Soapstone Valley Park Sewer Rehabilitation Project

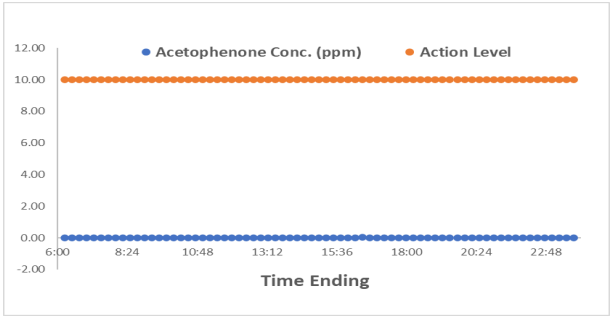
Shots #1-9

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**3/14/2023**
Summary:	Air monitoring performed during **shot #1 M-10445 to M-10343**. Air monitoring results were less than the Action Levels.

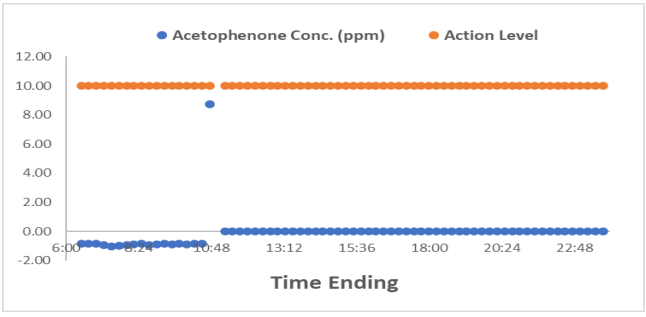
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater the Action Levels, and any emissions controls implemented in response to the real-time monitoring results. Real-time Action Levels are used for onsite personnel to identify periods of concentrations that require emissions controls and are not used to establish compliance with offsite impacts. Results summarized herein are preliminary and are subject to change based on a complete review of the data quality objectives. Final results will be included in the project area reports and will include an evaluation of the chemical-specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 6:00 am – 11:30 pm	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted.	

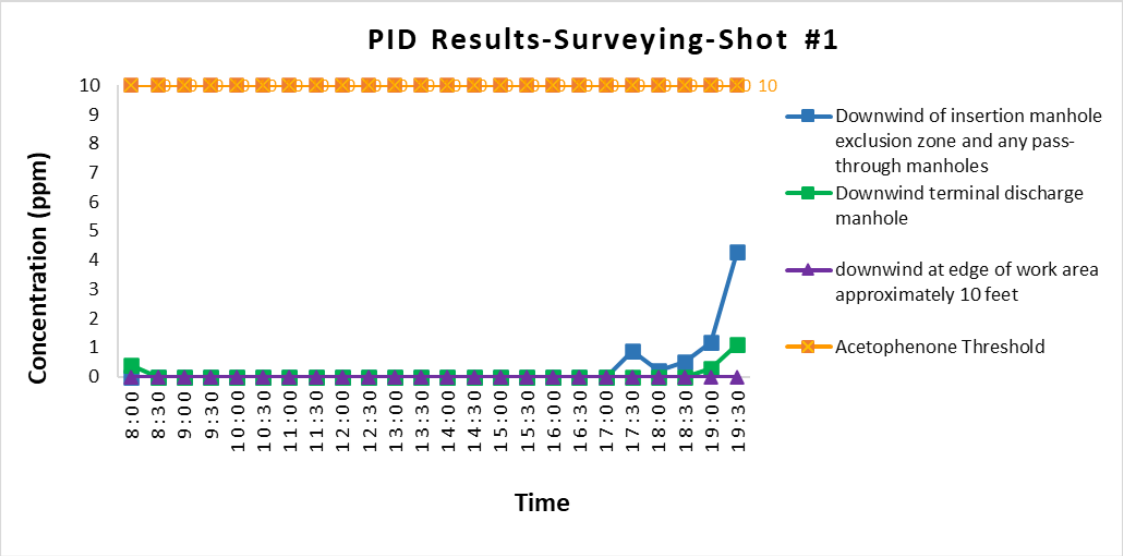


Figure 1. PID Results during Surveying (Shot 1)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	4.5	0	0	2
Comments	TVOCs concentration fluctuated periodically with the startup and run of the boiler truck.	Not detected	Not detected	Light and Occasional
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

Elevated Concentration Summary for Action Levels

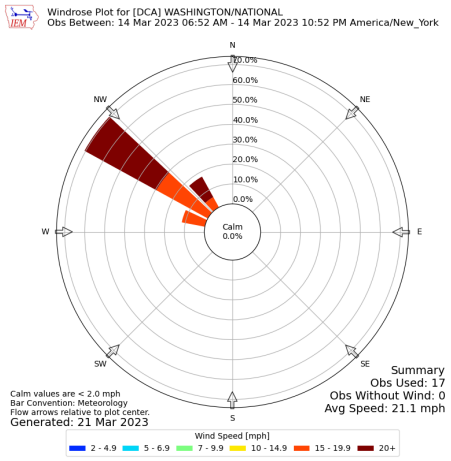
Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #1	3/14/23	Method 18 for acetophenone TO-15 for VOCs	Results received from laboratory and being reviewed against AQMP.
Shot #2	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.
Shot #3	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.

Shot #4	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	20mph	WN - WNW

***Weather results taken form the [DCA] Washington/National**

Site Map

Shot 1: M10445 to M10343		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.9454416, -77.0514673)	Upwind
2	(38.9453756, -77.0514365)	4” above insertion manhole
3	(38.9453159, -77.0514157)	Downwind
4	(38.9454280, -77.0511760)	4” above te manhole
5	(38.9453795, -77.0511455)	Near terminal manhole

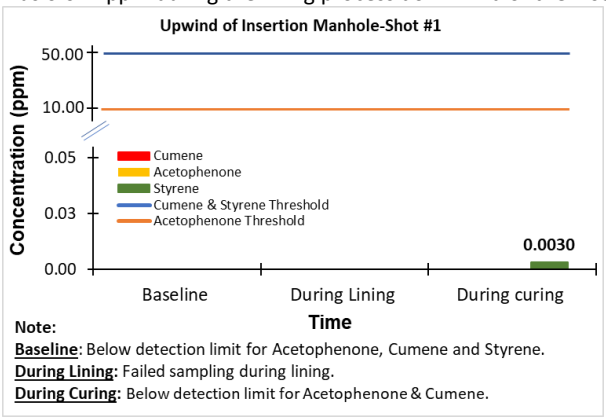
General Comments

8:00	Set up PID and canister at upwind and downwind locations.
9:00	Pre-liner and liner work started
12:30	Lining finished
13:30	Curing begins
17:30	Curing begins and canisters and sorbent tube positioned 4" above the terminal manhole
18:00	Placed canister on top if insertion manhole.
18:30	Removal canister from insertion manhole
19:00	Removal of sorbent tube from insertion manhole
19:30	Took anemometer reading from insertion manhole and terminal manhole
20:00	Remove canister from upwind and downwind location
23:47	Picked up canister from terminal manhole
Next day @ 13:30	Removed PID from upwind & Downwind locations

Submitted By: CUIRE/UTA **Date:** 3/23/2023

Reviewed By:	AECOM	**Date:**	3/24/2023

- Based on Figure 1, cumene and acetophenone concentrations are below the detection limit of the instrument at the insertion (upwind & downwind) and terminal manhole for the baseline, during lining, and curing activities; hence, it is not displayed on the graphs. Styrene concentrations were 0.003 ppm at the upwind and downwind of the insertion manhole and 0.0022 ppm during curing activity at the termination manhole which were significantly below the threshold limit of 50 ppm. Styrene concentration was 0.014 ppm during the lining process downwind of the insertion manhole which was below the threshold limit of 50 ppm.



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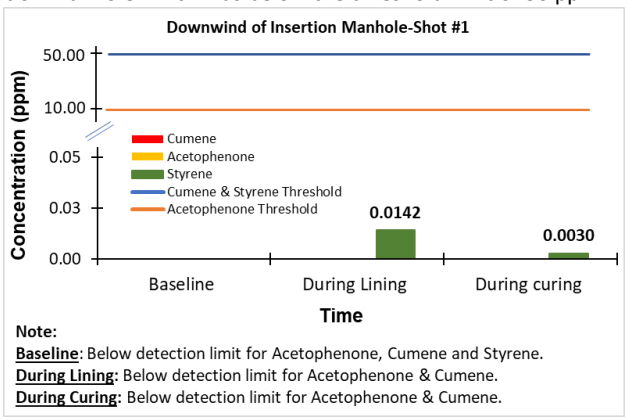

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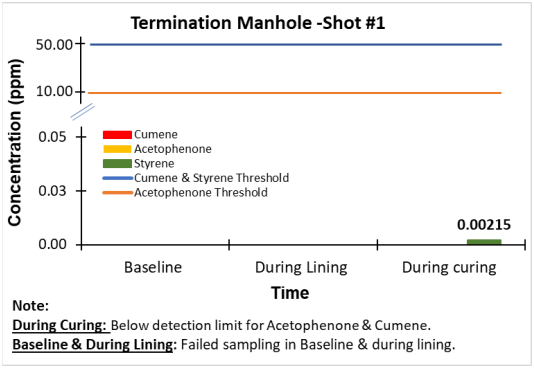

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- **Figure 2.** Summa Canister Analysis (a) Upwind of Insertion Manhole, (b) Downwind of Insertion Manhole, and (c) Termination Manhole

Table 1. Integrated Sample VOCs for Shot #1 (March 14, 2023)

Number	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole	Upwind of Insertion Manhole		Downwind of Insertion Manhole		
		OSHA PEL ppm	CAL/ OSHA PEL ppm	NIOSH REL ppm	ACGIH ppm	During curing ppm	Baseline ppm	During curing- above the insertion Manhole ppm	Baseline ppm	During Lining ppm	During curing- above the insertion Manhole ppm
1	Acetone	1000	500	250	250	0.00363	0.00322	0.0068	0.00315	0.00234	0.0068
2	Ethylbenzene	100	5	100	20	ND	ND	0.0016	ND	ND	0.0016
3	Heptane	500	400	85	400	ND	ND	0.00	ND	ND	0.0016
4	Isopropanol	N/A	N/A	N/A	N/A	0.00	ND	0.00356	ND	ND	0.0036
5	Propene	N/A	N/A	N/A	N/A	ND	ND	0.0049	ND	ND	0.0049
6	m&p-Xylenes	100	100	100	20	ND	ND	0.0035	ND	ND	0.0035
7	o-Xylene	100	100	100	20	ND	ND	0.0014	ND	ND	0.0014

Table 2. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 14.3.2023 Worker 1

Lab ID#: 2303682-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	8.4	0.19	16
Toluene	0.10	7.5	0.20	15
Styrene	0.10	9.1	0.50	45

Client Sample ID: 14.3.2023 Worker 2

Lab ID#: 2303682-02A

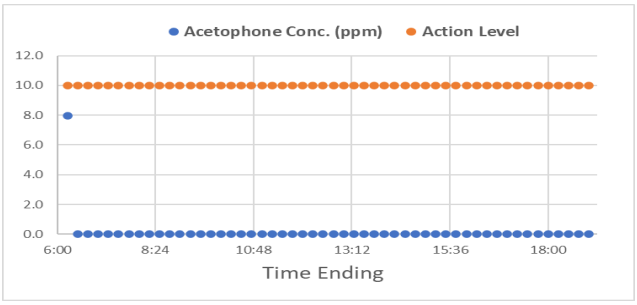
Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Toluene	0.10	7.5	0.12	9.4
Styrene	0.10	9.1	0.31	28

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**3/16/2023**
Summary:	Air monitoring performed during **shot #2 M-10445 to M-10363**. Air monitoring results were less than the Action Levels.

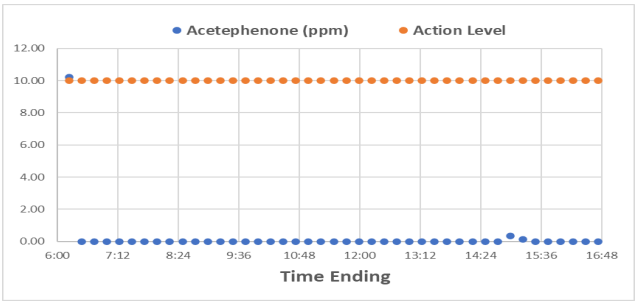
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater the Action Levels, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 6:00 am – 7:00 pm	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted.	

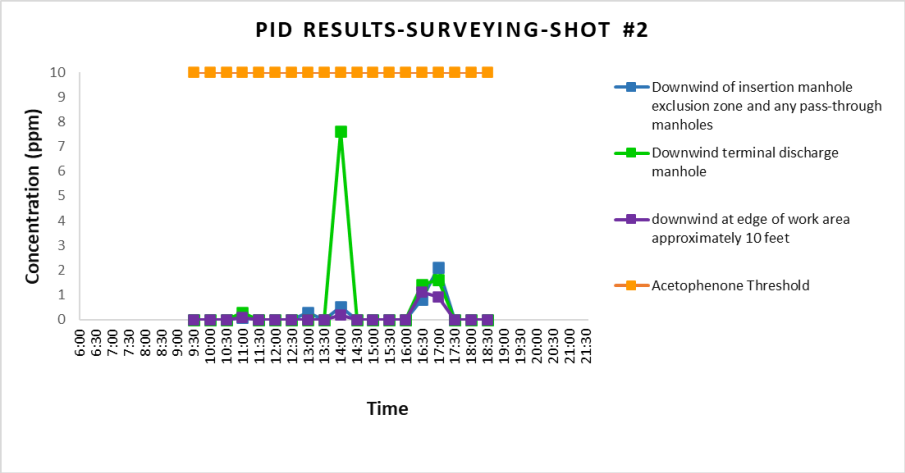


Figure 3. PID Results during Surveying (Shot 2)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	4.5	0	0	3
Comments	Less than Action Level	Not detected	Not detected	See elevated concentration summary below.
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

Elevated Concentration Summary for Action Levels

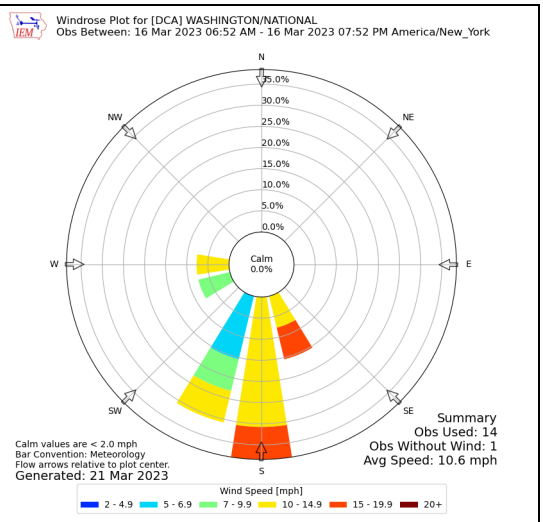
Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	SW	4.5	TVOC concentrations remained less than Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	14:00	Terminal discharge manhole	NA	3	Odor elevated because of refueling of the air blower not related to CIPP activities. Decrease with 15-20 ft distance away from the manhole.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #1	3/14/23	Method 18 for acetophenone TO-15 for VOCs	Results received from laboratory and being reviewed against AQMP.
Shot #2	3/16/23	Method 18 for acetophenone TO-15 for VOCs	Results received from laboratory and being reviewed against AQMP.
Shot #3	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.
Shot #4	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.

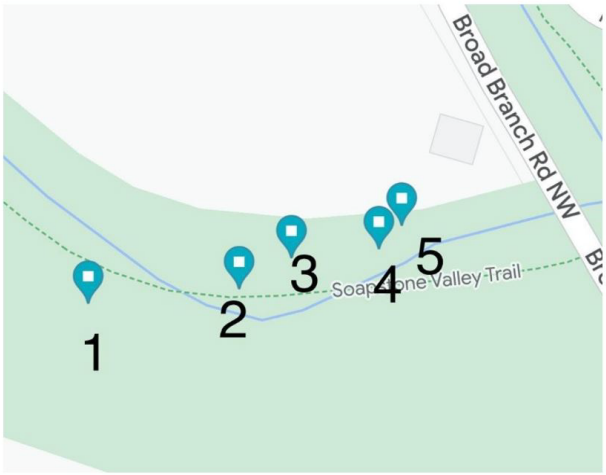
Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions

Precipitation (Yes/No)	No	
Average Wind Speed	8.9 mph	SW-SSW

***Weather results taken form the [DCA] Washington/National**

Site Map



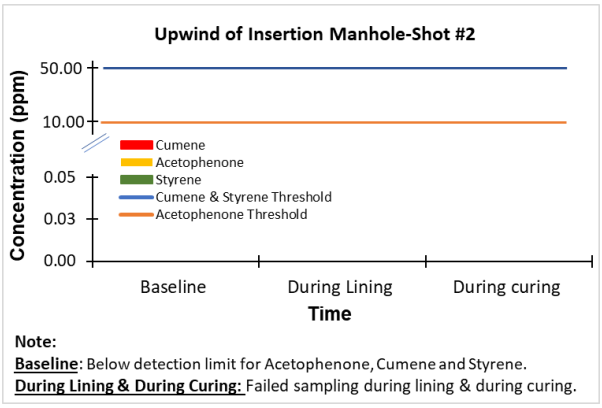
Shot 2: M10445 to M10363		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.9452356, -77.0525375)	Downwind
2	(38.9452718, -77.0520725)	4” above insertion manhole
3	(38.9453469, -77.0519116)	Upwind
4	(38.9453683, -77.0516427)	4” above terminal manhole
5	(38.9454262, -77.0515736)	Near terminal manhole

General Comments

8:07	Insertion of pre-liner
10:50	CIPP start time
12:00	Lining finished
14:00	Curing begins
18:00	Curing finished

Submitted By:	CUIRE/UTA	**Date:**	3/16/2023
Reviewed By:	AECOM	**Date:**	3/27/2023

Based on Figure 3, acetophenone concentrations were below the instrument detection limit for the baseline, during the lining and curing process for the insertion manhole (upwind & downwind) and termination manhole. Cumene detected at a concentration of 0.026 ppm during the lining process at the termination manhole and has not been detected elsewhere. Cumene concentration was significantly below the threshold limit of 50 ppm. Styrene has been seen at the downwind of insertion manhole and during lining and curing at the termination manhole.



