



46555 Humboldt Drive, Suite 100  
Novi, MI 48377  
Telephone 248.669.5140  
Fax 248.669.5147  
[www.oneatlas.com](http://www.oneatlas.com)

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August 16, 2022

Mr. Al Dyer  
City of Detroit, Demolition Department  
1301 Third Street, Suite 606  
Detroit, Michigan 48226

RE: [Delineation Assessment Summary - QQ-0070](#)  
Lenox Center Property  
100 Lenox Street  
Detroit, Michigan 48226  
Atlas Project No.: 188BS22411

Dear Mr. Dyer:

On behalf of the City of Detroit, Demolition Department (DDD), Atlas Technical Consultants LLC (Atlas) completed additional site delineation activities in response to findings during previous environmental due diligence including a Phase I Environmental Site Assessment (ESA) and Phase II ESA. A summary of previous site activities and the requested delineation assessment are included in this Delineation Assessment Summary Report.

#### PREVIOUS SITE ACTIVITIES

Atlas previously completed a Phase I ESA for the referenced Site with a report dated September 20, 2021 and submitted to DDD.

The Phase I ESA identified the following:

- Significant filling occurred in the southern portion of the site along the Detroit River between 1937 and 1981 (and possible deposition of fill material in other areas of the site).
- For the western adjoining off-site property, a Baseline Environmental Assessment (BEA) was submitted to the State of Michigan in 2006 under the names Lenox Waterfront Estates (Lenox and Avondale Streets) and Morgan Development LLC (South side of Lenox Street between Avondale and the Detroit River) which are associated with the uncompleted residential development. Based on the above BEA, a previous 2004 environmental study indicated concentrations of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and/or various metals in soil and/or groundwater above the residential cleanup criteria contained in State of Michigan, Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended (P.A. 451), Part 201 and this property was defined as an environmental “facility”.

Based on the potential environmental concerns identified in the Phase I ESA, Atlas was requested by DDD to complete a limited Phase II ESA. The Phase II ESA was completed on April 12, 2002, with a report submitted to DDD dated May 5, 2022.

The Phase II ESA identified the following:

According to the soil and groundwater sample analytical results, the following laboratory parameters were identified in soil and groundwater above the cleanup criteria contained in Table 1. Residential and Nonresidential Groundwater Criteria updated December 21, 2020, and Table 2. Residential Soil Criteria updated June 24, 2018, found in State of Michigan, Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994 (P.A. 451), as amended, found at Michigan Compiled Laws (MCL) 324.20101, et seq. ("Part 201"):

- Lead and benzo(a)pyrene in soil above Direct Contact Criteria (DCC) at GP-3 (1'-3')
- Lead in soil above DCC at GP-8 (2'-4')
- Lead in soil above the Drinking Water Protection Criteria (DWPC) at GP-3 (1'-3')
- Barium, cadmium, copper, lead, mercury, and zinc in soil above the DWPC at GP-8 (2'-4')
- Benzene in groundwater above the Drinking Water Criteria (DWC) at GP-4

Based on the soil and groundwater sample analytical results, the detected presence of the above referenced laboratory parameters above the referenced residential cleanup criteria defines the site as an environmental "facility" as defined by P.A. 451, Part 201.

DELINEATION ACTIVITIES

Based on the findings of the Phase II ESA, DDD requested additional delineation of the lead and/or PAHs identified above DCC at GP-3 and GP-8 to attempt to determine the extent of lead and PAHs impacts for future site redevelopment. Atlas mobilized to the Site, on July 27, 2022, to advance six (6) Geoprobe borings (GP-9 through GP-14) to depths of approximately 10 feet below surface grade (bsg) to assess the previously identified lead at GP-3 and GP-8 and benzo(a)pyrene identified at GP-3.

The soil samples were collected in accordance with United States Environmental Protection Agency (USEPA) Laboratory Methods and State of Michigan, Department of Environment, Great Lakes and Energy (EGLE) sampling protocols. Samples were submitted for laboratory analyses as follows:

- lead by USEPA Method 7010, and
- PAHs by USEPA Method 8270C.

Please refer to Appendix A for Sample Location Map, and Soil Analytical Map.

LITHOLOGY

During the advancement of GP-9 through GP-14, the surface cover consisted of grass/topsoil. Below the surface cover, the soils generally consisted of intermixed horizons of brown to dark gray, damp to saturated, clay with varying amounts of sand and silt; and horizons of fine to coarse grain sand with varying amounts of silt that continued to the bottom of the borings (maximum boring depth was 10 feet bsg. The soil horizons contained debris (e.g., brick, metal, slag, plastic) at depths ranging from near grade up to 10 feet bsg which indicates fill materials were placed in several areas of the site. GP-14 indicated crushed limestone/gravel from 4 to 10 feet bsg and groundwater at 7 feet. Please refer to Appendix B for Soil Boring Logs.

## ANALYTICAL RESULTS

Atlas submitted 18 soil samples, and two (2) duplicates for laboratory analysis. The samples were stored on “wet” ice and transported under chain-of-custody to Quantum Laboratories (Quantum, Wixom, Michigan) on July 28, 2022. Quantum reported the laboratory analytical results dated August 4, 2022. Please see Appendix C for Laboratory Analytical Summary Tables and Appendix D for Laboratory Report.

### Lead Results

According to the soil sample analytical results, lead was identified at the following samples above Statewide Default Background Criteria, the Residential Direct Contact Criteria (DCC) and the Drinking Water Protection Criteria (DWPC) contained in Table 2 of P.A. 451, Part 201:

- GP-9 (0'-1'), GP 9 (6'-7'), GP-10 (2'-4'), GP-11 (0'-1'), GP-11 (2'-4'), GP-11 (6'-7'), GP-12 (0'-1'), GP-12 (2'-4'), GP-12 (6'-7'), GP-13 (0'-1'), GP-13 (2'-4') and GP-14 (6'-7'), exceeded the Statewide Default background for lead.
- GP-10 (2'-4'), GP-11 (2'-4'), GP-11 (6'-7'), GP-12 (0'-1'), GP-13 (0'-1'), and GP 14 (6'-7') exceeded the Residential DCC and/or the DWPC. Sample concentrations for lead ranged from 563,000 (µg/kg) to 4,880,000 (µg/kg).

### Polynuclear Aromatic Hydrocarbons

According to the soil sample analytical results, PAHs were identified at the following samples above the Residential DCC in Table 2 of P.A. 451, Part 201.

- GP-12 (0'-1') exceeded the Residential DCC for Benzo(a)pyrene at 2,560 (µg/kg)

## CONCLUSIONS AND RECOMMENDATIONS

Based on findings from the Phase II ESA (previously submitted to DDD) and this Additional Delineation Assessment metals, PAHs and/or VOCs exist in soil or groundwater at the site above the residential cleanup criteria.

*According to discussion with DDD, regarding future site use, risk pathways include Direct Contact (soil) to be addressed as part of site redevelopment activities. The drinking water exposure pathway does not appear to be immediate risk as groundwater at the site is not used for drinking water and site is serviced by a municipal water supply. Atlas notes that if, during site redevelopment, dewatering is necessary then appropriate characterization will be required prior to permitting, treatment or discharge.*

Lead and benzo(a)pyrene exist in soil at the site above the Residential DCC at the following locations:

- Lead: GP-3, GP-8, GP-10, GP-11, GP-12, GP-13 and GP-14
- Benzo(a)pyrene: GP-3 and GP-12

Atlas notes the detected laboratory parameters in soil have not been horizontally or vertically delineated; and, because the placement of fill materials with debris could potentially be the source of the contamination, delineation of the contaminated soil may be difficult if the fill came from multiple sources and was placed in varying locations on-site.

