

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

AOI 1: Shunk Street Sewer Ventilation System and Biofilter (Belmont Terminal)

pH Data, January 2022 - February 2022

**Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC
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Date	Leachate pH	Biofilter Treatment Cell - Soil pH		
		Cell 1	Cell 2	Cell 3
3-Jan-22	7.20	NM	NM	NM
11-Jan-22	7.16	NM	NM	NM
25-Jan-22	7.30	NM	NM	NM
8-Feb-22	7.18	NM	NM	NM
21-Feb-22	6.44	NM	NM	NM

Notes:

Leachate and recordings are collected on a quarterly basis.

Media pH recordings were collected on a monthly basis prior to December 2013. In December 2013, the an Air Cleaning Device Installation Permit Application for Minor Emission Sources was submitted to the City of Philadelphia Air Management Services (AMS) with a Request to Modify Plan Approval No.: 01092. AMS approved the aforementioned documents on December 23, 2013 thus reducing the media pH monitoring to a quarterly basis.

NM = Not measured

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System Operational Temperature and Humidity Data, January 2022 - February 2022

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Date	Time	Temp (°F)	Relative Humidity	Dew Point
1-Jan-22	7:00:00	60.5	92.9	57.9
1-Jan-22	19:00:00	61.3	91.8	58.4
2-Jan-22	7:00:00	60.9	91.9	58.0
2-Jan-22	19:00:00	62.3	88.5	58.1
3-Jan-22	7:00:00	57.2	95.7	55.6
3-Jan-22	19:00:00	55.4	98.4	54.8
4-Jan-22	7:00:00	53.3	100.1	53.4
4-Jan-22	19:00:00	57.5	94.7	55.6
5-Jan-22	7:00:00	54.5	98.1	53.8
5-Jan-22	19:00:00	57.3	95.6	55.7
6-Jan-22	7:00:00	56.0	96.5	54.7
6-Jan-22	19:00:00	57.0	95.1	55.3
7-Jan-22	7:00:00	54.6	97.6	53.8
7-Jan-22	19:00:00	55.4	97.5	54.5
8-Jan-22	7:00:00	52.3	100.2	52.4
8-Jan-22	19:00:00	56.6	94.7	54.8
9-Jan-22	7:00:00	53.6	97.9	52.9
9-Jan-22	19:00:00	55.6	96.3	54.3
10-Jan-22	7:00:00	54.8	96.7	53.6
10-Jan-22	19:00:00	55.4	96.2	54.0
11-Jan-22	19:00:00	49.0	98.9	48.6
12-Jan-22	7:00:00	51.3	100.1	51.3
12-Jan-22	19:00:00	55.9	94.4	53.9
13-Jan-22	7:00:00	53.7	96.3	52.4
13-Jan-22	19:00:00	58.1	89.6	54.4
14-Jan-22	7:00:00	54.8	94.4	52.8
14-Jan-22	19:00:00	57.0	91.7	54.0
15-Jan-22	7:00:00	49.8	99.4	49.6
15-Jan-22	19:00:00	51.9	98.8	51.5
16-Jan-22	7:00:00	48.4	100.3	48.5
16-Jan-22	19:00:00	52.0	99.1	51.7
17-Jan-22	7:00:00	52.3	96.7	51.1
17-Jan-22	19:00:00	52.5	96.6	51.2
18-Jan-22	7:00:00	51.5	97.4	50.6
18-Jan-22	19:00:00	53.5	95.4	51.9
19-Jan-22	7:00:00	50.9	97.6	50.1
19-Jan-22	19:00:00	53.0	90.8	49.6
20-Jan-22	7:00:00	41.6	99.6	41.4
20-Jan-22	19:00:00	37.5	99.9	37.5
21-Jan-22	7:00:00	24.9	99.5	24.8
22-Jan-22	2:00:00	30.3	99.3	30.0
22-Jan-22	14:00:00	31.4	98.5	30.8
23-Jan-22	2:00:00	33.8	95.5	32.2
23-Jan-22	14:00:00	35.2	98.8	34.8
24-Jan-22	2:00:00	38.7	98.8	38.3
24-Jan-22	14:00:00	41.5	96.3	40.2
25-Jan-22	2:00:00	52.3	93.8	50.0
25-Jan-22	14:00:00	52.9	94.9	51.1
26-Jan-22	2:00:00	51.4	94.5	49.4
27-Jan-22	1:00:00	34.5	97.7	33.7
27-Jan-22	13:00:00	34.7	98.0	33.9
28-Jan-22	1:00:00	37.8	95.6	36.2
28-Jan-22	13:00:00	33.3	100.3	33.4
29-Jan-22	1:00:00	35.7	99.3	35.4
29-Jan-22	13:00:00	28.9	99.9	28.9
30-Jan-22	1:00:00	25.4	100.4	25.6