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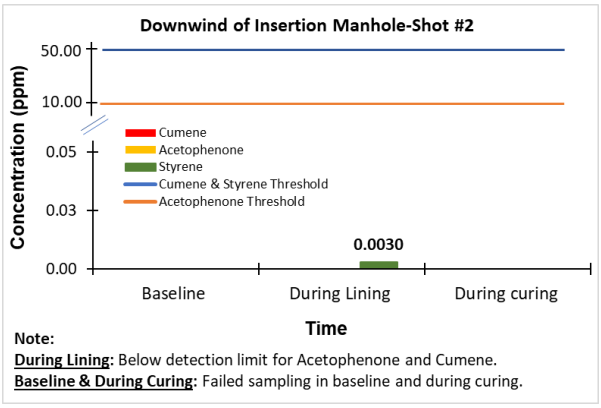

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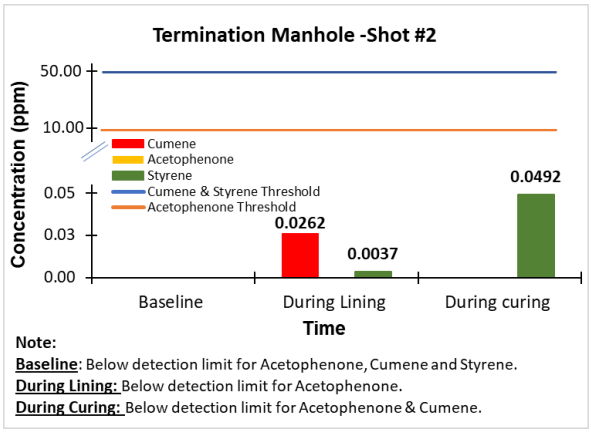

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Figure 4. Summa Canister Analysis (a) Upwind Insertion MH, (b) Downwind Insertion MH, and (c) Termination MH

Table 3. Integrated Sample VOCs for Shot #2 (March 16, 2023)

Row	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole	Downwind of Insertion Manhole
		OSHA PEL ppm	CAL/ OSHA PEL ppm	NIOSH REL ppm	ACGIH ppm	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)
1	Acetone	1000	500	250	250	0.0026	ND	0.0271	0.0030	0.0036
2	Benzene	10	1	0.1	0.5	ND	0.1070	ND	ND	ND
3	1,3-Butadiene	1	1	N/A	2	ND	0.0040	ND	ND	ND
4	Chlorobenzene	75	10	75	10	ND	0.0018	ND	ND	ND
5	Chloroform	50	2	2	10	ND	ND	0.0010	ND	ND
6	Cyclohexane	300	300	300	100	ND	0.1220	ND	ND	ND
7	Dichloromethane (Methylene chloride)	N/A	25	N/A	50	ND	ND	0.0382	ND	ND
8	Ethylbenzene	100	5	100	20	ND	0.1150	0.0017	ND	ND
9	4-Ethyltoluene	N/A	N/A	N/A	N/A	ND	0.0403	ND	ND	ND
10	Heptane	500	400	85	400	ND	0.1680	ND	ND	ND
11	Hexane	500	50	50	50	ND	0.3010	0.0013	ND	ND
12	Methyl ethyl ketone (2-Butanone)	200	200	200	75	ND	0.0013	0.0029	ND	ND
13	Propene	N/A	N/A	N/A	N/A	ND	0.0319	0.0009	ND	ND
14	Tetrahydrofuran (THF)	200	200	200	50	ND	ND	0.0043	ND	ND
15	Toluene	300	500	100	20	ND	0.5450	0.0045	ND	ND
16	1,3,5-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	0.0437	ND	ND	ND
17	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	0.1690	ND	ND	ND
18	2,2,4-Trimethylpentane	N/A	N/A	N/A	N/A	ND	0.1260	ND	ND	ND
19	m&p-Xylenes	100	100	100	20	ND	0.3960	0.0052	ND	ND
20	o-Xylene	100	100	100	20	ND	0.1610	0.0019	ND	ND

ND - Not Detected, N/A - Not Available

Table 4. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: 16.3.2023 Worker1 Sample 2

Lab ID#: 2303682-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Toluene	0.10	7.5	0.12	9.2
Styrene	0.10	9.1	0.28	26

Client Sample ID: 16.3.2023 Worker 1

Lab ID#: 2303682-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	54	1.4	79
Styrene	0.10	9.1	0.18	16

Client Sample ID: 16.3.2023 Worker 2

Lab ID#: 2303682-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	54	2.7	140
Hexane	0.10	8.4	0.96	81
Cyclohexane	0.10	10	0.20	21
Heptane	0.10	9.6	0.21	20
Toluene	0.10	7.5	0.60	45
m,p-Xylene	0.10	7.9	0.22	17
Styrene	0.10	9.1	0.23	21

Table 5. Summary of Analytical Results for Water Sampling VOC

			Boiler 1
			03/16/2023
Analyte Name	**Units**	**Cas#**	
1,1,1-Trichloroethane	ug/L	71-55-6	<1.0
1,1,2,2-Tetrachloroethane	ug/L	79-34-5	<1.0
1,1,2-Trichloroethane	ug/L	79-00-5	<1.0
1,1,2-Trichlorotrifluoroethane	ug/L	76-13-1	<1.0
1,1-Dichloroethane	ug/L	75-34-3	<1.0
1,1-Dichloroethene	ug/L	75-35-4	<1.0
1,2,3-Trichlorobenzene	ug/L	87-61-6	<1.0
1,2,4-Trichlorobenzene	ug/L	120-82-1	<1.0
1,2-Dibromo-3-chloropropane	ug/L	96-12-8	<1.0
1,2-Dibromoethane	ug/L	106-93-4	<1.0
1,2-Dichlorobenzene	ug/L	95-50-1	<1.0
1,2-Dichloroethane	ug/L	107-06-2	<1.0
1,2-Dichloropropane	ug/L	78-87-5	<1.0
1,3-Dichlorobenzene	ug/L	541-73-1	<1.0
1,4-Dichlorobenzene	ug/L	106-46-7	<1.0
2-Butanone (MEK)	ug/L	78-93-3	**97**
2-Hexanone (MBK)	ug/L	591-78-6	<5.0
4-Methyl-2-Pentanone (MIBK)	ug/L	108-10-1	<5.0
Acetone	ug/L	67-64-1	**1100**
Benzene	ug/L	71-43-2	<1.0
Bromochloromethane	ug/L	74-97-5	<1.0
Bromodichloromethane	ug/L	75-27-4	**4.7**
Bromoform	ug/L	75-25-2	<1.0
Bromomethane	ug/L	74-83-9	<1.0
Carbon Disulfide	ug/L	75-15-0	**2.5**
Carbon tetrachloride	ug/L	56-23-5	<1.0
Chlorobenzene	ug/L	108-90-7	<1.0
Chloroethane	ug/L	75-00-3	<1.0
Chloroform	ug/L	67-66-3	**34**
Chloromethane	ug/L	74-87-3	**1.3**
Cyclohexane	ug/L	110-82-7	<1.0
Dibromochloromethane	ug/L	124-48-1	<1.0
Dichlorodifluoromethane	ug/L	75-71-8	<1.0
Ethylbenzene	ug/L	100-41-4	**7.2**
Isopropylbenzene	ug/L	98-82-8	**38**
Methyl Acetate	ug/L	79-20-9	<1.0
Methyl-t-Butyl Ether	ug/L	1634-04-4	<1.0
Methylcyclohexane	ug/L	108-87-2	<1.0
Methylene chloride	ug/L	75-09-2	<1.0
Naphthalene	ug/L	91-20-3	<1.0
Styrene	ug/L	100-42-5	**1300**
Tetrachloroethene	ug/L	127-18-4	<1.0
Toluene	ug/L	108-88-3	<1.0
Trichloroethene	ug/L	79-01-6	<1.0
Trichlorofluoromethane	ug/L	75-69-4	<1.0
Vinyl chloride	ug/L	75-01-4	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	<1.0
cis-1,3-Dichloropropene	ug/L	10061-01-5	<1.0
m&p-Xylene	ug/L	108-38-3	**23**
o-Xylene	ug/L	95-47-6	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	<1.0
trans-1,3-Dichloropropene	ug/L	10061-02-6	<1.0

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**4/4/2023**
Summary:	Air monitoring performed during **shot #4 M-10443 to M-10364**. Air monitoring results were less than the Action Levels.

This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations

Upwind Concentrations	**Downwind Concentrations**
Data Plots were not available (see comments below). Data was reviewed periodically during CIPP activities and instantaneous concentrations were less than the Action Level.	Data plots were not available (see comments below). Data was reviewed periodically during CIPP activities and instantaneous concentrations were less than the Action Level.

Comments	Work hours were 7:45 am – 8:20 pm. Instruments were configured to provide measurements on the digital display and were not set up to log data. UTA will verify instrument configuration prior to subsequent CIPP activities.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck). - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted.	

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	0	0	0	0
Comments	Not detected	Not detected	Not detected	Not detected
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

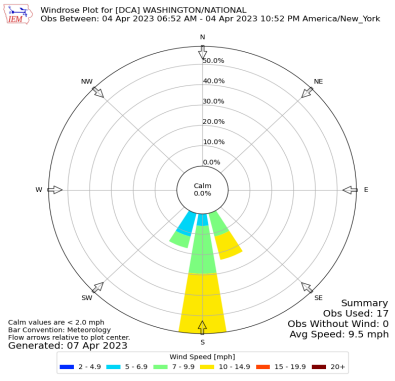
Elevated Concentration Summary for Action Levels

Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #1	3/14/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of cumene and acetophenone were below Compliance Levels set forth in the AQMP.
Shot #2	3/16/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of cumene and acetophenone were below Compliance Levels set forth in the AQMP.
Shot #3	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.
Shot #4	04/04/23	Method 18 for acetophenone TO-15 for VOCs	Samples sent to laboratory for analysis.
Shot #5	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	9.7 mph	S-SW

*Weather results obtained from the [DCA] Washington/National Airport

Site Map

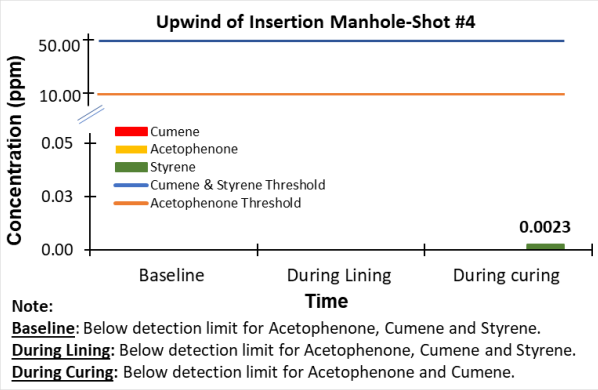
Shot 4: M10443 to M10364		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.9463899, -77.0559812)	Upwind
2	(38.9465206, -77.0558527)	4” above insertion manhole
3	(38.9466092, -77.0557072)	Downwind
4	(38.946513, -77.055249)	Passthrough manhole 1
5	(38.946477, -77.054898)	Passthrough manhole 2
6	(38.946451, -77.054533)	Passthrough manhole 3
7	(38.9463339, -77.0541908)	4” above terminal manhole
8	(38.9463693, -77.0541237)	Near terminal manhole

General Comments

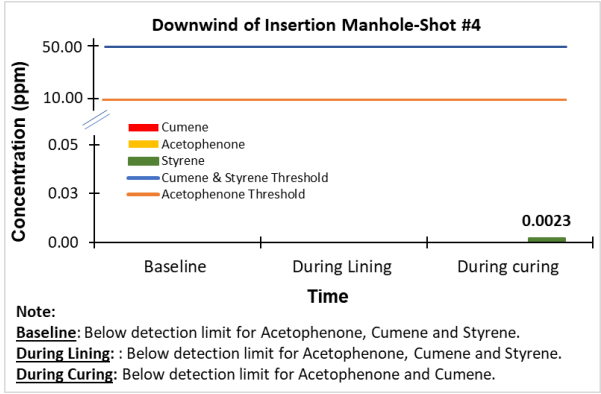
7:45 am arrived on job site
8:00 am contractor started CCTV activity
8:45 am started baseline samples
9:00 am started real-time TVOC monitoring upwind and downwind of insertion manhole
9:19 am refrigeration truck with liner arrived at job site
10:00 set started routine samples at upwind, downwind and terminal manhole
10:30 am started personnel sampling (2 sorbent tubes)
11:45 am started sorbent tube on terminal manhole (for insertion)
3:00 pm boiler truck arrived on the job site.
5:56 pm completed personnel sampling (2 sorbent tubes)
6:10 pm started canister and sorbent tube at terminal manhole (for curing)
6:20 pm started canister and sorbent tube at insertion manhole (for curing)
6:25 pm completed personnel sampling (1 sorbent tubes)
7:00 pm Boiler up to temperature
12:00 am collected PID and Canisters

Submitted By:	CUIRE/UTA	**Date:**	04/04/2023
Reviewed By:	AECOM	**Date:**	04/11/2023

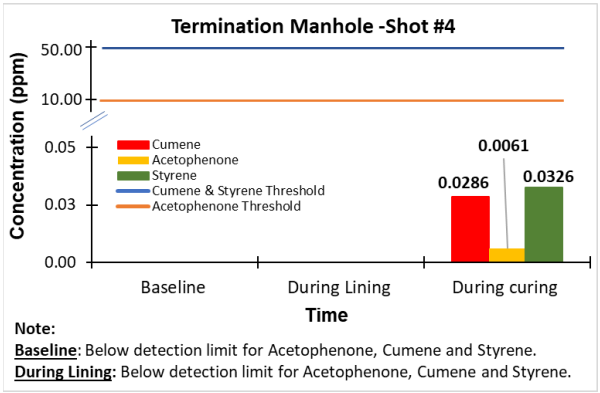
Based on figure 4 Cumene and acetophenone concentrations were below the detection limit for the upwind and downwind of insertion manhole for the baseline, during lining and curing activities. Cumene and acetophenone concentrations were also below the detection limit for the baseline and during lining at the termination manhole. However, during the curing activity, cumene and acetophenone concentrations were 0.0286 ppm and 0.061 ppm, respectively at the termination manhole which was significantly low below the threshold limit of 50 ppm and 10 ppm. Styrene concentration was 0.0023 ppm at the upwind and downwind of insertion manhole, and 0.033 ppm during curing activity at the termination manhole which was significantly below the threshold limit of 50 ppm.



(a)



(b)



(c)

Figure 5. Summa Canister Analysis (a) Upwind Insertion MH, (b) Downwind Insertion MH, and (c) Termination MH

Table 6. Integrated Sample VOCs for Shot #4 (April 11, 2023)

Row	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL ppm	CAL/ OSHA PEL ppm	NIOSH REL ppm	ACGIH ppm	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
1	Acetone	1000	500	250	250	0.0035	0.0045	0.02410	0.00	0.00	0.0617	0.00	0.00	0.062
2	Bromodichloromethane	N/A	N/A	N/A	N/A	ND	ND	0.00204	ND	ND	0.0038	ND	ND	0.004
3	Carbon disulfide	30	30	10	1	ND	ND	ND	ND	ND	0.0349	ND	ND	0.035
4	Chloroform	50	2	2	10	ND	ND	0.00204	ND	ND	0.0038	ND	ND	0.004
5	Chloromethane (Methyl Chloride)	N/A	N/A	N/A	N/A	ND	ND	0.00070	ND	ND	0.0013	ND	ND	0.001
6	Dichloromethane (Methylene chloride)	N/A	25	N/A	50	ND	ND	ND	ND	ND	0.3970	ND	ND	0.397
7	Ethylbenzene	100	5	100	20	ND	ND	0.00268	ND	ND	ND	ND	ND	ND
8	Heptane	500	400	85	400	ND	ND	ND	ND	ND	0.0055	ND	ND	0.006
9	Hexane	500	50	50	50	ND	ND	ND	ND	ND	0.0030	ND	ND	0.003
10	Isopropanol	N/A	N/A	N/A	N/A	ND	0.0008	0.04750	ND	ND	0.0612	ND	ND	0.061
11	Methyl ethyl ketone (2-Butanone)	200	200	200	75	ND	ND	0.00454	0.00	ND	0.0056	ND	ND	0.006
12	Tetrahydrofuran (THF)	200	200	200	50	ND	ND	0.03070	ND	ND	0.0577	ND	ND	0.058
13	Toluene	300	500	100	20	ND	ND	ND	ND	ND	0.0024	ND	ND	0.002
14	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	ND	0.00157	ND	ND	ND	ND	ND	ND
15	m&p-Xylenes	100	100	100	20	ND	ND	0.00969	ND	ND	ND	ND	ND	ND
16	o-Xylene	100	100	100	20	ND	ND	0.00233	ND	ND	ND	ND	ND	ND

