	0.13
Pyrene	78 ug/g dry	0.10	0.07	0.18

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Parameters	O.Reg 153/04 (2011) Table 3, Residential fine	TP102-SS2	TP103-SS2
Semi-Volatiles (PAHs)			
Acenaphthene	58 ug/g dry	ND (0.2)	ND (0.2)

Acenaphthylene	0.17 ug/g dry	0.03	ND (0.02)
Anthracene	0.74 ug/g dry	0.04	ND (0.02)
Benzo[a]anthracene	0.63 ug/g dry	0.13	0.05
Benzo[a]pyrene	0.3 ug/g dry	0.14	0.12
Benzo[b]fluoranthene	0.78 ug/g dry	0.11	0.10
Benzo[g,h,i]perylene	7.8 ug/g dry	0.08	0.08
Benzo[k]fluoranthene	0.78 ug/g dry	0.03	0.03
Chrysene	7.8 ug/g dry	0.15	0.07
Fluoranthene	0.69 ug/g dry	0.21	0.06
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.12	0.12
1-Methylnaphthalene	3.4 ug/g dry	0.12	0.02
2-Methylnaphthalene	3.4 ug/g dry	0.10	0.02
Methylnaphthalene (1&2)	3.4 ug/g dry	0.21	0.04
Naphthalene	0.75 ug/g dry	0.05	0.02
Phenanthrene	7.8 ug/g dry	0.18	0.06
Pyrene	78 ug/g dry	0.14	0.04

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

FINDINGS & CONCLUSIONS

The Phase Two Environmental Site Assessment and Delineation at 4280 Fourth Avenue, Niagara Falls, ON revealed soil exceedances to Ministry of the Environment, Conservation & Parks (MECP) Site Condition Standards 2011 Table 3 for Residential Land Use in a non-potable groundwater condition, for fine textured soil for contaminant groups Metals (by ICP), Polycyclic Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds (VOCs) at boreholes: BH/MW-1, BH/MW-3, BH/MW-5, BH/MW-8, MW-104 and MW-106b and test pits: TP-2, TP-3, TP-106.

Groundwater samples also revealed exceedances to the applicable MECP Table 3 site condition standards for contaminant groups Petroleum Hydrocarbons (PHCs), and Volatile Organic Compounds (VOCs) at monitoring wells: MW-1, MW-3, MW-104, and MW-105.

The soil and groundwater impacts identified were associated with the following APECs:

1) Fill material observed across the site;
2) Historic railway spur in the northern portion of the site;
3) A former historic underground storage tank in the southwestern portion of the site; and
4) A plume of chlorinated solvents in soil and groundwater exhibiting a distribution pattern in the southwest area of the site indicating the source of the solvents as 4346 Fourth Ave,

a commercial autobody shop, situated on the southwest property adjacent to the subject site. The chlorinated solvent plume distribution pattern further exhibits the potential to have impacted soil and groundwater at the adjacent residential site 4339-4341 Third Ave.

Areas of Soil and Groundwater Impact

Soil

Area 1: Former rail spur – north end of site. PAHs & Metals.

Area: 1,213.5 m^2

B: 0.7 mbgs

Volume: 849.45 m^3

Area 2: VOC/PHC from former UST on site, and chlorinated solvents from off-site.

Area: 1,825.95 m^2

B: 2.29 mbgs

Volume: 4,181.43 m^3

Area 3: Localized VOC anomaly. Northeast corner of site.

Area: 186.27 m^2

B: 1.5 mbgs

Volume: 279.41 m^3

Groundwater

Groundwater impacted by Petroleum Hydrocarbons and VOCs as chlorinated solvents in the southwest area of the site was estimated as:

Area: 1,090.72 m^2

B: 6.12 mbgs

Volume: 2,200 m^3

(note: Volume calculated based on soil porosity = 30%)

Aesthetically Impacted Soil

Black Sand & Gravel Fill was identified across the site ranging in depths between 0.6 mbgs – 2.1 mbgs. While passing MECP Site Condition Standards Table 3 for Residential Land Use in a Non-Potable Groundwater Condition, the material may not be suitable for re-use within a residential development.

*Note: Soil and Groundwater area/volume estimates were based on a “worst-case, to next clean point” bases, as required by O.Reg 153/04 – 511/09.

LIST OF ACRONYMS

APEC	Area of Potential Environmental Concern
AST	Aboveground Storage Tank
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COC	Contaminant of Concern
CSM	Conceptual Site Model
CSVC	Combustible Soil Vapour Concentration
EC	Electrical Conductivity
EPA	Environmental Protection Act
ESA	Environmental Site Assessment
GPR	Ground Penetrating Radar
i	Hydraulic Gradient
k_h	Hydraulic Conductivity
LEL	Lower Explosive Limit
masl	Metres above sea level
mbgs	Metres below ground surface
MECP	Ministry of the Environment, Conservation and Parks
MW	Monitoring Well
OC/OCP	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCA	Potentially Contaminating Activity
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene (tetrachloroethylene)
pH	Power of Hydrogen
PHC	Petroleum Hydrocarbons
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
QP	Qualified Person
RA	Risk Assessment
RSC	Record of Site Condition
SAR	Specific Absorption Rate
SCS	Site Condition Standard
SGWSS	Soil Groundwater and Sediment Standards
SVOC	Semi-Volatile Organic Compounds
TCLP	Toxicity Classification Leachate Procedure
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

Potentially Contaminating Activities (PCAs)
Schedule D Table 2 of O. Reg 511/09

PCA#	Description
1	Acid and Alkali Manufacturing, Processing and Bulk Storage
2	Adhesives and Resins Manufacturing, Processing and Bulk Storage
3	Airstrips and Hangars Operation
4	Antifreeze and De-icing Manufacturing and Bulk Storage
5	Asphalt and Bitumen Manufacturing
6	Battery Manufacturing, Recycling and Bulk Storage
7	Boat Manufacturing
8	Chemical Manufacturing, Processing and Bulk Storage
9	Coal Gasification
10	Commercial Autobody Shops
11	Commercial Trucking and Container Terminals
12	Concrete, Cement and Lime Manufacturing
13	Cosmetics Manufacturing, Processing and Bulk Storage
14	Crude Oil Refining, Processing and Bulk Storage
15	Discharge of Brine related to oil and gas production
16	Drum and Barrel and Tank Reconditioning and Recycling
17	Dye Manufacturing, Processing and Bulk Storage
18	Electricity Generation, Transformation and Power Stations
19	Electronic and Computer Equipment Manufacturing
20	Explosives and Ammunition Manufacturing, Production and Bulk Storage
21	Explosives and Firing Range
22	Fertilizer Manufacturing, Processing and Bulk Storage
23	Fire Retardant Manufacturing, Processing and Bulk Storage
24	Fire Training
25	Flocculants Manufacturing, Processing and Bulk Storage
26	Foam and Expanded Foam Manufacturing and Processing
27	Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles
28	Gasoline and Associated Products Storage in Fixed Tanks
29	Glass Manufacturing
30	Importation of Fill Material of Unknown Quality

PCA#	Description
31	Ink Manufacturing, Processing and Bulk Storage
32	Iron and Steel Manufacturing and Processing
33	Metal Treatment, Coating, Plating and Finishing
34	Metal Fabrication
35	Mining, Smelting and Refining; Ore Processing; Tailings Storage
36	Oil Production
37	Operation of Dry-Cleaning Equipment (where chemicals are used)
38	Ordnance Use
39	Paints Manufacturing, Processing and Bulk Storage
40	Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications
41	Petroleum-derived Gas Refining, Manufacturing, Processing and Bulk Storage
42	Pharmaceutical Manufacturing and Processing
43	Plastics (including Fibreglass) Manufacturing and Processing
44	Port Activities, including Operation and Maintenance of Wharves and Docks
45	Pulp, Paper and Paperboard Manufacturing and Processing
46	Rail Yards, Tracks and Spurs
47	Rubber Manufacturing and Processing
48	Salt Manufacturing, Processing and Bulk Storage
49	Salvage Yard, including automobile wrecking
50	Soap and Detergent Manufacturing, Processing and Bulk Storage
51	Solvent Manufacturing, Processing and Bulk Storage
52	Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems
53	Tannery
54	Textile Manufacturing and Processing
55	Transformer Manufacturing, Processing and Use
56	Treatment of Sewage equal to or greater than 10,000 litres per day
57	Vehicles and Associated Parts Manufacturing
58	Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
59	Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Project Objectives

Hallex Environmental Ltd. was retained by 1274505 Ontario Ltd. hereinafter referred to as the "client") to conduct a Phase Two Environmental Site Assessment (ESA) and Delineation at 4280 Fourth Avenue, Niagara Falls, Ontario (hereinafter referred to as the "study site"). The objectives of the Phase Two ESA were to determine the presence/absence of potential contaminants of concern within the soil associated with a historic on-site Underground Storage Tank (UST) and railway tracks, in addition to the off-site automotive garages, railway, and historic chemical facility, which are all Potentially Contaminating Activities (PCA's) listed in Schedule D, Table 2, of O. Reg. 511/09, thus results in seven (7) Areas of Potential Environmental Concern (APEC) triggering the Phase Two ESA.

The presence of contaminants in the soil, if detected, would determine the need for further sampling and analyses to delineate the extent of the impact, and to satisfy the requirements of Ontario Regulation (O. Reg.) 153/04, as amended. The site location is shown in Figure 1 and the PCA/APEC, identified in the Phase One ESA (Hallex, 2022) are shown on Figure 2.

1.2 Limitations and Exceptions of Assessment

EON Environmental Consulting Ltd.

This report was prepared by Hallex Environmental Ltd. (hereinafter referred to as "Hallex") for the client. The material in it reflects Hallex's best judgment based on the information discovered at the time of preparation and within the scope of work. The investigative procedures, and format of this report, generally follow the guidelines established in: O. Reg. 511/09 per Part XV.1 of the Environmental Protection Act. Any information presented concerning materials at the site is based on information gathered at the Test Pit, and borehole/monitoring well locations only. There may be materials and/or subsurface soil and/or groundwater conditions on-site which are not represented by these investigations. 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. Hallex Environmental Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. *EON Environmental Consulting Ltd.*

1.3 Site Description

Municipal address:	4280 Fourth Avenue, Niagara Falls, ON
Client(s):	1274505 Ontario Ltd.
UTM coordinates:	Zone: 17T, Northing: 4,774,971.58m, Easting: 656,364.04m
Elevation:	177 masl
Approx. site area:	7,172.1 m^2

1.4 Current and Proposed Future Uses

The site was historically used for recreational/community use as a ball hockey court with two (2) rinks located on-site. A small storage/office building is located in the southwest corner of the property. Future plans include removal of the existing ball hockey rinks and office space in order to convert the space into residential townhomes.

1.5 Applicable Site Condition Standard

The Soil, Ground Water and Sediment Standards (SGWSS) that would be applicable to the subject site as per O. Reg. 153/04, as amended, are based on site sensitivity analyses. Site sensitivity is determined based on conformance or non-conformance with shallow soil conditions (<2 m to bedrock), soil pH, proximity to an "Area of Natural Significance", the presence of a water body on-site or within 30 meters of the subject property, and the site and adjacent lands groundwater conditions being either potable or non-potable. The 'Full Depth Generic' standards would apply to a 'non-sensitive site', with further distinctions made based on potable or non-potable groundwater conditions, and coarse or fine soil texture. A 'Sensitive Site' would require application of generic standards, other than 'Full Depth', based on the specific sensitivity.

4280 Fourth Avenue, Niagara Falls, ON– Site Sensitivity Analysis

The rationale for the selection of SGWSS criteria for the subject property included:

- Intended Property Use: **Residential**
- Soil Texture: **Medium/Fine (grain size texture by Paracel laboratories Ltd.)**
- Adjacent to a designated area of natural significance: **No**
- Within 30 m of a water body: **No**
- Groundwater condition: **Non-Potable**
- Depth to bedrock: **Not encountered at maximum borehole depth of 5.2 meters.** Depth to bedrock was not noted in any of the well records listed within the study area.
- Soil pH: Surface **7.62 average** with range from 7.39-7.83; subsurface: **7.62 average**, ranged from 7.53-7.77

Applicable Regulatory Criteria

O. Reg. 153/04 Ministry of the Environment, Conservation and Parks (MECP) Site Condition Standards Table 3 for Residential Land Use in a Non-Potable Ground Water Condition, fine textured soil, was applied to the subject site, based on conditions observed at the time of the site assessment.

1.6 Previous Environmental Reports

A Phase One Environmental Site Assessment report drafted by Hallex Environmental, August 11th, 2022, was provided to Hallex Environmental Ltd. for review pertaining to the study site. Noted conclusions are summarized below:

- Two (2) on-site and five (5) off-site PCAs resulting in seven (7) APECs with the potential to have impacted the study site's soil and/or groundwater.
    - **PCA-1/APEC-1: #28 – Gasoline and Associated Products Storage in Fixed Tanks** – The 1965 FIP illustrated one (1) Underground Storage Tank (UST) of unknown size and with unknown substance on-site, approximately 20m eat of Fourth Avenue behind the current office building. The presence of a UST represents an on-site PCA creating an on-site APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) to have impacted the study sites soil and groundwater.
    - ***PCA-2/APEC-2: #46 Rail Yards, Tracks and Spurs.*** According to FIPs a CN rail spur was located along the northern portion of the study site prior to 1934 until 1965 when it was decommissioned. The historic presence of the on-site railway tracks represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), PHCs, BTEX, and PAHs to have impacted the study sites' soil and/or groundwater.
    - ***PCA-3/APEC-3: #10 Commercial Autobody Shops***. Vernon's City Directories and the site reconnaissance revealed that the south adjacent land use has been an auto repair garage since at least 1970s until current day. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Volatile Organic Compound (VOCs) Metals, PHCs, and PAHs to have impacted the study sites soil and/or groundwater.
    - ***PCA-4/APEC-4: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles***. The FIPs revealed that the east adjacent land use has been an auto repair garage. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Metals, PHCs, VOCs and PAHs to have impacted the study sites soil and/or groundwater.

- ***PCA-5/APEC-5: #8 Chemical Manufacturing, Processing and Bulk Storage.*** The 1916 FIP noted "Calcium Carbide Plant" at the east adjacent property (4290 Third Avenue) and removed by 1932. This Plant represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), VOCs, and PAHs in the study sites soil and groundwater.
- ***PCA-6/APEC-6: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles***. The FIPs, Google Street view and Vernon's Street Directory revealed that the western land use has been an auto repair garage from 1975 to 2018. The presence of an auto repair garage represents in a PCA resulting in an on-site APEC. Target contaminants of concern include Metals, PHCs, VOCs and PAHs to have impacted the study sites soil and/or groundwater.
- ***PCA-7/APEC-7: #46 Rail Yards, Tracks and Spurs.*** According to FIPs a cluster of CN railway lines ran from the eastern portion of the study area to Cyanamid and running along the north adjacent property. The historic presence of the off-site railway tracks represents a PCA resulting in an on-site APEC. Target contaminants of concern include Metals (by ICP), PHCs, BTEX, and PAHs to have impacted the study sites' soil and/or groundwater.
- Fifteen (15) additional PCAs were noted within 250 m of the Study Site, however it is unlikely that any contaminants migrating off-site would present an on-site APEC at the study site due to the distance to the site and interpreted groundwater flow direction away from the site.

- Fifteen (15) additional PCAs were noted within 250 m of the Study Site, however it is unlikely that any contaminants migrating off-site would present an on-site APEC at the Study Site due to the distance of the site and interpreted groundwater flow direction away from the site.

2.0 INVESTIGATION METHODS

2.1 Borehole Drilling and Test Pits

Davis Drilling utilized a 75 CME – drilling system for borehole sampling and monitoring well installations. Jay's Excavating utilized a mini-excavator for test pit sampling. Preparation for the test pits, borehole and monitoring well sampling was initiated via requests for demarcation of underground utilities by Ontario One Call: for Bell, cable, hydro, natural gas, water, sewer and private locates. All services were cleared within the designated work areas.

2.2 Soil Investigation

Four (4) Test Pits were advanced along the North property boundary, on December 8th, 2022, in addition to, eight (8) boreholes, BH-1 to BH-8 which were advanced across the property (within APEC areas) on December 9th, 2022. Borehole, monitoring well and test pit locations are shown in Figure 3 and borehole and test pit logs are contained in Appendix A. Soil samples were collected at depth intervals of 0.61 m to a maximum depth of 5.2 meters below ground surface (mbgs).

2.2.1 Soil: Sampling

Each sample was placed in a 250 ml glass jar with a Teflon lined lid, filled to zero head-space, sealed, and placed in a cooler for transportation. Concurrently, a 12 ml soil sample was collected with a disposable syringe and placed inside a 40 ml vial containing methanol for field preservation of Petroleum Hydrocarbons F1, Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Volatile Organic Compounds (VOCs). A portion of each sample was placed in a plastic bag and allowed to warm to approximately 20° C for headspace combustible vapour measurement using a MiniRAE 3000 photo-ionizing detector (PID). Each sample was logged for colour, texture, structure, moisture, and visual and olfactory evidence of contamination. Additionally, textural identification of soil, through hand soil textural techniques, including the 'squeeze test' and 'ribbon test' was conducted on soil from each stratum identified.

2.3 Field Screening Combustible Soil Vapour Survey

On-site field screening measurements were conducted utilizing the PID, capable of measuring Volatile Organic Vapour Concentrations (VOCs) from 0 part per million (ppm) to 15,000ppm. The readings from the PID were utilized to indicate the presence or absence of VOC's within the field samples. The samples with the highest combustible vapour concentration readings were chosen, in addition to other select samples, as determined by the QP, for laboratory analyses. The combustible soil vapour readings are indicated on the borehole logs in Appendix A and tabulated in Section 2.4.

2.4 Combustible Soil Vapour Concentrations

The field combustibility soil vapour concentrations are tabulated below, exhibiting a concentration range of 0 to 55.6 ppm (parts per million). Eighteen (18) worst case samples were chosen for laboratory submission to Paracel Laboratories Ltd. under chain of custodies #136512, 136511, 67622, and 67623 on December 12th, 2022, for analyses of PHCs (F1-F4), BTEX, PAHs, EC/SAR/pH, Metals (by ICP) and Grain Size Texture. All other samples were stored at the laboratory for later analyses, if required, for delineation of contaminants.

Borehole #/ ID		Date Sampled	Depth (mbgs)	CSVC (PPM)	APEC-#	Parameters Analyzed
BH-1	-1	December 9th, 2022	0-0.61	0.0		
	-2		0.76-1.37	55.6	1 & 3	PHCs (F1-F4), BTEX, PAHs, Metals (by ICP)
	-3		1.5-2.1	24.0		
	-4		2.3-2.9	0.9	1 & 3	pH
	-5		3-3.6	4.5		
	-6		4.6-5.2	0.5		
BH-2	-1		0-0.61	0.0	1 & 3	PHCs (F2-F4), BTEX, PAHs, Metals (by ICP)
	-2		1.5-2.1	0.3	1 & 3	VOCs, PHCs (F1)
	-3		3-3.7	0.0	1 & 3	Grain Size Texture
	-4		4.57-5.2	0.2		
BH-3	-1		0-0.61	0.0		
	-AS1		0.91-1.4	0.3	3	PHCs (F1-F4), BTEX, VOCs, PAHs, Metals (by ICP)
	-2		1.5-2.1	0.1	3	pH
	-3		3-3.7	0.1		
	-4		4.57-5.2	0.0		
BH-4	-1		0-0.61	0.0		
	-AS1		0.91-1.4	0.0	3 & 4	PHCs (F1-F4), BTEX, VOCs, PAHs, Metals (by ICP)
	-2		1.5-2.1	0.0	3 & 4	pH
	-3		3-3.7	0.0		
	-4		4.57-5.2	0.0		
BH-5	-1		0-0.61	0.0	4 & 5	pH
	-AS1		0.91-1.4	0.0	4 & 5	PHCs (F1-F4), BTEX, VOCs, PAH, Metals (by ICP)
	-2		1.5-2.1	0.0		
	-3		3-3.7	0.0	4 & 5	pH, Grain Size Texture
	-4		4.57-5.2	0.0		
BH-6	-1		0-0.61	0.0	6	PHCs (F1-F4), BTEX, VOCs, PAH, Metals (by ICP)
	-2		1.5-2.1	0.1	6	pH
	-3		3-3.7	0.0		

Borehole #/ ID		Date Sampled	Depth (mbgs)	CSVC (PPM)	APEC-#	Parameters Analyzed
	-4		4.57-5.2	0.0		
BH-7	-1		0-0.61	0.0	2, 5, & 7	PHCs (F1-F4), BTEX, VOCs, PAH, Metals (by ICP), pH
	-2		1.5-2.1	0.0		
	-3		3-3.7	0.0	2, 5, & 7	pH
	-4		4.57-5.2	0.0		
BH-8	-1		0-0.61	0.2	2 & 7	PHCs (F1-F4), BTEX, VOCs, PAH, Metals (by ICP), pH
	-2		1.5-2.1	0.4		
	-3		3-3.7	0.0	2 & 7	pH
	-4		4.57-5.2	0.1		
TP1	SS1	December 8th, 2022	0.31-0.51		2 & 7	
	SS2		0.57-0.75			
	SS3		0.75-1.05			
TP2	SS1		0.07-0.70			Metals (by ICP), VOCs, PAH, BTEX, PHCs (F1-F4)
	SS2		0.70-1.4			
	SS3		1.4-1.8			
	SS4		1.8-2.1			
TP3	SS1		0-0.64			Metals (by ICP), VOCs, PAH, BTEX, PHCs (F1-F4)
	SS2		0.64-1.4			
TP4	SS1		0.2-0.4			
	SS2		0.4-1.45			
	SS3		1.45-1.95			

Highlighted sample ID's above depict the samples chosen for submission to the lab.

2.5 Monitoring Wells Installation

Eight (8) monitoring wells MW-1 to MW-8 were installed into all eight (8) boreholes on December 9th, 2022, all to a depth of 5.2 mbgs. The monitoring well locations are shown on Figure 3 and the field logs are in Appendix A. The wells were constructed to MECP recognized industry standards and as required by O. Reg. 903, consisted of a 2-inch diameter slotted PVC screen surrounded by silica sand, attached beneath a solid 2-inch diameter PVC riser, surrounded by bentonite grout to ensure a seal between ground surface and the well screen. Each well was fitted with a metal protective raised-mount casing. A waterra manual lift pump was installed into each well to allow for purging and development, rising head hydraulic conductivity tests, and subsequent groundwater sample collection.

2.6 Groundwater Sampling

Groundwater samples were collected with a low-flow peristaltic pump with new low-flow tubing, silicone, and metal filters for each monitoring well. Groundwater samples were collected in standard sized amber glass jars, vials and plastic jars as per analytical protocol (O. Reg. 153/04), filled to zero head-space, sealed, and placed in a cooler for transportation.

Sample ID	Dates	Laboratory Analyses
MW-1	Sampled and submitted on December 20th, 2022 chain of custody number #67627	PHCs (F1-F4), PAHs, Metals, VOCs
MW-2		PHCs (F1-F4), PAHs, Metals, VOCs
MW-3		PHCs (F1-F4), PAHs, Metals, VOCs
MW-4		PHCs (F1-F4), PAHs, Metals, VOCs
MW-5		PHCs (F1-F4), PAHs, Metals, VOCs
MW-6		PHCs (F1-F4), PAHs, Metals, VOCs
MW-7		PHCs (F1-F4), PAHs, Metals, VOCs
MW-8		PHCs (F1-F4), PAHs, Metals, VOCs

2.7 Free Product Investigation

Free product was not monitored in any of the wells during the Phase Two investigation.

2.8 Residue Management Procedures

Soil cuttings and purge water, as well as all fluids used for equipment cleaning were temporarily stored on-site in sealed 55-gallon steel drums.

2.9 Quality Assurance and Quality Control Measures

Hallex conducted Quality Assurance/Quality Control (QA/QC) measures throughout all stages of the assessment to verify sampling procedures and results, including blind duplicate groundwater samples to verify sampling procedures and results. Davis Drilling pre-cleaned the set of augers and hollow stem spoons prior to arriving on-site. The split spoon sampler was decontaminated prior to and in between taking samples by scrubbing with a wire brush and washing in a water solution.

Decontamination of equipment and sampling tools was carried out during field work, as well as appropriate precautions, including new nitrile gloves, to minimize potential cross-contamination between samples and boreholes/monitoring wells.

Soil sampling was implemented according to *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act* (March 9, 2004, as amended as of July 1, 2011). Chain of Custody reports were completed for all samples submitted for analyses to keep track of samples collected and to ensure that all parties involved were properly informed as to the nature of the samples.

Instruments and all their associated components are checked daily prior to field use, and annual equipment servicing, and maintenance is conducted by Enviro Measure Inc. to ensure the equipment remains properly calibrated and functioning.

3.0 FINDINGS

3.1 Soil Conditions

Soil conditions were determined through field investigative measures including the use of analytical equipment, determination of stratigraphy including analysis of moisture, odours, colour, texture, etc. and combustible soil vapor concentration results.

3.1.1 Overburden Stratigraphy

The general overburden stratigraphy observed in boreholes BH-1 to BH-8 consisted of:

Depth (avg.)	Description
0 - 0.2 mbgs	Sand and Gravel
0.2 – 0.9 mbgs	Brown to black FILL with some gravel to Sand and Gravel FILL
1.5 – 5.18 mbgs	Brown Silty Clay

Notes:

- Black Sand FILL encountered at all borehole locations.
- Bedrock was not encountered at borehole maximum depth of 5.18 mbgs.
- Moisture increased below 0.6 mbgs.
- Colour changed gradually from brown to greyish brown at 3.5 to 4.5 mbgs, increasing grey with depth.
- Petroleum odour was noted in core samples from boreholes BH-1, BH-2, BH-3, BH-4, & BH-5, to depths of approximately 1.5 mbgs.

3.2 Groundwater Conditions

Groundwater physical conditions were determined through field data collection, and subsequent calculations, including: hydraulic gradient, hydraulic conductivity/groundwater velocity, and groundwater elevations.

3.2.1 Hydraulic Gradient (i)

The hydraulic gradient was calculated between MW-2, MW-3, and MW-5 with the average across the site being i = 0.0136, northeast.

Monitoring Well	*i* (m/m)
MW-2 to MW-3	0.01
MW-3 to MW-5	-0.02
MW-5 to MW-2	0.011

3.2.2 Hydraulic Conductivity (k)

Rising-head hydraulic conductivity tests were conducted in monitoring wells MW-2 and MW-8 after purging, for calculations of hydraulic conductivity using the Bouwer-Rice method with results indicating k = $1.5114E^{-06}$ cm/sec for MW-2 and k = $2.826E^{-06}$ cm/sec for MW-8. Groundwater calculations are provided in Appendix B.

3.2.3 Groundwater Elevation

The groundwater levels in monitoring wells MW-1 to MW-8 were measured and recorded with a Solinst water-level meter before initial purging and monitoring after a recovery period to allow the wells to return to static level.

Monitoring Well	mbgs	masl
MW-1	0.68	98.75
MW-2	0.79	98.61
MW-3	0.55	98.93
MW-4	1.87	97.45
MW-5	1.56	97.75
MW-6	0.6	98.96
MW-7	4.23	95.85
MW-8	1.91	98.28

mbgs= metres below ground surface, masl = metres above sea level

Groundwater elevation contours are plotted on Figure 5.

3.3 Soil Laboratory Results

Soil laboratory analytical data was compared with MECP Site Condition Standards (2011) Table 3: Residential land use in a Non-Potable Groundwater Situation, fine textured soil. The tables below highlight the soil exceedances with complete laboratory analytical reports provided in Appendix C. Figure 4a illustrates the soil exceedances.

Metals

Exceedances were noted in samples from three (3) boreholes (BH-3, BH-5, and BH-8) within the fill material from depth ranges 0.05 – 1.5 mbgs, and two (2) test pits within the fill material from depth ranges 0.07 – 0.75 mbgs, for target contaminant group Metals (Arsenic, Cadmium, Lead). Although there were four (4) test pits advanced only two (2) were sampled as a representative of the four (4) test pits. \

Parameter	O. Reg. 153/04 (2011) Table 3 Potable, fine	BH3-AS1	BH5-AS1	BH8-SS1	TP2-SS1	TP3-SS1
Metals						
Arsenic	18 ug/g dry	**22.2**	**26.7**	**19.0**	6.0	7.4
Cadmium	1.2 ug/g dry	0.8	**1.7**	**2.5**	0.6	ND
Lead	120 ug/g dry	23.2	44.6	77.2	**175**	**250**

ND: Not Detected, N/A: Not Applicable, Highlights indicate exceedance to applicable regulation.

VOCs

Soil laboratory analytical data was compared with MECP Site Condition Standards (2011) Table 3: Residential land use in a Non-Potable Groundwater Situation, fine textured soil. Exceedances were noted in three (3) boreholes (BH-1, BH-3, and BH-5) and a presence was noted in one (1) borehole and two (2) test pits (BH8, TP2 and TP3) all within the fill material from depth ranges 0.07–1.4 mbgs, for target contaminants Benzene and Trichloroethylene.

Parameter	O. Reg. 153/04 (2011) Table 3 Residential, fine	BH1-SS2	BH3-AS1	BH5-AS1	BH8-SS1	TP2-SS1	TP3-SS1
Volatiles							
Benzene	0.17 ug/g dry	**0.32**	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	30 ug/g dry	ND	0.92	ND	ND	N/A	N/A
Ethylbenzene	15 ug/g dry	0.46	ND	ND	ND	ND	ND
Hexane	34 ug/g dry	1.03	ND	ND	ND	N/A	N/A
Toluene	6 ug/g dry	0.50	ND	ND	0.32	ND	ND
Trichloroethylene	0.52 ug/g dry	ND	**0.85**	**0.65**	ND	N/A	N/A
Xylenes, total	25 ug/g dry	2.68	ND	ND	0.38	0.25	0.05

ND: Not Detected, N/A: Not Applicable, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Polycyclic Aromatic Hydrocarbons (PAHs)

PAH exceedances were noted in one (1) borehole (BH8-SS1) depth of 0.05–0.6 mbgs, and in one (1) test pit (TP2-SS1) depth of 0.07-0.70 mbgs, both in fill material.

Parameter	O. Reg. 153/04 (2011) Table 3 Potable, fine	BH8-SS1	TP2-SS1
Semi-Volatiles			
Benzo[a]anthracene	0.63 ug/g dry	0.37	**0.90**
Benzo[a]pyrene	0.3 ug/g dry	**0.37**	**0.60**
Benzo[b]fluoranthene	0.78 ug/g dry	0.32	**0.80**
Dibenzo[a,h]anthracene	0.1 ug/g dry	0.06	**0.13**
Fluoranthene	0.69 ug/g dry	0.67	**1.45**
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.23	**0.52**

Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

3.4 Groundwater Laboratory Results

Groundwater laboratory analytical data was compared with MECP Site Condition Standards (2011) Table 3: Residential land use in a Non-Potable Groundwater Situation, fine textured soil. The tables below highlight the groundwater presence and exceedances with complete laboratory analytical reports provided in Appendix C. Figure 4b illustrates the soil exceedances.

Metals

The groundwater lab analytical data indicated that all samples MW1-MW8, satisfied the Site Condition Standards, Table 3, Fine textured soil, for Metals in Groundwater.

Volatile Organic Compound

Exceedances and presence of VOCs were noted in samples from two (2) monitoring wells (MW-1 and MW-3) and the duplicate sample obtained from MW-3.

Parameter	O. Reg. 153/04 (2011) Table 3 Non-Potable, fine	MW-1	MW-3	MW-3 - Dup
Volatiles				
Benzene	430 ug/L	**3550**	ND	ND
1,2-Dichloroethane	12 ug/L	1.7	ND	ND
cis-1,2-Dichloroethylene	17 ug/L	ND	**18.3**	**18.8**
Ethylbenzene	2300 ug/L	54.6	ND	ND
Hexane	520 ug/L	48.0	ND	ND
Toluene	18000 ug/L	43.6	ND	ND
Trichloroethylene	17 ug/L	ND	5.5	5.4
Vinyl Chloride	1.7 ug/L	ND	**4.4**	**5.2**
Xylenes, total	4200 ug/L	232	ND	ND

Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Petroleum Hydrocarbons

PHC exceedances and presence was noted in samples from one (1) monitoring well (MW-1), for target contaminant group PHCs (F1 and F2).

Parameter	O. Reg. 153/04 (2011) Table 3 Non-Potable, fine	MW-1
Hydrocarbons		
F1 PHCs (C6-C10)	750 ug/L	**2410**
F2 PHCs (C10-C16)	150 ug/L	147

Red highlights indicate exceedance to applicable regulation and blue highlights indicate presence below regulation.

Polycyclic Automatic Hydrocarbons

PAH presence was noted in samples from three (3) monitoring wells (MW-2, MW-4 and MW-6).

Parameter	O. Reg. 153/04 (2011) Table 3	MW-2	MW-4	MW-6

	Non-Potable, fine			
Hydrocarbons				
Anthracene	2.4 ug/L	0.04	ND	0.04
Fluoranthene	130 ug/L	0.06	ND	ND
1-Methylnaphthalene	1800 ug/L	ND	ND	0.10
2-Methylnaphthalene	1800 ug/L	ND	ND	0.16
Methylnaphthalene (1&2)	1800 ug/L	ND	ND	0.26
Naphthalene	6400 ug/L	0.17	ND	0.43
Phenanthrene	580 ug/L	0.12	0.08	0.12
Pyrene	68 ug/L	0.05	ND	ND

Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

3.5 Laboratory Quality Assurance and Quality Control

Laboratory QA/QC measures adhering to the Ministry of the Environment's "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 2010" are standard procedure for Paracel Laboratories (accredited to the ISO/IEC 17025 Standard by CALA) in order to ensure that the standards of quality were met within the expected level of confidence.

4.0 SOIL & GROUNDWATER DELINEATION

Ten (10) additional boreholes were advanced between March 9th and 10th, 2023, and all converted into monitoring wells (MW-101, MW-102, MW-103, MW-104, MW-105, MW-106a, MW-106b, MW-107, MW-108, and MW-109) delineate the extent of soil and groundwater contamination across the site. Borehole drilling and monitoring well installation was consistent with methods outlined in the above section 2.0.

4.1 Soil Conditions

Soil conditions were determined through field investigative measures including the use of analytical equipment, determination of stratigraphy including analysis of moisture, odours, colour, texture, etc. and combustible soil vapor concentration results.

4.1.1 Overburden Stratigraphy

The general overburden stratigraphy observed in boreholes BH-101 to BH-109 consisted of:

Depth (avg.)	Description
0 - 0.2 mbgs	Sand and Gravel
0.2 – 0.9 mbgs	Brown to black FILL with some gravel to Sand and Gravel FILL
1.5 – 5.18 mbgs	Brown Clayey Silt
5.33 – 5.94 mbgs	Grey Clay & Silt
6.1 – 7.32 mbgs	Reddish Brown Silt with trace Clay

Notes:

- Sand & Gravel FILL encountered at all borehole locations.
- Bedrock was not encountered at borehole maximum depth of 7.32 mbgs.
- Moisture increased below 0.6 mbgs.
- Colour changed gradually from brown to greyish brown at 5.3 to 5.9 mbgs, and then returned to a reddish brown colour below.
- Heavy oil odour was noted in core samples from borehole BH-101, to a depth of approximately 2.1 mbgs.

4.2 Groundwater Conditions

Groundwater physical conditions were determined through field data collection, and subsequent calculations, including: hydraulic gradient, hydraulic conductivity/groundwater velocity, and groundwater elevations.

4.1 Soil

Thirteen (13) samples were chosen for submission to Paracel Laboratories Ltd. under chain of custodies #71315 and #64785 on March 13th, 2023, for analysis of VOCs, PAHs, PHCs (F1-F4), Metals (by ICP), pH, and Grain Size Analysis. Other samples were stored at the laboratory for later analyses, if required for additional vertical delineation.

Borehole # / Sample ID		Date Sampled	Depth (m) From – To		CSVC (PPM)	Parameters Analyzed
MW-101	SS1	March 9th 2023	0.00	0.61	0.1	
	SS2		0.76	1.37	0.0	VOCs, PAHs, PHC, Metals (by ICP)
	SS3		1.52	2.13	0.0	
	SS4		2.29	2.9	0.0	
	SS5		3.05	3.66	0.0	
	SS6		3.81	4.27	0.0	
	SS7		4.57	5.18	0.0	
	SS8		5.33	5.94	0.0	
	SS9		6.1	6.71	0.0	
	SS10		6.9	7.47	0.1	
MW-103	SS1	March 9th 2023	0.00	0.61	0.4	
	SS2		0.76	1.37	0.2	
	SS3		1.52	2.13	0.2	
	SS4		2.29	2.9	0.1	VOCs, Metals (by ICP)
	SS5		3.05	3.66	0.1	
	SS6		3.81	4.27	0.1	
	SS7		4.57	5.18	0.0	
	SS8		5.33	5.94	0.0	
	SS9		6.1	6.71	0.1	
	SS10		6.9	7.47	0.1	
MW-102	N/A		0	4.42	n/a	
MW-104	SS1	March 9th 2023	0.00	0.61	0.3	
	SS2		0.76	1.37	0.1	Metals (by ICP), VOCs
	SS3		1.52	2.13	0.2	
	SS4		2.29	2.9	0.3	VOCs, Arsenic
	SS5		3.05	3.66	0.1	
	SS6		3.81	4.27	0.9	VOCs
	SS7		4.57	5.18	0	
	SS8		5.33	5.94	0.1	
	SS9		6.1	6.71	0.2	
	SS10		6.9	7.47	0.1	
MW-105	n/a		0	4.18	n/a	
MW-106a	SS1	March 10th 2023	0.00	0.61	0	
	SS2		0.76	1.37	-	
	SS3		1.52	2.13	-	
	SS4		2.29	2.9	0.1	

Borehole # / Sample ID		Date Sampled	Depth (m) From – To		CSVC (PPM)	Parameters Analyzed
	SS5		3.05	3.66	-	
	SS6		3.81	4.27	0	
	SS7		4.57	5.18	0.4	
	SS8		5.33	5.94	0.3	
	SS9		6.1	6.71	0.3	
	SS10		6.9	7.47	0.3	
MW-106b	SS1	March 10th 2023	0.00	0.61	0.5	
	SS2		0.76	1.37	0.5	VOCs, PAHs, Metals (by ICP), PHC, pH
	SS3		1.52	2.13	0.3	
	SS4		2.29	2.9	0.4	
	SS5		3.05	3.66	0.4	VOCs, PAHs, Metals (by ICP), PHC, Grain Size
	SS6		3.81	4.27	0.3	
MW-107	SS1	March 10th 2023	0.00	0.61	0.3	
	SS2		0.76	1.37	0.3	VOCs, PAHs, Metals (by ICP), PHC
	SS3		1.52	2.13	0.3	
	SS4		2.29	2.9	0.4	VOCs, PAHs, Metals (by ICP), PHC
	SS5		3.05	3.66	0.3	
	SS6		3.81	4.27	0.4	
MW-108	SS1	March 10th 2023	0.00	0.61	0.5	
	SS2		0.76	1.37	0.6	VOCs, PAHs, Metals (by ICP), PHC
	SS3		1.52	2.13	0.7	
	SS4		2.29	2.9	0.5	VOCs, PAHs, Metals (by ICP), PHC, Grain Size
	SS5		3.05	3.66	0.5	
	SS6		3.81	4.27	0.4	
MW-109	SS1	March 10th 2023	0.00	0.61	0.2	VOCs, PAHs, Metals (by ICP), PHC
	SS2		0.76	1.37	0	
	SS3		1.52	2.13	0.3	
	SS4		2.29	2.9	0.3	VOCs, PAHs, Metals (by ICP), PHC, Grain Size
	SS5		3.05	3.66	0.3	
	SS6		3.81	4.27	0.4	
TP-101	SS1	March 15th 2023	0.00	0.3	n/a	
	SS2		0.3	0.8	n/a	
TP-102	SS1	March 15th 2023	0.00	0.4	n/a	
	SS2		0.4	0.8	n/a	PAHs, Metals (by ICP)
	SS3		0.8	2	n/a	
	SS4		2	2.1	n/a	
TP-103	SS1	March 15th 2023	0.1	0.3	n/a	
	SS2		0.3	0.6	n/a	PAHs, Metals (by ICP)
	SS3		0.6	1.5	n/a	
	SS4		1.5	1.6	n/a	
TP-104	SS1	March 15th 2023	0.2	0.4	n/a	
	SS2		0.4	0.6	n/a	
	SS3		0.6	1.0	n/a	
	SS4		1.0	1.5	n/a	

Borehole # / Sample ID		Date Sampled	Depth (m) From – To		CSVC (PPM)	Parameters Analyzed
TP-105	SS1	March 15th 2023	0.15	0.3	n/a	PAHs
	SS2		0.3	0.5	n/a	
	SS3		0.5	1.0	n/a	
TP-105	SS4		1.0	1.5	n/a	
TP-106	SS1	March 15th 2023	0.2	0.4	n/a	
	SS2		0.4	0.9	n/a	Metals (by ICP)
	SS3		0.9	1.6	n/a	Cadmium
	SS4		1.6	1.8	n/a	
TP-107	SS1	March 15th 2023	0.3	0.4	n/a	
	SS2		0.4	0.8	n/a	
	SS3		0.8	1.0	n/a	
	SS4		1.0	1.2	n/a	Metals (by ICP)
	SS5		1.2	1.8	n/a	
	SS6		1.8	2.0	n/a	
TP-108	SS1	March 15th 2023	0.0	0.6	n/a	
	SS2		0.6	1.0	n/a	Metals (by ICP)
	SS3		1.0	1.5	n/a	
	SS4		1.5	2.1	n/a	VOCs
TP-109	SS1	March 15th 2023	0.0	0.4	n/a	
	SS2		0.4	0.9	n/a	
	SS3		0.9	1.5	n/a	
	SS4		1.5	2.6	n/a	VOCs

Highlighted sample ID's above depict the samples chosen for submission to the lab., n/a = not applicable

4.2 Soil Laboratory Results

Soil laboratory analytical data was compared with MECP Site Condition Standards (2011) Table 3: Residential land use in a non-potable groundwater condition, fine textured soil. The table below highlights the exceedances in red and presences in blue with complete laboratory analytical reports provided in Appendix C. Figures 7a illustrate the soil exceedances.

Metals

Exceedances were noted from two (2) boreholes, MW-104 and MW-106b, for Metals (by ICP) and from a depth range of 0.76 to 1.37 mbgs. A metal presence was noted in three (3) additional boreholes, MW-101, MW-108 and MW-109 and a lower sample from MW-104.

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-101-SS2	MW-104 – SS2	MW104-SS4	MW106b – SS2	MW108 – SS2	MW109 – SS1
Metals							
Arsenic	18 ug/g dry	11.8	29.2	6	7.9	16.2	4.7
Lead	120 ug/g dry	110	12.1	N/A	240	74.2	80.7

NA: Not Applicable, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

One (1) exceedance was noted in the test pit, TP-106, for Metals (by ICP) from a depth range of 0.4 to 0.9 mbgs. According to O.Reg 153/04, s. 48(2)

"if two or more samples of soil are taken from sampling points at the same sampling location that are at the same depth in, on, or under the property, the property meets a standard mentioned in subsection (1) if the average of the sampling results meets the standard and in no other circumstances."

As such, four (4) soil samples were advanced within 2.0 m north, south, east, and west, of the initial exceedance. As shown below, the averaged result for Cadmium is 0.8 ug/g, which meets the applicable criteria.

Parameters	O. Reg 153/04 (2011) Table 3, Residential fine	TP-106-SS2	TP-106-SSN	TP-106-SSE	TP-106-SSS	TP-106-SSW	Average
Metals							
Cadmium	1.2 ug/g dry	2.0	<0.5	<0.5	<0.5	<0.5	0.8

NA: Not Applicable (sample not submitted), Red highlights indicate exceedance to applicable regulation and blue highlights indicate presence below regulation

One of the soil samples submitted for analysis as part of the December-January 2023 Phase Two ESA indicated exceedances for Arsenic and Cadmium (Sample ID BH/MW-5-AS1). According to O.Reg 153/04, s. 48(2)

"if two or more samples of soil are taken from sampling points at the same sampling location that are at the same depth in, on, or under the property, the property meets a standard mentioned in subsection (1) if the average of the sampling results meets the standard and in no other circumstances."

As such, test pit (TP-108) was advanced within 2.0 m of the initial exceedance. As shown below, the averaged result for Arsenic is 13.3 ug/g and the averaged result for Cadmium is 1.1 ug/g, which meet the applicable criteria.

Parameter	O.Reg. 153/04 (2011) – Table 3 Residential, Fine/Med	BH/MW-5-AS1	TP-108	Average
Metals				
Arsenic	18 ug/g dry	22.2 ug/g	4.4	13.3
Cadmium	1.2 ug/g dry	1.7 ug/g	0.5	1.1

Volatile Organic Compound

Exceedances and presence of VOCs were noted in samples from one (1) borehole, MW-104-SS2 and presences were noted from MW-104 in lower samples (SS4 & SS6).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-104–SS2	MW-104-SS4	MW-104-SS6

Volatiles (VOCs)				
Cis-1,-2-Dichloroethylene	30 ug/g dry	3.08	0.05	0.45
Trichloroethylene	0.52 ug/g dry	2.96	ND (0.05)	ND (0.05)

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Petroleum Hydrocarbons (PHCs)

PHC presence was noted in samples from four (4) boreholes (MW-101-SS2, MW-106b-SS2, MW-108-SS2, MW-109-SS1).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW-101-SS2	MW106b – SS2	MW108 – SS2	MW109 – SS1
Petroleum Hydrocarbons (PHCs)					
F3 PHCs (C16-C34)	1300 ug/g dry	20	10	89	122
F4 PHCs (C34-C50)	5600 ug/g dry	ND (6)	ND (6)	49	137

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Polycyclic Aromatic Hydrocarbons

PAH presence was noted in samples from three (3) boreholes (MW-106b-SS2, MW-108-SS2 and MW-109-SS1) and test pits (TP102-SS2 and TP103-SS2).