Due to the environmental “facility” status of the site, Atlas recommends preparing a Due Care Evaluation (DCE) (aka Due Care Plan) in an attempt to prevent unacceptable human exposure of site workers and/or visitors to the detected laboratory parameters on-site in the future. Atlas also recommends additional sampling to determine full extent of lead and PAHs in soil (i.e., grid sampling) above cleanup criteria as part of the DCE and/or a Soil and Groundwater Management Plan to assess site risks and soil handling during site redevelopment.

#### LIMITATIONS AND QUALIFICATIONS

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the independent conclusions, opinions, or recommendations made by others based on the field exploration data presented in this report. It is noted that all environmental assessments are inherently limited in the sense that conclusions are drawn and recommendations were developed from information obtained from limited research and site evaluation.

The results and conclusions presented herein are based solely on the aforementioned field screening techniques and field observations. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties.

The work performed in conjunction with this assessment and the data developed are intended as a description of available information at the dates and locations given. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

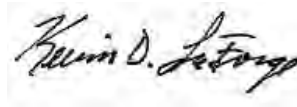
With respect to Atlas' interpretation of government (federal, state or local) generated documents (e.g., EGLE), Atlas notes opinions of other parties may differ from our opinion and Atlas recommends consultation with appropriate counsel for legal guidance. This report has been prepared for the exclusive use of DDD and it is a report upon which you may rely.

If there are any questions pertaining to this report, please do not hesitate to contact the undersigned at (248) 669-5140.

Respectfully Submitted,  
Atlas Technical Consultants LLC

A handwritten signature in black ink, appearing to read "Ann O'Brien".

Ann O'Brien  
Due Diligence Manager  
Email: [ann.obrien@oneatlas.com](mailto:ann.obrien@oneatlas.com)

A handwritten signature in black ink, appearing to read "Kevin D. LaForge".

Kevin D. LaForge  
Senior Project Manager  
Email: [kevin.laforge@oneatlas.com](mailto:kevin.laforge@oneatlas.com)

## **APPENDICES**

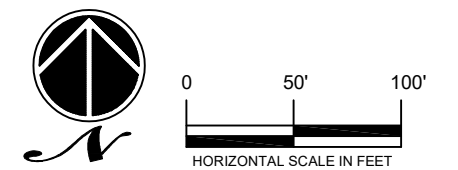
Appendix A	Maps
Appendix B	Boring Logs
Appendix C	Laboratory Analytical Summary Tables
Appendix D	Laboratory Reports

## **APPENDIX A**





- SUBJECT PROPERTY BOUNDARY
- SUBJECT PROPERTY BUILDING
- DELINEATION SOIL BORING LOCATION
- SOIL BORING LOCATION



**ATLAS**

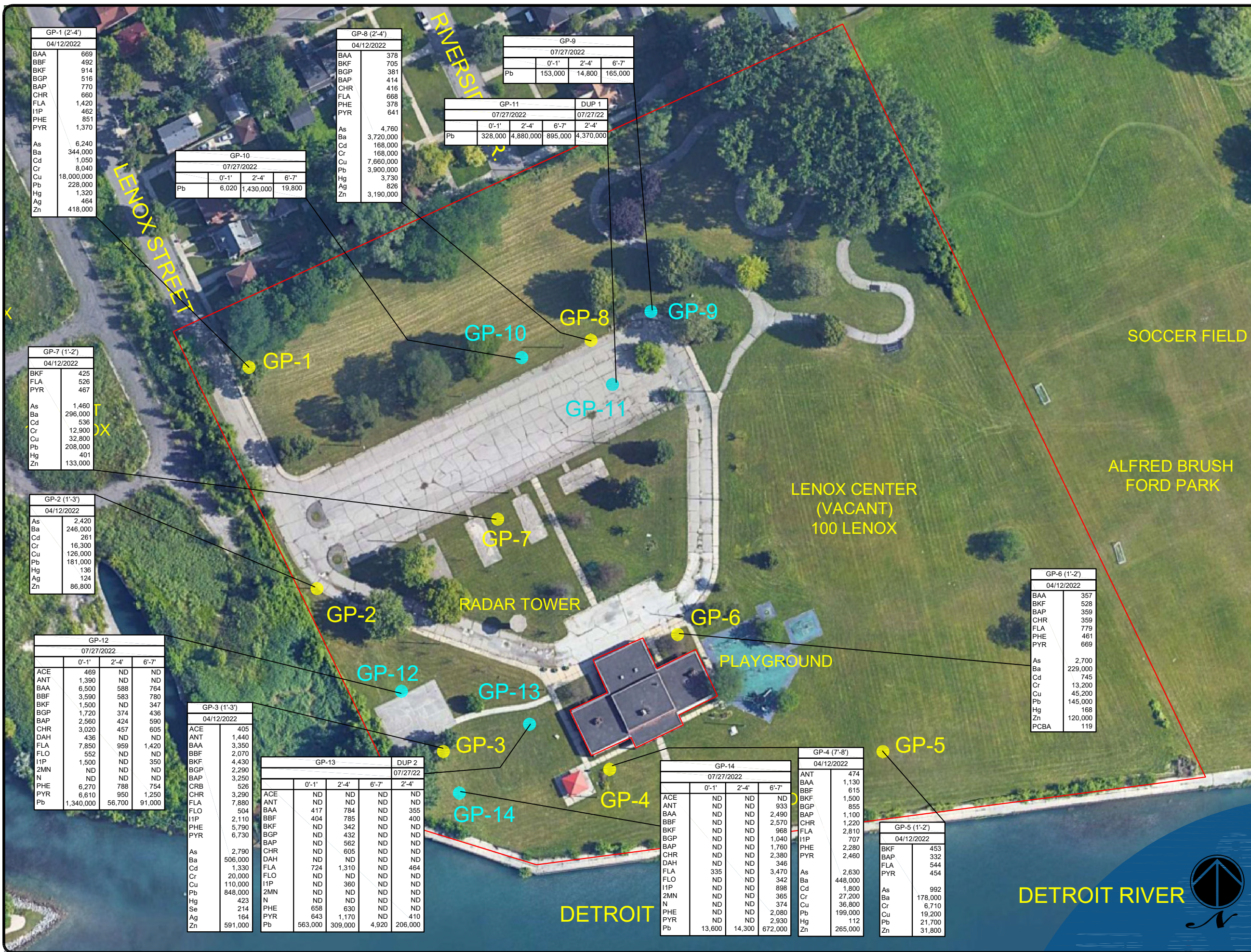
1735 E MCNICHOLS  
 DETROIT, MICHIGAN  
 PH: 616-698-3131  
 FAX: 616-698-1922  
 WEBSITE: WWW.ONEATLAS.COM

