NORTHROP GRUMMAN

ISTR Operations Monthly Progress Report

Reporting Period: June 2021

Operable Unit 3 VOC Source Area Remedy
Former Grumman Settling Ponds, Bethpage, NY
NYSDEC Site No. 130003A
August 05, 2021

In-Situ Thermal Remediation (ISTR) Operations Monthly Progress Report

NORTHROP GRUMMAN

Prepared per Section 8.2 of the OU3 Remedial Action Work Plan (RAWP) and DER-10, Section 5.7(b):

1. Remedy Progress / Performance Monitoring
2. Ambient Air
3. Significant Activities
4. Schedule / Proposed Modifications
5. Pending RAWP Modifications
6. Data Tables

Remedy Progress / Performance Monitoring June 2021

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ISTR Operations Summary

- Air emissions comply with effluent concentration limits specified in the RAWP
- No exceedances of NYSDEC Community Air Monitoring Plan (CAMP) PID action levels
- No validated ambient air monitoring results above target screening levels*
- Liquid discharges comply with criteria specified in the RAWP

* Benzene was over the screening level in AMP-1 on 6/1. A technical evaluation per the CAMP was conducted and did not identify any releases. Benzene was not found above detection in the subsequent week's AMP-1 sample.

Reporting Period: June 2021

System Startup	8/26/2020
Days of Operation Since Startup	308
Estimated cumulative TVOC Mass Removed, lbs	1,260

Remedy Progress / Performance Monitoring June 2021

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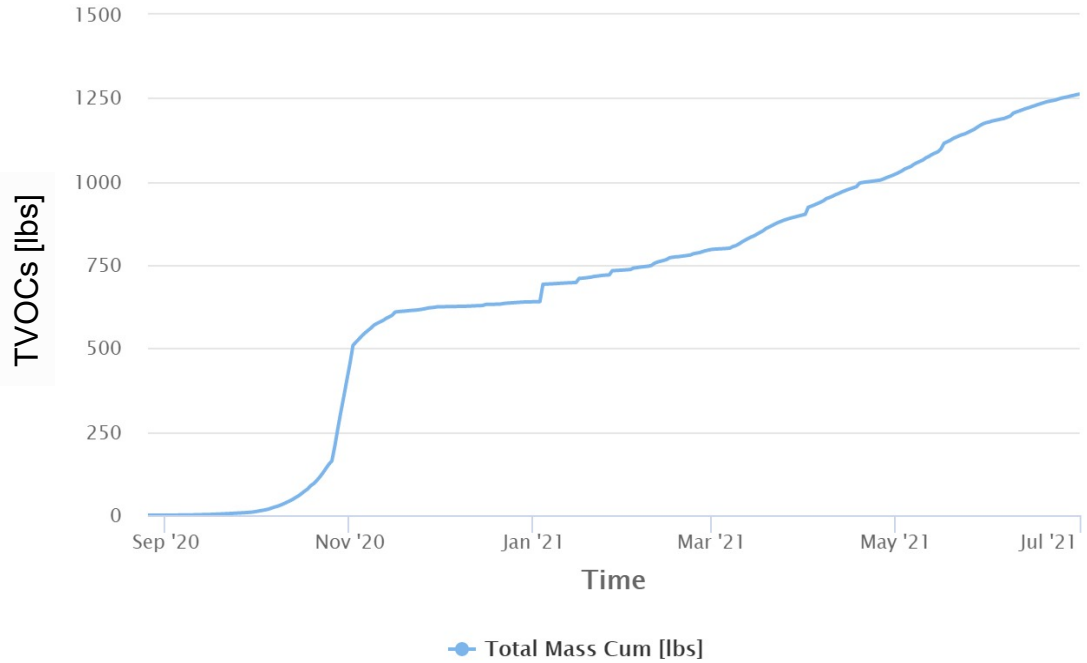
Cumulative TVOC Mass Removed



Estimated 1,260 lbs of total volatile organic compounds (TVOCs) removed through 6/30

Cumulative TVOC mass is the sum of the following:

- Photoionization detector (PID) TVOC vapor mass
- Liquid TVOC mass
- Condensed non-aqueous phase liquid (NAPL) mass

Remedy Progress / Performance Monitoring
June 2021

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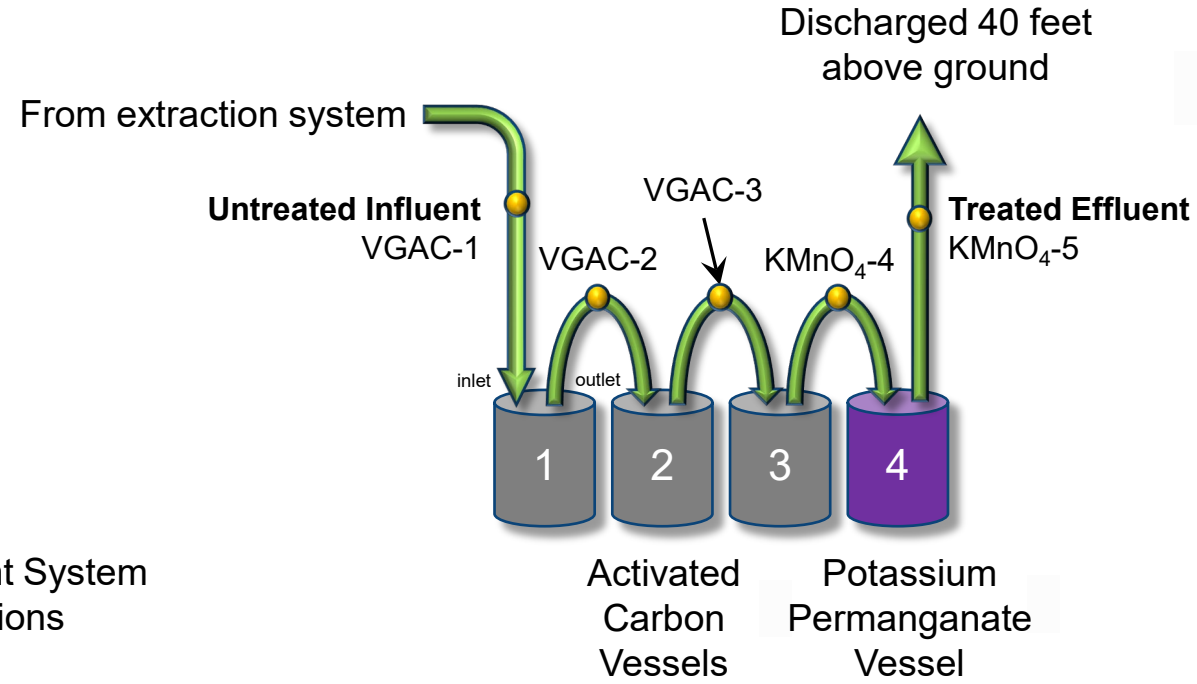
Vapor Treatment System



- Vapor Treatment System Sampling Locations

Remedy Progress / Performance Monitoring
June 2021

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Vapor Treatment System

Air emissions meet treatment criteria in the RAWP:

- Stack concentrations less than 7.6 mg/m^3 for TCE and 1.9 mg/m^3 design limits for vinyl chloride throughout June
- TCE and vinyl chloride concentrations in ambient air samples collected in June were all below target screening levels.

