

March 8, 2023

Mr. Christopher Saber
Regional Project Manager – PADEP
Northwest Regional Office
230 Chestnut Street
Meadville, PA 16335

Re: Data Summary Report No. 2 - Final
Groundwater Monitoring Well Installation and Round No. 1 Sampling
Erie Coke Site (GTAC7-6-181)

Dear Mr. Saber:

As stipulated in the Site Investigation Work Plan (OBG | Baker, June 2022), OBG | Baker Federal Solutions Joint Venture (OBG | Baker) was tasked to develop this Data Summary Report No. 2 for the Pennsylvania Department of Environmental Protection (PADEP or Department) to summarize the monitoring well installation activities and present the laboratory analytical results from Round No. 1 (of 2) of groundwater sampling at the Erie Coke site located in Erie, PA. As noted in the Work Plan, this summary report does not provide detailed descriptions of well installation activities or interpretation of the groundwater laboratory analytical results. Rather, this report is essentially a presentation of data to be used for ensuing meetings between the Department and OBG | Baker to discuss future investigation activities and strategy. The detailed presentation of the groundwater installation and sampling methodologies, findings, detailed laboratory reports, and interpretations of data will be presented in the Site Investigation Report anticipated to be completed in spring 2023.

From meetings in November 2022, it was agreed between the Department and OBG | Baker that 15 shallow and deep (relative) groundwater monitoring wells would be installed in the initial phase of the Site Investigation. The 15 wells included 11 shallow wells (MW-1 through MW-8, MW-10, and MW-11) and four deeper wells (MW-5D, MW-6D, MW-9D, and MW-11D) and are all shown on Figure 1.

Monitoring Well Installation and Development

The 15 monitoring wells were installed from November 28 to December 7, 2022, by Cascade Drilling, LP of Flint, MI with the OBG | Baker on-site geologist providing oversight and direction. Well installation activities encountered 'running sands' at all 15 of the well boring locations. Approximately 45 gallons of potable water were pumped into the drill casing to equalize the hydrostatic pressure of the aquifer at each well with great success. Once the hydrostatic pressure was neutralized, the wells were able to be installed at the targeted depths to either straddle the encountered water table (shallow wells) or be installed at the soil/bedrock interface (deep wells). Wells were installed between approximately 15 and 25 feet below grade. The Test Boring and Well Construction Records for the 15 wells are provided as Attachment A.

After installation, each of the wells was developed using a decontaminated submersible pump and disposable discharge line. Development included not only the removal of the calculated five well volumes in the well casing (standard methodology) but also the approximate 45 gallons of potable water used during well installation. Development waters from all wells were containerized in 17 drums and were disposed of accordingly by the waste disposal subcontractor (AWMSI) in January 2023.

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Monitoring Well Sampling

Approximately one week after completing the well development activities, the first round of groundwater sampling of the 15 monitoring wells was completed from December 12 through December 14, 2022. Prior to sampling, groundwater levels in the casing and total well depths were recorded in the field notebook and are summarized on Table 1. Groundwater sampling was completed using low-flow sampling techniques. Water Quality Parameters (WQPs) including pH, Oxidation-Reduction Potential (ORP), specific conductance, dissolved oxygen, temperature, and turbidity were measured at approximate five-minute intervals during purging and recorded in the field logbook. The final readings from each well prior to sampling are presented on Table 2 and were determined by the criteria specified in the Site Investigation Work Plan and Field Sampling and Analysis Plan (OBG | Baker, June 2022).

Monitoring Well Survey

Concurrent with the groundwater sampling activities, the survey of the 15 wells was completed by the OBG | Baker PA-licensed surveyor. The survey data from the 15 monitoring wells are summarized on Table 1. A groundwater elevation contour map (Figure 2) was developed from the December 2022 groundwater elevations measurements. Note that only the shallow wells (blue wells on Figure 1) were used in formulation of the mapping contours as there were not enough data points to also assess groundwater flow for the deeper wells. The available data shows the groundwater flow in the overburden, unconfined aquifer is approximately due north, toward Lake Erie, as expected.

Groundwater Analytical Results – Round No. 1

Because of the unknown future use of the site and the mixture of commercial and industrial areas near the site, the groundwater analytical results from Round No. 1 of groundwater sampling were compared to both the Pennsylvania Residential and Non-Residential Medium-Specific Concentrations (MSCs) for Used Aquifers. A summary of the groundwater analytical result detections (i.e., 'Hits' table) is provided on Table 3 for the December 2022 sampling event.

Volatile Organic Compounds (VOCs) were detected in a majority (13 of 15) of the monitoring wells with criteria exceedances limited to benzene in approximately one half of the monitoring wells. Semi-Volatile Organic Compounds (SVOCs) were detected in all 15 of the monitoring wells with detections varying from two SVOC detections (MW-4 and MW-5S) to 16 SVOC detections (MW-8D and MW-9D). Most of the SVOC criteria exceedances were exhibited in the same wells that exhibited VOC criteria exceedances. Multiple SVOC criteria exceedances were exhibited in wells MW-2 (5 exceedances), MW-6S (2 exceedances), MW-6D (4 exceedances), MW-8S (2 exceedances), MW-8D (2 exceedances), MW-9D (5 exceedances), MW-10 (5 exceedances), and MW-11D (4 exceedances). 1,1'-biphenyl, 2-methylnaphthalene, carbazole, dibenzofuran, and naphthalene were the most common SVOC analytes to exceed criteria in December 2022.

Although no PCBs were detected in any of the 15 wells, pesticides were detected in two of the wells (MW-6S and MW-6D), both at concentrations orders of magnitude below criteria. Dioxins were detected in all 15 wells with all concentrations below available criteria. Consistent with multiple other dioxin detections across the site, all groundwater well samples exhibited multiple dioxin detections, but most were qualified ('B') with also being detected in the associated laboratory blank. However, some dioxins (e.g., 1,2,3,4,6,7,8-HpCDD) were detected in most groundwater samples without the 'B' qualifier conveying that the analyte is present in the sample and not a laboratory artifact / interference.

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Although both a total and dissolved metals analysis sample were collected from each well, the discussion below is focused solely on the dissolved component of the groundwater samples as these data provide a better understanding of groundwater quality without interference.

Several dissolved metals were detected in all 15 of the monitoring wells with 13 of the wells exhibiting criteria exceedances (sans MW-10 and MW-11S). Each of the 13 wells exhibited no less than one, but no more than four, dissolved metals criteria exceedances. Most samples exhibited two metals criteria exceedances (iron and manganese) with wells MW-6S and MW-6D exhibiting the most with four exceedances (iron, lead, manganese, and selenium). Iron and manganese were the most prolific in groundwater having criteria exceedances in 12 wells and 9 wells, respectively. The thallium concentration in MW-7 also exceeded criteria.

General chemistry also was analyzed in the 15 groundwater wells. As summarized on Table 3, elevated chloride levels were exhibited in MW-9D and MW-11D, elevated nitrate levels in MW-6S and MW-6D, elevated pH in MW-1, and elevated sulfate levels above criteria (250 milligrams per liter [mg/L]) in all wells excluding MW-1, MW-2, and MW-11S.

Recommendations

It was recommended that the Department review and provide comments on the Draft Data Summary Report No. 2 in a timely manner to allow submittal of the final data summary report promptly afterwards. The submittal was timely to allow discussions of possibly truncating the extensive analytical suite scheduled for the March 2023 sampling event due to lack of detections of select analytes (e.g., PCBs) during the December 2022 sampling event. The Department decided to continue with the extensive analytical suite for the second round of groundwater sampling (March 2023) to be consistent with the December 2022 sampling event.

OBG | Baker appreciates the opportunity to continue working with the Department on this interesting and important project. Please feel free to call me at (724) 457-8910 (cell) or email me at Ckupfer@mbakerintl.com if you have any questions or need further information.