ND - Not Detected, N/A - Not Available

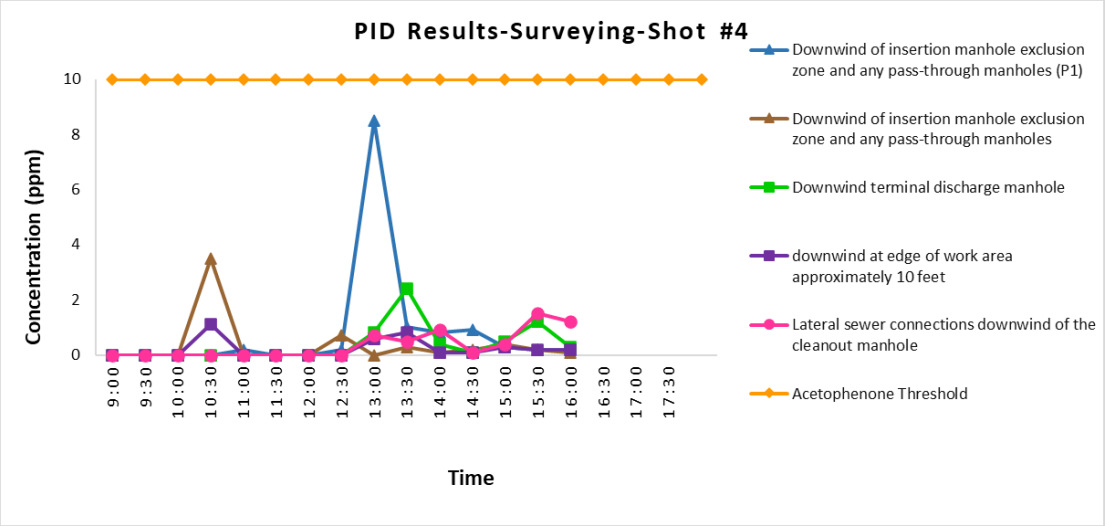


Figure 6. PID Results during Surveying (Shot 4)

Table 7. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Worker 1

Lab ID#: 2304208-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	3.4	0.48	16
Heptane	0.10	3.9	0.22	8.5
Toluene	0.10	3.0	0.93	28
Ethyl Benzene	0.10	3.3	0.31	10
m,p-Xylene	0.10	3.2	1.0	33
o-Xylene	0.10	3.4	0.36	12
Styrene	0.10	3.7	0.21	7.7

Client Sample ID: Worker 2

Lab ID#: 2304208-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	3.2	0.35	11
Heptane	0.10	3.6	0.12	4.6
Toluene	0.10	2.8	0.48	14
Ethyl Benzene	0.10	3.1	0.11	3.5
m,p-Xylene	0.10	3.0	0.34	10
o-Xylene	0.10	3.2	0.13	4.2

Summary of Analytical Results for Water Sampling VOC

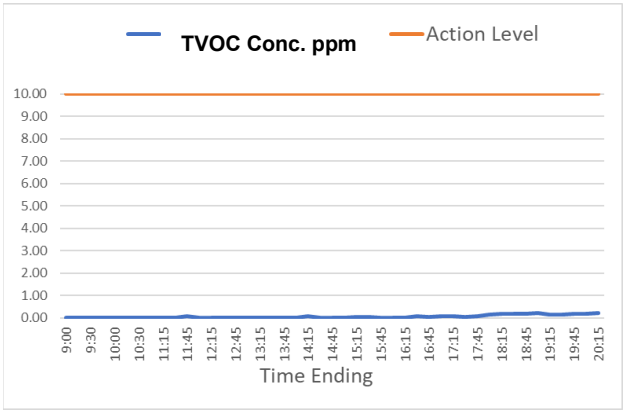
			Boiler Start	Boiler Curing
			04/04/2023	4/4/2023
Analyte Name	Units	Cas#		
1,1,1-Trichloroethane	ug/L	71-55-6	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	79-34-5	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	79-00-5	<1.0	<1.0
1,1,2-Trichlorotrifluoroethane	ug/L	76-13-1	<1.0	<1.0
1,1-Dichloroethane	ug/L	75-34-3	<1.0	<1.0
1,1-Dichloroethene	ug/L	75-35-4	<1.0	<1.0
1,2,3-Trichlorobenzene	ug/L	87-61-6	<1.0	<1.0
1,2,4-Trichlorobenzene	ug/L	120-82-1	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	96-12-8	<1.0	<1.0
1,2-Dibromoethane	ug/L	106-93-4	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	95-50-1	<1.0	<1.0
1,2-Dichloroethane	ug/L	107-06-2	<1.0	<1.0
1,2-Dichloropropane	ug/L	78-87-5	<1.0	<1.0
1,3-Dichlorobenzene	ug/L	541-73-1	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	106-46-7	<1.0	<1.0
2-Butanone (MEK)	ug/L	78-93-3	<5.0	**180**
2-Hexanone (MBK)	ug/L	591-78-6	<5.0	<5.0
4-Methyl-2-Pentanone (MIBK)	ug/L	108-10-1	<5.0	<5.0
Acetone	ug/L	67-64-1	**110**	**210**
Benzene	ug/L	71-43-2	<1.0	<1.0
Bromochloromethane	ug/L	74-97-5	<1.0	<1.0
Bromodichloromethane	ug/L	75-27-4	**3.2**	**6.6**
Bromoform	ug/L	75-25-2	<1.0	<1.0
Bromomethane	ug/L	74-83-9	<1.0	<1.0
Carbon Disulfide	ug/L	75-15-0	<1.0	**2.2**
Carbon tetrachloride	ug/L	56-23-5	<1.0	<1.0
Chlorobenzene	ug/L	108-90-7	<1.0	<1.0
Chloroethane	ug/L	75-00-3	<1.0	<1.0
Chloroform	ug/L	67-66-3	**16**	**52**
Chloromethane	ug/L	74-87-3	<1.0	**1.4**
Cyclohexane	ug/L	110-82-7	<1.0	<1.0
Dibromochloromethane	ug/L	124-48-1	<1.0	<1.0
Dichlorodifluoromethane	ug/L	75-71-8	<1.0	<1.0
Ethylbenzene	ug/L	100-41-4	**8.4**	**21**
Isopropylbenzene	ug/L	98-82-8	<1.0	**110**
Methyl Acetate	ug/L	79-20-9	<1.0	<1.0
Methyl-t-Butyl Ether	ug/L	1634-04-4	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	<1.0	<1.0
Methylene chloride	ug/L	75-09-2	<1.0	<1.0
Naphthalene	ug/L	91-20-3	<1.0	<1.0
Styrene	ug/L	100-42-5	**3800**	**360**
Tetrachloroethene	ug/L	127-18-4	<1.0	<1.0
Toluene	ug/L	108-88-3	<1.0	**1.8**
Trichloroethene	ug/L	79-01-6	<1.0	<1.0
Trichlorofluoromethane	ug/L	75-69-4	<1.0	<1.0
Vinyl chloride	ug/L	75-01-4	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	10061-01-5	<1.0	<1.0
m&p-Xylene	ug/L	108-38-3	<2.0	**60**
o-Xylene	ug/L	95-47-6	<1.0	**22**
trans-1,2-Dichloroethene	ug/L	156-60-5	<1.0	<1.0
trans-1,3-Dichloropropene	ug/L	10061-02-6	<1.0	<1.0

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**4/11/2023**
Summary:	Air monitoring performed during **shot #5 M-10409 to M-10443**. Air monitoring results were less than the Action Levels.

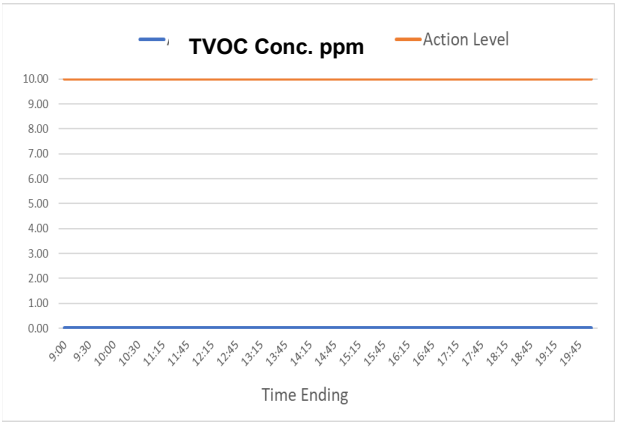
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 7:07 am – 8:27 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	0	0	0	0
Comments	Not detected	Not detected	Not detected	Not detected
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

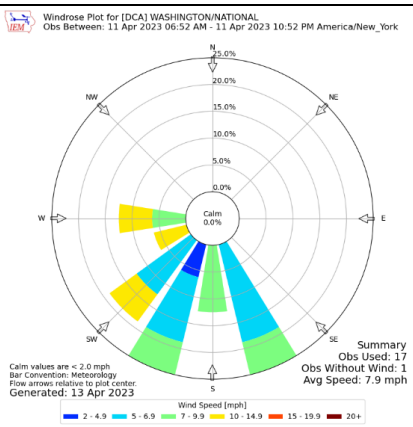
Elevated Concentration Summary for Action Levels

Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #1	3/14/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.
Shot #2	3/16/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.
Shot #4	04/04/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.
Shot #5	04/11/23	Method 18 for acetophenone TO-15 for VOCs	Samples sent to laboratory for analysis.
Shot #3	TBD	Method 18 for acetophenone TO-15 for VOCs	Future sampling event. Supplies ordered from the laboratory.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	7.9 mph	W-SW-S-SE

*Weather results obtained from the [DCA] Washington/National Airport

Site Map

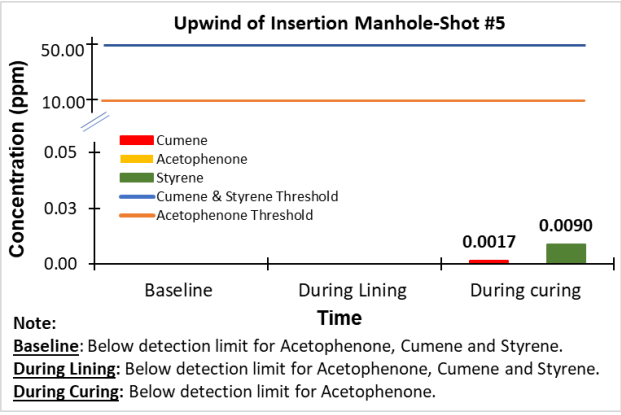
Shot 5: M10409 to M10443		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.9464974, -77.0562988)	Lateral manhole
2	(38.9463663, -77.0562721)	4" above terminal manhole
3	(38.9464272, -77.0561294)	Passthrough manhole
4	(38.9464132, -77.0559651)	Upwind
5	(38.9465175, -77.0558671)	4" above insertion manhole
6	(38.9466439, -77.0557578)	Downwind
7	(38.9465049, -77.0560023)	New Upwind
8	(38.9465495, -77.0557465)	New Downwind

General Comments

7:07 am arrived at job site
7:35 am started baseline VOC samples
9:30 am started liner insertion
9:45 am started the upwind and downwind PIDs
9:51 am started personnel sampling (2 sorbent tubes)
10:00 am started collecting data from anemometer and PID at various locations
11:20 am completed liner insertion
11:45 am boiler truck arrived at site
12:15 pm replacement of boiler truck with other truck to rectify liner issues
12:40 pm boiler returned to job site
1:33 pm water started circulation inside manhole
1:40 pm started acetophenone and VOC samples at insertion manhole (for curing)
1:45 boiler started and curing process started
1:53 pm placed acetophenone and VOC samples at terminal manhole (for curing)
2:00 pm collected water samples from boiler
2:45 pm boiler reached temperature
3:15 pm reached temperature at terminal manhole
4:00 pm relocated the upwind & downwind PID and VOC samples based on change in wind direction
5:25 pm completed personnel sampling (2 sorbent tubes)
8:00 pm curing finished
8:01 pm collected the VOC samples from upwind and downwind locations with final verification of media collection
8:25 pm collected water samples post curing
8:27 pm collected acetophenone and VOC sample from terminal manhole

Submitted By:	CUIRE/UTA	**Date:**	04/17/2023
Reviewed By:	AECOM	**Date:**	

Per Figure 7, acetophenone concentration was 0.002 ppm during the curing process at the termination manhole. It has been below the detection limit for the baseline, during lining, and during curing processes at other manholes' locations. Cumene concentrations were 0.0017, 0.0017, and 0.014 ppm during curing process at insertion (upwind & downwind) and termination manholes, respectively. These values were below the threshold limit of 50 ppm. Styrene concentration was 0.009 ppm at the upwind and downwind of insertion manhole, and 0.43 ppm during curing activity at the termination manhole which was significantly below the threshold limit of 50 ppm.



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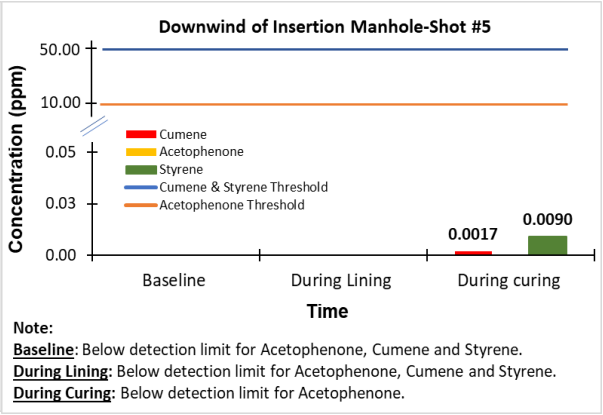
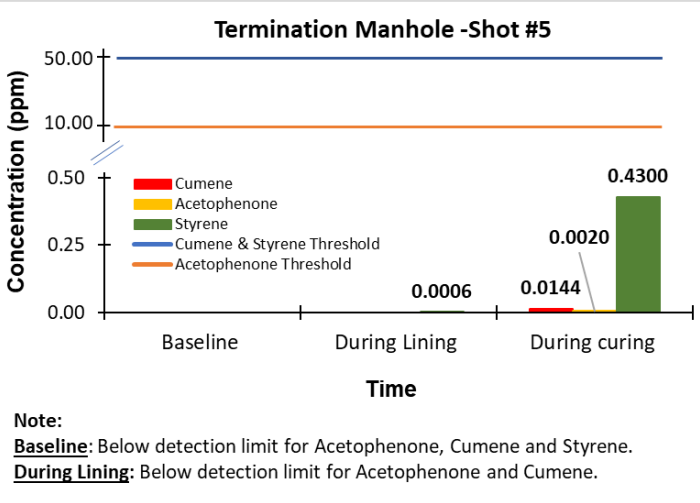


(b)



(c)

Figure 7. Summa Canister Analysis (a) Upwind of Insertion Manhole, (b) Downwind of Insertion Manhole, and (c) Termination Manhole

Table 7. Integrated Sample VOCs for Shot #5 (April 04, 2023)

Row	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL	CAL/ OSHA PEL	NIOSH REL	ACGIH	Baseline	During Lining	During curing	Baseline	During Lining	During curing- above the insertion Manhole	Baseline	During Lining	During curing- above the insertion Manhole
		ppm	ppm	ppm	ppm	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
1	Acetone	1000	500	250	250	0.0041	0.0058	0.1980	0.00	0.01	0.0189	0.00	0.00	0.0189
2	Benzene	10	1	0.1	0.5	ND	ND	0.0010	ND	ND	0.0020	ND	ND	0.0020
3	Bromodichloromethane	N/A	N/A	N/A	N/A	ND	0.0027	0.0443	ND	ND	0.0043	ND	ND	0.0043
4	Carbon disulfide	30	30	10	1	ND	ND	0.0009	ND	ND	0.0023	ND	ND	0.0023
5	Chloroform	50	2	2	10	ND	0.0027	0.0444	ND	ND	0.0043	ND	ND	0.0043
6	Chloromethane (Methyl Chloride)	N/A	N/A	N/A	N/A	ND	ND	0.0010	ND	ND	ND	ND	ND	ND
7	Cyclohexane	300	300	300	100	ND	ND	0.0020	ND	ND	0.0026	ND	ND	0.0026
8	Dichloromethane (Methylene chloride)	N/A	25	N/A	50	ND	0.0017	0.0031	ND	ND	2.6200	ND	ND	2.6200
9	1,4-Dioxane	100	0.28	1	20	ND	ND	0.0031	ND	ND	ND	ND	ND	ND
10	Ethylbenzene	100	5	100	20	ND	ND	0.0148	ND	ND	0.0016	ND	ND	0.0016
11	4-Ethyltoluene	N/A	N/A	N/A	N/A	ND	ND	0.0027	ND	ND	ND	ND	ND	ND
12	Heptane	500	400	85	400	ND	ND	0.0011	ND	ND	0.0027	ND	ND	0.0027
13	Hexane	500	50	50	50	ND	ND	0.0029	ND	ND	0.0243	ND	0.00	0.0243
14	Isopropanol	N/A	N/A	N/A	N/A	ND	ND	0.5170	ND	ND	0.0136	ND	ND	0.0136
15	Methyl ethyl ketone (2-Butanone)	200	200	200	75	ND	0.0011	0.0559	ND	ND	0.0043	ND	0.00	0.0043
16	Propene	N/A	N/A	N/A	N/A	ND	ND	0.0015	ND	ND	0.0036	ND	ND	0.0036
17	Tetrachloroethene (PCE)	N/A	N/A	N/A	N/A	ND	ND	0.0008	ND	ND	ND	ND	ND	ND
18	Tetrahydrofuran (THF)	200	200	200	50	ND	ND	0.1380	ND	ND	0.0024	ND	ND	0.0024
19	Toluene	300	500	100	20	ND	ND	0.0053	ND	ND	0.0071	ND	0.00	0.0071
20	1,3,5-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	ND	0.0024	ND	ND	ND	ND	ND	ND
21	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	ND	0.0095	ND	ND	0.0022	ND	ND	0.0022
22	2,2,4-Trimethylpentane	N/A	N/A	N/A	N/A	ND	ND	0.0011	ND	ND	0.0021	ND	ND	0.0021
23	m&p-Xylenes	100	100	100	20	ND	ND	0.0652	ND	ND	0.0056	ND	ND	0.0056
24	o-Xylene	100	100	100	20	ND	ND	0.0132	ND	ND	0.0019	ND	ND	0.0019