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Date	Time	Temp (°F)	Relative Humidity	Dew Point
30-Jan-22	13:00:00	24.2	99.4	23.9
31-Jan-22	1:00:00	33.0	97.0	31.9
1-Feb-22	1:00:00	50.6	96.4	49.3
1-Feb-22	13:00:00	51.5	97.2	50.5
2-Feb-22	1:00:00	52.8	92.4	50.1
2-Feb-22	13:00:00	52.1	95.8	50.5
3-Feb-22	1:00:00	54.7	90.0	51.1
3-Feb-22	13:00:00	53.3	94.2	51.2
4-Feb-22	1:00:00	55.1	91.2	52.0
4-Feb-22	13:00:00	55.2	90.9	52.0
5-Feb-22	1:00:00	50.8	96.6	49.6
5-Feb-22	13:00:00	50.8	97.7	50.0
6-Feb-22	1:00:00	49.9	97.0	48.8
6-Feb-22	13:00:00	50.8	97.2	49.8
7-Feb-22	1:00:00	52.2	92.0	49.3
7-Feb-22	13:00:00	51.5	96.1	50.1
8-Feb-22	1:00:00	52.1	95.6	50.6
8-Feb-22	13:00:00	53.1	93.6	50.9
9-Feb-22	1:00:00	51.5	92.3	48.7
9-Feb-22	13:00:00	52.7	92.8	50.1
10-Feb-22	1:00:00	54.2	86.6	49.4
10-Feb-22	13:00:00	54.3	90.8	51.0
11-Feb-22	1:00:00	54.9	85.6	49.8
11-Feb-22	13:00:00	54.9	89.3	51.0
12-Feb-22	1:00:00	57.0	81.3	50.3
12-Feb-22	13:00:00	56.8	85.5	51.5
13-Feb-22	1:00:00	56.6	83.4	50.6
13-Feb-22	13:00:00	51.3	95.9	49.8
14-Feb-22	1:00:00	50.5	97.3	49.5
14-Feb-22	13:00:00	50.2	98.6	49.7
15-Feb-22	1:00:00	50.0	96.3	48.6
15-Feb-22	13:00:00	51.1	97.3	50.1
16-Feb-22	1:00:00	51.6	93.3	49.1
16-Feb-22	13:00:00	52.8	94.0	50.6
17-Feb-22	1:00:00	55.0	87.6	50.5
17-Feb-22	13:00:00	56.5	88.5	52.4
18-Feb-22	1:00:00	59.3	80.5	52.3
18-Feb-22	13:00:00	58.2	86.3	53.2
19-Feb-22	1:00:00	53.3	90.7	50.0
19-Feb-22	13:00:00	51.9	95.9	50.4
20-Feb-22	1:00:00	50.6	95.2	48.9
20-Feb-22	13:00:00	51.3	96.1	49.9
21-Feb-22	1:00:00	52.0	92.0	49.1
21-Feb-22	13:00:00	54.1	91.4	51.0
22-Feb-22	1:00:00	57.3	81.7	50.7
22-Feb-22	13:00:00	55.6	90.2	52.1
23-Feb-22	1:00:00	58.1	86.0	53.0
23-Feb-22	13:00:00	58.5	84.5	53.0
24-Feb-22	1:00:00	58.0	81.0	51.2
24-Feb-22	13:00:00	52.1	95.0	50.3
25-Feb-22	1:00:00	52.1	95.6	50.5