Parameters	O. Reg. 153/04 Table 3, Residential fine	MW106b – SS2	MW108 – SS2	MW109 – SS1
Semi-Volatiles (PAHs)				
Anthracene	0.74 ug/g dry	0.02	ND (0.02)	0.10
Benzo[a]anthracene	0.63 ug/g dry	0.08	0.05	0.11
Benzo[a]pyrene	0.3 ug/g dry	0.09	0.06	0.21
Benzo[b]fluoranthene	0.78 ug/g dry	0.07	0.05	0.19
Benzo[g,h,i]perylene	7.8 ug/g dry	0.07	0.05	0.20
Benzo[k]fluoranthene	0.78 ug/g dry	0.03	0.02	0.08
Chrysene	7.8 ug/g dry	0.09	0.06	0.12
Dibenzo[a,h]anthracene	0.1 ug/g dry	0.03	0.02	ND (0.02)
Fluoranthene	0.69 ug/g dry	0.13	0.11	0.23
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.08	0.05	0.22
1-Methylnaphthalene	3.4 ug/g dry	0.07	0.05	0.04
2-Methylnaphthalene	3.4 ug/g dry	0.07	0.06	0.04
Methylnaphthalene (1&2)	3.4 ug/g dry	0.14	0.11	0.07
Naphthalene	0.75 ug/g dry	0.04	0.04	0.02
Phenanthrene	7.8 ug/g dry	0.12	0.11	0.13
Pyrene	78 ug/g dry	0.10	0.07	0.18

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

Parameters	O.Reg 153/04 (2011) Table 3, Residential fine	TP102-SS2	TP103-SS2
Semi-Volatiles (PAHs)			
Acenaphthene	58 ug/g dry	ND (0.2)	ND (0.2)
Acenaphthylene	0.17 ug/g dry	0.03	ND (0.02)
Anthracene	0.74 ug/g dry	0.04	ND (0.02)
Benzo[a]anthracene	0.63 ug/g dry	0.13	0.05
Benzo[a]pyrene	0.3 ug/g dry	0.14	0.12
Benzo[b]fluoranthene	0.78 ug/g dry	0.11	0.10
Benzo[g,h,i]perylene	7.8 ug/g dry	0.08	0.08

Benzo[k]fluoranthene	0.78 ug/g dry	0.03	0.03
Chrysene	7.8 ug/g dry	0.15	0.07
Fluoranthene	0.69 ug/g dry	0.21	0.06
Indeno[1,2,3-cd]pyrene	0.48 ug/g dry	0.12	0.12
1-Methylnaphthalene	3.4 ug/g dry	0.12	0.02
2-Methylnaphthalene	3.4 ug/g dry	0.10	0.02
Methylnaphthalene (1&2)	3.4 ug/g dry	0.21	0.04
Naphthalene	0.75 ug/g dry	0.05	0.02
Phenanthrene	7.8 ug/g dry	0.18	0.06
Pyrene	78 ug/g dry	0.14	0.04

ND: Not Detected, Red highlights indicate exceedance and blue highlights indicate presence to applicable site condition standards

4.3 Monitoring Wells

Ten (10) additional monitoring wells were installed across the site, seven (7) of those (MW-102, MW-105, MW-106b, MW-107, MW-108, & MW-109) were installed to depths of 4.2 mbgs, while four (4) (MW-101, MW-103, MW-104, and MW-106a) were installed at an approximate depth of 7.32 mbgs for lateral and vertical delineation of groundwater contaminants. Groundwater samples were submitted to Paracel Laboratories Ltd. on March 16th, 2023, for laboratory analyses of: PHCs (F1-F4), Metals (by ICP), VOCs, and PAHs. Groundwater submission included one (1) QA/QC sample. The groundwater sampling program is summarized in the following table:

Monitoring Well #	Screen Depth	Laboratory Analysis
MW-101	7.23 mbgs	VOCs, PHCs (F1-F4), PAHs
MW-102	4.42 mbgs	Metals (by ICP), VOCs, PHCs (F1-F4), PAHs
MW-103	7.29 mbgs	VOCs, PHCs (F1-F4)
MW-104	7.49 mbgs	VOCs, PHCs (F1-F4)
MW-105	4.18 mbgs	VOCs, PHCs (F1-F4)
MW-106a	6.78 mbgs	VOCs, PHCs (F1-F4)
MW-106b	4.37 mbgs	VOCs, PHCs (F1-F4)
MW-107	4.31 mbgs	VOCs, PHCs (F1-F4)
MW-108	4.29 mbgs	VOCs, PHCs (F1-F4)
MW-109	4.38 mbgs	Metals (by ICP), VOCs, PHCs (F1-F4), PAHs

Note a Duplicate (MW-109b) was obtained from MW-109.

Groundwater Elevations

Groundwater levels were measured on March 16th, 2023, and are tabulated below, plotted with contours on Figure 5.

Monitoring Well	Water Levels (mbgs)	Water Elevation (masl)
MW-1	0.62	98.82
MW-2	0.71	98.70
MW-3	0.27	99.21
MW-4	1.12	98.21

Monitoring Well	Water Levels (mbgs)	Water Elevation (masl)
MW-5	1.47	97.85
MW-6	0.22	99.34
MW-7	0.63	99.46
MW-8	0.84	99.35
MW-101	1.47	98.01
MW-102	0.78	98.70
MW-103	0.82	98.60
MW-104	0.83	98.57
MW-105	0.25	99.12
MW-106a	0.75	98.72
MW-106b	0.72	98.84
MW-107	1.13	98.36
MW-108	0.86	98.54
MW-109	0.29	99.15

mbgs = meters below ground surface, mbtoc = meters below top of casing

4.4 Groundwater Laboratory Results

Groundwater laboratory analytical data was compared with groundwater criteria in the MECP Site Condition Standards (2011) Table 3: Residential, Potable groundwater condition, fine-textured soil.

Metals

The Groundwater lab analytical data indicated that all samples, MW-101 to MW-109, satisfied the Site Condition Standards, Table 3, Fine texture soil, for metals in groundwater.

Volatile Organic Compounds

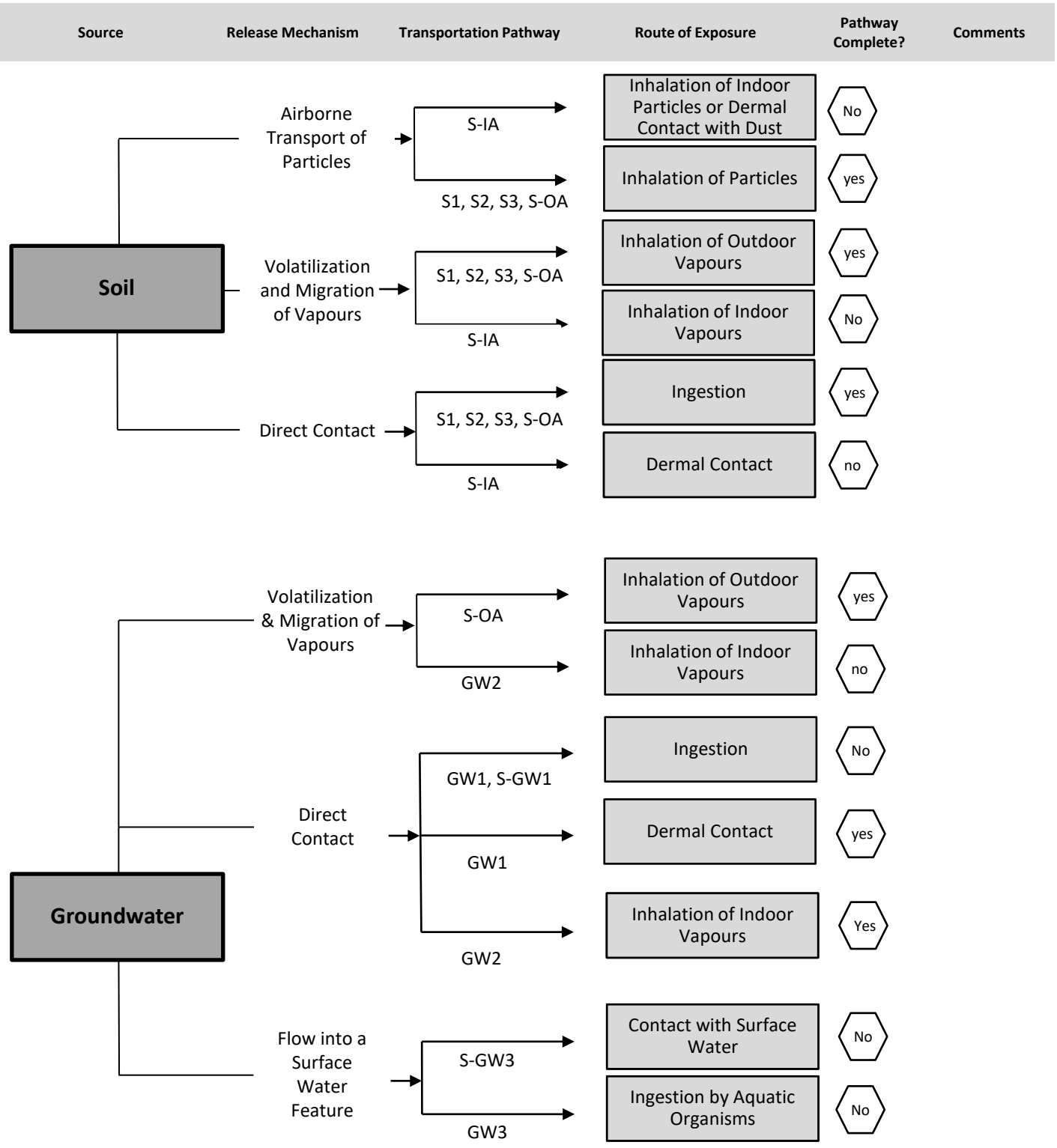
Exceedances of VOCs were noted in MW-104 and MW-105. The tables below highlight the groundwater exceedances with complete analytical reports provided in Appendix C. Groundwater exceedances are illustrated in Figure 4b.

Parameter	**O. Reg. 153/04 (2011) Table 3, Residential, Fine**	**MW-102**	**MW-103**	**MW-104**	**MW-105**	**MW-106A**
Volatiles						
Cis-1,2-Dichloroethylene	17 ug/L	ND (0.5)	2.0	34.2	8.8	0.8
Trichloroethylene	17 ug/L	ND (0.5)	ND (0.5)	7.2	5.0	ND (0.5)
Vinyl Chloride	1.7 ug/L	ND (0.5)	ND (0.5)	7.2	5.0	ND (0.5)

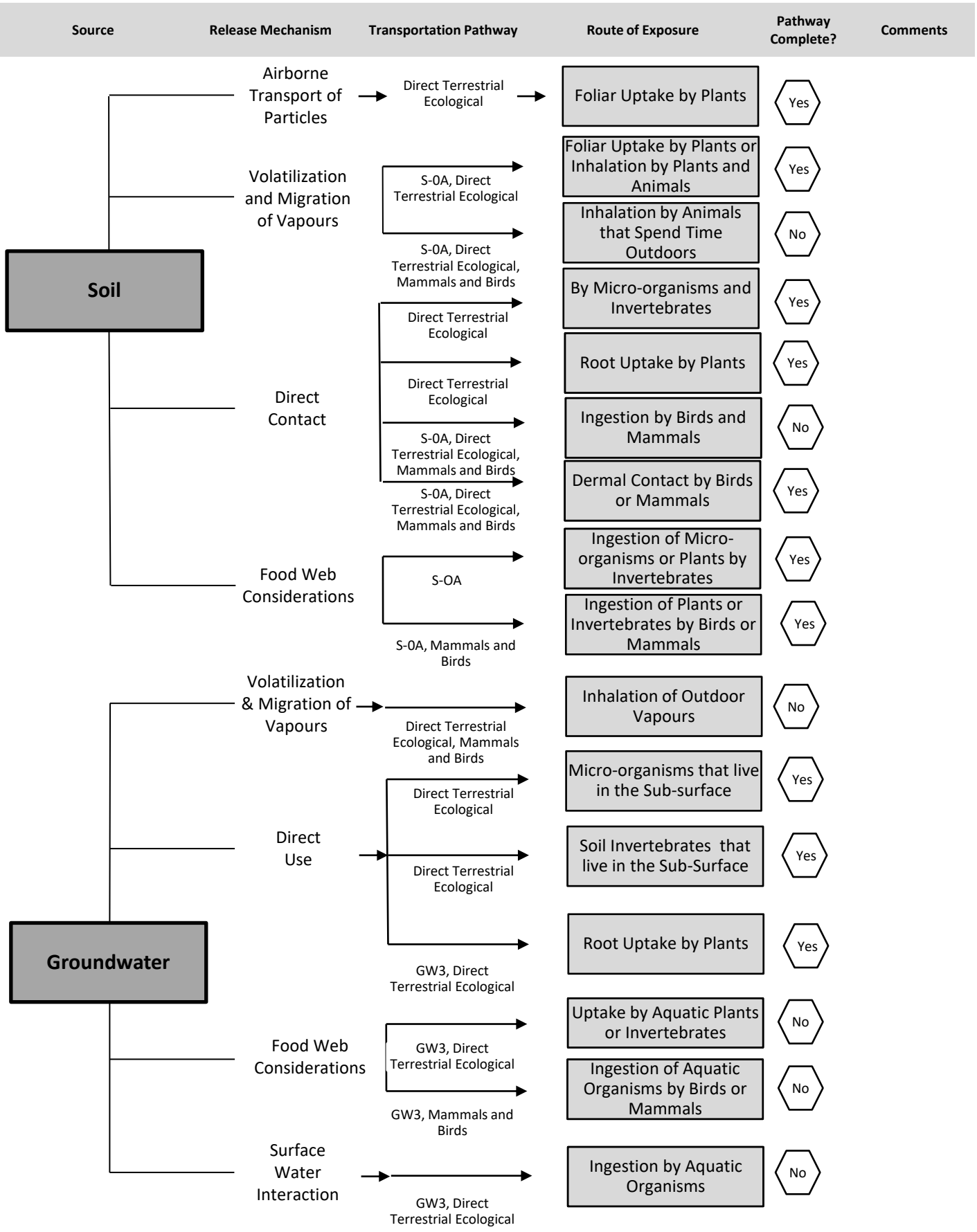
Polycyclic Aromatic Hydrocarbons

The groundwater lab analytical data indicated that all samples MW-101-MW-109, satisfied the Site Condition Standards, Table 3, Fine Textured Soil, for PAHs in Groundwater.

Human Health Conceptual Site Model



Ecological Conceptual Site Model



5.0 FINDINGS & CONCLUSIONS

The Phase Two Environmental Site Assessment and Delineation at 4280 Fourth Avenue, Niagara Falls, ON revealed soil exceedances to Ministry of the Environment, Conservation & Parks (MECP) Site Condition Standards 2011 Table 3 for Residential Land Use in a non-potable groundwater condition, for fine textured soil for contaminant groups Metals (by ICP), Polycyclic Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds (VOCs) at boreholes: BH/MW-1, BH/MW-3, BH/MW-5, BH/MW-8, MW-104 and MW-106b and test pits: TP-2, TP-3, TP-106.

Groundwater samples also revealed exceedances to the applicable MECP Table 3 site condition standards for contaminant groups Petroleum Hydrocarbons (PHCs), and Volatile Organic Compounds (VOCs) at monitoring wells: MW-1, MW-3, MW-104, and MW-105.

The soil and groundwater impacts identified were associated with the following APECs:

1) Fill material observed across the site;
2) Historic railway spur in the northern portion of the site;
3) A former historic underground storage tank in the southwestern portion of the site; and
4) A plume of chlorinated solvents in soil and groundwater exhibiting a distribution pattern in the southwest area of the site indicating the source of the solvents as 4346 Fourth Ave, a commercial autobody shop, situated on the southwest property adjacent to the subject site. The chlorinated solvent plume distribution pattern further exhibits the potential to have impacted soil and groundwater at the adjacent residential site 4339-4341 Third Ave.

Areas of Soil and Groundwater Impact

The areas and volumes of contaminated soil and groundwater are estimated below. Estimates are based on "worst-case to the next clean point" as required by O.Reg 153/04 – 511/09.

Soil

Area 1: Former rail spur – north end of site. PAHs & Metals.

Area: 1,213.5 m^2

Thickness: B: 0.7 m (depth: 0 mbgs to 0.7 mbgs)

Volume: 849.45 m^3

Area 2: VOC/PHC from former UST on site, and chlorinated solvents from off-site.

Area: 1,825.95 m^2

Thickness: B: 2.29 m (depth: 0 mbgs to 2.29 mbgs)

Volume: 4,181.43 m^3

Area 3: Localized VOC anomaly. Northeast corner of site.

Area: 186.27 m^2

Thickness: B: 1.5 m (depth: 0 mbgs to 1.5 mbgs)

Volume: 279.41 m^3

Groundwater

Groundwater impacted by Petroleum Hydrocarbons and VOCs as chlorinated solvents in the southwest area of the site was estimated as:

Area: 1,090.72 m^2

Thickness: B: 6.12 m (depth: 1.2 mbgs to 7.32 mbgs)

Volume: 2,200 m^3

(note: Volume calculated based on soil porosity = 30%)

Aesthetically Impacted Soil

Black Sand & Gravel Fill was identified across the site ranging in depths between 0.6 mbgs – 2.1 mbgs. While passing MECP Site Condition Standards Table 3 for Residential Land Use in a Non-Potable Groundwater Condition, the material may not be suitable for re-use within a residential development due to the strong organic odour observed throughout the material, and trace asphalt. The aesthetically impacted fill may be suitable for use as industrial fill off-site.

6.0 AUTHOR

Hallex Environmental Ltd. has conducted this Phase Two Environmental Site Assessment as permitted by Hallex Certificate of Authorization (#90252). The following employees authored the report:

Amber Cottle - Ms. Amber Cottle, BA Environmental Science (Honours), EMA (Honours), was the Environmental Scientist for the project with experience in the environmental consulting field. Related project work includes Phase One & Phase Two Environmental Site Assessments, Designated Substances & Hazardous Material Surveys.

Nicole Metz - Ms. Nicole Metz, ETPD, ERPC, was the Project Coordinator for the project with over eight years of experience in the environmental consulting field. Some projects Mrs. Metz have worked on included: Phase One & Two Environmental Site Assessments, Site Remediation, groundwater and surface water sampling, underground or aboveground storage tank decommissioning, Designated Substance Surveys, Records of Site Condition Filing, Environmental Compliance Approvals, National Pollutant Release Inventory, and Hazardous Waste Information Network training.

Kevin Christian - Mr. Kevin Christian, M.Sc., P.Geo., a Professional Geoscientist (#0387) registered with the Association of Professional Geoscientists of Ontario, and a Qualified Person (Environmental Site Assessment & Risk Assessment) as per Ontario Regulations 153/04 and 511/09, has thirty-five years of experience in the environmental geoscience consulting industry conducting Phase One and Two ESA's, remedial planning, site remediation supervision, and Record of Site Condition (RSC) preparation.

FIGURES

HALLEX ENVIRONMENTAL LTD.

Legend

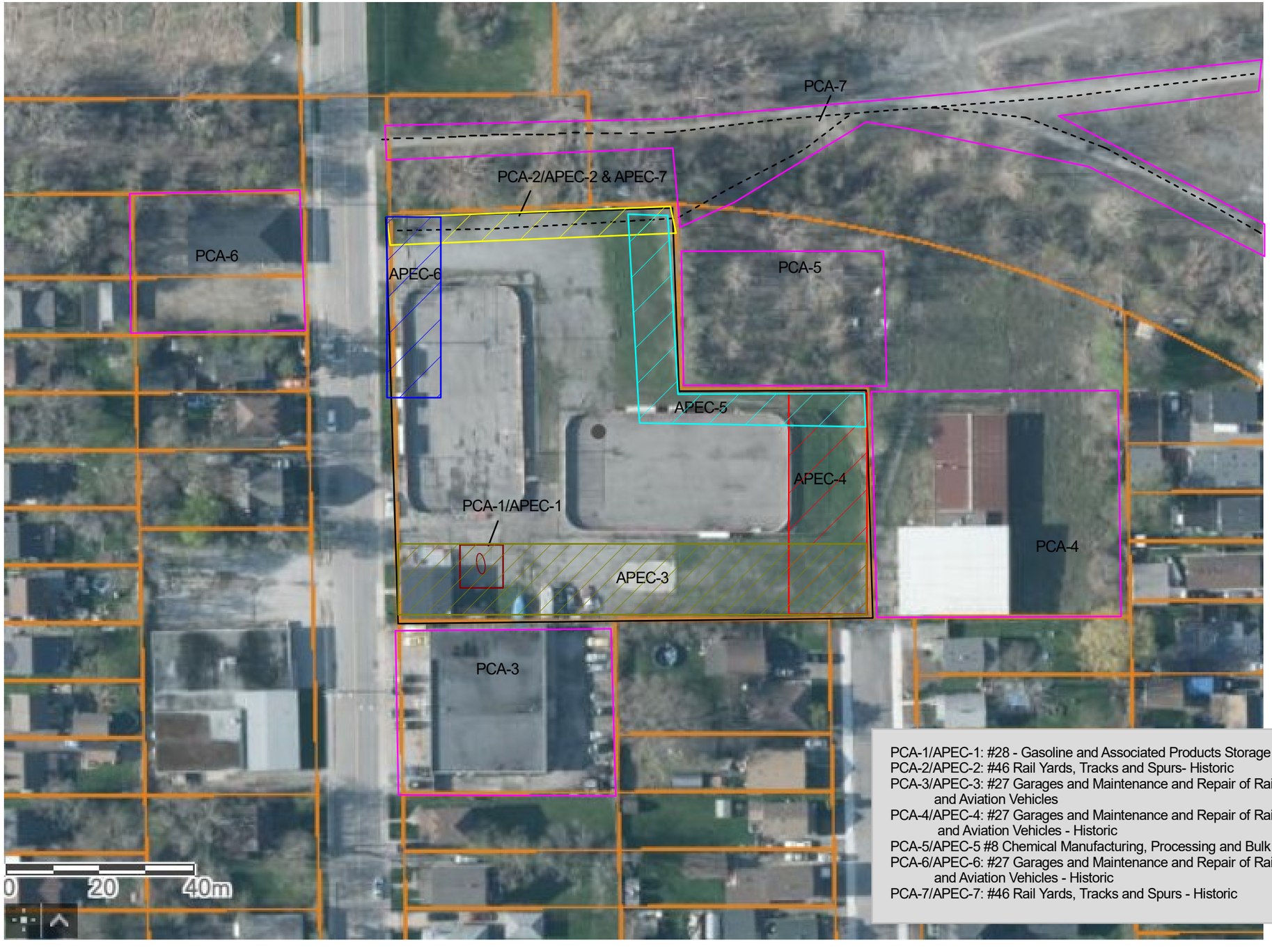
- Phase Two Property
- Residential Use
- Industrial Use
- Commercial Use
- Community Use
- Vacant Industrial Land
- Study Area

Client
1274505 Ontario Ltd.

Project
Phase Two ESA & Delineation
4280 Fourth Avenue, Niagara Falls, ON

Figure Name
Site Layout and Adjacent Land Use

Project E-22-32-2	Figure 1
Date July 2022	
Drafted: AC Reviewed: NM	



Groundwater Flow Direction

HALLEX ENVIRONMENTAL LTD.

Legend

- Phase Two Property
- Historic Railway
- PCA-#
- APEC-1
- APEC-2
- APEC-3
- APEC-4
- APEC-5
- APEC-6
- APEC-7

PCA-1/APEC-1: #28 - Gasoline and Associated Products Storage in Fixed Tanks
PCA-2/APEC-2: #46 Rail Yards, Tracks and Spurs- Historic
PCA-3/APEC-3: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles
PCA-4/APEC-4: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles - Historic
PCA-5/APEC-5 #8 Chemical Manufacturing, Processing and Bulk Storage - Historic
PCA-6/APEC-6: #27 Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles - Historic
PCA-7/APEC-7: #46 Rail Yards, Tracks and Spurs - Historic

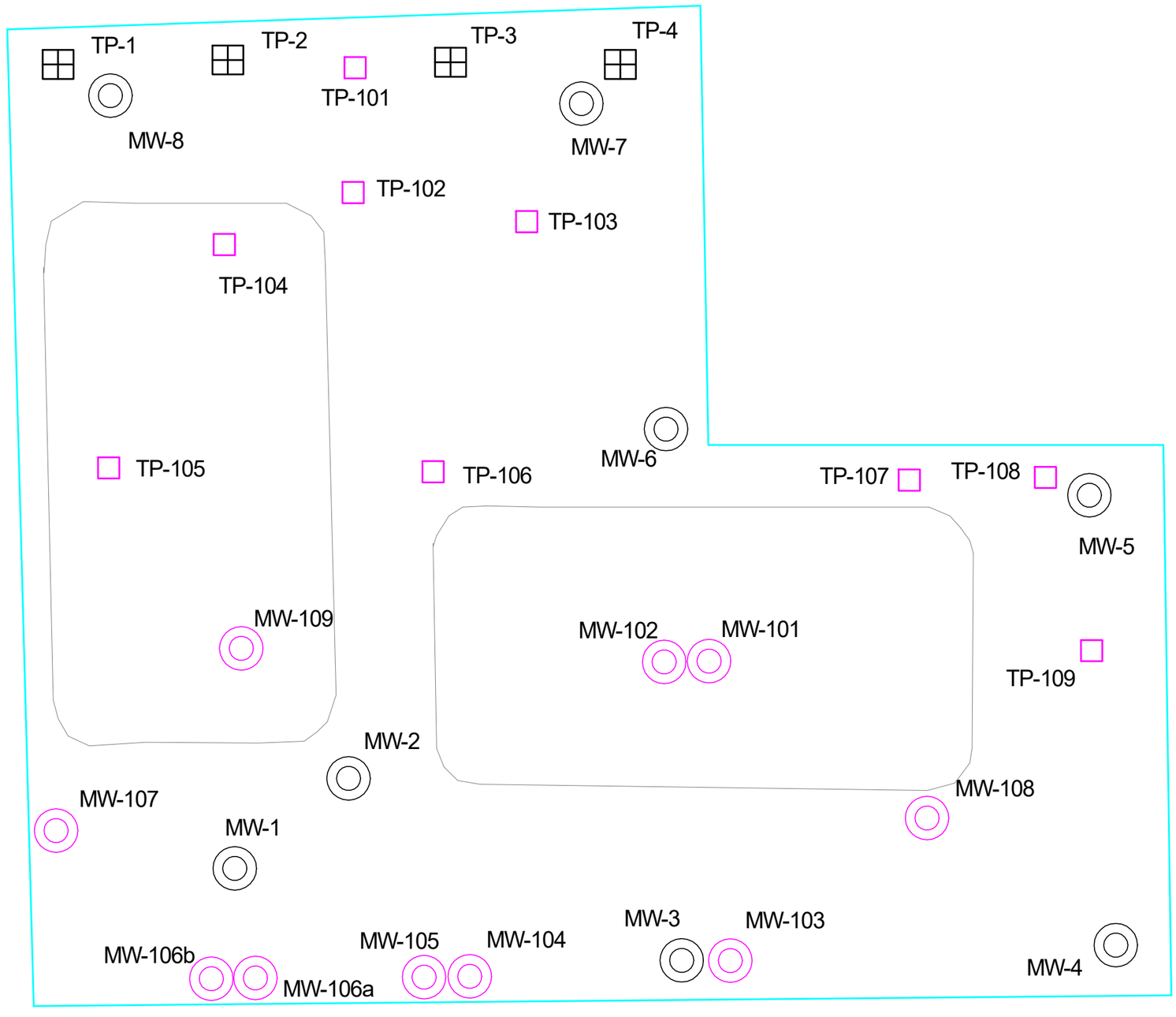
Client
1274505 Ontario Ltd.

Project
Phase Two ESA & Delineation
4280 Fourth Avenue, Niagara Falls, ON

Figure Name
Areas of Potential Environmnetal Concern

Project	E-22-32-2a
Date	July 2022
Drafted: AC Reviewed: NM	

Figure 2



Legend

- Phase Two Property
- December 2022 Test Pit
- March 2023 Test Pit
- December 2022 Borehole/ Monitoring Well Locations
- March 2023 Borehole/ Monitoring Well Locations

Client

1274505 Ontario Ltd.

Project

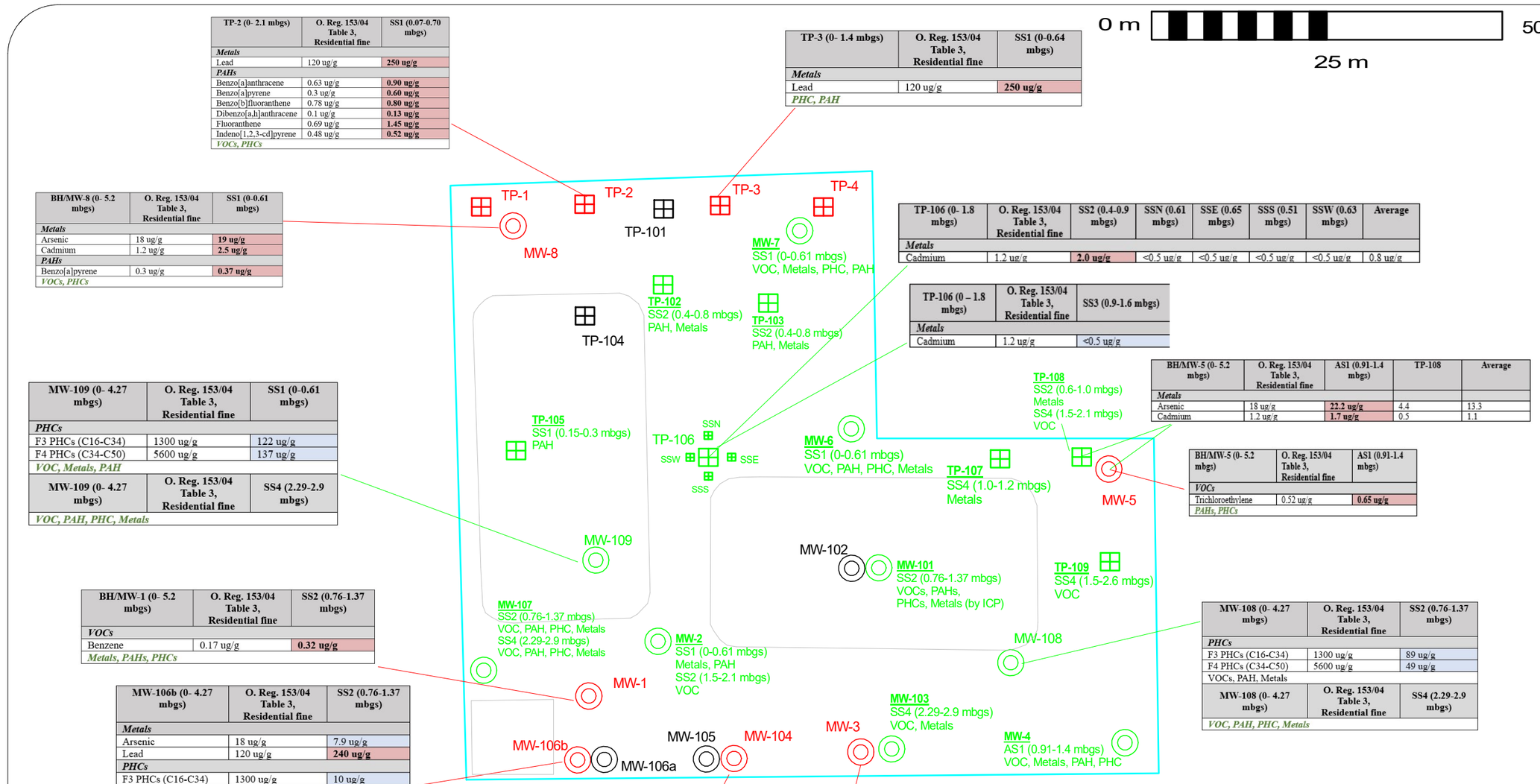
Phase Two ESA
& Delineation
4280 Fourth Ave.,
Niagara Falls, ON

Figure Name

Borehole, Test Pit, Monitoring Well Locations

Project	E-22-32-2a
Date	March 2023
Drafted: AC Reviewed: NM	

Figure 3



TP-2 (0- 2.1 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS1 (0.07-0.70 mbgs)
Metals		
Lead	120 ug/g	**250 ug/g**
PAHs		
Benzo[a]anthracene	0.63 ug/g	**0.90 ug/g**
Benzo[a]pyrene	0.3 ug/g	**0.60 ug/g**
Benzo[b]fluoranthene	0.78 ug/g	**0.80 ug/g**
Dibenzo[a,h]anthracene	0.1 ug/g	**0.13 ug/g**
Fluoranthene	0.69 ug/g	**1.45 ug/g**
Indeno[1,2,3-cd]pyrene	0.48 ug/g	**0.52 ug/g**
VOCs, PHCs		

TP-3 (0- 1.4 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS1 (0-0.64 mbgs)
Metals		
Lead	120 ug/g	**250 ug/g**
PHC, PAH		

BH/MW-8 (0- 5.2 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS1 (0-0.61 mbgs)
Metals		
Arsenic	18 ug/g	**19 ug/g**
Cadmium	1.2 ug/g	**2.5 ug/g**
PAHs		
Benzo[a]pyrene	0.3 ug/g	**0.37 ug/g**
VOCs, PHCs		

TP-106 (0- 1.8 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS2 (0.4-0.9 mbgs)	SSN (0.61 mbgs)	SSE (0.65 mbgs)	SSS (0.51 mbgs)	SSW (0.63 mbgs)	Average
Metals							
Cadmium	1.2 ug/g	**2.0 ug/g**	<0.5 ug/g	<0.5 ug/g	<0.5 ug/g	<0.5 ug/g	0.8 ug/g

TP-106 (0 – 1.8 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS3 (0.9-1.6 mbgs)
Metals		
Cadmium	1.2 ug/g	<0.5 ug/g

BH/MW-5 (0- 5.2 mbgs)	O. Reg. 153/04 Table 3, Residential fine	AS1 (0.91-1.4 mbgs)	TP-108	Average
Metals				
Arsenic	18 ug/g	**22.2 ug/g**	4.4	13.3
Cadmium	1.2 ug/g	**1.7 ug/g**	0.5	1.1

BH/MW-5 (0- 5.2 mbgs)	O. Reg. 153/04 Table 3, Residential fine	AS1 (0.91-1.4 mbgs)
VOCs		
Trichloroethylene	0.52 ug/g	**0.65 ug/g**
PAHs, PHCs		

MW-109 (0- 4.27 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS1 (0-0.61 mbgs)
PHCs		
F3 PHCs (C16-C34)	1300 ug/g	122 ug/g
F4 PHCs (C34-C50)	5600 ug/g	137 ug/g
VOC, Metals, PAH		
MW-109 (0- 4.27 mbgs)	**O. Reg. 153/04 Table 3, Residential fine**	**SS4 (2.29-2.9 mbgs)**
VOC, PAH, PHC, Metals		

BH/MW-1 (0- 5.2 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS2 (0.76-1.37 mbgs)
VOCs		
Benzene	0.17 ug/g	**0.32 ug/g**
Metals, PAHs, PHCs		

MW-108 (0- 4.27 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS2 (0.76-1.37 mbgs)
PHCs		
F3 PHCs (C16-C34)	1300 ug/g	89 ug/g
F4 PHCs (C34-C50)	5600 ug/g	49 ug/g
VOCs, PAH, Metals		
MW-108 (0- 4.27 mbgs)	**O. Reg. 153/04 Table 3, Residential fine**	**SS4 (2.29-2.9 mbgs)**
VOC, PAH, PHC, Metals		

MW-106b (0- 4.27 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS2 (0.76-1.37 mbgs)
Metals		
Arsenic	18 ug/g	7.9 ug/g
Lead	120 ug/g	**240 ug/g**
PHCs		
F3 PHCs (C16-C34)	1300 ug/g	10 ug/g
PAHs		
Anthracene	0.74 ug/g	0.02 ug/g
Benzo[a]anthracene	0.63 ug/g	0.08 ug/g
Benzo[a]pyrene	0.3 ug/g	0.09 ug/g
Benzo[b]fluoranthene	0.78 ug/g	0.07 ug/g
Benzo[g,h,i]perylene	7.8 ug/g	0.07 ug/g
Benzo[k]fluoranthene	0.78 ug/g	0.03 ug/g
Chrysene	7.8 ug/g	0.09 ug/g
Dibenzo[a,h]anthracene	0.1 ug/g	0.03 ug/g
Fluoranthene	0.69 ug/g	0.13 ug/g
Indeno[1,2,3-cd]pyrene	0.48 ug/g	0.08 ug/g
1-Methylnaphthalene	3.4 ug/g dry	0.07 ug/g
2-Methylnaphthalene	3.4 ug/g dry	0.07 ug/g
Methylnaphthalene (1&2)	3.4 ug/g dry	0.14 ug/g
Naphthalene	0.75 ug/g dry	0.04 ug/g
Phenanthrene	7.8 ug/g dry	0.12 ug/g
Pyrene	78 ug/g dry	0.10 ug/g
VOC		
MW-106b (0- 4.27 mbgs)	**O. Reg. 153/04 Table 3, Residential fine**	**SS5 (3.05-3.66 mbgs)**
VOC, PAH, PHC, Metals		

MW104 (0-7.47 mbgs)	O. Reg. 153/04 Table 3, Residential fine	SS2 (0.76-1.37 mbgs)
Metals		
Arsenic	18 ug/g	**29.2 ug/g**
Lead	120 ug/g	12.1 ug/g
VOCs		
Cis-1,2-Dichloroethylene	30 ug/g	3.08 ug/g
Trichloroethylene	0.52 ug/g	**2.96 ug/g**
PAHs, PHCs		
MW-104 (0-7.47 mbgs)	**O. Reg. 153/04 Table 3, Residential fine**	**SS4 (2.29-2.0 mbgs)**
VOCs		
Cis-1,2-Dichloroethylene	30 ug/g	0.05 ug/g
Metals		
MW-104 (0-7.47 mbgs)	**O. Reg. 153/04 Table 3, Residential fine**	**SS6 (3.81-4.27 mbgs)**
VOCs		
Cis-1,2-Dichloroethylene	30 ug/g	0.45 ug/g

BH/MW-3 (0- 5.2 mbgs)	O. Reg. 153/04 Table 3, Residential fine	AS1 (0.91-1.4 mbgs)
Metals		
Arsenic	18 ug/g	**22.2 ug/g**
VOCs		
Trichloroethylene	0.52 ug/g	**0.85 ug/g**
PAHs, PHCs		

HALLEX ENVIRONMENTAL LTD.

Legend

- Phase Two Property
- Borehole/ Monitoring Well
- Test Pit

Red exceeds Table 3 residential fine criteria
Green meets Table 3 residential fine criteria

Client
1274505 Ontario Ltd.

Project
Phase Two ESA & Delineation
4280 Fourth Ave, Niagara Falls, ON

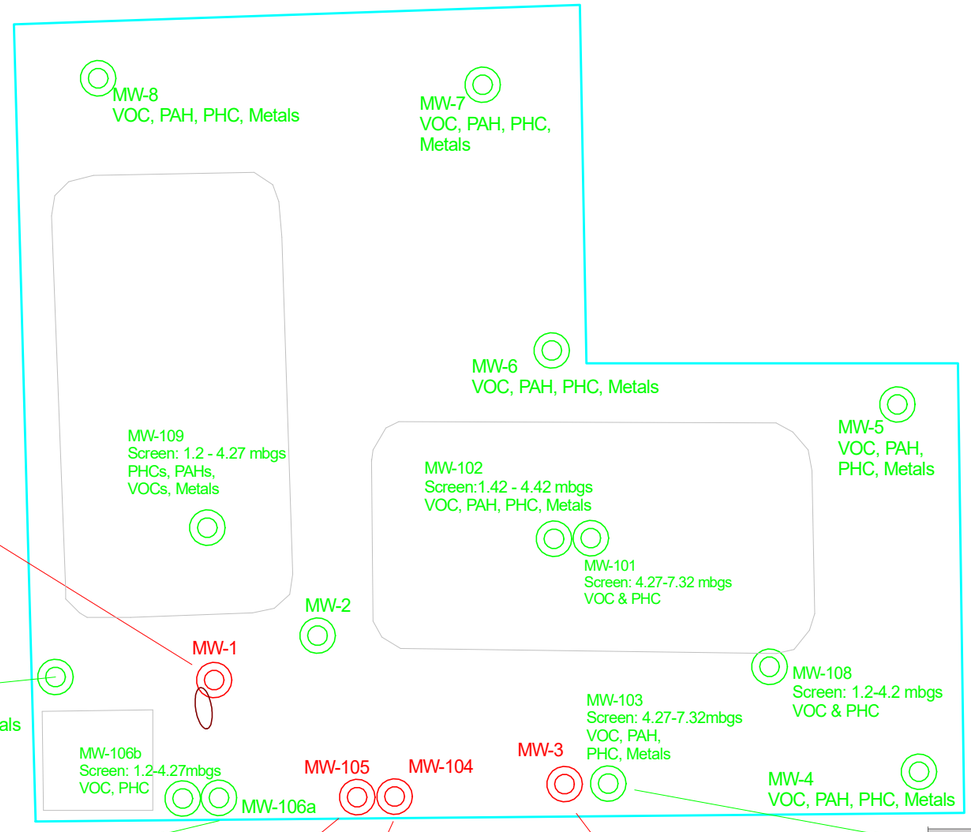
Figure Name
Soil Results

Project E-22-32-2a
Date March 2023
Drafted: A. Cottle
Reviewed: N. Metz

Figure 4a

Groundwater
Flow Direction

0 m — 25 m — 50 m



BH/MW1	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 1.4 – 4.4 mbgs
VOCs		
Benzene	430 ug/L	**3550 ug/L**
1,2- Dichloroethane	12 ug/L	1.7 ug/L
Ethylbenzene	2300 ug/L	54.6 ug/L
Toluene	18000 ug/L	43.6 ug/L
PHCs (F1-F4)		
F1 PHCs (C6-C10)	750 ug/L	**2410 ug/L**
Metals (by ICP), PAHs		

MW106a	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 4.27 – 7.32 mbgs
VOCs		
Cis-1,2-Dichloroethylene	17 ug/L	0.8 ug/L
PHCs		

MW105	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 1.2 – 4.27 mbgs
VOCs		
Cis-1,2-Dichloroethylene	17 ug/L	8.8 ug/L
Trichloroethylene	17 ug/L	1.6 ug/L
Vinyl Chloride	1.7 ug/L	**5 ug/L**
PHCs		

MW104	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 4.27 – 7.32 mbgs
VOCs		
Cis-1,2-Dichloroethylene	17 ug/L	**34.2 ug/L**
Trichloroethylene	17 ug/L	0.5 ug/L
Vinyl Chloride	1.7 ug/L	**7.2 ug/L**
PHCs		

BH/MW3	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 1.6 – 4.6 mbgs
VOCs		
Cis-1,2-Dichloroethylene	17 ug/L	**18.5 ug/L**
Trichloroethylene	17 ug/L	5.5 ug/L
Vinyl Chloride	1.7 ug/L	**5.2 ug/L**
Metals (by ICP), PAHs, PHCs		

MW103	O. Reg. 153/04 Table 3, Residential fine	Groundwater Sample Screen: 4.27-7.32 mbgs
VOCs		
Cis-1,2-Dichloroethylene	17 ug/L	2.0 ug/L
VOCs, PHCs (F1)		

Legend

- Phase Two Property
- Borehole/ Monitoring Well
- Underground Fuel Storage Tank
- Groundwater Flow Direction

Red exceeds Table 3 residential fine criteria
Green meets Table 3 residential fine criteria

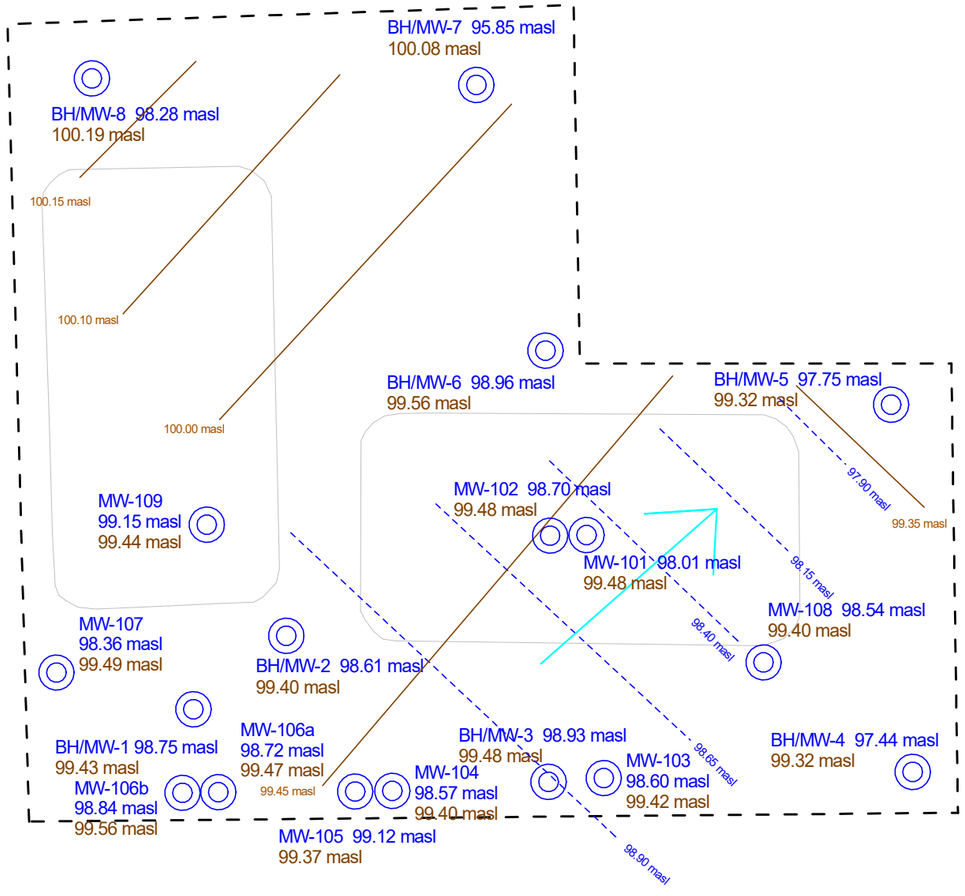
Client
1274505 Ontario Ltd.

Project
Phase Two ESA & Delineation
4280 Fourth Ave, Niagara Falls, ON

Figure Name
Groundwater Results

Project E-22-32-2a
Date March 2023
Drafted: A. Cottle
Reviewed: N. Metz

Figure 4b



0 m 20 m 40 m

Note: Water Level Ranged from 97.85 - 99.46 masl

HALLEX ENVIRONMENTAL LTD.

