MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: Amy Keranen, Project Manager, Marquette District Office
Remediation and Redevelopment Division

FROM: Chris Black, Geological Technician, Geological Services Section
Remediation and Redevelopment Division

DATE: January 19, 2023

SUBJECT: Calumet Dry Cleaners, Houghton County, Site ID #31000530
GSS Job #1496
Vapor Intrusion (VI) Sampling-December 2022

This memorandum is for work requested by the Department of Environment, Great Lakes, and Energy (EGLE), Remediation and Redevelopment Division's (RRD's), Marquette District Office for the subject site located at 120 5th Street, in Calumet, Houghton County, Michigan. District staff requested RRD's Geological Services Section (GSS) sample four existing vapor points (22VP-01-SS, 22VP-02-SS, 22VP-03-SS, and 22VP-4-SS).

On December 13, 2022, GSS sampled all the points (Appendix A). Staff submitted the samples to the EGLE Laboratory, in Lansing, for volatile organic compound analyses using United States Environmental Protection Agency Method TO-15 (Table 1). The laboratory results are included in Content Manager (EGLE Laboratory/ 12/13/22 Air Sampling Results – 2212138).

If you have any questions, contact me at 517-243-3174. Chris Black (KZ)

cc/att: Aaron Berndt, EGLE
Scott Densteadt, EGLE
Jeff Pincumbe, EGLE

Michigan Department of Environment, Great Lakes, and Energy Analytical Testing Report
Work Order: 2212138
Report Date: 1/11/2023
Client: EGLE-RRD-UP
Attention: Amy Keranen
Project Name: CALUMET DRY CLEANERS
Project Number: 31000530
Note: This is not the original data. Please refer to PDF / Hardcopy report.

Analysis	Analyte	Units	Method	* RDL				
LAB ID					2212138-01	2212138-02	2212138-03	2212138-04
CLIENT ID					22VP01-SS	22VP02-SS	22VP03-SS	22VP04-SS
DATE SAMPLED					12/13/2022	12/13/2022	12/13/2022	12/13/2022
DATE RECEIVED					12/16/2022	12/16/2022	12/16/2022	12/16/2022
MATRIX					Air	Air	Air	Air
BOTTLEVAC	Bromofluorobenzene	ug/m3	TO-15		137	140	142	138
BOTTLEVAC	1,1,1-Trichloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,1,2,2-Tetrachloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,1,2-Trichloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,1,2-Trichlorotrifluoroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,1-Dichloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,1-Dichloroethylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2,3-Trichlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2,3-Trichloropropane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2,3-Trimethylbenzene	ug/m3	TO-15		3.3	3.5	2.8	3.3
BOTTLEVAC	1,2,4-Trichlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2,4-Trimethylbenzene	ug/m3	TO-15		14	15	14	14
BOTTLEVAC	1,2-Dibromo-3-chloropropane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2-Dibromoethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2-Dichlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2-Dichloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,2-Dichloropropane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,3,5-Trimethylbenzene	ug/m3	TO-15		3.5	3.7	3.3	3.3
BOTTLEVAC	1,3-Butadiene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,3-Dichlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	1,4-Dichlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	2,2,4-Trimethylpentane	ug/m3	TO-15		13	3.5	ND	2.6
BOTTLEVAC	2-Butanone (MEK)	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	2-Methylnaphthalene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	4-Methyl-2-pentanone (MIBK)	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Acetone	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Acetonitrile	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Acrylonitrile	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Benzene	ug/m3	TO-15		4.3	1.1	2.7	ND
BOTTLEVAC	Bromobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Bromodichloromethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Bromoform	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Bromomethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Carbon disulfide	ug/m3	TO-15		ND	2.6	ND	ND
BOTTLEVAC	Carbon tetrachloride	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Chlorobenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Chloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Chloroform	ug/m3	TO-15		ND	4.5	ND	ND
BOTTLEVAC	Chloromethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	cis-1,2-Dichloroethylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	cis-1,3-Dichloropropylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Cyclohexane	ug/m3	TO-15		2.3	ND	ND	ND
BOTTLEVAC	Dibromochloromethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Dichlorodifluoromethane	ug/m3	TO-15		2.3	2.2	2.2	2
BOTTLEVAC	Diethyl ether	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Diisopropyl Ether	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Ethanol	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Ethylbenzene	ug/m3	TO-15		20	5.5	5.7	5.6
BOTTLEVAC	Ethyltertiarybutylether	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Hexachloroethane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Hexane	ug/m3	TO-15		4.3	ND	ND	ND
BOTTLEVAC	Isopropyl Alcohol	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Isopropylbenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	m & p - Xylene	ug/m3	TO-15		34	25	22	24
BOTTLEVAC	Methylcyclopentane	ug/m3	TO-15		6.6	1	ND	ND
BOTTLEVAC	Methylene chloride	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Methyltertiarybutylether	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	n-Heptane	ug/m3	TO-15		7.3	1.4	ND	1.3
BOTTLEVAC	n-Propylbenzene	ug/m3	TO-15		3.2	2.3	2	2.2
BOTTLEVAC	o-Xylene	ug/m3	TO-15		11	8.9	8.4	8.1
BOTTLEVAC	Pentane	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	sec-Butylbenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Styrene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	tert-Butylbenzene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	tertiary Butyl Alcohol	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	tertiaryAmylmethylether	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Tetrachloroethylene	ug/m3	TO-15		110	65	80	68
BOTTLEVAC	Tetrahydrofuran	ug/m3	TO-15		0.79	ND	ND	ND
BOTTLEVAC	Toluene	ug/m3	TO-15		36	33	37	30
BOTTLEVAC	trans-1,2-Dichloroethylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	trans-1,3-Dichloropropylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Trichloroethylene	ug/m3	TO-15		ND	ND	ND	ND
BOTTLEVAC	Trichlorofluoromethane	ug/m3	TO-15		6.3	ND	ND	ND
BOTTLEVAC	Vinyl chloride	ug/m3	TO-15		ND	ND	ND	ND