ND - Not Detected, N/A - Not Available

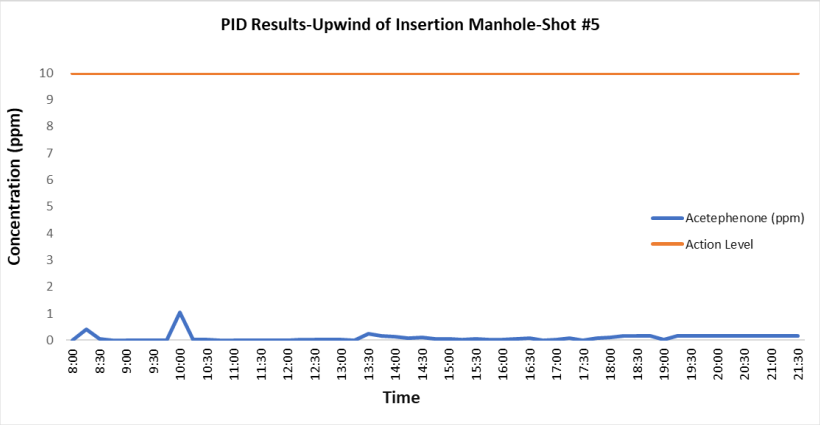


Figure 8. PID Results at Upwind of Insertion Manhole (Shot 5)

Table 8. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Worker 1

Lab ID#: 2304374-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	3.2	0.24	7.6
Heptane	0.10	3.6	0.10	3.8
Toluene	0.10	2.8	0.34	9.7
m,p-Xylene	0.10	3.0	0.23	6.9

Client Sample ID: Worker 2

Lab ID#: 2304374-02A

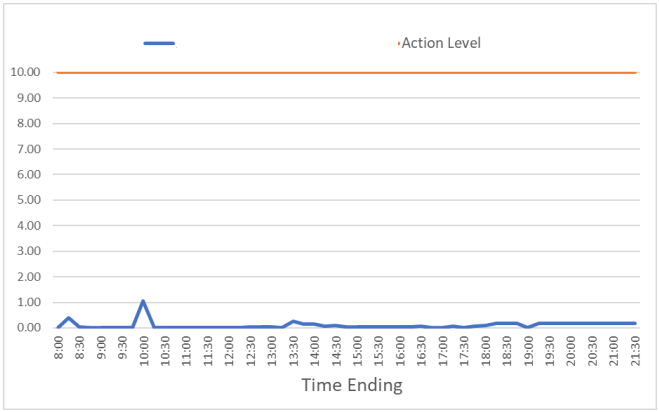
Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Toluene	0.10	3.0	0.13	4.0
m,p-Xylene	0.10	3.2	0.14	4.3

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**4/13/2023**
Summary:	Air monitoring performed during **shot #3 M-10364 to M-10363**. Air monitoring results were less than the Action Levels.

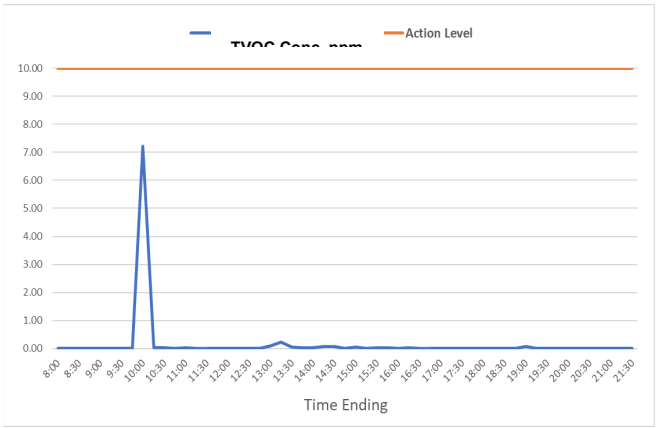
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 7:05 am – 6:20 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

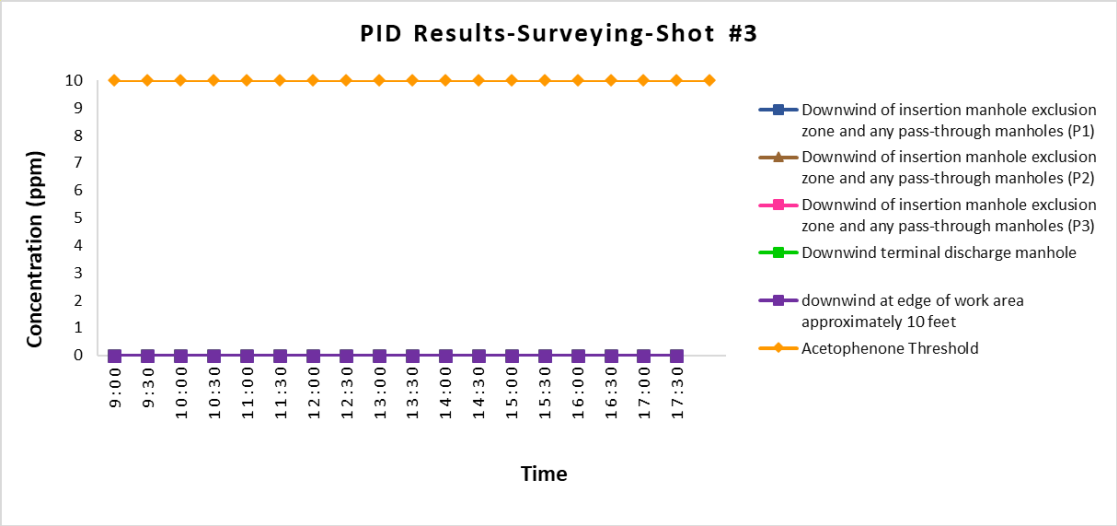


Figure 9. PID Results during Surveying (Shot 3)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	0	0	0	0
Comments	Not detected	Not detected	Not detected	Not detected
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

Elevated Concentration Summary for Action Levels

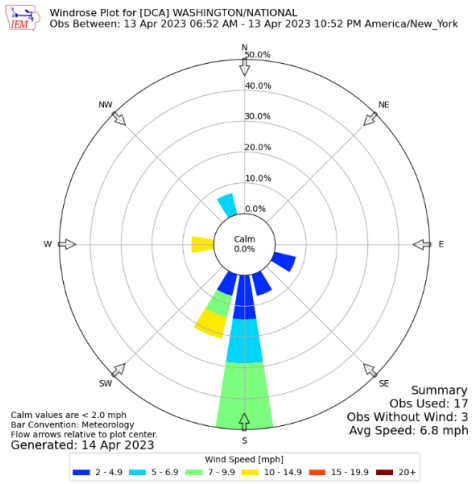
Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #1	03/14/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.
Shot #2	03/16/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.

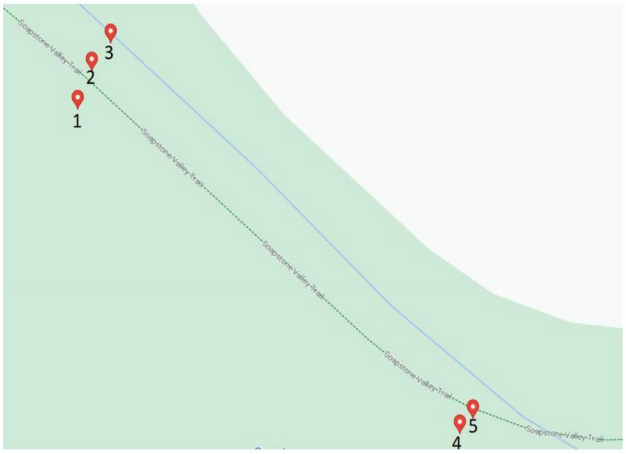
Shot #4	04/04/23	Method 18 for acetophenone TO-15 for VOCs	Results received. Concentrations of COCs were below Compliance Levels documented in AQMP.
Shot #5	04/11/23	Method 18 for acetophenone TO-15 for VOCs	Samples sent to laboratory for analysis.
Shot #3	04/13/23	Method 18 for acetophenone TO-15 for VOCs	Samples sent to laboratory for analysis.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	6.8 mph	W-NW-SW

*Weather results obtained from the [DCA] Washington/National Airport

Site Map



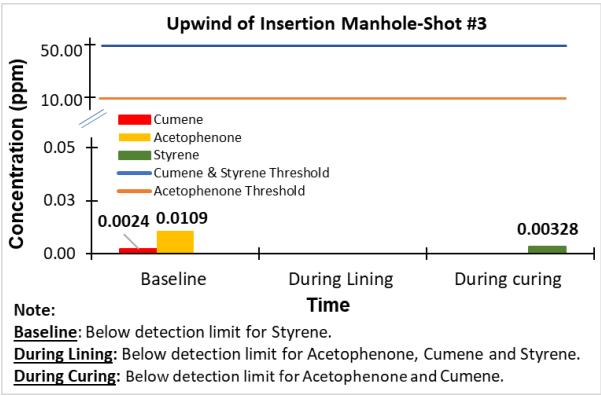
Shot 3: M10364 to M10363		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.9459949, -77.0534065)	Downwind
2	(38.9459418, -77.0534547)	4” above insertion manhole
3	(38.9458777, -77.0534966)	Upwind
4	(38.9453120, -77.0524522)	4” above terminal manhole
5	(38.9452794, -77.0524864)	Terminal

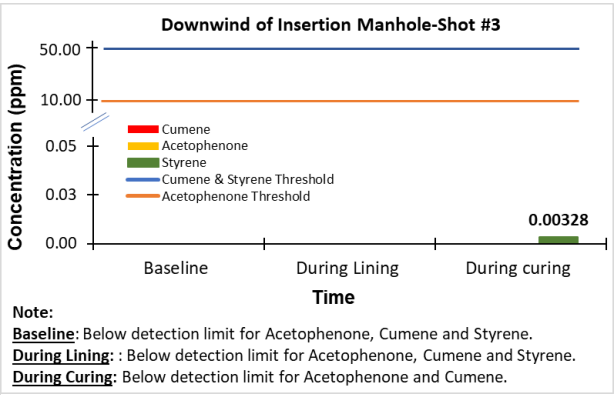
General Comments

04/12/2023: - 2:00 pm arrived at job site to complete baseline samples
2:30 pm started baseline samples
2:30 pm liner truck arrived onsite to set up
6:25 pm completed baseline samples
04/13/2023: - 7:05 am arrived at job site
8:02 am started routine VOC samples at upwind, downwind and terminal manhole
8:28 am CCTV started
8:50 am started personnel sampling (2 sorbent tubes)
9:20 am refrigeration truck arrived at job site
9:45 am started insertion of liner
10:25 am liner insertion completed, liner truck leaving site
10:37 am boiler truck arrived at the job site.
10:58 am started inversion of liner
11:30 am liner inversion complete
11:52 am placed acetophenone and VOC samples at terminal manhole (for curing)
12:30 am circulation in boiler due to kink in water hose in manhole
2:35 pm acetophenone and VOC samples removed from terminal manhole to allow IPR needed access to terminal manhole to resolve the hose issue
3:05 pm problem with hose in manhole rectified
3:08 pm acetophenone and VOC samples placed back on terminal manhole
3:15 pm boiler truck running to start the curing process.
3:26 pm acetophenone and VOC samples placed at insertion manhole
4:15 pm reached temperature at insertion & terminal manholes
5:48 pm completed personnel sampling (2 sorbent tubes)
6:20 pm off site
9:00 pm returned to site to collect samples and PIDs
9:20 pm shutdown PIDs from upwind and downwind locations
9:37 pm collected acetophenone and VOC samples from terminal manhole
9:49 pm collected acetophenone and VOC samples from insertion manhole

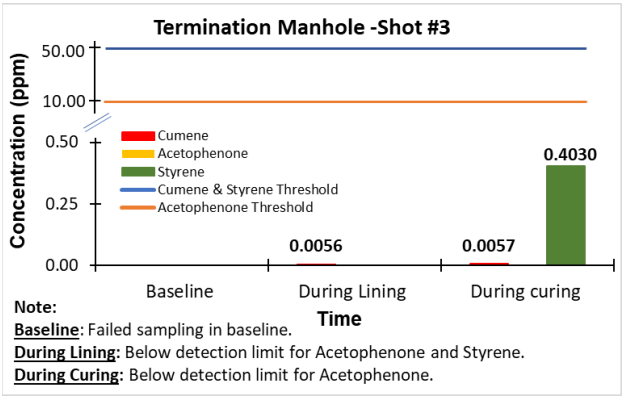
Submitted By:	CUIRE/UTA	**Date:**	04/17/2023
Reviewed By:	AECOM	**Date:**	

Per figure 10. Cumene and acetophenone concentrations were detected during the baseline data collection at the upwind of insertion manhole as displayed in Figure 5. Concentrations for cumene was 0.0024 ppm and acetophenone was 0.011 ppm, significantly below the threshold values of 50 ppm and 10 ppm, respectively. Acetophenone has not been detected at any other manhole location during baseline, lining, and curing activities. Cumene concentrations were 0.0056 ppm and 0.0057 ppm during lining and curing activities at a termination manhole which were significantly below the threshold limit of 50 ppm. Styrene has only been detected during curing processes at the insertion (upwind & downwind) and termination manholes. Styrene concentrations were 0.0033, 0.0033, and 0.4 ppm for the upwind, downwind of insertion manhole, and termination manhole, respectively. These values were significantly less than the threshold limit of 50 ppm.





(a) (b)



(c)

Figure 10. Summa Canister Analysis (a) Upwind of Insertion MH, (b) Downwind of Insertion MH, and (c) Termination MH

Table 9. Integrated Sample VOCs for Shot #3 (April 13, 2023)

Row	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole		Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL ppm	CAL/ OSHA PEL ppm	NIOSH REL ppm	ACGIH ppm	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
1	Acetone	1000	500	250	250	0.0088	0.2530	0.0046	0.0050	0.0504	0.0042	0.0052	0.0504
2	Benzene	10	1	0.1	0.5	ND	ND	ND	ND	0.0010	ND	ND	0.0010
3	Bromodichloromethane	N/A	N/A	N/A	N/A	0.0022	0.0723	ND	ND	0.0060	ND	ND	0.0060
4	Carbon disulfide	30	30	10	1	ND	0.0022	ND	ND	0.0193	ND	ND	0.0193
5	Chloroform	50	2	2	10	0.0022	0.0723	ND	ND	0.0060	ND	ND	0.0060
6	Chloromethane (Methyl Chloride)	N/A	N/A	N/A	N/A	ND	0.0015	ND	ND	0.0008	ND	ND	0.0008
7	Cyclohexane	300	300	300	100	ND	0.0026	ND	ND	0.0015	ND	ND	0.0015
8	Dibromochloromethane	N/A	N/A	N/A	N/A	ND	0.0012	ND	ND	ND	ND	ND	ND
9	Dichloromethane (Methylene chloride)	N/A	25	N/A	50	ND	0.0032	ND	ND	0.1470	ND	ND	0.1470
10	1,4-Dioxane	100	0.28	1	20	ND	0.0026	ND	ND	ND	ND	ND	ND
11	Ethyl acetate	400	400	400	400	ND	0.0281	ND	ND	ND	ND	ND	ND
12	Ethylbenzene	100	5	100	20	ND	ND	ND	ND	0.0014	ND	ND	0.0014
13	4-Ethyltoluene	N/A	N/A	N/A	N/A	ND	0.0045	ND	ND	ND	ND	ND	ND
14	Heptane	500	400	85	400	ND	ND	ND	ND	0.0097	ND	ND	0.0097
15	Hexane	500	50	50	50	ND	1.6900	ND	ND	0.0027	ND	0.0014	0.0027
16	Isopropanol	N/A	N/A	N/A	N/A	ND	0.6300	0.0011	ND	0.0071	ND	ND	0.0071
17	Methyl ethyl ketone (2-Butanone)	200	200	200	75	ND	0.0603	0.0007	ND	0.0036	ND	ND	0.0036
18	Propene	N/A	N/A	N/A	N/A	ND	0.00097	ND	ND	0.0043	ND	ND	0.0043
19	1,1,2,2-Tetrachloroethane	5	1	1	1	0.0051	ND	ND	ND	ND	ND	ND	ND
20	Tetrachloroethene (PCE)	N/A	N/A	N/A	N/A	ND	0.0014	ND	ND	ND	ND	ND	ND
21	Tetrahydrofuran (THF)	200	200	200	50	ND	0.2120	ND	ND	0.0064	ND	ND	0.0064
22	Toluene	300	500	100	20	ND	0.0032	ND	ND	0.0037	0.0016	0.0016	0.0037
23	1,3,5-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	0.0041	ND	ND	ND	ND	ND	ND
24	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	0.0158	ND	ND	ND	ND	ND	ND
25	m&p-Xylenes	100	100	100	20	ND	0.0873	ND	ND	0.0032	ND	ND	0.0032
26	o-Xylene	100	100	100	20	ND	0.0247	ND	ND	0.0012	ND	ND	0.0012

ND - Not Detected, N/A - Not Available

Table 10. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Worker 2

Lab ID#: 2304471-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	18	1.7	31
Hexane	0.10	2.8	0.59	17
Cyclohexane	0.10	3.4	0.17	5.8
Heptane	0.10	3.2	0.22	7.0
Toluene	0.10	2.5	0.74	19
Ethyl Benzene	0.10	2.7	0.16	4.4
m,p-Xylene	0.10	2.6	0.50	13
o-Xylene	0.10	2.8	0.18	5.1

Client Sample ID: Worker 1

Lab ID#: 2304471-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	2.8	0.24	6.8
Heptane	0.10	3.2	0.12	3.9
Toluene	0.10	2.5	0.35	8.9
m,p-Xylene	0.10	2.6	0.25	6.6

Table 11. Acetophenone (Sorbent tube) Sampling Result:

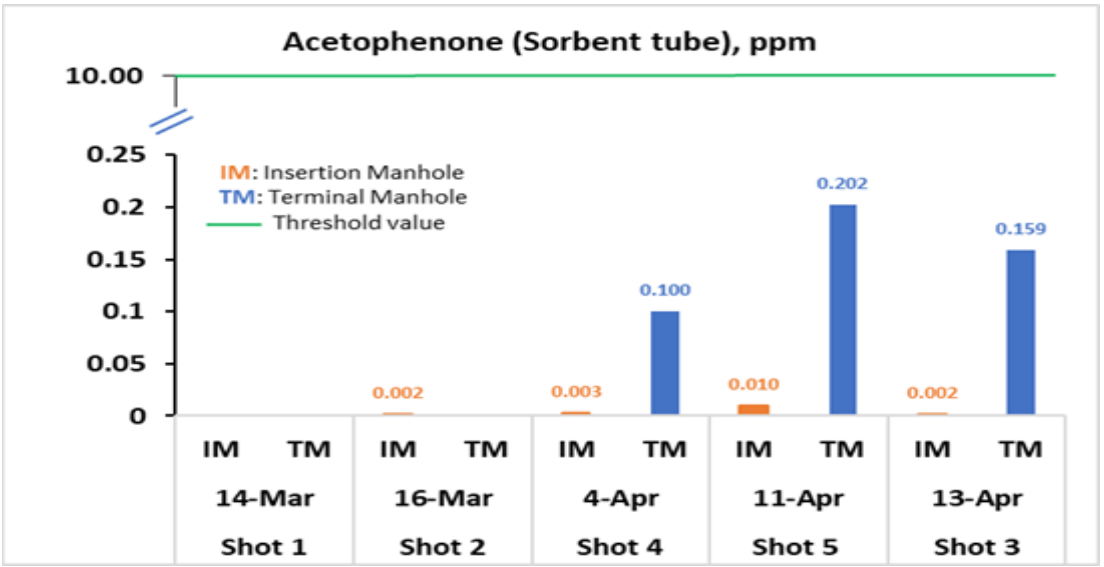


Table 12. Summary of Analytical Results for Water Sampling VOC

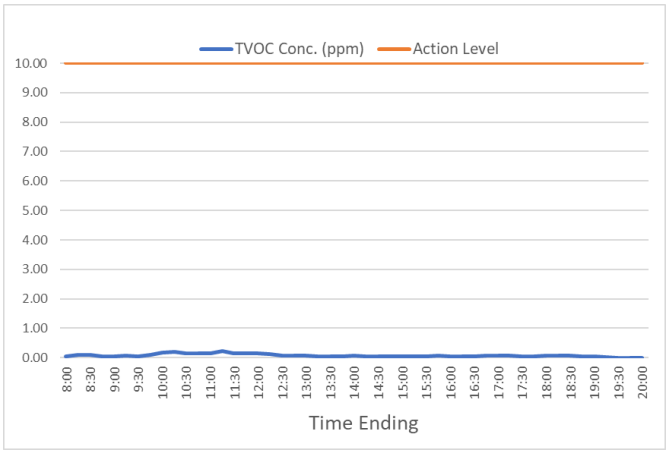
			Boiler Start	Boiler after Curing	Boiler Start	Boiler after Curing
			04/11/2023	04/11/2023	04/13/2023	04/13/2023
Analyte Name	**Units**	**Cas#**				
1,1,1-Trichloroethane	ug/L	71-55-6	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	79-34-5	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	79-00-5	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichlorotrifluoroethane	ug/L	76-13-1	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	75-34-3	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	75-35-4	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	ug/L	87-61-6	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	ug/L	120-82-1	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	96-12-8	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	106-93-4	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	ug/L	95-50-1	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	ug/L	107-06-2	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	78-87-5	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	ug/L	541-73-1	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	ug/L	106-46-7	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	ug/L	78-93-3	**120**	**39**	<5.0	**74**
2-Hexanone (MBK)	ug/L	591-78-6	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-Pentanone (MIBK)	ug/L	108-10-1	<5.0	<5.0	<5.0	<5.0
Acetone	ug/L	67-64-1	**120**	**110**	<5.0	**120**
Benzene	ug/L	71-43-2	<1.0	<1.0	<1.0	<1.0
Bromochloromethane	ug/L	74-97-5	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	75-27-4	**2.0**	**6.4**	**7.8**	**8.7**
Bromoform	ug/L	75-25-2	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	74-83-9	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	75-15-0	<1.0	**3.0**	<1.0	**2.6**
Carbon tetrachloride	ug/L	56-23-5	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	108-90-7	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	75-00-3	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	67-66-3	**19**	**34**	**27**	**54**
Chloromethane	ug/L	74-87-3	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	ug/L	124-48-1	<1.0	**1.3**	**1.5**	**1.5**
Dichlorodifluoromethane	ug/L	75-71-8	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	100-41-4	**13**	**8.8**	<1.0	**8.3**
Isopropylbenzene	ug/L	98-82-8	**12**	**35**	<1.0	**46**
Methyl Acetate	ug/L	79-20-9	<1.0	<1.0	<1.0	<1.0
Methyl-t-Butyl Ether	ug/L	1634-04-4	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	<1.0	<1.0	<1.0	<1.0
Methylene chloride	ug/L	75-09-2	<1.0	<1.0	<1.0	<1.0
Naphthalene	ug/L	91-20-3	<1.0	<1.0	<1.0	<1.0
Styrene	ug/L	100-42-5	**140**	**110**	<1.0	**230**
Tetrachloroethene	ug/L	127-18-4	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	79-01-6	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	ug/L	75-69-4	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	ug/L	75-01-4	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	10061-01-5	<1.0	<1.0	<1.0	<1.0
m&p-Xylene	ug/L	108-38-3	**7.3**	**18**	<2.0	**25**
o-Xylene	ug/L	95-47-6	<1.0	**6.7**	<1.0	**9.9**
trans-1,2-Dichloroethene	ug/L	156-60-5	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	ug/L	10061-02-6	<1.0	<1.0	<1.0	<1.0

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**9/19/2023**
Summary:	Air monitoring performed during **shot #6 M-10412 to M-10442**. Air monitoring results were less than the Action Levels.

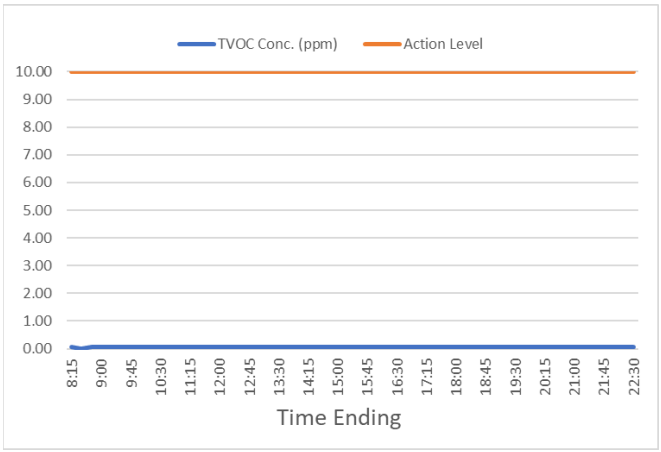
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 7:50 am – 7:00 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

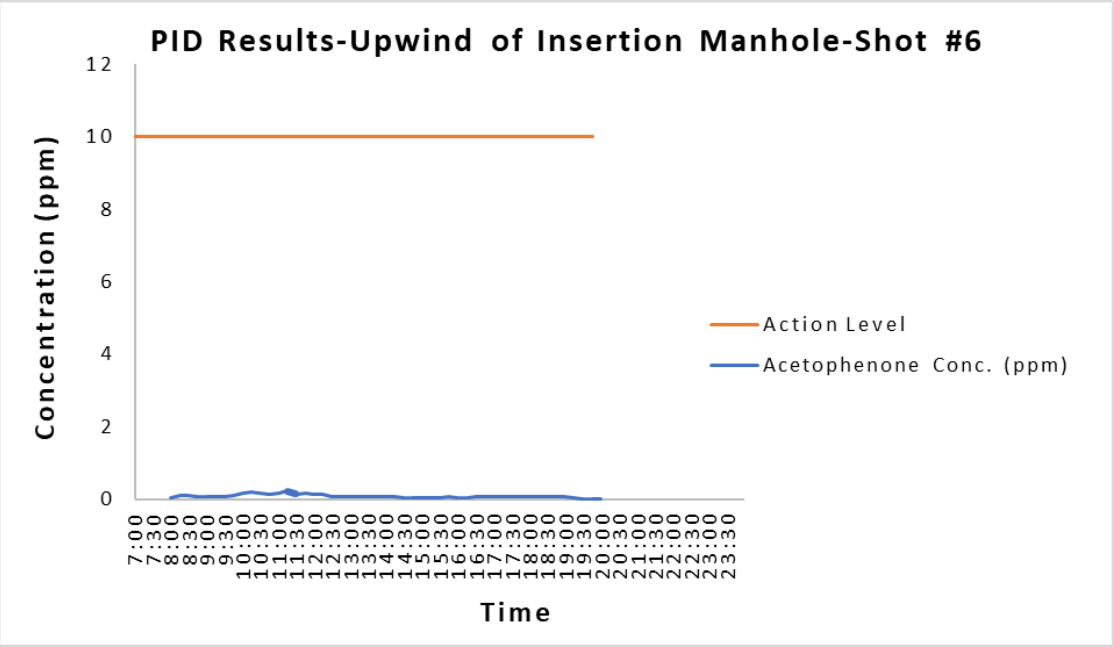


Figure 11. PID Results at Upwind of Insertion Manhole (Shot #6)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	9.7	0	0	1
Comments	Downwind of the terminal manhole, the perimeter data reflected concentrations less than 1.	Below detection limit of equipment.	Below detection limit of equipment.	--
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

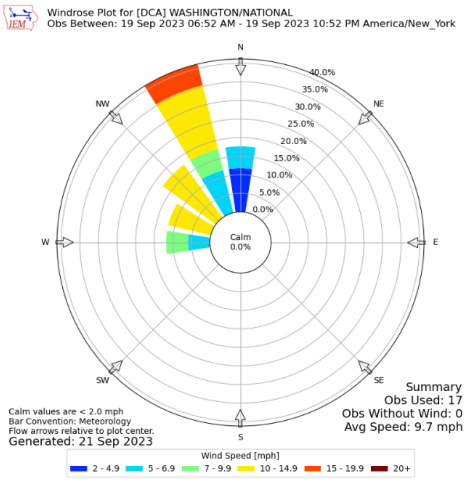
Elevated Concentration Summary for Action Levels

Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 - 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

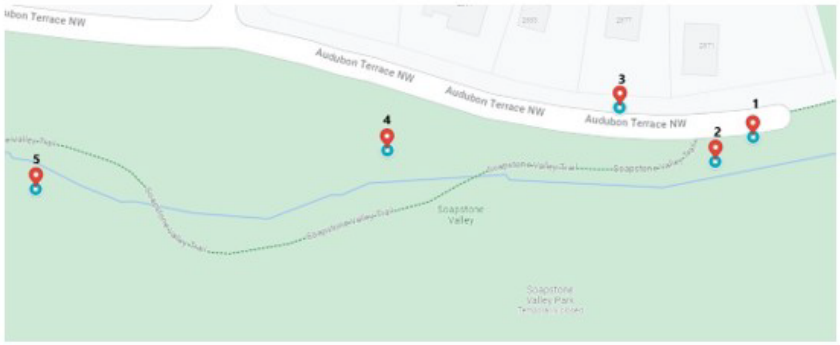
Project Area	Sample Date	Method Type	Comments
Shot #6	09/19/23	Method 18 for acetophenone TO-15 for VOCs	Media available for Method 18 analysis Samples sent to laboratory for analysis.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	9.7 mph	N-NNW-NW

*Weather results obtained from the [DCA] Washington/National Airport

Site Map

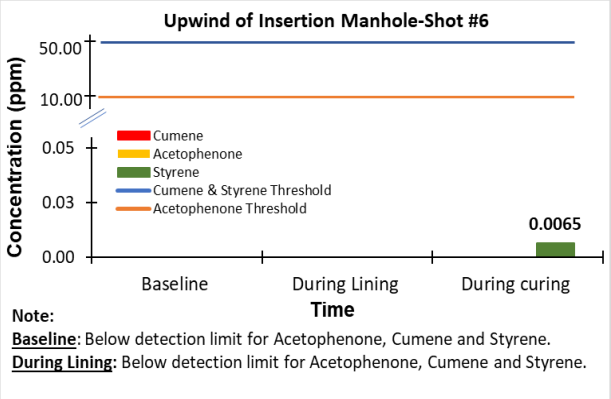


Shot 6: M10412 to M10442		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.946134, -77.057102)	Downwind
2	(38.946060, -77.057246)	4" above insertion manhole
3	(38.946221, -77.057612)	Upwind
4	(38.946093, -77.058498)	Passthrough Manhole 1
5	(38.945979, -77.059837)	4" above terminal manhole

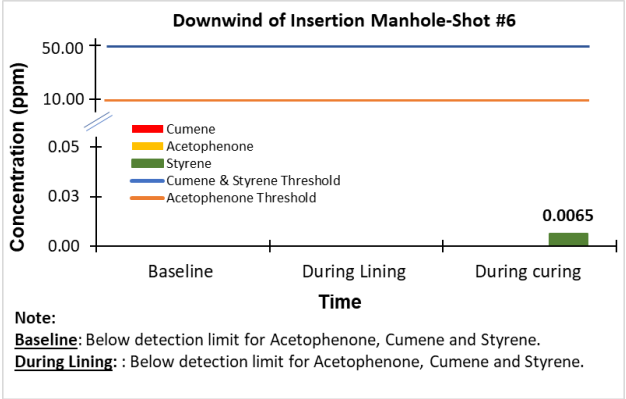
General Comments

9/18/2023	2:00 p.m	Arrived on job site and started baseline samples
9/18/2023	2:30 p.m	Baseline (location)
9/18/2023	2:00 p.m	Coordinates taken of all locations
9/19/2023	7:50 a.m	Arrived on job site (Insertion MH: 10412, Termination MH: 10442)
8:10 a.m	- 8:30 a.m	Set up PID & canister sampling upwind (UW), downwind (DW), and terminal manhole
8:10 a.m		Start insertion of preliner
8:50 a.m		Arrival of refrigeration truck
9:00 a.m		Started personnel (worker) sorbent tubes (WK1)
9:00 a.m		Started personnel (worker) sorbent tubes (WK2)
9:23 a.m		Opening of refrigeration truck - post at UW & DW locations
10:23 a.m		Begin liner insertion
11:45 a.m		Insertion complete
11:45 a.m		Refrigeration truck left job site
12:00 p.m		Arrival boiler truck
12:00 p.m		Start inversion of liner
01:30 p.m		End inversion of liner
02:00 p.m		Boiler started
02:00 p.m		Placement of canister at insertion manhole (curing)
02:15 p.m		Placement of canister at the termination manhole (curing)
04:00 p.m		Boiler reached temperature
04:00 p.m		Temperature reached at insertion manhole
05:30 p.m		Temperature reached at terminal manhole
07:00 p.m		Completed personnel (worker) sorbent tubes (WK1)
10:00 p.m		Completed personnel (worker) sorbent tubes (WK2)
10:00 p.m		Removal of canister at terminal manhole
10:15 p.m		Removal of canister at insertion manhole
10:00 p.m		Removal of PIDs at UW & DW locations
Submitted By:	CUIRE/UTA	**Date:** 9/20/2023
Reviewed By:	AECOM	**Date:**

Based on the Figure 12, cumene and acetophenone concentrations are below the detection limit of the instrument at the insertion (upwind & downwind) and terminal manhole for the baseline, during lining, and curing activities; hence, it is not displayed on the graphs. Styrene concentrations for upwind and downwind of insertion manhole and termination manhole during baseline and lining were not detected, but it was 0.0065 ppm at the upwind and downwind of insertion manhole during curing, at the termination manhole the cumene concentration was 0.1310 for during curing which were significantly below the threshold limits.