Sincerely,

OBG | BAKER ENVIRONMENTAL SOLUTIONS JOINT VENTURE



Christopher H. Kupfer, P.G.
Project Manager

attachments

FIGURES



FIGURE 1
MONITORING WELL LOCATION MAP
ERIE COKE SITE
ERIE, PENNSYLVANIA

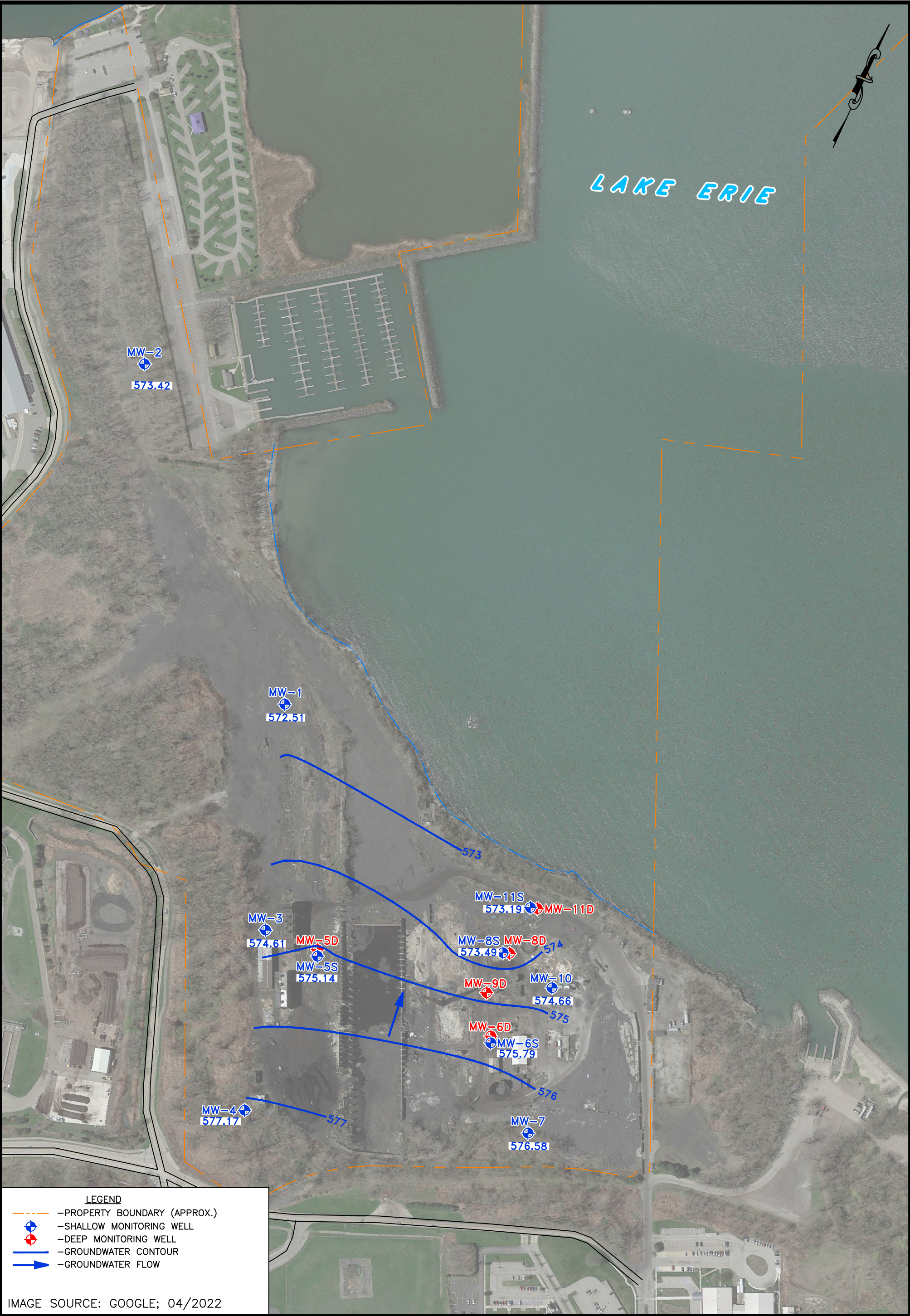


FIGURE 2
GROUNDWATER CONTOUR MAP
DECEMBER 2022
ERIE COKE SITE
ERIE, PENNSYLVANIA

TABLES

Table 1
Groundwater Monitoring Well Survey Data
December 2022
Erie Coke Site

Well	Northing	Easting	Ground Surface Elevation (MSL)	Top of Casing Elevation		Depth to Water (TOC-PVC)	Groundwater Elevation (MSL)	Approximate Well Screen Interval		Total Well Depth		
				(Steel)	(PVC)			(BGS)	(MSL)	(TOC-PVC)	(BGS)	(MSL)
MW-1	729,566.90	1,338,421.29	579.50	582.50	582.09	9.58	572.51	5 - 15	574.5 - 564.5	17.50	14.91	564.59
MW-2	730,434.14	1,337,495.97	581.67	584.82	584.59	11.17	573.42	8 - 18	573.7 - 563.7	21.09	18.17	563.50
MW-3	728,830.75	1,338,682.82	581.15	584.32	584.06	9.45	574.61	5 - 15	576.2 - 566.2	18.00	15.09	566.06
MW-4	728,235.60	1,338,874.27	581.41	584.45	584.26	7.09	577.17	5 - 15	576.4 - 566.4	17.74	14.89	566.52
MW-5S	728,822.68	1,338,882.83	583.11	586.21	586.05	10.91	575.14	5 - 15	578.1 - 568.1	18.00	15.06	568.05
MW-5D	728,827.82	1,338,880.99	583.14	586.19	586.02	10.89	575.13	10 - 20	573.1 - 563.1	23.13	20.25	562.89
MW-6S	728,798.13	1,339,550.54	589.57	592.89	592.54	16.75	575.79	10 - 20	579.6 - 569.6	23.08	20.11	569.46
MW-6D	728,802.44	1,339,548.32	589.59	592.82	592.55	16.70	575.85	15 - 25	574.6 - 564.6	28.58	25.62	563.97
MW-7	728,567.85	1,339,796.16	585.58	588.56	588.33	11.75	576.58	8 - 18	577.6 - 567.6	20.75	18.00	567.58
MW-8S	729,097.94	1,339,460.18	586.91	590.01	589.87	16.38	573.49	8 - 18	578.9 - 568.9	21.64	18.68	568.23
MW-8D	729,097.60	1,339,464.41	586.87	589.90	589.85	16.42	573.43	14 - 24	572.9 - 562.9	27.42	24.44	562.43
MW-9D	728,949.59	1,339,465.73	587.99	590.99	590.93	16.19	574.74	15 - 25	573.0 - 563.0	27.34	24.40	563.59
MW-10	729,058.11	1,339,664.17	587.68	590.77	590.60	15.94	574.66	10 - 20	577.7 - 567.7	22.80	19.88	567.80
MW-11S	729,278.97	1,339,481.85	585.54	588.57	588.43	15.24	573.19	8 - 18	577.5 - 567.5	20.95	18.06	567.48
MW-11D	729,278.30	1,339,488.31	585.50	588.56	588.44	15.27	573.17	13 - 23	572.5 - 562.5	26.15	23.21	562.29

MSL - Mean Sea Level
TOC - Top of Casing
BGS - Below Ground Surface
N/A - Not Applicable/Not Available

Table 2
Summary of Aqueous Field Parameter Data
December 2022 Groundwater Sampling Event
Erie Coke Site

Well	Date Sampled	Temperature (C°)	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	pH (S.U.)	Turbidity (NTU)	Oxidation-Reduction Potential (mV)
Monitoring Well							
MW-1	12/12/22	13.7	0.732	0.30	11.58	2.51	-276.8
MW-2	12/12/22	11.6	1.140	0.86	7.00	15.36	-213.4
MW-3	12/13/22	14.0	1.276	0.35	7.11	7.95	-160.2
MW-4	12/13/22	9.7	1.404	1.43	6.91	3.00	-112.2
MW-5S	12/13/22	10.2	0.947	1.21	7.33	5.10	-123.2
MW-5D	12/13/22	12.4	1.059	0.92	7.89	3.18	-217.2
MW-6S	12/14/22	15.8	3.147	0.35	6.65	20.74	-27.5
MW-6D	12/14/22	16.7	2.992	0.28	6.70	9.86	-9.5
MW-7	12/13/22	11.3	1.688	0.33	6.88	2.16	-232.1
MW-8S	12/14/22	17.6	1.877	0.92	7.51	1.50	-329.3
MW-8D	12/14/22	18.1	1.787	0.63	7.61	0.37	-331.7
MW-9D	12/14/22	17.9	3.648	0.20	7.37	1.10	-308.7
MW-10	12/13/22	15.8	2.246	0.94	7.41	0.36	-347.3
MW-11S	12/13/22	16.4	0.780	0.29	8.47	25.93	-174.8
MW-11D	12/13/22	16.5	2.377	0.25	8.55	7.78	-229.8

N/A = Not Available/Not Applicable

C° - degrees Celsius

µs/cm - microsiemens per centimeter

mg/L - milligrams per liter

mV - millivolts

S.U. - Standard Units

NTU - Nephelometric Turbidity Units

TABLE 3

SUMMARY OF DETECTED ANALYTICAL DATA - GROUNDWATER MONITORING WELLS - DECEMBER 2022
ERIE COKE SITE
CITY OF ERIE, ERIE COUNTY, PENNSYLVANIA

Sample ID	PADEP Residential Groundwater MSCs (Used Aquifer; TDS≤2500)	PADEP Nonresidential Groundwater MSCs (Used Aquifer; TDS≤2500)	MW-1 12/12/2022	MW-2 12/12/2022	MW-2 DUP 12/12/2022	MW-3 12/13/2022	MW-4 12/13/2022	MW-5S 12/13/2022	MW-5D 12/13/2022	MW-6S 12/14/2022
Sample Date										
Volatile Organic Compounds (µg/L) ⁽¹⁾										
Benzene	5	5	0.6 U	6800	6600	2.4	0.6 U	4.7	14	0.6 U
Carbon disulfide	1,500	6,200	0.88 U	0.88 U	0.88 U	0.88 U^c	0.88 U^c	0.88 U^c	0.88 U^c	0.88 U
Chloroform	80	80	3.8	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Chloromethane	30	30	0.96 J	0.9 U	0.9 U	0.9 U^c	0.9 U^c	0.9 U^c	0.9 U^c	0.9 U
cis-1,2-Dichloroethene	70	70	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Cyclohexane	13,000	53,000	0.63 U^c	0.63 U^c	0.7 J^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c
Ethylbenzene	700	700	0.51 U	35	32	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U
Isopropylbenzene	840	3,500	0.34 U	4.9	4.7	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Methylcyclohexane	NE	NE	0.61 U	1.6	1.7	0.61 U^c	0.61 U^c	0.61 U^c	0.61 U^c	0.61 U
Styrene	100	100	0.47 U	2.6	2.3	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
Toluene	1,000	1,000	0.46 U	10	9.1	0.65 J	0.46 U	0.46 U	1.1	0.46 U
Trichloroethene	5	5	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 JB
Xylenes, Total	10,000	10,000	0.89 U	31	28	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
Semivolatile Organic Compounds (µg/L) ⁽²⁾										
1,1'-Biphenyl	0.84	3.5	0.14 U	4.6 J	5.5 J	0.15 U	0.14 U	0.14 U	0.15 U	1.4
2,4-Dimethylphenol	690	1,900	0.17 UFL	2.6 U	2.4 U	0.17 U	0.16 U	0.16 U	0.18 U	0.18 U
2-Methylnaphthalene	6.3	26	0.062 U	25	28	0.065 U	0.06 U	0.06 U	0.067 U	7.9
2-Methylphenol	1,700	4,900	0.3 U	4.7 U	4.3 U	0.31 U	0.29 U	0.29 U	0.33 U	0.33 U
Acenaphthene	2,100	3,800	0.065 U	85	100	0.068 U	0.063 U	0.063 U	0.071 U	0.68
Acenaphthylene	2,100	5,800	0.065 U	13	16	0.068 U	0.063 U	0.063 U	0.071 U	6.9
Anthracene	66	66	0.049 U	5.5	5.9	0.051 U	0.047 U	0.047 U	0.053 U	1.1
Benzo[a]anthracene	0.3	3.9	0.075 U	1.2 U	1.1 U	0.078 U	0.072 U	0.072 U	0.082 U	0.082 U
Bis(2-chloroethoxy)methane	100	290	0.15 U	2.4 U	2.2 U	0.16 U	0.15 U	0.15 U	0.17 U	0.17 U
Caprolactam	NE	NE	1.1 J	7.3 U	6.8 U	0.68 J	0.45 U	0.52 J	2.2 J	1.1 J
Carbazole	33	140	0.051 U	96	100	0.053 U	0.049 U	0.049 U	0.055 U	6.5
Dibenzofuran	35	97	0.19 U	58	67	0.2 U	0.18 U	0.18 U	0.21 U	5.7
Di-n-butyl phthalate	3,500	9,700	0.74 U	12 U	11 U	2.7	0.71 U	0.71 U	2.2	1.4
Fluoranthene	260	260	0.06 U	7.6	7.5	0.063 U	0.058 U	0.058 U	0.065 U	1.7
Fluorene	1,400	1,900	0.069 U	70	79	0.072 U	0.066 U	0.066 U	0.075 U	6.4
Methylphenol, 3 & 4	170 ⁽³⁾	490 ⁽³⁾	0.37 U	5.8 U	5.4 U	0.39 U	0.36 U	0.36 U	0.4 U	0.4 U
Naphthalene	100	100	0.16 J	910 E	1100 E	0.54	0.23	0.057 U	0.32	46 E
Phenanthrene	1,100	1,100	0.13 J	63	67	0.064 J	0.068 J	0.07 J	0.062 J	7.2
Phenol	2,000	2,000	0.49 U	27	33	0.51 U	0.47 U	0.47 U	0.53 U	0.53 U
Pyrene	130	130	0.054 U	4.4	3.9	0.056 U	0.052 U	0.052 U	0.059 U	0.82
Pesticides (µg/L) ⁽⁴⁾										
4,4'-DDD	2.7	11	0.00051 U	0.00053 U	0.00051 U	0.00051 U	0.0005 U	0.00051 U	0.00051 U	0.0091
PCBs (µg/L) ⁽⁵⁾										
None Detected										