DATE: 06/13/2022	PROJECT NO.: 188BS22189
DRAWN BY: DTB	SCALE: AS SHOWN
REVIEWED BY: KL	<b>FIGURE 1</b>

**SAMPLE LOCATION MAP**

Lenox Center Property  
 100 Lenox Street  
 Detroit, Michigan





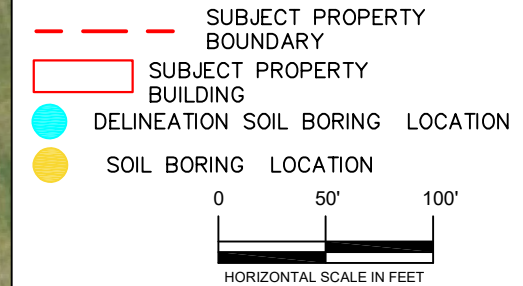
### LEGEND

SAMPLE LOCATION (SAMPLE DEPTH)  
 SAMPLE DATE  
 SAMPLE DEPTH

PNAs:  
 ACE- Acenaphthene  
 ANT- Anthracene  
 BAA- Benzo(a)anthracene  
 BBF- Benzo(b)fluoranthene  
 BKF- Benzo(k)fluoranthene  
 BGP- Benzo(g,h,i)perylene  
 BAP- Benzo(a)pyrene  
 CRB- Carbazole  
 CHR- Chrysene  
 DAH- Dibenzo(a,h)anthracene  
 DNB- Di-n-butylphthalate  
 DBF- Dibenzofuran  
 FLA- Fluoranthene  
 FLO- Fluorene  
 I1P- Indeno(1,2,3-cd)pyrene  
 2MN- 2-Methylnaphthalene  
 N- Naphthalene  
 PHE- Phenanthrene  
 PYR- Pyrene

Metals:  
 As- Arsenic  
 Ba- Barium  
 Cd- Cadmium  
 Cr- Chromium  
 Cu- Copper  
 Pb- Lead  
 Hg- Mercury  
 Se- Selenium  
 Ag- Silver  
 Zn- Zinc

PCBA- PCB AROCLOR 1260  
 (µg/kg) - All concentrations in micrograms per kilogram  
 PNA- Polynuclear Aromatic Hydrocarbons  
 ND- Analytes below laboratory detection limits  
 DUP Analytical results are found on analytical tables.



1735 E MCNICHOLS  
 DETROIT, MICHIGAN  
 PH: 616-698-3131  
 FAX: 616-698-1922  
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REVIEWED BY: KL	FIGURE 2

### SOIL ANALYTICAL MAP

Lenox Center Property  
 100 Lenox Street  
 Detroit, Michigan

GP-1 (2'-4')  
04/12/2022

BAA	669
BBF	492
BKF	914
BGP	516
BAP	770
CHR	660
FLA	1,420
I1P	462
PHE	851
PYR	1,370
As	6,240
Ba	344,000
Cd	1,050
Cr	8,040
Cu	18,000,000
Pb	228,000
Hg	1,320
Ag	464
Zn	418,000

GP-8 (2'-4')  
04/12/2022

BAA	378
BKF	705
BGP	381
BAP	414
CHR	416
FLA	668
PHE	378
PYR	641
As	4,760
Ba	3,720,000
Cd	168,000
Cr	168,000
Cu	7,660,000
Pb	3,900,000
Hg	3,730
Ag	826
Zn	3,190,000

GP-9  
07/27/2022

	0'-1'	2'-4'	6'-7'
Pb	153,000	14,800	165,000

GP-11  
07/27/2022

	0'-1'	2'-4'	6'-7'	DUP 1	07/27/22
Pb	328,000	4,880,000	895,000	4,370,000	

GP-10  
07/27/2022

	0'-1'	2'-4'	6'-7'
Pb	6,020	1,430,000	19,800

GP-7 (1'-2')  
04/12/2022

BKF	425
FLA	526
PYR	467
As	1,460
Ba	296,000
Cd	536
Cr	12,900
Cu	32,800
Pb	208,000
Hg	401
Zn	133,000

GP-2 (1'-3')  
04/12/2022

As	2,420
Ba	246,000
Cd	261
Cr	16,300
Cu	126,000
Pb	181,000
Hg	136
Ag	124
Zn	86,800

GP-12  
07/27/2022

	0'-1'	2'-4'	6'-7'
ACE	469	ND	ND
ANT	1,390	ND	ND
BAA	6,500	588	764
BBF	3,590	583	780
BKF	1,500	ND	347
BGP	1,720	374	436
BAP	2,560	424	590
CHR	3,020	457	605
DAH	436	ND	ND
FLA	7,850	959	1,420
FLO	552	ND	ND
I1P	1,500	ND	350
2MN	ND	ND	ND
N	ND	ND	ND
PHE	6,270	788	754
PYR	6,610	950	1,250
Pb	1,340,000	56,700	91,000

GP-3 (1'-3')  
04/12/2022

ACE	405
ANT	1,440
BAA	3,350
BBF	2,070
BKF	4,430
BGP	2,290
BAP	3,250
CHR	526
DAH	3,290
FLA	7,880
FLO	504
I1P	2,110
PHE	5,790
PYR	6,730
As	2,790
Ba	506,000
Cd	1,330
Cr	20,000
Cu	110,000
Pb	848,000
Hg	423
Se	214
Ag	164
Zn	591,000

GP-13  
07/27/22

	0'-1'	2'-4'	6'-7'	DUP 2	07/27/22
ACE	ND	ND	ND	ND	
ANT	ND	ND	ND	ND	
BAA	417	784	ND	355	
BBF	404	785	ND	400	
BKF	ND	342	ND	ND	
BGP	ND	432	ND	ND	
BAP	ND	562	ND	ND	
CHR	ND	605	ND	ND	
DAH	ND	ND	ND	ND	
FLA	724	1,310	ND	464	
FLO	ND	ND	ND	ND	
I1P	ND	360	ND	ND	
2MN	ND	ND	ND	ND	
N	ND	ND	ND	ND	
PHE	658	630	ND	ND	
PYR	643	1,170	ND	410	
Pb	563,000	309,000	4,920	206,000	

GP-14  
07/27/2022

	0'-1'	2'-4'	6'-7'
ACE	ND	ND	ND
ANT	ND	ND	933
BAA	ND	ND	2,490
BBF	ND	ND	2,570
BKF	ND	ND	968
BGP	ND	ND	1,040
BAP	ND	ND	1,760
CHR	ND	ND	2,380
DAH	ND	ND	346
FLA	335	ND	3,470
FLO	ND	ND	342
I1P	ND	ND	898
2MN	ND	ND	365
N	ND	ND	374
PHE	ND	ND	2,080
PYR	ND	ND	2,930
Pb	13,600	14,300	672,000

GP-4 (7'-8')  
04/12/2022

ANT	474
BAA	1,130
BBF	615
BKF	1,500
BGP	855
BAP	1,100
CHR	1,220
FLA	2,810
I1P	707
PHE	2,280
PYR	2,460
As	2,630
Ba	448,000
Cd	1,800
Cr	27,200
Cu	36,800
Pb	199,000
Hg	112
Zn	265,000

GP-6 (1'-2')  
04/12/2022

BAA	357
BKF	528
BAP	359
CHR	359
FLA	779
PHE	461
PYR	669
As	2,700
Ba	229,000
Cd	745
Cr	13,200
Cu	45,200
Pb	145,000
Hg	168
Zn	120,000
PCBA	119

GP-5 (1'-2')  
04/12/2022

BKF	453
BAP	332
FLA	544
PYR	454
As	992
Ba	178,000
Cr	6,710
Cu	19,200
Pb	21,700
Zn	31,800





○ Lead above direct contact criteria

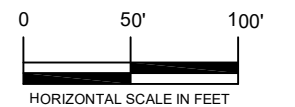
○ Benzo(a)pyrene above direct contact criteria

--- SUBJECT PROPERTY BOUNDARY

▭ SUBJECT PROPERTY BUILDING

● DELINEATION SOIL BORING LOCATION

● SOIL BORING LOCATION



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1735 E MCNICHOLS  
 DETROIT, MICHIGAN  
 PH: 616-698-3131  
 FAX: 616-698-1922  
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DATE:  
8/12/2022