(a)



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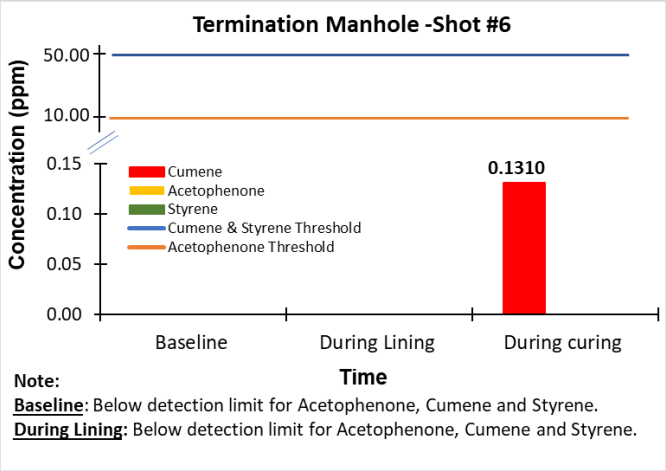


(c)

Figure 12. Summa Canister Analysis (a) Upwind Insertion MH, (b) Downwind Insertion MH, and (c) Termination MH

Table 13. Integrated Sample VOCs for Shot #6 (September 19, 2023)

Volatile Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
	OSHA PEL (ppm)	CAL/ OSHA PEL (ppm)	NIOSH REL (ppm)	ACGIH (ppm)	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
Cumene	50	50	50	50	ND	ND	0.1310	ND	ND	ND	ND	ND	ND
Styrene	100	50	50	10	ND	ND	ND	ND	ND	0.0065	ND	ND	0.0065
Acetone	1000	500	250	250	0.0047	0.0032	0.1330	0.0032	0.0041	0.0058	0.0040	0.0035	0.0058
Chloroform	50	2	2	10	ND	ND	0.7430	ND	ND	ND	ND	ND	ND
Hexane	500	50	50	50	ND	0.0008	ND	ND	ND	ND	ND	ND	ND
Isopropanol	N/A	N/A	N/A	N/A	ND	ND	0.3190	ND	ND	0.0139	ND	ND	0.0139
Methyl ethyl ketone (2-Butanone)	200	200	200	75	0.0020	0.0020	ND	ND	0.0019	ND	0.0014	0.0016	ND
Propene	N/A	N/A	N/A	N/A	ND	ND	ND	ND	ND	0.0083	ND	ND	0.0083
Styrene	100	50	50	10	ND	ND	ND	ND	ND	0.0065	ND	ND	0.0065
Tetrahydrofuran (THF)	200	200	200	50	ND	ND	ND	ND	ND	0.1090	ND	ND	0.1090
Toluene	300	500	100	20	ND	0.0018	ND	ND	ND	ND	ND	ND	ND

ND - Not Detected, N/A - Not Available

Table 14. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Worker 1 (9/19/23)

Lab ID#: 2310179-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Toluene	0.10	2.2	0.12	2.8

Client Sample ID: Worker 2 (9/19/23)

Lab ID#: 2310179-02A

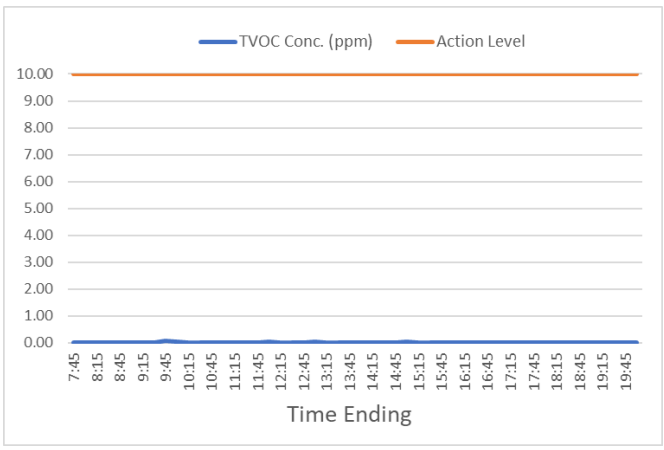
Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	1.9	0.88	17
Cyclohexane	0.10	2.4	0.28	6.7
Benzene	0.40	6.4	0.67	11
Heptane	0.10	2.2	0.84	18
Toluene	0.10	1.7	1.4	24
Ethyl Benzene	0.10	1.9	0.27	5.1
m,p-Xylene	0.10	1.8	0.83	15
o-Xylene	0.10	2.0	0.28	5.6
Styrene	0.10	2.1	0.26	5.5

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**9/21/2023**
Summary:	Air monitoring performed during **shot #7 M-9762 to M-10442**. Air monitoring results were less than the Action Levels.

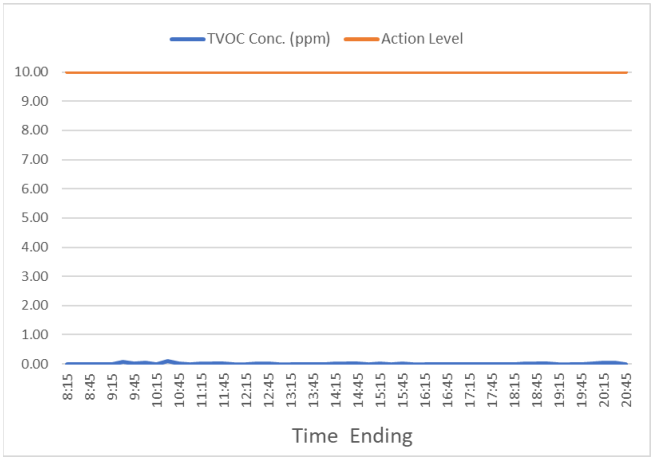
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 5:50am – 6:20 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

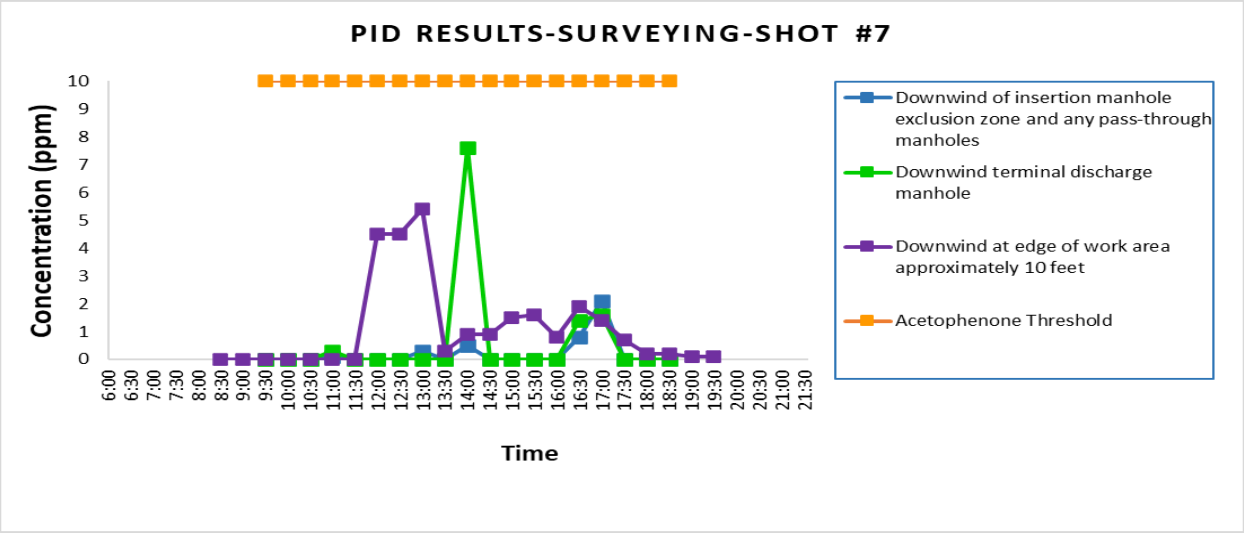


Figure 13. PID Results during Surveying (Shot #7)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	8.7	NA	NA	2
Comments	Downwind of the terminal manhole, the perimeter data reflected concentrations less than 1.	Below detection limit of equipment.	Below detection limit of equipment.	--
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

Elevated Concentration Summary for Action Levels

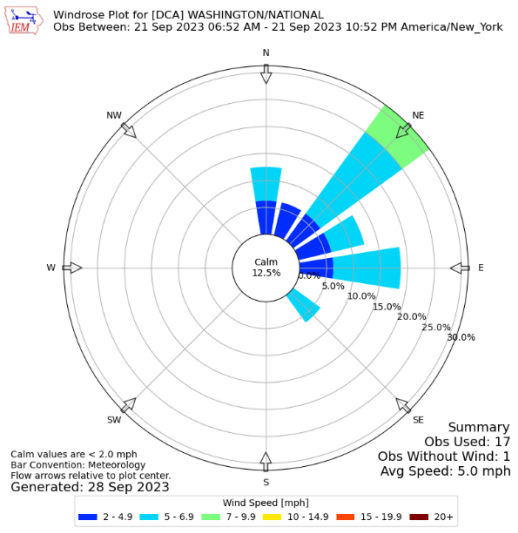
Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 – 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

Project Area	Sample Date	Method Type	Comments
Shot #6	09/19/23	Method 18 for acetophenone TO-15 for VOCs	Media unavailable for Method 18 analysis Samples sent to laboratory for analysis.
Shot #7	09/21/23	Method 18 for acetophenone	Media unavailable for Method 18 analysis

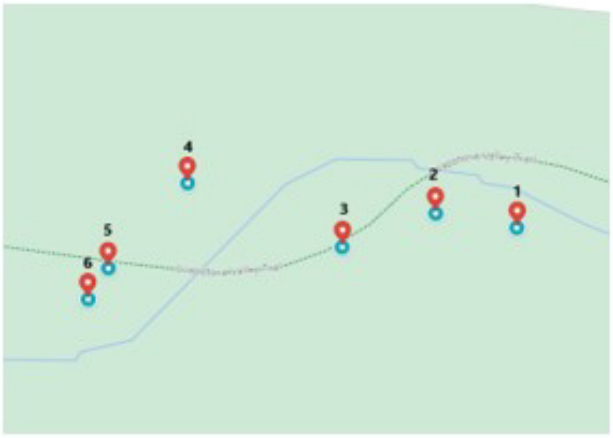
		TO-15 for VOCs	Samples sent to laboratory for analysis.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	No	
Average Wind Speed	5.0 mph	N-NE-E-SE

*Weather results obtained from the [DCA] Washington/National Airport

Site Map



Shot 7: M9762 to M10442		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.945979, -77.059837)	4" above terminal manhole
2	(38.945940, -77.060291)	Passthrough Manhole 1
3	(38.946007, -77.060049)	Passthrough Manhole 2
4	(38.946070, -77.060693)	Upwind
5	(38.945896, -77.060899)	4" above insertion manhole
6	(38.945834, -77.060951)	Downwind

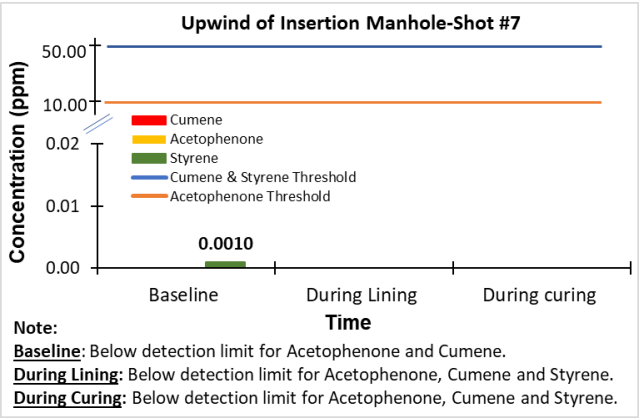
General Comments

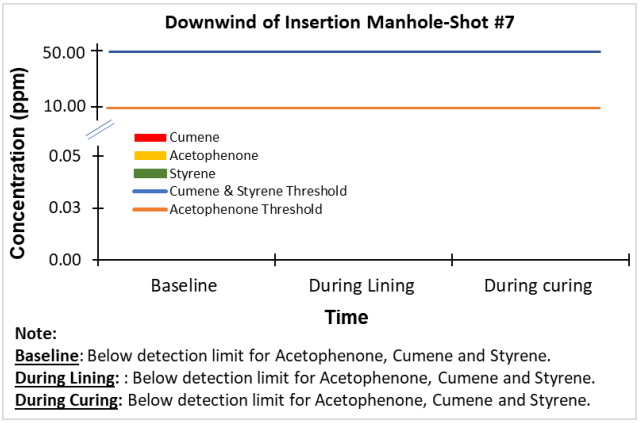
9/20/2023 2:00 pm	Arrived on job site and started baseline samples (Insertion MH: 9762, Termination MH: 10442)
9/20/2023 2:00 pm	Coordinates taken of all locations
9/21/2023 5:50 am	Arrived at job site
8:00 am - 8:30 am	Set up canister sampling upwind (UW) & downwind (DW), and terminal manhole
9:20 am	Start insertion of preliner
9:05 am	CCTV started
7:45 am	Started personnel (worker) sorbent tubes (WK1)
7:45 am	Started personnel (worker) sorbent tubes (WK2)
10:20 am	Arrival of refrigeration truck

10:20 am	Opening of refrigeration truck - post at UW & DW locations
10:55 am	Begin liner insertion
11:10 am	Arrival boiler truck
11:10 am	Start inversion of liner
11:28 am	Refrigeration truck left job site
11:35 am	Insertion completed
11:35 am	End Inversion of Liner
01:00 pm	Boiler started
01:00 pm	Placement of samples at the insertion manhole (curing)
01:00 pm	Placement of samples at the termination manhole (curing)
01:10 pm	Completed personnel (worker) sorbent tubes (WK1)
03:00 pm	Boiler reached temperature
07:00 pm	Completed personnel (worker) sorbent tubes (WK2)
09:00 pm	Removal of samples at terminal manhole
09:00 pm	Removal of samples at insertion manhole
09:00 pm	Removal of PIDs at UW & DW locations

Submitted By:	CUIRE/UTA	**Date:**	9/26/2023
Reviewed By:	AECOM	**Date:**	

Based on the Figure 14, acetophenone, cumene and styrene concentrations were below the instrument detection limit for the baseline, during lining and curing process for the insertion manhole (upwind & downwind) and termination manhole. Cumene detected at a concentration of 0.3830 ppm during curing process at the termination manhole and has not been detected elsewhere. Cumene concentration was significantly below the threshold limit of 50 ppm. Styrene has been detected at the upwind of insertion manhole with concentration of 0.0010 ppm during baseline and during curing at the termination manhole with concentration of 0.3340 ppm. For this shot during curing acetophenone concentration caught at 0.0932 ppm.





(a)
(b)

(c)

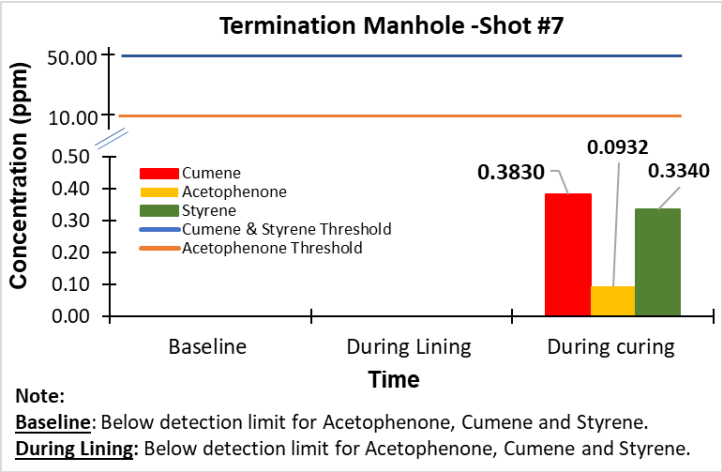


Figure 14. Summa Canister Analysis (a) Upwind of Insertion Manhole, (b) Downwind of Insertion Manhole, and (c) Termination Manhole

Table 15. Integrated Sample VOCs for Shot #7 (September 21, 2023)

Number	Volatile Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL (ppm)	CAL/ OSHA PEL (ppm)	NIOSH REL (ppm)	ACGIH (ppm)	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
1	Acetophenone	-	10	-		ND	ND	0.0932	ND	ND	ND	ND	ND	ND
2	Cumene	50	50	50	50	ND	ND	0.3830	ND	ND	ND	ND	ND	ND
3	Styrene	100	50	50	10	ND	ND	0.3340	0.0010	ND	ND	ND	ND	ND
4	Acetone	1000	500	250	250	0.0047	0.0045	0.1570	0.0044	0.0036	0.0485	0.0039	0.0051	0.0485
5	Carbon disulfide	30	30	10	1	ND	ND	ND	ND	ND	0.0096	ND	ND	0.0096
6	Chloroform	50	2	2	10	ND	ND	0.0117	ND	ND	0.0192	ND	ND	0.0192
7	Ethylbenzene	100	5	100	20	ND	ND	0.0450	ND	ND	ND	ND	ND	ND
8	Hexane	500	50	50	50	ND	0.0010	ND	ND	ND	ND	ND	ND	ND
9	Isopropanol					ND	0.8800	0.8160	ND	0.0008	0.6080	ND	0.0013	0.6080
10	Methyl ethyl ketone (2-Butanone)	200	200	200	75	0.0020	ND	0.0359	0.0008	0.0011	ND	0.0010	0.0013	ND
11	Propene					ND	0.0011	ND	ND	ND	ND	ND	ND	ND
12	Styrene	100	50	50	10	ND	ND	0.3340	0.0010	ND	ND	ND	ND	ND
13	Tetrahydrofuran (THF)	200	200	200	50	ND	0.0013	3.0100	ND	0.0013	0.4120	ND	ND	0.4120
14	Toluene	300	500	100	20	ND	0.0026	0.0095	ND	0.0008	0.0134	ND	0.0010	0.0134
15	1,2,4-Trimethylbenzene					ND	0.0010	0.0243	ND	ND	ND	ND	ND	ND
16	2,2,4-Trimethylpentane					ND	0.0015	ND	ND	ND	ND	ND	ND	ND
17	m&p-Xylenes	100	100	100	20	ND	0.0029	0.1560	ND	ND	ND	ND	ND	ND
18	o-Xylene	100	100	100	20	ND	0.0012	0.0437	ND	ND	ND	ND	ND	ND

ND - Not Detected, N/A - Not Available

Table 16. Worker Sorbent Tube Sampling Result:

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Worker 2 (9/21/23)

Lab ID#: 2310179-04A

Heptane	0.10	3.5	0.50	17
Toluene	0.10	2.7	1.5	41
Ethyl Benzene	0.10	3.0	0.27	8.1
m,p-Xylene	0.10	2.9	0.91	26
o-Xylene	0.10	3.1	0.30	9.3

Client Sample ID: Worker 1 (9/21/23)

Lab ID#: 2310179-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	20	6.4	130
Toluene	0.10	2.7	0.19	5.2
m,p-Xylene	0.10	2.9	0.29	8.3

Client Sample ID: Worker 2 (9/21/23)

Lab ID#: 2310179-04A

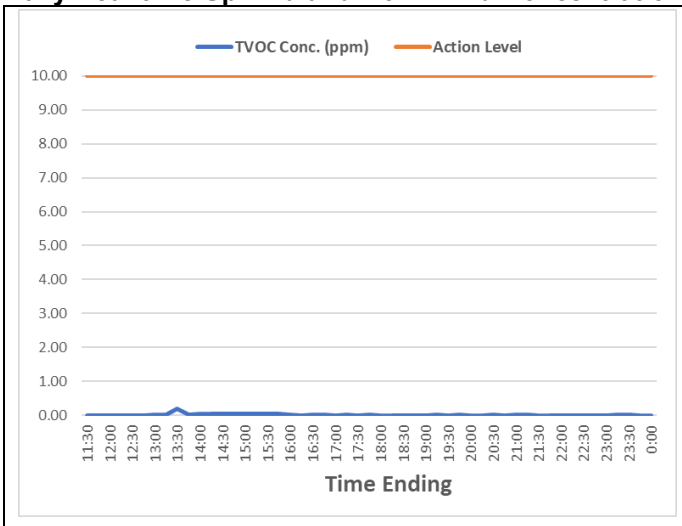
Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	20	4.9	98
Hexane	0.10	3.1	1.6	51
Cyclohexane	0.10	3.7	0.35	13
Benzene	0.40	10	0.56	14

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**9/26/2023**
Summary:	Air monitoring performed during **shot #8 M-9764 to M-9762**. Air monitoring results were less than the Action Levels.