Legend

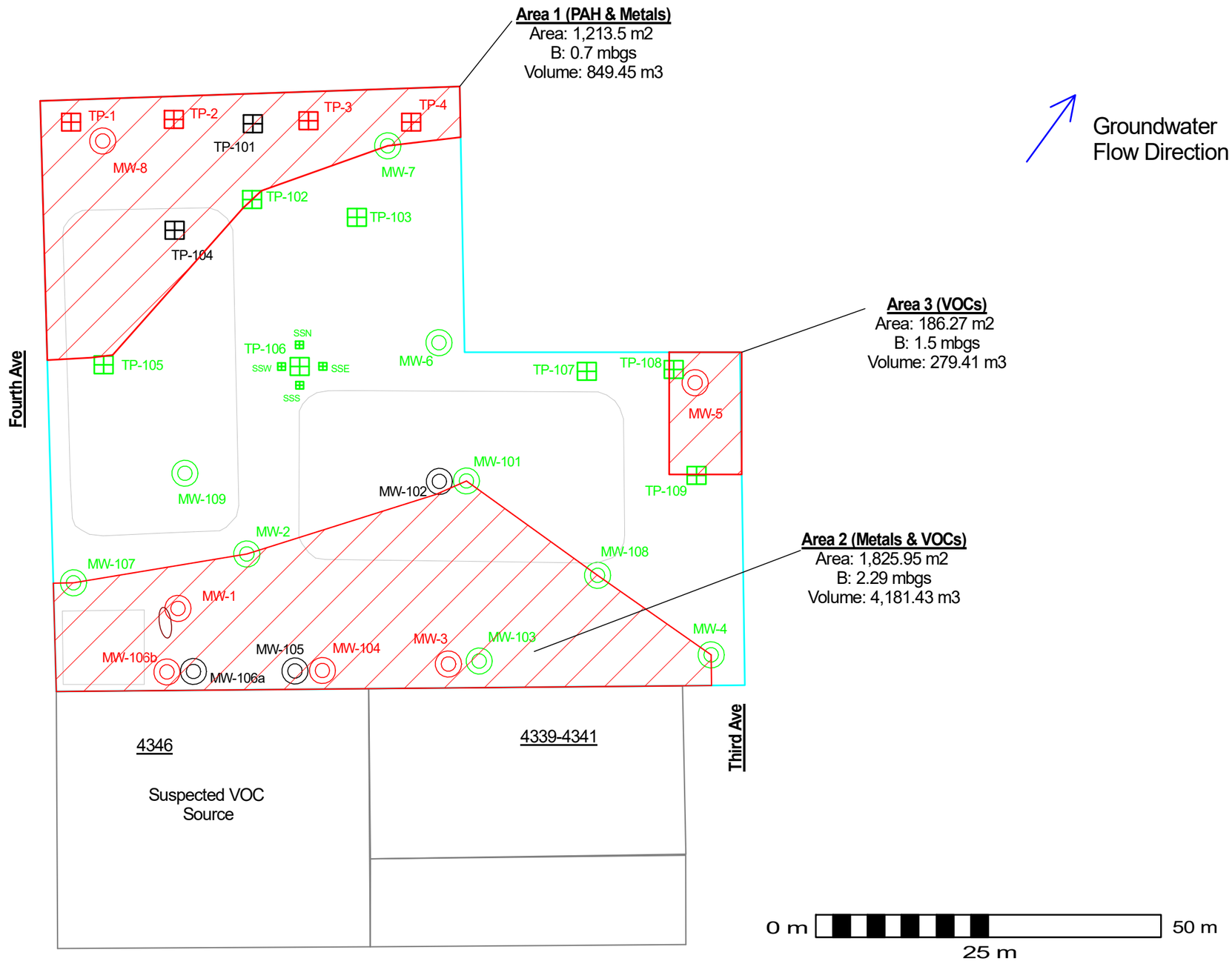
- Phase Two Property
- Borehole/ Monitoring Well Location
- Groundwater Contour
- Elevation Contour
- Groundwater Flow Direction

Client
1274505 Ontario Ltd.

Project
Phase Two ESA
& Delineation
4280 Fourth Avenue,
Niagara Falls, ON

Figure Name
Topographic and Groundwater Flow Contours

Project E-22-32-2	Figure 5
Date January 2023	
Drafted: A. Cottle Reviewed: N. Metz	



Legend

- Phase Two Property
- Borehole/ Monitoring Well Locations
- Test Pit Locations
- Impacted Areas
- Underground Storage Tank
- Groundwater Flow Direction

Client

1274505 Ontario Ltd.

Project

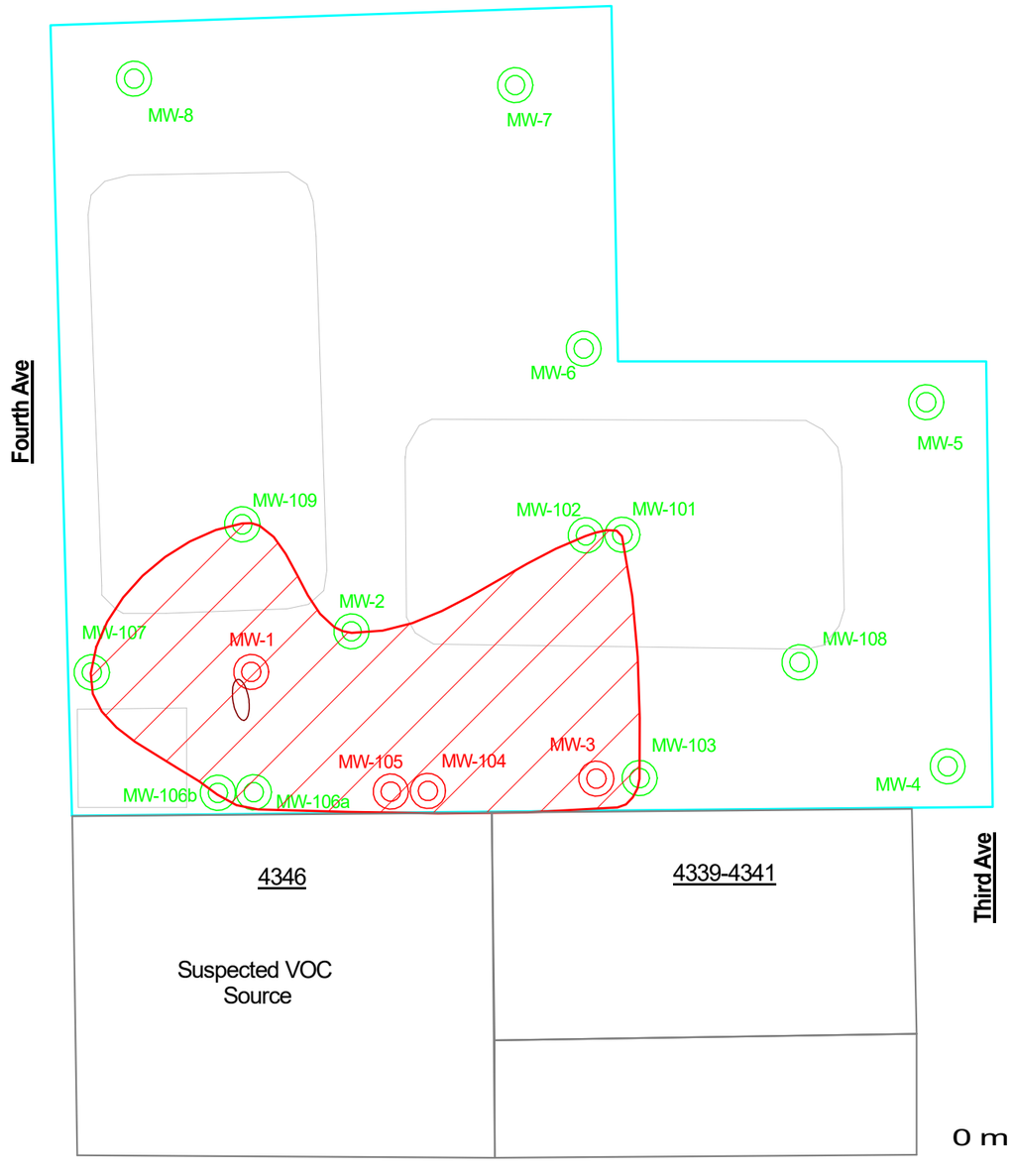
Phase Two ESA
& Delineation
4280 Fourth Ave,
Niagara Falls, ON

Figure Name

Soil
Area of Impact

Project	E-22-32-2a
Date	March 2023
Drafted: A. Cottle Reviewed: N. Metz	

Figure 6a



Groundwater Flow Direction

Estimated Area (PHC & VOC)
Area: 1,090.72 m2
B: 6.12 mbgs
Volume: 2,200 m3
*volume calculated based on soil porosity = 30%

0 m 25 m 50 m

HALLEX ENVIRONMENTAL LTD.

Legend

- Phase Two Property
- Borehole/ Monitoring Well Locations
- Impacted Area
- Underground Storage Tank

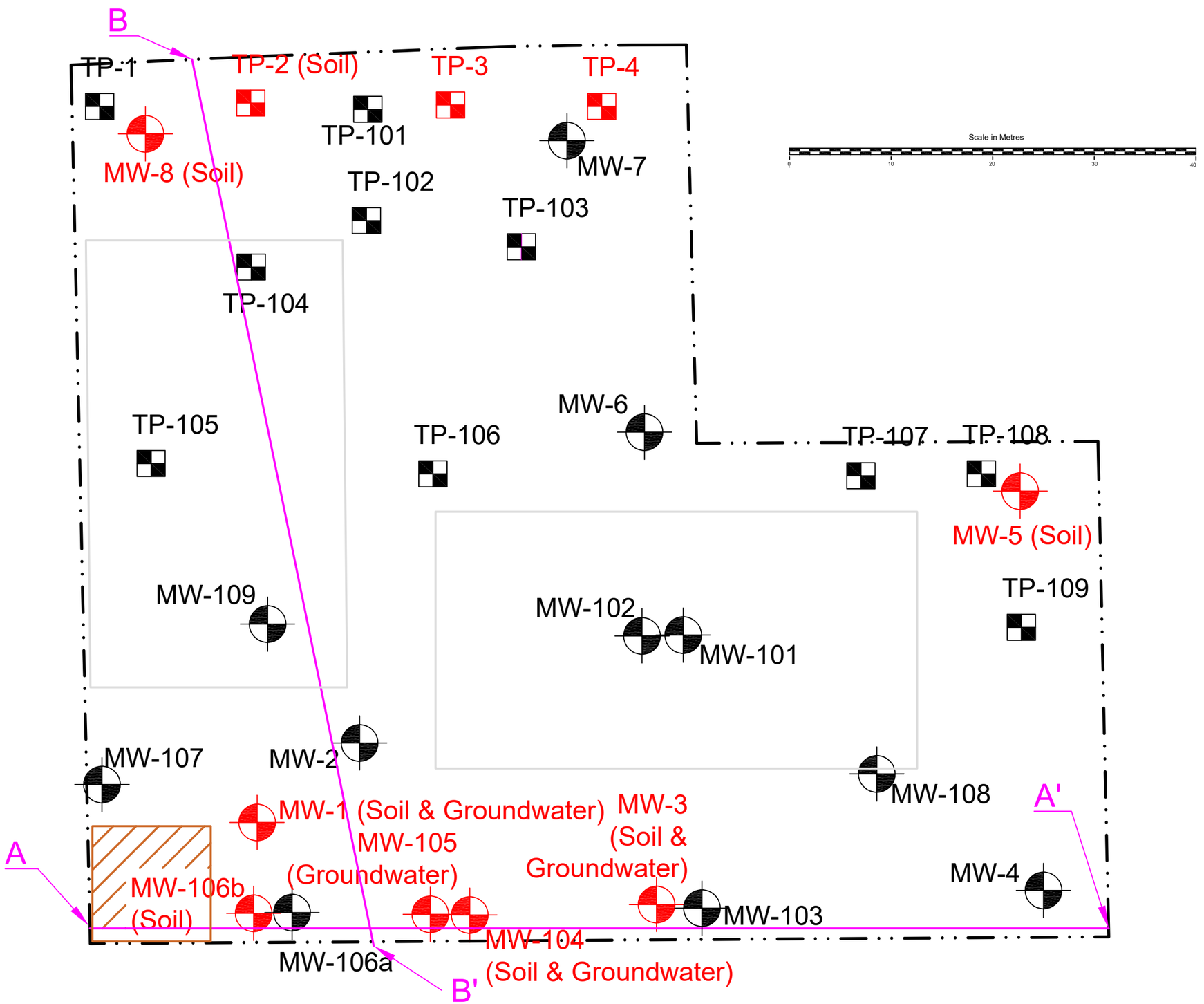
Client
1274505 Ontario Ltd.

Project
Phase Two ESA & Delineation
4280 Fourth Ave, Niagara Falls, ON

Figure Name
Groundwater Area of Impact

Project	E-22-32-2a
Date	January 2023
Drafted: A. Cottle Reviewed: N. Metz	

Figure 6b



Legend

- Phase Two Property
- Test Pit Location
- Monitoring Well Locations
- Profile Line

Client
1274505 Ontario Inc.

Project
Phase Two ESA & Delineation
4280 Fourth Avenue, Niagara Falls, ON.

Figure Name
Profile Key

Project E-22-32-2a
Date May 2023
Drafted: CC
Reviewed: KC

Figure 7A

Groundwater

MW1	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
Benzene	430 ug/L	**3550**
Hydrocarbons		
F1 PHCs (C6-C10)	750 ug/L	**2410**

Soil

BH/MW-1 SS2, 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Volatiles		
Benzene	0.17	**0.32**

Groundwater

MW105	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
Vinyl Chloride	1.7 ug/L	**5.0**

Groundwater

MW104	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
cis-1,2-Dichloroethylene	17 ug/L	**34.2**
Vinyl Chloride	1.7 ug/L	**7.2**

Soil

MW-104 , SS2 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Arsenic	29.2	**29.2**
Volatiles		
Trichloroethylene	0.52	**2.96**

Groundwater

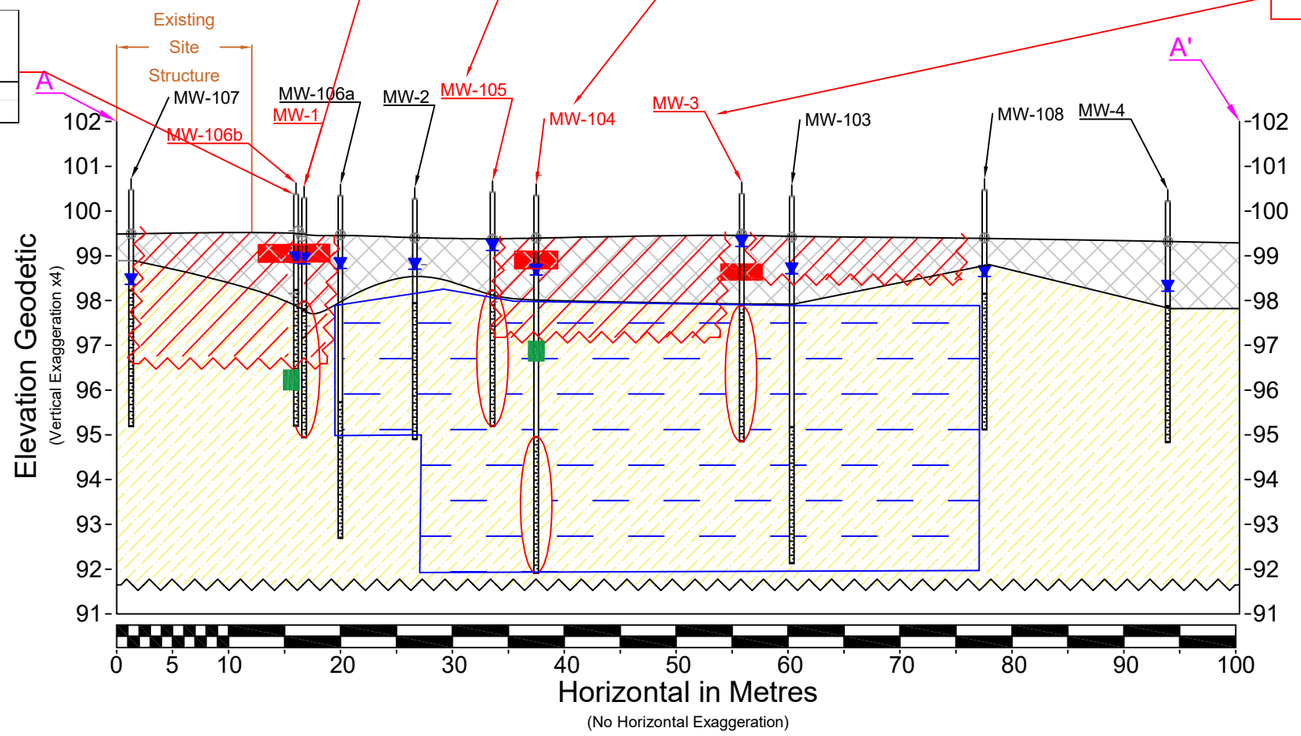
MW3	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)	Results duplicate (ug/L)
Volatiles			
cis-1,2-Dichloroethylene	17 ug/L	**18.3**	**18.8**
Vinyl Chloride	1.7 ug/L	**4.4**	**5.2**

Soil

BH/MW-3-AS1 , 0.91mbgs to 1.4mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Arsenic	18	**22.2**
Volatiles		
Trichloroethylene	0.52	**0.85**

Soil

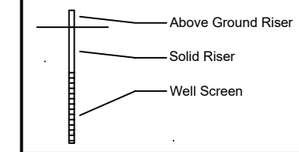
MW-106b SS2, 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Lead	120	**240**



Legend

- Interpreted groundwater level
- Fill material, (includes asphalt pavement)
- Silt / Sandy Silt / Silty Sand / Clayey Silt
- Soil Sample Location (Exceedance Only)
- Groundwater Sample Location (Exceedance Only)
- Extent of Soil Exceedance
- Extent of Groundwater Exceedance

MONITORING WELL



HALLEX ENVIRONMENTAL LTD.

Client
1274505 Ontario Inc.

Project
Phase Two ESA & Delineation
4280 Fourth Avenue, Niagara Falls, ON.

Figure Name
Profile A-A' Soil and Groundwater Exceedance

Project E-22-32-2a
Date May 2023
Drafted: CC
Reviewed: KC

Figure 7B

Soil

BH/MW-8 SS1, 0 to 0.61mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Arsenic	18	**19**
Cadmium	1.2	**2.5**
Semi-Volatiles		
Benzo[a]pyrene	0.3	**0.37**

Soil

TP-2 SS1, 0.07mbgs to 0.7mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Lead	120	**250**
Semi-Volatiles		
Benzo[a]anthracene	0.63	**0.9**
Benzo[a]pyrene	0.3	**0.6**
Benzo[b]fluoranthene	0.78	**0.8**
Dibenzo[a,h]anthracene	0.1u	**0.13**
Fluorene	0.69	**1.45**
Indeno [1,2,3-cd] pyrene	0.48	**0.52**

Groundwater

MW1	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
Benzene	430 ug/L	**3550**
Hydrocarbons		
F1 PHCs (C6-C10)	750 ug/L	**2410**

Soil

BH/MW-1 SS2, 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Volatiles		
Benzene	0.17	**0.32**

Soil

MW-106b SS2, 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Lead	120	**240**

Groundwater

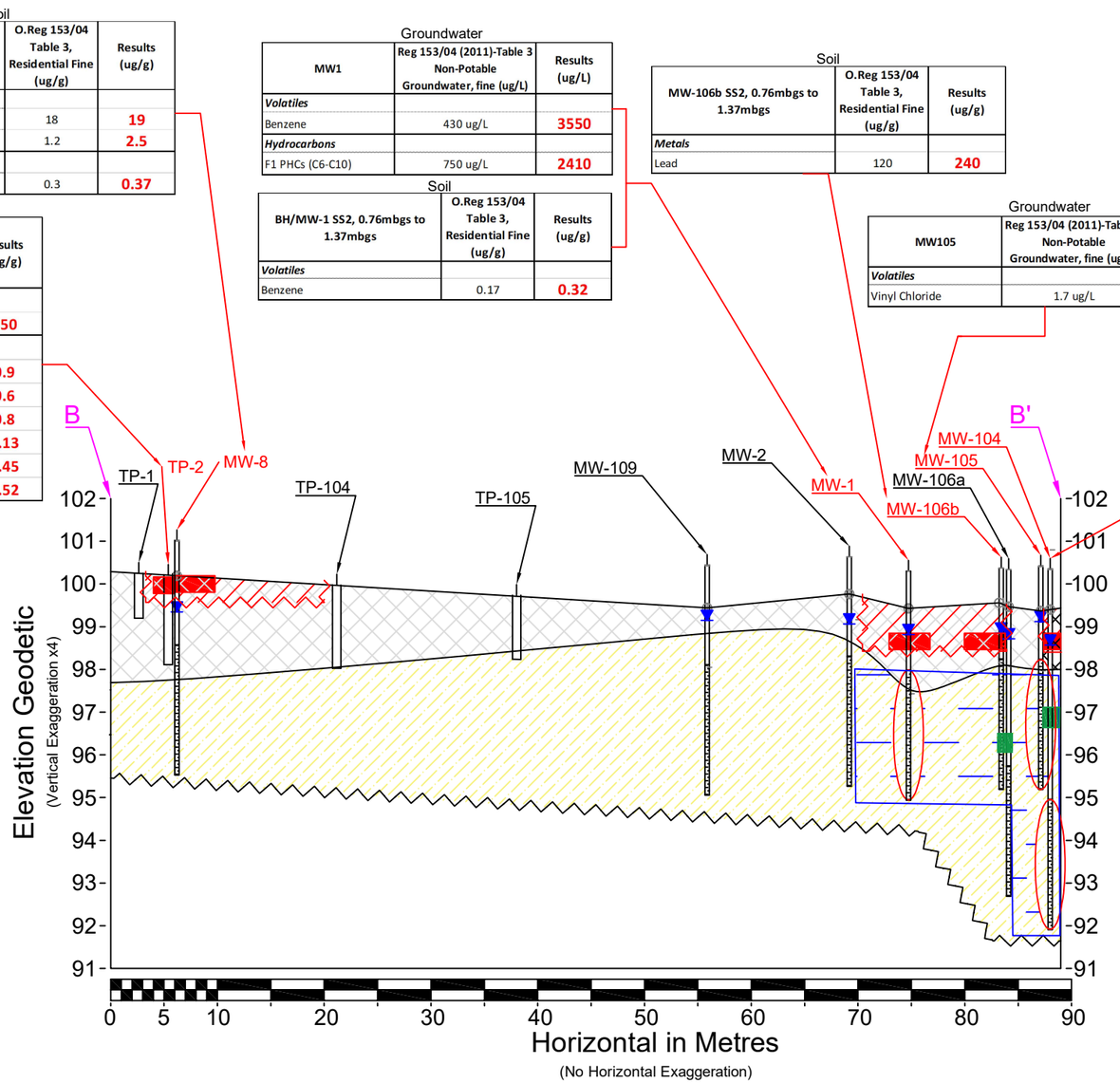
MW105	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
Vinyl Chloride	1.7 ug/L	**5.0**

Groundwater

MW104	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, fine (ug/L)	Results (ug/L)
Volatiles		
cis-1,2-Dichloroethylene	17 ug/L	**34.2**
Vinyl Chloride	1.7 ug/L	**7.2**

Soil

MW-104 , SS2 0.76mbgs to 1.37mbgs	O.Reg 153/04 Table 3, Residential Fine (ug/g)	Results (ug/g)
Metals		
Arsenic	29.2	**29.2**
Volatiles		
Trichloroethylene	0.52	**2.96**



Legend

- Interpreted groundwater level
- Fill material, (includes asphalt pavement)
- Silt / Sandy Silt / Silty Sand / Clayey Silt
- Soil Sample Location (Exceedance Only)
- Groundwater Sample Location (Exceedance Only)
- Extent of Soil Exceedance
- Extent of Groundwater Exceedance

MONITORING WELL

Client
1274505 Ontario Inc.

Project
Phase Two ESA & Delineation
4280 Fourth Avenue, Niagara Falls, ON.

Figure Name
Profile B-B' Soil and Groundwater Exceedance

Project E-22-32-2a
Date May 2023
Drafted: CC
Reviewed: KC

Figure 7C

Appendix A:

Field Logs

TEST PIT LOG HALLEX ENVIRONMENTAL LTD

Project #: E-22-32-2	Client: 1274505 Ontario Ltd.	Location: 4280 Fourth Avenue, Niagara Falls, ON	Date: December 8th, 2022

Test Pit #	Depth (m)	Description	Sample #	Lab
TP#: 1	0 - 0.31	Brown, topsoil, silty sand, reworked material, dry		
	0.31 - 0.57	Brown, Sandy Silt, reworked material, dry, trace gravel	SS1	
	0.57 - 0.75	Black, sand, rewroked, dry, burned material (shingles)	SS2	
	0.75 - 1.05	Brown, Sandy Silt, reworked material, damp	SS3	
	TD = 1.05m			
TP#: 2	0 - 0.07	Grey Granular/Gravel, reworked dry		
	0.07 - 0.70	Brown/ Black Sandy Silt, reworked, dry, trace wood/asphalt	SS1	
	0.70 - 1.4	Redish Brown, Sandy Silt, reworked dry, wood/ asphalt	SS2	
	1.8 to 1.8	Brown Silty Clay, Undisturbed, dry	SS3	
	1.8 - 2.1	Brown/ Grey, Clay, dry,	SS4	
	TD = 2.10m	* Railroad Debris *Organic Material *Trace Asphalt throu		
TP#: 3	0 - 0.64	Brown Sandy Silt, reworked, dry, trace asphalt	SS1	
	0.64 - 1.4	Redish Brown, Sandy Silt, reworked, dry, trace concrete	SS2	
	TD = 1.95			
TP#: 4	0 - 0.2	Grey Sand, reworked, dry, trace asphalt, gravel, organics	SS1	
	0.2 - 0. 4	Black, Sand, reworked, damp, trace asphalt, grvael, organics		
	0.4 - 1.45	Brown, Sandy Silt, reworked, dry, mottling (brown staining)	SS2	
	1.45 - 1.95	Greyish Brown, Clay, undisturbed, dry	SS3	

TEST PIT LOG HALLEX ENVIRONMENTAL LTD

Project #: E-22-32-2a	Client: Petra Iron Works	Location: 4280 Fourth Avenue, Niagara Falls,	Date: March 15th, 2023

Test Pit #	Depth (m)	Description	Sample #	Lab
TP#: 101	0 - 0.3	Black topsoil layer with organics and trace gravel	SS1	
	0.3 - 0.8	Reworked sandy silt with some gravel and trace c	SS2	
	TD = 0.8m	* Water at 0.8mbgs, kept rising		
TP#: 102	0 - 0.4	Black Sand and Gravel	SS1	
	0.4 - 0.8	Sand and Gravel with some Topsoil	SS2	PAHs, Metals (by ICP)
	0.8 - 2	Light Brown Silt with trace Clay	SS3	
	2 - 2.1	Brown and Grey Silt and Clay	SS4	
	TD = 2.10m			
TP#: 103	0 - 0.1	Grey Gravel layer		
	0.1 - 0.3	Reddish Brown Sandy Silt layer with trace gravel	SS1	
	0.3 - 0.6	Black Sand and Gravel	SS2	PAHs, Metals (by ICP)
	0.6 - 1.5	Light Brown Silt with trace clay, trace gravel	SS3	
	1.5 - 1.6	Grey Silt and Clay	SS4	
	TD = 1.6			
TP#: 104	0 - 0.2	Grey gravel layer		
	0.2 - 0. 4	Black Sand and Gravel Fill	SS1	
	0.4 - 0.6	Light Brown Sandy Silt with Trace Clay	SS2	
	0.6 - 1	Grey Silt with some clay	SS3	
	1 - 1.5	Grey Silt and Clay	SS4	
	TD = 1.5			
TP#: 105	0 - 0.15	Grey Gravel layer		
	0.15 - 0.3	Red/Brown Sandy Silt, trace clay, trace organics, slight petroleum odour	SS1	PAHs
	0.3 - 0.5	Grey/Brown Sandy Silt FILL	SS2	
	0.5 - 1	Light Brown Silt with Trace Clay	SS3	
	1 - 1.5	Grey/Brown Silt and Clay	SS4	
	TD = 1.5			
TP#: 106	0 - 0.2	Grey Gravel Layer		
	0.2 - 0.4	Brown Sand and Gravel FILL	SS1	
	0.4 - 0.9	Black Sandy Silt and Gravel FILL	SS2	Metals (by ICP)
	0.9 - 1.6	Brown Silt with trace Clay	SS3	
	1.6 - 1.8	Grey/Brown Silt and Clay	SS4	
	TD = 1.8			
TP#: 107	0 - 0.3	Grey Gravel layer		
	0.3 - 0.4	Black Sand layer with trace gravel	SS1	
	0.4 - 0.8	Reddish Brown Sandy Silt layer with trace gravel	SS2	
	0.8 - 1	Grey Sand with trace Gravel	SS3	
	1 - 1.2	Black Slag with grey gravel	SS4	Metals (by ICP)
	1.2 - 1.8	Brown Silt with trace Clay	SS5	
	1.8 - 2	Greyish Brown Silt and Clay	SS6	

TEST PIT LOG HALLEX ENVIRONMENTAL LTD

Project #: E-22-32-2a	Client: Petra Iron Works	Location: 4280 Fourth Avenue, Niagara Falls, ON	Date: March 15th, 2023

Test Pit #	Depth (m)	Description	Sample #	Lab
TP#: 108	0 - 0.6	Dark Brown/Black Topsoil with some organics and trace gravel	SS1	
	0.6 - 0.8	Light Brown Sandy Silt FILL with gravel and rocks	SS2	Metals (by ICP)
	TD = 2.1			
TP#: 109	0 - 0.4	Black Topsoil with some organics	SS1	
	0.4 - 0.8	Brown Sandy Silt with Gravel FILL	SS2	
	0.8 - 0.9	Black Sand and Gravel FILL		
	0.9 - 1.5	Grey Sand and Gravel FILL	SS3	
	TD = 2.6			

BOREHOLE LOG BH/MW-1

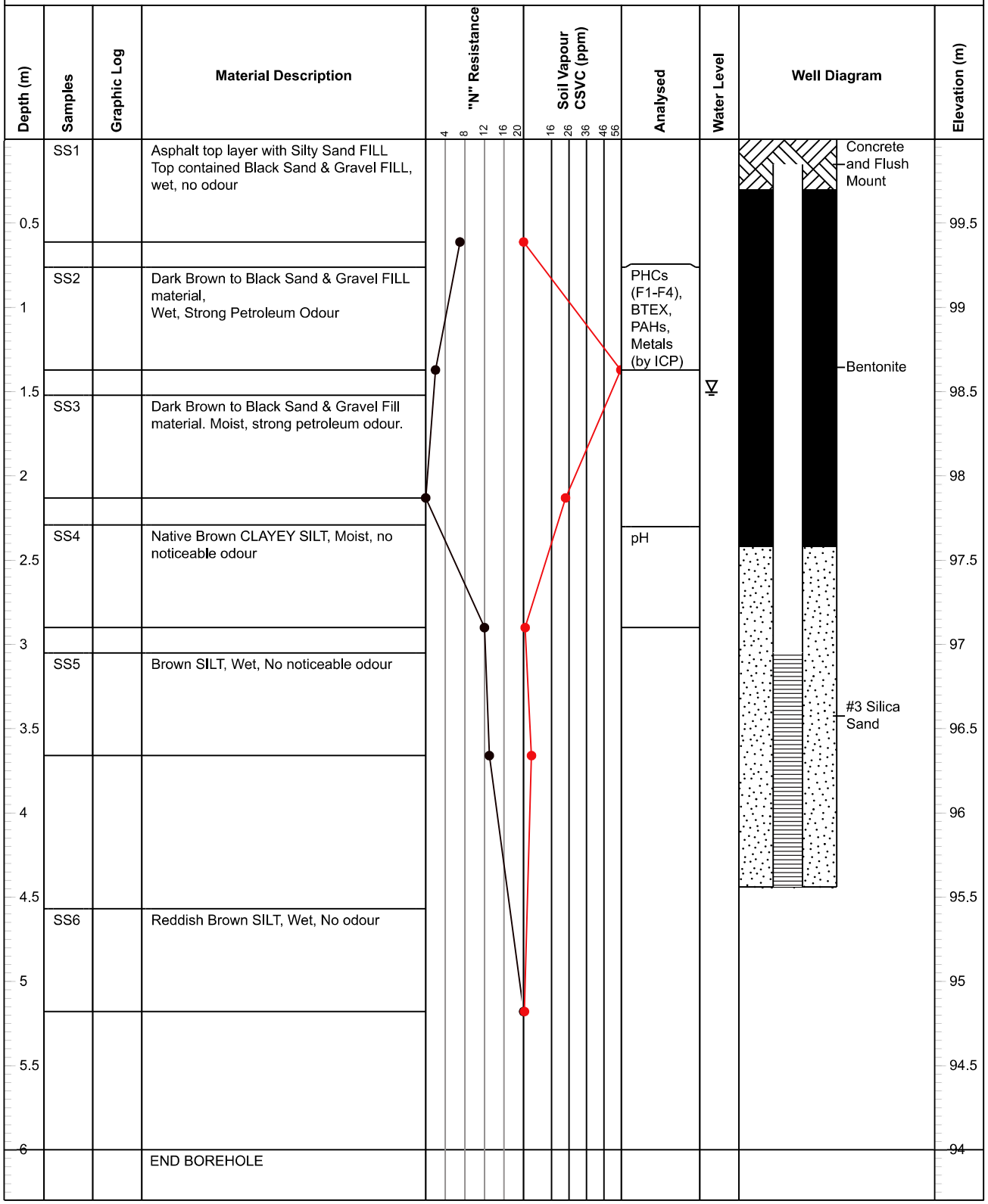
Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

Drill date:
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.43m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian



BOREHOLE LOG BH/MW-2

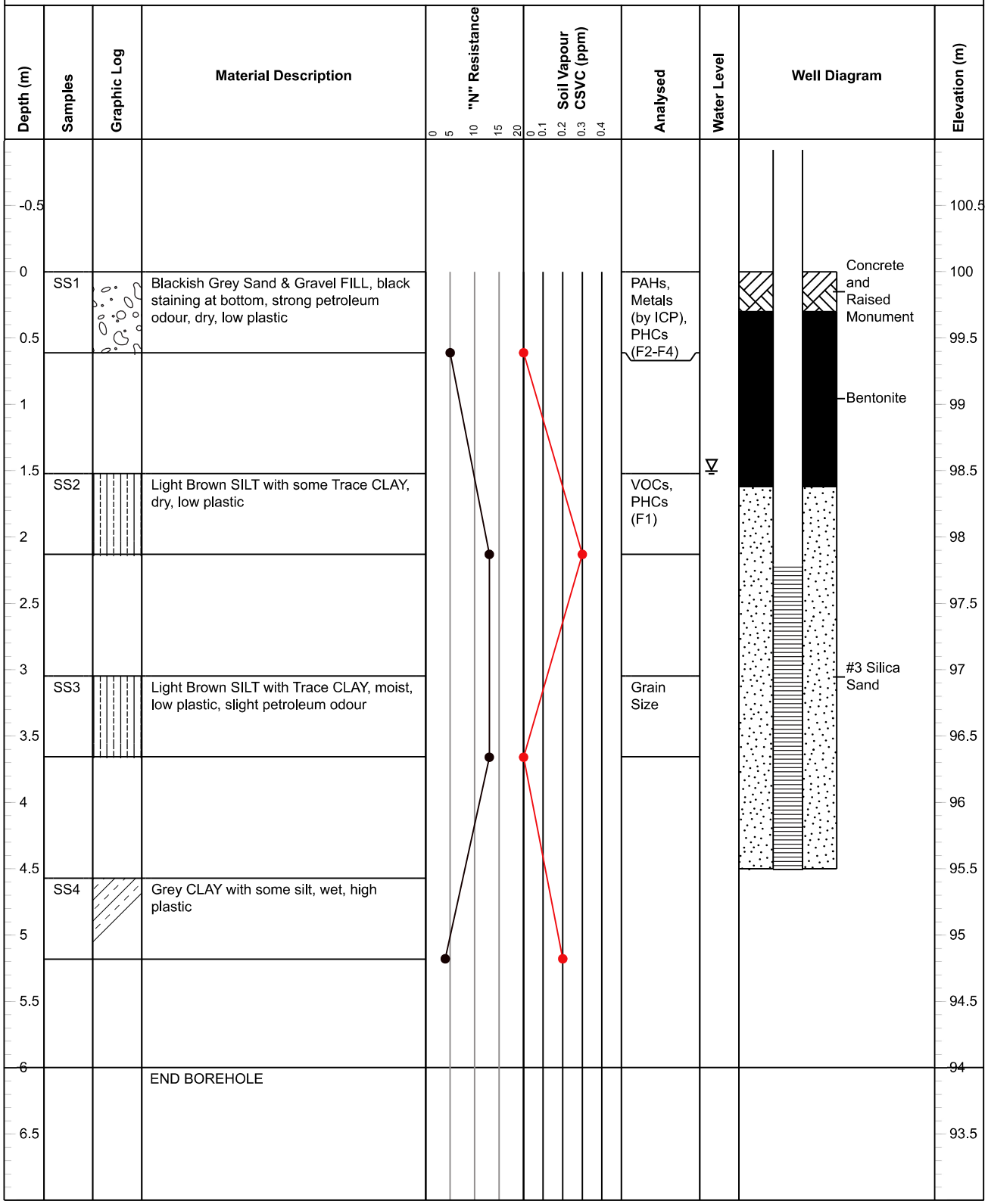
Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.40 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian



BOREHOLE LOG BH/MW-3

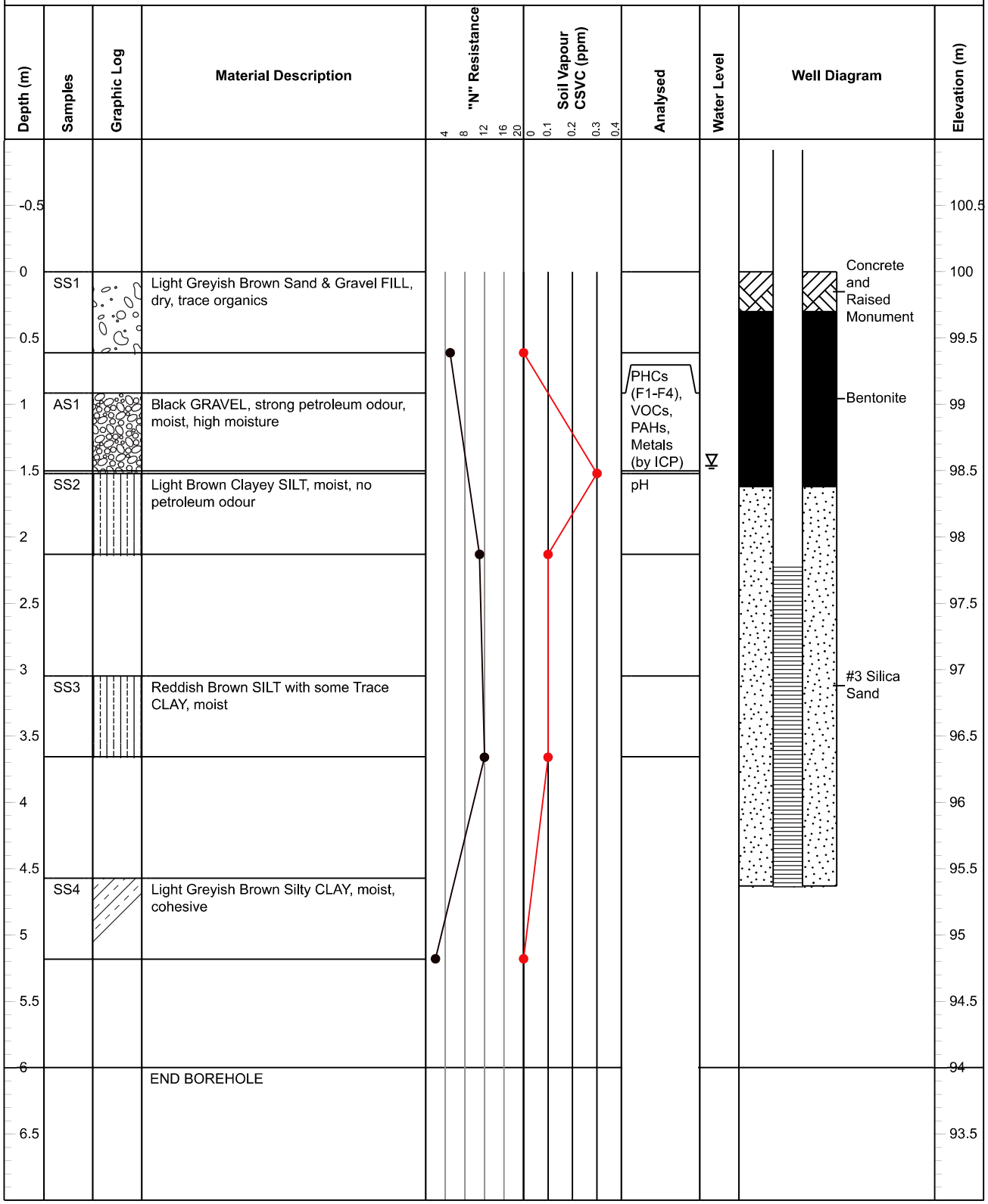
Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.48 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian



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BOREHOLE LOG BH/MW-4

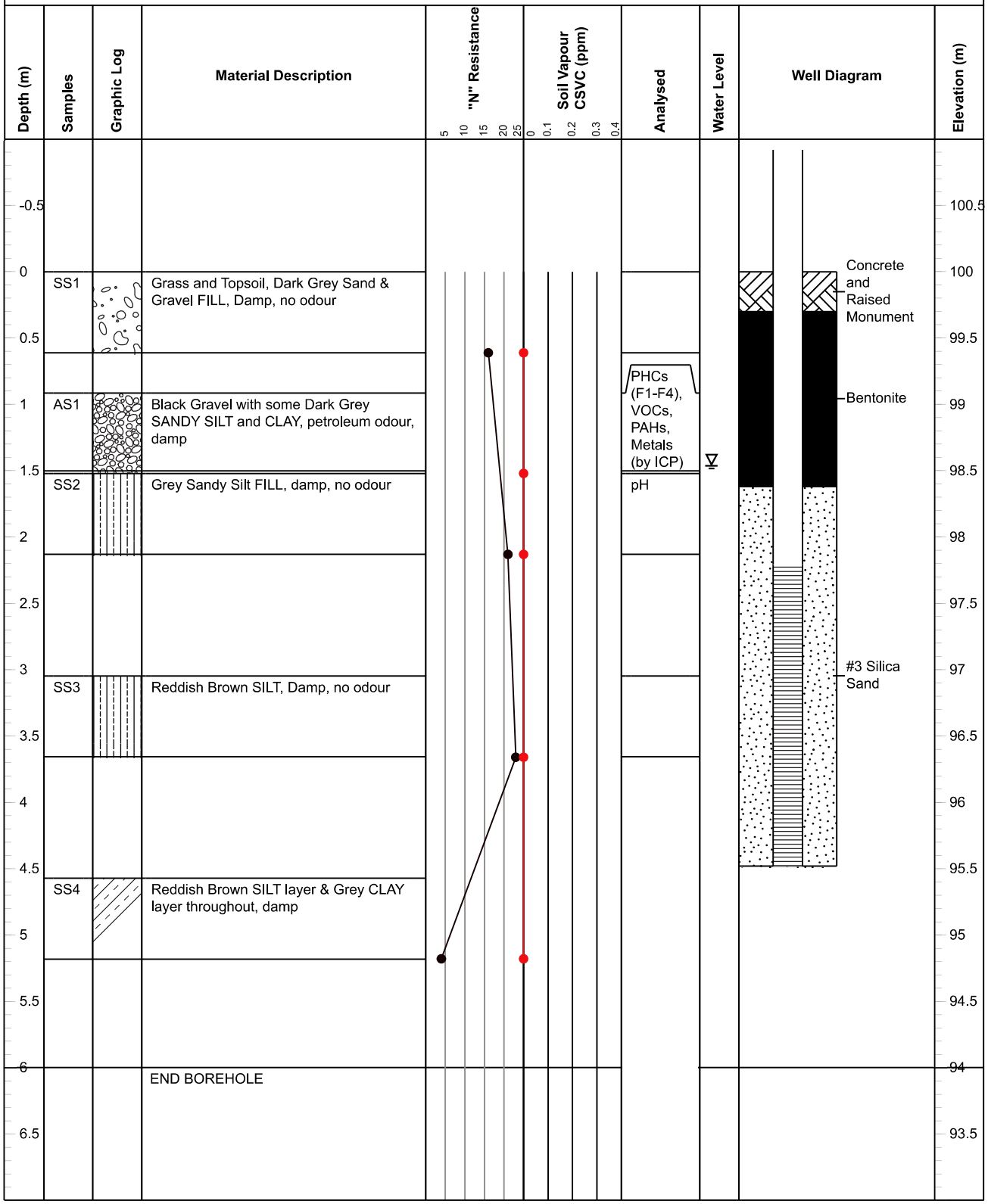
Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.32 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian



BOREHOLE LOG BH/MW-5

Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

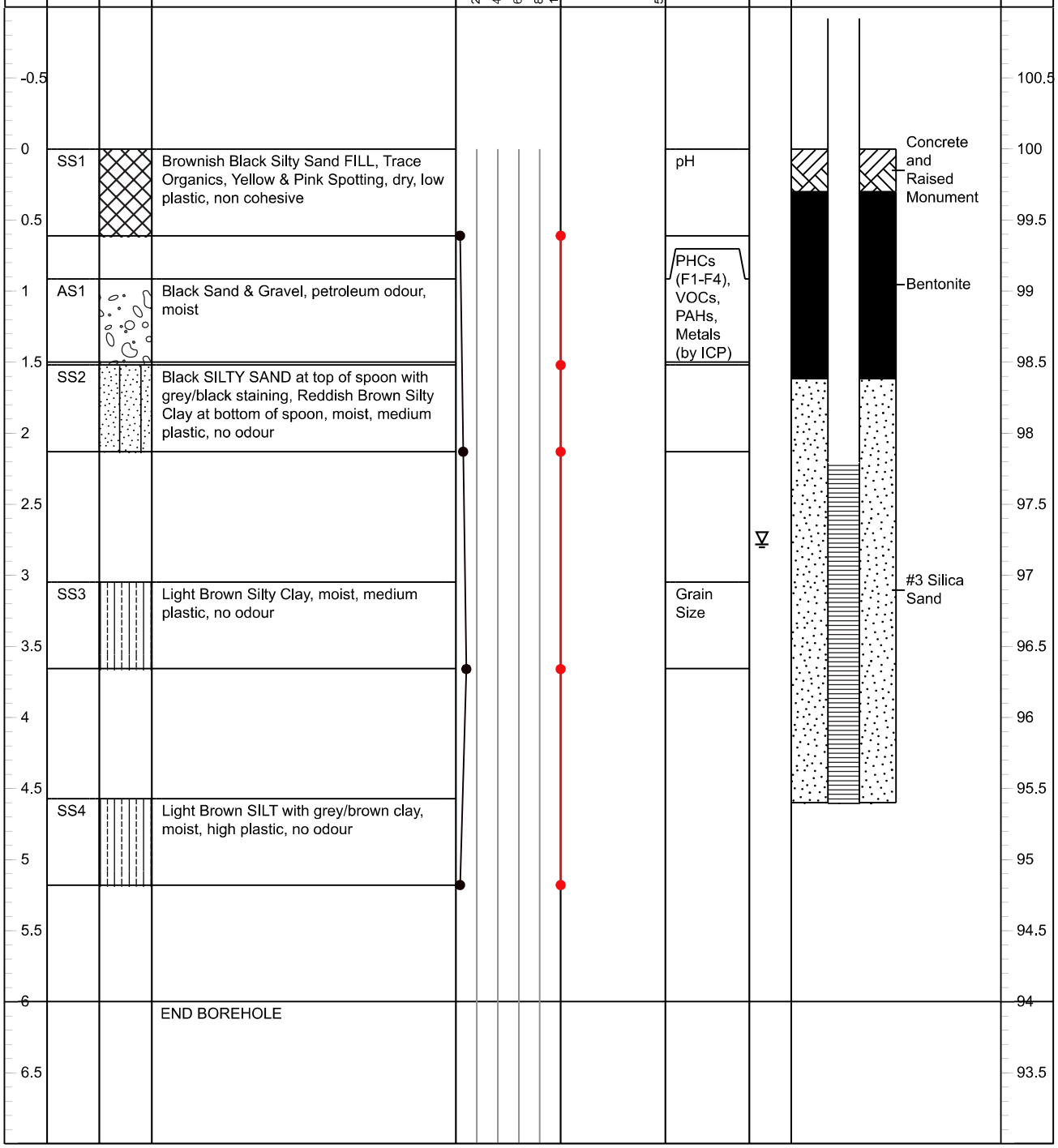
Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.32 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed	Elevation (m)
0	SS1	Brownish Black Silty Sand FILL, Trace Organics, Yellow & Pink Spotting, dry, low plastic, non cohesive	pH	100
1	AS1	Black Sand & Gravel, petroleum odour, moist	PHCs (F1-F4), VOCs, PAHs, Metals (by ICP)	99
1.5	SS2	Black SILTY SAND at top of spoon with grey/black staining, Reddish Brown Silty Clay at bottom of spoon, moist, medium plastic, no odour		98.5
3	SS3	Light Brown Silty Clay, moist, medium plastic, no odour	Grain Size	97
4.5	SS4	Light Brown SILT with grey/brown clay, moist, high plastic, no odour		95.5
6		END BOREHOLE		94



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BOREHOLE LOG BH/MW-6

Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

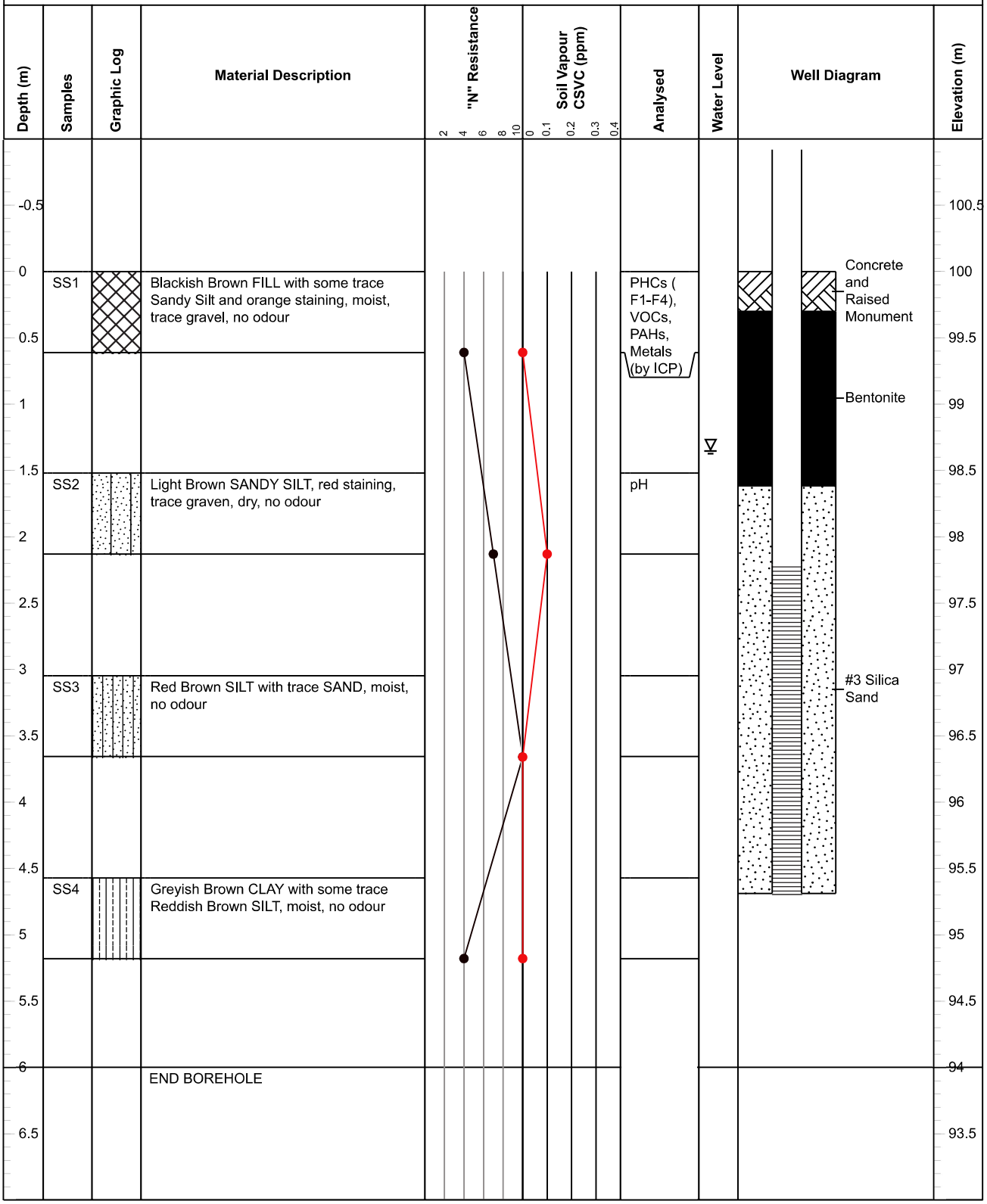
Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 99.557 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Graphic Log	Material Description	Analysed	Elevation (m)
0	SS1		Blackish Brown FILL with some trace Sandy Silt and orange staining, moist, trace gravel, no odour	PHCs (F1-F4), VOCs, PAHs, Metals (by ICP)	100
1.5	SS2		Light Brown SANDY SILT, red staining, trace graven, dry, no odour	pH	98.5
3	SS3		Red Brown SILT with trace SAND, moist, no odour		97
4.5	SS4		Greyish Brown CLAY with some trace Reddish Brown SILT, moist, no odour		95.5
6			END BOREHOLE		94



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BOREHOLE LOG BH/MW-7

Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

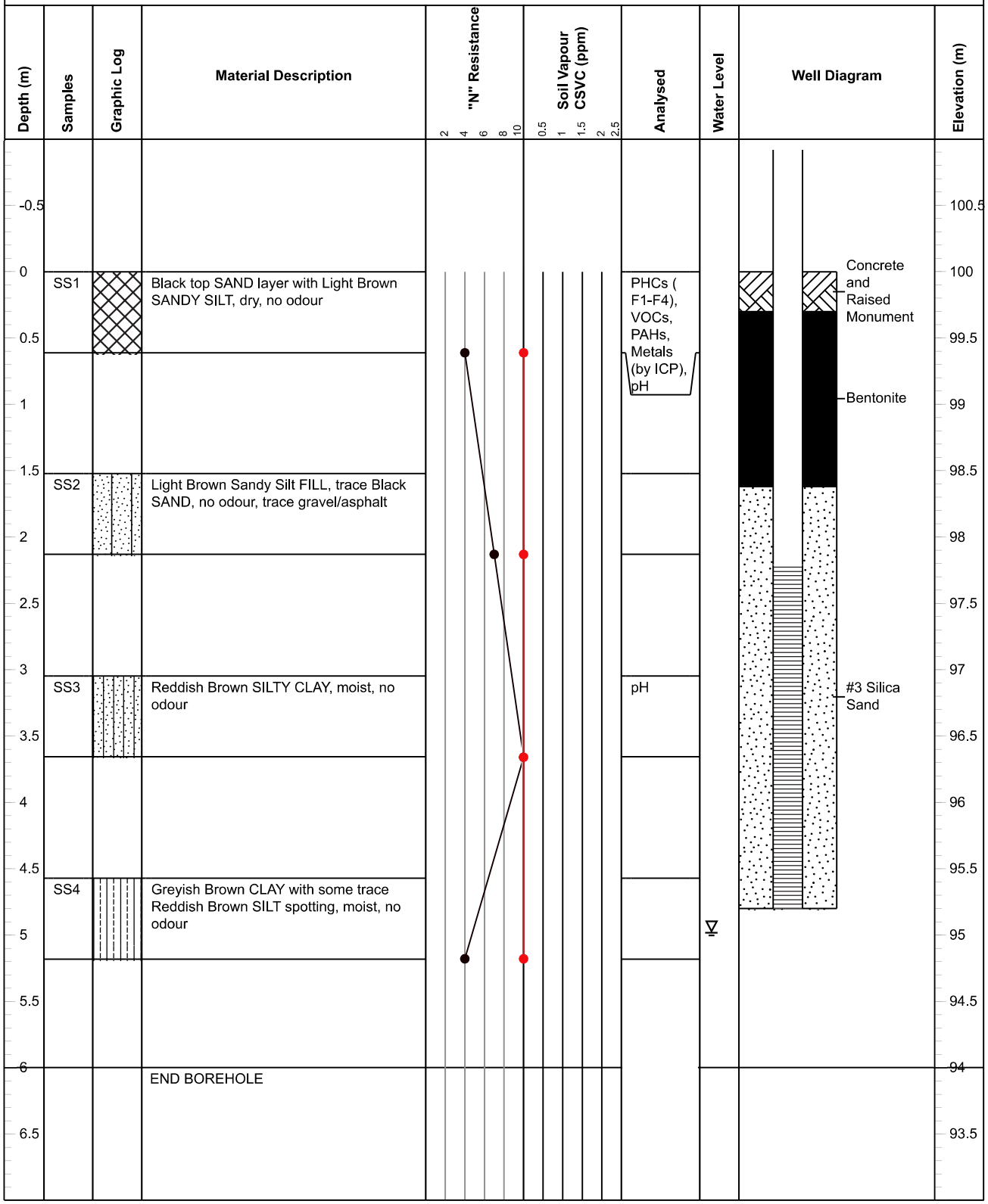
Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 100.192 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Graphic Log	Material Description	Analysed	Water Level	Elevation (m)
0	SS1		Black top SAND layer with Light Brown SANDY SILT, dry, no odour	PHCs (F1-F4), VOCs, PAHs, Metals (by ICP), pH		100
1.5	SS2		Light Brown Sandy Silt FILL, trace Black SAND, no odour, trace gravel/asphalt			98.5
3	SS3		Reddish Brown SILTY CLAY, moist, no odour	pH		97
4.5	SS4		Greyish Brown CLAY with some trace Reddish Brown SILT spotting, moist, no odour		▽	95.5
6			END BOREHOLE			94



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BOREHOLE LOG BH/MW-8

Project Number: E-22-32-2
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Ave., Niagara Falls, ON

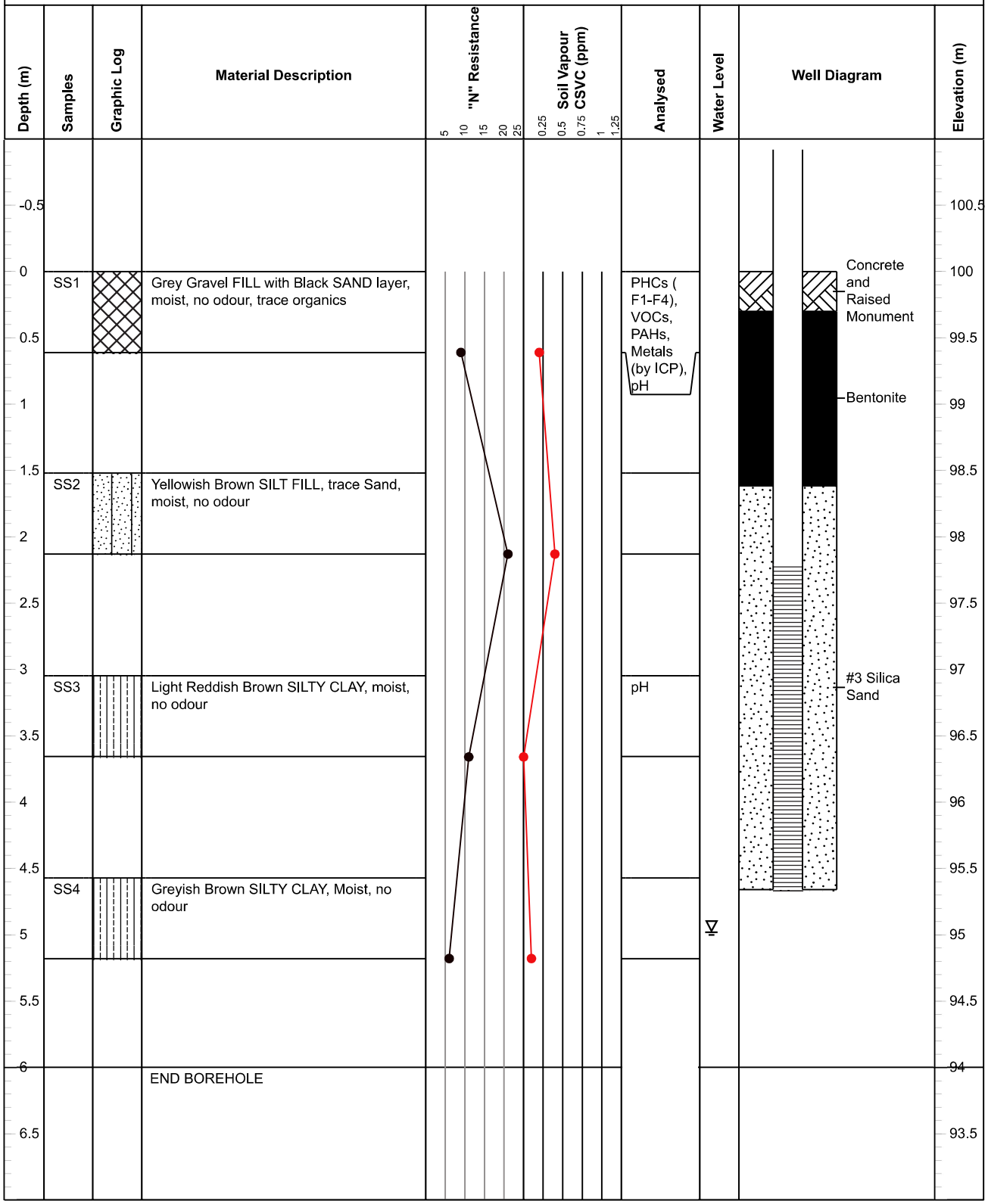
Drill date: December 9th, 2022
Total depth: 5.2 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME

Surface Elevation: 100.192 m (relative)

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed
0	SS1	Grey Gravel FILL with Black SAND layer, moist, no odour, trace organics	PHCs (F1-F4), VOCs, PAHs, Metals (by ICP), pH
1.5	SS2	Yellowish Brown SILT FILL, trace Sand, moist, no odour	
3	SS3	Light Reddish Brown SILTY CLAY, moist, no odour	pH
4.5	SS4	Greyish Brown SILTY CLAY, Moist, no odour	
6		END BOREHOLE	



BOREHOLE LOG BH/MW-101

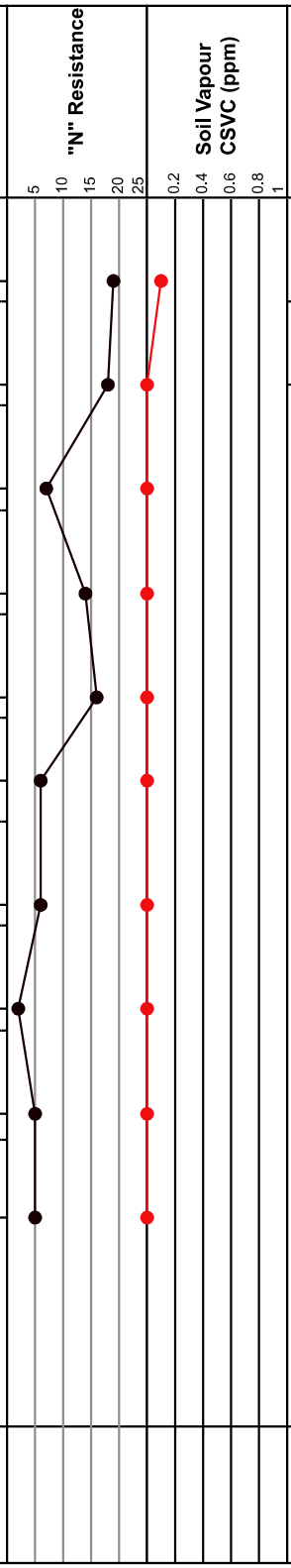
Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 7.62 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - solid stem

Comments:

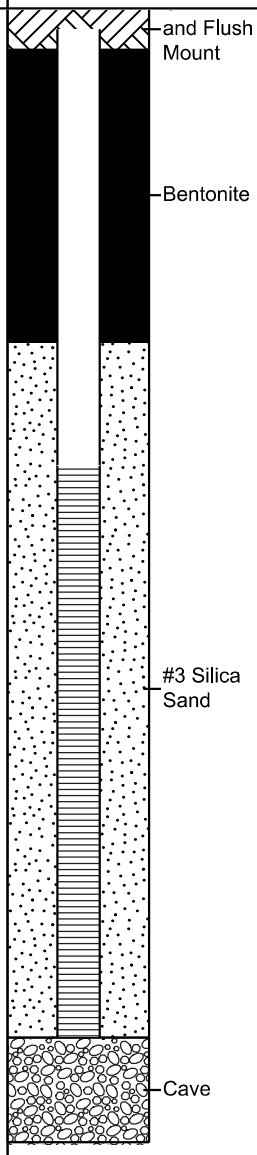
Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description
0.5	SS1	Gravel FILL with black/brown SAND bottom 1/3 of spoon. Moist, no odour.
1	SS2	Black reworked Sand & Gravel FILL. Dry, slight oil odour.
1.5	SS3	Light Brown SILT with Trace Clay, yellow/orange mottling. Dry, heavy oil odour.
2	SS4	Gray SILT and CLAY. Wet, no odour.
2.5	SS5	Reddish Brown Clayey SILT with trace Sand. Wet, no odour.
3	SS6	Reddish Brown Clayey SILT with trace Sand. Moist, no odour.
3.5	SS7	Reddish Brown SILT, with trace grey Clay and trace Sand. Wet, no odour.
4	SS8	Grey SILT and CLAY. Moist, no odour, no staining.
4.5	SS9	Greyish Brown SILT and CLAY. Moist, no odour, no staining.
5	SS10	Reddish Brown SILT with trace Clay layer at top of spoon. Moist, no odour, no staining.
5.5		
6		
6.5		
7		
7.5		
8		
8.5		
9		END STATEMENT
9.5		



Analysed: VOC, PAH, PHC (F2 - F4), Metals (by ICP)

Water Level



Elevation (m)
99.5
99
98.5
98
97.5
97
96.5
96
95.5
95
94.5
94
93.5
93
92.5
92
91.5
91
90.5

BOREHOLE LOG BH/MW-103

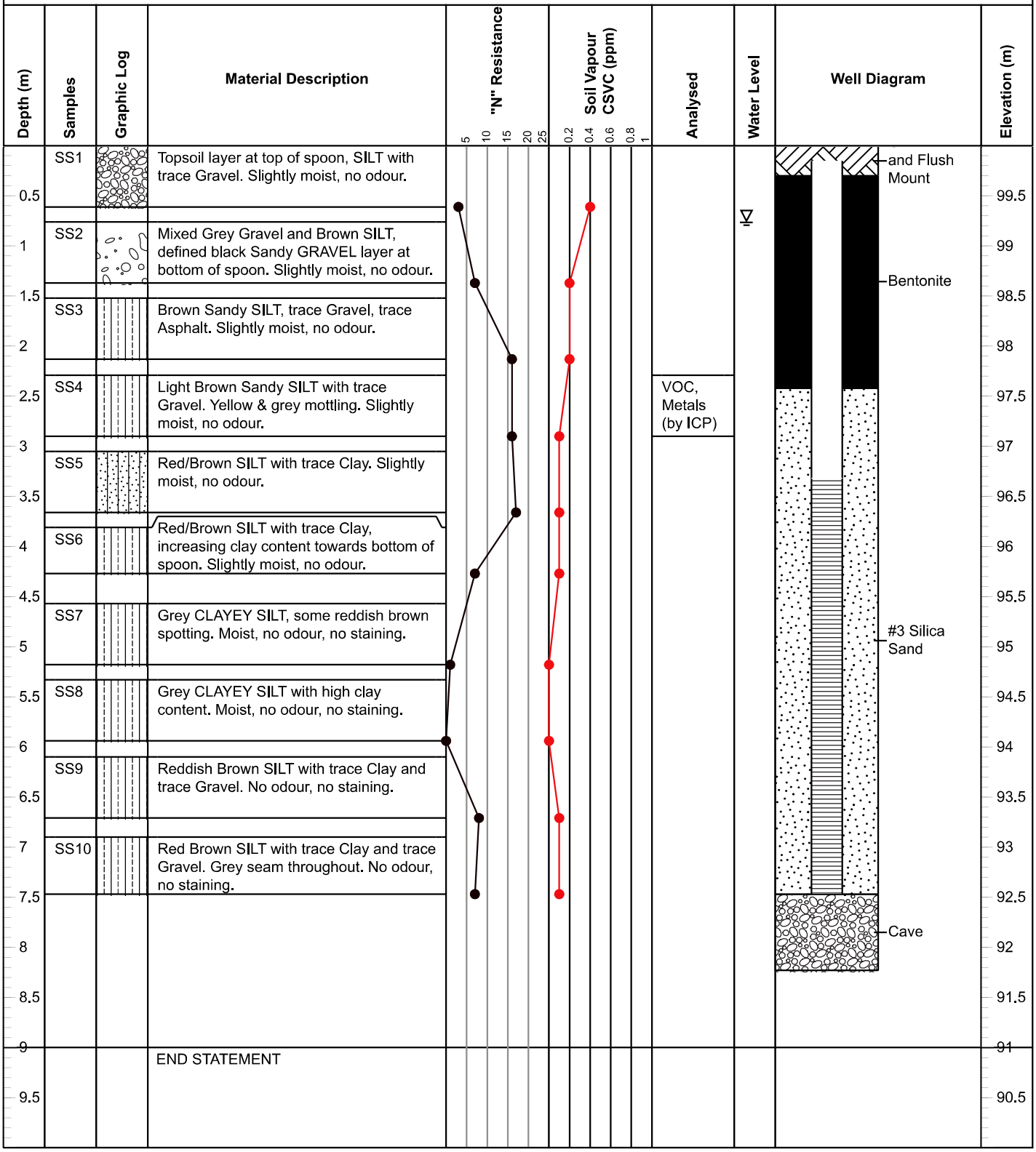
Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 7.62 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed	Water Level	Elevation (m)
0.5	SS1	Topsoil layer at top of spoon, SILT with trace Gravel. Slightly moist, no odour.			99.5
1	SS2	Mixed Grey Gravel and Brown SILT, defined black Sandy GRAVEL layer at bottom of spoon. Slightly moist, no odour.			99
1.5	SS3	Brown Sandy SILT, trace Gravel, trace Asphalt. Slightly moist, no odour.			98.5
2					98
2.5	SS4	Light Brown Sandy SILT with trace Gravel. Yellow & grey mottling. Slightly moist, no odour.	VOC, Metals (by ICP)		97.5
3	SS5	Red/Brown SILT with trace Clay. Slightly moist, no odour.			97
3.5					96.5
4	SS6	Red/Brown SILT with trace Clay, increasing clay content towards bottom of spoon. Slightly moist, no odour.			96
4.5					95.5
5	SS7	Grey CLAYEY SILT, some reddish brown spotting. Moist, no odour, no staining.			95
5.5	SS8	Grey CLAYEY SILT with high clay content. Moist, no odour, no staining.			94.5
6					94
6.5	SS9	Reddish Brown SILT with trace Clay and trace Gravel. No odour, no staining.			93.5
7	SS10	Red Brown SILT with trace Clay and trace Gravel. Grey seam throughout. No odour, no staining.			93
7.5					92.5
8					92
8.5					91.5
9		END STATEMENT			91
9.5					90.5



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BOREHOLE LOG BH/MW-104

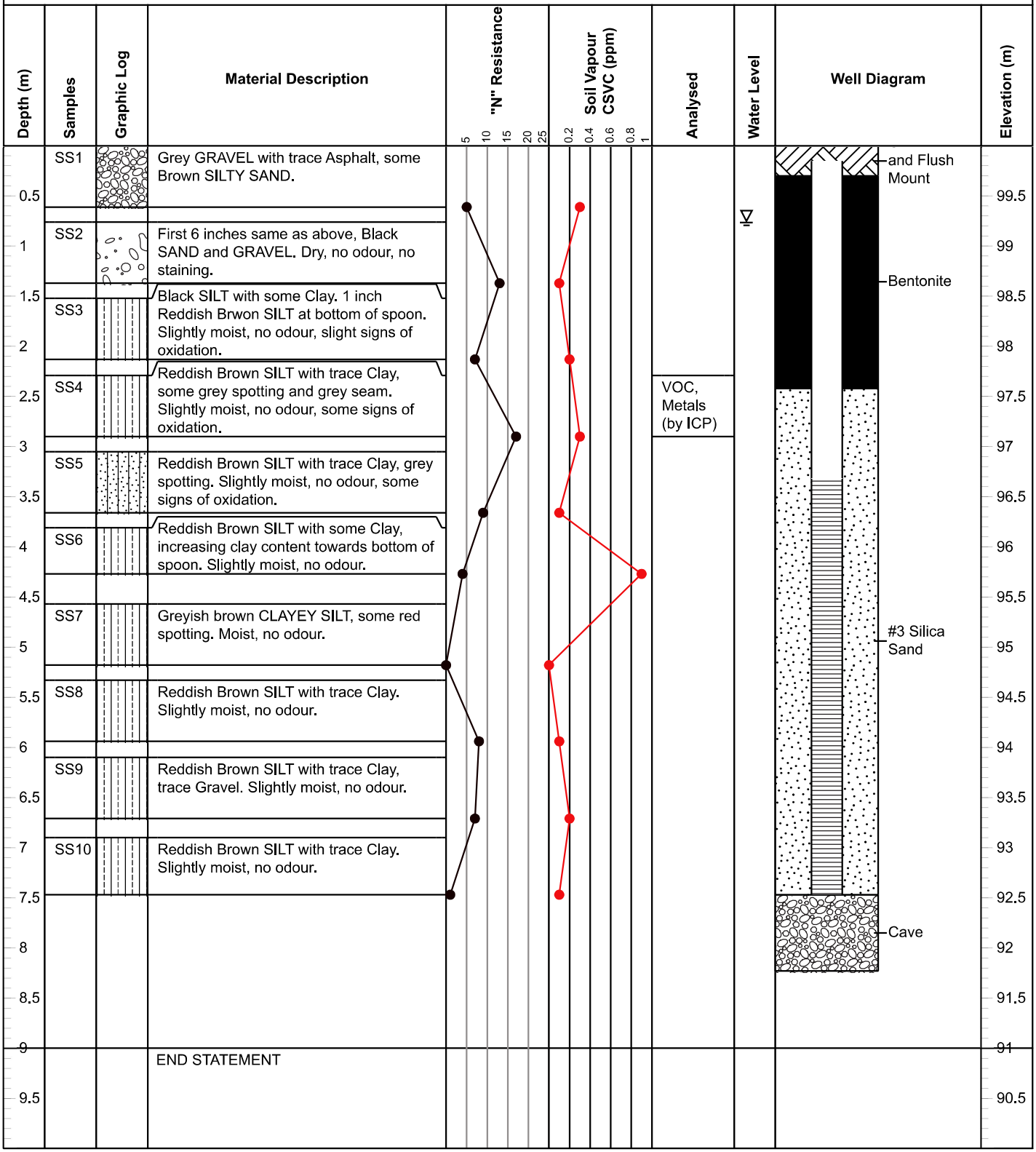
Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 7.62 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed	Water Level	Elevation (m)
0.5	SS1	Grey GRAVEL with trace Asphalt, some Brown SILTY SAND.			99.5
1	SS2	First 6 inches same as above, Black SAND and GRAVEL. Dry, no odour, no staining.			99
1.5	SS3	Black SILT with some Clay. 1 inch Reddish Brwon SILT at bottom of spoon. Slightly moist, no odour, slight signs of oxidation.			98.5
2					98
2.5	SS4	Reddish Brown SILT with trace Clay, some grey spotting and grey seam. Slightly moist, no odour, some signs of oxidation.	VOC, Metals (by ICP)		97.5
3					97
3.5	SS5	Reddish Brown SILT with trace Clay, grey spotting. Slightly moist, no odour, some signs of oxidation.			96.5
4	SS6	Reddish Brown SILT with some Clay, increasing clay content towards bottom of spoon. Slightly moist, no odour.			96
4.5					95.5
5	SS7	Greyish brown CLAYEY SILT, some red spotting. Moist, no odour.			95
5.5	SS8	Reddish Brown SILT with trace Clay. Slightly moist, no odour.			94.5
6					94
6.5	SS9	Reddish Brown SILT with trace Clay, trace Gravel. Slightly moist, no odour.			93.5
7	SS10	Reddish Brown SILT with trace Clay. Slightly moist, no odour.			93
7.5					92.5
8					92
8.5					91.5
9		END STATEMENT			91
9.5					90.5



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BOREHOLE LOG BH/MW-106a

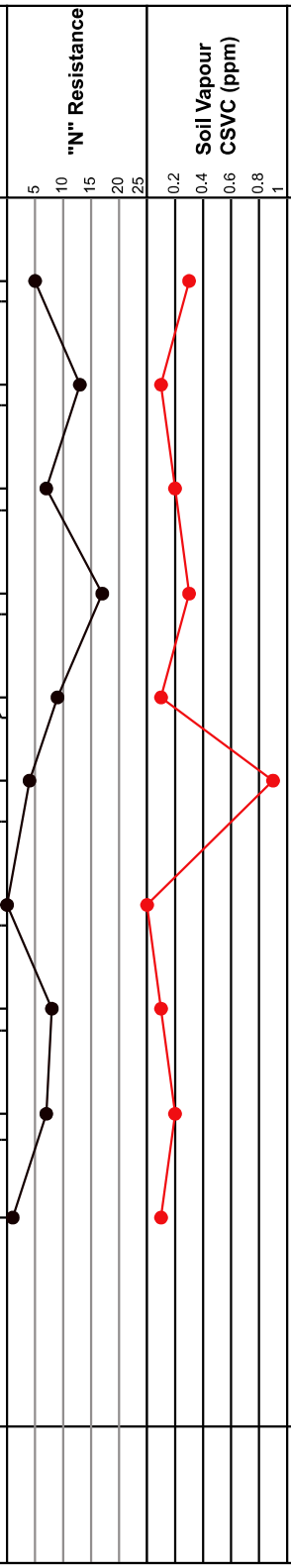
Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 7.62 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

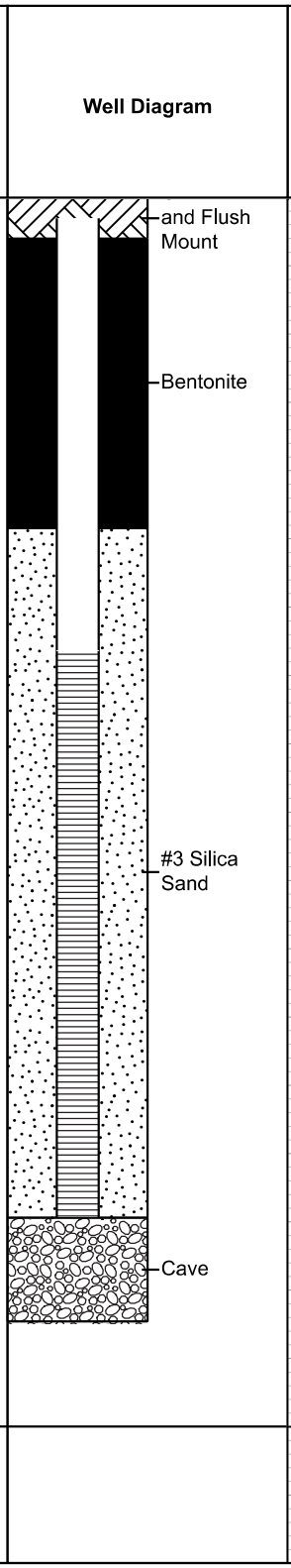
Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description
0.5	SS1	Reddish brown SANDY SILT with some Gravel, 1 inch topsoil layer at top of spoon. Damp, trace organics, no odour.
1	SS2	Insufficient Sample
1.5	SS3	Insufficient Sample
2	SS4	Reddish Brown SILT with some Clay layering and trace Gravel. Damp, no odour, no staining.
2.5	SS5	Insufficient Sample
3.5	SS6	Reddish Brown SILT with grey Clay layer near bottom of spoon. Trace Gravel at top of spoon. Moist, no odour, no staining.
4.5	SS7	Grey CLAYEY SILT. Moist, no odour, no staining.
5	SS8	Reddish Brown SILT with trace Clay, trace Gravel. Moist, no odour.
5.5	SS9	Reddish Brown SILT with trace Clay, trace Gravel. Moist, no odour.
6.5	SS10	Reddish Brown SILT with trace Clay, trace Gravel. Slightly moist, no odour.
7.5		
8.5		
9		END STATEMENT
9.5		



Analysed

Water Level



Elevation (m)
99.5
99
98.5
98
97.5
97
96.5
96
95.5
95
94.5
94
93.5
93
92.5
92
91.5
91
90.5

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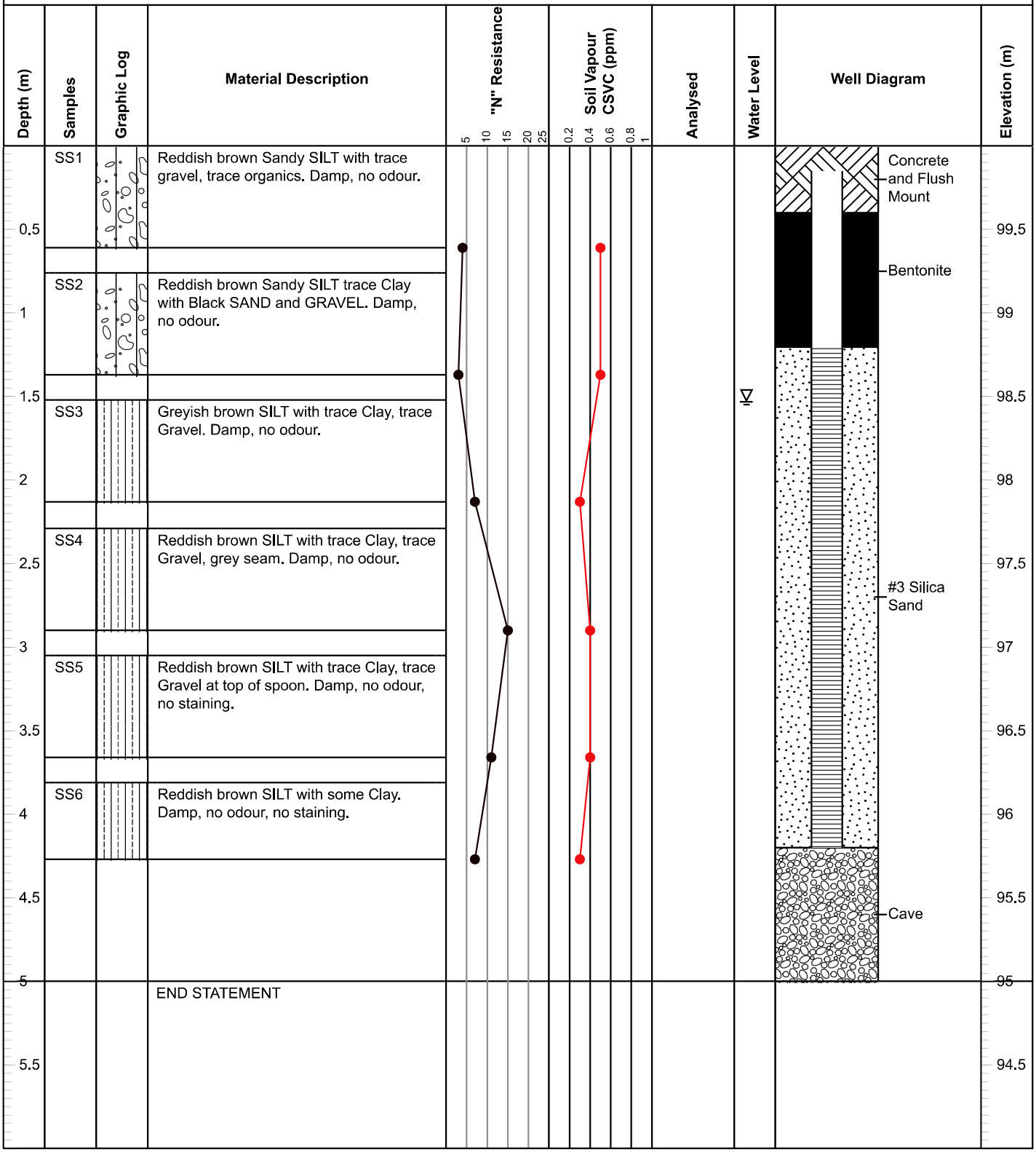
BOREHOLE LOG BH/MW-106b

Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 4.27 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian



BOREHOLE LOG BH/MW-107

Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 4.27 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Graphic Log	Material Description	"N" Resistance	Soil Vapour CSVC (ppm)	Analysed	Water Level	Well Diagram	Elevation (m)
0	SS1		Black SAND and GRAVEL. Damp, no odour, no staining.					Concrete and Flush Mount	
0.5									99.5
	SS2		Brown Sandy SILT, trace Clay. Damp, no odour, no staining.			VOC, PAH, Metals (by ICP), PHC (F1-F4)		Bentonite	
1									99
1.5	SS3		Brown SILT with trace Clay, trace Gravel. Damp, no odour, no staining.				▽		98.5
2									98
2.5	SS4		Reddish brown SILT with trace Clay, trace Gravel. Grey seam, damp, no odour, no staining.					#3 Silica Sand	97.5
3									97
3.5	SS5		Reddish brown SILT with trace Clay, trace Gravel. Damp, no odour, no staining.						96.5
4	SS6		Reddish brown/Grey SILT with some Clay. Damp, no odour, no staining.						96
4.5								Cave	95.5
5			END STATEMENT						95
5.5									94.5

"N" Resistance: 5, 10, 15, 20, 25
Soil Vapour CSVC (ppm): 0.2, 0.4, 0.6, 0.8, 1

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BOREHOLE LOG BH/MW-108

Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 4.27 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed	Water Level	Elevation (m)
0.5	SS1	Black and grey SAND and GRAVEL, some Topsoil, trace organics. Damp, no odour, no staining.			99.5
1	SS2	Black Silty SAND and GRAVEL. Damp, no odour, no staining.	VOC, PAH, Metals (by ICP), PHC (F1-F4)		99
1.5	SS3	Light brown SILT with trace Clay, trace Gravel. Yellow and Grey Spotting. Damp, no odour, no staining.		▽	98.5
2					98
2.5	SS4	Light brown SILT with trace Clay, some Gravel. Damp, no odour, no staining.	VOC, PAH, Metals (by ICP), PHC (F1-F4), Grain Size		97.5
3	SS5	Reddish brown SILT with trace Clay, trace Gravel. Moist, no odour, no staining.			97
3.5					96.5
4	SS6	Reddish brown SILT with trace Clay. Damp, no odour, no staining.			96
4.5					95.5
5		END STATEMENT			95
5.5					94.5

"N" Resistance: 5, 10, 15, 20, 25

Soil Vapour CSVC (ppm): 0.2, 0.4, 0.6, 0.8, 1

Well Diagram: Concrete and Flush Mount; Bentonite; #3 Silica Sand; Cave

BOREHOLE LOG BH/MW-109

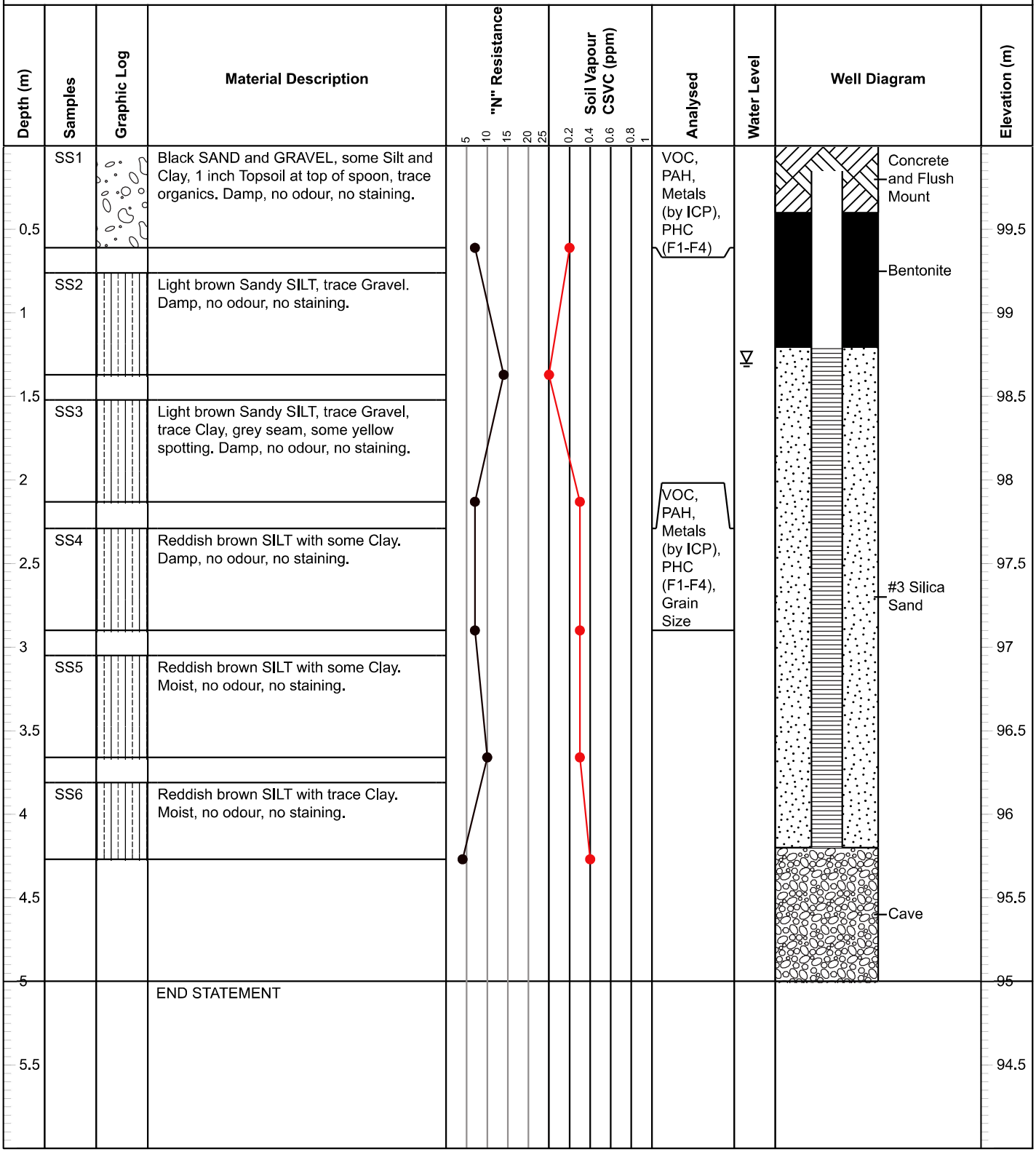
Project Number: E-22-32-2a
Project: Phase Two ESA
Client: 1274505 Ontario Ltd.
Address: 4280 Fourth Avenue, Niagara Falls, ON

Drill date: March 9th
Total depth: 4.27 mbgs
Drilling contractor: Davis Drilling
Drill rig: 75 CME - hollow stem

Comments:

Logged by: A. Cottle
Reviewed by: K. Christian

Depth (m)	Samples	Material Description	Analysed	Water Level
0	SS1	Black SAND and GRAVEL, some Silt and Clay, 1 inch Topsoil at top of spoon, trace organics. Damp, no odour, no staining.	VOC, PAH, Metals (by ICP), PHC (F1-F4)	
0.5				
1	SS2	Light brown Sandy SILT, trace Gravel. Damp, no odour, no staining.		▽
1.5	SS3	Light brown Sandy SILT, trace Gravel, trace Clay, grey seam, some yellow spotting. Damp, no odour, no staining.		
2			VOC, PAH, Metals (by ICP), PHC (F1-F4), Grain Size	
2.5	SS4	Reddish brown SILT with some Clay. Damp, no odour, no staining.		
3	SS5	Reddish brown SILT with some Clay. Moist, no odour, no staining.		
3.5				
4	SS6	Reddish brown SILT with trace Clay. Moist, no odour, no staining.		
4.5				
5		END STATEMENT		
5.5				



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Appendix B:

Groundwater Calculations

MW-2-22

Well radius	r =	0.051	m
Borehole radius	R =	0.1524	
Length of screen	L =	3.05	
Initial depth to gw	H =	1.66	
Pumped depth, t=0	Ho =	5.24	
Final depth to gw	h =	4.87	
Time (min)	dt=	180	

Time (min)	Water Level (m)
0	5.24
2	5.23
9	5.2
16	5.17
142	4.93
180	4.87
1514	3.33

r, radius of well =	5.080E-02	
dh =	3.700E-01	
dt =	1.800E+02	
q(t), rate of inflow =	4.036E-06	
V, volume removed =	3.443E-03	0.003
To, time lag =	8.530E+02	
L, length of screen	3.000E+00	
r2 =	2.581E-03	
L/R =	2.001E+01	
ln l/r =	2.996E+00	
r2 x ln l/r =	7.733E-03	
K =	**1.511E-06**	**cm/s**
K =	1.305E-01	cm/day
K =	1.305E-03	m/day
K =	4.765E-01	m/yr

Hvorslev method	To=(pi)r^2/FK			
	K=(r^{2}ln(L/R))/2LTo			
v=ki/n				
v=	4.53279E-08	cm/s	3.91633E-05	m/d
k=	1.51093E-06		1.30544E-03	
n=	2.00000E-01			
i=	6.00000E-03			
		v=	**1.42946E-02**	**m/yr**

MW-8-22

Well radius	r =	0.051	m
Borehole radius	R =	0.1524	
Length of screen	L =	3.05	
Initial depth to gw	H =	2.735	
Pumped depth, t=0	Ho =	5.35	
Final depth to gw	h =	4.78	
Time (min)	dt=	203	

Time (min)	Water Level (m)
0	5.35
6	5.28
11	5.24
17	5.22
50	5.11
99	4.99
128	4.96
203	4.78
1547	3.39

r, radius of well =	5.080E-02	
dh =	5.700E-01	
dt =	2.030E+02	
q(t), rate of inflow =	5.513E-06	
V, volume removed =	2.515E-03	0.003
To, time lag =	4.561E+02	
L, length of screen	3.000E+00	
r2 =	2.581E-03	
L/R =	2.001E+01	
ln l/r =	2.996E+00	
r2 x ln l/r =	7.733E-03	
K =	**2.826E-06**	**cm/s**
K =	2.441E-01	cm/day
K =	2.441E-03	m/day
K =	8.911E-01	m/yr

Hvorslev method	To=(pi)r^2/FK			
	K=(r^{2}ln(L/R))/2LTo			
v=ki/n				
v=	8.47670E-08	cm/s	7.32387E-05	m/d
k=	2.82557E-06		2.44129E-03	
n=	2.00000E-01			
i=	6.00000E-03			
		v=	**2.67321E-02**	**m/yr**

Appendix C:

Laboratory Analytical Reports

PARACEL LABORATORIES LTD.
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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2
Custody: 67624,621

Report Date: 19-Dec-2022
Order Date: 13-Dec-2022

Order #: 2251117

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

Paracel ID	Client ID
2251117-04	TP2-SS1
2251117-08	TP3-SS1

Approved By:

Alex Enfield, MSc
Lab Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	15-Dec-22	19-Dec-22
PHC F1	CWS Tier 1 - P&T GC-FID	15-Dec-22	19-Dec-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	15-Dec-22	16-Dec-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	19-Dec-22	19-Dec-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	16-Dec-22	19-Dec-22
Solids, %	CWS Tier 1 - Gravimetric	16-Dec-22	19-Dec-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
TP2-SS1	Lead	1 ug/g	175	120 ug/g	120 ug/g
TP2-SS1	Benzo [a] anthracene	0.02 ug/g	0.90	0.96 ug/g	0.63 ug/g
TP2-SS1	Benzo [a] pyrene	0.02 ug/g	0.60	0.3 ug/g	0.3 ug/g
TP2-SS1	Benzo [b] fluoranthene	0.02 ug/g	0.80	0.96 ug/g	0.78 ug/g
TP2-SS1	Dibenzo [a,h] anthracene	0.02 ug/g	0.13	0.1 ug/g	0.1 ug/g
TP2-SS1	Fluoranthene	0.02 ug/g	1.45	9.6 ug/g	0.69 ug/g
TP2-SS1	Indeno [1,2,3-cd] pyrene	0.02 ug/g	0.52	0.95 ug/g	0.48 ug/g
TP3-SS1	Lead	1 ug/g	250	120 ug/g	120 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	TP2-SS1	TP3-SS1	-	-	Criteria:	
	Sample Date:	08-Dec-22 09:00	08-Dec-22 09:00	-	-	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251117-04	2251117-08	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	91.0	84.8	-	-	-	-
Metals							
Antimony	1 ug/g	<1.0	<1.0	-	-	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	6.0	7.4	-	-	18 ug/g	18 ug/g
Barium	1 ug/g	116	228	-	-	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	<0.5	0.6	-	-	10 ug/g	5 ug/g
Boron	5 ug/g	8.0	6.3	-	-	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	0.6	<0.5	-	-	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	17.1	21.0	-	-	160 ug/g	160 ug/g
Cobalt	1 ug/g	5.7	7.8	-	-	100 ug/g	22 ug/g
Copper	5 ug/g	33.8	59.2	-	-	300 ug/g	180 ug/g
Lead	1 ug/g	175	250	-	-	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	<1.0	-	-	40 ug/g	6.9 ug/g
Nickel	5 ug/g	15.1	28.2	-	-	340 ug/g	130 ug/g
Selenium	1 ug/g	<1.0	<1.0	-	-	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	<0.3	-	-	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	<1.0	-	-	3.3 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	1.1	-	-	33 ug/g	23 ug/g
Vanadium	10 ug/g	19.2	28.3	-	-	86 ug/g	86 ug/g
Zinc	20 ug/g	129	179	-	-	340 ug/g	340 ug/g
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	-	-	0.4 ug/g	0.17 ug/g
Ethylbenzene	0.05 ug/g	<0.05	<0.05	-	-	1.6 ug/g	1.6 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	-	-	9 ug/g	6 ug/g
m,p-Xylenes	0.05 ug/g	0.10	<0.05	-	-	-	-

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	TP2-SS1	TP3-SS1	-	-	Criteria:	
	Sample Date:	08-Dec-22 09:00	08-Dec-22 09:00	-	-	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251117-04	2251117-08	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Volatiles							
o-Xylene	0.05 ug/g	0.14	0.05	-	-	-	-
Xylenes, total	0.05 ug/g	0.25	0.05	-	-	30 ug/g	25 ug/g
Toluene-d8	Surrogate	105%	105%	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	-	-	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	<4	<4	-	-	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	125	31	-	-	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	83	<6	-	-	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	0.05	<0.02	-	-	29 ug/g	29 ug/g
Acenaphthylene	0.02 ug/g	0.14	0.03	-	-	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	0.23	0.02	-	-	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	0.90	0.09	-	-	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	0.60	0.12	-	-	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	0.80	0.12	-	-	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	0.40	0.11	-	-	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	0.26	0.05	-	-	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	0.95	0.12	-	-	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	0.13	<0.02	-	-	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	1.45	0.14	-	-	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	0.05	<0.02	-	-	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	0.52	0.14	-	-	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	0.07	0.06	-	-	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	0.07	0.06	-	-	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	0.14	0.12	-	-	42 ug/g	3.4 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	TP2-SS1	TP3-SS1	-	-	Criteria:	
	Sample Date:	08-Dec-22 09:00	08-Dec-22 09:00	-	-	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251117-04	2251117-08	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Semi-Volatiles							
Naphthalene	0.01 ug/g	0.06	0.05	-	-	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	0.71	0.08	-	-	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	1.21	0.14	-	-	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	87.5%	95.5%	-	-	-	-
Terphenyl-d14	Surrogate	101%	123%	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	0.03	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.443*		*ug/g*	*88.6*	*50-140*			
Surrogate: Terphenyl-d14	*0.587*		*ug/g*	*117*	*50-140*			
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*8.53*		*ug/g*	*107*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	2.3	1.0	ug/g	2.0			12.7	30	
Barium	47.3	1.0	ug/g	51.5			8.5	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	9.7	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	10.2	5.0	ug/g	11.3			10.2	30	
Cobalt	3.3	1.0	ug/g	3.4			4.4	30	
Copper	7.5	5.0	ug/g	8.3			9.4	30	
Lead	46.6	1.0	ug/g	38.3			19.7	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	ND	5.0	ug/g	5.5			NC	30	
Selenium	2.0	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	18.1	10.0	ug/g	19.8			8.7	30	
Zinc	65.4	20.0	ug/g	67.0			2.5	30	
Physical Characteristics									
% Solids	83.0	0.1	% by Wt.	84.2			1.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	0.048			NC	40	
Acenaphthylene	0.149	0.02	ug/g	0.141			5.5	40	
Anthracene	0.118	0.02	ug/g	0.232			65.5	40	QR-04
Benzo [a] anthracene	0.752	0.02	ug/g	0.900			18.0	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [a] pyrene	0.590	0.02	ug/g	0.596			1.0	40	
Benzo [b] fluoranthene	0.749	0.02	ug/g	0.798			6.4	40	
Benzo [g,h,i] perylene	0.313	0.02	ug/g	0.397			23.6	40	
Benzo [k] fluoranthene	0.318	0.02	ug/g	0.263			18.8	40	
Chrysene	0.784	0.02	ug/g	0.946			18.7	40	
Dibenzo [a,h] anthracene	0.104	0.02	ug/g	0.130			22.1	40	
Fluoranthene	1.17	0.02	ug/g	1.45			21.2	40	
Fluorene	ND	0.02	ug/g	0.050			NC	40	
Indeno [1,2,3-cd] pyrene	0.412	0.02	ug/g	0.516			22.5	40	
1-Methylnaphthalene	0.108	0.02	ug/g	0.071			42.2	40	QR-04
2-Methylnaphthalene	0.125	0.02	ug/g	0.071			55.2	40	QR-04
Naphthalene	0.103	0.01	ug/g	0.064			46.3	40	QR-04
Phenanthrene	0.244	0.02	ug/g	0.708			97.4	40	QR-04
Pyrene	1.12	0.02	ug/g	1.21			7.9	40	
Surrogate: 2-Fluorobiphenyl	*0.519*		*ug/g*		*94.4*	*50-140*			
Surrogate: Terphenyl-d14	*0.607*		*ug/g*		*110*	*50-140*			
Volatiles									
Benzene	0.143	0.02	ug/g	0.156			8.7	50	
Ethylbenzene	0.214	0.05	ug/g	0.220			2.8	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	0.314	0.05	ug/g	0.313			0.5	50	
o-Xylene	0.089	0.05	ug/g	0.089			0.0	50	
Surrogate: Toluene-d8	*6.55*		*ug/g*		*107*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	66	7	ug/g	ND	92.8	80-120			
F2 PHCs (C10-C16)	83	4	ug/g	ND	84.2	60-140			
F3 PHCs (C16-C34)	183	8	ug/g	ND	82.9	60-140			
F4 PHCs (C34-C50)	137	6	ug/g	ND	86.2	60-140			
Metals									
Antimony	120	1.0	ug/g	ND	96.2	70-130			
Arsenic	126	1.0	ug/g	2.0	98.9	70-130			
Barium	168	1.0	ug/g	51.5	93.3	70-130			
Beryllium	111	0.5	ug/g	ND	88.9	70-130			
Boron	113	5.0	ug/g	ND	90.2	70-130			
Cadmium	132	0.5	ug/g	ND	106	70-130			
Chromium	130	5.0	ug/g	11.3	95.2	70-130			
Cobalt	120	1.0	ug/g	3.4	93.3	70-130			
Copper	125	5.0	ug/g	8.3	93.5	70-130			
Lead	151	1.0	ug/g	38.3	90.2	70-130			
Molybdenum	129	1.0	ug/g	ND	104	70-130			
Nickel	122	5.0	ug/g	5.5	93.5	70-130			
Selenium	116	1.0	ug/g	ND	93.1	70-130			
Silver	111	0.3	ug/g	ND	89.0	70-130			
Thallium	119	1.0	ug/g	ND	95.0	70-130			
Uranium	127	1.0	ug/g	ND	102	70-130			
Vanadium	137	10.0	ug/g	19.8	93.9	70-130			
Zinc	211	20.0	ug/g	67.0	115	70-130			
Semi-Volatiles									
Acenaphthene	0.574	0.02	ug/g	0.048	95.8	50-140			
Acenaphthylene	0.688	0.02	ug/g	0.141	99.6	50-140			
Anthracene	0.706	0.02	ug/g	0.232	86.2	50-140			
Benzo [a] anthracene	1.47	0.02	ug/g	0.900	104	50-140			
Benzo [a] pyrene	1.05	0.02	ug/g	0.596	82.4	50-140			
Benzo [b] fluoranthene	1.31	0.02	ug/g	0.798	93.7	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [g,h,i] perylene	0.858	0.02	ug/g	0.397	84.0	50-140			
Benzo [k] fluoranthene	0.821	0.02	ug/g	0.263	102	50-140			
Chrysene	1.78	0.02	ug/g	0.946	152	50-140			QM-4X
Dibenzo [a,h] anthracene	0.602	0.02	ug/g	0.130	85.9	50-140			
Fluoranthene	1.89	0.02	ug/g	1.45	79.7	50-140			
Fluorene	0.611	0.02	ug/g	0.050	102	50-140			
Indeno [1,2,3-cd] pyrene	0.965	0.02	ug/g	0.516	81.7	50-140			
1-Methylnaphthalene	0.621	0.02	ug/g	0.071	100	50-140			
2-Methylnaphthalene	0.638	0.02	ug/g	0.071	103	50-140			
Naphthalene	0.605	0.01	ug/g	0.064	98.4	50-140			
Phenanthrene	0.884	0.02	ug/g	0.708	32.1	50-140			QM-4X
Pyrene	2.27	0.02	ug/g	1.21	194	50-140			QM-4X
Surrogate: 2-Fluorobiphenyl	*0.524*		*ug/g*		*95.4*	*50-140*			
Surrogate: Terphenyl-d14	*0.586*		*ug/g*		*107*	*50-140*			
Volatiles									
Benzene	3.78	0.02	ug/g	ND	94.0	60-130			
Ethylbenzene	3.94	0.05	ug/g	ND	98.0	60-130			
Toluene	3.72	0.05	ug/g	ND	92.6	60-130			
m,p-Xylenes	7.81	0.05	ug/g	ND	97.3	60-130			
o-Xylene	4.09	0.05	ug/g	ND	102	60-130			
Surrogate: Toluene-d8	*7.87*		*ug/g*		*98.4*	*50-140*			

Qualifier Notes:

QC Qualifiers:

QM-4X	The spike recovery was outside of QC acceptance limits due to elevated analyte concentration.
QR-04	Duplicate results exceeds RPD limits due to non-homogeneous matrix.

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 unlesss otherwise noted.

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

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

PARACEL LABORATORIES LTD. | TRUSTE RESPON RELIAB

Paracel ID: 2251117

r Number 17

Chain Of Custody
(Lab Use Only)
№ 67624

Client Name:	Project Ref: E-22-32-2
Contact Name: Hallex Environmental Ltd. Contact: Kevin Christian	Quote #:
Address: 4999 Victoria Ave. Niagara Falls, ON L2E 4C9	PO #:
Telephone: Ph: 905-988-8030	E-mail: kchristian@hallex.ca nmetz@hallex.ca

Page 1 of 2

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required: _____

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☒ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Hold	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP
1	TP1-SS1	S		2	Dec 8th 2022	9am	X				
2	TP1-SS2			2			X				
3	TP1-SS3			2			X				
4	TP2-SS1			3				X		X	X
5	TP2-SS2			2			X				
6	TP2-SS3			2			X				
7	TP2-SS4			2			X				
8	TP3-SS1			3				X		X	X
9	TP3-SS2			2			X				
10	TP4-SS1			2			X				

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign): A. Cottle	Received By Driver/Depot:	Received at Lab: Kim McCalla	Verified By: KB
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: 12/13/22 8:49	Date/Time: Dec 13/22 - 9:51
Date/Time: Dec 12 5pm	Temperature: °C	Temperature: 12.7 °C	pH Verified: ☐ By: NA

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Paracel ID: 2251117

nber)

Chain Of Custody
(Lab Use Only)
№ 67621

Client Name:	Hallex Environmental Ltd.
Contact Name:	Contact: Kevin Christian
Address:	4999 Victoria Ave. Niagara Falls, ON L2E 4C9
Telephone:	Ph: 905-988-8030
Project Ref:	E-22-32-2
Quote #:	
PO #:	
E-mail:	kchristian@hallex.ca nmetz@hallex.ca

Page 2 of 2

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☒ REG 153/04	☐ REG 406/19	Other Regulation	
☐ Table 1	☐ Res/Park	☒ Med/Fine	☐ REG 558 ☐ PWQO
☒ Table 2	☐ Ind/Comm	☐ Coarse	☐ CCME ☐ MISA
☐ Table 3	☐ Agri/Other		☐ SU - Sani ☐ SU - Storm
☐ Table ___			Mun:
For RSC: ☒ Yes	☐ No		☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analysis: Hold
1	TP4-SS2	S		2	Dec 8th 2022	11:00am	X
2	TP4-SS3	↓		↓	"	"	X
3							
4							
5							
6							
7							
8							
9							
10							

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: McCalla	Verified By: KB
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: 12/13/22 849	Date/Time: DEC13/22. 9.51
Date/Time: Dec. 12 5pm	Temperature: °C	Temperature: 12.7 °C	pH Verified: ☐ NA By:

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2
Custody: 136512, 136511, 67622, 67623

Report Date: 19-Dec-2022
Order Date: 13-Dec-2022

Order #: 2251119

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

Paracel ID	Client ID
2251119-02	BH1-SS2
2251119-04	BH1-SS4
2251119-07	BH2-SS1
2251119-08	BH2-SS2
2251119-12	BH3-AS1
2251119-13	BH3-SS2
2251119-17	BH4-AS1
2251119-18	BH4-SS2
2251119-21	BH5-SS1
2251119-22	BH5-AS1
2251119-24	BH5-SS3
2251119-26	BH6-SS1
2251119-27	BH6-SS2
2251119-30	BH7-SS1
2251119-32	BH7-SS3
2251119-34	BH8-SS1
2251119-36	BH8-SS3

Approved By:

Alex Enfield, MSc
Lab Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	16-Dec-22	19-Dec-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	16-Dec-22	19-Dec-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	19-Dec-22	19-Dec-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	15-Dec-22	16-Dec-22
REG 153: pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	15-Dec-22	16-Dec-22
REG 153: VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	16-Dec-22	19-Dec-22
Solids, %	CWS Tier 1 - Gravimetric	16-Dec-22	16-Dec-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
BH1-SS2	Benzene	0.02 ug/g	0.32	0.4 ug/g	0.17 ug/g
BH3-AS1	Arsenic	1 ug/g	22.2	18 ug/g	18 ug/g
BH3-AS1	Trichloroethylene	0.05 ug/g	0.85	0.61 ug/g	0.52 ug/g
BH5-AS1	Arsenic	1 ug/g	26.7	18 ug/g	18 ug/g
BH5-AS1	Cadmium	0.5 ug/g	1.7	1.9 ug/g	1.2 ug/g
BH5-AS1	Trichloroethylene	0.05 ug/g	0.65	0.61 ug/g	0.52 ug/g
BH6-SS1	Lead	1 ug/g	174	120 ug/g	120 ug/g
BH8-SS1	Arsenic	1 ug/g	19.0	18 ug/g	18 ug/g
BH8-SS1	Cadmium	0.5 ug/g	2.5	1.9 ug/g	1.2 ug/g
BH8-SS1	Benzo [a] pyrene	0.02 ug/g	0.37	0.3 ug/g	0.3 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH1-SS2	BH1-SS4	BH2-SS1	BH2-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-02	2251119-04	2251119-07	2251119-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	85.9	-	77.3	82.4	-	-
General Inorganics							
pH	0.05 pH Units	-	7.53	-	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	<1.0	-	<1.0	-	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	3.8	-	9.2	-	18 ug/g	18 ug/g
Barium	1 ug/g	62.1	-	91.3	-	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	<0.5	-	1.0	-	10 ug/g	5 ug/g
Boron	5 ug/g	<5.0	-	13.0	-	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	0.6	-	<0.5	-	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	10.6	-	12.3	-	160 ug/g	160 ug/g
Cobalt	1 ug/g	4.2	-	6.8	-	100 ug/g	22 ug/g
Copper	5 ug/g	14.3	-	31.1	-	300 ug/g	180 ug/g
Lead	1 ug/g	14.8	-	56.5	-	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	-	<1.0	-	40 ug/g	6.9 ug/g
Nickel	5 ug/g	8.3	-	21.2	-	340 ug/g	130 ug/g
Selenium	1 ug/g	<1.0	-	<1.0	-	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	-	<0.3	-	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	-	<1.0	-	3.3 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	-	<1.0	-	33 ug/g	23 ug/g
Vanadium	10 ug/g	16.8	-	17.9	-	86 ug/g	86 ug/g
Zinc	20 ug/g	47.6	-	69.3	-	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	-	-	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	0.32	-	-	<0.02	0.4 ug/g	0.17 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH1-SS2	BH1-SS4	BH2-SS1	BH2-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-02	2251119-04	2251119-07	2251119-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromodichloromethane	0.05 ug/g	<0.05	-	-	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	-	-	<0.05	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	<0.05	-	-	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	-	-	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	-	-	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	-	-	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	-	-	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	-	-	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	-	-	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	-	-	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	-	-	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	-	-	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	-	-	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	-	-	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	<0.05	-	-	<0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	-	-	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	-	-	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	-	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	-	-	<0.05	0.081 ug/g	0.081 ug/g
Ethylbenzene	0.05 ug/g	0.46	-	-	<0.05	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	-	-	<0.05	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	1.03	-	-	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	-	-	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	-	-	<0.50	210 ug/g	4.3 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH1-SS2	BH1-SS4	BH2-SS1	BH2-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-02	2251119-04	2251119-07	2251119-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Methyl tert-butyl ether	0.05 ug/g	<0.05	-	-	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	-	-	<0.05	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	<0.05	-	-	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	-	-	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	-	-	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	-	-	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	0.50	-	-	<0.05	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	-	-	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	-	-	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	<0.05	-	-	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	-	-	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	-	-	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	2.54	-	-	<0.05	-	-
o-Xylene	0.05 ug/g	0.14	-	-	<0.05	-	-
Xylenes, total	0.05 ug/g	2.68	-	-	<0.05	30 ug/g	25 ug/g
Dibromofluoromethane	Surrogate	90.1%	-	-	118%	-	-
4-Bromofluorobenzene	Surrogate	84.1%	-	-	90.4%	-	-
Toluene-d8	Surrogate	99.1%	-	-	96.9%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	46	-	-	<7	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	<4	-	<4	-	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	42	-	24	-	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	197	-	<6	-	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	<0.02	-	29 ug/g	29 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH1-SS2	BH1-SS4	BH2-SS1	BH2-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-02	2251119-04	2251119-07	2251119-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Acenaphthylene	0.02 ug/g	<0.02	-	<0.02	-	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	<0.02	-	0.02	-	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	<0.02	-	0.04	-	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	0.03	-	0.04	-	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	0.03	-	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	0.03	-	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	<0.02	-	0.04	-	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	0.03	-	0.05	-	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	<0.02	-	<0.02	-	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	0.02	-	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	0.05	-	0.37	-	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	0.05	-	0.46	-	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	0.09	-	0.83	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	0.08	-	0.34	-	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	0.03	-	0.14	-	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	0.02	-	0.05	-	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	65.5%	-	53.9%	-	-	-
Terphenyl-d14	Surrogate	58.7%	-	61.9%	-	-	-

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH3-AS1	BH3-SS2	BH4-AS1	BH4-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-12	2251119-13	2251119-17	2251119-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	73.8	-	81.6	-	-	-
General Inorganics							
pH	0.05 pH Units	-	7.67	-	7.83	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	<1.0	-	<1.0	-	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	22.2	-	6.1	-	18 ug/g	18 ug/g
Barium	1 ug/g	126	-	144	-	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	1.2	-	1.1	-	10 ug/g	5 ug/g
Boron	5 ug/g	11.5	-	5.8	-	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	0.8	-	<0.5	-	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	26.2	-	29.8	-	160 ug/g	160 ug/g
Cobalt	1 ug/g	12.3	-	14.8	-	100 ug/g	22 ug/g
Copper	5 ug/g	21.2	-	20.2	-	300 ug/g	180 ug/g
Lead	1 ug/g	23.2	-	19.6	-	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	-	<1.0	-	40 ug/g	6.9 ug/g
Nickel	5 ug/g	21.3	-	23.1	-	340 ug/g	130 ug/g
Selenium	1 ug/g	1.6	-	<1.0	-	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	-	<0.3	-	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	-	<1.0	-	3.3 ug/g	1 ug/g
Uranium	1 ug/g	2.3	-	<1.0	-	33 ug/g	23 ug/g
Vanadium	10 ug/g	41.8	-	44.4	-	86 ug/g	86 ug/g
Zinc	20 ug/g	121	-	72.5	-	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	-	<0.50	-	28 ug/g	28 ug/g
Benzene	0.02 ug/g	<0.02	-	<0.02	-	0.4 ug/g	0.17 ug/g

	Client ID:	BH3-AS1	BH3-SS2	BH4-AS1	BH4-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-12	2251119-13	2251119-17	2251119-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromodichloromethane	0.05 ug/g	<0.05	-	<0.05	-	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	-	<0.05	-	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	<0.05	-	<0.05	-	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	-	<0.05	-	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	-	<0.05	-	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	-	<0.05	-	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	-	<0.05	-	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	-	<0.05	-	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	-	<0.05	-	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	-	<0.05	-	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	-	<0.05	-	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	-	<0.05	-	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	-	<0.05	-	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	-	<0.05	-	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	0.92	-	<0.05	-	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	-	<0.05	-	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	-	<0.05	-	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	<0.05	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	<0.05	-	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	-	<0.05	-	0.081 ug/g	0.081 ug/g
Ethylbenzene	0.05 ug/g	<0.05	-	<0.05	-	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	-	<0.05	-	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	<0.05	-	<0.05	-	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	-	<0.50	-	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	-	<0.50	-	210 ug/g	4.3 ug/g

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH3-AS1	BH3-SS2	BH4-AS1	BH4-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-12	2251119-13	2251119-17	2251119-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Methyl tert-butyl ether	0.05 ug/g	<0.05	-	<0.05	-	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	-	<0.05	-	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	<0.05	-	<0.05	-	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	-	<0.05	-	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	-	<0.05	-	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	-	<0.05	-	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	<0.05	-	<0.05	-	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	-	<0.05	-	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	-	<0.05	-	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	0.85	-	<0.05	-	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	-	<0.05	-	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	-	<0.02	-	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	-	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	<0.05	-	30 ug/g	25 ug/g
Dibromofluoromethane	Surrogate	115%	-	113%	-	-	-
4-Bromofluorobenzene	Surrogate	85.2%	-	115%	-	-	-
Toluene-d8	Surrogate	94.9%	-	94.1%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	<7	-	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	<4	-	<4	-	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	18	-	<8	-	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	<6	-	<6	-	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	<0.02	-	29 ug/g	29 ug/g

	Client ID:	BH3-AS1	BH3-SS2	BH4-AS1	BH4-SS2	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-12	2251119-13	2251119-17	2251119-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Acenaphthylene	0.02 ug/g	<0.02	-	<0.02	-	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	<0.02	-	<0.02	-	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	<0.02	-	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	<0.02	-	<0.02	-	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	<0.02	-	<0.02	-	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	<0.02	-	<0.02	-	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	<0.02	-	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	<0.02	-	<0.02	-	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	<0.03	-	<0.03	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	<0.01	-	<0.01	-	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	<0.02	-	<0.02	-	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	<0.02	-	<0.02	-	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	56.7%	-	64.8%	-	-	-
Terphenyl-d14	Surrogate	55.8%	-	60.8%	-	-	-

PARACEL LABORATORIES LTD.

Order #: 2251119

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH5-SS1	BH5-AS1	BH5-SS3	BH6-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-21	2251119-22	2251119-24	2251119-26		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	-	77.0	-	84.4	-	-
General Inorganics							
pH	0.05 pH Units	7.39	-	7.60	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	-	<1.0	-	<1.0	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	-	26.7	-	6.1	18 ug/g	18 ug/g
Barium	1 ug/g	-	133	-	290	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	-	1.6	-	<0.5	10 ug/g	5 ug/g
Boron	5 ug/g	-	17.7	-	6.9	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	-	1.7	-	0.9	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	-	24.3	-	21.5	160 ug/g	160 ug/g
Cobalt	1 ug/g	-	7.6	-	5.2	100 ug/g	22 ug/g
Copper	5 ug/g	-	35.4	-	30.0	300 ug/g	180 ug/g
Lead	1 ug/g	-	44.6	-	174	120 ug/g	120 ug/g
Molybdenum	1 ug/g	-	<1.0	-	<1.0	40 ug/g	6.9 ug/g
Nickel	5 ug/g	-	20.3	-	16.5	340 ug/g	130 ug/g
Selenium	1 ug/g	-	1.7	-	<1.0	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	-	<0.3	-	<0.3	50 ug/g	25 ug/g
Thallium	1 ug/g	-	<1.0	-	<1.0	3.3 ug/g	1 ug/g
Uranium	1 ug/g	-	1.4	-	<1.0	33 ug/g	23 ug/g
Vanadium	10 ug/g	-	37.8	-	21.4	86 ug/g	86 ug/g
Zinc	20 ug/g	-	160	-	214	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	-	<0.50	-	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	-	<0.02	-	<0.02	0.4 ug/g	0.17 ug/g

	Client ID:	BH5-SS1	BH5-AS1	BH5-SS3	BH6-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-21	2251119-22	2251119-24	2251119-26		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromodichloromethane	0.05 ug/g	-	<0.05	-	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	-	<0.05	-	<0.05	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	-	<0.05	-	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	-	<0.05	-	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	-	<0.05	-	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	-	<0.05	-	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	-	<0.05	-	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	-	<0.05	-	<0.05	0.081 ug/g	0.081 ug/g
Ethylbenzene	0.05 ug/g	-	<0.05	-	<0.05	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	-	<0.05	-	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	-	<0.50	-	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	-	<0.50	-	<0.50	210 ug/g	4.3 ug/g

	Client ID:	BH5-SS1	BH5-AS1	BH5-SS3	BH6-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-21	2251119-22	2251119-24	2251119-26		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Methyl tert-butyl ether	0.05 ug/g	-	<0.05	-	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	-	<0.05	-	<0.05	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	-	<0.05	-	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	-	<0.05	-	<0.05	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	-	<0.05	-	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	-	0.65	-	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	-	<0.05	-	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	-	<0.02	-	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	-	<0.05	-	<0.05	-	-
o-Xylene	0.05 ug/g	-	<0.05	-	<0.05	-	-
Xylenes, total	0.05 ug/g	-	<0.05	-	<0.05	30 ug/g	25 ug/g
Toluene-d8	Surrogate	-	96.3%	-	97.5%	-	-
4-Bromofluorobenzene	Surrogate	-	93.7%	-	75.7%	-	-
Dibromofluoromethane	Surrogate	-	112%	-	111%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	-	<7	-	<7	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	-	<4	-	<4	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	-	64	-	32	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	-	159	-	<6	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	-	<0.02	-	<0.02	29 ug/g	29 ug/g

	Client ID:	BH5-SS1	BH5-AS1	BH5-SS3	BH6-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-21	2251119-22	2251119-24	2251119-26		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Acenaphthylene	0.02 ug/g	-	<0.02	-	<0.02	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	-	<0.02	-	<0.02	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	-	0.03	-	0.03	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	-	0.03	-	0.05	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	-	0.03	-	0.04	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	-	0.03	-	0.03	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	-	<0.02	-	<0.02	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	-	0.03	-	0.03	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	-	<0.02	-	<0.02	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	-	0.03	-	0.06	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	-	<0.02	-	<0.02	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	-	0.03	-	0.03	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	-	0.14	-	0.02	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	-	0.16	-	0.02	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	-	0.30	-	0.05	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	-	0.09	-	0.02	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	-	0.08	-	0.04	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	-	0.04	-	0.05	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	-	56.8%	-	56.8%	-	-
Terphenyl-d14	Surrogate	-	57.5%	-	60.1%	-	-

PARACEL LABORATORIES LTD.

Order #: 2251119

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH6-SS2	BH7-SS1	BH7-SS3	BH8-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-27	2251119-30	2251119-32	2251119-34		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	-	87.1	-	82.3	-	-
General Inorganics							
pH	0.05 pH Units	7.62	7.61	7.58	7.58	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	-	<1.0	-	<1.0	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	-	4.4	-	19.0	18 ug/g	18 ug/g
Barium	1 ug/g	-	114	-	157	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	-	0.6	-	0.8	10 ug/g	5 ug/g
Boron	5 ug/g	-	5.7	-	9.5	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	-	<0.5	-	2.5	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	-	27.8	-	20.8	160 ug/g	160 ug/g
Cobalt	1 ug/g	-	6.5	-	8.5	100 ug/g	22 ug/g
Copper	5 ug/g	-	21.6	-	63.0	300 ug/g	180 ug/g
Lead	1 ug/g	-	69.6	-	77.2	120 ug/g	120 ug/g
Molybdenum	1 ug/g	-	<1.0	-	<1.0	40 ug/g	6.9 ug/g
Nickel	5 ug/g	-	16.3	-	38.6	340 ug/g	130 ug/g
Selenium	1 ug/g	-	<1.0	-	1.2	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	-	<0.3	-	<0.3	50 ug/g	25 ug/g
Thallium	1 ug/g	-	<1.0	-	<1.0	3.3 ug/g	1 ug/g
Uranium	1 ug/g	-	<1.0	-	<1.0	33 ug/g	23 ug/g
Vanadium	10 ug/g	-	24.0	-	21.2	86 ug/g	86 ug/g
Zinc	20 ug/g	-	88.5	-	206	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	-	<0.50	-	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	-	<0.02	-	<0.02	0.4 ug/g	0.17 ug/g

	Client ID:	BH6-SS2	BH7-SS1	BH7-SS3	BH8-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-27	2251119-30	2251119-32	2251119-34		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromodichloromethane	0.05 ug/g	-	<0.05	-	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	-	<0.05	-	<0.05	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	-	<0.05	-	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	-	<0.05	-	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	-	<0.05	-	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	-	<0.05	-	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	-	<0.05	-	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	-	<0.05	-	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	<0.05	-	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	-	<0.05	-	<0.05	0.081 ug/g	0.081 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	<0.05	-	<0.05	0.05 ug/g	0.05 ug/g
Ethylbenzene	0.05 ug/g	-	<0.05	-	<0.05	1.6 ug/g	1.6 ug/g
Hexane	0.05 ug/g	-	<0.05	-	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	-	<0.50	-	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	-	<0.50	-	<0.50	210 ug/g	4.3 ug/g

	Client ID:	BH6-SS2	BH7-SS1	BH7-SS3	BH8-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-27	2251119-30	2251119-32	2251119-34		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Methyl tert-butyl ether	0.05 ug/g	-	<0.05	-	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	-	<0.05	-	<0.05	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	-	<0.05	-	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	-	<0.05	-	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	-	<0.05	-	0.32	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	-	<0.05	-	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	-	<0.05	-	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	-	<0.05	-	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	-	<0.05	-	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	-	<0.02	-	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	-	<0.05	-	0.25	-	-
o-Xylene	0.05 ug/g	-	<0.05	-	0.13	-	-
Xylenes, total	0.05 ug/g	-	<0.05	-	0.38	30 ug/g	25 ug/g
Dibromofluoromethane	Surrogate	-	118%	-	108%	-	-
4-Bromofluorobenzene	Surrogate	-	78.1%	-	81.8%	-	-
Toluene-d8	Surrogate	-	94.6%	-	93.9%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	-	<7	-	<7	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	-	<4	-	<4	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	-	40	-	10	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	-	95	-	<6	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	-	<0.02	-	0.06	29 ug/g	29 ug/g

	Client ID:	BH6-SS2	BH7-SS1	BH7-SS3	BH8-SS1	Criteria:	
	Sample Date:	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	10-Dec-22 00:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-27	2251119-30	2251119-32	2251119-34		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Acenaphthylene	0.02 ug/g	-	0.07	-	0.02	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	-	0.07	-	0.11	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	-	0.23	-	0.37	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	-	0.26	-	0.37	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	-	0.23	-	0.32	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	-	0.17	-	0.23	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	-	0.11	-	0.15	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	-	0.17	-	0.34	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	-	0.05	-	0.06	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	-	0.34	-	0.67	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	-	<0.02	-	0.04	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	-	0.18	-	0.23	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	-	0.04	-	0.32	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	-	0.05	-	0.40	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	-	0.09	-	0.72	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	-	0.03	-	0.21	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	-	0.13	-	0.52	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	-	0.32	-	0.66	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	-	54.1%	-	56.9%	-	-
Terphenyl-d14	Surrogate	-	65.5%	-	58.1%	-	-

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH8-SS3				Criteria:	
	Sample Date:	10-Dec-22 00:00				Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2251119-36					
	Matrix:	Soil					
	MDL/Units						
General Inorganics							
pH	0.05 pH Units	7.77	-	-	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	0.03	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.349*		*ug/g*	*69.9*	*50-140*			
Surrogate: Terphenyl-d14	*0.300*		*ug/g*	*59.9*	*50-140*			
Volatiles								
Acetone	ND	0.50	ug/g					
Benzene	ND	0.02	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					
Bromomethane	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Dibromochloromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2-Dichloropropane	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					
Trichlorofluoromethane	ND	0.05	ug/g					
Vinyl chloride	ND	0.02	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: 4-Bromofluorobenzene	*7.69*		*ug/g*	*95.8*	*50-140*			
Surrogate: Dibromofluoromethane	*11.4*		*ug/g*	*143*	*50-140*			S-GC
Surrogate: Toluene-d8	*7.66*		*ug/g*	*95.8*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.60	0.05	pH Units	7.68			1.1	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	2.3	1.0	ug/g	2.0			12.7	30	
Barium	47.3	1.0	ug/g	51.5			8.5	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	9.7	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	10.2	5.0	ug/g	11.3			10.2	30	
Cobalt	3.3	1.0	ug/g	3.4			4.4	30	
Copper	7.5	5.0	ug/g	8.3			9.4	30	
Lead	46.6	1.0	ug/g	38.3			19.7	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	ND	5.0	ug/g	5.5			NC	30	
Selenium	2.0	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	18.1	10.0	ug/g	19.8			8.7	30	
Zinc	65.4	20.0	ug/g	67.0			2.5	30	
Physical Characteristics									
% Solids	83.0	0.1	% by Wt.	84.2			1.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	0.045	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	0.052	0.02	ug/g	0.025			70.3	40	QR-04
Benzo [b] fluoranthene	0.041	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	0.035	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	0.038	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	0.072	0.02	ug/g	0.028			87.2	40	QR-04
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	0.032	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	0.036	0.02	ug/g	0.047			26.7	40	
2-Methylnaphthalene	0.030	0.02	ug/g	0.048			45.8	40	QR-04
Naphthalene	0.068	0.01	ug/g	0.084			21.5	40	
Phenanthrene	0.054	0.02	ug/g	0.029			61.6	40	QR-04
Pyrene	0.064	0.02	ug/g	0.024			91.1	40	QR-04
Surrogate: 2-Fluorobiphenyl	*0.323*		*ug/g*		*55.5*	*50-140*			
Surrogate: Terphenyl-d14	*0.385*		*ug/g*		*66.2*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*12.1*		*ug/g*		*97.2*	*50-140*			
Surrogate: Dibromofluoromethane	*14.5*		*ug/g*		*117*	*50-140*			
Surrogate: Toluene-d8	*11.5*		*ug/g*		*92.8*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	70	7	ug/g	ND	98.7	80-120			
F2 PHCs (C10-C16)	76	4	ug/g	ND	86.5	60-140			
F3 PHCs (C16-C34)	162	8	ug/g	ND	82.2	60-140			
F4 PHCs (C34-C50)	135	6	ug/g	ND	95.0	60-140			
Metals									
Antimony	120	1.0	ug/g	ND	96.2	70-130			
Arsenic	126	1.0	ug/g	2.0	98.9	70-130			
Barium	168	1.0	ug/g	51.5	93.3	70-130			
Beryllium	111	0.5	ug/g	ND	88.9	70-130			
Boron	113	5.0	ug/g	ND	90.2	70-130			
Cadmium	132	0.5	ug/g	ND	106	70-130			
Chromium	130	5.0	ug/g	11.3	95.2	70-130			
Cobalt	120	1.0	ug/g	3.4	93.3	70-130			
Copper	125	5.0	ug/g	8.3	93.5	70-130			
Lead	151	1.0	ug/g	38.3	90.2	70-130			
Molybdenum	129	1.0	ug/g	ND	104	70-130			
Nickel	122	5.0	ug/g	5.5	93.5	70-130			
Selenium	116	1.0	ug/g	ND	93.1	70-130			
Silver	111	0.3	ug/g	ND	89.0	70-130			
Thallium	119	1.0	ug/g	ND	95.0	70-130			
Uranium	127	1.0	ug/g	ND	102	70-130			
Vanadium	137	10.0	ug/g	19.8	93.9	70-130			
Zinc	211	20.0	ug/g	67.0	115	70-130			
Semi-Volatiles									
Acenaphthene	0.357	0.02	ug/g	ND	61.3	50-140			
Acenaphthylene	0.367	0.02	ug/g	ND	63.0	50-140			
Anthracene	0.346	0.02	ug/g	ND	59.4	50-140			
Benzo [a] anthracene	0.364	0.02	ug/g	ND	62.5	50-140			
Benzo [a] pyrene	0.364	0.02	ug/g	0.025	58.2	50-140			
Benzo [b] fluoranthene	0.410	0.02	ug/g	ND	70.4	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [g,h,i] perylene	0.335	0.02	ug/g	ND	57.6	50-140			
Benzo [k] fluoranthene	0.391	0.02	ug/g	ND	67.2	50-140			
Chrysene	0.356	0.02	ug/g	ND	61.1	50-140			
Dibenzo [a,h] anthracene	0.346	0.02	ug/g	ND	59.4	50-140			
Fluoranthene	0.404	0.02	ug/g	0.028	64.5	50-140			
Fluorene	0.375	0.02	ug/g	ND	64.4	50-140			
Indeno [1,2,3-cd] pyrene	0.357	0.02	ug/g	ND	61.3	50-140			
1-Methylnaphthalene	0.381	0.02	ug/g	0.047	57.2	50-140			
2-Methylnaphthalene	0.390	0.02	ug/g	0.048	58.8	50-140			
Naphthalene	0.432	0.01	ug/g	0.084	59.7	50-140			
Phenanthrene	0.367	0.02	ug/g	0.029	58.1	50-140			
Pyrene	0.358	0.02	ug/g	0.024	57.3	50-140			
Surrogate: 2-Fluorobiphenyl	*0.297*		*ug/g*		*59.5*	*50-140*			
Surrogate: Terphenyl-d14	*0.283*		*ug/g*		*56.6*	*50-140*			
Volatiles									
Acetone	7.68	0.50	ug/g	ND	76.8	50-140			
Benzene	3.72	0.02	ug/g	ND	92.5	60-130			
Bromodichloromethane	3.99	0.05	ug/g	ND	99.2	60-130			
Bromoform	3.66	0.05	ug/g	ND	91.1	60-130			
Bromomethane	4.28	0.05	ug/g	ND	107	50-140			
Carbon Tetrachloride	3.58	0.05	ug/g	ND	88.6	60-130			
Chlorobenzene	3.65	0.05	ug/g	ND	90.9	60-130			
Chloroform	3.87	0.05	ug/g	ND	96.7	60-130			
Dibromochloromethane	3.60	0.05	ug/g	ND	89.2	60-130			
Dichlorodifluoromethane	5.10	0.05	ug/g	ND	128	50-140			
1,2-Dichlorobenzene	3.64	0.05	ug/g	ND	90.2	60-130			
1,3-Dichlorobenzene	3.55	0.05	ug/g	ND	88.7	60-130			
1,4-Dichlorobenzene	3.75	0.05	ug/g	ND	93.8	60-130			
1,1-Dichloroethane	3.34	0.05	ug/g	ND	82.7	60-130			
1,2-Dichloroethane	3.78	0.05	ug/g	ND	94.0	60-130			
1,1-Dichloroethylene	3.85	0.05	ug/g	ND	95.2	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,2-Dichloroethylene	3.65	0.05	ug/g	ND	90.8	60-130			
trans-1,2-Dichloroethylene	3.33	0.05	ug/g	ND	83.3	60-130			
1,2-Dichloropropane	4.12	0.05	ug/g	ND	103	60-130			
cis-1,3-Dichloropropylene	3.89	0.05	ug/g	ND	96.4	60-130			
trans-1,3-Dichloropropylene	4.14	0.05	ug/g	ND	103	60-130			
Ethylbenzene	3.41	0.05	ug/g	ND	84.9	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	3.71	0.05	ug/g	ND	92.8	60-130			
Hexane	3.76	0.05	ug/g	ND	94.0	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.06	0.50	ug/g	ND	80.6	50-140			
Methyl Isobutyl Ketone	9.45	0.50	ug/g	ND	94.5	50-140			
Methyl tert-butyl ether	9.38	0.05	ug/g	ND	93.8	50-140			
Methylene Chloride	4.62	0.05	ug/g	ND	116	60-130			
Styrene	3.71	0.05	ug/g	ND	92.3	60-130			
1,1,1,2-Tetrachloroethane	3.76	0.05	ug/g	ND	93.6	60-130			
1,1,2,2-Tetrachloroethane	3.50	0.05	ug/g	ND	86.9	60-130			
Tetrachloroethylene	3.72	0.05	ug/g	ND	92.5	60-130			
Toluene	3.67	0.05	ug/g	ND	91.2	60-130			
1,1,1-Trichloroethane	3.83	0.05	ug/g	ND	94.8	60-130			
1,1,2-Trichloroethane	5.47	0.05	ug/g	ND	136	60-130			QS-02
Trichloroethylene	4.46	0.05	ug/g	ND	110	60-130			
Trichlorofluoromethane	3.85	0.05	ug/g	ND	96.3	50-140			
Vinyl chloride	4.04	0.02	ug/g	ND	101	50-140			
m,p-Xylenes	7.36	0.05	ug/g	ND	91.8	60-130			
o-Xylene	3.57	0.05	ug/g	ND	88.8	60-130			
Surrogate: 4-Bromofluorobenzene	*8.11*		*ug/g*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*7.81*		*ug/g*		*97.6*	*50-140*			
Surrogate: Toluene-d8	*8.11*		*ug/g*		*101*	*50-140*			

Qualifier Notes:

QC Qualifiers:

QR-04	Duplicate results exceeds RPD limits due to non-homogeneous matrix.
QS-02	Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

Sample Data Revisions:

None

Certificate of Analysis

Report Date: 19-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

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 unlesss otherwise noted.