PROJECT NO.:  
188BS22189

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DTB

SCALE:  
AS SHOWN

REVIEWED BY:  
KL

**FIGURE 3**

**Lead and Benzo(a)pyrene  
 Direct Contact Criteria  
 Exceedances**  
 Lenox Center Property  
 100 Lenox Street  
 Detroit, Michigan



## **APPENDIX B**





# Soil Boring Log

46555 Humboldt Drive, Ste. 100  
 Novi, MI 48377  
 Phone: (248) 669-5140  
 Fax: (248) 669-5147

**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-9 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction
0	HA	0-1'	GP-9	12"		TOP SOIL/SAND mix, brown-dark brown in color, damp, organics/roots	0.0	Native soils
1	HA			12"		CLAY - some sand, dark brown, dry with trace fill (bricks, metal slag) and gravel	0.0	
2	HA			12"			0.0	
3	HA	2-4'	GP-9	12"			0.0	
4	HA			12"		SANDY CLAY - dark brown with red, some fill material, dry	0.0	
5	GP			12"			0.0	
6	GP	6-7'	GP-9	12"			0.0	
7	GP			12"		CLAY - gray, with trace sand and gravel, moist, dense, little plastic	0.0	
8	GP			12"			0.0	
9	GP			12"			0.0	

End of Boring @ 10'

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Logged by:** Ryann Scott  
**Drawn by:** Ryann Scott  
**Checked by:** Josh Schuyler

**Borehole Observations After Drilling**

**Immediately after:** \_\_\_\_\_  
**Hrs. after:** \_\_\_\_\_

**Backfill:** Native Backfill and Bentonite

**Drilling Co.:** Terra Probe  
**Drill Rig Type:** Geoprobe

(Rec.) = RECOVERY (EOB) = END OF BORING

(bgs) = Below Ground Surface

(NR) = NO RECOVERY

(NA) = NOT APPLICABLE

**Driller:** Aaron

**Assistant:** \_\_\_\_\_



# Soil Boring Log

46555 Humboldt Drive, Ste. 100  
 Novi, MI 48377  
 Phone: (248) 669-5140  
 Fax: (248) 669-5147

**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-10 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction
0						GRAVEL		<div style="border-left: 2px solid black; border-right: 2px solid black; height: 100%; width: 100%;"></div> <p style="text-align: right; margin-right: 5px;">← Native soils</p>
1	HA	0-1'	GP-10	12"		SANDY CLAY - brown, dry with trace fill	0.0	
2	HA	2-4'	GP-10	12"		CLAY - black, sandy, moist with some metal slag and bricks	0.0	
3	HA			12"		SANDY CLAY - dark brown/red with trace bricks, moist	0.0	
4	HA			12"			0.0	
5	GP			12"			0.0	
6	GP	6-7'	GP-10	12"		SAND - gray, fine to medium grained, damp	0.0	
7	GP			12"			0.0	
8	GP			12"		CLAY - gray, moist with trace sand and gravel, dense, little plastic	0.0	
9	GP			12"			0.0	
10						End of Boring @ 10'		

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Logged by:** Ryann Scott  
**Drawn by:** Ryann Scott  
**Checked by:** Josh Schuyler

**Borehole Observations After Drilling**

**Immediately after:** \_\_\_\_\_  
**Hrs. after:** \_\_\_\_\_

**Backfill:** Native Backfill and Bentonite

**Drilling Co.:** Terra Probe  
**Drill Rig Type:** Geoprobe

(Rec.) = RECOVERY (EOB) = END OF BORING  
 (bgs) = Below Ground Surface  
 (NR) = NO RECOVERY  
 (NA) = NOT APPLICABLE

**Driller:** Aaron  
**Assistant:** \_\_\_\_\_



# Soil Boring Log

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**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-11 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction
0						GRAVEL		
1	HA	0-1'	GP-11	12"		CLAY - dark brown with some fill (metal slag, glass, brick)	0.0	
2	HA			12"		SANDY CLAY - dark brown/red with fine to medium grained sand and trace fill, moist	0.0	
3	HA	2-4'	GP-11 & DUP-1	12"			0.0	
4	HA			12"			0.0	
5	GP			12"			0.0	
6	GP	6-7'	GP-11	12"		SAND AND GRAVEL - gray/red, damp	0.0	
7	GP			12"		0.0		
8	GP			12"		CLAY - gray, soft, damp with trace gravel	0.0	
9	GP			12"			0.0	
10								

End of Boring @ 10'

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Borehole Observations After Drilling**

Immediately after: \_\_\_\_\_

Hrs. after: \_\_\_\_\_

Backfill: Native Backfill and Bentonite

(Rec.) = RECOVERY (EOB) = END OF BORING

(bgs) = Below Ground Surface

(NR) = NO RECOVERY

(NA) = NOT APPLICABLE

Logged by: Ryann Scott

Drawn by: Ryann Scott

Checked by: Josh Schuyler

Drilling Co.: Terra Probe

Drill Rig Type: Geoprobe

Driller: Aaron

Assistant: \_\_\_\_\_





# Soil Boring Log

46555 Humboldt Drive, Ste. 100  
 Novi, MI 48377  
 Phone: (248) 669-5140  
 Fax: (248) 669-5147

**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-12 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction
0						GRASS AND TOPSOIL		← Native soils
1	HA	0-1'	GP-12	12"		SANDY CLAY - dark brown, dry with trace gravel and fill (bricks)	0.0	
2	HA			12"				
3	HA	2-4'	GP-12	12"			0.0	
4	HA			12"			0.0	
5	GP			12"			0.0	
6	GP	6-7'	GP-12	12"		SILTY CLAY - gray/brown with trace fill, moist	0.0	
7	GP			12"			0.0	
8	GP			12"			0.0	
9	GP			12"			0.0	
10						End of Boring @ 10'		

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Borehole Observations After Drilling**

**Immediately after:** \_\_\_\_\_  
**Hrs. after:** \_\_\_\_\_

**Backfill:** Native Backfill and Bentonite

(Rec.) = RECOVERY (EOB) = END OF BORING  
 (bgs) = Below Ground Surface  
 (NR) = NO RECOVERY  
 (NA) = NOT APPLICABLE

**Logged by:** Ryann Scott  
**Drawn by:** Ryann Scott  
**Checked by:** Josh Schuyler

**Drilling Co.:** Terra Probe  
**Drill Rig Type:** Geoprobe

**Driller:** Aaron  
**Assistant:** \_\_\_\_\_



# Soil Boring Log

46555 Humboldt Drive, Ste. 100  
 Novi, MI 48377  
 Phone: (248) 669-5140  
 Fax: (248) 669-5147

**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-13 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction	
0						GRASS AND TOPSOIL		<div style="border-left: 2px solid black; border-right: 2px solid black; height: 100%;"></div> <p style="text-align: center;">← Native soils</p>	
1	HA	0-1'	GP-13	12"		SANDY CLAY - dark brown, fine to medium grained sand, moist	0.0		
2	HA	2-4'	GP-13 & DUP-2	12"		CLAY - gray/black, moist, semi-plastic	0.0		
3	HA			12"					
4	HA			12"					
5	GP	6-7'	GP-13	12"		CLAY - silty, gray, soft with little plastic, damp	0.0		
6	GP			12"			0.0		
7	GP			12"			0.0		
8	GP			12"			0.0		
9	GP			12"			0.0		
10	End of Boring @ 10'								