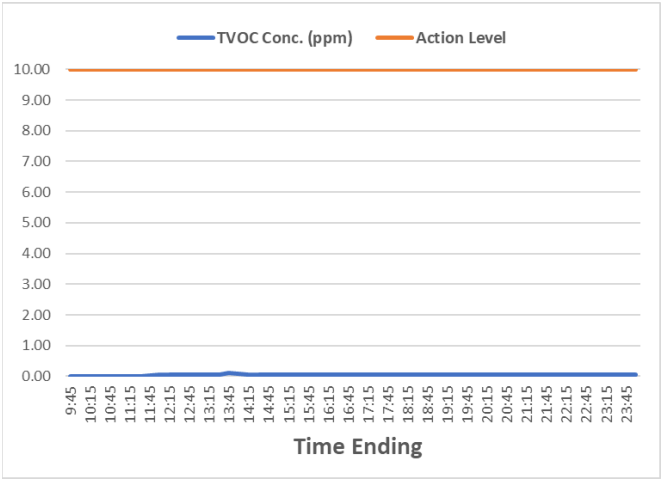
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 6:30am – 8:00 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

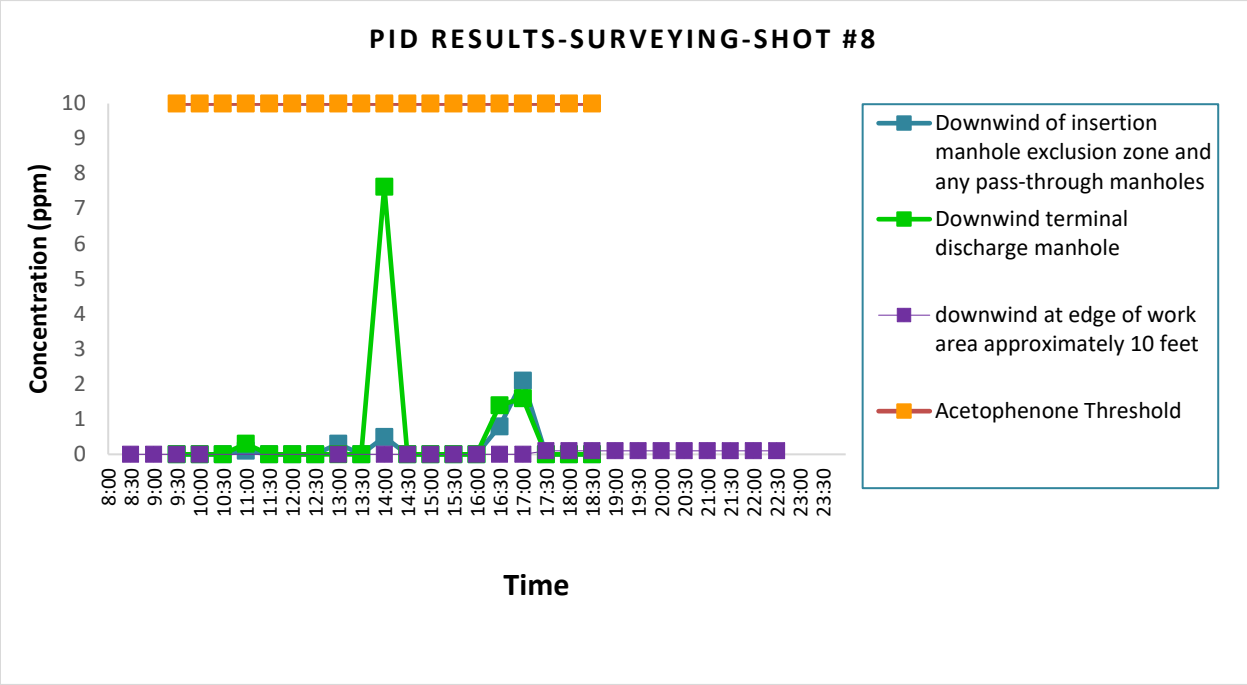


Figure 15. PID Results during Surveying (Shot #8)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	0.3	NA	NA	1
Comments	Downwind terminal of manhole	It is expected to be similar to shots 6 and 7.	It is expected to be similar to shots 6 and 7.	--
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

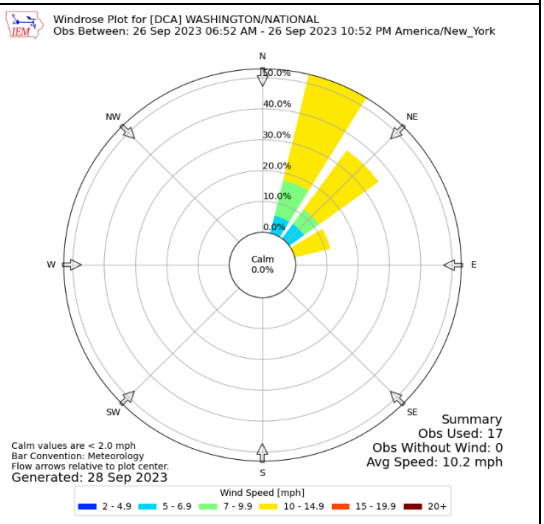
Elevated Concentration Summary for Action Levels

Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 – 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

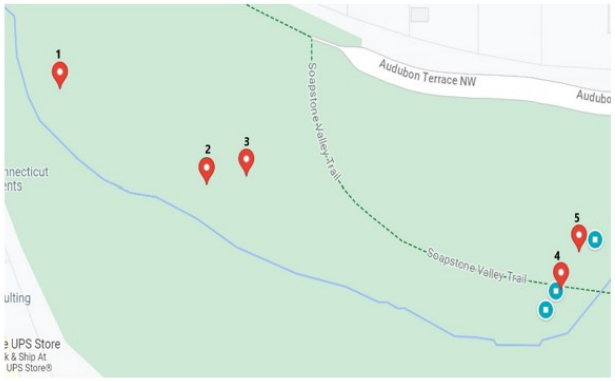
Project Area	Sample Date	Method Type	Comments
Shot #6	09/19/23	Method 18 for acetophenone TO-15 for VOCs	Media unavailable for Method 18 analysis Samples sent to laboratory for analysis.
Shot #7	09/21/23	Method 18 for acetophenone TO-15 for VOCs	Media unavailable for Method 18 analysis Samples sent to laboratory for analysis.
Shot #8	09/26/23	Method 18 for acetophenone TO-15 for VOCs	Media samples sent to lab for Method 18 analysis Samples sent to laboratory for analysis.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	Yes	
Average Wind Speed	10.2 mph	NNE-NE-ENE

*Weather results obtained from the [DCA] Washington/National Airport

Site Map



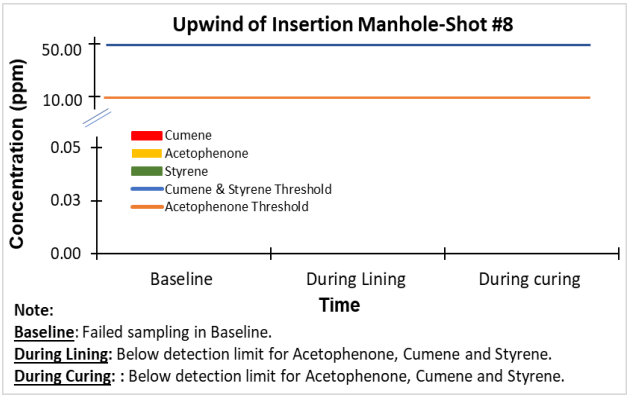
Shot 8: M9764 to M9762		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.946562, -77.063494)	Upwind
2	(38.946242, -77.062726)	4” above insertion manhole
3	(38.946270, -77.062519)	Downwind insertion
4	(38.945893, -77.060872)	Downwind terminal
5	(38.946019, -77.060778)	Terminal manhole

General Comments

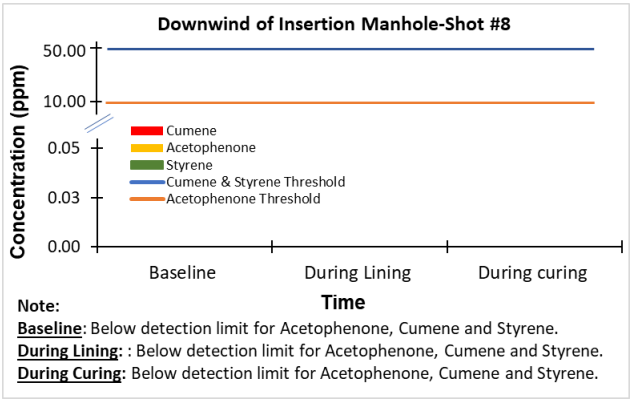
9/25/2023	3:00 pm	Arrived at job site for baseline sampling (Insertion MH: 9764, Termination MH: 9762)
9/25/2023	3:00 pm	Coordinates taken of all locations
9/25/2023	7:00 pm	End of baseline sampling
9/26/2023		
6:30 am		Arrived at job site
08:00 am		CCTV started
08:00 am		Started personnel (worker) sorbent tubes (WK1)
08:00 am		Started personnel (worker) sorbent tubes (WK2)
09:07 am		Start Prelining
09:45 am		Set up canister sampling upwind (UW), downwind (DW) and at terminal manhole
01:00 pm		Arrival of refrigeration truck
01:00 pm		Opening of refrigeration truck - post at UW & DW locations
01:30 pm		Begin liner insertion
01:50 pm		Start inversion of liner
02:50 pm		Refrigeration truck left job site
03:10 pm		Insertion completed
03:10 pm		End inversion of liner
05:00 pm		Arrival boiler truck
05:20 pm		Boiler started
05:20 pm		Placement of samples at the insertion manhole (curing)
05:20 pm		Placement of samples at the termination manhole (curing)
07:00 pm		Boiler at temperature
07:00 pm		Temperature reached at insertion manhole
10:00 pm		Temperature reached at termination manhole
9/27/2023		
01:30 am		Completed personnel (worker) sorbent tubes (WK1)
01:30 am		Completed personnel (worker) sorbent tubes (WK2)
01:30 am		Removal of samples at termination manhole
01:30 am		Removal of samples at insertion manhole

Submitted By:	CUIRE/UTA	**Date:**	9/26/2023
Reviewed By:	AECOM	**Date:**	

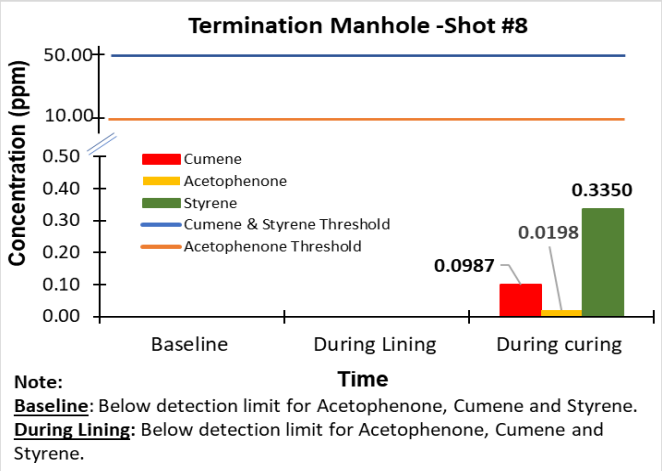
Cumene, acetophenone and styrene concentrations were not detected during the baseline, lining and curing data collection at the upwind and downwind of insertion manhole as displayed in Figure 5. Concentrations for cumene was 0.0987 ppm and acetophenone was 0.0198 ppm and for styrene concentration was 0.3350 ppm which were significantly below the threshold values of 50 ppm and 10 ppm, respectively.



(a)



(b)



(c)

Figure 16. Summa Canister Analysis (a) Upwind of Insertion Manhole, (b) Downwind of Insertion Manhole, and (c) Termination Manhole

Table 17. Integrated Sample VOCs for Shot #8 (September 26, 2023)

Row	Volative Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL ppm	CAL/ OSHA PEL ppm	NIOSH REL ppm	ACGIH ppm	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
1	Acetone	1000	500	250	250	0.0035	0.0045	0.02410	0.00	0.00	0.0617	0.00	0.00	0.062
2	Bromodichloromethane	N/A	N/A	N/A	N/A	ND	ND	0.00204	ND	ND	0.0038	ND	ND	0.004
3	Carbon disulfide	30	30	10	1	ND	ND	ND	ND	ND	0.0349	ND	ND	0.035
4	Chloroform	50	2	2	10	ND	ND	0.00204	ND	ND	0.0038	ND	ND	0.004
5	Chloromethane (Methyl Chloride)	N/A	N/A	N/A	N/A	ND	ND	0.00070	ND	ND	0.0013	ND	ND	0.001
6	Dichloromethane (Methylene chloride)	N/A	25	N/A	50	ND	ND	ND	ND	ND	0.3970	ND	ND	0.397
7	Ethylbenzene	100	5	100	20	ND	ND	0.00268	ND	ND	ND	ND	ND	ND
8	Heptane	500	400	85	400	ND	ND	ND	ND	ND	0.0055	ND	ND	0.006
9	Hexane	500	50	50	50	ND	ND	ND	ND	ND	0.0030	ND	ND	0.003
10	Isopropanol	N/A	N/A	N/A	N/A	ND	0.0008	0.04750	ND	ND	0.0612	ND	ND	0.061
11	Methyl ethyl ketone (2-Butanone)	200	200	200	75	ND	ND	0.00454	0.00	ND	0.0056	ND	ND	0.006
12	Tetrahydrofuran (THF)	200	200	200	50	ND	ND	0.03070	ND	ND	0.0577	ND	ND	0.058
13	Toluene	300	500	100	20	ND	ND	ND	ND	ND	0.0024	ND	ND	0.002
14	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	ND	ND	0.00157	ND	ND	ND	ND	ND	ND
15	m&p-Xylenes	100	100	100	20	ND	ND	0.00969	ND	ND	ND	ND	ND	ND
16	o-Xylene	100	100	100	20	ND	ND	0.00233	ND	ND	ND	ND	ND	ND

ND - Not Detected, N/A - Not Available

Table 18. Worker Sorbent Tube Sampling Result:

Client Sample ID: Worker 1 (9/26/23)

Lab ID#: 2310179-05A

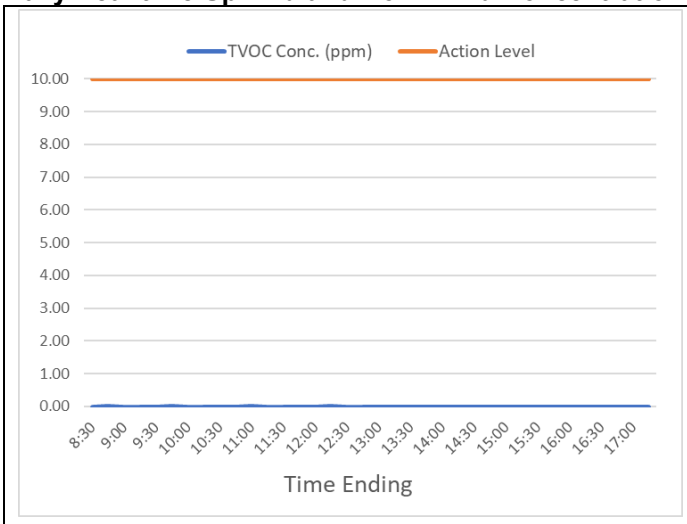
Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
m,p-Xylene	0.10	6.0	0.26	15

Client:	**DC Water / WRF**
Location:	**Soapstone Valley Park, Washington, DC**
Date:	**9/28/2023**
Summary:	Air monitoring performed during **shot #9 M-9765 to M-9764**. Air monitoring results were less than the Action Levels.

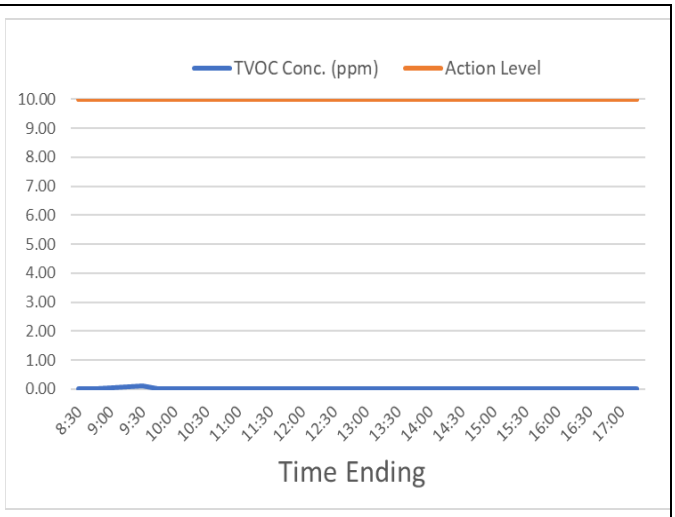
This air monitoring daily field report is a summary of the ambient and emission monitoring data collected during the Soapstone Valley Park Sewer Rehabilitation Project related to the cured in place pipe (CIPP) activities in accordance with the project's Air Quality Monitoring and Emissions Testing Plan (AQMP). Instrumentation measuring total volatile organic compounds (TVOCs), acetophenone and cumene are calibration checked daily prior to the start of activities, unless otherwise noted.