TABLE 3

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ERIE COKE SITE
CITY OF ERIE, ERIE COUNTY, PENNSYLVANIA

Sample ID	PADEP Residential Groundwater MSCs (Used Aquifer; TDS≤2500)	PADEP Nonresidential Groundwater MSCs (Used Aquifer; TDS≤2500)	MW-1 12/12/2022	MW-2 12/12/2022	MW-2 DUP 12/12/2022	MW-3 12/13/2022	MW-4 12/13/2022	MW-5S 12/13/2022	MW-5D 12/13/2022	MW-6S 12/14/2022
Sample Date										
Dioxins (pg/L)										
1,2,3,4,6,7,8-HpCDD	NE	NE	0.91 JI	0.62 J	1.7 JI	1.4 JI	0.38 U	1.3 JI	1.6 JI	0.71 JIB
1,2,3,4,6,7,8-HpCDF	NE	NE	0.28 JIB	0.42 JIB	0.38 JIB	0.38 JIB	0.036 UB	0.66 JIB	0.67 JB	0.18 JIB
1,2,3,4,7,8,9-HpCDF	NE	NE	0.33 JIB	0.33 JIB	0.29 JIB	0.4 JB	0.048 UB	0.9 JIB	0.78 JIB	0.22 JIB
1,2,3,4,7,8-HxCDD	NE	NE	0.67 JIB	0.019 UB	0.054 UB	0.1 UB	0.024 UB	0.41 JB	0.053 UB	0.2 JI
1,2,3,4,7,8-HxCDF	NE	NE	0.83 JIB	0.077 UB	0.44 JIB	0.41 JIB	0.37 JB	0.68 JB	0.53 JB	0.16 JI
1,2,3,6,7,8-HxCDD	NE	NE	0.81 JIB	0.02 UB	0.051 UB	0.11 UB	0.45 JIB	0.71 JB	1.2 JIB	0.22 JI
1,2,3,6,7,8-HxCDF	NE	NE	0.42 JIB	0.076 UB	0.52 JIB	0.24 JB	0.12 UB	0.32 JIB	0.81 JIB	0.2 JI
1,2,3,7,8,9-HxCDD	NE	NE	0.13 UB	0.023 UB	0.052 UB	0.11 UB	0.028 UB	0.042 UB	1.2 JIB	0.018 U
1,2,3,7,8,9-HxCDF	NE	NE	0.67 JIB	0.094 UB	0.086 UB	1.3 JB	0.16 UB	1.4 JB	0.98 JIB	0.075 U
1,2,3,7,8-PeCDD	NE	NE	1.5 JIB	0.22 UB	0.44 JIB	0.5 JIB	0.38 JIB	0.8 JIB	0.7 JIB	0.046 U
1,2,3,7,8-PeCDF	NE	NE	1.7 JIB	0.58 JIB	0.31 JIB	0.58 JB	0.038 UB	0.66 JIB	0.75 JIB	0.043 U
2,3,4,6,7,8-HxCDF	NE	NE	0.27 JIB	1.1 JB	0.37 JIB	0.6 JIB	0.6 JB	0.68 JIB	0.8 JIB	0.38 J
2,3,4,7,8-PeCDF	NE	NE	0.76 JB	0.5 JIB	0.04 UB	0.69 JIB	0.33 JIB	0.62 JB	0.53 JIB	0.2 JIB
2,3,7,8-TCDD	30	30	0.51 JI	0.074 U	0.3 JI	0.054 U	0.049 U	0.032 U	0.31 J	0.046 U
2,3,7,8-TCDF	NE	NE	0.39 JB	0.035 UB	0.025 UB	0.036 UB	0.045 UB	0.64 JB	0.037 UB	0.023 U
OCDD	NE	NE	3 JIB	2.3 JB	4.7 JB	2 JB	0.58 UB	3 JIB	3.7 JB	1.4 JB
OCDF	NE	NE	0.86 JIB	0.052 UB	1 JIB	1.1 JIB	0.87 JIB	1.4 JIB	1.1 JIB	0.81 JIB
Total Metals (µg/L) ⁽⁶⁾										
Aluminum	200 ⁽⁷⁾	200 ⁽⁷⁾	860	41 U	41 U	41 U	41 U	41 U	41 U	41 U
Arsenic	10	10	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
Barium	2,000	2,000	58 J	150 J	140 J	87 J	130 J	52 J	66 J	22 J
Cadmium	5	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.71 J
Calcium	NE	NE	86000	160000	150000	200000	260000	180000	210000	650000
Cobalt	10	29	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.3 J
Copper	1,000	1,000	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	5.9 J
Iron	300 ⁽⁷⁾	300 ⁽⁷⁾	72 U	1700	1500	10000	13000	5400	5100	1000
Lead	5	5	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	5.5 J
Magnesium	NE	NE	260 U	86000	84000	34000	46000	29000	28000	83000
Manganese	300	300	2.4 U	1100	1100	450	830	740	440	920
Nickel	100	100	1.9 U	1.9 U	1.9 U	2.6 J	1.9 U	1.9 U	1.9 U	9.8 J
Potassium	NE	NE	5300	17000	17000	13000	13000	39000	31000	2600 J
Selenium	50	50	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	110
Sodium	NE	NE	21000	12000	11000	60000	80000	24000	47000	97000 B
Thallium	2	2	3 U	3 U	3 U	3 U	3 U	3 U	3 J	3 U
Zinc	2000	2000	2.6 UB	2.6 UB	2.6 UB	2.6 U	9.3 JB	13 J	2.6 U	45

TABLE 3

SUMMARY OF DETECTED ANALYTICAL DATA - GROUNDWATER MONITORING WELLS - DECEMBER 2022
ERIE COKE SITE
CITY OF ERIE, ERIE COUNTY, PENNSYLVANIA

Sample ID Sample Date	PADEP Residential Groundwater MSCs (Used Aquifer; TDS≤2500)	PADEP Nonresidential Groundwater MSCs (Used Aquifer; TDS≤2500)	MW-1 12/12/2022	MW-2 12/12/2022	MW-2 DUP 12/12/2022	MW-3 12/13/2022	MW-4 12/13/2022	MW-5S 12/13/2022	MW-5D 12/13/2022	MW-6S 12/14/2022
Dissolved Metals (µg/L) ⁽⁸⁾										
Aluminum	200 ⁽⁷⁾	200 ⁽⁷⁾	920	41 U	41 U	41 U	41 U	41 U	41 U	41 U
Arsenic	10	10	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
Barium	2,000	2,000	57 J	160 J	150 J	89 J	130 J	53 J	64 J	23 J
Cadmium	5	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.79 J
Calcium	NE	NE	85000	160000	160000	200000	260000	180000	200000	670000
Cobalt	10	29	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.9 J
Copper	1,000	1,000	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	6.2 J
Iron	300 ⁽⁷⁾	300 ⁽⁷⁾	72 U	1800	1500	11000	14000	5400	4700	1100
Lead	5	5	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	5.3 J
Magnesium	NE	NE	260 U	91000	88000	34000	46000	28000	27000	85000
Manganese	300	300	2.4 U	1200	1100	450	840	750	420	960
Nickel	100	100	1.9 U	1.9 U	1.9 U	2 J	2.6 J	1.9 U	1.9 U	10 J
Potassium	NE	NE	5300	18000	18000	13000	13000	39000	30000	2500 J
Selenium	50	50	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	110
Sodium	NE	NE	20000	13000	12000	62000	79000	24000	45000	100000 B
Thallium	2	2	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Zinc	2,000	2,000	2.6 UB	2.6 UB	2.6 UB	3.2 J	7.7 JB	15 J	2.6 U	44
General Chemistry (mg/L)										
Acidity as CaCO3 to pH 8.3	NE	NE	-91.8	5 U	-20.6	5 U	-37.4	-33.2	-19.2	-340
Chloride	250 ⁽⁷⁾	NE	24.3	6.78	6.64	70.3	103	28.2	64.1	138
Nitrate as N	10	10	0.0345 JH	0.0872 JH	0.023 UH	0.023 U	0.0671 J	0.13	0.023 U	133
pH (SU)	6.5 - 8.5	NE	11.2 HF	7.8 HF	7.7 HF	7.8 HF	7.5 HF	7.8 HF	7.9 HF	7.2 HF
Specific Conductance (µmhos/cm)	NE	NE	840	1400	1400	1400	1800	1200	1400	3500
Sulfate	250 ⁽⁷⁾	NE	73.7	16.6	16.9	322	333	328	442	929
Total Alkalinity as CaCO3 to pH 4.5	NE	NE	---	---	---	330	420	240	140	330
Total Dissolved Solids	NE	NE	320	780	800	970	1200	840	990	2900
Turbidity (NTU)	NE	NE	0.05 J	80	75	150	120	60	55	4