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Logged by:** Ryann Scott  
**Drawn by:** Ryann Scott  
**Checked by:** Josh Schuyler

**Borehole Observations After Drilling**  
**Immediately after:** \_\_\_\_\_  
**Hrs. after:** \_\_\_\_\_  
**Backfill:** Native Backfill and Bentonite

**Drilling Co.:** Terra Probe  
**Drill Rig Type:** Geoprobe

(Rec.) = RECOVERY (EOB) = END OF BORING  
 (bgs) = Below Ground Surface  
 (NR) = NO RECOVERY  
 (NA) = NOT APPLICABLE

**Driller:** Aaron  
**Assistant:** \_\_\_\_\_



# Soil Boring Log

46555 Humboldt Drive, Ste. 100  
 Novi, MI 48377  
 Phone: (248) 669-5140  
 Fax: (248) 669-5147

**Project Number:** 188BS22164  
**Project Name:** Lenox Center Property  
**Site Location:** 100 Lenox Street  
**City, State:** Detroit, Michigan  
**Boring Diameter:** 4" HA/2.25" Macrocore  
**Drilling Method:** Hand Auger / Macrocore

**Boring Number:** GP-14 **Page:** 1  
**Start Date:** 07/27/22 **End Date:** 07/27/22  
**Casing:** NA  
**Casing Diameter:** NA **Length:** NA  
**Screen Slot Size:** NA  
**Screen Diameter:** NA **Length:** NA

FEET (bgs)	SAMPLE TYPE	SAMPLE INTERVAL (bgs)	SAMPLE NUMBER	Rec.	Graphic	LITHOLOGY DESCRIPTION	PID PPM	Well Construction	
0						GRASS AND TOPSOIL		← Native soils	
1	HA	0-1'	GP-14	12"		SAND - very fine grained, brown, dry	0.0		
2	HA			12"					
3	HA	2-4'	GP-14	12"		CRUSHED LIMESTONE & GRAVEL, moist	0.3		
4	HA			12"					
5	GP			12"	(Symbol: circles)		0.0		
6	GP	6-7'	GP-14	12"	(Symbol: diagonal lines)	CLAY - gray, silty, moist/damp			3.2
7	GP			12"		GRAVEL - wet, black/gray			
8	GP			12"	(Symbol: circles)				2.4
9	GP			12"	(Symbol: circles)				
10	End of Boring @ 10'								

(HA) = HAND AUGER (DS) = DISTURBED SAMPLE  
 (AK) = AIR KNIFE (GP) = Geoprobe  
 (SS) = SPLIT SPOON bpf = blows per foot  
 (qP) = Penetrometer Unconfined Compressive Strength

**Borehole Observations After Drilling**

**Immediately after:** \_\_\_\_\_  
**Hrs. after:** \_\_\_\_\_  
**Backfill:** Native Backfill and Bentonite

(Rec.) = RECOVERY (EOB) = END OF BORING  
 (bgs) = Below Ground Surface  
 (NR) = NO RECOVERY  
 (NA) = NOT APPLICABLE

**Logged by:** Ryann Scott  
**Drawn by:** Ryann Scott  
**Checked by:** Josh Schuyler

**Drilling Co.:** Terra Probe  
**Drill Rig Type:** Geoprobe

**Driller:** Aaron  
**Assistant:** \_\_\_\_\_



## **APPENDIX C**

**Table 1 - Summary of Soil Laboratory Analytical Results (Detected Metals)  
Lenox Center Property  
100 Lenox Street  
Detroit, Michigan**

Analytes	Statewide	Residential	Residential	Sample Locations								
	Default	Drinking Water	Direct Contact	GP-1	GP-2	GP-3	Duplicate (GP-3)	GP-4	GP-5	GP-6	GP-7	GP-8
	Background Levels	Protection Criteria	Criteria (DCC)	(2'-4')	(1'-3')	(1'-3')	(1'-3")	(7'-8')	(1'-2')	(1'-2')	(1'-2')	(2'-4')
	(µg/kg)	(DWPC) (µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
<b>Metals</b>												
Arsenic	5,800	4,600	7,600	6,240	2,420	2,790	2,800	2,630	992	2,700	1,460	4,760
Barium	75,000	1,300,000	37,000,000	<b>344,000</b>	<b>246,000</b>	<b>506,000</b>	<b>704,000</b>	<b>448,000</b>	<b>178,000</b>	<b>229,000</b>	<b>296,000</b>	<b>3,720,000</b>
Cadmium	1,200	6,000	550,000	1,050	261	<b>1,330</b>	<b>1,370</b>	<b>1,800</b>	ND	745	536	<b>168,000</b>
Chromium	18,000	100,000,000	790,000,000	8,040	16,300	<b>20,000</b>	<b>36,000</b>	<b>27,200</b>	6,710	13,200	12,900	<b>168,000</b>
Copper	32,000	580,000	20,000,000	<b>18,000,000</b>	<b>126,000</b>	<b>110,000</b>	<b>209,000</b>	<b>36,800</b>	19,200	<b>45,200</b>	<b>32,800</b>	<b>7,660,000</b>
Lead	21,000	700,000	400,000	<b>228,000</b>	<b>181,000</b>	<b>848,000</b>	<b>1,730,000</b>	<b>199,000</b>	<b>21,700</b>	<b>145,000</b>	<b>208,000</b>	<b>3,900,000</b>
Mercury	130	1,700	160,000	<b>1,320</b>	<b>136</b>	<b>423</b>	<b>960</b>	112	ND	<b>168</b>	<b>401</b>	<b>3,730</b>
Selenium	410	4,000	2,600,000	ND	ND	214	ND	ND	ND	ND	ND	ND
Silver	1,000	4,500	2,500,000	464	124	164	238	ND	ND	ND	ND	826
Zinc	47,000	2,400,000	170,000,000	<b>418,000</b>	<b>86,800</b>	<b>591,000</b>	<b>792,000</b>	<b>265,000</b>	31,800	<b>120,000</b>	<b>133,000</b>	<b>3,190,000</b>

- Notes:
1. Samples were collected on April 12, 2022.
  2. NA denotes: "Not Analyzed". ND denotes the indicated laboratory parameter was "Not Detected" above the laboratory reported detection limit (RDL).
  3. The cleanup criteria are derived from Table 2, Soil Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451 dated June 25, 2018 (Table 2).
  4. Shaded values exceed one or more applicable cleanup criteria and bold font indicates a metal detected above the Default Background Level contained in Table 2.
  5. All samples were analyzed at Quantum Laboratories, Inc. located in Wixom, Michigan.
  6. NLV denotes: "Not Likely to Volatilize", ID denotes: "Insufficient Data" that is available to establish criteria.
  7. µg/kg denotes micrograms per kilogram.
  8. A "G" denotes value depends on the pH or water hardness, or both, of the receiving waters and an "X" denotes value is not protective for surface water used as a drinking water source. For details, please refer to P.A. 451, Part 201, R 299.49 footnotes for Table 2.