The purpose of this Report is to communicate real-time monitoring results with a focus on any results greater than the Action Levels set forth in the AQMP, and any emissions controls implemented in response to the real-time monitoring results. Results summarized herein are preliminary and are subject to change based on a review on a quality assurance quality control review. Final results will be included in the project area reports and will include an evaluation of the chemical specific sampling results.

Daily Real-time Upwind and Downwind Concentrations



Upwind Concentrations



Downwind Concentrations

Comments	Work hours were 6:50am – 5:00 pm.	
Action Level	TVOC	10 ppm or greater
Notes	- Real-time continuous monitoring performed upwind and downwind of the work zone (including the insertion manhole and refrigeration truck. - Real-time continuous monitoring results represent 15-minute average concentrations unless otherwise noted. - TVOC concentrations were measured as isobutylene and reported as acetophenone based on the PID correlation factor.	

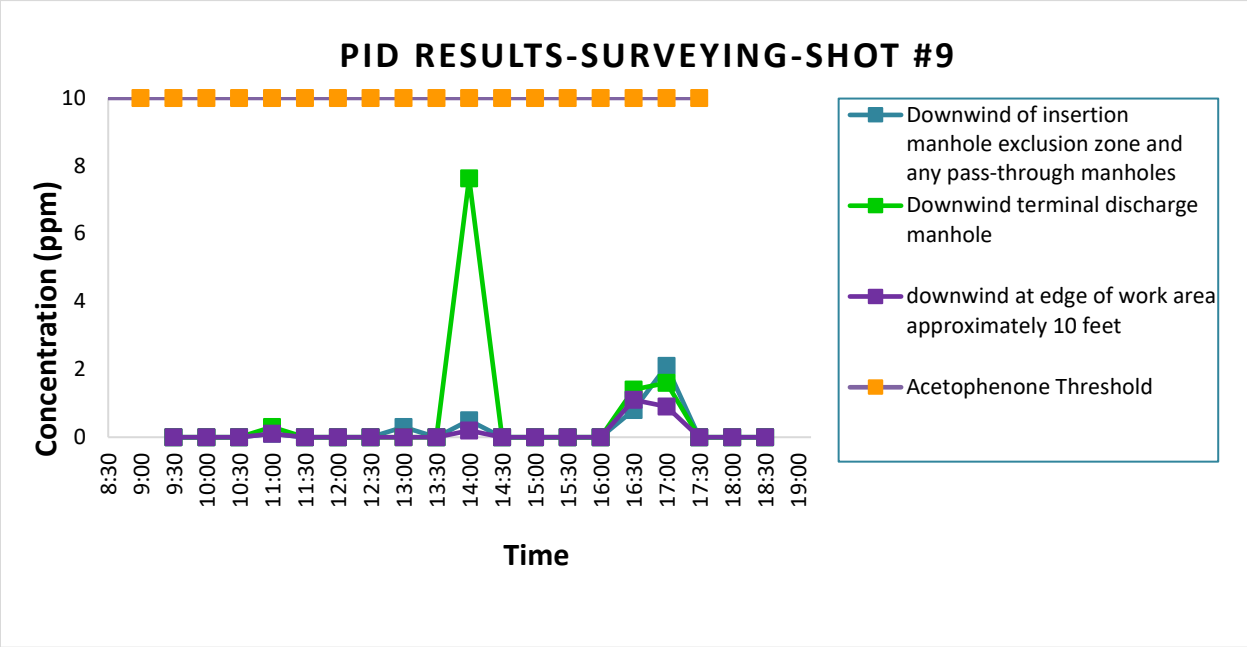


Figure 17. PID Results during Surveying (Shot #9)

Daily Maximum Hand-held Monitoring and Observations

Parameter	TVOC (ppm)	Cumene (ppm)	Acetophenone (ppm)	Odor Intensity
Observation	5.4	NA	NA	1
Comments	Downwind the terminal manhole the perimeter data reflected concentrations <0.5	It is expected to be similar to shots 6 and 7.	It is expected to be similar to shots 6 and 7.	
Action Levels	10 ppm or greater	50 ppm or greater	10 ppm or greater	3 or greater or off-site odor complaint verified by Air Monitoring Contractor
Notes	- Hand-held monitoring performed downwind of the terminal discharge manhole and any applicable passthrough manholes, downstream manholes, and lateral sewer connection cleanouts. - Hand-held monitoring results represent instantaneous concentrations unless otherwise noted.			

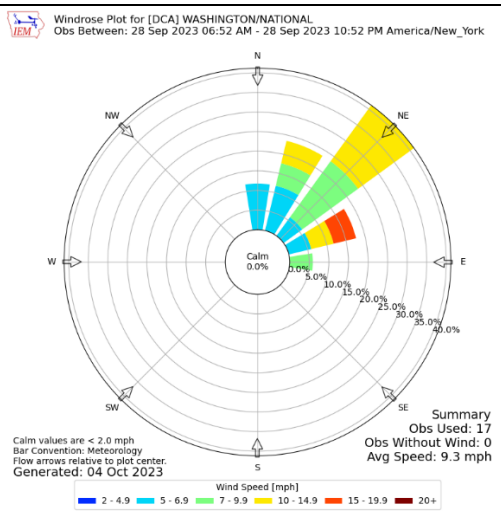
Elevated Concentration Summary for Action Levels

Parameter	Time	Location	Wind Conditions	Elevated Conc.	Comments/Explanation
TVOC (ppm)	NA	NA	NA	NA	TVOC concentrations remained less than the Action Level.
Cumene (ppm)	NA	NA	NA	NA	Cumene concentrations remained less than the Action Level.
Acetophenone (ppm)	NA	NA	NA	NA	Acetophenone concentrations remained less than the Action Level.
Odor Intensity (0 – 5)	NA	NA	NA	NA	Odor observations remained less than the Action Level.

Constituent-Specific Sampling Summary

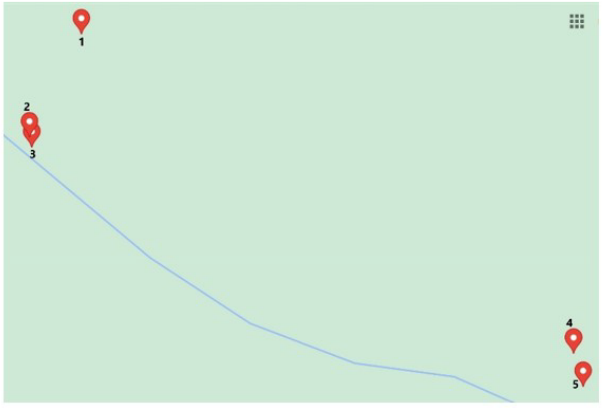
Project Area	Sample Date	Method Type	Comments
Shot #6	09/19/23	Method 18 for acetophenone TO-15 for VOCs	Media unavailable for Method 18 analysis Samples sent to laboratory for analysis.
Shot #7	09/21/23	Method 18 for acetophenone TO-15 for VOCs	Media unavailable for Method 18 analysis Samples sent to laboratory for analysis.
Shot #8	09/26/23	Method 18 for acetophenone TO-15 for VOCs	Media samples sent to lab for Method 18 analysis. Samples sent to laboratory for analysis.
Shot #9	09/28/23	Method 18 for acetophenone TO-15 for VOCs	Media samples sent to lab for Method 18 analysis. Samples sent to laboratory for analysis.

Daily Weather Conditions

Parameter	Workday Measurements	Wind Conditions
Precipitation (Yes/No)	Yes	
Average Wind Speed	9.3 mph	N-NNE-NE-ENE-E

*Weather results obtained from the [DCA] Washington/National Airport

Site Map



Shot 9: M9765 to M9764		
ID	**Location (Latitude – Longitude)**	**Canister Position**
1	(38.946562, -77.063494)	Upwind
2	(38.946454, -77.063564)	4” above insertion manhole
3	(38.946443, -77.063561)	Downwind
4	(38.946227, -77.062827)	4” above terminal manhole
5	(38.946192, -77.062815)	Downwind of terminal manhole

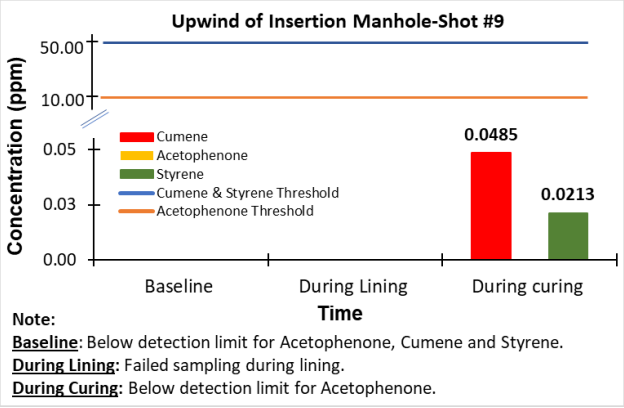
General Comments

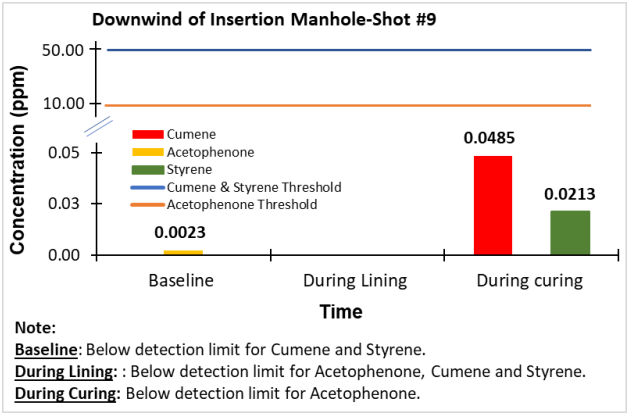
9/27/2023	
1:00 pm	Arrived on job site and started baseline sampling (Insertion MH: 9765, Termination MH: 9764)
1:00 pm	Coordinates taken of all locations
5:00 pm	End of baseline sampling
9/28/2023	
6:50 am	Arrived Job Site
08:00 am	Set up Canister & PID sampling UW, DW and termination manhole
08:00 am	CCTV started
08:00 am	Started personnel (worker) sorbent tubes (WK1)
08:00 am	Started personnel (worker) sorbent tubes (WK2)
08:20 am	Arrival of refrigeration truck
08:25 am	Opening of refrigeration truck - post at UW & DW locations
08:50 am	Begin liner insertion
09:00 am	Start inversion of liner
09:50 am	End inversion of liner
09:50 am	Insertion complete
09:53 am	Refrigeration (Liner) Truck leaving job site
10:10 am	Arrival boiler truck
10:45 am	Boiler started
10:45 am	Placement of canister at insertion manhole (curing)
10:45 am	Placement of canister at termination manhole (curing)
12:30 pm	Boiler reached temperature
12:30 pm	Temperature reached at insertion manhole
02:00 pm	Temperature reached at termination manhole
05:00 pm	Completed personnel (worker) sorbent tubes (WK1)
05:00 pm	Completed personnel (worker) sorbent tubes (WK2)
05:00 pm	Removal of canister at termination manhole
05:00 pm	Removal of canister at insertion manhole
05:00 pm	Removal of PIDs at UW & DW locations
	Left Job Site

Submitted By:	CUIRE/UTA	**Date:**	9/28/2023
Reviewed By:	AECOM	**Date:**	

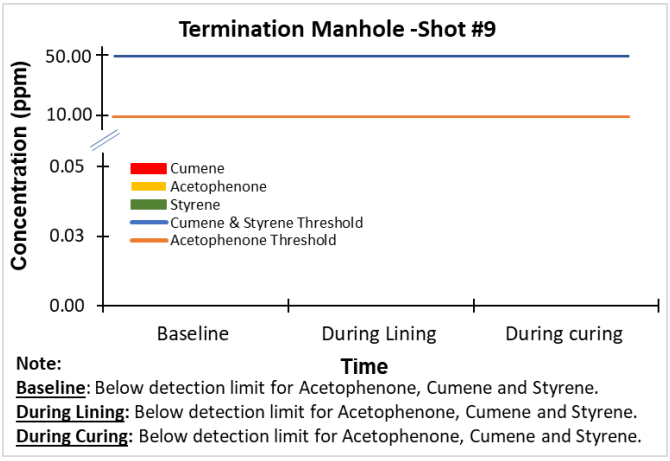
NA

Cumene and styrene concentrations were below the detection limit for the upwind and downwind of insertion manhole for the baseline, during lining and curing activities. Cumene and styrene concentrations were 0.0485 ppm and 0.0213 ppm at upwind, 0.0485 ppm and 0.0213 ppm at downwind of insertion manhole. At termination manhole during baseline, lining and curing cumene, acetophenone and styrene were not detected.





(a) (b)



(c)

Figure 18. Summa Canister Analysis (a) Upwind of Insertion Manhole, (b) Downwind of Insertion Manhole, and (c) Termination Manhole

Table 19. Integrated Sample VOCs for Shot #9 (September 28, 2023)

Number	Volatile Organic Compounds (VOCs)	Threshold				Termination Manhole			Upwind of Insertion Manhole			Downwind of Insertion Manhole		
		OSHA PEL (ppm)	CAL/ OSHA PEL (ppm)	NIOSH REL (ppm)	ACGIH (ppm)	Baseline (ppm)	During Lining (ppm)	During curing (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)	Baseline (ppm)	During Lining (ppm)	During curing- above the insertion Manhole (ppm)
1	Acetophenone	-	10	-		ND	ND	ND	ND	Failed	ND	0.0023	ND	ND
2	Cumene	50	50	50	50	ND	ND	ND	ND	-	0.0485	ND	ND	0.0485
3	Styrene	100	50	50	10	ND	ND	ND	ND	-	0.0213	ND	ND	0.0213
4	Acetone	1000	500	250	250	0.0028	0.0043	ND	0.0041	-	0.0095	0.0048	0.0054	0.0095
5	Ethyl acetate	400	400	400	400	ND	ND	ND	0.0025	-	0.0090	ND	0.0061	0.0090
6	Isopropanol	N/A	N/A	N/A	N/A	ND	ND	4.5000	0.0009	-	0.0531	0.0020	0.0043	0.0531
7	Methyl ethyl ketone (2-Butanone)	200	200	200	75	0.0009	0.0013	ND	ND	-	ND	0.0010	0.0014	ND
8	Styrene	100	50	50	10	ND	ND	ND	ND	-	0.0213	ND	ND	0.0213
9	Tetrahydrofuran (THF)	200	200	200	50	ND	ND	8.9200	ND	-	0.2990	ND	0.0020	0.2990
10	1,1,2-Trichloroethane	10	10	10	10	ND	ND	ND	0.0051	-	ND	ND	0.0018	ND
11	m&p-Xylenes	100	100	100	20	ND	ND	ND	ND	-	0.0088	ND	ND	0.0088

ND - Not Detected, N/A - Not Available

Table 20. Worker Sorbent Tube Sampling Result:

Client Sample ID: Worker 1 (9/28/23)

Lab ID#: 2310179-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	2.8	0.11	3.0
Toluene	0.10	2.5	0.14	3.5
m,p-Xylene	0.10	2.6	0.13	3.4

Client Sample ID: Worker 2 (9/28/23)

Lab ID#: 2310179-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Hexane	0.10	2.8	1.5	41
Chloroform	0.10	2.5	0.11	2.7
Cyclohexane	0.10	3.4	0.41	14
Heptane	0.10	3.2	0.42	13
Toluene	0.10	2.5	1.3	33
Ethyl Benzene	0.10	2.7	0.25	6.9
m,p-Xylene	0.10	2.6	0.79	21
o-Xylene	0.10	2.8	0.26	7.4

Figure 16. Acetophenone (Sorbent tube) Sampling Result:

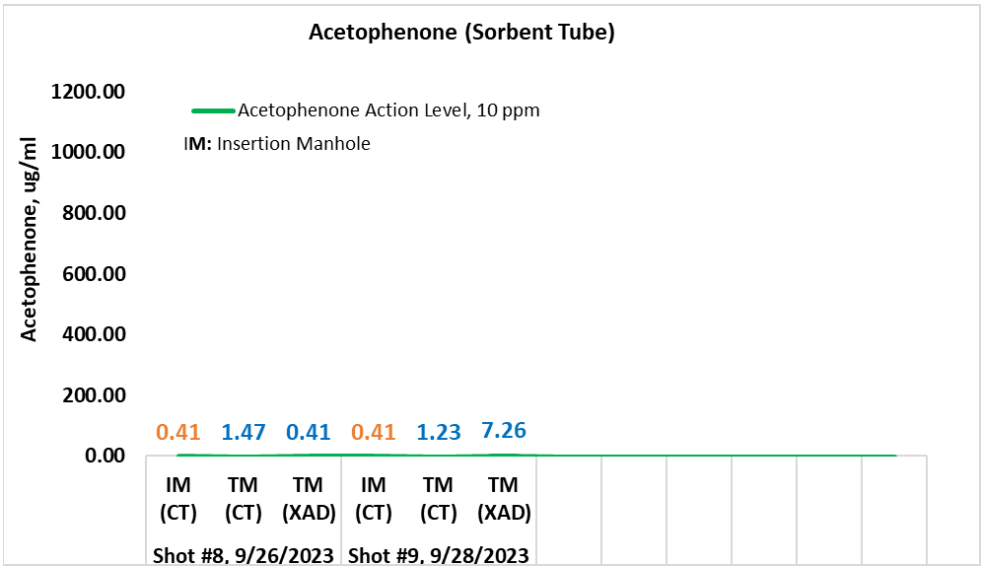


Figure 19. Summary map showing Shots completed (1 - 9)