TABLE 3

SUMMARY OF DETECTED ANALYTICAL DATA - GROUNDWATER MONITORING WELLS - DECEMBER 2022
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Sample ID Sample Date	PADEP Residential Groundwater MSCs (Used Aquifer; TDS≤2500)	PADEP Nonresidential Groundwater MSCs (Used Aquifer; TDS≤2500)	MW-6D 12/14/2022	MW-7 12/13/2022	MW-8S ⁽⁹⁾ 12/14/2022	MW-8D ⁽⁹⁾ 12/14/2022	MW-9D ⁽⁹⁾ 12/14/2022	MW-9D DUP ⁽⁹⁾ 12/14/2022	MW-10 ⁽⁹⁾ 12/13/2022	MW-11S ⁽⁹⁾ 12/13/2022	MW-11D 12/13/2022
Volatile Organic Compounds (µg/L) ⁽¹⁾											
Benzene	5	5	2.9	0.6 U	380 E	290 E	280 E	360 E	560 E	62 E	0.6 U
Carbon disulfide	1,500	6,200	0.88 U	0.88 U^c	0.88 U	0.88 U	0.88 U	0.88 U	1.6 ^c	0.88 U^c	0.88 U^c
Chloroform	80	80	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Chloromethane	30	30	0.9 U	0.9 U^c	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U^c	0.9 U^c	0.9 U^c
cis-1,2-Dichloroethene	70	70	0.71 U	0.71 U	0.97 J	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Cyclohexane	13,000	53,000	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c	0.63 U^c
Ethylbenzene	700	700	0.51 U	0.51 U	67 E	310 E	12	43	73 E	1	16
Isopropylbenzene	840	3,500	0.34 U	0.34 U	8.9	9.2	3.3	5.2	3.8	0.34 U	1.6
Methylcyclohexane	NE	NE	0.61 U	0.61 U^c	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U^c	0.61 U^c	0.61 U^c
Styrene	100	100	0.61 J	0.47 U	0.47 U	0.47 U	7	10	14	0.47 U	12
Toluene	1,000	1,000	2.5	0.46 U	35	20	90 E	150 E	350 E	0.54 J	17
Trichloroethene	5	5	0.75 JB	0.69 U	1.5 B	0.89 JB	0.84 JB	0.81 JB	0.69 U	0.69 U	0.69 U
Xylenes, Total	10,000	10,000	4.5	0.89 U	31	24	75	140 E	540 E	2.4	86
Semivolatile Organic Compounds (µg/L) ⁽²⁾											
1,1'-Biphenyl	0.84	3.5	3 J	0.14 U	1.5 U	0.74 U	8.4 J	8.1 J	20 U	0.34 J	3.8 J
2,4-Dimethylphenol	690	1,900	0.93 J	0.17 U	31	38	46	35	470	0.45 J	45
2-Methylnaphthalene	6.3	26	16	0.42	4.8	3	34	32	120	0.2	37
2-Methylphenol	1,700	4,900	1.3 U	0.3 U	82 FL	130	93	73	760	0.3 U	29
Acenaphthene	2,100	3,800	1.6	0.099 J	2 J	1.5	9.1	7.8	9.4 U	0.43	2.5
Acenaphthylene	2,100	5,800	19	0.065 U	1.1 J	0.67 J	33	30	18 J	0.62	12
Anthracene	66	66	3	0.049 U	0.8 J	0.63 J	5 J	4.9	7.8 J	0.049 U	0.27 J
Benzo[a]anthracene	0.3	3.9	0.31 J	0.075 U	0.82 U	0.39 U	2.3 U	2 U	11 U	0.075 U	0.39 U
Bis(2-chloroethoxy)methane	100	290	0.63 U	0.15 U	1.7 U	1.6 J	4.6 U	4 U	22 U	0.15 U	0.79 U
Caprolactam	NE	NE	2 U	1.1 J	5.1 U	2.4 U	14 U	12 U	68 U	0.51 J	2.4 U
Carbazole	33	140	15	0.051 U	44 FL	44	85	80	160	2.5	35
Dibenzofuran	35	97	14	0.19 U	5.6 J	3.3 J	45	40	42 J	0.64 J	6.8
Di-n-butyl phthalate	3,500	9,700	3.1 U	2.3	8.1 U	3.9 U	22 U	19 U	110 U	2.3	3.9 U
Fluoranthene	260	260	5.9	0.06 U	0.71 J	0.66 J	8	7.9	8.7 U	0.06 U	0.31 U
Fluorene	1,400	1,900	19	0.069 U	5.7	3.4	47	45	37	0.31	6.7
Methylphenol, 3 & 4	170 ⁽³⁾	490 ⁽³⁾	1.6 U	0.37 U	39 FL	80	140	110	230	0.37 U	1.9 U
Naphthalene	100	100	140	4.7	230 4	250 E	870	730	4700	11	440 E
Phenanthrene	1,100	1,100	23	0.058 J	3	2.9	46	45	39	0.11 J	2
Phenol	2,000	2,000	2 U	0.49 U	45 FL	92	71	56	140	0.49 U	3.5 J
Pyrene	130	130	2.9	0.054 U	0.59 U	0.29 J	4.5 J	4.1 J	7.8 U	0.054 U	0.28 U
Pesticides (µg/L) ⁽⁴⁾											
4,4'-DDD	2.7	11	0.0056 p	0.00052 U	0.00052 U	0.00051 U	0.00052 U	0.00052 U	0.00051 U	0.00051 U	0.00051 U
PCBs (µg/L) ⁽⁵⁾											
None Detected											

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Dioxins (pg/L)											
1,2,3,4,6,7,8-HpCDD	NE	NE	1.3 JIB	0.96 JI	0.1 UB	0.66 JIB	0.98 JB	0.83 JIB	1.4 JI	0.96 JI	1 JI
1,2,3,4,6,7,8-HpCDF	NE	NE	0.3 JIB	0.38 JIB	0.16 JIB	0.12 JIB	0.21 JIB	0.38 JIB	0.4 JIB	0.34 JIB	0.48 JIB
1,2,3,4,7,8,9-HpCDF	NE	NE	0.019 UB	0.34 JIB	0.013 UB	0.098 JB	0.11 JIB	0.18 JIB	0.66 JIB	0.36 JIB	0.41 JIB
1,2,3,4,7,8-HxCDD	NE	NE	0.25 JI	0.063 UB	0.028 U	0.013 U	0.16 JI	0.24 J	0.064 UB	0.031 UB	0.42 JIB
1,2,3,4,7,8-HxCDF	NE	NE	0.21 JI	0.37 JIB	0.047 U	0.16 U	0.48 JI	0.082 JI	0.41 JIB	0.034 UB	0.096 UB
1,2,3,6,7,8-HxCDD	NE	NE	0.25 JI	0.059 UB	0.28 JI	0.095 JI	0.015 U	0.25 JI	0.36 JIB	0.52 JB	0.89 JIB
1,2,3,6,7,8-HxCDF	NE	NE	0.066 U	0.31 JB	0.044 U	0.16 U	0.13 J	0.21 JI	0.74 JIB	0.41 JIB	0.093 UB
1,2,3,7,8,9-HxCDD	NE	NE	0.29 JI	0.062 UB	0.027 U	0.013 U	0.45 J	0.11 JI	1.1 JIB	0.035 UB	0.093 UB
1,2,3,7,8,9-HxCDF	NE	NE	0.21 JI	0.94 JIB	0.21 JI	0.2 U	0.057 U	0.38 JI	0.92 JIB	0.044 UB	0.1 UB
1,2,3,7,8-PeCDD	NE	NE	0.029 U	0.2 UB	0.33 JI	0.049 U	0.17 JI	0.37 JI	0.13 UB	0.077 UB	0.72 JIB
1,2,3,7,8-PeCDF	NE	NE	0.5 JI	0.092 UB	0.4 JI	0.46 J	0.47 JI	0.53 JI	0.65 JB	0.36 JIB	0.86 JIB
2,3,4,6,7,8-HxCDF	NE	NE	0.19 JI	0.45 JIB	0.042 U	0.15 U	0.35 JI	0.41 JI	0.7 JIB	1.2 JIB	0.089 UB
2,3,4,7,8-PeCDF	NE	NE	0.23 JIB	0.27 JIB	0.34 JIB	0.019 UB	0.23 JIB	0.15 JIB	0.024 UB	0.33 JB	0.76 JIB
2,3,7,8-TCDD	30	30	0.034 U	0.035 U	0.062 U	0.054 U	0.083 JI	0.21 JI	0.1 JI	0.056 U	0.088 U
2,3,7,8-TCDF	NE	NE	0.032 U	0.086 JIB	0.13 JI	0.026 U	0.029 U	0.022 U	0.025 UB	0.037 UB	0.049 UB*5-
OCDD	NE	NE	2.8 JIB	2.9 JIB	2.1 JIB	1.7 JB	0.22 UB	2.1 JIB	2.6 JIB	1.9 JIB	2.8 JIB
OCDF	NE	NE	0.71 JIB	0.82 JIB	0.56 JIB	0.36 JIB	0.5 JIB	0.3 JB	1.2 JIB	1.3 JIB	1.3 JIB
Total Metals (µg/L) ⁽⁶⁾											
Aluminum	200 ⁽⁷⁾	200 ⁽⁷⁾	67 J	41 U	41 U	41 U	41 U	41 U	41 U	41 U	41 U
Arsenic	10	10	8.3 U	8.3 UF2	28	30	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
Barium	2,000	2,000	30 J	96 JF2	75 J	70 J	40 J	39 J	33 J	75 J	99 J
Cadmium	5	5	0.77 J	0.39 JF2	0.3 U	0.3 U	0.37 J	0.38 J	0.49 J	0.3 U	0.3 U
Calcium	NE	NE	600000 4	270000 4	170000	140000	230000	230000	200000	64000	95000
Cobalt	10	29	2.4 J	1.9 UF2	2.6 J	1.9 U	3 J	3 J	1.9 U	1.9 U	2.4 J
Copper	1,000	1,000	5.6 J	2.2 UF2	2.2 U	2.2 U	2.2 U	2.2 U	5.6 J	2.2 U	2.2 U
Iron	300 ⁽⁷⁾	300 ⁽⁷⁾	700	13000 FL	850	360	440	450	130	150	320
Lead	5	5	5.5 J	4.4 UF2	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
Magnesium	NE	NE	89000	43000	96000	100000	110000	110000	59000	25000	56000
Manganese	300	300	400	720 F2	290	160	76	72	220	200	88
Nickel	100	100	11 J	1.9 UF2	1.9 U	1.9 U	1.9 U	1.9 J	1.9 U	1.9 U	1.9 U
Potassium	NE	NE	5600	15000	7400	7800	10000	9900	3800 J	9000	24000
Selenium	50	50	120	3.7 UF2	13	7.1 J	3.7 U	3.7 U	3.9 J	3.7 U	3.7 U
Sodium	NE	NE	90000 B	85000 FL	81000 B	66000 B	250000 B	250000 B	240000	45000	110000
Thallium	2	2	3 U	3 UF2	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Zinc	2000	2000	140	2.6 U	2.6 J	7.9 J	3.6 J	11 J	47	2.6 U	2.6 U