**Table 1 - Summary of Soil Laboratory Analytical Results (Detected Lead)  
Lenox Center Property  
100 Lenox Street  
Detroit, Michigan**

Analytes	Statewide	Residential	Residential	Sample Locations									
	Default	Drinking Water	Direct Contact	GP-9	GP-9	GP-9	GP-10	GP-10	GP-10	GP-11	GP-11	GP-11 (Duplicate-1 )	GP-11
	Background Levels	Protection Criteria	Criteria (DCC)	(0'-1')	(2'-4')	(6'-7')	(0'-1')	(2'-4')	(6'-7')	(0'-1')	(2'-4')	(2'-4')	(6'-7')
	(µg/kg)	(DWPC) (µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
<b>Metals</b>													
Lead	21,000	700,000	400,000	<b>153,000</b>	14,800	<b>165,000</b>	6,020	<b>1,430,000</b>	19,800	<b>328,000</b>	<b>4,880,000</b>	<b>4,370,000</b>	<b>895,000</b>

- Notes:
1. Samples were collected on July 27, 2022.
  2. NA denotes: "Not Analyzed". ND denotes the indicated laboratory parameter was "Not Detected" above the laboratory reported detection limit (RDL).
  3. The cleanup criteria are derived from Table 2, Soil Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451 dated June 25, 2018 (Table 2).
  4. Shaded values exceed one or more applicable cleanup criteria and bold font indicates a metal detected above the Default Background Level contained in Table 2.
  5. All samples were analyzed at Quantum Laboratories, Inc. located in Wixom, Michigan.
  6. NLV denotes: "Not Likely to Volatilize", ID denotes: "Insufficient Data" that is available to establish criteria.
  7. µg/kg denotes micrograms per kilogram.
  8. A "G" denotes value depends on the pH or water hardness, or both, of the receiving waters and an "X" denotes value is not protective for surface water used as a drinking water source. For details, please refer to P.A. 451, Part 201, R 299.49 footnotes for Table 2.

**Table 1 - Summary of Soil Laboratory Analytical Results (Detected Lead)  
Lenox Center Property  
100 Lenox Street  
Detroit, Michigan**

	Statewide Default Background Levels (µg/kg)	Residential Drinking Water Protection Criteria (DWPC) (µg/kg)	Residential Direct Contact Criteria (DCC) (µg/kg)	Sample Locations									
				GP-12 (0'-1') (µg/kg)	GP-12 (2'-4') (µg/kg)	GP-12 (6'-7') (µg/kg)	GP-13 (0'-1') (µg/kg)	GP-13 (2'-4') (µg/kg)	GP-13 (Duplicate-2) (2'-4') (µg/kg)	GP-13 (6'-7') (µg/kg)	GP-14 (0'-1') (µg/kg)	GP-14 (2'-4') (µg/kg)	GP-14 (6'-7') (µg/kg)
<b>Analytes</b>													
<b>Metals</b>													
Lead	21,000	700,000	400,000	<b>1,340,000</b>	<b>56,700</b>	<b>91,000</b>	<b>563,000</b>	<b>309,000</b>	<b>206,000</b>	4,920	13,600	14,300	<b>672,000</b>

- Notes:
1. Samples were collected on July, 27, 2022.
  2. NA denotes: "Not Analyzed". ND denotes the indicated laboratory parameter was "Not Detected" above the laboratory reported detection limit (RDL).
  3. The cleanup criteria are derived from Table 2, Soil Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451 dated June 25, 2018 (Table 2).
  4. Shaded values exceed one or more applicable cleanup criteria and bold font indicates a metal detected above the Default Background Level contained in Table 2.
  5. All samples were analyzed at Quantum Laboratories, Inc. located in Wixom, Michigan.
  6. NLV denotes: "Not Likely to Volatilize", ID denotes: "Insufficient Data" that is available to establish criteria.
  7. µg/kg denotes micrograms per kilogram.
  8. A "G" denotes value depends on the pH or water hardness, or both, of the receiving waters and an "X" denotes value is not protective for surface water used as a drinking water source. For details, please refer to P.A. 451, Part 201, R 299.49 footnotes for Table 2.

**Table 2 - Summary of Soil Laboratory Analytical Results (Detected SVOCs)**

**Lenox Center Property  
100 Lenox Street  
Detroit, Michigan**

Analyte	Residential Drinking Water Protection Criteria (DWPC) (µg/kg)	Residential Soil Volatilization to Indoor Air Inhalation Criteria (SVIAC) (µg/kg)	Residential Direct Contact Criteria (DCC) (µg/kg)	Sample Location							
				GP-1 (2'-4') (µg/kg)	GP-3 (1'-3') (µg/kg)	Duplicate (GP-3) (1'-3') (µg/kg)	GP-4 (7'-8') (µg/kg)	GP-5 (1'-2') (µg/kg)	GP-6 (1'-2') (µg/kg)	GP-7 (1'-2') (µg/kg)	GP-8 (2'-4') (µg/kg)
<b>SVOCs</b>											
Acenaphthene	300,000	190,000,000	41,000,000	ND	405	445	ND	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	230,000,000	ND	1,440	1,760	474	ND	ND	ND	ND
Benzo(a)anthracene	NLL	NLV	20,000	669	3,350	3,680	1,130	ND	357	ND	378
Benzo(b)fluoranthene	NLL	NLV	20,000	492	2,070	1,760	615	ND	ND	ND	ND
Benzo(k)fluoranthene	NLL	NLV	200,000	914	4,430	5,560	1,500	453	528	425	705
Benzo(g,h,i)perylene	NLL	NLV	2,000,000	516	2,290	2,860	855	ND	ND	ND	381
Benzo(a)pyrene	NLL	NLV	2,000	770	3,250	3,830	1,100	332	359	ND	414
Carbazole	9,400	NLV	530,000	ND	526	657	ND	ND	ND	ND	ND
Chrysene	NLL	ID	2,000,000	660	3,290	3,770	1,220	ND	359	ND	416
Di-n-butylphthalate	960,000	NLV	27,000,000	ND	ND	405	ND	ND	ND	ND	ND
Dibenzofuran	ID	2,000,000	ID	ND	ND	401	ND	ND	ND	ND	ND
Fluoranthene	730,000	1,000,000,000	46,000,000	1,420	7,880	8,720	2,810	544	779	526	668
Fluorene	390,000	580,000,000	27,000,000	ND	504	646	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	NLL	NLV	20,000	462	2,110	2,470	707	ND	ND	ND	ND
Phenanthrene	56,000	2,800,000	1,600,000	851	5,790	6,830	2,280	ND	461	ND	378
Pyrene	480,000	1,000,000,000	29,000,000	1,370	6,730	7,740	2,460	454	669	467	641

**Notes:**

1. Samples were collected on April 12, 2022.
2. NA denotes "Not Analyzed". "ND" denotes the indicated laboratory parameter was not detected above the laboratory reported detection limit (RDL).
3. The cleanup criteria are derived from Table 2, Soil Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451- dated June 25, 2018 (Table 2).
4. Shaded values exceed one or more cleanup criteria contained in Table 2 of P.A. 451, Part 201.
5. All samples were analyzed at Quantum Laboratories, Inc. located in Wixom, Michigan.
6. NLV = not likely to volatilize, NLL = not likely to leach, ID = Insufficient data available to establish criteria.
7. µg/kg denotes micrograms per kilogram.
8. A "ID" denotes insufficient data to develop criterion. For details, please refer to P.A. 451, Part 201, R 299.49 footnotes for Table 2.