Grey indicates contaminant was detected.
* Refer to PDF/Hardcopy report for detection limit.
ND = Not Detected.

APPENDIX A

Calumet Dry Cleaners, Houghton County
Site ID #31000530

VI Sampling Field Sheets

V.I. Sampling Field Sheet

Sample Point ID: 22 VP 01-SS

Date: 12-13-22

Site Name: Calumet Dry Cleaners County: Houghton

Site Address: 5th St. Calumet.

Sampler's Name: C. Black

Project Manager: Amy Keranen District: UP

Suspected COC's: Petroleum: _____ Solvent: ✓

Point Information

Point/Well Name: _____ Point/Well Location: _____

Point/Well Installation Date: _____

Sub Slab: _____ Soil Gas Probe: _____ Depth: _____

Permanent: _____ Temporary: _____ Screen Material Used: _____

Weather Conditions: Temp.: _____ Rain Event: Y / N Amount of Rain: _____

Surface Type: Asphalt: _____ Concrete: _____ Grass: _____ Surface Thickness: _____ inches

Surface Staining: Y / N Comments: _____

Pressure (Home): 0.07 Pressure (Sampling Point): _____ Pressure (After Sampling): _____

Leak Detection

Bottle Vac #: 1087 Regulator #: 245

Tubing Type: Teflon: _____ Polyethylene: _____ Master Flex: _____

Tubing Certified Clean: Y / N Field Purged with Nitrogen: Y / N

Leak Test Performed: (Y) / N On Vapor Point: ✓ On Soill Gas Point: _____

Tracer Gas Utilized: (Y) / N Helium: ✓ Total Volume of Tubing: _____ ml X 3 = _____ Total

Evidence of Leakage: Y (N)

Initial Field Readings: O2 20.5 % CO2: 2 % CH4: 0 % CO: 0 % H2S: 0 ppm

Barometric Pressure: 28.90 in/Hg GEM Used: Y / N

Regulator Gauge Baseline Reading: -1 in/Hg

Initial Bottle Vac Pressure Reading: -27 in/Hg Start Time: 2:04

Final Bottle Vac Pressure Reading: -1.. in/Hg Stop Time: 2:13

Evidence of Moisture in Bottle Vac: Y / N

CO2: _____ ppm LEL: 0 % VOC: 0 ppm O2: _____ % PID Used: (Y) / N

V.I. Sampling Field Sheet

Sample Point ID: 22VP02-SS

Date: 12-13-22

Site Name: Calumet Dry Cleaner County: Houghton

Site Address: 5th St. Calumet

Sampler's Name: C. Black

Project Manager: Amy Keranen District: UP

Suspected COC's: Petroleum: _____ Solvent: ✓

Point Information

Point/Well Name: _____ Point/Well Location: _____

Point/Well Installation Date: _____

Sub Slab: _____ Soil Gas Probe: _____ Depth: _____

Permanent: _____ Temporary: _____ Screen Material Used: _____

Weather Conditions: Temp.: _____ Rain Event: Y / N Amount of Rain: _____

Surface Type: Asphalt: _____ Concrete: _____ Grass: _____ Surface Thickness: _____ inches

Surface Staining: Y / N Comments: _____

Pressure (Home): 2 Pressure (Sampling Point): _____ Pressure (After Sampling): _____

Leak Detection

Bottle Vac #: 1654 Regulator #: 240

Tubing Type: Teflon: _____ Polyethylene: _____ Master Flex: _____

Tubing Certified Clean: Y / N Field Purged with Nitrogen: Y / N

Leak Test Performed: Y / N On Vapor Point: ✓ On Soil Gas Point: _____

Tracer Gas Utilized: Y / N Helium: ✓ Total Volume of Tubing: _____ ml X 3 = _____ Total