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Sample ID Sample Date	PADEP Residential Groundwater MSCs (Used Aquifer; TDS≤2500)	PADEP Nonresidential Groundwater MSCs (Used Aquifer; TDS≤2500)	MW-6D 12/14/2022	MW-7 12/13/2022	MW-8S ⁽⁹⁾ 12/14/2022	MW-8D ⁽⁹⁾ 12/14/2022	MW-9D ⁽⁹⁾ 12/14/2022	MW-9D DUP ⁽⁹⁾ 12/14/2022	MW-10 ⁽⁹⁾ 12/13/2022	MW-11S ⁽⁹⁾ 12/13/2022	MW-11D 12/13/2022
Dissolved Metals (µg/L) ⁽⁸⁾											
Aluminum	200 ⁽⁷⁾	200 ⁽⁷⁾	41 U	41 U	41 U	41 U	41 U	41 U	41 U	41 U	41 U
Arsenic	10	10	8.3 U	8.3 U	23	24	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U
Barium	2,000	2,000	29 J	96 J	72 J	74 J	39 J	39 J	31 J	74 J	110 J
Cadmium	5	5	0.72 J	0.39 J	0.3 U	0.32 J	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Calcium	NE	NE	590000	270000	160000	140000	230000	230000	190000	63000	110000
Cobalt	10	29	2.3 J	1.9 U	2.5 J	1.9 U	3.2 J	3.2 J	1.9 U	1.9 U	2.6 J
Copper	1,000	1,000	6.4 J	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Iron	300 ⁽⁷⁾	300 ⁽⁷⁾	690	13000	780	350	430	450	110	110	330
Lead	5	5	5.5 J	4.5 J	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
Magnesium	NE	NE	89000	43000	95000	100000	110000	110000	57000	24000	63000
Manganese	300	300	390	720	310	140	73	73	200	190	95
Nickel	100	100	11 J	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Potassium	NE	NE	5600	15000	7200	7800	10000	9900	3700 J	9000	27000
Selenium	50	50	130	3.7 U	10	3.8 J	4.7 J	3.7 U	4.1 J	3.7 U	3.7 U
Sodium	NE	NE	90000 B	87000	81000 B	67000 B	250000 B	250000 B	220000	45000	120000
Thallium	2	2	3 U	3.9 J	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Zinc	2,000	2,000	140	20	2.6 U	2.6 U	2.6 U	3.1 J	2.6 U	7 J	2.6 U
General Chemistry (mg/L)											
Acidity as CaCO3 to pH 8.3	NE	NE	-358	-21.8	-427	-416	-327	-326	-38	-53.8	-13.8
Chloride	250 ⁽⁷⁾	NE	145	165	94.1	90.2	543	558	201	57.4	336
Nitrate as N	10	10	136 E	0.023 U	0.117 J^c	0.0575 U	0.0526 J	0.0592 J^c	0.0575 U	0.023 U	0.0575 U
pH (SU)	6.5 - 8.5	NE	7.3 HF	7.6 HF	7.9 HF	7.9 HF	7.6 HF	7.7 HF	8 HF	8.2 HF	8.3 HF
Specific Conductance (µmhos/cm)	NE	NE	3500	1900	2300	2100	4300	3900	2700	890	2700
Sulfate	250 ⁽⁷⁾	NE	803	285	506	484	822	844	652	198	646
Total Alkalinity as CaCO3 to pH 4.5	NE	NE	350	370	420	410	320	310	360	100	140
Total Dissolved Solids	NE	NE	2700	1200	1300	1200	2100	2100	1600	470	1100
Turbidity (NTU)	NE	NE	4.3	130	180	120	45	50	600	0.65 J	2.3

SUMMARY OF DETECTED ANALYTICAL DATA - GROUNDWATER MONITORING WELLS - DECEMBER 2022
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- - Not Analyzed
- % - percent
- *+ - LCS and/or LCSD is outside acceptance limits; biased high
- ^c - CCV recovery is outside acceptance limits
- *5- - Isotope dilution analyte is outside acceptance limits; biased low
- 4 - the analyte present in sample is greater than 4x the MS concentration; control limits are not applicable
- µg/L - microgram per liter
- µhos/cm - microhos per centimeter
- B - analyte was found in the blank
- CCV - Continuing Calibration Verification
- E - result exceeded calibration range
- EMPC - Estimated Maximum Possible Concentration
- F2 - MS/MSD RPD exceeds control limits
- FL - MS and/or MSD recovery below control limits
- H - sample was prepped or analyzed beyond specified holding times
- HF - field parameter with a holding time of 15 minutes; test performed by laboratory as requested
- I - value is EMPC
- J - result is less than the RL but greater than or equal to the MDL; estimated
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate

MDL - Method Detection Limit
mg/L - milligram per liter
MS - Matrix Spike
MSC - Medium-Specific Concentration
MSD - Matrix Spike Duplicate
MW - Monitoring Well
NE - Not Established
NTU - Nephelometric Turbidity Units
p - %RPD between the primary and confirmation column/detector is >40%; the lower volume has been reported
PADEP - Pennsylvania Department of Environmental Protection
PCB - Polychlorinated Biphenyl
pg/L - picogram per liter
RL - Reporting Limit
RPD - Relative Percent Difference
SMCL - Secondary Maximum Contaminant Level
SU - Standard Unit
SVOCs - Semi Volatile Organic Compounds
TDS - Total Dissolved Solids
U - Not Detected
VOCs - Volatile Organic Compounds

- (1) - 35 additional VOCs were analyzed for but not detected; reporting limits for 2 VOCs exceeded one or both of the screening criteria
- (2) - 45 additional SVOCs were analyzed for but not detected; reporting limits for 28 SVOCs exceeded one or both of the screening criteria
- (3) - 3&4-methylphenol is a combination of two isomers: 3-methylphenol and 4-methylphenol; 4-Methylphenol used as a surrogate
- (4) - 20 additional pesticides were analyzed for but not detected
- (5) - 7 PCBs were analyzed for but not detected
- (6) - 6 additional total metals were analyzed for but not detected; reporting limits for 3 total metals exceeded one or both of the screening criteria
- (7) - SMCL
- (8) - 6 additional dissolved metals were analyzed for but not detected; reporting limits for 3 total metals exceeded one or both of the screening criteria

* - SVOCs and metals for this sample were collected 10/18/2022

Analyte	Initial Result	Dilution Result	Dilution Factor
MW-8S			
Benzene	380 E	610 H	20
MW-8D			
Benzene	290 E	980 H	20
Ethylbenzene	310 E	460 H	20
MW-9D			
Benzene	280 E	620 H	20
Toluene	90 E	110 H	20
Xylenes, Total	75	78 H	20
MW-9D DUP			
Benzene	360 E	800 H	20
Ethylbenzene	43	13 JH	20
Toluene	150 E	140 H	20
Xylenes, Total	140 E	98 H	20
MW-10			
Benzene	560 E	4100 H	100
Toluene	350 E	630 H	100
Xylenes, Total	540 E	470 H	100
MW-11S			
Benzene	62 E	67 H	5

ATTACHMENT A

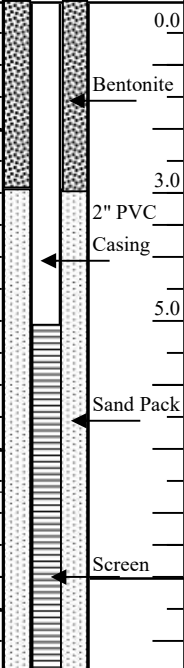
Test Boring and Well Construction Records

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-1**
 COORDINATES: EAST: **1,338,421.29** NORTH: **729,566.90**
 ELEVATION: SURFACE: **579.50** TOP OF PVC CASING: **582.09**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			11/29/2022	0.0-15.0	Cloudy, 40s	7.1
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						WELL INFORMATION			
						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	5.0
						Schedule 40 PVC, 10 slot	2"	5.0	15.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	5.0 100%			0.1	0.0-2.0 COKE FRAGMENTS and COKE BREEZE, little slag, black/dk gray, loose, moist		0.0	
2					0.1	2.0		2.0	
3					0.1	2.0-7.0 COKE, SLAG, and sandy SILT, trace clay, reddish-brown, loose, moist		3.0	
4					0.3			5.0	
5					9.6			5.0	
6	SC-2	5.0 100%			0.2				
7					0.1	7.0			
8					0.2	7.0-7.6 COKE/SLAG, gray, loose			
9					0.2	7.6-9.5 Med. and coarse SAND, little slag, trace silt, lt brown/gray, loose, wet			
10					0.4	9.5			
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-1** SHEET 1 OF **2**

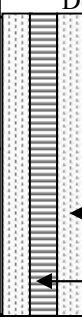
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-1

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	15.0	SC-3	4.0 80%			0	<i>Continued from Sheet 1</i>		
12						0.1	9.5-12.5 SLAG/SILT, little coarse sand, little med. and coarse angular gravel, gray, loose, wet		
13						0.1	12.5-15.0 FINE SAND, trace flat/rounded gravel, gray, med. dense, wet (native)		
14						0.1			
15						0.1			
16							End of Boring at 15.0'		
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

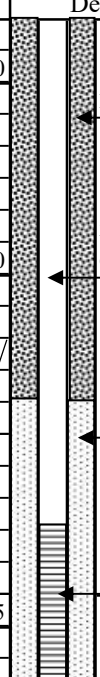
BAKER REP.: **Brad Mikula**

BORING NO.: **MW-1**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-2**
 COORDINATES: EAST: **1,337,495.97** NORTH: **730,434.14**
 ELEVATION: SURFACE: **581.67** TOP OF PVC CASING: **584.59**

Rig: Sonic Geoprobe - 8140LC Track Rig						Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing							
Length	4.75"	6"				11/29/2022	0.0-20.0	Cloudy, 40s	8.5
Type	5'	5'							
Hammer Wt.	Steel	Steel							
Fall									
Remarks:									
SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	8.0
						Schedule 40 PVC, 10 slot	2"	8.0	18.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	5.0 100%			0	0.0-1.0 TOPSOIL			0.0
2					0.7	1.0-4.0 CLAYEY SILT, little med. to fine sand, little med. and coarse subangular gravel, trace slag/coal/brick frags., brown/black, loose, moist to damp, slight benzene/naphtha odor			1.0
3					5.2				2.0
4					8.7				4.0
5					300.2	4.0-5.0 COKE, little slag, med. dense, black w/white flakes, moist, benzene/naphtha odor, oily, pieces of newspaper			5.0
6	SC-2	5.0 100%			8.5	5.0-9.5 SANDY SILT, little slag, trace brick frags., brown, loose, dry to wet			6.0
7					2.5				7.0
8					1.7				8.0
9					3.5				9.0
10					24.4	9.5-10.0 Fine and med. angular GRAVEL, c. sand, wet, odor			9.5

Match to Sheet 2

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-2** SHEET 1 OF **2**

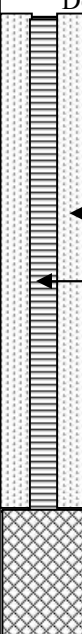
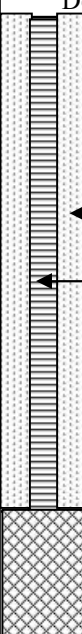
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-2

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	15.0	SC-3	5.0 100%			1.6	Continued from Sheet 1 10.0-14.0 COKE and SLAG, some med. and coarse sand, black w/white flakes, med. dense, wet		
12						7.3			
13						14.6			
14						7.7			
15						3.3	14.0-15.0 CLAYEY FINE SAND, trace slag, dk brown, soft, wet, (benzene/naphtha odor, oily)		
16	20.0	SC-4	5.0 100%			324.3	17.0-20.0 FINE SAND, trace flat/rounded gravel, gray, med. dense, wet (native), slight odor		
17						126.1			
18						40.9			
19						30.3			
20						24.2			
21							End of Boring at 20.0'		
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-2**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-3**
 COORDINATES: EAST: **1,338,682.82** NORTH: **728,830.75**
 ELEVATION: SURFACE: **581.15** TOP OF PVC CASING: **584.06**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			11/30/2022	0.0-15.0	Rain, 40s	6.3
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	5.0
						Schedule 40 PVC, 10 slot	2"	5.0	15.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	4.0 80%			0.0	0.0-3.0 SILT and COKE BREEZE, some fine and med. gravel (angular to subangular), little med. sand, black, loose, moist to damp			0.0
2					1.8				
3					2.0				
4					0.2	3.0-4.5 SILT and SLAG, trace med. sand, trace coke, brown/black, loose, damp to moist			3.0
5	5.0	SC-2			0.1	4.5-7.0 SILT and SLAG, little coarse sand, trace coal, black to brown, loose, moist to wet			5.0
6	0.0								
7	0.1								
8	0.1				7.0-8.5 CLAYEY SILT, little slag, trace coke, lt brown to gray, soft, wet	7.0			
9	0.0								
10	0.0				8.5-15.0 FINE SAND, trace rounded gravel, gray, med. dense, wet (native)	8.5			
									Match to Sheet 2