**Table 2 - Summary of Soil Laboratory Analytical Results (Detected PNAs)  
Lenox Center Property  
100 Lenox Street  
Detroit, Michigan**

Analyte	Residential Drinking Water Protection Criteria (DWPC) (µg/kg)	Residential Soil Volatilization to Indoor Air Inhalation Criteria (SVIAC) (µg/kg)	Residential Direct Contact Criteria (DCC) (µg/kg)	Sample Location									
				GP-12 (0'-1') (µg/kg)	GP-12 (2'-4') (µg/kg)	GP-12 (6'-7') (µg/kg)	GP-13 (0'-1') (µg/kg)	GP-13 (2'-4') (µg/kg)	GP-13 (Duplicate-2) (2'-4') (µg/kg)	GP-13 (6'-7') (µg/kg)	GP-14 (0'-1') (µg/kg)	GP-14 (2'-4') (µg/kg)	GP-14 (6'-7') (µg/kg)
<b>PNAs</b>													
Acenaphthene	300,000	190,000,000	41,000,000	469	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	230,000,000	1,390	ND	ND	ND	ND	ND	ND	ND	ND	933
Benzo(a)anthracene	NLL	NLV	20,000	6,500	588	764	417	784	355	ND	ND	ND	2,490
Benzo(b)fluoranthene	NLL	ID	20,000	3,590	583	780	404	785	400	ND	ND	ND	2,570
Benzo(k)fluoranthene	NLL	NLV	200,000	1,500	ND	347	ND	342	ND	ND	ND	ND	968
Benzo(g,h,i)perylene	NLL	NLV	2,500,000	1,720	374	436	ND	432	ND	ND	ND	ND	1,040
Benzo(a)pyrene	NLL	NLV	2,000	2,560	424	590	ND	562	ND	ND	ND	ND	1,760
Chrysene	NLL	ID	2,000,000	3,020	457	605	ND	605	ND	ND	ND	ND	2,380
Dibenzo(a,h)anthracene	NLL	NLV	2,000	436	ND	ND	ND	ND	ND	ND	ND	ND	346
Fluoranthene	730,000	1,000,000,000	46,000,000	7,850	959	1,420	724	1,310	464	ND	335	ND	3,470
Fluorene	390,000	580,000,000	27,000,000	552	ND	ND	ND	ND	ND	ND	ND	ND	342
Indeno(1,2,3-cd)pyrene	NLL	NLV	20,000	1,500	ND	350	ND	360	ND	ND	ND	ND	898
2-Methylnaphthalene	57,000	2,700,000	8,100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	365
Naphthalene	35,000	250,000	16,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	374
Phenanthrene	56,000	2,800,000	1,600,000	6,270	788	754	658	630	ND	ND	ND	ND	2,080
Pyrene	480,000	1,000,000,000	29,000,000	6,610	950	1,250	643	1,170	410	ND	ND	ND	2,930

**Notes:**

1. Samples were collected on July 27, 2022.
2. NA denotes "Not Analyzed". "ND" denotes the indicated laboratory parameter was not detected above the laboratory reported detection limit (RDL).
3. The cleanup criteria are derived from Table 2, Soil Residential Generic Cleanup Criteria and Screening Levels, issued under part 201 of P.A. 451- dated June 25, 2018 (Table 2).
4. Shaded values exceed one or more cleanup criteria contained in Table 2 of P.A. 451, Part 201.
5. All samples were analyzed at Quantum Laboratories, Inc. located in Wixom, Michigan.
6. NLV = not likely to volatilize, NLL = not likely to leach, ID = Insufficient data available to establish criteria.
7. µg/kg denotes micrograms per kilogram.
8. A "ID" denotes insufficient data to develop criterion. For details, please refer to P.A. 451, Part 201, R 299.49 footnotes for Table 2.

## **APPENDIX D**

## ANALYTICAL REPORT

For: Atlas Technical Consultants (ATLAS)  
46555 Humboldt Dr. Ste. 100  
Novi MI 48377

**Report Number: 12434**  
Report Date: August 4, 2022  
Project Name: City of Detroit-Lenox Center  
Project Number: -  
Page: 1 of 18

Attn: Mr. Kevin LaForge

248-669-5140

Fax: 248-669-5147

### Sample Description

Twenty (20) samples reported to be Soil and identified as "City of Detroit-Lenox Center", 100 Lenox St., Detroit, MI, 7/27/22, Grab and:

- |                       |                       |
|-----------------------|-----------------------|
| 1. GP-9, 0-1', 1043   | 11. GP-12, 2-4', 1343 |
| 2. GP-9, 2-4', 1052   | 12. GP-12, 6-7', 1356 |
| 3. GP-9, 6-7', 1101   | 13. GP-13, 0-1', 1502 |
| 4. GP-10, 0-1', 1215  | 14. GP-13, 2-4', 1516 |
| 5. GP-10, 2-4', 1228  | 15. GP-13, 6-7', 1528 |
| 6. GP-10, 6-7', 1236  | 16. GP-14, 0-1', 1416 |
| 7. GP-11, 0-1', 1126  | 17. GP-14, 2-4', 1428 |
| 8. GP-11, 2-4', 1134  | 18. GP-14, 6-7', 1439 |
| 9. GP-11, 6-7', 1149  | 19. DUP-1, 0000       |
| 10. GP-12, 0-1', 1331 | 20. DUP-2, 0000       |

### Analysis Requested

Chemical Analysis per SW-846 (SW) for:

1. Polynuclear Aromatic Hydrocarbons (PNA), Method 8270C (Samples 10-18 and 20)
2. Lead, Method 7010 (All Samples)

## Analytical Results

Sample Description: GP-9, 0-1', 1043, 7/27/22						
Laboratory ID:	12434-1	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	153,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	90.3%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-9, 2-4', 1052, 7/27/22						
Laboratory ID:	12434-2	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	14,800	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	90.2%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-9, 6-7', 1101, 7/27/22						
Laboratory ID:	12434-3	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	165,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	87.4%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-10, 0-1', 1215, 7/27/22						
Laboratory ID:	12434-4	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	6,020	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	93.5%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-10, 2-4', 1228, 7/27/22						
Laboratory ID:	12434-5	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	1,430,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	86.0%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-10, 6-7', 1236, 7/27/22						
Laboratory ID:	12434-6	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	19,800	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	82.8%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-11, 0-1', 1126, 7/27/22						
Laboratory ID:	12434-7	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	328,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	85.0%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Sample Description: GP-11, 2-4', 1134, 7/27/22						
Laboratory ID:	12434-8	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	4,880,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	81.3%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	



Sample Description:		GP-11, 6-7', 1149, 7/27/22				
Laboratory ID:	12434-9	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	895,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	77.4%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits  
 S QC spike recovery outside of acceptance limits  
 R RPD outside of acceptance limits

E Reporting limit is elevated  
 D Result is from a dilution  
 J Result should be considered estimated

M Matrix interference observed  
 F Matrix Spike four times rule applied  
 C See Case Narrative

Sample Description:		GP-12, 0-1', 1331, 7/27/22				
Laboratory ID:	12434-10	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	469	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	1,390	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	6,500	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	3,590	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	1,500	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	1,720	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	2,560	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	3,020	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	436	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	7,850	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	552	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	1,500	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	6,270	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	6,610	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	63.8%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	67.6%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	78.6%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	1,340,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	92.6%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-12, 2-4', 1343, 7/27/22				
Laboratory ID:	12434-11	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	588	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	583	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	374	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	424	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	457	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	959	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	788	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	950	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	69.8%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	74.4%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	83.3%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	56,700	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	87.2%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-12, 6-7', 1356, 7/27/22				
Laboratory ID:	12434-12	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	764	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	780	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	347	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	436	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	590	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	605	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	1,420	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	350	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	754	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	1,250	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	63.3%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	68.4%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	78.7%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	91,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	85.1%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-13, 0-1', 1502, 7/27/22				
Laboratory ID:	12434-13	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	417	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	404	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	724	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	658	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	643	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	66.1%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	70.8%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	77.1%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	563,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	82.0%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative



Sample Description:		GP-13, 2-4', 1516, 7/27/22				
Laboratory ID:	12434-14	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	784	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	785	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	342	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	432	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	562	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	605	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	1,310	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	360	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	630	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	1,170	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	69.4%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	73.3%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	81.8%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	309,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	85.8%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-13, 6-7', 1528, 7/27/22				
Laboratory ID:	12434-15	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	69.1%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	73.2%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	79.8%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	4,920	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	81.1%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-14, 0-1', 1416, 7/27/22				
Laboratory ID:	12434-16	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	335	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	67.2%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	72.6%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	85.1%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	13,600	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	96.7%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-14, 2-4', 1428, 7/27/22				
Laboratory ID:	12434-17	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	67.4%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	71.9%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	80.1%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	14,300	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	97.3%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:		GP-14, 6-7', 1439, 7/27/22				
Laboratory ID:	12434-18	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	933	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	2,490	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	2,570	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	968	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	1,040	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	1,760	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	2,380	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	346	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	3,470	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	342	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	898	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	365	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	374	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	2,080	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	2,930	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	70.2%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	76.4%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	81.6%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	672,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	82.3%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

Sample Description:	DUP-1, 0000, 7/27/22					
Laboratory ID:	12434-19	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b>Metals</b>						
Lead	4,370,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b>Analysis Information</b>						
Dry Weight Solids	83.6%	-	% by weight	07/28/22	MR	
Metals Digestion	Completed	-	-	08/01/22	LB	



Sample Description:		DUP-2, 0000, 7/27/22				
Laboratory ID:	12434-20	Reporting Limit	Units of Measure	Date of Analysis	Analyst	Data Qualifiers
<b><i>PNA</i>s</b>						
Acenaphthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Acenaphthylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)anthracene	355	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(b)fluoranthene	400	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(k)fluoranthene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(g,h,i)perylene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Benzo(a)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Chrysene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Dibenzo(a,h)anthracene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Fluoranthene	464	330	µg/Kg, dry wt.	08/01/22	DS	
Fluorene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Indeno(1,2,3-cd)pyrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
2-Methylnaphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Naphthalene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Phenanthrene	Not Detected	330	µg/Kg, dry wt.	08/01/22	DS	
Pyrene	410	330	µg/Kg, dry wt.	08/01/22	DS	
<b><i>Surrogate Standards</i></b>						
Nitrobenzene-d5	67.6%	-	% Recovery	08/01/22	DS	
2-Fluorobiphenyl	73.6%	-	% Recovery	08/01/22	DS	
Terphenyl-d14	81.0%	-	% Recovery	08/01/22	DS	
<b><i>Metals</i></b>						
Lead	206,000	1,000	µg/Kg, dry wt.	08/03/22	DS	
<b><i>Analysis Information</i></b>						
Dry Weight Solids	81.4%	-	% by weight	07/28/22	MR	
PNA Extraction	Completed	-	-	07/28/22	LB/MR	
Metals Digestion	Completed	-	-	08/01/22	LB	

Data Qualifiers: I Internal Standard results outside of acceptance limits E Reporting limit is elevated M Matrix interference observed  
 S QC spike recovery outside of acceptance limits D Result is from a dilution F Matrix Spike four times rule applied  
 R RPD outside of acceptance limits J Result should be considered estimated C See Case Narrative

## Quality Control

### ***PNA Matrix Spike Data***

Spiked Sample: 12434-15		Matrix: Soil		Units: ppm in extract				
Parameter	Sample Result	Spike Added	MS Result	MSD Result	MS % Rec.	MSD % Rec.	RPD	Data Qualifiers
Acenaphthene	0.1	20	15	14	75	70	6.9	
Phenanthrene	0.1	20	16	16	80	80	0.0	
Fluoranthene	0.2	20	17	17	84	84	0.0	
Pyrene	0.2	20	18	17	89	84	5.7	
Chrysene	0.0	20	17	16	85	80	6.1	

### ***Metals Matrix Spike Data***

Spiked Sample: 12435-4		Matrix: Soil		Units: ppb in solution				
Parameter	Sample Result	Spike Added	MS Result	MSD Result	MS % Rec.	MSD % Rec.	RPD	Data Qualifiers
Lead	94.9	25	137	171	169	305	22.2	S, M

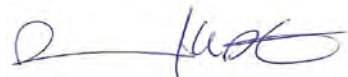
## Case Narrative

All method protocols and quality control requirements were satisfied for all samples.

## Notes

- (1) Quality Control Limits available upon request.
- (2) Results are applicable only to the sample tested.
- (3) All samples will be discarded after 30 days unless the laboratory receives other instructions.
- (4) Chain of Custody document attached.

QUANTUM LABORATORIES, INC.



David W. Starr  
Analytical Chemistry Manager



Women's Business Enterprise  
National Council



Cert. No. 2005111505

QUANTUM LABORATORIES, INC.  
28221 Beck Road | Suite A-11  
Wixom, MI 48393  
248-348-TEST or 248-348-8378

### CHAIN OF CUSTODY RECORD

CLIENT INFO	COMPANY	Atlas Technical Consultants LLC
	ADDRESS	46555 Humboldt Dr., #100
	CITY, STATE, ZIP	Novi, MI 48377
	TELEPHONE	
	FAX	
	CONTACT	Kevin LaFarge
	ADDITIONAL PHONE	(734) 351-9095 call w/any #'s
	EMAIL ADDRESS	kevin.lafarge@atlas.com

PROJECT INFO	REPORT NO. (LAB USE)	12434	Page 1 of 2
	P.O. NUMBER		
	PROJECT NUMBER		
	PROJECT NAME	City of Detroit - Lenox Center	
	SAMPLING LOCATION	100 Lenox St., Detroit MI	
	SAMPLES COLLECTED BY	K. Scott	
	TURN AROUND TIME	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush <input type="checkbox"/> By Date:	
	SPECIAL INSTRUCTIONS	X	

\* SAMPLE TYPE: S=Soil, W=Water, D=Drinking Water, O=Oil/Organic, M=Mixed, V=Vapor, A=Air  
U=Unknown or Other

\*\* GRAB/COMP: G=Grab Sample, C=Composite Sample

LINE NO.	LAB USE	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	TIME SAMPLED	DATE SAMPLED	SAMPLE TYPE *	GRAB / COMP **	REMARKS / PRESERVATIVES
1	GP-9	(0-1')	2	1043	7/27/22	S	G	
2	GP-9	(2-4')	2	1052				
3	GP-9	(6-7')	2	1101				
4	GP-10	(0-1')	2	1215				
5	GP-10	(2-4')	2	1228				
6	GP-10	(6-7')	2	1236				
7	GP-11	(0-1')	2	1126				
8	GP-11	(2-4')	2	1134				
9	GP-11	(6-7')	2	1149				
10	GP-12	(0-1')	2	1331				

Lead by 200/6000  
PAHs by 8170

\* Please use  
EFLC  
detection  
limits.

XFER	RELINQUISHED BY	TIME / DATE	ACCEPTED BY
1		1025 / 7/28/22	
2			
3			

SAMPLE RECEIVED	
<input type="checkbox"/> Wet Ice	
<input type="checkbox"/> Blue Ice	

Distribution: White - Lab Copy Yellow - Client Report Pink - Sampler

Data Qualifiers:  
1 Internal Standard results outside of acceptance limits  
S OC spike recovery outside of acceptance limits  
R PPD outside of acceptance limits

D Reporting limit is elevated  
J Result is from a dilution  
Result should be considered estimated

M Matrix interferences observed  
F Matrix spike four times rule applied  
C See Case Narrative