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

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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Paracel ID: 2251119

Chain Of Custody
(Lab Use Only)
Nº 136512

Page 1 of 4

Client Name:	Project Ref: E-22-32-2
Contact Name: Hallex Environmental Ltd	Quote #:
Address: Contact: Kevin Christian 4999 Victoria Ave. Niagara Falls, ON L2E 4C9	PO #:
Telephone: Ph: 905-988-8030	E-mail: kchristian@hallex.ca nmetz@hallex.ca

Turnaround Time
- ☐ 1 day
- ☐ 3 day
- ☐ 2 day
- ☒ Regular

Date Required:

Regulation
- ☒ REG 153/04 ☐ REG 406/19
- ☐ Table 1 ☐ Res/Park ☒ Med/Fine
- ☒ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other
- ☐ Table ___
- For RSC: ☒ Yes ☐ No

Other Regulation
- ☐ REG 558 ☐ PWQO
- ☐ CCME ☐ MISA
- ☐ SU - Sani ☐ SU - Storm
- Mun:
- ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Hold	pH	PHCs F2-F4	PHCs F1
1	BH1-SS1	S	☒	2	Dec 10th									X			
2	BH1-SS2			3			X	X	X	X							
3	BH1-SS3			2										X			
4	BH1-SS4			2											X		
5	BH1-SS5			3										X			
6	BH1-SS6			2										X			
7	BH2-SS1			2					X	X						X	
8	BH2-SS2			3				X									X
9	BH2-SS3			2										X			
10	BH2-SS4			3										X			

Comments:

Method of Delivery: Drop box

Relinquished By (Sign): A. Cottle	Received By Driver/Depot:	Received at Lab: (Y) / O	Verified By: dMcCalla
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: Dec 13/22. 8:35	Date/Time: 12/13/22 10:39
Date/Time: Dec. 12th 2022 5pm	Temperature: °C	Temperature: 7.8 °C	pH Verified: ☐ By: NA

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Paracel ID: 2251119

Chain Of Custody
(Lab Use Only)
№ 136511

Page 2 of 4

Client Name:	Project Ref: E-22-32-2
Contact Name: Hallex Environmental Ltd.	Quote #:
Address: Contact: Kevin Christian 4999 Victoria Ave. Niagara Falls, ON L2E 4C9	PO #:
Telephone: Ph: 905-988-8030	E-mail: kchristian@hallex.ca nmetz@hallex.ca

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required: _____

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☒ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	pH	1-Hot			
1	BH3-SS1	S		2	Dec. 10th										X			
2	BH3-AS1			3			X	X	X	X								
3	BH3-SS2			2										X				
4	BH3-SS3			3											X			
5	BH3-SS4			2											X			
6	BH4-SS1			2											X			
7	BH4-AS1			3			X	X	X	X								
8	BH4-SS2			2										X				
9	BH4-SS3			3											X			
10	BH4-SS4			2											X			

Comments:

Method of Delivery: Drop box

Relinquished By (Sign): A. Cottle	Received By Driver/Depot:	Received at Lab:	Verified By: KMcCalla
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: Dec13/22-8:35	Date/Time: 12/13/22 1039
Date/Time: Dec 12th 5pm	Temperature: °C	Temperature: 7.8 °C	pH Verified: ☐ By: NA

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Paracel ID: 2251119

Number Only)

Chain Of Custody
(Lab Use Only)
№ 67622

Client Name: Hallex Environmental Ltd.	Project Ref: E-22-32-2	Page 3 of 4
Contact Name: Contact: Kevin Christian	Quote #:	Turnaround Time
Address: 4999 Victoria Ave. Niagara Falls, ON L2E 4C9	PO #:	☐ 1 day ☐ 3 day
Ph: 905-988-8030	E-mail: kchristian@hallex.ca nmetz@hallex.ca	☐ 2 day ☒ Regular
Telephone:		Date Required:

☒ 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)
☐ Table 1 ☐ Res/Park ☒ Med/Fine	☐ REG 558 ☐ PWQO	
☒ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA	
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm	
☐ Table ___	Mun: ___	
For RSC: ☒ Yes ☐ No	☐ Other:	

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOC	PAH	Metals by ICP	pH	Hold							
1	BH5-SS1	S		2	Dec. 10th						X								
2	BH5-AS1			3			X	X	X	X									
3	BH5-SS2			3								X							
4	BH5-SS3			2							X								
5	BH5-SS4			2								X							
6	BH6-SS1			3			X	X	X	X									
7	BH6-SS2			3							X								
8	BH6-SS3			2								X							
9	BH6-SS4			2								X							
10	BH7-SS1			3			X	X	X	X	X								

Comments:

Method of Delivery: Drop box

Relinquished By (Sign): A. Cottle	Received By Driver/Depot:	Received at Lab:	Verified By: KMcCalla
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: Dec 13 22 - 8:35	Date/Time: 12/13/22 1039
Date/Time: Dec. 12th 5pm	Temperature: °C	Temperature: 7.8 °C	pH Verified: ☐ By: N/A

PARACEL LABORATORIES LTD. | TRUSTE RESPON RELIAB

Paracel ID: 2251119

Number Only)

Chain Of Custody
(Lab Use Only)
№ 67623

Client Name:

Project Ref: E-22-32-2

Page 4 of 4

Contact Name: Hallex Environmental Ltd.
Contact: Kevin Christian

Address: 4999 Victoria Ave.
Niagara Falls, ON L2E 4C9

Telephone: Ph: 905-988-8030

Quote #:

PO #:

E-mail: kchristian@hallex.ca
nmetz@hallex.ca

Turnaround Time

☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular

Date Required:

☒ 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)
☐ Table 1 ☐ Res/Park ☒ Med/Fine	☐ REG 558 ☐ PWQO	
☒ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA	
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm	
☐ Table	Mun:	
For RSC: ☒ Yes ☐ No	☐ Other:	

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analysis: Metals by ICP	HWI	pH	PAH	PHC F1-F4	VOC
1	BH7-SS2	S		3	Dec. 10th			X				
2	BH7-SS3			2					X			
3	BH7-SS4			2				X				
4	BH8-SS1			3			X		X	X	X	X
5	BH8-SS2			3				X		~~X~~	~~X~~	
6	BH8-SS3			2					X			
7	BH8-SS4			2				X				
8												
9												
10												

Comments:

Method of Delivery: Drop box

Relinquished By (Sign): A. Cottle	Received By Driver/Depot:	Received at Lab:	Verified By: KMC 6/12
Relinquished By (Print): Amber Cottle	Date/Time:	Date/Time: Dec 13/22 8:35	Date/Time: 12/13/22 10:39
Date/Time: Dec 12th 2022 5pm	Temperature: °C	Temperature: 7.8 °C	pH Verified: ☐ By: N/A

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1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2
Custody:

Report Date: 20-Dec-2022
Order Date: 13-Dec-2022

Order #: 2251364

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

Paracel ID	Client ID
2251364-01	BH2-SS3
2251364-02	BH5-SS3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Solids, %	CWS Tier 1 - Gravimetric	19-Dec-22	19-Dec-22
Texture - Coarse Med/Fine	Based on ASTM D2487	19-Dec-22	20-Dec-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	-	-

Certificate of Analysis

Report Date: 20-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 13-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	BH2-SS3	BH5-SS3	-	-		
	Sample Date:	09-Dec-22 09:00	09-Dec-22 09:00	-	-	-	-
	Sample ID:	2251364-01	2251364-02	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	84.3	82.4	-	-	-	-
>75 um	0.1 %	0.4	0.8	-	-	-	-
<75 um	0.1 %	99.6	99.2	-	-	-	-
Texture	0.1 %	Med/Fine	Med/Fine	-	-	-	-

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	

Qualifier Notes:

Sample Qualifiers :

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 unlesss otherwise noted.

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

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

Paracel ID: 2251364

...er Number (...e Only) 1364

Chain Of Custody
(Lab Use Only)

Client Name: Hallex Environmental	Project Ref: E-22-32-2
Contact Name: Kevin Christian	Quote #:
Address: 4999 Victoria Avenue, Niagara Falls, ON	PO #:
	E-mail: nmetz@hallex.ca kchristian@hallex.ca
Telephone: 905-988-8030	

Page 1 of 1

Turnaround Time

☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular

Date Required:

Regulation 153/04

☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☒ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Grain Size (Soil Tex					
1	BH2-SS3	S		2	Dec 9th									✓					
2	BH5-SS3	s		2	Dec 9th									✓					
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Drop box

Relinquished By (Sign): Amber Cottle (Digitally signed by Amber Cottle DN: cn=Amber Cottle, c=CA, email=acottle@hallex.ca Date: 2022.12.15 11:01:41 -05'00')	Received By Driver/Depot:	Received at Lab: Catherine McEntee	Verified By: KB
Relinquished By (Print):	Date/Time: Dec 13/22 - 8:35	Date/Time: Dec 17/22 13:15	Date/Time: Dec 15/22 - 12:00
Date/Time:	Temperature: 7.8 °C	Temperature: 8.2 °C	pH Verified: ☐ By:

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2
Custody: 67627

Report Date: 31-Dec-2022
Order Date: 20-Dec-2022

Order #: 2252194

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

Paracel ID	Client ID
2252194-01	MW1
2252194-02	MW2
2252194-03	MW3
2252194-04	MW3 - Dup
2252194-05	MW4
2252194-06	MW5
2252194-07	MW6
2252194-08	MW7
2252194-09	MW8

Approved By:

Milan Ralitsch, PhD

Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	23-Dec-22	29-Dec-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	29-Dec-22	30-Dec-22
REG 153: Metals by ICP/MS, water	EPA 200.8, ICP-MS	21-Dec-22	21-Dec-22
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	28-Dec-22	30-Dec-22
REG 153: VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	29-Dec-22	29-Dec-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
MW1	Benzene	0.5 ug/L	3550	5 ug/L	5 ug/L
MW1	1,2-Dichloroethane	0.5 ug/L	1.7	1.6 ug/L	5 ug/L
MW1	Ethylbenzene	0.5 ug/L	54.6	2.4 ug/L	2.4 ug/L
MW1	Toluene	0.5 ug/L	43.6	24 ug/L	24 ug/L
MW1	F1 PHCs (C6-C10)	25 ug/L	2410	750 ug/L	750 ug/L
MW3	cis-1,2-Dichloroethylene	0.5 ug/L	18.3	1.6 ug/L	17 ug/L
MW3	Trichloroethylene	0.5 ug/L	5.5	1.6 ug/L	5 ug/L
MW3	Vinyl chloride	0.5 ug/L	4.4	0.5 ug/L	1.7 ug/L
MW3 - Dup	cis-1,2-Dichloroethylene	0.5 ug/L	18.8	1.6 ug/L	17 ug/L
MW3 - Dup	Trichloroethylene	0.5 ug/L	5.4	1.6 ug/L	5 ug/L
MW3 - Dup	Vinyl chloride	0.5 ug/L	5.2	0.5 ug/L	1.7 ug/L

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW1	MW2	MW3	MW3 - Dup	Criteria:	
	Sample Date:	20-Dec-22 11:35	20-Dec-22 11:30	20-Dec-22 11:20	20-Dec-22 11:00	Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-01	2252194-02	2252194-03	2252194-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Metals							
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	6 ug/L	6 ug/L
Arsenic	1 ug/L	6.1	<1.0	5.4	5.5	25 ug/L	25 ug/L
Barium	1 ug/L	614	87.1	89.6	87.2	1000 ug/L	1000 ug/L
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	4 ug/L	4 ug/L
Boron	10 ug/L	217	118	335	321	5000 ug/L	5000 ug/L
Cadmium	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	2.7 ug/L	2.7 ug/L
Chromium	1 ug/L	<1.0	<1.0	<1.0	<1.0	50 ug/L	50 ug/L
Cobalt	0.5 ug/L	<0.5	<0.5	0.7	0.7	3.8 ug/L	3.8 ug/L
Copper	0.5 ug/L	<0.5	1.0	<0.5	<0.5	87 ug/L	87 ug/L
Lead	0.2 ug/L	0.3	<0.2	<0.2	<0.2	10 ug/L	10 ug/L
Molybdenum	0.5 ug/L	4.5	5.0	10.7	10.1	70 ug/L	70 ug/L
Nickel	1 ug/L	<1.0	<1.0	1.1	1.0	100 ug/L	100 ug/L
Selenium	1 ug/L	<1.0	<1.0	1.3	<1.0	10 ug/L	10 ug/L
Silver	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	1.5 ug/L	1.5 ug/L
Sodium	200 ug/L	21600	46400	32400	31400	490000 ug/L	490000 ug/L
Thallium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2 ug/L	2 ug/L
Uranium	0.2 ug/L	0.8	6.9	4.9	4.7	20 ug/L	20 ug/L
Vanadium	0.5 ug/L	<0.5	1.8	1.2	1.1	6.2 ug/L	6.2 ug/L
Zinc	5 ug/L	<5.0	11.6	<5.0	<5.0	1100 ug/L	1100 ug/L
Volatiles							
Acetone	5 ug/L	<5.0	<5.0	<5.0	<5.0	2700 ug/L	2700 ug/L
Benzene	0.5 ug/L	3550	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	16 ug/L	16 ug/L
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	25 ug/L
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.89 ug/L	0.89 ug/L

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW1	MW2	MW3	MW3 - Dup	Criteria:	
	Sample Date:	20-Dec-22 11:35	20-Dec-22 11:30	20-Dec-22 11:20	20-Dec-22 11:00	Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-01	2252194-02	2252194-03	2252194-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.79 ug/L	5 ug/L
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	30 ug/L	30 ug/L
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2.4 ug/L	22 ug/L
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	25 ug/L
Dichlorodifluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	590 ug/L	590 ug/L
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	3 ug/L	3 ug/L
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	59 ug/L	59 ug/L
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	1 ug/L
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
1,2-Dichloroethane	0.5 ug/L	1.7	<0.5	<0.5	<0.5	1.6 ug/L	5 ug/L
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	14 ug/L
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	18.3	18.8	1.6 ug/L	17 ug/L
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	17 ug/L
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.5 ug/L	0.5 ug/L
Ethylbenzene	0.5 ug/L	54.6	<0.5	<0.5	<0.5	2.4 ug/L	2.4 ug/L
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.2 ug/L	0.2 ug/L
Hexane	1 ug/L	48.0	<1.0	<1.0	<1.0	51 ug/L	520 ug/L
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	<5.0	<5.0	<5.0	1800 ug/L	1800 ug/L
Methyl Isobutyl Ketone	5 ug/L	<5.0	<5.0	<5.0	<5.0	640 ug/L	640 ug/L
Methyl tert-butyl ether	2 ug/L	<2.0	<2.0	<2.0	<2.0	15 ug/L	15 ug/L
Methylene Chloride	5 ug/L	<5.0	<5.0	<5.0	<5.0	50 ug/L	50 ug/L
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5.4 ug/L	5.4 ug/L

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW1	MW2	MW3	MW3 - Dup	Criteria:	
	Sample Date:	20-Dec-22 11:35	20-Dec-22 11:30	20-Dec-22 11:20	20-Dec-22 11:00	Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-01	2252194-02	2252194-03	2252194-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.1 ug/L	1.1 ug/L
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	1 ug/L
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	17 ug/L
Toluene	0.5 ug/L	43.6	<0.5	<0.5	<0.5	24 ug/L	24 ug/L
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	200 ug/L	200 ug/L
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	4.7 ug/L	5 ug/L
Trichloroethylene	0.5 ug/L	<0.5	<0.5	5.5	5.4	1.6 ug/L	5 ug/L
Trichlorofluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	150 ug/L	150 ug/L
Vinyl chloride	0.5 ug/L	<0.5	<0.5	4.4	5.2	0.5 ug/L	1.7 ug/L
m,p-Xylenes	0.5 ug/L	197	<0.5	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	35.2	<0.5	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	232	<0.5	<0.5	<0.5	300 ug/L	300 ug/L
4-Bromofluorobenzene	Surrogate	98.2%	95.6%	96.8%	97.5%	-	-
Toluene-d8	Surrogate	112%	106%	106%	106%	-	-
Dibromofluoromethane	Surrogate	74.6%	73.3%	78.3%	79.3%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	2410	<25	<25	<25	750 ug/L	750 ug/L
F2 PHCs (C10-C16)	100 ug/L	147	<100	<100	<100	150 ug/L	150 ug/L
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100	500 ug/L	500 ug/L
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100	500 ug/L	500 ug/L
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	4.1 ug/L	4.1 ug/L
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	1 ug/L	1 ug/L
Anthracene	0.01 ug/L	<0.01	0.04	<0.01	<0.01	2.4 ug/L	2.4 ug/L
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	1 ug/L	1 ug/L

	Client ID:	MW1	MW2	MW3	MW3 - Dup	Criteria:	
	Sample Date:	20-Dec-22 11:35	20-Dec-22 11:30	20-Dec-22 11:20	20-Dec-22 11:00	**Reg 153/04 -T2 Potable Groundwater, coarse**	**Reg 153/04 -T2 Potable Groundwater, fine**
	Sample ID:	2252194-01	2252194-02	2252194-03	2252194-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	0.01 ug/L	0.01 ug/L
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Chrysene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
Fluoranthene	0.01 ug/L	<0.01	0.06	<0.01	<0.01	0.41 ug/L	0.41 ug/L
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	120 ug/L	120 ug/L
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	3.2 ug/L	3.2 ug/L
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	3.2 ug/L	3.2 ug/L
Methylnaphthalene (1&2)	0.1 ug/L	<0.10	<0.10	<0.10	<0.10	3.2 ug/L	3.2 ug/L
Naphthalene	0.05 ug/L	<0.05	0.17	<0.05	<0.05	11 ug/L	11 ug/L
Phenanthrene	0.05 ug/L	<0.05	0.12	<0.05	0.06	1 ug/L	1 ug/L
Pyrene	0.01 ug/L	<0.01	0.05	<0.01	<0.01	4.1 ug/L	4.1 ug/L
2-Fluorobiphenyl	Surrogate	86.3%	87.0%	84.6%	75.0%	-	-
Terphenyl-d14	Surrogate	125%	110%	117%	98.6%	-	-

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW4	MW5	MW6	MW7	Criteria:	
	Sample Date:	20-Dec-22 10:30	20-Dec-22 10:20	20-Dec-22 10:00	20-Dec-22 09:40	**Reg 153/04 -T2 Potable Groundwater, coarse**	**Reg 153/04 -T2 Potable Groundwater, fine**
	Sample ID:	2252194-05	2252194-06	2252194-07	2252194-08		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Metals							
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	6 ug/L	6 ug/L
Arsenic	1 ug/L	1.1	1.3	<1.0	<1.0	25 ug/L	25 ug/L
Barium	1 ug/L	67.0	62.1	61.7	56.2	1000 ug/L	1000 ug/L
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	4 ug/L	4 ug/L
Boron	10 ug/L	119	169	101	115	5000 ug/L	5000 ug/L
Cadmium	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	2.7 ug/L	2.7 ug/L
Chromium	1 ug/L	<1.0	<1.0	<1.0	<1.0	50 ug/L	50 ug/L
Cobalt	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	3.8 ug/L	3.8 ug/L
Copper	0.5 ug/L	0.9	0.9	0.8	0.8	87 ug/L	87 ug/L
Lead	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	10 ug/L	10 ug/L
Molybdenum	0.5 ug/L	5.8	4.2	3.4	4.2	70 ug/L	70 ug/L
Nickel	1 ug/L	<1.0	<1.0	<1.0	<1.0	100 ug/L	100 ug/L
Selenium	1 ug/L	<1.0	1.2	<1.0	1.3	10 ug/L	10 ug/L
Silver	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	1.5 ug/L	1.5 ug/L
Sodium	200 ug/L	43200	21600	62200	48100	490000 ug/L	490000 ug/L
Thallium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2 ug/L	2 ug/L
Uranium	0.2 ug/L	9.8	4.9	9.6	12.2	20 ug/L	20 ug/L
Vanadium	0.5 ug/L	1.5	0.9	1.1	1.6	6.2 ug/L	6.2 ug/L
Zinc	5 ug/L	<5.0	<5.0	<5.0	<5.0	1100 ug/L	1100 ug/L
Volatiles							
Acetone	5 ug/L	<5.0	<5.0	<5.0	<5.0	2700 ug/L	2700 ug/L
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	16 ug/L	16 ug/L
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	25 ug/L
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.89 ug/L	0.89 ug/L

	Client ID:	MW4	MW5	MW6	MW7	Criteria:	
	Sample Date:	20-Dec-22 10:30	20-Dec-22 10:20	20-Dec-22 10:00	20-Dec-22 09:40	Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-05	2252194-06	2252194-07	2252194-08		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.79 ug/L	5 ug/L
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	30 ug/L	30 ug/L
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2.4 ug/L	22 ug/L
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	25 ug/L
Dichlorodifluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	590 ug/L	590 ug/L
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	3 ug/L	3 ug/L
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	59 ug/L	59 ug/L
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	1 ug/L
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	5 ug/L
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	14 ug/L
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	17 ug/L
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	17 ug/L
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	5 ug/L
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.5 ug/L	0.5 ug/L
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.2 ug/L	0.2 ug/L
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2.4 ug/L	2.4 ug/L
Hexane	1 ug/L	<1.0	<1.0	<1.0	<1.0	51 ug/L	520 ug/L
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	<5.0	<5.0	<5.0	1800 ug/L	1800 ug/L
Methyl Isobutyl Ketone	5 ug/L	<5.0	<5.0	<5.0	<5.0	640 ug/L	640 ug/L
Methyl tert-butyl ether	2 ug/L	<2.0	<2.0	<2.0	<2.0	15 ug/L	15 ug/L
Methylene Chloride	5 ug/L	<5.0	<5.0	<5.0	<5.0	50 ug/L	50 ug/L
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5.4 ug/L	5.4 ug/L

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW4	MW5	MW6	MW7	Criteria:	
	Sample Date:	20-Dec-22 10:30	20-Dec-22 10:20	20-Dec-22 10:00	20-Dec-22 09:40	**Reg 153/04 -T2 Potable Groundwater, coarse**	**Reg 153/04 -T2 Potable Groundwater, fine**
	Sample ID:	2252194-05	2252194-06	2252194-07	2252194-08		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.1 ug/L	1.1 ug/L
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	1 ug/L
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	17 ug/L
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	24 ug/L	24 ug/L
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	200 ug/L	200 ug/L
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	4.7 ug/L	5 ug/L
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.6 ug/L	5 ug/L
Trichlorofluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	150 ug/L	150 ug/L
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.5 ug/L	1.7 ug/L
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	300 ug/L	300 ug/L
4-Bromofluorobenzene	Surrogate	92.2%	91.8%	90.9%	92.3%	-	-
Toluene-d8	Surrogate	106%	106%	105%	106%	-	-
Dibromofluoromethane	Surrogate	78.9%	78.3%	77.6%	76.2%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	750 ug/L	750 ug/L
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100	150 ug/L	150 ug/L
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100	500 ug/L	500 ug/L
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100	500 ug/L	500 ug/L
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	4.1 ug/L	4.1 ug/L
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	1 ug/L	1 ug/L
Anthracene	0.01 ug/L	<0.01	<0.01	0.04	<0.01	2.4 ug/L	2.4 ug/L
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	1 ug/L	1 ug/L

	Client ID:	MW4	MW5	MW6	MW7	Criteria:	
	Sample Date:	20-Dec-22 10:30	20-Dec-22 10:20	20-Dec-22 10:00	20-Dec-22 09:40	**Reg 153/04 -T2 Potable Groundwater, coarse**	**Reg 153/04 -T2 Potable Groundwater, fine**
	Sample ID:	2252194-05	2252194-06	2252194-07	2252194-08		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	0.01 ug/L	0.01 ug/L
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Chrysene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.1 ug/L	0.1 ug/L
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
Fluoranthene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	0.41 ug/L	0.41 ug/L
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	120 ug/L	120 ug/L
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	<0.05	<0.05	0.2 ug/L	0.2 ug/L
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	0.10	<0.05	3.2 ug/L	3.2 ug/L
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	0.16	<0.05	3.2 ug/L	3.2 ug/L
Methylnaphthalene (1&2)	0.1 ug/L	<0.10	<0.10	0.26	<0.10	3.2 ug/L	3.2 ug/L
Naphthalene	0.05 ug/L	<0.05	<0.05	0.43	<0.05	11 ug/L	11 ug/L
Phenanthrene	0.05 ug/L	0.08	<0.05	0.12	<0.05	1 ug/L	1 ug/L
Pyrene	0.01 ug/L	<0.01	<0.01	<0.01	<0.01	4.1 ug/L	4.1 ug/L
2-Fluorobiphenyl	Surrogate	74.2%	91.6%	87.5%	101%	-	-
Terphenyl-d14	Surrogate	97.4%	104%	105%	179% [4]	-	-

	Client ID:	MW8				Criteria:	
	Sample Date:	20-Dec-22 09:30					
	Sample ID:	2252194-09					
	Matrix:	Ground Water					
	MDL/Units					Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
Metals							
Antimony	0.5 ug/L	<0.5	-	-	-	6 ug/L	6 ug/L
Arsenic	1 ug/L	<1.0	-	-	-	25 ug/L	25 ug/L
Barium	1 ug/L	74.6	-	-	-	1000 ug/L	1000 ug/L
Beryllium	0.5 ug/L	<0.5	-	-	-	4 ug/L	4 ug/L
Boron	10 ug/L	64.9	-	-	-	5000 ug/L	5000 ug/L
Cadmium	0.2 ug/L	<0.2	-	-	-	2.7 ug/L	2.7 ug/L
Chromium	1 ug/L	<1.0	-	-	-	50 ug/L	50 ug/L
Cobalt	0.5 ug/L	<0.5	-	-	-	3.8 ug/L	3.8 ug/L
Copper	0.5 ug/L	0.6	-	-	-	87 ug/L	87 ug/L
Lead	0.2 ug/L	<0.2	-	-	-	10 ug/L	10 ug/L
Molybdenum	0.5 ug/L	2.1	-	-	-	70 ug/L	70 ug/L
Nickel	1 ug/L	<1.0	-	-	-	100 ug/L	100 ug/L
Selenium	1 ug/L	<1.0	-	-	-	10 ug/L	10 ug/L
Silver	0.2 ug/L	<0.2	-	-	-	1.5 ug/L	1.5 ug/L
Sodium	200 ug/L	21600	-	-	-	490000 ug/L	490000 ug/L
Thallium	0.5 ug/L	<0.5	-	-	-	2 ug/L	2 ug/L
Uranium	0.2 ug/L	8.8	-	-	-	20 ug/L	20 ug/L
Vanadium	0.5 ug/L	1.2	-	-	-	6.2 ug/L	6.2 ug/L
Zinc	5 ug/L	6.3	-	-	-	1100 ug/L	1100 ug/L
Volatiles							
Acetone	5 ug/L	<5.0	-	-	-	2700 ug/L	2700 ug/L
Benzene	0.5 ug/L	<0.5	-	-	-	5 ug/L	5 ug/L
Bromodichloromethane	0.5 ug/L	<0.5	-	-	-	16 ug/L	16 ug/L
Bromoform	0.5 ug/L	<0.5	-	-	-	25 ug/L	25 ug/L
Bromomethane	0.5 ug/L	<0.5	-	-	-	0.89 ug/L	0.89 ug/L

	Client ID:	MW8				Criteria:	
	Sample Date:	20-Dec-22 09:30				Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-09					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
Carbon Tetrachloride	0.2 ug/L	<0.2	-	-	-	0.79 ug/L	5 ug/L
Chlorobenzene	0.5 ug/L	<0.5	-	-	-	30 ug/L	30 ug/L
Chloroform	0.5 ug/L	<0.5	-	-	-	2.4 ug/L	22 ug/L
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-	25 ug/L	25 ug/L
Dichlorodifluoromethane	1 ug/L	<1.0	-	-	-	590 ug/L	590 ug/L
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	3 ug/L	3 ug/L
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	59 ug/L	59 ug/L
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-	1 ug/L	1 ug/L
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-	5 ug/L	5 ug/L
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	5 ug/L
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	14 ug/L
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	17 ug/L
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	17 ug/L
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-	5 ug/L	5 ug/L
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	-	-	0.5 ug/L	0.5 ug/L
Ethylbenzene	0.5 ug/L	<0.5	-	-	-	2.4 ug/L	2.4 ug/L
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	-	-	-	0.2 ug/L	0.2 ug/L
Hexane	1 ug/L	<1.0	-	-	-	51 ug/L	520 ug/L
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	-	-	-	1800 ug/L	1800 ug/L
Methyl Isobutyl Ketone	5 ug/L	<5.0	-	-	-	640 ug/L	640 ug/L
Methyl tert-butyl ether	2 ug/L	<2.0	-	-	-	15 ug/L	15 ug/L
Methylene Chloride	5 ug/L	<5.0	-	-	-	50 ug/L	50 ug/L
Styrene	0.5 ug/L	<0.5	-	-	-	5.4 ug/L	5.4 ug/L

Certificate of Analysis

Report Date: 31-Dec-2022

Client: **Hallex Environmental Ltd.**

Order Date: 20-Dec-2022

Client PO:

Project Description: E-22-32-2

	Client ID:	MW8				Criteria:	
	Sample Date:	20-Dec-22 09:30				Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-09					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-	1.1 ug/L	1.1 ug/L
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-	1 ug/L	1 ug/L
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	17 ug/L
Toluene	0.5 ug/L	<0.5	-	-	-	24 ug/L	24 ug/L
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-	200 ug/L	200 ug/L
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-	4.7 ug/L	5 ug/L
Trichloroethylene	0.5 ug/L	<0.5	-	-	-	1.6 ug/L	5 ug/L
Trichlorofluoromethane	1 ug/L	<1.0	-	-	-	150 ug/L	150 ug/L
Vinyl chloride	0.5 ug/L	<0.5	-	-	-	0.5 ug/L	1.7 ug/L
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-	300 ug/L	300 ug/L
Toluene-d8	Surrogate	106%	-	-	-	-	-
Dibromofluoromethane	Surrogate	76.1%	-	-	-	-	-
4-Bromofluorobenzene	Surrogate	91.9%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-	750 ug/L	750 ug/L
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-	150 ug/L	150 ug/L
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-	500 ug/L	500 ug/L
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-	500 ug/L	500 ug/L
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	-	-	-	4.1 ug/L	4.1 ug/L
Acenaphthylene	0.05 ug/L	<0.05	-	-	-	1 ug/L	1 ug/L
Anthracene	0.01 ug/L	<0.01	-	-	-	2.4 ug/L	2.4 ug/L
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-	1 ug/L	1 ug/L

	Client ID:	MW8				Criteria:	
	Sample Date:	20-Dec-22 09:30				Reg 153/04 -T2 Potable Groundwater, coarse	Reg 153/04 -T2 Potable Groundwater, fine
	Sample ID:	2252194-09					
	Matrix:	Ground Water					
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-	0.01 ug/L	0.01 ug/L
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-	0.1 ug/L	0.1 ug/L
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-	0.2 ug/L	0.2 ug/L
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-	0.1 ug/L	0.1 ug/L
Chrysene	0.05 ug/L	<0.05	-	-	-	0.1 ug/L	0.1 ug/L
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-	0.2 ug/L	0.2 ug/L
Fluoranthene	0.01 ug/L	<0.01	-	-	-	0.41 ug/L	0.41 ug/L
Fluorene	0.05 ug/L	<0.05	-	-	-	120 ug/L	120 ug/L
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-	0.2 ug/L	0.2 ug/L
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	3.2 ug/L	3.2 ug/L
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	3.2 ug/L	3.2 ug/L
Methylnaphthalene (1&2)	0.1 ug/L	<0.10	-	-	-	3.2 ug/L	3.2 ug/L
Naphthalene	0.05 ug/L	<0.05	-	-	-	11 ug/L	11 ug/L
Phenanthrene	0.05 ug/L	<0.05	-	-	-	1 ug/L	1 ug/L
Pyrene	0.01 ug/L	<0.01	-	-	-	4.1 ug/L	4.1 ug/L
2-Fluorobiphenyl	Surrogate	77.5%	-	-	-	-	-
Terphenyl-d14	Surrogate	106%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	25	ug/L					
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					
Metals								
Antimony	ND	0.5	ug/L					
Arsenic	ND	1.0	ug/L					
Barium	ND	1.0	ug/L					
Beryllium	ND	0.5	ug/L					
Boron	ND	10.0	ug/L					
Cadmium	ND	0.2	ug/L					
Chromium	ND	1.0	ug/L					
Cobalt	ND	0.5	ug/L					
Copper	ND	0.5	ug/L					
Lead	ND	0.2	ug/L					
Molybdenum	ND	0.5	ug/L					
Nickel	ND	1.0	ug/L					
Selenium	ND	1.0	ug/L					
Silver	ND	0.2	ug/L					
Sodium	ND	200	ug/L					
Thallium	ND	0.5	ug/L					
Uranium	ND	0.2	ug/L					
Vanadium	ND	0.5	ug/L					
Zinc	ND	5.0	ug/L					
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*8.59*		*ug/L*	*85.9*	*50-140*			
Surrogate: Terphenyl-d14	*7.63*		*ug/L*	*76.3*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					
Bromomethane	ND	0.5	ug/L					
Carbon Tetrachloride	ND	0.2	ug/L					
Chlorobenzene	ND	0.5	ug/L					
Chloroform	ND	0.5	ug/L					
Dibromochloromethane	ND	0.5	ug/L					
Dichlorodifluoromethane	ND	1.0	ug/L					
1,2-Dichlorobenzene	ND	0.5	ug/L					
1,3-Dichlorobenzene	ND	0.5	ug/L					
1,4-Dichlorobenzene	ND	0.5	ug/L					
1,1-Dichloroethane	ND	0.5	ug/L					
1,2-Dichloroethane	ND	0.5	ug/L					
1,1-Dichloroethylene	ND	0.5	ug/L					
cis-1,2-Dichloroethylene	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,2-Dichloroethylene	ND	0.5	ug/L					
1,2-Dichloropropane	ND	0.5	ug/L					
cis-1,3-Dichloropropylene	ND	0.5	ug/L					
trans-1,3-Dichloropropylene	ND	0.5	ug/L					
1,3-Dichloropropene, total	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L					
Hexane	ND	1.0	ug/L					
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L					
Methyl Isobutyl Ketone	ND	5.0	ug/L					
Methyl tert-butyl ether	ND	2.0	ug/L					
Methylene Chloride	ND	5.0	ug/L					
Styrene	ND	0.5	ug/L					
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L					
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L					
Tetrachloroethylene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
1,1,1-Trichloroethane	ND	0.5	ug/L					
1,1,2-Trichloroethane	ND	0.5	ug/L					
Trichloroethylene	ND	0.5	ug/L					
Trichlorofluoromethane	ND	1.0	ug/L					
Vinyl chloride	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: 4-Bromofluorobenzene	*73.4*		*ug/L*	*91.4*	*50-140*			
Surrogate: Dibromofluoromethane	*63.5*		*ug/L*	*79.3*	*50-140*			
Surrogate: Toluene-d8	*83.8*		*ug/L*	*105*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	2.1	1.0	ug/L	1.6			NC	20	
Barium	74.7	1.0	ug/L	65.5			13.1	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	41.2	10.0	ug/L	37.0			10.6	20	
Cadmium	ND	0.2	ug/L	ND			NC	20	
Chromium	ND	1.0	ug/L	ND			NC	20	
Cobalt	ND	0.5	ug/L	ND			NC	20	
Copper	ND	0.5	ug/L	ND			NC	20	
Lead	ND	0.2	ug/L	ND			NC	20	
Molybdenum	1.4	0.5	ug/L	1.2			10.8	20	
Nickel	ND	1.0	ug/L	ND			NC	20	
Selenium	ND	1.0	ug/L	ND			NC	20	
Silver	ND	0.2	ug/L	ND			NC	20	
Sodium	6610	200	ug/L	5720			14.3	20	
Thallium	ND	0.5	ug/L	ND			NC	20	
Uranium	1.2	0.2	ug/L	1.0			12.1	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	ND	5.0	ug/L	ND			NC	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	6.22	0.5	ug/L	6.10			2.0	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*74.0*		*ug/L*		*92.2*	*50-140*			
Surrogate: Dibromofluoromethane	*61.8*		*ug/L*		*77.2*	*50-140*			
Surrogate: Toluene-d8	*84.2*		*ug/L*		*105*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	576	25	ug/L	ND	81.4	68-117			
F2 PHCs (C10-C16)	1720	100	ug/L	ND	104	60-140			
F3 PHCs (C16-C34)	4070	100	ug/L	ND	110	60-140			
F4 PHCs (C34-C50)	2410	100	ug/L	ND	90.0	60-140			
Metals									
Antimony	47.9	0.5	ug/L	ND	95.8	70-130			
Arsenic	61.8	1.0	ug/L	1.6	120	70-130			
Barium	117	1.0	ug/L	65.5	103	70-130			
Beryllium	50.1	0.5	ug/L	ND	100	70-130			
Boron	78.6	10.0	ug/L	37.0	83.1	70-130			
Cadmium	53.4	0.2	ug/L	ND	107	70-130			
Chromium	54.3	1.0	ug/L	ND	109	70-130			
Cobalt	51.8	0.5	ug/L	ND	104	70-130			
Copper	51.2	0.5	ug/L	ND	102	70-130			
Lead	45.5	0.2	ug/L	ND	91.0	70-130			
Molybdenum	53.7	0.5	ug/L	1.2	105	70-130			
Nickel	52.2	1.0	ug/L	ND	104	70-130			
Selenium	55.7	1.0	ug/L	ND	111	70-130			
Silver	45.1	0.2	ug/L	ND	90.2	70-130			
Sodium	6170	200	ug/L	5720	44.4	70-130			QM-07
Thallium	50.3	0.5	ug/L	ND	101	70-130			
Uranium	56.5	0.2	ug/L	1.0	111	70-130			
Vanadium	55.0	0.5	ug/L	ND	110	70-130			
Zinc	52.1	5.0	ug/L	ND	104	70-130			
Semi-Volatiles									
Acenaphthene	9.07	0.05	ug/L	ND	90.7	50-140			
Acenaphthylene	9.36	0.05	ug/L	ND	93.6	50-140			
Anthracene	9.58	0.01	ug/L	ND	95.8	50-140			
Benzo [a] anthracene	10.1	0.01	ug/L	ND	101	50-140			
Benzo [a] pyrene	9.00	0.01	ug/L	ND	90.0	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	7.51	0.05	ug/L	ND	75.1	50-140			
Benzo [g,h,i] perylene	8.08	0.05	ug/L	ND	80.8	50-140			
Benzo [k] fluoranthene	6.96	0.05	ug/L	ND	69.6	50-140			
Chrysene	8.59	0.05	ug/L	ND	85.9	50-140			
Dibenzo [a,h] anthracene	8.63	0.05	ug/L	ND	86.3	50-140			
Fluoranthene	9.52	0.01	ug/L	ND	95.2	50-140			
Fluorene	9.24	0.05	ug/L	ND	92.4	50-140			
Indeno [1,2,3-cd] pyrene	10.2	0.05	ug/L	ND	102	50-140			
1-Methylnaphthalene	8.10	0.05	ug/L	ND	81.0	50-140			
2-Methylnaphthalene	8.22	0.05	ug/L	ND	82.2	50-140			
Naphthalene	8.43	0.05	ug/L	ND	84.3	50-140			
Phenanthrene	9.44	0.05	ug/L	ND	94.4	50-140			
Pyrene	8.81	0.01	ug/L	ND	88.1	50-140			
Surrogate: 2-Fluorobiphenyl	*9.52*		*ug/L*		*95.2*	*50-140*			
Surrogate: Terphenyl-d14	*7.70*		*ug/L*		*77.0*	*50-140*			
Volatiles									
Acetone	37.9	5.0	ug/L	ND	37.9	50-140			QM-05
Benzene	37.8	0.5	ug/L	ND	94.0	50-140			
Bromodichloromethane	34.7	0.5	ug/L	ND	86.3	50-140			
Bromoform	33.2	0.5	ug/L	ND	82.6	50-140			
Bromomethane	43.0	0.5	ug/L	ND	107	50-140			
Carbon Tetrachloride	32.9	0.2	ug/L	ND	81.4	50-140			
Chlorobenzene	37.1	0.5	ug/L	ND	92.2	50-140			
Chloroform	40.1	0.5	ug/L	ND	100	50-140			
Dibromochloromethane	33.0	0.5	ug/L	ND	81.7	50-140			
Dichlorodifluoromethane	34.8	1.0	ug/L	ND	86.9	50-140			
1,2-Dichlorobenzene	38.0	0.5	ug/L	ND	94.0	50-140			
1,3-Dichlorobenzene	38.1	0.5	ug/L	ND	95.4	50-140			
1,4-Dichlorobenzene	37.1	0.5	ug/L	ND	92.8	50-140			
1,1-Dichloroethane	40.9	0.5	ug/L	ND	101	50-140			
1,2-Dichloroethane	36.2	0.5	ug/L	ND	90.0	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethylene	36.9	0.5	ug/L	ND	91.3	50-140			
cis-1,2-Dichloroethylene	38.3	0.5	ug/L	ND	95.2	50-140			
trans-1,2-Dichloroethylene	36.5	0.5	ug/L	ND	91.2	50-140			
1,2-Dichloropropane	38.2	0.5	ug/L	ND	95.4	50-140			
cis-1,3-Dichloropropylene	35.0	0.5	ug/L	ND	86.6	50-140			
trans-1,3-Dichloropropylene	37.1	0.5	ug/L	ND	92.2	50-140			
Ethylbenzene	33.0	0.5	ug/L	ND	82.1	50-140			
Ethylene dibromide (dibromoethane, 1,2-)	32.1	0.2	ug/L	ND	80.2	50-140			
Hexane	45.0	1.0	ug/L	ND	112	50-140			
Methyl Ethyl Ketone (2-Butanone)	50.9	5.0	ug/L	ND	50.9	50-140			
Methyl Isobutyl Ketone	98.0	5.0	ug/L	ND	98.0	50-140			
Methyl tert-butyl ether	88.8	2.0	ug/L	ND	88.8	50-140			
Methylene Chloride	36.7	5.0	ug/L	ND	91.8	50-140			
Styrene	37.4	0.5	ug/L	ND	93.1	50-140			
1,1,1,2-Tetrachloroethane	33.3	0.5	ug/L	ND	82.9	50-140			
1,1,2,2-Tetrachloroethane	34.4	0.5	ug/L	ND	85.6	50-140			
Tetrachloroethylene	35.5	0.5	ug/L	ND	88.3	50-140			
Toluene	36.0	0.5	ug/L	ND	89.7	50-140			
1,1,1-Trichloroethane	34.8	0.5	ug/L	ND	86.2	50-140			
1,1,2-Trichloroethane	39.4	0.5	ug/L	ND	98.0	50-140			
Trichloroethylene	35.1	0.5	ug/L	ND	86.9	50-140			
Trichlorofluoromethane	33.4	1.0	ug/L	ND	83.5	50-140			
Vinyl chloride	29.0	0.5	ug/L	ND	72.5	50-140			
m,p-Xylenes	69.9	0.5	ug/L	ND	87.1	50-140			
o-Xylene	37.1	0.5	ug/L	ND	92.2	50-140			
Surrogate: 4-Bromofluorobenzene	*81.1*		*ug/L*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*92.3*		*ug/L*		*115*	*50-140*			
Surrogate: Toluene-d8	*80.1*		*ug/L*		*100*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

4: Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

QC Qualifiers:

QM-05 The spike recovery was outside acceptance limits for the matrix spike due to matrix interference.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

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

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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Paracel ID: 2252194

Chain Of Custody
(Lab Use Only)
№ 67627

Client Name: Hallex Environmental Ltd.	Project Ref: E-22-32-2	Page 1 of 1
Contact Name: Contact: Kevin Christian	Quote #:	Turnaround Time
Address: 4999 Victoria Ave. Niagara Falls, ON L2E 4C9 Ph: 905-988-8030	PO #:	☐ 1 day ☐ 3 day
	E-mail: acottle@hallex.ca nmetz@hallex.ca	☐ 2 day ☒ Regular
Telephone:		Date Required:

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☒ Yes ☐ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun: ___ ☐ Other: ___

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	VOC	PHC F1-F4	PAH	Metals
1	MW1	GW		5	Dec 20th	11:35am	X	X	X	X
2	MW2					11:30am	X	X	X	X
3	MW3					11:20am	X	X	X	X
4	MW3-Dup					11:00am	X	X	X	X
5	MW4					10:30am	X	X	X	X
6	MW5					10:20am	X	X	X	X
7	MW6					10:00am	X	X	X	X
8	MW7					9:40am	X	X	X	X
9	MW8					9:30am	X	X	X	X
10										

Comments:

Method of Delivery: Drop box

Relinquished By (Sign):	Received By Driver/Depot: NIAGARA. BHOMENICK	Received at Lab: C-Ply	Verified By: C-Ply
Relinquished By (Print): Maddie Calvert	Date/Time: 20DEC22	Date/Time: Dec 21/22 8:30	Date/Time: Dec 21/22 8:51
Date/Time: December 20, 2022	Temperature: 6 °C	Temperature: 6.4 °C	pH Verified: ☑ By: KM

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2a
Custody: 64785, 71315

Report Date: 31-Mar-2023
Order Date: 13-Mar-2023

Revised Report

Order #: 2311127

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

Paracel ID	Client ID
2311127-01	MW101-SS2
2311127-03	MW103-SS4
2311127-05	MW104-SS2
2311127-06	MW104-SS4
2311127-07	MW104-SS6
2311127-10	MW106B-SS2
2311127-11	MW106B-SS5
2311127-12	MW107-SS2
2311127-13	MW107-SS4
2311127-15	MW108-SS2
2311127-16	MW108-SS4
2311127-18	MW109-SS1
2311127-19	MW109-SS4

Approved By:

Alex Enfield, MSc
Lab Manager

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Grain Size - Sieve only	Based on ASTM D2487	16-Mar-23	20-Mar-23
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	30-Mar-23	30-Mar-23
PHC F1	CWS Tier 1 - P&T GC-FID	16-Mar-23	17-Mar-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	17-Mar-23	20-Mar-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	17-Mar-23	17-Mar-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	17-Mar-23	20-Mar-23
REG 153: pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	20-Mar-23	20-Mar-23
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	16-Mar-23	16-Mar-23
REG 153: VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	16-Mar-23	17-Mar-23
Solids, %	CWS Tier 1 - Gravimetric	17-Mar-23	20-Mar-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
MW104-SS2	Arsenic	1 ug/g	29.2	18 ug/g	18 ug/g
MW104-SS2	cis-1,2-Dichloroethylene	0.05 ug/g	3.08	2.5 ug/g	2.5 ug/g
MW104-SS2	Trichloroethylene	0.05 ug/g	2.96	0.61 ug/g	0.52 ug/g
MW106B-SS2	Lead	1 ug/g	240	120 ug/g	120 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW101-SS2	MW103-SS4	MW104-SS2	MW104-SS4	Criteria:	
	Sample Date:	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-01	2311127-03	2311127-05	2311127-06		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	75.6	82.4	51.3	80.2	-	-
Metals							
Antimony	1 ug/g	<1.0	<1.0	<1.0	-	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	11.8	7.1	29.2	5	18 ug/g	18 ug/g
Barium	1 ug/g	141	111	61.9	-	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	0.7	0.7	1.2	-	10 ug/g	5 ug/g
Boron	5 ug/g	<5.0	<5.0	11.5	-	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	0.7	<0.5	1.0	-	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	32.4	22.7	12.5	-	160 ug/g	160 ug/g
Cobalt	1 ug/g	7.2	12.6	4.6	-	100 ug/g	22 ug/g
Copper	5 ug/g	78.6	20.9	11.4	-	300 ug/g	180 ug/g
Lead	1 ug/g	110	5.9	12.1	-	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	<1.0	<1.0	-	40 ug/g	6.9 ug/g
Nickel	5 ug/g	28.6	28.7	12.2	-	340 ug/g	130 ug/g
Selenium	1 ug/g	<1.0	<1.0	<1.0	-	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	0.4	<0.3	<0.3	-	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	<1.0	<1.0	-	3.3 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	<1.0	<1.0	-	33 ug/g	23 ug/g
Vanadium	10 ug/g	27.4	32.5	23.3	-	86 ug/g	86 ug/g
Zinc	20 ug/g	184	55.1	120	-	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.4 ug/g	0.17 ug/g
Bromodichloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	0.26 ug/g

	Client ID:	MW101-SS2	MW103-SS4	MW104-SS2	MW104-SS4	Criteria:	
	Sample Date:	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-01	2311127-03	2311127-05	2311127-06		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromomethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	<0.05	<0.05	3.08	0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.081 ug/g	0.081 ug/g
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	210 ug/g	4.3 ug/g
Methyl tert-butyl ether	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2 ug/g	0.96 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW101-SS2	MW103-SS4	MW104-SS2	MW104-SS4	Criteria:	
	Sample Date:	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-01	2311127-03	2311127-05	2311127-06		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Styrene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	<0.05	<0.05	2.96	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	30 ug/g	25 ug/g
Dibromofluoromethane	Surrogate	82.4%	86.0%	91.7%	85.7%	-	-
Toluene-d8	Surrogate	96.5%	97.1%	96.1%	96.1%	-	-
4-Bromofluorobenzene	Surrogate	103%	103%	105%	104%	-	-
Hydrocarbons							
F2 PHCs (C10-C16)	4 ug/g	<4	-	<4	-	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	1040	-	20	-	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	1620	-	<6	-	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	<0.02	-	29 ug/g	29 ug/g
Acenaphthylene	0.02 ug/g	<0.02	-	<0.02	-	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	0.03	-	<0.02	-	0.96 ug/g	0.63 ug/g

	Client ID:	MW101-SS2	MW103-SS4	MW104-SS2	MW104-SS4	Criteria:	
	Sample Date:	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	09-Mar-23 10:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-01	2311127-03	2311127-05	2311127-06		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.02 ug/g	0.06	-	<0.02	-	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	0.05	-	<0.02	-	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	0.05	-	<0.02	-	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	0.02	-	<0.02	-	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	0.04	-	<0.02	-	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	<0.02	-	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	0.04	-	<0.02	-	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	<0.02	-	<0.02	-	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	0.05	-	<0.02	-	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	0.02	-	<0.02	-	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	0.02	-	<0.02	-	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	0.04	-	<0.03	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	0.02	-	<0.01	-	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	0.03	-	<0.02	-	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	0.05	-	<0.02	-	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	63.9%	-	42.2% [4]	-	-	-
Terphenyl-d14	Surrogate	66.8%	-	11.0% [4]	-	-	-

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW104-SS6	MW106B-SS2	MW106B-SS5	MW107-SS2	Criteria:	
	Sample Date:	09-Mar-23 10:00	10-Mar-23 10:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-07	2311127-10	2311127-11	2311127-12		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	79.2	78.5	83.5	79.2	-	-
Particle Size							
>19 mm	0.1 %	-	-	<0.1	-	-	-
<19 to >4.75 mm	0.1 %	-	-	<0.1	-	-	-
<4.75 to >2.00 mm	0.1 %	-	-	<0.1	-	-	-
<2.00 to >0.425 mm	0.1 %	-	-	0.1	-	-	-
<0.425 to >0.075 mm	0.1 %	-	-	0.8	-	-	-
<0.075 mm	0.1 %	-	-	99.0	-	-	-
General Inorganics							
pH	0.05 pH Units	-	7.29	-	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	-	<1.0	<1.0	<1.0	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	-	7.9	6.9	5.5	18 ug/g	18 ug/g
Barium	1 ug/g	-	267	67.9	188	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	-	0.8	0.6	1.0	10 ug/g	5 ug/g
Boron	5 ug/g	-	<5.0	8.6	<5.0	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	-	<0.5	<0.5	<0.5	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	-	23.5	20.1	31.2	160 ug/g	160 ug/g
Cobalt	1 ug/g	-	9.5	10.8	15.0	100 ug/g	22 ug/g
Copper	5 ug/g	-	46.9	20.1	23.8	300 ug/g	180 ug/g
Lead	1 ug/g	-	240	4.3	12.1	120 ug/g	120 ug/g
Molybdenum	1 ug/g	-	<1.0	1.2	<1.0	40 ug/g	6.9 ug/g
Nickel	5 ug/g	-	22.9	23.8	36.2	340 ug/g	130 ug/g
Selenium	1 ug/g	-	<1.0	<1.0	<1.0	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	-	<0.3	<0.3	<0.3	50 ug/g	25 ug/g

	Client ID:	MW104-SS6	MW106B-SS2	MW106B-SS5	MW107-SS2	Criteria:	
	Sample Date:	09-Mar-23 10:00	10-Mar-23 10:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-07	2311127-10	2311127-11	2311127-12		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Metals							
Thallium	1 ug/g	-	<1.0	<1.0	<1.0	3.3 ug/g	1 ug/g
Uranium	1 ug/g	-	<1.0	<1.0	<1.0	33 ug/g	23 ug/g
Vanadium	10 ug/g	-	29.8	28.7	42.8	86 ug/g	86 ug/g
Zinc	20 ug/g	-	180	49.4	68.1	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.4 ug/g	0.17 ug/g
Bromodichloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	0.45	<0.05	<0.05	<0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-

	Client ID:	MW104-SS6	MW106B-SS2	MW106B-SS5	MW107-SS2	Criteria:	
	Sample Date:	09-Mar-23 10:00	10-Mar-23 10:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-07	2311127-10	2311127-11	2311127-12		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.081 ug/g	0.081 ug/g
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	210 ug/g	4.3 ug/g
Methyl tert-butyl ether	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	30 ug/g	25 ug/g
Toluene-d8	Surrogate	96.7%	95.7%	128%	97.9%	-	-
Dibromofluoromethane	Surrogate	86.4%	93.5%	109%	94.4%	-	-
4-Bromofluorobenzene	Surrogate	104%	106%	105%	105%	-	-

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW104-SS6	MW106B-SS2	MW106B-SS5	MW107-SS2	Criteria:	
	Sample Date:	09-Mar-23 10:00	10-Mar-23 10:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-07	2311127-10	2311127-11	2311127-12		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	-	<7	<7	<7	65 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	-	<4	<4	<4	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	-	10	<8	<8	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	-	<6	<6	<6	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	-	<0.02	<0.02	<0.02	29 ug/g	29 ug/g
Acenaphthylene	0.02 ug/g	-	<0.02	<0.02	<0.02	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	-	0.02	<0.02	<0.02	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	-	0.08	<0.02	<0.02	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	-	0.09	<0.02	<0.02	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	-	0.07	<0.02	<0.02	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	-	0.07	<0.02	<0.02	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	-	0.03	<0.02	<0.02	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	-	0.09	<0.02	<0.02	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	-	0.03	<0.02	<0.02	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	-	0.13	<0.02	<0.02	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	-	<0.02	<0.02	<0.02	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	-	0.08	<0.02	<0.02	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	-	0.07	<0.02	<0.02	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	-	0.07	<0.02	<0.02	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	-	0.14	-	<0.03	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.04 ug/g	-	-	<0.04	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	-	0.04	<0.01	<0.01	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	-	0.12	<0.02	<0.02	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	-	0.10	<0.02	<0.02	96 ug/g	78 ug/g

	Client ID:	MW104-SS6	MW106B-SS2	MW106B-SS5	MW107-SS2	Criteria:	
	Sample Date:	09-Mar-23 10:00	10-Mar-23 10:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-07	2311127-10	2311127-11	2311127-12		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
2-Fluorobiphenyl	Surrogate	-	62.1%	76.5%	68.6%	-	-
Terphenyl-d14	Surrogate	-	68.9%	73.1%	77.9%	-	-

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW107-SS4	MW108-SS2	MW108-SS4	MW109-SS1	Criteria:	
	Sample Date:	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-13	2311127-15	2311127-16	2311127-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	79.6	75.6	82.5	72.5	-	-
Particle Size							
>19 mm	0.1 %	-	-	<0.1	-	-	-
<19 to >4.75 mm	0.1 %	-	-	<0.1	-	-	-
<4.75 to >2.00 mm	0.1 %	-	-	<0.1	-	-	-
<2.00 to >0.425 mm	0.1 %	-	-	0.2	-	-	-
<0.425 to >0.075 mm	0.1 %	-	-	0.6	-	-	-
<0.075 mm	0.1 %	-	-	99.1	-	-	-
Metals							
Antimony	1 ug/g	<1.0	<1.0	<1.0	<1.0	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	6.4	16.2	8.2	4.7	18 ug/g	18 ug/g
Barium	1 ug/g	135	124	138	88.5	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	0.7	0.8	1.1	<0.5	10 ug/g	5 ug/g
Boron	5 ug/g	<5.0	<5.0	15.7	<5.0	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	<0.5	0.8	<0.5	0.5	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	24.9	19.5	38.3	17.0	160 ug/g	160 ug/g
Cobalt	1 ug/g	13.4	7.6	19.8	6.6	100 ug/g	22 ug/g
Copper	5 ug/g	20.7	34.6	30.8	20.0	300 ug/g	180 ug/g
Lead	1 ug/g	6.4	74.2	8.6	80.7	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	<1.0	1.0	<1.0	40 ug/g	6.9 ug/g
Nickel	5 ug/g	29.1	25.0	45.4	17.4	340 ug/g	130 ug/g
Selenium	1 ug/g	<1.0	<1.0	<1.0	<1.0	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	<0.3	<0.3	<0.3	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	<1.0	<1.0	<1.0	3.3 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	<1.0	<1.0	<1.0	33 ug/g	23 ug/g

	Client ID:	MW107-SS4	MW108-SS2	MW108-SS4	MW109-SS1	Criteria:	
	Sample Date:	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-13	2311127-15	2311127-16	2311127-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Metals							
Vanadium	10 ug/g	34.9	35.4	49.3	26.3	86 ug/g	86 ug/g
Zinc	20 ug/g	56.7	164	83.7	114	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	28 ug/g	28 ug/g
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.4 ug/g	0.17 ug/g
Bromodichloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.081 ug/g	0.081 ug/g

	Client ID:	MW107-SS4	MW108-SS2	MW108-SS4	MW109-SS1	Criteria:	
	Sample Date:	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-13	2311127-15	2311127-16	2311127-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	1.6 ug/g	1.6 ug/g
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.05 ug/g	0.05 ug/g
Hexane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	<0.50	<0.50	<0.50	210 ug/g	4.3 ug/g
Methyl tert-butyl ether	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	<0.05	30 ug/g	25 ug/g
Dibromofluoromethane	Surrogate	86.7%	83.2%	113%	80.7%	-	-
Toluene-d8	Surrogate	97.6%	97.8%	133%	97.8%	-	-
4-Bromofluorobenzene	Surrogate	104%	104%	109%	102%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	<7	65 ug/g	65 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW107-SS4	MW108-SS2	MW108-SS4	MW109-SS1	Criteria:	
	Sample Date:	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-13	2311127-15	2311127-16	2311127-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Hydrocarbons							
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	<4	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	<8	89	<8	122	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	<6	49	<6	137	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	29 ug/g	29 ug/g
Acenaphthylene	0.02 ug/g	<0.02	<0.02	<0.02	0.11	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	<0.02	<0.02	<0.02	0.10	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	<0.02	0.05	<0.02	0.11	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	<0.02	0.06	<0.02	0.21	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	<0.02	0.05	<0.02	0.19	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	0.05	<0.02	0.20	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	<0.02	0.02	<0.02	0.08	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	<0.02	0.06	<0.02	0.12	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	0.02	<0.02	<0.02	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	<0.02	0.11	<0.02	0.23	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	<0.02	<0.02	<0.02	<0.02	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	0.05	<0.02	0.22	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	<0.02	0.05	<0.02	0.04	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	<0.02	0.06	<0.02	0.04	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.03 ug/g	<0.03	0.11	-	0.07	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.04 ug/g	-	-	<0.04	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	<0.01	0.04	<0.01	0.02	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	<0.02	0.11	<0.02	0.13	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	<0.02	0.07	<0.02	0.18	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	73.0%	64.4%	72.5%	70.8%	-	-

	Client ID:	MW107-SS4	MW108-SS2	MW108-SS4	MW109-SS1	Criteria:	
	Sample Date:	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	10-Mar-23 12:00	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-13	2311127-15	2311127-16	2311127-18		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Terphenyl-d14	Surrogate	78.9%	67.2%	77.2%	73.6%	-	-

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW109-SS4				Criteria:	
	Sample Date:	10-Mar-23 12:00				Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-19					
	Matrix:	Soil					
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	77.2	-	-	-	-	-
Particle Size							
>19 mm	0.1 %	<0.1	-	-	-	-	-
<19 to >4.75 mm	0.1 %	<0.1	-	-	-	-	-
<4.75 to >2.00 mm	0.1 %	<0.1	-	-	-	-	-
<2.00 to >0.425 mm	0.1 %	0.2	-	-	-	-	-
<0.425 to >0.075 mm	0.1 %	0.3	-	-	-	-	-
<0.075 mm	0.1 %	99.5	-	-	-	-	-
Metals							
Antimony	1 ug/g	<1.0	-	-	-	50 ug/g	7.5 ug/g
Arsenic	1 ug/g	5.9	-	-	-	18 ug/g	18 ug/g
Barium	1 ug/g	173	-	-	-	670 ug/g	390 ug/g
Beryllium	0.5 ug/g	1.1	-	-	-	10 ug/g	5 ug/g
Boron	5 ug/g	17.4	-	-	-	120 ug/g	120 ug/g
Cadmium	0.5 ug/g	<0.5	-	-	-	1.9 ug/g	1.2 ug/g
Chromium	5 ug/g	39.2	-	-	-	160 ug/g	160 ug/g
Cobalt	1 ug/g	19.8	-	-	-	100 ug/g	22 ug/g
Copper	5 ug/g	27.0	-	-	-	300 ug/g	180 ug/g
Lead	1 ug/g	9.0	-	-	-	120 ug/g	120 ug/g
Molybdenum	1 ug/g	<1.0	-	-	-	40 ug/g	6.9 ug/g
Nickel	5 ug/g	42.3	-	-	-	340 ug/g	130 ug/g
Selenium	1 ug/g	<1.0	-	-	-	5.5 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	-	-	-	50 ug/g	25 ug/g
Thallium	1 ug/g	<1.0	-	-	-	3.3 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	-	-	-	33 ug/g	23 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW109-SS4				Criteria:	
	Sample Date:	10-Mar-23 12:00				Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-19					
	Matrix:	Soil					
	MDL/Units						
Metals							
Vanadium	10 ug/g	52.6	-	-	-	86 ug/g	86 ug/g
Zinc	20 ug/g	83.8	-	-	-	340 ug/g	340 ug/g
Volatiles							
Acetone	0.5 ug/g	<0.50	-	-	-	28 ug/g	28 ug/g
Benzene	0.02 ug/g	<0.02	-	-	-	0.4 ug/g	0.17 ug/g
Bromodichloromethane	0.05 ug/g	<0.05	-	-	-	1.9 ug/g	1.9 ug/g
Bromoform	0.05 ug/g	<0.05	-	-	-	1.7 ug/g	0.26 ug/g
Bromomethane	0.05 ug/g	<0.05	-	-	-	0.05 ug/g	0.05 ug/g
Carbon Tetrachloride	0.05 ug/g	<0.05	-	-	-	0.71 ug/g	0.12 ug/g
Chlorobenzene	0.05 ug/g	<0.05	-	-	-	2.7 ug/g	2.7 ug/g
Chloroform	0.05 ug/g	<0.05	-	-	-	0.18 ug/g	0.18 ug/g
Dibromochloromethane	0.05 ug/g	<0.05	-	-	-	2.9 ug/g	2.9 ug/g
Dichlorodifluoromethane	0.05 ug/g	<0.05	-	-	-	25 ug/g	25 ug/g
1,2-Dichlorobenzene	0.05 ug/g	<0.05	-	-	-	1.7 ug/g	1.7 ug/g
1,3-Dichlorobenzene	0.05 ug/g	<0.05	-	-	-	12 ug/g	6 ug/g
1,4-Dichlorobenzene	0.05 ug/g	<0.05	-	-	-	0.57 ug/g	0.097 ug/g
1,1-Dichloroethane	0.05 ug/g	<0.05	-	-	-	0.6 ug/g	0.6 ug/g
1,2-Dichloroethane	0.05 ug/g	<0.05	-	-	-	0.05 ug/g	0.05 ug/g
1,1-Dichloroethylene	0.05 ug/g	<0.05	-	-	-	0.48 ug/g	0.05 ug/g
cis-1,2-Dichloroethylene	0.05 ug/g	<0.05	-	-	-	2.5 ug/g	2.5 ug/g
trans-1,2-Dichloroethylene	0.05 ug/g	<0.05	-	-	-	2.5 ug/g	0.75 ug/g
1,2-Dichloropropane	0.05 ug/g	<0.05	-	-	-	0.68 ug/g	0.085 ug/g
cis-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	-	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	<0.05	-	-	-	-	-
1,3-Dichloropropene, total	0.05 ug/g	<0.05	-	-	-	0.081 ug/g	0.081 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW109-SS4				Criteria:	
	Sample Date:	10-Mar-23 12:00				Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-19					
	Matrix:	Soil					
	MDL/Units						
Volatiles							
Ethylene dibromide (dibromoethane,	0.05 ug/g	<0.05	-	-	-	0.05 ug/g	0.05 ug/g
Ethylbenzene	0.05 ug/g	<0.05	-	-	-	1.6 ug/g	1.6 ug/g
Hexane	0.05 ug/g	<0.05	-	-	-	88 ug/g	34 ug/g
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	<0.50	-	-	-	88 ug/g	44 ug/g
Methyl Isobutyl Ketone	0.5 ug/g	<0.50	-	-	-	210 ug/g	4.3 ug/g
Methyl tert-butyl ether	0.05 ug/g	<0.05	-	-	-	2.3 ug/g	1.4 ug/g
Methylene Chloride	0.05 ug/g	<0.05	-	-	-	2 ug/g	0.96 ug/g
Styrene	0.05 ug/g	<0.05	-	-	-	43 ug/g	2.2 ug/g
1,1,1,2-Tetrachloroethane	0.05 ug/g	<0.05	-	-	-	0.11 ug/g	0.05 ug/g
1,1,2,2-Tetrachloroethane	0.05 ug/g	<0.05	-	-	-	0.094 ug/g	0.05 ug/g
Tetrachloroethylene	0.05 ug/g	<0.05	-	-	-	2.5 ug/g	2.3 ug/g
Toluene	0.05 ug/g	<0.05	-	-	-	9 ug/g	6 ug/g
1,1,1-Trichloroethane	0.05 ug/g	<0.05	-	-	-	12 ug/g	3.4 ug/g
1,1,2-Trichloroethane	0.05 ug/g	<0.05	-	-	-	0.11 ug/g	0.05 ug/g
Trichloroethylene	0.05 ug/g	<0.05	-	-	-	0.61 ug/g	0.52 ug/g
Trichlorofluoromethane	0.05 ug/g	<0.05	-	-	-	5.8 ug/g	5.8 ug/g
Vinyl chloride	0.02 ug/g	<0.02	-	-	-	0.25 ug/g	0.022 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	-	-	-	-	-
o-Xylene	0.05 ug/g	<0.05	-	-	-	-	-
Xylenes, total	0.05 ug/g	<0.05	-	-	-	30 ug/g	25 ug/g
Toluene-d8	Surrogate	134%	-	-	-	-	-
Dibromofluoromethane	Surrogate	112%	-	-	-	-	-
4-Bromofluorobenzene	Surrogate	110%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	-	-	-	65 ug/g	65 ug/g

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW109-SS4				Criteria:	
	Sample Date:	10-Mar-23 12:00				Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2311127-19					
	Matrix:	Soil					
	MDL/Units						
Hydrocarbons							
F2 PHCs (C10-C16)	4 ug/g	<4	-	-	-	250 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	<8	-	-	-	2500 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	<6	-	-	-	6600 ug/g	5600 ug/g
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	-	-	-	29 ug/g	29 ug/g
Acenaphthylene	0.02 ug/g	<0.02	-	-	-	0.17 ug/g	0.17 ug/g
Anthracene	0.02 ug/g	<0.02	-	-	-	0.74 ug/g	0.74 ug/g
Benzo [a] anthracene	0.02 ug/g	<0.02	-	-	-	0.96 ug/g	0.63 ug/g
Benzo [a] pyrene	0.02 ug/g	<0.02	-	-	-	0.3 ug/g	0.3 ug/g
Benzo [b] fluoranthene	0.02 ug/g	<0.02	-	-	-	0.96 ug/g	0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	-	-	-	9.6 ug/g	7.8 ug/g
Benzo [k] fluoranthene	0.02 ug/g	<0.02	-	-	-	0.96 ug/g	0.78 ug/g
Chrysene	0.02 ug/g	<0.02	-	-	-	9.6 ug/g	7.8 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	-	-	-	0.1 ug/g	0.1 ug/g
Fluoranthene	0.02 ug/g	<0.02	-	-	-	9.6 ug/g	0.69 ug/g
Fluorene	0.02 ug/g	<0.02	-	-	-	69 ug/g	69 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	-	-	-	0.95 ug/g	0.48 ug/g
1-Methylnaphthalene	0.02 ug/g	<0.02	-	-	-	42 ug/g	3.4 ug/g
2-Methylnaphthalene	0.02 ug/g	<0.02	-	-	-	42 ug/g	3.4 ug/g
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	-	-	-	42 ug/g	3.4 ug/g
Naphthalene	0.01 ug/g	<0.01	-	-	-	28 ug/g	0.75 ug/g
Phenanthrene	0.02 ug/g	<0.02	-	-	-	16 ug/g	7.8 ug/g
Pyrene	0.02 ug/g	<0.02	-	-	-	96 ug/g	78 ug/g
2-Fluorobiphenyl	Surrogate	68.3%	-	-	-	-	-
Terphenyl-d14	Surrogate	66.2%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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*	*80.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.23*		*ug/g*	*92.6*	*50-140*			
Volatiles								
Acetone	ND	0.50	ug/g					
Acetone	ND	0.50	ug/g					
Benzene	ND	0.02	ug/g					
Benzene	ND	0.02	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					
Bromomethane	ND	0.05	ug/g					
Bromomethane	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Dibromochloromethane	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Dibromochloromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					
1,2-Dichloropropane	ND	0.05	ug/g					
1,2-Dichloropropane	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					
Trichlorofluoromethane	ND	0.05	ug/g					
Trichlorofluoromethane	ND	0.05	ug/g					
Vinyl chloride	ND	0.02	ug/g					
Vinyl chloride	ND	0.02	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Xylenes, total	ND	0.05	ug/g					
Surrogate: 4-Bromofluorobenzene	*9.65*		*ug/g*	*121*	*50-140*			
Surrogate: Dibromofluoromethane	*8.07*		*ug/g*	*101*	*50-140*			
Surrogate: Toluene-d8	*9.85*		*ug/g*	*123*	*50-140*			
Surrogate: 4-Bromofluorobenzene	*8.60*		*ug/g*	*108*	*50-140*			
Surrogate: Dibromofluoromethane	*7.47*		*ug/g*	*93.4*	*50-140*			
Surrogate: Toluene-d8	*7.58*		*ug/g*	*94.8*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.69	0.05	pH Units	7.72			0.4	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	23	4	ug/g	52			75.3	30	QR-04
F3 PHCs (C16-C34)	63	8	ug/g	116			58.5	30	QR-04
F4 PHCs (C34-C50)	432	6	ug/g	637			38.4	30	QR-04
Metals									
Antimony	ND	1.0	ug/g	1.1			NC	30	
Arsenic	3.3	1	ug/g	2.9			12.6	30	
Arsenic	18.9	1.0	ug/g	17.7			6.7	30	
Barium	77.0	1.0	ug/g	77.0			0.1	30	
Beryllium	0.6	0.5	ug/g	0.5			9.0	30	
Boron	8.0	5.0	ug/g	9.3			14.8	30	
Cadmium	3.2	0.5	ug/g	3.1			4.5	30	
Chromium	28.5	5.0	ug/g	30.5			6.8	30	
Cobalt	7.5	1.0	ug/g	7.4			2.0	30	
Copper	65.0	5.0	ug/g	63.3			2.6	30	
Lead	62.8	1.0	ug/g	62.4			0.6	30	
Molybdenum	1.1	1.0	ug/g	1.1			4.9	30	
Nickel	14.4	5.0	ug/g	14.3			1.1	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	31.6	10.0	ug/g	31.7			0.2	30	
Zinc	779	20.0	ug/g	757			2.9	30	
Physical Characteristics									
% Solids	83.6	0.1	% by Wt.	84.4			0.9	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
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	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.03*		*ug/g*		*64.8*	*50-140*			
Surrogate: Terphenyl-d14	*1.33*		*ug/g*		*83.6*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*10.2*		*ug/g*		*106*	*50-140*			
Surrogate: Dibromofluoromethane	*10.3*		*ug/g*		*108*	*50-140*			
Surrogate: Toluene-d8	*12.3*		*ug/g*		*128*	*50-140*			
Surrogate: 4-Bromofluorobenzene	*7.16*		*ug/g*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*6.31*		*ug/g*		*92.7*	*50-140*			
Surrogate: Toluene-d8	*6.52*		*ug/g*		*95.7*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	193	7	ug/g	ND	96.6	80-120			
F2 PHCs (C10-C16)	140	4	ug/g	52	90.1	60-140			
F3 PHCs (C16-C34)	372	8	ug/g	116	106	60-140			
F4 PHCs (C34-C50)	219	6	ug/g	ND	130	60-140			
Metals									
Antimony	38.1	1.0	ug/g	ND	75.3	70-130			
Arsenic	140	1	ug/g	2.9	110	70-130			
Arsenic	115	1.0	ug/g	ND	92.3	70-130			
Barium	92.2	1.0	ug/g	30.8	123	70-130			
Beryllium	61.2	0.5	ug/g	ND	122	70-130			
Boron	59.6	5.0	ug/g	ND	112	70-130			
Cadmium	61.8	0.5	ug/g	1.2	121	70-130			
Chromium	120	5.0	ug/g	7.7	89.7	70-130			
Cobalt	114	1.0	ug/g	2.7	89.0	70-130			
Copper	299	5.0	ug/g	197	81.4	70-130			
Lead	132	1.0	ug/g	11.1	96.9	70-130			
Molybdenum	112	1.0	ug/g	ND	89.7	70-130			
Nickel	116	5.0	ug/g	5.5	88.4	70-130			
Selenium	51.9	1.0	ug/g	ND	103	70-130			
Silver	55.9	0.3	ug/g	ND	112	70-130			
Thallium	52.8	1.0	ug/g	ND	105	70-130			
Uranium	55.8	1.0	ug/g	ND	111	70-130			
Vanadium	125	10.0	ug/g	14.8	88.4	70-130			
Zinc	144	20.0	ug/g	46.6	78.1	70-130			
Semi-Volatiles									
Acenaphthene	0.143	0.02	ug/g	ND	71.5	50-140			
Acenaphthylene	0.116	0.02	ug/g	ND	58.2	50-140			
Anthracene	0.123	0.02	ug/g	ND	61.7	50-140			
Benzo [a] anthracene	0.124	0.02	ug/g	ND	61.9	50-140			
Benzo [a] pyrene	0.140	0.02	ug/g	ND	70.0	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	0.173	0.02	ug/g	ND	86.9	50-140			
Benzo [g,h,i] perylene	0.138	0.02	ug/g	ND	69.3	50-140			
Benzo [k] fluoranthene	0.143	0.02	ug/g	ND	71.6	50-140			
Chrysene	0.177	0.02	ug/g	ND	88.9	50-140			
Dibenzo [a,h] anthracene	0.147	0.02	ug/g	ND	73.6	50-140			
Fluoranthene	0.129	0.02	ug/g	ND	64.7	50-140			
Fluorene	0.116	0.02	ug/g	ND	58.0	50-140			
Indeno [1,2,3-cd] pyrene	0.149	0.02	ug/g	ND	74.5	50-140			
1-Methylnaphthalene	0.155	0.02	ug/g	ND	77.9	50-140			
2-Methylnaphthalene	0.168	0.02	ug/g	ND	84.4	50-140			
Naphthalene	0.163	0.01	ug/g	ND	81.5	50-140			
Phenanthrene	0.136	0.02	ug/g	ND	67.9	50-140			
Pyrene	0.127	0.02	ug/g	ND	63.9	50-140			
Surrogate: 2-Fluorobiphenyl	*1.11*		*ug/g*		*69.7*	*50-140*			
Surrogate: Terphenyl-d14	*1.23*		*ug/g*		*77.1*	*50-140*			
Volatiles									
Acetone	10.6	0.50	ug/g	ND	106	50-140			
Acetone	11.5	0.50	ug/g	ND	115	50-140			
Benzene	3.79	0.02	ug/g	ND	94.7	60-130			
Benzene	3.81	0.02	ug/g	ND	94.9	60-130			
Bromodichloromethane	3.82	0.05	ug/g	ND	95.4	60-130			
Bromodichloromethane	4.05	0.05	ug/g	ND	101	60-130			
Bromoform	4.16	0.05	ug/g	ND	104	60-130			
Bromoform	4.04	0.05	ug/g	ND	100	60-130			
Bromomethane	4.88	0.05	ug/g	ND	122	50-140			
Bromomethane	4.50	0.05	ug/g	ND	113	50-140			
Carbon Tetrachloride	3.69	0.05	ug/g	ND	92.3	60-130			
Carbon Tetrachloride	3.94	0.05	ug/g	ND	97.5	60-130			
Chlorobenzene	4.03	0.05	ug/g	ND	101	60-130			
Chlorobenzene	3.83	0.05	ug/g	ND	95.4	60-130			
Chloroform	3.84	0.05	ug/g	ND	96.0	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloroform	4.18	0.05	ug/g	ND	105	60-130			
Dibromochloromethane	4.23	0.05	ug/g	ND	106	60-130			
Dibromochloromethane	3.86	0.05	ug/g	ND	95.6	60-130			
Dichlorodifluoromethane	2.94	0.05	ug/g	ND	73.5	50-140			
Dichlorodifluoromethane	4.63	0.05	ug/g	ND	116	50-140			
1,2-Dichlorobenzene	3.54	0.05	ug/g	ND	88.6	60-130			
1,2-Dichlorobenzene	3.92	0.05	ug/g	ND	97.0	60-130			
1,3-Dichlorobenzene	3.66	0.05	ug/g	ND	91.5	60-130			
1,3-Dichlorobenzene	3.86	0.05	ug/g	ND	96.4	60-130			
1,4-Dichlorobenzene	3.36	0.05	ug/g	ND	84.0	60-130			
1,4-Dichlorobenzene	3.86	0.05	ug/g	ND	96.4	60-130			
1,1-Dichloroethane	4.20	0.05	ug/g	ND	105	60-130			
1,1-Dichloroethane	3.99	0.05	ug/g	ND	98.7	60-130			
1,2-Dichloroethane	3.67	0.05	ug/g	ND	91.8	60-130			
1,2-Dichloroethane	3.84	0.05	ug/g	ND	95.5	60-130			
1,1-Dichloroethylene	4.03	0.05	ug/g	ND	101	60-130			
1,1-Dichloroethylene	3.75	0.05	ug/g	ND	92.7	60-130			
cis-1,2-Dichloroethylene	3.82	0.05	ug/g	ND	95.6	60-130			
cis-1,2-Dichloroethylene	3.80	0.05	ug/g	ND	94.5	60-130			
trans-1,2-Dichloroethylene	3.69	0.05	ug/g	ND	92.3	60-130			
trans-1,2-Dichloroethylene	3.67	0.05	ug/g	ND	91.7	60-130			
1,2-Dichloropropane	3.68	0.05	ug/g	ND	92.1	60-130			
1,2-Dichloropropane	3.88	0.05	ug/g	ND	97.1	60-130			
cis-1,3-Dichloropropylene	3.62	0.05	ug/g	ND	90.6	60-130			
cis-1,3-Dichloropropylene	3.52	0.05	ug/g	ND	87.1	60-130			
trans-1,3-Dichloropropylene	3.77	0.05	ug/g	ND	94.3	60-130			
trans-1,3-Dichloropropylene	3.73	0.05	ug/g	ND	92.7	60-130			
Ethylbenzene	3.99	0.05	ug/g	ND	99.9	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	3.97	0.05	ug/g	ND	99.2	60-130			
Ethylbenzene	3.72	0.05	ug/g	ND	92.6	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	3.82	0.05	ug/g	ND	95.6	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hexane	4.31	0.05	ug/g	ND	108	60-130			
Hexane	3.22	0.05	ug/g	ND	80.5	60-130			
Methyl Ethyl Ketone (2-Butanone)	11.0	0.50	ug/g	ND	110	50-140			
Methyl Ethyl Ketone (2-Butanone)	10.6	0.50	ug/g	ND	106	50-140			
Methyl Isobutyl Ketone	9.42	0.50	ug/g	ND	94.2	50-140			
Methyl Isobutyl Ketone	10.3	0.50	ug/g	ND	103	50-140			
Methyl tert-butyl ether	8.07	0.05	ug/g	ND	80.7	50-140			
Methyl tert-butyl ether	9.98	0.05	ug/g	ND	98.8	50-140			
Methylene Chloride	4.26	0.05	ug/g	ND	106	60-130			
Methylene Chloride	3.93	0.05	ug/g	ND	98.2	60-130			
Styrene	4.06	0.05	ug/g	ND	101	60-130			
Styrene	3.78	0.05	ug/g	ND	94.2	60-130			
1,1,1,2-Tetrachloroethane	4.00	0.05	ug/g	ND	100	60-130			
1,1,1,2-Tetrachloroethane	3.82	0.05	ug/g	ND	95.1	60-130			
1,1,2,2-Tetrachloroethane	4.22	0.05	ug/g	ND	106	60-130			
1,1,2,2-Tetrachloroethane	3.79	0.05	ug/g	ND	94.3	60-130			
Tetrachloroethylene	4.20	0.05	ug/g	ND	105	60-130			
Tetrachloroethylene	3.66	0.05	ug/g	ND	91.1	60-130			
Toluene	4.08	0.05	ug/g	ND	102	60-130			
Toluene	3.67	0.05	ug/g	ND	91.3	60-130			
1,1,1-Trichloroethane	3.71	0.05	ug/g	ND	92.9	60-130			
1,1,1-Trichloroethane	4.04	0.05	ug/g	ND	99.9	60-130			
1,1,2-Trichloroethane	3.71	0.05	ug/g	ND	92.9	60-130			
1,1,2-Trichloroethane	3.94	0.05	ug/g	ND	98.0	60-130			
Trichloroethylene	3.61	0.05	ug/g	ND	90.2	60-130			
Trichloroethylene	3.86	0.05	ug/g	ND	95.5	60-130			
Trichlorofluoromethane	4.26	0.05	ug/g	ND	107	50-140			
Trichlorofluoromethane	4.00	0.05	ug/g	ND	99.9	50-140			
Vinyl chloride	3.33	0.02	ug/g	ND	83.2	50-140			
Vinyl chloride	3.93	0.02	ug/g	ND	97.8	50-140			
m,p-Xylenes	8.25	0.05	ug/g	ND	103	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	7.37	0.05	ug/g	ND	91.8	60-130			
o-Xylene	4.20	0.05	ug/g	ND	105	60-130			
o-Xylene	3.82	0.05	ug/g	ND	95.0	60-130			
Surrogate: 4-Bromofluorobenzene	*7.57*		*ug/g*		*94.6*	*50-140*			
Surrogate: Dibromofluoromethane	*7.88*		*ug/g*		*98.6*	*50-140*			
Surrogate: Toluene-d8	*8.07*		*ug/g*		*101*	*50-140*			
Surrogate: 4-Bromofluorobenzene	*8.42*		*ug/g*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*9.99*		*ug/g*		*125*	*50-140*			
Surrogate: Toluene-d8	*7.97*		*ug/g*		*99.7*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

4: Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

QC Qualifiers:

QR-04 Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions:

None

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 13-Mar-2023

Client PO:

Project Description: E-22-32-2a

Work Order Revisions / Comments:

REVISION 1 - This report includes additional analysis as per the client.

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 unlesss otherwise noted.

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

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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№ 64785

Page 1 of 2

Client Name:

Contact Name: Hallex Environmental Ltd.
Contact: Kevin Christian

Address: 4999 Victoria Ave.
Niagara Falls, ON L2E 4C9

Telephone: Ph: 905-988-8030

Project Ref: E-22-32-2a

Quote #:

PO #:

E-mail: kchristian@hallex.ca
nmetz@hallex.ca

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	pH	VOC	PAH	PHC (F1-F4)	Metals (as req'd)	Hold	PHC (F1-F4)				
1	MW101-SS2	S		3	March 9th	10 am		X	X	X	X						
2	MW101-SS5			3								X					
3	MW103-SS4			3				X			X						
4	MW103-SS6			3								X					
5	MW104-SS2			3				X	X	X	X						
6	MW104-SS4			3													
7	MW104-SS6			3				X									
8	MW106A-SS4			3	March 10th	10 am						X					
9	MW106A-SS7			3								X					
10	MW106B-SS2			3			X	X	X		X		X				

Comments:

Method of Delivery: WALK IN

Relinquished By (Sign): A. Coffle	Received By Driver/Depot: NIAGARA	Received at Lab: C-PLY	Verified By: C-PLY
Relinquished By (Print): Amber Coffle	Date/Time: 13MAR23 1520	Date/Time: 03/14/23 8:30	Date/Time: 03/14/23 10:04
Date/Time: March 13th, 2:59pm	Temperature: 1D °C	Temperature: 8.6 °C	pH Verified: ☐ By: —

Chain of Custody (Blank).xlsx

Revision 4.0

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Paracel ID: 2311127

Chain Of Custody
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№ 71315

Page 2 of 2

Client Name:	Hallex Environmental Ltd.
Contact Name:	Contact: Kevin Christian
Address:	4999 Victoria Ave. Niagara Falls, ON L2E 4C9
Telephone:	Ph: 905-988-8030
Project Ref:	B-22-32-2a
Quote #:	
PO #:	
E-mail:	kchristian@hallex.ca; nmetz@hallex.ca

Turnaround Time
☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Date Required:

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☒ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	pH	VOC	PAH	PHC (F2-F4)	Metals (by ICP)	Hold	PHC (F1-F4)	Grain Size
1	MW106B - SS5	S		3	March 10th	12 am		X	X		X		X	X
2	MW107 - SS2			3				X	X		X		X	
3	MW107-SS4			3				X	X		X		X	
4	MW107-SS6			3								X		
5	MW108-SS2			3				X	X		X		X	
6	MW108-SS4			3				X	X		X		X	X
7	MW108-SS6			3								X		
8	MW109-SS1			2				X	X		X		X	
9	MW109-SS4			3				X	X		X		X	X
10	MW109-SS6			3								X		

Comments:

Method of Delivery: WALK IN

Relinquished By (Sign):	Received By Driver/Depot: NIAGARA BHOMENIEK	Received at Lab: C-Ply	Verified By: C-Ply
Relinquished By (Print): A. Cottle	Date/Time: 13MAR23 1520	Date/Time: 03/14/23 8:30	Date/Time: 03/14/23 10:04
Date/Time: March 13th, 2:59pm	Temperature: 10 °C	Temperature: 8.6 °C	pH Verified: ☐ By:

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2a
Custody: 67653

Report Date: 31-Mar-2023
Order Date: 27-Mar-2023

Order #: 2313107

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

Paracel ID	Client ID
2313107-01	TP106-SS3
2313107-02	MW104-SS4

Approved By:

Alex Enfield, MSc
Lab Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	30-Mar-23	30-Mar-23
Solids, %	CWS Tier 1 - Gravimetric	31-Mar-23	31-Mar-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine

Certificate of Analysis

Report Date: 31-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 27-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	TP106-SS3	MW104-SS4	-	-	Criteria:	
	Sample Date:	15-Mar-23 11:00	09-Mar-23 15:00	-	-	Reg 153/04 -T2 Ind/Com, fine	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2313107-01	2313107-02	-	-		
	Matrix:	Soil	Soil	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	87.6	87.0	-	-	-	-
Metals							
Arsenic	1 ug/g	-	6	-	-	18 ug/g	18 ug/g
Cadmium	0.5 ug/g	<0.5	-	-	-	1.9 ug/g	1.2 ug/g

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals								
Arsenic	ND	1	ug/g					
Cadmium	ND	0.5	ug/g					

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Arsenic	3.3	1	ug/g	2.9			12.6	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Physical Characteristics									
% Solids	100	0.1	% by Wt.	100			0.0	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Arsenic	140	1	ug/g	2.9	110	70-130			
Cadmium	138	0.5	ug/g	ND	110	70-130			

Qualifier Notes:

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 unlesss otherwise noted.