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-3** SHEET 1 OF **2**

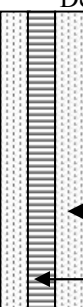
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-3

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	SC-3	5.0 100%			0.0	8.5-15.0 FINE SAND, trace rounded gravel, gray, med. dense, wet (native)		
12					0.0			
13					0.0			
14					0.0			
15					0.0			
16						End of Boring at 15.0'		
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-3**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-4**
 COORDINATES: EAST: **1,338,874.27** NORTH: **728,235.60**
 ELEVATION: SURFACE: **581.41** TOP OF PVC CASING: **584.26**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			11/30/2022	0.0-15.0	Snow, 40s	6.2
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						WELL INFORMATION			
						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	5.0
						Schedule 40 PVC, 10 slot	2"	5.0	15.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	5.0 100%			0.0	0.0-3.5 CLAYEY SILT, little fine and med. gravel (angular to subangular), little fine and med. sand, trace slag, black, soft, moist		0.0	
2					0.1			3.0	
3					0.1			3.5	
4					0			5.0	
5	SC-2	2.5 50%			0.1	3.5-10.0 SANDY SILT and GRAVEL (angular to subangular), little organic matter, trace slag, reddish-brown, loose, moist to wet		5.0	
6					0.2				
7					0.1			wet at 6.0'	
8					0.1				
9					0.1				
10					0.1			10.0	
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-4** SHEET 1 OF **2**

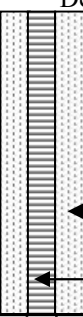
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-4

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
11	SC-3	5.0 100%			0.5	10.0-14.0 CLAY, little organic matter, gray w/black mottling, soft, wet (Fuel odor and oily from 10-14')			
12					9.4				
13					1.2				
14					0.5				
15					0.3	14.0-15.0 FINE SAND, trace rnd gravel, gray, med. dense, wet (native)			
15.0						End of Boring at 15.0'			
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-4**

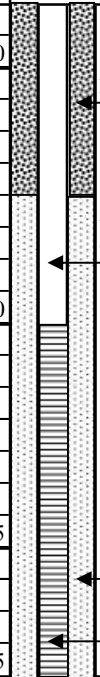
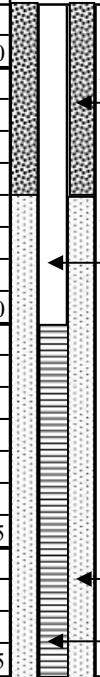
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-5S**
 COORDINATES: EAST: **1,338,882.83** NORTH: **728,822.68**
 ELEVATION: SURFACE: **583.11** TOP OF PVC CASING: **586.05**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/1/2022	0.0-15.0	Cloudy, Lt Snow, 30s	7.0
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	5.0
						Schedule 40 PVC, 10 slot	2"	5.0	15.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	4.5 90%			0	0.0-1.0 SANDY SILT and SLAG, gray/black, loose, moist		0.0	
2					2.5	1.0-5.0 SANDY SILT, little slag/brick/concrete fragments, trace coke, brown and tan, loose, damp		3.0	
3					0.7			5.0	
4					1.9			5.0	
5					4.3			5.0	
6	SC-2	4.0 80%			0.2	5.0-8.5 SANDY SILT, little slag, trace brick fragments, brown, loose, damp to wet			
7					0.2	wet at 7.5'			
8					0.9				
9					0.2	8.5-10.5 SILTY FINE SAND and SLAG, trace coke, lt gray, med. dense, wet			
10					0.1				
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-5S** SHEET 1 OF **2**

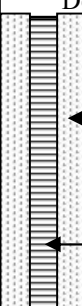
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-5S

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	15.0	SC-3	3.0 60%			0.1	<i>Continued from Sheet 1</i> 10.5-11.5 FINE SAND and SILT, trace slag, dk gray, loose, wet		15.0
12						0.1	11.5-15.0 FINE SAND, trace silt, trace rounded gravel, gray, med. dense, wet (native)		
13						0.1			
14						0.1			
15						0.1			
16							End of Boring at 15.0'		
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
							Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-5S**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-5D**
 COORDINATES: EAST: **1,338,880.99** NORTH: **728,827.82**
 ELEVATION: SURFACE: **583.14** TOP OF PVC CASING: **586.02**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/1/2022	0.0-22.0	Cloudy, Lt Snow, 40s	7.8
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	10.0
						Schedule 40 PVC, 10 slot	2"	10.0	20.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	5.0 100%			0.0	0.0-1.0 SANDY SILT and SLAG, gray/black, loose, moist		0.0	
2					4.8	1.0-5.0 SANDY SILT, little slag/brick/concrete fragments, trace coke, brown and tan, loose, damp			
3					1.8				
4					4.7				
5					8.9				
6	SC-2	4.5 90%			0.9	5.0-8.3 SANDY SILT, little slag, trace brick fragments, brown, loose, damp to wet			
7					0.4				
8					2.1	wet at 8.0'			
9					0.3	8.3-10.5 SILTY FINE SAND and SLAG, trace coke, lt gray, med. dense, wet			
10					0.9				
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-5D** SHEET 1 OF **2**

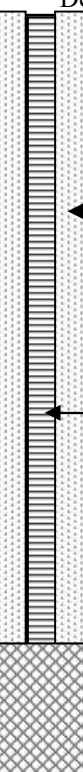
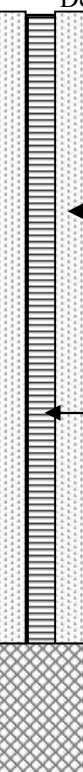
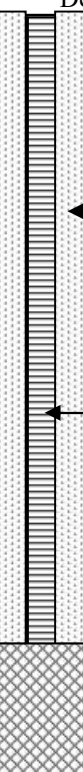
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-5D

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	4.0 80%			0.1	10.5-11.5 FINE SAND and SILT, trace slag, dk gray, loose, wet		
12					0.1	11.5-20.0 FINE SAND, trace silt, trace rounded gravel, gray, med. dense, wet (native)		
13					0.1			
14					0.1			
15					0.1			
16	SC-4	2.5 50%			0.1			
17					0.1			
18					0.1			
19					0.1			
20					0.1			
21	SC-5	2.0 100%			0.1	20.0-21.0 FINE SAND, trace shale, gray, loose, wet		
22					0.1	21.0-22.0 SANDY SHALE, trace clay, gray, hard, dry to moist		
23						End of Boring at 22.0'		
24								
25								
26								
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-5D**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-6S**
 COORDINATES: EAST: **1,339,550.54** NORTH: **728,798.13**
 ELEVATION: SURFACE: **589.57** TOP OF PVC CASING: **592.54**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/8/2022	0.0-20.0	Cloudy, Lt Rain, 40s	13.2
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	10.0
						Schedule 40 PVC, 10 slot	2"	10.0	20.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	5.0 100%			8.9	0.0-0.5 SANDY SILT, SLAG, and COAL BREEZE, little coal tar, black, med.dense, moist (naphtha/benzene odor) 0.5			0.0
2					20.8	0.5-2.0 SANDY SILT, SLAG and COAL TAR, wood frags, black, sticky, moist (naphtha/benzene odor) 2.0			
3					76.1	2.0-3.5 CONCRETE and SLAG, tan/lt gray, dense, dry 3.5			
4					17.5	3.5-5.0 SANDY SILT and SLAG, little coke and fine angular gravel, lt brown, loose, moist (odor) 5.0			
5					4.0	5.0-6.5 SLAG and fine/med. SAND, little fine angular gravel, trace silt, dk brown, loose, moist (naphtha/benzene odor) 6.5			
6	SC-2	5.0 100%			3.5	Oily at 6.0 - 6.5			
7					95.7	6.5-10.0 SILT and SLAG, some large slag frags/some white slag, trace med. sand, brown, damp (odor)			
8					4.4				
9					2.3				
10					1.6				

Match to Sheet 2

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-6S** SHEET 1 OF **2**

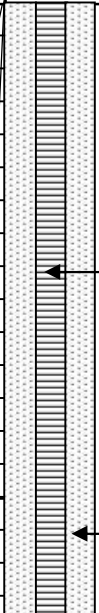
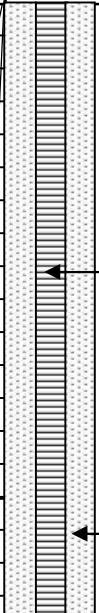
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-6S

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
						<i>Continued from Sheet 1</i>			
11	SC-3	5.0 100%			7.9	10.0-10.5 SLAG w/oily sheen, gray, loose, wet (strong naphtha/benzene odor)			
12					14.3	10.5-16.0 FINE and MEDIUM SAND and SLAG, little silt, trace coal, dk brown, loose, moist to wet (naphtha/benzene odor)			
13					2.7				
14					1.0				
15					1.6				
16	SC-4	5.0 100%			6.7	16.0-18.0 CLAYEY FINE SAND, little silt, trace slag, reddish-orange brown w/dk gray lenses, med. dense, wet (stained-naph./benzene odor)			
17					1.6				
18					0.4	18.0-20.0 FINE SAND, trace slag, lt brown to dk gray, med. dense, moist (naphtha/benzene odor)			
19					0.4				
20					0.4				
21						End of Boring at 20.0'			
22									
23									
24									
25									
26									
27									
28									
29									
30									
						Match to Sheet 3			

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-6S**

SHEET 2 OF **2**

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-6D**
 COORDINATES: EAST: **1,339,548.32** NORTH: **728,802.44**
 ELEVATION: SURFACE: **589.59** TOP OF PVC CASING: **592.55**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)	
Size (ID)	Core Barrel	Casing							
Length	4.75"	6"			12/7/2022	0.0-25.0	Cloudy, Lt Rain, 40s	10.5	
Type	5'	5'							
Hammer Wt.	Steel	Steel							
Fall									
Remarks:									
SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample					WELL INFORMATION				
					Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)	
					Schedule 40 PVC	2"	+3	15.0	
					Schedule 40 PVC, 10 slot	2"	15.0	25.0	
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	5.0 100%			0	0.0-0.5 SANDY SILT, SLAG, and COAL BREEZE, little coal tar, black, med.dense, moist (naphtha/benzene odor) 0.5		0.0	
2						86.3		0.5-1.0 WOOD and COAL TAR, blk, sticky (naphtha/benzene odor) 0.5	
3						20.2		1.0-2.0 COAL TAR and SLAG, black, sticky, moist (odor) 2.0	
4						9.2		2.0-3.5 CONCRETE and SLAG, tan/lt gray, dense, dry 3.5	
5						2.1		3.5-5.0 SANDY SILT and SLAG, little coke and fine angular gravel, lt brown, loose, moist (odor) 5.0	
6	SC-2	5.0 100%			7.0	5.0-6.5 SLAG and fine/med. SAND, little fine angular gravel, trace silt, dk brown, loose, moist (naphtha/benzene odor) 6.5			
7						8.1		6.5-10.0 SILT and SLAG, some large slag frags/some white slag, trace med. sand, brown, damp (odor) 1.2	
8						1.0			
9						1.9			
10						1.2			