Evidence of Leakage: Y (N)

Initial Field Readings: O2 20.6 % CO2: 1.1 % CH4: 0 % CO: 0 % H2S: 0 ppm

Barometric Pressure: 28.90 in/Hg GEM Used: Y / N

Regulator Gauge Baseline Reading: 0 in/Hg

Initial Bottle Vac Pressure Reading: -28 in/Hg Start Time: 2:28

Final Bottle Vac Pressure Reading: 0 in/Hg Stop Time: 2:38

Evidence of Moisture in Bottle Vac: Y / N

CO2: _____ ppm LEL: 0 % VOC: 0 ppm O2: _____ % PID Used: Y / N

V.I. Sampling Field Sheet

Sample Point ID: 22 UP 03-SS

Date: 12-13-22

Site Name: Calumet Dry Cleaners County: Houghton

Site Address: 5th St. Calumet

Sampler's Name: C. Black

Project Manager: Amy Keranen District: UP

Suspected COC's: Petroleum: _____ Solvent: ✓

Point Information

Point/Well Name: _____ Point/Well Location: _____

Point/Well Installation Date: _____

Sub Slab: _____ Soil Gas Probe: _____ Depth: _____

Permanent: _____ Temporary: _____ Screen Material Used: _____

Weather Conditions: Temp.: _____ Rain Event: Y / N Amount of Rain: _____

Surface Type: Asphalt: _____ Concrete: _____ Grass: _____ Surface Thickness: _____ Inches

Surface Staining: Y / N Comments: _____

Pressure (Home): 1.3 Pressure (Sampling Point): _____ Pressure (After Sampling): _____

Leak Detection

Bottle Vac #: 1900 **Regulator #:** 223

Tubing Type: Teflon: _____ Polyethylene: _____ Master Flex: _____

Tubing Certified Clean: Y / N Field Purged with Nitrogen: Y / N

Leak Test Performed: Y / N On Vapor Point: ✓ On Soil Gas Point: _____

Tracer Gas Utilized: Y / N Helium: ✓ Total Volume of Tubing: _____ ml X 3 = _____ Total

Evidence of Leakage: Y / N

Initial Field Readings: O2 20.9 % CO2: 1 % CH4: 0 % CO: 0 % H2S: 0 ppm

Barometric Pressure: 28.90 in/Hg **GEM Used:** Y / N

Regulator Gauge Baseline Reading: -1 in/Hg

Initial Bottle Vac Pressure Reading: -27 in/Hg **Start Time:** 2148

Final Bottle Vac Pressure Reading: -1 in/Hg **Stop Time:** 2157

Evidence of Moisture in Bottle Vac: Y / N

CO2: _____ ppm LEL: 0 % VOC: 0 ppm O2: _____ % **PID Used:** Y / N

V.I. Sampling Field Sheet

Sample Point ID: SVP 04-SS

Date: 12-13-22

Site Name: Calumet Dry Cleaner County: Houghton

Site Address: 5th St. Calumet

Sampler's Name: C. Black

Project Manager: Amy Keranen District: U.P.

Suspected COC's: Petroleum: _____ Solvent: ✓

Point Information

Point/Well Name: _____ Point/Well Location: _____

Point/Well Installation Date: _____

Sub Slab: _____ Soil Gas Probe: _____ Depth: _____

Permanent: _____ Temporary: _____ Screen Material Used: _____

Weather Conditions: Temp.: _____ Rain Event: Y / N Amount of Rain: _____

Surface Type: Asphalt: _____ Concrete: _____ Grass: _____ Surface Thickness: _____ inches

Surface Staining: Y / N Comments: _____

Pressure (Home): .0001 Pressure (Sampling Point): _____ Pressure (After Sampling): _____

Leak Detection

Bottle Vac #: 1443 Regulator #: 257

Tubing Type: Teflon: _____ Polyethylene: _____ Master Flex: _____

Tubing Certified Clean: Y / N Field Purged with Nitrogen: Y / N

Leak Test Performed: (Y)/N On Vapor Point: ✓ On Soill Gas Point: _____

Tracer Gas Utilized: (Y)/ N Helium: ✓ Total Volume of Tubing: _____ ml X 3 = _____ Total

Evidence of Leakage: Y /(N)

Initial Field Readings: O2 21.2 % CO2: _____ % CH4: 0 % CO: 0 % H2S: 0 ppm

Barometric Pressure: 28.90 in/Hg GEM Used: Y / N

Regulator Gauge Baseline Reading: 0 in/Hg

Initial Bottle Vac Pressure Reading: -25 in/Hg Start Time: 3:12

Final Bottle Vac Pressure Reading: 0 in/Hg Stop Time: 3:20

Evidence of Moisture in Bottle Vac: Y /(N)

CO2: _____ ppm LEL: 0 % VOC: 0 ppm O2: _____ % PID Used: (Y)/ N