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

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Paracel ID: 2313107

Chain Of Custody
(Lab Use Only)
№ 67653

Client Name: Hallex	Project Ref: E-22-32-2a
Contact Name: Kevin Christian	Quote #:
Address: 4999 Victoria Ave. Niagara Falls ON.	PO #:
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Page 1 of 1

Turnaround Time
☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Date Required: _____

☒ REG 153/04 ☐ REG 406/19

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm ☐ Other: Mun: _____

☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☒ Yes ☐ No

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	Required Analysis: Cadmium	Required Analysis: Arsenic
1	TP106-SS3	S		2	March 15	11 am	X	
2	MW104-SS4	S		2	March 14	3pm		X
3		~~S~~						
4		~~S~~						
5		~~S~~						
6								
7								
8								
9								
10								

Comments:

Method of Delivery: WALK IN

Relinquished By (Sign): A. Cottle	Received By Driver/Depot: NIAGARA BHOMENICK	Received at Lab: C-Ply	Verified By: C-Ply
Relinquished By (Print): Amber Cottle	Date/Time: 27 MAR 23 8:45	Date/Time: 03/28/23 8:25	Date/Time: 03/28/23 8:53
Date/Time: March 17th 8:30am	Temperature: 7.4 °C	Temperature: 8.6 °C	pH Verified: ☐ By:

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2a
Custody: 67652

Report Date: 23-Mar-2023
Order Date: 17-Mar-2023

Order #: 2312003

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

Paracel ID	Client ID
2312003-01	TP102-SS2
2312003-02	TP103-SS2
2312003-03	TP105-SS1
2312003-04	TP106-SS2
2312003-05	TP107-SS4
2312003-06	TP108-SS2
2312003-07	TP108-SS4
2312003-08	TP109-SS4

Approved By:

Milan Ralitsch, PhD

Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	21-Mar-23	21-Mar-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	20-Mar-23	21-Mar-23
REG 153: VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	21-Mar-23	23-Mar-23
Solids, %	CWS Tier 1 - Gravimetric	20-Mar-23	21-Mar-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	-	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	TP102-SS2	TP103-SS2	TP105-SS1	TP106-SS2	-	-
	Sample Date:	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00		
	Sample ID:	2312003-01	2312003-02	2312003-03	2312003-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	75.2	79.1	83.2	75.3	-	-
Metals							
Antimony	1 ug/g	<1.0	<1.0	-	<1.0	-	-
Arsenic	1 ug/g	9.4	4.7	-	13.6	-	-
Barium	1 ug/g	106	113	-	195	-	-
Beryllium	0.5 ug/g	0.9	0.7	-	0.7	-	-
Boron	5 ug/g	10.6	7.5	-	6.4	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	-	2.0	-	-
Chromium	5 ug/g	23.8	22.8	-	23.1	-	-
Cobalt	1 ug/g	9.4	10.0	-	9.7	-	-
Copper	5 ug/g	30.8	16.4	-	61.7	-	-
Lead	1 ug/g	40.8	12.2	-	65.2	-	-
Molybdenum	1 ug/g	<1.0	<1.0	-	<1.0	-	-
Nickel	5 ug/g	24.7	19.9	-	39.8	-	-
Selenium	1 ug/g	<1.0	<1.0	-	<1.0	-	-
Silver	0.3 ug/g	<0.3	<0.3	-	4.5	-	-
Thallium	1 ug/g	<1.0	<1.0	-	<1.0	-	-
Uranium	1 ug/g	<1.0	<1.0	-	<1.0	-	-
Vanadium	10 ug/g	32.6	33.8	-	25.3	-	-
Zinc	20 ug/g	98.7	53.6	-	319	-	-
Semi-Volatiles							
Acenaphthene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Acenaphthylene	0.02 ug/g	0.03	<0.02	<0.02	-	-	-
Anthracene	0.02 ug/g	0.04	<0.02	<0.02	-	-	-
Benzo [a] anthracene	0.02 ug/g	0.13	0.05	<0.02	-	-	-

	Client ID:	TP102-SS2	TP103-SS2	TP105-SS1	TP106-SS2	-	-
	Sample Date:	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00		
	Sample ID:	2312003-01	2312003-02	2312003-03	2312003-04		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.02 ug/g	0.14	0.12	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g	0.11	0.10	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g	0.08	0.08	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g	0.03	0.03	<0.02	-	-	-
Chrysene	0.02 ug/g	0.15	0.07	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Fluoranthene	0.02 ug/g	0.21	0.06	<0.02	-	-	-
Fluorene	0.02 ug/g	<0.02	<0.02	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g	0.12	0.12	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g	0.12	0.02	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g	0.10	0.02	<0.02	-	-	-
Methylnaphthalene (1&2)	0.03 ug/g	0.21	0.04	<0.03	-	-	-
Naphthalene	0.01 ug/g	0.05	0.02	<0.01	-	-	-
Phenanthrene	0.02 ug/g	0.18	0.06	<0.02	-	-	-
Pyrene	0.02 ug/g	0.14	0.04	<0.02	-	-	-
2-Fluorobiphenyl	Surrogate	70.5%	66.9%	63.5%	-	-	-
Terphenyl-d14	Surrogate	61.7%	63.4%	65.1%	-	-	-

	Client ID:	TP107-SS4	TP108-SS2	TP108-SS4	TP109-SS4	-	-
	Sample Date:	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00		
	Sample ID:	2312003-05	2312003-06	2312003-07	2312003-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	69.4	87.1	81.7	80.5	-	-
Metals							
Antimony	1 ug/g	<1.0	<1.0	-	-	-	-
Arsenic	1 ug/g	7.2	4.4	-	-	-	-
Barium	1 ug/g	94.8	44.2	-	-	-	-
Beryllium	0.5 ug/g	0.7	<0.5	-	-	-	-
Boron	5 ug/g	11.4	7.9	-	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	-	-	-	-
Chromium	5 ug/g	21.6	31.6	-	-	-	-
Cobalt	1 ug/g	6.9	4.0	-	-	-	-
Copper	5 ug/g	24.6	33.6	-	-	-	-
Lead	1 ug/g	23.5	59.8	-	-	-	-
Molybdenum	1 ug/g	<1.0	<1.0	-	-	-	-
Nickel	5 ug/g	19.8	20.0	-	-	-	-
Selenium	1 ug/g	<1.0	<1.0	-	-	-	-
Silver	0.3 ug/g	<0.3	<0.3	-	-	-	-
Thallium	1 ug/g	<1.0	<1.0	-	-	-	-
Uranium	1 ug/g	<1.0	<1.0	-	-	-	-
Vanadium	10 ug/g	28.8	11.0	-	-	-	-
Zinc	20 ug/g	65.1	132	-	-	-	-
Volatiles							
Acetone	0.5 ug/g	-	-	<0.50	<0.50	-	-
Benzene	0.02 ug/g	-	-	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Bromoform	0.05 ug/g	-	-	<0.05	<0.05	-	-

	Client ID:	TP107-SS4	TP108-SS2	TP108-SS4	TP109-SS4	-	-
	Sample Date:	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00		
	Sample ID:	2312003-05	2312003-06	2312003-07	2312003-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Bromomethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g	-	-	<0.05	<0.05	-	-
Chlorobenzene	0.05 ug/g	-	-	<0.05	<0.05	-	-
Chloroform	0.05 ug/g	-	-	<0.05	<0.05	-	-
Dibromochloromethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g	-	-	<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g	-	-	<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g	-	-	<0.05	<0.05	-	-
Ethylene dibromide (dibromoethane,	0.05 ug/g	-	-	<0.05	<0.05	-	-
Hexane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.5 ug/g	-	-	<0.50	<0.50	-	-
Methyl Isobutyl Ketone	0.5 ug/g	-	-	<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g	-	-	<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g	-	-	<0.05	<0.05	-	-

	Client ID:	TP107-SS4	TP108-SS2	TP108-SS4	TP109-SS4	-	-
	Sample Date:	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00	15-Mar-23 10:00		
	Sample ID:	2312003-05	2312003-06	2312003-07	2312003-08		
	Matrix:	Soil	Soil	Soil	Soil		
	MDL/Units						
Volatiles							
Styrene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
Toluene	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g	-	-	<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g	-	-	<0.02	<0.02	-	-
m,p-Xylenes	0.05 ug/g	-	-	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g	-	-	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g	-	-	<0.05	<0.05	-	-
Toluene-d8	Surrogate	-	-	99.3%	99.1%	-	-
4-Bromofluorobenzene	Surrogate	-	-	102%	102%	-	-
Dibromofluoromethane	Surrogate	-	-	105%	108%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
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					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1-Methylnaphthalene	ND	0.02	ug/g					
2-Methylnaphthalene	ND	0.02	ug/g					
Methylnaphthalene (1&2)	ND	0.03	ug/g					
Naphthalene	ND	0.01	ug/g					
Phenanthrene	ND	0.02	ug/g					
Pyrene	ND	0.02	ug/g					
Surrogate: 2-Fluorobiphenyl	*0.396*		*ug/g*	*79.2*	*50-140*			
Surrogate: Terphenyl-d14	*0.444*		*ug/g*	*88.7*	*50-140*			
Volatiles								
Acetone	ND	0.50	ug/g					
Benzene	ND	0.02	ug/g					
Bromodichloromethane	ND	0.05	ug/g					
Bromoform	ND	0.05	ug/g					
Bromomethane	ND	0.05	ug/g					
Carbon Tetrachloride	ND	0.05	ug/g					
Chlorobenzene	ND	0.05	ug/g					
Chloroform	ND	0.05	ug/g					
Dibromochloromethane	ND	0.05	ug/g					
Dichlorodifluoromethane	ND	0.05	ug/g					
1,2-Dichlorobenzene	ND	0.05	ug/g					
1,3-Dichlorobenzene	ND	0.05	ug/g					
1,4-Dichlorobenzene	ND	0.05	ug/g					
1,1-Dichloroethane	ND	0.05	ug/g					
1,2-Dichloroethane	ND	0.05	ug/g					
1,1-Dichloroethylene	ND	0.05	ug/g					
cis-1,2-Dichloroethylene	ND	0.05	ug/g					
trans-1,2-Dichloroethylene	ND	0.05	ug/g					
1,2-Dichloropropane	ND	0.05	ug/g					
cis-1,3-Dichloropropylene	ND	0.05	ug/g					
trans-1,3-Dichloropropylene	ND	0.05	ug/g					
1,3-Dichloropropene, total	ND	0.05	ug/g					
Ethylbenzene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g					
Hexane	ND	0.05	ug/g					
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g					
Methyl Isobutyl Ketone	ND	0.50	ug/g					
Methyl tert-butyl ether	ND	0.05	ug/g					
Methylene Chloride	ND	0.05	ug/g					
Styrene	ND	0.05	ug/g					
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g					
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g					
Tetrachloroethylene	ND	0.05	ug/g					
Toluene	ND	0.05	ug/g					
1,1,1-Trichloroethane	ND	0.05	ug/g					
1,1,2-Trichloroethane	ND	0.05	ug/g					
Trichloroethylene	ND	0.05	ug/g					
Trichlorofluoromethane	ND	0.05	ug/g					
Vinyl chloride	ND	0.02	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: 4-Bromofluorobenzene	*8.14*		*ug/g*	*102*	*50-140*			
Surrogate: Dibromofluoromethane	*9.09*		*ug/g*	*114*	*50-140*			
Surrogate: Toluene-d8	*7.87*		*ug/g*	*98.4*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.7	1.0	ug/g	3.0			19.4	30	
Barium	90.1	1.0	ug/g	88.3			2.0	30	
Beryllium	0.6	0.5	ug/g	0.5			19.1	30	
Boron	22.0	5.0	ug/g	18.1			19.8	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	18.0	5.0	ug/g	17.0			5.7	30	
Cobalt	6.5	1.0	ug/g	6.2			4.3	30	
Copper	15.8	5.0	ug/g	15.2			4.2	30	
Lead	13.4	1.0	ug/g	12.7			5.3	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	16.6	5.0	ug/g	15.8			4.7	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	0.4	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	1.2	1.0	ug/g	ND			NC	30	
Vanadium	25.2	10.0	ug/g	24.0			4.7	30	
Zinc	67.1	20.0	ug/g	65.4			2.5	30	
Physical Characteristics									
% Solids	96.1	0.1	% by Wt.	95.7			0.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	0.024			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	0.026	0.02	ug/g	0.027			2.8	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*0.392*		*ug/g*		*74.4*	*50-140*			
Surrogate: Terphenyl-d14	*0.441*		*ug/g*		*83.6*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*12.3*		*ug/g*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*13.2*		*ug/g*		*109*	*50-140*			
Surrogate: Toluene-d8	*11.9*		*ug/g*		*98.8*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	120	1.0	ug/g	ND	95.6	70-130			
Arsenic	139	1.0	ug/g	3.0	109	70-130			
Barium	218	1.0	ug/g	88.3	104	70-130			
Beryllium	116	0.5	ug/g	0.5	92.5	70-130			
Boron	136	5.0	ug/g	18.1	94.4	70-130			
Cadmium	128	0.5	ug/g	ND	102	70-130			
Chromium	147	5.0	ug/g	17.0	104	70-130			
Cobalt	129	1.0	ug/g	6.2	98.6	70-130			
Copper	144	5.0	ug/g	15.2	103	70-130			
Lead	131	1.0	ug/g	12.7	95.0	70-130			
Molybdenum	142	1.0	ug/g	ND	114	70-130			
Nickel	144	5.0	ug/g	15.8	103	70-130			
Selenium	138	1.0	ug/g	ND	110	70-130			
Silver	117	0.3	ug/g	ND	93.9	70-130			
Thallium	122	1.0	ug/g	ND	97.5	70-130			
Uranium	127	1.0	ug/g	ND	102	70-130			
Vanadium	152	10.0	ug/g	24.0	102	70-130			
Zinc	189	20.0	ug/g	65.4	99.0	70-130			
Semi-Volatiles									
Acenaphthene	0.531	0.02	ug/g	ND	101	50-140			
Acenaphthylene	0.516	0.02	ug/g	ND	97.8	50-140			
Anthracene	0.488	0.02	ug/g	ND	92.5	50-140			
Benzo [a] anthracene	0.557	0.02	ug/g	ND	106	50-140			
Benzo [a] pyrene	0.516	0.02	ug/g	ND	97.8	50-140			
Benzo [b] fluoranthene	0.432	0.02	ug/g	ND	81.9	50-140			
Benzo [g,h,i] perylene	0.466	0.02	ug/g	ND	88.5	50-140			
Benzo [k] fluoranthene	0.405	0.02	ug/g	ND	76.8	50-140			
Chrysene	0.515	0.02	ug/g	ND	97.6	50-140			
Dibenzo [a,h] anthracene	0.483	0.02	ug/g	ND	91.6	50-140			
Fluoranthene	0.548	0.02	ug/g	ND	104	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Fluorene	0.577	0.02	ug/g	ND	109	50-140			
Indeno [1,2,3-cd] pyrene	0.590	0.02	ug/g	ND	112	50-140			
1-Methylnaphthalene	0.572	0.02	ug/g	ND	108	50-140			
2-Methylnaphthalene	0.563	0.02	ug/g	0.024	102	50-140			
Naphthalene	0.542	0.01	ug/g	ND	103	50-140			
Phenanthrene	0.531	0.02	ug/g	0.027	95.8	50-140			
Pyrene	0.499	0.02	ug/g	ND	94.6	50-140			
Surrogate: 2-Fluorobiphenyl	*0.370*		*ug/g*		*70.2*	*50-140*			
Surrogate: Terphenyl-d14	*0.377*		*ug/g*		*71.6*	*50-140*			
Volatiles									
Acetone	13.0	0.50	ug/g	ND	130	50-140			
Benzene	4.48	0.02	ug/g	ND	112	60-130			
Bromodichloromethane	4.59	0.05	ug/g	ND	114	60-130			
Bromoform	4.66	0.05	ug/g	ND	116	60-130			
Bromomethane	5.13	0.05	ug/g	ND	128	50-140			
Carbon Tetrachloride	4.54	0.05	ug/g	ND	112	60-130			
Chlorobenzene	4.61	0.05	ug/g	ND	115	60-130			
Chloroform	4.65	0.05	ug/g	ND	116	60-130			
Dibromochloromethane	4.57	0.05	ug/g	ND	113	60-130			
Dichlorodifluoromethane	4.37	0.05	ug/g	ND	109	50-140			
1,2-Dichlorobenzene	4.71	0.05	ug/g	ND	117	60-130			
1,3-Dichlorobenzene	4.65	0.05	ug/g	ND	116	60-130			
1,4-Dichlorobenzene	4.65	0.05	ug/g	ND	116	60-130			
1,1-Dichloroethane	4.08	0.05	ug/g	ND	101	60-130			
1,2-Dichloroethane	4.47	0.05	ug/g	ND	111	60-130			
1,1-Dichloroethylene	3.89	0.05	ug/g	ND	96.3	60-130			
cis-1,2-Dichloroethylene	4.49	0.05	ug/g	ND	112	60-130			
trans-1,2-Dichloroethylene	4.03	0.05	ug/g	ND	101	60-130			
1,2-Dichloropropane	4.58	0.05	ug/g	ND	115	60-130			
cis-1,3-Dichloropropylene	4.01	0.05	ug/g	ND	99.2	60-130			
trans-1,3-Dichloropropylene	4.16	0.05	ug/g	ND	103	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Ethylbenzene	4.54	0.05	ug/g	ND	113	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	4.45	0.05	ug/g	ND	111	60-130			
Hexane	2.96	0.05	ug/g	ND	74.1	60-130			
Methyl Ethyl Ketone (2-Butanone)	11.7	0.50	ug/g	ND	117	50-140			
Methyl Isobutyl Ketone	11.8	0.50	ug/g	ND	118	50-140			
Methyl tert-butyl ether	10.3	0.05	ug/g	ND	102	50-140			
Methylene Chloride	4.61	0.05	ug/g	ND	115	60-130			
Styrene	4.54	0.05	ug/g	ND	113	60-130			
1,1,1,2-Tetrachloroethane	4.50	0.05	ug/g	ND	112	60-130			
1,1,2,2-Tetrachloroethane	4.52	0.05	ug/g	ND	113	60-130			
Tetrachloroethylene	4.42	0.05	ug/g	ND	110	60-130			
Toluene	4.45	0.05	ug/g	ND	111	60-130			
1,1,1-Trichloroethane	4.63	0.05	ug/g	ND	115	60-130			
1,1,2-Trichloroethane	4.61	0.05	ug/g	ND	115	60-130			
Trichloroethylene	4.62	0.05	ug/g	ND	114	60-130			
Trichlorofluoromethane	3.72	0.05	ug/g	ND	93.1	50-140			
Vinyl chloride	5.34	0.02	ug/g	ND	133	50-140			
m,p-Xylenes	9.00	0.05	ug/g	ND	112	60-130			
o-Xylene	4.67	0.05	ug/g	ND	116	60-130			
Surrogate: 4-Bromofluorobenzene	*7.97*		*ug/g*		*99.6*	*50-140*			
Surrogate: Dibromofluoromethane	*8.02*		*ug/g*		*100*	*50-140*			
Surrogate: Toluene-d8	*7.77*		*ug/g*		*97.2*	*50-140*			

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

Qualifier Notes:

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 unlesss otherwise noted.

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

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Paracel ID: 2312003

Chain Of Custody (Lab Use Only)
№ 67652

Page 1 of 1

Client Name: Hallex Environmental Ltd.	Project Ref: E-22-32-2a
Contact Name: Kevin Christian	Quote #:
Address: 4999 Victoria Ave. Niagara Falls Ontario.	PO #:
Telephone: 905 9888030	E-mail: kchristian@hallex.ca, Nmetz@hallex.ca, acottle@hallex.ca

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☒ REG 153/04 ☐ REG 406/19
☐ Table 1 ☐ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☒ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PAH	Metals (by ICP)	Hold	VOC								
1	TP102-SS2	S		2	March 15th	10 am	X	X										
2	TP103-SS2	↓		2	↓	↓	X	X										
3	TP105-SS1	↓		2	↓	↓	X											
4	TP106-SS2	↓		2	↓	↓		X										
5	TP107-SS4	↓		2	↓	↓		X										
6	TP108-SS2	↓		2	↓	↓		X										
7	TP108-SS4	↓		3	↓	↓				X								
8	TP109-SS4	↓		3	↓	↓				X								
9																		
10																		

Comments:

Method of Delivery: DROP BOX

Relinquished By (Sign): Amber Cottle	Received By Driver/Depot: NIAGARA BHOMENIEK	Received at Lab: C-Ply	Verified By: C-Ply
Relinquished By (Print): A. Cottle	Date/Time: 17 MAR 23 830	Date/Time: 03/20/23 8:30	Date/Time: 03/20/23 8:55
Date/Time: March 16th 5:30pm	Temperature: 3.8 °C	Temperature: 11.8 °C	pH Verified: ☐ By: —

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Certificate of Analysis

Hallex Environmental Ltd.
4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-22-32-2a
Custody:

Report Date: 23-Mar-2023
Order Date: 17-Mar-2023

Order #: 2311459

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

Paracel ID	Client ID
2311459-01	MW101
2311459-02	MW102
2311459-03	MW103
2311459-04	MW104
2311459-05	MW105
2311459-06	MW106A
2311459-07	MW106B
2311459-08	MW107
2311459-09	MW108
2311459-10	MW109A
2311459-11	MW109B

Approved By:

Milan Ralitsch, PhD

Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	17-Mar-23	20-Mar-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	22-Mar-23	23-Mar-23
REG 153: Metals by ICP/MS, water	EPA 200.8, ICP-MS	17-Mar-23	17-Mar-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	21-Mar-23	22-Mar-23
REG 153: VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	20-Mar-23	20-Mar-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Potable Groundwater, fine	-
MW102	Benzo [a] pyrene	0.01 ug/L	0.05	0.01 ug/L	-
MW104	cis-1,2-Dichloroethylene	0.5 ug/L	34.2	17 ug/L	-
MW104	Vinyl chloride	0.5 ug/L	7.2	1.7 ug/L	-
MW105	Vinyl chloride	0.5 ug/L	5.0	1.7 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW101	MW102	MW103	MW104	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-01	2311459-02	2311459-03	2311459-04	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Metals							
Antimony	0.5 ug/L	-	<0.5	-	-	6 ug/L	-
Arsenic	1 ug/L	-	1.3	-	-	25 ug/L	-
Barium	1 ug/L	-	71.7	-	-	1000 ug/L	-
Beryllium	0.5 ug/L	-	<0.5	-	-	4 ug/L	-
Boron	10 ug/L	-	121	-	-	5000 ug/L	-
Cadmium	0.2 ug/L	-	<0.2	-	-	2.7 ug/L	-
Chromium	1 ug/L	-	<1.0	-	-	50 ug/L	-
Cobalt	0.5 ug/L	-	<0.5	-	-	3.8 ug/L	-
Copper	0.5 ug/L	-	0.7	-	-	87 ug/L	-
Lead	0.2 ug/L	-	<0.2	-	-	10 ug/L	-
Molybdenum	0.5 ug/L	-	5.5	-	-	70 ug/L	-
Nickel	1 ug/L	-	<1.0	-	-	100 ug/L	-
Selenium	1 ug/L	-	<1.0	-	-	10 ug/L	-
Silver	0.2 ug/L	-	<0.2	-	-	1.5 ug/L	-
Sodium	200 ug/L	-	18000	-	-	490000 ug/L	-
Thallium	0.5 ug/L	-	<0.5	-	-	2 ug/L	-
Uranium	0.2 ug/L	-	3.1	-	-	20 ug/L	-
Vanadium	0.5 ug/L	-	1.2	-	-	6.2 ug/L	-
Zinc	5 ug/L	-	<5.0	-	-	1100 ug/L	-
Volatiles							
Acetone	5 ug/L	<5.0	<5.0	<5.0	<5.0	2700 ug/L	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	16 ug/L	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.89 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW101	MW102	MW103	MW104	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-01	2311459-02	2311459-03	2311459-04	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Volatiles							
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	5 ug/L	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	30 ug/L	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	22 ug/L	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	-
Dichlorodifluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	590 ug/L	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	3 ug/L	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	59 ug/L	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	14 ug/L	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	2.0	34.2	17 ug/L	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	17 ug/L	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.5 ug/L	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2.4 ug/L	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.2 ug/L	-
Hexane	1 ug/L	<1.0	<1.0	<1.0	<1.0	520 ug/L	-
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	<5.0	<5.0	<5.0	1800 ug/L	-
Methyl Isobutyl Ketone	5 ug/L	<5.0	<5.0	<5.0	<5.0	640 ug/L	-
Methyl tert-butyl ether	2 ug/L	<2.0	<2.0	<2.0	<2.0	15 ug/L	-
Methylene Chloride	5 ug/L	<5.0	<5.0	<5.0	<5.0	50 ug/L	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5.4 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW101	MW102	MW103	MW104	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-01	2311459-02	2311459-03	2311459-04	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Volatiles							
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.1 ug/L	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	17 ug/L	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	24 ug/L	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	200 ug/L	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	0.5	5 ug/L	-
Trichlorofluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	150 ug/L	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	7.2	1.7 ug/L	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	300 ug/L	-
Dibromofluoromethane	Surrogate	89.7%	91.3%	91.0%	91.7%	-	-
4-Bromofluorobenzene	Surrogate	108%	108%	107%	108%	-	-
Toluene-d8	Surrogate	103%	103%	102%	103%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	750 ug/L	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100	150 ug/L	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100	500 ug/L	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100	500 ug/L	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	-	<0.05	-	-	4.1 ug/L	-
Acenaphthylene	0.05 ug/L	-	<0.05	-	-	1 ug/L	-
Anthracene	0.01 ug/L	-	<0.01	-	-	2.4 ug/L	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	-	-	1 ug/L	-

	Client ID:	MW101	MW102	MW103	MW104	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-01	2311459-02	2311459-03	2311459-04	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.01 ug/L	-	0.05	-	-	0.01 ug/L	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	-	-	0.1 ug/L	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	-	-	0.2 ug/L	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	-	-	0.1 ug/L	-
Chrysene	0.05 ug/L	-	<0.05	-	-	0.1 ug/L	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	-	-	0.2 ug/L	-
Fluoranthene	0.01 ug/L	-	<0.01	-	-	0.41 ug/L	-
Fluorene	0.05 ug/L	-	<0.05	-	-	120 ug/L	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	-	-	0.2 ug/L	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-	3.2 ug/L	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-	3.2 ug/L	-
Methylnaphthalene (1&2)	0.1 ug/L	-	<0.10	-	-	3.2 ug/L	-
Naphthalene	0.05 ug/L	-	<0.05	-	-	11 ug/L	-
Phenanthrene	0.05 ug/L	-	0.10	-	-	1 ug/L	-
Pyrene	0.01 ug/L	-	<0.01	-	-	4.1 ug/L	-
2-Fluorobiphenyl	Surrogate	-	99.7%	-	-	-	-
Terphenyl-d14	Surrogate	-	105%	-	-	-	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW105	MW106A	MW106B	MW107	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-05	2311459-06	2311459-07	2311459-08	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Volatiles							
Acetone	5 ug/L	<5.0	<5.0	<5.0	<5.0	2700 ug/L	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	16 ug/L	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.89 ug/L	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	5 ug/L	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	30 ug/L	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	22 ug/L	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	25 ug/L	-
Dichlorodifluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	590 ug/L	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	3 ug/L	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	59 ug/L	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	14 ug/L	-
cis-1,2-Dichloroethylene	0.5 ug/L	8.8	0.8	<0.5	<0.5	17 ug/L	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	17 ug/L	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	0.5 ug/L	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	<0.2	0.2 ug/L	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	2.4 ug/L	-
Hexane	1 ug/L	<1.0	<1.0	<1.0	<1.0	520 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW105	MW106A	MW106B	MW107	Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00	Reg 153/04 -T2	-
	Sample ID:	2311459-05	2311459-06	2311459-07	2311459-08	Potable	
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water	Groundwater, fine	
	MDL/Units						
Volatiles							
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	<5.0	<5.0	<5.0	1800 ug/L	-
Methyl Isobutyl Ketone	5 ug/L	<5.0	<5.0	<5.0	<5.0	640 ug/L	-
Methyl tert-butyl ether	2 ug/L	<2.0	<2.0	<2.0	<2.0	15 ug/L	-
Methylene Chloride	5 ug/L	<5.0	<5.0	<5.0	<5.0	50 ug/L	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5.4 ug/L	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1.1 ug/L	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	1 ug/L	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	17 ug/L	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	24 ug/L	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	200 ug/L	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	5 ug/L	-
Trichloroethylene	0.5 ug/L	1.6	<0.5	<0.5	<0.5	5 ug/L	-
Trichlorofluoromethane	1 ug/L	<1.0	<1.0	<1.0	<1.0	150 ug/L	-
Vinyl chloride	0.5 ug/L	5.0	<0.5	<0.5	<0.5	1.7 ug/L	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5	300 ug/L	-
Toluene-d8	Surrogate	103%	103%	103%	103%	-	-
Dibromofluoromethane	Surrogate	91.0%	89.7%	89.7%	89.5%	-	-
4-Bromofluorobenzene	Surrogate	107%	107%	107%	108%	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	750 ug/L	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100	150 ug/L	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100	500 ug/L	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100	500 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW108	MW109A	MW109B		Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00		Reg 153/04 -T2 Potable Groundwater, fine	-
	Sample ID:	2311459-09	2311459-10	2311459-11			
	Matrix:	Ground Water	Ground Water	Ground Water			
	MDL/Units						
Metals							
Antimony	0.5 ug/L	-	<0.5	<0.5	-	6 ug/L	-
Arsenic	1 ug/L	-	<1.0	<1.0	-	25 ug/L	-
Barium	1 ug/L	-	91.5	85.5	-	1000 ug/L	-
Beryllium	0.5 ug/L	-	<0.5	<0.5	-	4 ug/L	-
Boron	10 ug/L	-	97.5	93.7	-	5000 ug/L	-
Cadmium	0.2 ug/L	-	<0.2	<0.2	-	2.7 ug/L	-
Chromium	1 ug/L	-	<1.0	<1.0	-	50 ug/L	-
Cobalt	0.5 ug/L	-	<0.5	<0.5	-	3.8 ug/L	-
Copper	0.5 ug/L	-	0.6	0.5	-	87 ug/L	-
Lead	0.2 ug/L	-	<0.2	<0.2	-	10 ug/L	-
Molybdenum	0.5 ug/L	-	6.0	5.0	-	70 ug/L	-
Nickel	1 ug/L	-	<1.0	<1.0	-	100 ug/L	-
Selenium	1 ug/L	-	<1.0	<1.0	-	10 ug/L	-
Silver	0.2 ug/L	-	<0.2	<0.2	-	1.5 ug/L	-
Sodium	200 ug/L	-	52100	47500	-	490000 ug/L	-
Thallium	0.5 ug/L	-	<0.5	<0.5	-	2 ug/L	-
Uranium	0.2 ug/L	-	9.2	8.5	-	20 ug/L	-
Vanadium	0.5 ug/L	-	1.3	1.2	-	6.2 ug/L	-
Zinc	5 ug/L	-	<5.0	<5.0	-	1100 ug/L	-
Volatiles							
Acetone	5 ug/L	<5.0	<5.0	<5.0	-	2700 ug/L	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-	16 ug/L	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-	25 ug/L	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-	0.89 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW108	MW109A	MW109B		Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00		Reg 153/04 -T2 Potable Groundwater, fine	-
	Sample ID:	2311459-09	2311459-10	2311459-11			
	Matrix:	Ground Water	Ground Water	Ground Water			
	MDL/Units						
Volatiles							
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-	5 ug/L	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-	30 ug/L	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-	22 ug/L	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-	25 ug/L	-
Dichlorodifluoromethane	1 ug/L	<1.0	<1.0	<1.0	-	590 ug/L	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-	3 ug/L	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-	59 ug/L	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-	1 ug/L	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-	14 ug/L	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-	17 ug/L	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-	17 ug/L	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-	0.5 ug/L	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-	2.4 ug/L	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	<0.2	-	0.2 ug/L	-
Hexane	1 ug/L	<1.0	<1.0	<1.0	-	520 ug/L	-
Methyl Ethyl Ketone (2-Butanone)	5 ug/L	<5.0	<5.0	<5.0	-	1800 ug/L	-
Methyl Isobutyl Ketone	5 ug/L	<5.0	<5.0	<5.0	-	640 ug/L	-
Methyl tert-butyl ether	2 ug/L	<2.0	<2.0	<2.0	-	15 ug/L	-
Methylene Chloride	5 ug/L	<5.0	<5.0	<5.0	-	50 ug/L	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-	5.4 ug/L	-

Certificate of Analysis

Report Date: 23-Mar-2023

Client: **Hallex Environmental Ltd.**

Order Date: 17-Mar-2023

Client PO:

Project Description: E-22-32-2a

	Client ID:	MW108	MW109A	MW109B		Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00		Reg 153/04 -T2 Potable Groundwater, fine	-
	Sample ID:	2311459-09	2311459-10	2311459-11			
	Matrix:	Ground Water	Ground Water	Ground Water			
	MDL/Units						
Volatiles							
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	1.1 ug/L	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	1 ug/L	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-	17 ug/L	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-	24 ug/L	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	200 ug/L	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-	5 ug/L	-
Trichlorofluoromethane	1 ug/L	<1.0	<1.0	<1.0	-	150 ug/L	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-	1.7 ug/L	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-	300 ug/L	-
4-Bromofluorobenzene	Surrogate	108%	107%	108%	-	-	-
Dibromofluoromethane	Surrogate	91.0%	89.7%	90.0%	-	-	-
Toluene-d8	Surrogate	103%	103%	102%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-	750 ug/L	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-	150 ug/L	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-	500 ug/L	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-	500 ug/L	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	-	<0.05	<0.05	-	4.1 ug/L	-
Acenaphthylene	0.05 ug/L	-	<0.05	<0.05	-	1 ug/L	-
Anthracene	0.01 ug/L	-	<0.01	<0.01	-	2.4 ug/L	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	<0.01	-	1 ug/L	-

	Client ID:	MW108	MW109A	MW109B		Criteria:	
	Sample Date:	16-Mar-23 09:00	16-Mar-23 09:00	16-Mar-23 09:00		Reg 153/04 -T2 Potable Groundwater, fine	-
	Sample ID:	2311459-09	2311459-10	2311459-11			
	Matrix:	Ground Water	Ground Water	Ground Water			
	MDL/Units						
Semi-Volatiles							
Benzo [a] pyrene	0.01 ug/L	-	<0.01	<0.01	-	0.01 ug/L	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	<0.05	-	0.1 ug/L	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	<0.05	-	0.2 ug/L	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	<0.05	-	0.1 ug/L	-
Chrysene	0.05 ug/L	-	<0.05	<0.05	-	0.1 ug/L	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	<0.05	-	0.2 ug/L	-
Fluoranthene	0.01 ug/L	-	<0.01	<0.01	-	0.41 ug/L	-
Fluorene	0.05 ug/L	-	<0.05	<0.05	-	120 ug/L	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	<0.05	-	0.2 ug/L	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	<0.05	-	3.2 ug/L	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	<0.05	-	3.2 ug/L	-
Methylnaphthalene (1&2)	0.1 ug/L	-	<0.10	<0.10	-	3.2 ug/L	-
Naphthalene	0.05 ug/L	-	<0.05	<0.05	-	11 ug/L	-
Phenanthrene	0.05 ug/L	-	<0.05	<0.05	-	1 ug/L	-
Pyrene	0.01 ug/L	-	<0.01	<0.01	-	4.1 ug/L	-
2-Fluorobiphenyl	Surrogate	-	92.0%	89.6%	-	-	-
Terphenyl-d14	Surrogate	-	98.0%	94.9%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons								
F1 PHCs (C6-C10)	ND	25	ug/L					
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					
Metals								
Antimony	ND	0.5	ug/L					
Arsenic	ND	1.0	ug/L					
Barium	ND	1.0	ug/L					
Beryllium	ND	0.5	ug/L					
Boron	ND	10.0	ug/L					
Cadmium	ND	0.2	ug/L					
Chromium	ND	1.0	ug/L					
Cobalt	ND	0.5	ug/L					
Copper	ND	0.5	ug/L					
Lead	ND	0.2	ug/L					
Molybdenum	ND	0.5	ug/L					
Nickel	ND	1.0	ug/L					
Selenium	ND	1.0	ug/L					
Silver	ND	0.2	ug/L					
Sodium	ND	200	ug/L					
Thallium	ND	0.5	ug/L					
Uranium	ND	0.2	ug/L					
Vanadium	ND	0.5	ug/L					
Zinc	ND	5.0	ug/L					
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*8.71*		*ug/L*	*87.1*	*50-140*			
Surrogate: Terphenyl-d14	*10.4*		*ug/L*	*104*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					
Bromomethane	ND	0.5	ug/L					
Carbon Tetrachloride	ND	0.2	ug/L					
Chlorobenzene	ND	0.5	ug/L					
Chloroform	ND	0.5	ug/L					
Dibromochloromethane	ND	0.5	ug/L					
Dichlorodifluoromethane	ND	1.0	ug/L					
1,2-Dichlorobenzene	ND	0.5	ug/L					
1,3-Dichlorobenzene	ND	0.5	ug/L					
1,4-Dichlorobenzene	ND	0.5	ug/L					
1,1-Dichloroethane	ND	0.5	ug/L					
1,2-Dichloroethane	ND	0.5	ug/L					
1,1-Dichloroethylene	ND	0.5	ug/L					
cis-1,2-Dichloroethylene	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,2-Dichloroethylene	ND	0.5	ug/L					
1,2-Dichloropropane	ND	0.5	ug/L					
cis-1,3-Dichloropropylene	ND	0.5	ug/L					
trans-1,3-Dichloropropylene	ND	0.5	ug/L					
1,3-Dichloropropene, total	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L					
Hexane	ND	1.0	ug/L					
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L					
Methyl Isobutyl Ketone	ND	5.0	ug/L					
Methyl tert-butyl ether	ND	2.0	ug/L					
Methylene Chloride	ND	5.0	ug/L					
Styrene	ND	0.5	ug/L					
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L					
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L					
Tetrachloroethylene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
1,1,1-Trichloroethane	ND	0.5	ug/L					
1,1,2-Trichloroethane	ND	0.5	ug/L					
Trichloroethylene	ND	0.5	ug/L					
Trichlorofluoromethane	ND	1.0	ug/L					
Vinyl chloride	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: 4-Bromofluorobenzene	*86.3*		*ug/L*	*108*	*50-140*			
Surrogate: Dibromofluoromethane	*73.4*		*ug/L*	*91.8*	*50-140*			
Surrogate: Toluene-d8	*82.1*		*ug/L*	*103*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	4.4	1.0	ug/L	3.9			13.4	20	
Barium	573	1.0	ug/L	577			0.6	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	3000	10.0	ug/L	2780			7.6	20	
Cadmium	0.6	0.2	ug/L	0.5			11.9	20	
Chromium	2.1	1.0	ug/L	2.5			14.6	20	
Cobalt	338	0.5	ug/L	325			4.0	20	
Copper	8.6	0.5	ug/L	7.6			12.2	20	
Lead	0.5	0.2	ug/L	0.5			2.7	20	
Molybdenum	3.3	0.5	ug/L	3.8			14.1	20	
Nickel	199	1.0	ug/L	190			5.0	20	
Selenium	4.3	1.0	ug/L	ND			NC	20	
Silver	0.2	0.2	ug/L	ND			NC	20	
Sodium	12100000	10000	ug/L	12700000			4.9	20	
Thallium	ND	0.5	ug/L	ND			NC	20	
Uranium	2.1	0.2	ug/L	2.4			12.2	20	
Vanadium	1.5	0.5	ug/L	1.2			NC	20	
Zinc	12.1	5.0	ug/L	11.7			3.4	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*84.6*		*ug/L*		*106*	*50-140*			
Surrogate: Dibromofluoromethane	*76.7*		*ug/L*		*95.8*	*50-140*			
Surrogate: Toluene-d8	*82.2*		*ug/L*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	596	25	ug/L	ND	84.2	68-117			
F2 PHCs (C10-C16)	1810	100	ug/L	ND	109	60-140			
F3 PHCs (C16-C34)	4900	100	ug/L	ND	132	60-140			
F4 PHCs (C34-C50)	2740	100	ug/L	ND	103	60-140			
Metals									
Antimony	52.7	0.5	ug/L	ND	105	70-130			
Arsenic	38.9	1.0	ug/L	3.9	70.1	70-130			
Barium	51.7	1.0	ug/L	ND	103	80-120			
Beryllium	50.2	0.5	ug/L	ND	100	70-130			
Boron	46.8	10.0	ug/L	ND	93.5	80-120			
Cadmium	38.5	0.2	ug/L	0.5	76.0	70-130			
Chromium	45.0	1.0	ug/L	2.5	85.1	70-130			
Cobalt	45.2	0.5	ug/L	ND	90.5	80-120			
Copper	46.3	0.5	ug/L	7.6	77.3	70-130			
Lead	51.1	0.2	ug/L	0.5	101	70-130			
Molybdenum	43.5	0.5	ug/L	3.8	79.5	70-130			
Nickel	46.4	1.0	ug/L	ND	92.8	80-120			
Selenium	45.6	1.0	ug/L	ND	91.2	70-130			
Silver	55.4	0.2	ug/L	ND	111	70-130			
Sodium	1020	200	ug/L	ND	102	80-120			
Thallium	51.6	0.5	ug/L	ND	103	70-130			
Uranium	50.2	0.2	ug/L	2.4	95.5	70-130			
Vanadium	49.5	0.5	ug/L	1.2	96.7	70-130			
Zinc	53.3	5.0	ug/L	11.7	83.2	70-130			
Semi-Volatiles									
Acenaphthene	10.9	0.05	ug/L	ND	109	50-140			
Acenaphthylene	11.2	0.05	ug/L	ND	112	50-140			
Anthracene	10.8	0.01	ug/L	ND	108	50-140			
Benzo [a] anthracene	11.0	0.01	ug/L	ND	110	50-140			
Benzo [a] pyrene	14.5	0.01	ug/L	ND	145	50-140			QS-02

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	15.3	0.05	ug/L	ND	153	50-140			QS-02
Benzo [g,h,i] perylene	14.9	0.05	ug/L	ND	149	50-140			QS-02
Benzo [k] fluoranthene	16.0	0.05	ug/L	ND	160	50-140			QS-02
Chrysene	12.1	0.05	ug/L	ND	121	50-140			
Dibenzo [a,h] anthracene	14.3	0.05	ug/L	ND	143	50-140			QS-02
Fluoranthene	11.3	0.01	ug/L	ND	113	50-140			
Fluorene	12.0	0.05	ug/L	ND	120	50-140			
Indeno [1,2,3-cd] pyrene	14.8	0.05	ug/L	ND	148	50-140			QS-02
1-Methylnaphthalene	9.08	0.05	ug/L	ND	90.8	50-140			
2-Methylnaphthalene	9.21	0.05	ug/L	ND	92.1	50-140			
Naphthalene	9.38	0.05	ug/L	ND	93.8	50-140			
Phenanthrene	11.6	0.05	ug/L	ND	116	50-140			
Pyrene	12.0	0.01	ug/L	ND	120	50-140			
Surrogate: 2-Fluorobiphenyl	*8.52*		*ug/L*		*85.2*	*50-140*			
Surrogate: Terphenyl-d14	*8.55*		*ug/L*		*85.5*	*50-140*			
Volatiles									
Acetone	98.7	5.0	ug/L	ND	98.7	50-140			
Benzene	32.6	0.5	ug/L	ND	81.0	50-140			
Bromodichloromethane	34.9	0.5	ug/L	ND	86.9	50-140			
Bromoform	36.1	0.5	ug/L	ND	89.9	50-140			
Bromomethane	35.6	0.5	ug/L	ND	88.9	50-140			
Carbon Tetrachloride	33.2	0.2	ug/L	ND	82.1	50-140			
Chlorobenzene	33.8	0.5	ug/L	ND	84.0	50-140			
Chloroform	33.8	0.5	ug/L	ND	84.5	50-140			
Dibromochloromethane	35.1	0.5	ug/L	ND	86.8	50-140			
Dichlorodifluoromethane	37.0	1.0	ug/L	ND	92.5	50-140			
1,2-Dichlorobenzene	35.2	0.5	ug/L	ND	87.1	50-140			
1,3-Dichlorobenzene	35.0	0.5	ug/L	ND	87.4	50-140			
1,4-Dichlorobenzene	34.9	0.5	ug/L	ND	87.2	50-140			
1,1-Dichloroethane	34.0	0.5	ug/L	ND	84.2	50-140			
1,2-Dichloroethane	33.1	0.5	ug/L	ND	82.4	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethylene	32.6	0.5	ug/L	ND	80.6	50-140			
cis-1,2-Dichloroethylene	33.0	0.5	ug/L	ND	82.0	50-140			
trans-1,2-Dichloroethylene	33.6	0.5	ug/L	ND	84.0	50-140			
1,2-Dichloropropane	34.2	0.5	ug/L	ND	85.4	50-140			
cis-1,3-Dichloropropylene	35.4	0.5	ug/L	ND	87.6	50-140			
trans-1,3-Dichloropropylene	37.4	0.5	ug/L	ND	93.0	50-140			
Ethylbenzene	32.6	0.5	ug/L	ND	81.1	50-140			
Ethylene dibromide (dibromoethane, 1,2-)	35.3	0.2	ug/L	ND	88.3	50-140			
Hexane	32.8	1.0	ug/L	ND	82.0	50-140			
Methyl Ethyl Ketone (2-Butanone)	95.8	5.0	ug/L	ND	95.8	50-140			
Methyl Isobutyl Ketone	100	5.0	ug/L	ND	100	50-140			
Methyl tert-butyl ether	81.4	2.0	ug/L	ND	80.6	50-140			
Methylene Chloride	39.8	5.0	ug/L	ND	99.6	50-140			
Styrene	33.4	0.5	ug/L	ND	83.0	50-140			
1,1,1,2-Tetrachloroethane	34.9	0.5	ug/L	ND	86.9	50-140			
1,1,2,2-Tetrachloroethane	36.4	0.5	ug/L	ND	90.7	50-140			
Tetrachloroethylene	32.5	0.5	ug/L	ND	80.8	50-140			
Toluene	62.0	0.5	ug/L	ND	154	50-140			QM-01
1,1,1-Trichloroethane	34.1	0.5	ug/L	ND	84.5	50-140			
1,1,2-Trichloroethane	35.8	0.5	ug/L	ND	89.1	50-140			
Trichloroethylene	33.4	0.5	ug/L	ND	82.8	50-140			
Trichlorofluoromethane	35.9	1.0	ug/L	ND	89.7	50-140			
Vinyl chloride	37.2	0.5	ug/L	ND	92.4	50-140			
m,p-Xylenes	64.8	0.5	ug/L	ND	80.8	50-140			
o-Xylene	33.6	0.5	ug/L	ND	83.5	50-140			
Surrogate: 4-Bromofluorobenzene	*81.8*		*ug/L*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*80.9*		*ug/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*78.4*		*ug/L*		*98.0*	*50-140*			

Qualifier Notes:

QC Qualifiers:

QM-01	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
QS-02	Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

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

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

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Chain Of Custody
(Lab Use Only)

Client Name: HALLEX ENVIRONMENTAL	Project Ref: E-22-32-2a
Contact Name: Kevin Christian	Quote #:
Address: 4999 Victoria Avenue, Niagara Falls, ON	PO #:
Telephone: 905-988-8030	E-mail: nmetz@hallex.ca & ccolbourne@hallex.ca; kchristian@hallex.ca

Page 1 of 2

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☒ REG 153/04 ☐ REG 406/19

Other Regulation
☐ Table 1 ☒ Res/Park ☒ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table 8
For RSC: ☒ Yes ☐ No
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	METALS (ICP)	VOC	~~BTEX~~ PHC 1-4	PAH	HOLD
1	MW101	GW		3	MARCH 16, 23	AM		✔	✔		
2	MW102	GW		5	MARCH 16, 23	AM	✔	✔	✔	✔	
3	MW103	GW		3	MARCH 16, 23	AM		✔	✔		
4	MW104	GW		3	MARCH 16, 23	AM		✔	✔		
5	MW105	GW		3	MARCH 16, 23	AM		✔	✔		
6	MW106A	GW		3	MARCH 16, 23	AM		✔	✔		
7	MW106B	GW		3	MARCH 16, 23	AM		✔	✔		
8	MW107	GW		3	MARCH 16, 23	AM		✔	✔		
9	MW108	GW		3	MARCH 16, 23	AM		✔	✔		
10	MW109A	GW		5	MARCH 16, 23	AM	✔	✔	✔	✔	

Comments: METALS (ICP) SAMPLES FIELD FILTERED

Method of Delivery: Drop box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: C-Ply	Verified By: C-Ply
Relinquished By (Print): C.COLBOURNE	Date/Time:	Date/Time: 03/17/23 8:30	Date/Time: 03/17/23 9:40
Date/Time: MARCH 16, 2023 2400 hrs	Temperature: °C	Temperature: 8.3	pH Verified: ☑ By: CP

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Paracel ID: 2311459

Chain Of Custody
(Lab Use Only)

Client Name: HALLEX ENVIRONMENTAL	Project Ref: E-22-32-2a	Page 2 of 2
Contact Name: Kevin Christian	Quote #:	**Turnaround Time**
Address: 4999 Victoria Avenue, Niagara Falls, ON	PO #:	☐ 1 day ☐ 3 day
	E-mail: nmetz@hallex.ca & ccolbourne@hallex.ca	☐ 2 day ☒ Regular
Telephone: 905-988-8030	kchristian@hallex.ca	Date Required:

☒ REG 153/04 ☐ REG 406/19	**Other Regulation**
☐ Table 1 ☒ Res/Park ☒ Med/Fine	☐ REG 558 ☐ PWQO
☒ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm
☐ Table 8	Mun:
For RSC: ☒ Yes ☐ No	☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		Required Analysis											
					Date	Time	METALS (ICP)	VOC	~~BTEX~~ PHC F1-F4	PAH	HOLD							
1	MW109B	GW		5	MARCH 16, 23	AM	✔	✔	✔	✔								
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments: METALS (ICP) SAMPLES FIELD FILTERED

Method of Delivery: Drop box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: C-PLY	Verified By: C-PLY
Relinquished By (Print): C.COLBOURNE	Date/Time:	Date/Time: 03/17/23 8:30	Date/Time: 03/17/23 9:40
Date/Time: MARCH 16, 2023 2100 hrs	Temperature: °C	Temperature: 8.3	pH Verified: ☑ By: CP