Match to Sheet 2

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-6D** SHEET 1 OF **2**

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-6D

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	5.0 100%			1.4	10.0-10.5 SLAG w/oily sheen, gray, loose, wet (strong		
12					5.8	naphtha/benzene odor) 10.5		
13					0.9	10.5-16.0 FINE and MEDIUM		13.0
14					0.6	SAND and SLAG, little silt, trace coal, dk brown, loose, moist, (naphtha/benzene odor)		
15					0.5			15.0
16	SC-4	5.0 100%			8.4	16.0		
17					7.6	16.0-18.0 CLAYEY FINE SAND, little silt, trace slag, reddish-orange brown w/dk gray lenses, med. dense, wet (stained-naph./benzene odor) 18.0		
18					0.9	18.0-20.0 FINE SAND, trace slag, lt brown to dk gray, med. dense, moist (naphtha/benzene odor)		
19					0.8			
20					0.8	20.0		20.0
21	SC-5	5.0 100%			0.9	20.0-25.0 FINE SAND, trace slag, dk gray, med. dense, moist		
22					1.2	Naphtha/benzene odor to 24.0'		
23					1.0			
24					1.0			
25					0.6	SANDY SHALE fragments (gray) at 25.0' 25.0		25.0
26						End of Boring at 25.0'		
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-6D**

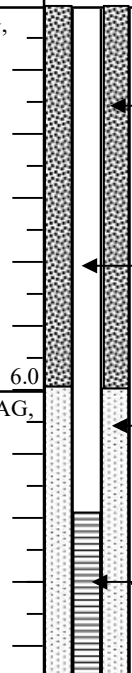
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-7**
 COORDINATES: EAST: **1,339,796.16** NORTH: **728,567.85**
 ELEVATION: SURFACE: **585.58** TOP OF PVC CASING: **588.33**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/5/2022	0.0-20.0	Cloudy, 50s	9.15
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						WELL INFORMATION			
						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	8.0
						Schedule 40 PVC, 10 slot	2"	8.0	18.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	4.0 80%			0.1	0.0-6.0 SANDY SILT and SLAG, little coke and coal, dk gray/black, loose, moist		0.0	
2									
3									
4									
5								5.0	
6	SC-2	3.0 60%			0.1	6.0-13.0 CLAYEY SILT and SLAG, trace fine sand, dk brown, loose, moist to wet		6.0	
7									
8									
9									
10								10.0	
						Wet at 9.0'.			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

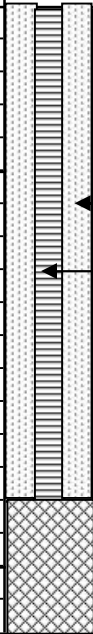
BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-7** SHEET 1 OF **2**

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: 188511

BORING NO.: MW-7

SAMPLE TYPE						DEFINITIONS			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	15.0	SC-3	4.0 80%			0.0	6.0-13.0 CLAYEY SILT and SLAG, trace fine sand, dk brown, loose, moist to wet 13.0-19.0 FINE SAND, trace flat/rounded gravel, gray, med. dense, wet (native) 19.0-20.0 SANDY SHALE, gray, hard, dry		
12						0.2			
13						0.2			
14						0.1			
15						0.1			
16	20.0	SC-4	4.0 80%			0.0			
17						0.0			
18						0.0			
19						0.0			
20						0.0			
21							End of Boring at 20.0'		
22									
23									
24									
25									
26									
27									
28									
29									
30									
							Match to Sheet 3		

DRILLING CO.: Cascade Drilling, LP

DRILLER: Chris Bond

BAKER REP.: Brad Mikula

BORING NO.: MW-7

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-8S**
 COORDINATES: EAST: **1,339,460.18** NORTH: **729,097.94**
 ELEVATION: SURFACE: **586.91** TOP OF PVC CASING: **589.87**

Rig: Sonic Geoprobe - 8140LC Track Rig						Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing							
Length	4.75"	6"				12/7/2022	0.0-20.0	Cloudy, 40s	11.5
Type	5'	5'							
Hammer Wt.	Steel	Steel							
Fall									
Remarks:									
SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	8.0
						Schedule 40 PVC, 10 slot	2"	8.0	18.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	2.0 40%			0.0	0.0-1.5 SANDY SILT, SLAG, and COKE frags, little fine angular gravel, black to reddish-brown, loose, moist to wet			0.0
2					0.0				
3					0.0	1.5-7.0 SANDY SILT, SLAG, and GRAVEL (fine angular), reddish-brown/black, loose to med. dense, wet (oily product and strong fuel odor throughout)			
4					4.5				
5					0.4				
6	SC-2	5.0 100%			0.5	Large slag fragments from 1.5 to 5.0' caused lower recovery.			6.0
7					1.5				
8					13.0	7.0-9.0 SANDY SILT, SLAG, and GRAVEL (fine angular), reddish-brown, med. dense, moist (fuel odor)			8.0
9					2.1				
10					0.6	9.0-16.0 SANDY CLAYEY SILT, some slag, little fine angular gravel, gray, med. dense, dry to wet			

Match to Sheet 2

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-8S** SHEET 1 OF **2**

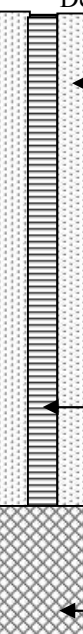
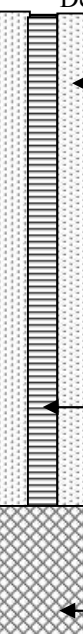
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-8S

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	5.0 100%			0.5	9.0-16.0 SANDY CLAYEY SILT, some slag, little fine angular gravel, gray, med. dense, dry to wet		
12					4.2	Wet at 11.0'		
13					348.5	(Fuel odor and oily product from 9.0-16.0')		
14					381.4			
15					254.2			
16	SC-4	5.0 100%			2.0	16.0-18.0 SANDY CLAYEY SILT, some slag, reddish-brown/black, med. dense, wet		
17					4.8	(sheen and fuel odor)		
18					7.2	18.0-20.0 MEDIUM SAND and coarse and med. SLAG, little silt, little coal fines, black to gray, med. dense, moist (fuel odor)		
19					41.4			
20					6.4			
21						End of Boring at 20.0'		
22								
23								
24								
25								
26								
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-8S**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: 188511 BORING NO.: **MW-8D**
 COORDINATES: EAST: 1,339,464.41 NORTH: 729,097.60
 ELEVATION: SURFACE: 586.87 TOP OF PVC CASING: 589.85

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)	
Size (ID)	Core Barrel	Casing							
Length	4.75"	6"			12/7/2022	0.0-25.0	Fog/Mist, 40s	12.3	
Type	5'	5'							
Hammer Wt.	Steel	Steel							
Fall									
Remarks:									
SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample					WELL INFORMATION				
					Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)	
					Schedule 40 PVC	2"	+3	14.0	
					Schedule 40 PVC, 10 slot	2"	14.0	24.0	
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	3.0 60%			0.0	0.0-1.5 SANDY SILT, SLAG, and COKE frags, little fine angular gravel, black to reddish-brown, loose, moist to wet		0.0	
2					0.0	1.5-7.0 SANDY SILT, SLAG, and GRAVEL (fine angular), reddish-brown/black, loose to med. dense, wet (oily product and strong fuel odor throughout)		1.5	
3					0.2				
4					3.2				
5					0.2				
6	SC-2	5.0 100%			6.5	Large slag fragments from 1.5 to 5.0' caused lower recovery.			
7					8.4				
8					5.6	7.0-9.0 SANDY SILT, SLAG, and GRAVEL (fine angular), reddish-brown, med. dense, moist (fuel odor)		7.0	
9					1.0				
10					9.5	9.0-15.0 SANDY CLAYEY SILT, some slag, little fine angular gravel, gray, med. dense, dry to wet		9.0	

Match to Sheet 2

DRILLING CO.: Cascade Drilling, LP
 DRILLER: Chris Bond

BAKER REP.: Brad Mikula
 BORING NO.: MW-8D SHEET 1 OF 2

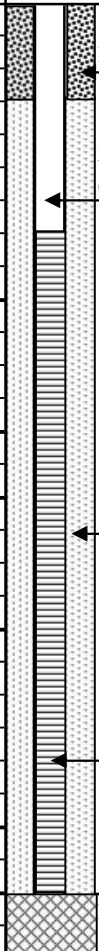
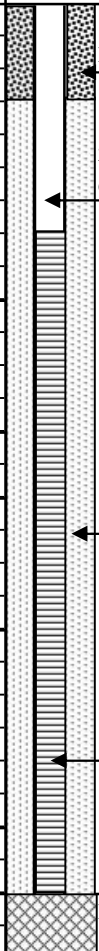
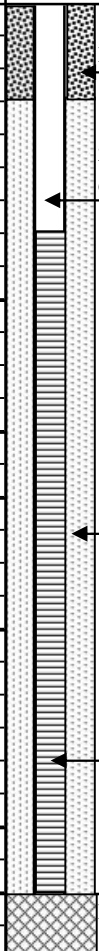
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-8D

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	5.0 100%			1.3	9.0-15.0 SANDY CLAYEY SILT, some slag, little fine angular gravel, gray, med. dense, dry to wet		12.0
12					4.0	Wet at 10.0'		
13					46.2	Fuel odor from 9.0-15.0'		
14					12.2			
15					26.5			
16	SC-4	4.0 80%			0.0	15.0-17.0 SLAG, little fine angular gravel, trace silt and sand, some terra-cotta pipe fragments, gray, loose, wet (fuel odor)		17.0
17					0.4			
18					1.0	17.0-18.0 SILT and SLAG, brown, loose, wet (fuel odor)		
19					2.6	18.0-20.0 MEDIUM SAND and coarse and med. SLAG, little coal, dr brown to black, med. dense, moist (fuel odor)		
20					65.8			
21	SC-5	5.0 100%			4.6	20.0-23.0 FINE SAND, trace slag, dk gray, med. dense, moist (fuel odor)		24.0
22					4.9			
23					5.4	23.0-24.0 Weathered SHALE/CLAY, gray, med. stiff, moist (odor)		
24					5.8			
25					0.5	24.0-25.0 SANDY SHALE, gray, hard, dry		
26						End of Boring at 25.0'		
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-8D**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT:	PADEP Erie Coke Site		
PROJ. NO.:	188511	BORING NO.:	MW-9D
COORDINATES: EAST:	1,339,465.73	NORTH:	728,949.59
ELEVATION: SURFACE:	587.99	TOP OF PVC CASING:	590.93