Note:
 °F: Temperature in degrees Fahrenheit

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Organic Vapor Concentrations, January 2022 - February 2022

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Date	Flow Rate (CFM)	Sewer Air PID (ppm)	Total Flow PID (ppm)	Treatment Cell Effluent PID (ppm)			Treatment Cell Media Temperature (°F)		
				Cell #1	Cell #2	Cell #3	Cell #1	Cell #2	Cell #3
1-Dec-21	4872	3.00	3.00	0.50	0.00	0.50	65	73	65
6-Dec-21	3126	3.00	3.00	1.40	0.00	1.40	65	73	65
14-Dec-21	3126	1.80	1.80	1.50	1.50	1.50	64	64	64
20-Dec-21	3173	0.00	0.00	0.00	0.00	0.00	64	64	64
28-Dec-21	3337	2.30	2.30	2.30	2.30	2.30	62	64	62
3-Jan-22	3328	0.10	0.10	0.10	0.10	0.10	55	55	55
11-Jan-22	3248	0.10	0.10	0.10	0.10	0.10	48	48	48
18-Jan-22	2242	2.00	2.00	0.00	0.00	0.00	49	49	49
25-Jan-22	2414	0.30	1.20	0.00	0.00	0.00	56	48	52
2-Feb-22	2504	0.60	0.60	0.00	0.00	0.00	56	46	52
8-Feb-22	2710	0.20	0.60	0.00	0.00	0.00	56	50	50
14-Feb-22	2703	0.20	0.60	0.00	0.00	0.00	56	50	50
21-Feb-22	2733	8.00	8.00	0.00	0.00	0.00	54	50	50
1-Mar-22	3187	8.00	8.00	0.00	0.00	0.00	56	50	50

Notes:

CFM = cubic feet per minute

PID = Photoionization Detector

NA = not available

NM = not measured

ppm = parts per million

°F = Degrees Fahrenheit

Vapor concentrations are collected using a MultiRAE Lite Photoionization Detector (PID).

The Sewer Air reading is collected from the Shunk Street sewer air stream only.

The air stripper was taken offline on June 17, 2004; therefore, the Total Flow is equal to the Sewer Air reading.

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

AOI 1: 26th Street & Packer Avenue Sewers Biofilter Remediation System (Point Breeze Biofilter)

pH Data, January 2022 - February 2022

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AOI 1: 26th Street & Packer Avenue Sewers Biofilter Remediation System (Point Breeze Biofilter)
pH Data, January 2022 - February 2022

Date	Leachate pH	Biofilter Bed - Soil pH			
		Cell 1	Cell 2	Cell 3	Cell 4
12-Jan-22	7.55	6.98	7.03	NM	NM
15-Feb-22	7.43	7.10	7.15	NM	NM

Notes:

Media pH readings are collected on a quarterly basis.

NM: not measured

NA: No leachate was available to record pH.

Cells 3 and 4 were shut off June 18, 2010 and remained off for the reporting period as they are not currently needed for vapor treatment.

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AOI 1: 26th Street & Packer Avenue Sewers Biofilter Remediation System (Point Breeze Biofilter)

Organic Vapor Concentrations, January 2022 - February 2022

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Organic Vapor Concentrations, January 2022 - February 2022

Date	Flow Rate (cfm)	Biofilter Influent (ppm)					Biofilter Effluent (ppm)				
		Packer Ave.	26 th Street	ST-1 (Combined Influent)	Relative Humidity	Inlet Temperature	Cell-1N	Cell-1S	Cell-2N	Cell-2S	Percent Reduction
3-Jan-22	7,355	2.0	1.2	0	87.4	56	0.0	0.0	0.0	0.0	100%
12-Jan-22	6,786	1.8	2.5	0	83.0	44	0.0	0.0	0.0	0.0	100%
18-Jan-22	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	N/A
25-Jan-22	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	N/A
1-Feb-22	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	N/A
7-Feb-22	NM	0.1	0.0	0	0.0	60	0.0	0.0	0.0	0.0	100%
15-Feb-22	4,513	16.6	15.3	0	0.0	62	0.0	0.0	0.0	0.0	100%
24-Feb-22	3,493	0.4	0.3	0	0.0	68	0.0	0.0	0.0	0.0	100%

see last page for notes

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Organic Vapor Concentrations, January 2022 - February 2022

Date	Blower # 1				Blower #2				Blower #3			
	Differential Pressure 1 (inches of water)	Differential Pressure 2 (inches of water)	Effluent pressure (inches of water)	Blower On	Differential Pressure 1 (inches of water)	Differential Pressure 2 (inches of water)	Effluent pressure (inches of water)	Blower On	Differential Pressure 1 (inches of water)	Differential Pressure 2 (inches of water)	Effluent pressure (inches of water)	Blower On
3-Jan-22	0.00	0.30	6.40	yes	0.00	0.30	5.20	yes	0.00	0.01	1.90	no
12-Jan-22	0.10	0.30	5.60	yes	0.00	0.35	3.80	yes	0.00	0.01	0.60	no
18-Jan-22	0.00	0.00	0.00	no	0.00	0.00	0.00	no	0.00	0.01	0.60	no
25-Jan-22	0.00	0.00	0.00	no	0.00	0.00	0.00	no	0.00	0.01	0.60	no
1-Feb-22	0.00	0.00	0.00	no	0.00	0.00	0.00	no	0.00	0.01	0.60	no
7-Feb-22	0.00	0.00	0.00	no	0.00	0.00	0.60	yes	0.00	0.00	0.00	no
15-Feb-22	0.00	0.00	0.00	no	0.00	0.00	0.60	yes	0.00	0.00	0.00	no
24-Feb-22	0.00	0.00	0.00	no	0.00	0.05	0.60	yes	0.00	0.00	0.00	no

see last page for notes

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Organic Vapor Concentrations, January 2022 - February 2022

Date	Cell #1		Cell #2		Steam Valve	Blowers Maintenance						
	Pressure (inches of water)	Temp °F	Pressure (inches of water)	Temp °F	Position	Blower Vibration	Anchor Bolts Tightened	V belt condition	Bearing Lubrication	Blower Maintenance Required Blower 1	Blower Maintenance Required Blower 1	Blower Maintenance Required Blower 1
3-Jan-22	4.0	36	4.1	51	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
12-Jan-22	3.6	30	3.8	52	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
18-Jan-22	0.0	0	0.0	0	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
25-Jan-22	0.0	0	0.0	0	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
1-Feb-22	0.0	0	0.0	0	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
7-Feb-22	1.2	28	1.2	50	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
15-Feb-22	1.1	30	1.4	50	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No
24-Feb-22	1.0	44	1.2	52	Off	Satisfactory	Satisfactory	Satisfactory	Satisfactory	No	No	No

Notes:

cfm: cubic feet per minute

ppm: parts per million

°F: Temperature in degrees Fahrenheit

N/A: Not Applicable

NM: Field reading not measured

Vapor concentrations are collected using a MultiRAE Lite Photoionization Detector (PID).

An air velocity meter is used measure the speed or flow of air within the sewer.

Cells 3 and 4 were shut off June 18, 2010 and remained off for the reporting period as they are not currently needed for vapor treatment.

The system was not operational from January 18, 2022 through February 7, 2022 due the electrical utility interruption associated with site demolition activities.