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
	Core Barrel	Casing						
Size (ID)	4.75"	6"			12/6/2022	0.0-25.0	Cloudy, 40s	11.5
Length	5'	5'						
Type	Steel	Steel						
Hammer Wt.								
Fall								
Remarks:								
SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample					WELL INFORMATION			
					Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
					Schedule 40 PVC	2"	+3	15.0
					Schedule 40 PVC, 10 slot	2"	15.0	25.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	SC-1	4.0 80%			0.1	0.0-6.0 SANDY SILT, SLAG and COKE/COAL BREEZE, little fine angular gravel, black to dk brown, loose, moist		0.0
2					0.2			6.0
3					2.5			
4					0.4			
5					0.3			5.0
6	SC-2	4.0 80%			0.0	6.0-12.0 SLAG, some sandy silt, reddish-brown and gray, loose, moist to wet		
7					0.0			
8					0.6			
9					0.1			
10					0.1			10.0
						Match to Sheet 2		

DRILLING CO.: Cascade Drilling, LP
 DRILLER: Chris Bond

BAKER REP.: Brad Mikula
 BORING NO.: MW-9D SHEET 1 OF 2

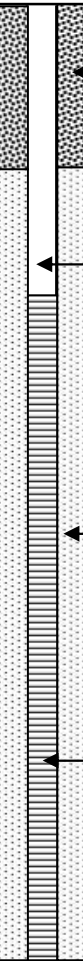
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-9D

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	5.0 100%			7.1	6.0-12.0 SLAG, some sandy silt, reddish-brown and gray, loose, moist		13.0
12					43.3	to wet at 11.0'		
13					18.6	12.0-15.0 SANDY CLAYEY SILT, little slag, reddish-brown and black, soft, wet		
14					215.2	(saturated with oily product and naphtha/benzene odor)		
15					356.8			
16	SC-4	5.0 100%			103.7	15.0-20.0 Medium and coarse SLAG and SANDY SILT, dk brown and black, loose, wet		
17					271.1	(saturated with oily product and naphtha/benzene odor)		
18					180.6			
19					302.5			
20					318.6			
21	SC-5	4.0 80%			651.5	20.0-25.0 FINE SAND, trace rounded fine gravel, brown/dk gray, med. dense, wet		
22					607.3	(oily sheen, staining and naphtha/benzene odor 20.0-22.0')		
23					83.1			
24					77.2			
25					0.0	SANDY SHALE (gray) at 25.0'		
26						End of Boring at 25.0'		
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-9D**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-10**
 COORDINATES: EAST: **1,339,664.17** NORTH: **729,058.11**
 ELEVATION: SURFACE: **587.68** TOP OF PVC CASING: **590.60**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)	
Size (ID)	Core Barrel	Casing							
Length	4.75"	6"			12/6/2022	0.0-20.0	Cloudy, 40s	12.9	
Type	5'	5'							
Hammer Wt.	Steel	Steel							
Fall									
Remarks:									
SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample					WELL INFORMATION				
					Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)	
					Schedule 40 PVC	2"	+3	10.0	
					Schedule 40 PVC, 10 slot	2"	10.0	20.0	
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	4.0 80%			0.0	0.0-4.0 SANDY SILT, SLAG, and GRAVEL (fine angular), trace coke, dk brown/black, loose, moist		0.0	
2						0.0		0.0	
3						0.0		0.0	
4						0		4.0	
5	5.0				1.6	4.0-4.5 CONCRETE COBBLES, tan/white, dry		4.5	
6	SC-2	5.0 100%			3.3	4.5-5.5 SANDY CLAYEY SILT and SLAG, lt brown, loose, moist		8.0	
7						4.0		5.5-11.0 SANDY CLAYEY SILT and SLAG, little fine angular gravel, trace metallic slag and white flakes, brown and lt brown, loose, moist to wet	10.0
8						1.8			
9						0.5			
10						1.9			
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-10** SHEET 1 OF **2**

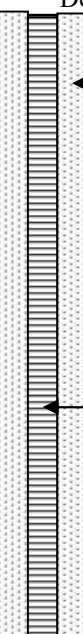
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-10

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	4.0 80%			0.0	wet at 11.0'		
12					0.2	11.0-13.0 SANDY SILT and COKE, loose, wet (naphtha/benzene odor)		
13					1.9	13.0-14.0 BRICK COBBLES, little silt, yellow/red/br, loose, wet		
14					10.2	14.0-15.5 SLAG and BRICK, little silt, dk gray/black, loose, wet		
15					69.0	(oily, naphtha/benzene odor)		
16	SC-4	5.0 100%			1.9	15.5-20.0 SANDY CLAYEY SILT and med. and coarse SLAG, little coarse sand, gray to reddish-brown, loose, wet		
17					6.4	(oily sheen/product and naphtha/benzene odor 18.0-20.0')		
18					35.7			
19					41.5			
20					92.1			
21						End of Boring at 20.0'		
22								
23								
24								
25								
26								
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-10**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-11S**
 COORDINATES: EAST: **1,339,481.85** NORTH: **729,278.97**
 ELEVATION: SURFACE: **585.54** TOP OF PVC CASING: **588.43**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/2/2022	0.0-20.0	Partly Sunny, Windy, 40s	12.1
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						WELL INFORMATION			
						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	8.0
						Schedule 40 PVC, 10 slot	2"	8.0	18.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1	SC-1	4.0 80%			0.0	0.0-2.0 SANDY SILT and SLAG, little fine angular gravel, dk brown to lt brown, loose, damp		0.0	
2					0.0	Cemented slag (lt gray) 1.3-2.0' 2.0			
3					0.0	2.0-6.0 SANDY SILT and SLAG, little clay, little fine angular gravel, reddish-brown, loose, damp to moist			
4					0.0				
5					0.0				
6	SC-2	5.0 100%			0.0	6.0-7.5 Medium and coarse SLAG, trace silt, gray, loose, damp		6.0	
7					0.0				
8					0.0	7.5-10.0 FINE SANDY CLAYEY SILT, reddish-brown, soft, moist to wet		8.0	
9					0.0				
10					0.0	wet at 10.0'		10.0	
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-11S** SHEET 1 OF **2**

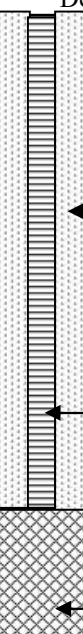
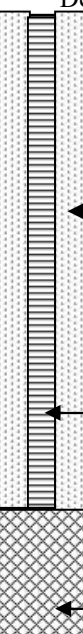
TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-11S

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11	SC-3	4.0 80%			0.0	<i>Continued from Sheet 1</i>		
12					0.0	10.0-14.0 SLAG and SANDY SILT, little fine angular gravel, reddish-brown to gray, loose, wet		
13					0.0			
14					0.0			
15					0.0	14.0-15.0 Fine to coarse SLAG and coarse SAND, little silt, gray, wet		
16	SC-4	5.0 100%			0.0	15.0-16.5 Fine to coarse SLAG, little silt, trace med. sand, gray		
17					0.0	16.5-20.0 Fine and medium SAND and SLAG, little fine angular gravel, gray to dk gray, loose, wet (slight naphtha/benzene odor at 16.0-18.0')		
18					0.0			
19					0.0			
20					0.0			
21					0.0	End of Boring at 20.0'		
22					0.0			
23					0.0			
24					0.0			
25					0.0			
26								
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-11S**

SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**
 PROJ. NO.: **188511** BORING NO.: **MW-11D**
 COORDINATES: EAST: **1,339,488.31** NORTH: **729,278.30**
 ELEVATION: SURFACE: **585.50** TOP OF PVC CASING: **588.44**

Rig: Sonic Geoprobe - 8140LC Track Rig					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	Core Barrel	Casing						
Length	4.75"	6"			12/2/2022	0.0-25.0	Cloudy, Windy, 30s	12.9
Type	5'	5'						
Hammer Wt.	Steel	Steel						
Fall								

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC	2"	+3	13.0
						Schedule 40 PVC, 10 slot	2"	13.0	23.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	SC-1	5.0 100%			0.0	0.0-3.5 SANDY SILT and SLAG, little fine angular gravel, dk brown, loose, damp		0.0	
2					0.0				
3					0.0				
4					0.0	3.5-5.5 SANDY SILT and SLAG, little clay, trace red brick, lt brown			
5	5.0				0.0	to reddish-brown, loose, damp to moist (fibrous material 4.0-4.5')			
6	SC-2	4.5 90%			0.0	5.5-7.3 Medium and coarse SLAG, trace silt, gray, loose, damp			
7					0.0				
8					0.0	7.3-10.0 FINE SANDY CLAYEY SILT, reddish-brown, soft, moist			
9					0.0	to wet			
10					0.0	wet at 10.0'			
						Match to Sheet 2			

DRILLING CO.: **Cascade Drilling, LP**
 DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**
 BORING NO.: **MW-11D** SHEET 1 OF **2**

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: **PADEP Erie Coke Site**

PROJ. NO.: **188511**

BORING NO.:

MW-11D

SAMPLE TYPE						DEFINITIONS		
S = Sonic Sleeve A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core M = MacroCore D = Direct Push N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
						<i>Continued from Sheet 1</i>		
11	SC-3	4.0 80%			0.0	10.0-12.0 SLAG and SANDY SILT, reddish-brown, loose, wet		11.0
12					0.0	12.0		
13					0.0	COKE/COAL BREEZE, black		
14					0.0	12.5-15.0 Fine to coarse SLAG and coarse SAND, little silt, dk brown to gray, loose, wet		13.0
15					0.0	15.0		
16	SC-4	5.0 100%			0.0	15.0-19.0 Fine to coarse SLAG, little silt, trace med. sand, gray to reddish-brown		
17					0.0	16.0-16.5 then back to gray, loose, wet		
18					0.0			
19					0.0	19.0		
20					0.0	19.0-21.0 Fine and medium SAND and SLAG, little fine angular gravel, dk gray, loose, wet (slight naphtha/benzene odor)		
21	SC-5	5.0 100%			0.0	21.0-23.0 FINE SAND, trace rounded gravel, brown to dk gray, med. dense, wet (staining)		
22					0.0			
23					0.0	23.0		23.0
24					0.0	23.0-25.0 SANDY SHALE, trace clay, gray, hard, dry to moist		
25					0.0	25.0		
26						End of Boring at 25.0'		
27								
28								
29								
30								
						Match to Sheet 3		

DRILLING CO.: **Cascade Drilling, LP**

DRILLER: **Chris Bond**

BAKER REP.: **Brad Mikula**

BORING NO.: **MW-11D**

SHEET 2 OF 2