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

AOI 8: Maiden Lane Remediation System

Organic Vapor Concentrations, January 2022 - February 2022

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC
AOI 8: Maiden Lane Remediation System
Organic Vapor Concentrations, January 2022 - February 2022

Date	PreCatalyst Set Point T1 (°C)	T2 (°C)	T3 (°C)	Air Flow rate (cfm)	Influent PID Reading (ppmv)	Effluent PID Reading (ppmv)	VOC Reduction	Influent Benzene (ppmv)	Effluent Benzene (ppmv)
10-Jan-22	338	515	540	14.30	745	0.0	100%	50.00	0.0
14-Jan-22	System shut down due to low groundwater levels								
10-Feb-22	System turned on; placed on timer to operate for 1 hour 2 times per day								
10-Feb-22	334	497	523	15.10	757	0.0	100%	50.00	0.0
18-Feb-22	331	383	401	16.24	801	0.0	100%	37.30	0.0

NM - Not measured

ppm - Parts per million

ppmv - Parts per million by volume

cfm - cubic feet per minute

PID - Photoionization detector

Temperatures in °C

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

AOI 8: Maiden Lane Remediation System

Groundwater and LNAPL Recovery System Operational Data, January 2022 - February 2022

Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC
AOI 8: Maiden Lane Remediation System
Groundwater and LNAPL Recovery System Operational Data, January 2022 - February 2022

Date	Period Total Flow (gallons)	Total Flow (gallons)	LNAPL Recovered in Period (gallons)	Total LNAPL Recovered (gallons)	System Operational Exceptions
03-Jan-22	0	4,285,900	0	4462	System still off from 12/29/21
04-Jan-22	0	4,285,900	0	4462	System still off from 12/29/21
06-Jan-22	110	4,286,010	32	4494	System started back up
07-Jan-22	1,240	4,287,250	34	4528	
10-Jan-22	2,260	4,289,510	39	4567	System off upon arrival due to compressor shut down
11-Jan-22	660	4,290,170	0	4567	
12-Jan-22	500	4,290,670	6	4573	
13-Jan-22	680	4,291,350	28	4601	
14-Jan-22	0	4,291,350	24	4625	System shut down to jet horizontal well. Lewis Env vacced out 178 gallons.
17-Jan-22	155	4,291,505	0	4625	System still off from 1/14/22 (Low groundwater levels).
18-Jan-22	0	4,291,505	0	4625	System still off from 1/17/22 (Low groundwater levels).
21-Jan-22	0	4,291,505	0	4625	Attempt to start system - frozen hoses
24-Jan-22	0	4,291,505	0	4625	System still off from 1/17/22 (Low groundwater levels).
25-Jan-22	0	4,291,505	0	4625	System still off from 1/17/22 (Low groundwater levels).
31-Jan-22	0	4,291,505	0	4625	System still off from 1/17/22 (Low groundwater levels).
07-Feb-22	0	4,291,505	0	4625	System still off from 1/17/22 (Low groundwater levels).
14-Feb-22	0	4,291,505	0	4625	System turned on 2/10/2022; placed on timer to operate 1 hour 2 times per day.
21-Feb-22	0	4,291,505	0	4625	System on twice a day for 1 hour. No groundwater discharge
28-Feb-22	0	4,291,505	5	4630	System on twice a day for 1 hour. No groundwater discharge

	Total Flow	LNAPL Recovered
	(gallons)	(gallons)
Totals	5,605	168

Notes:

LNAPL: Light Non-Aqueous Phase Liquid

The Maiden Lane Remediation System consists of 1 horizontal well and was started on January 11, 2021. Groundwater and LNAPL are extracted using a diaphragm pump, and total fluids pass through an oil/water separator (OWS). The groundwater is discharged to the Philadelphia Water Department (PWD) sanitary sewer and LNAPL is recovered in two 550-gallon storage tanks.