Vapor treatment system analytical results for June provided in Table 1

Remedy Progress / Performance Monitoring
June 2021

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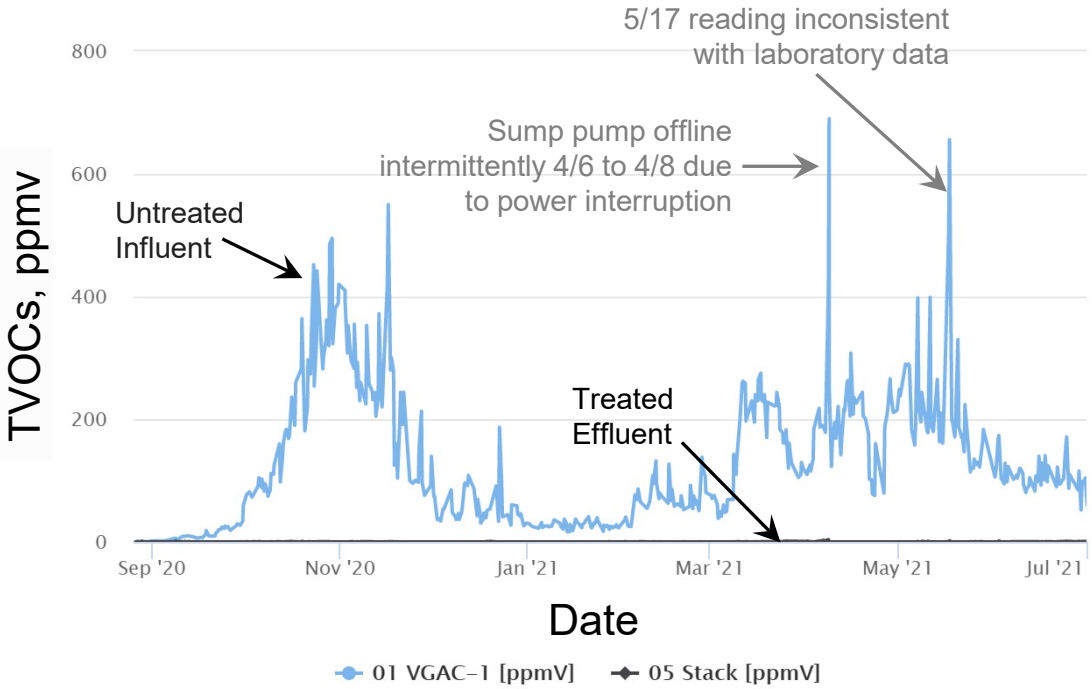
Vapor Treatment System (PID)



TVOC concentrations (PID) on June 30:

- Influent = 104 ppmv
- Effluent = 0.9 ppmv

Maximum TVOC concentrations (PID) during June reporting period:

- Influent = 173 ppmv
- Effluent = 1.4 ppmv

Remedy Progress / Performance Monitoring June 2021

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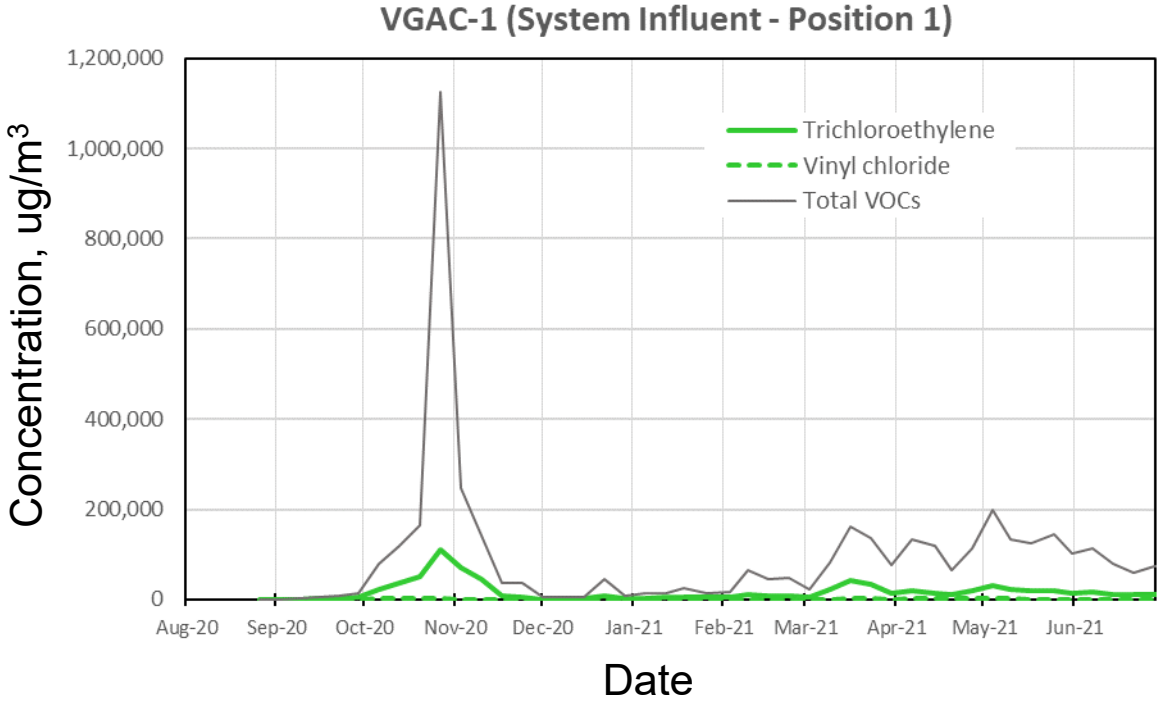
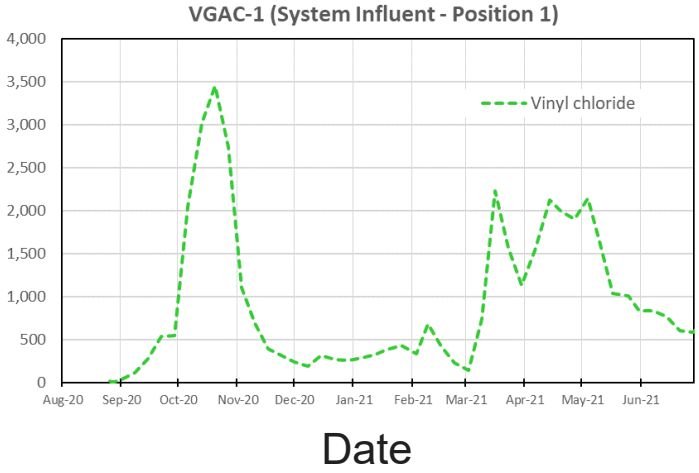
Vapor Treatment System Influent



Influent concentrations (Summa) on 6/28:

- TVOCs = 74,800 ug/m^3
- TCE = 10,500 ug/m^3
- Vinyl chloride = 585 ug/m^3



Remedy Progress / Performance Monitoring June 2021

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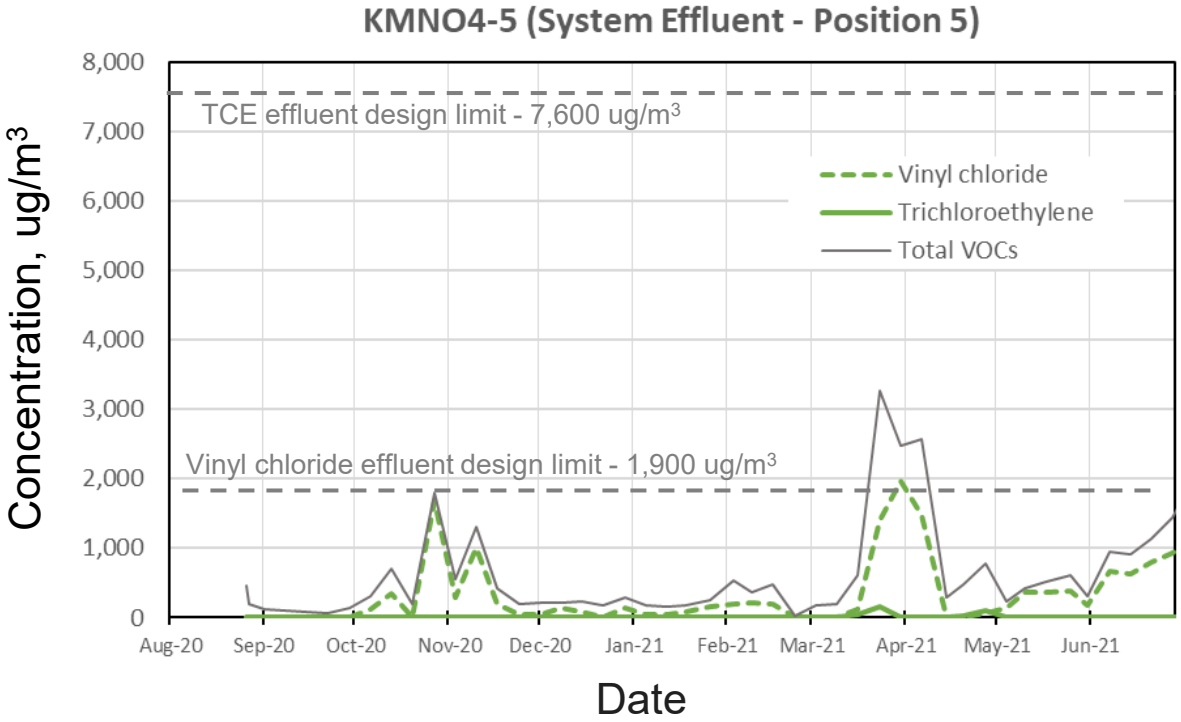
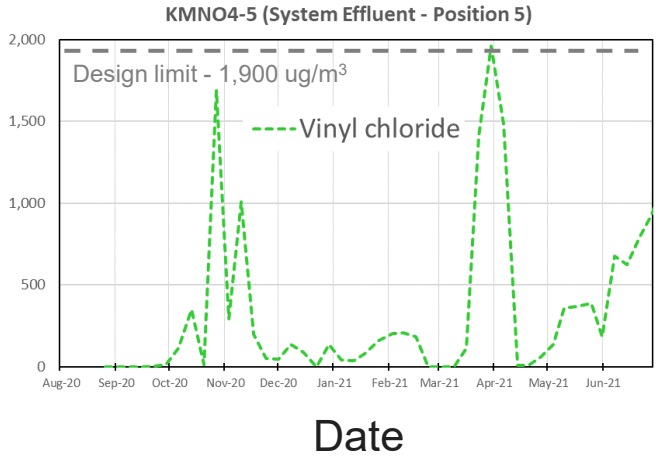
Vapor Treatment System Effluent



Effluent concentrations (Summa) on 6/28:

- TVOCs = 1,431 ug/m^3
- TCE = 0.4 ug/m^3
- Vinyl chloride = 933 ug/m^3



Remedy Progress / Performance Monitoring
June 2021

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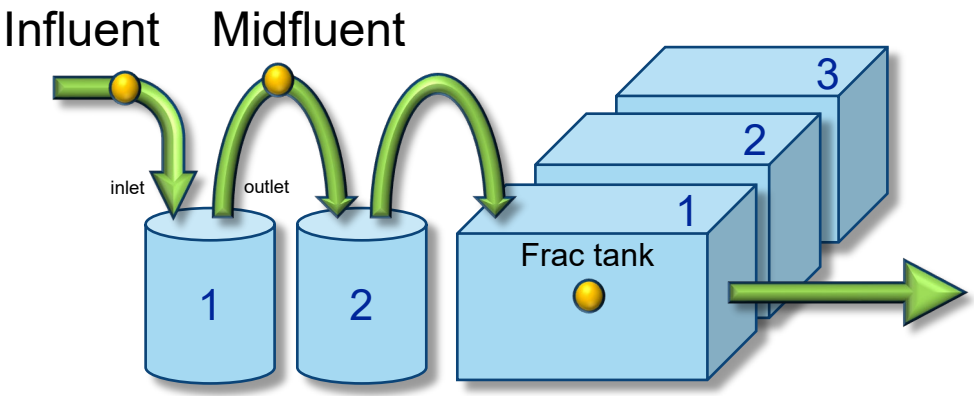
Liquid Treatment System

- Liquid Treatment System Sampling Locations



Activated Carbon Vessels

Treated Effluent Storage (~14,000-gallon batches)

Treated liquid pumped to OU3 Groundwater Treatment System

Remedy Progress / Performance Monitoring
June 2021

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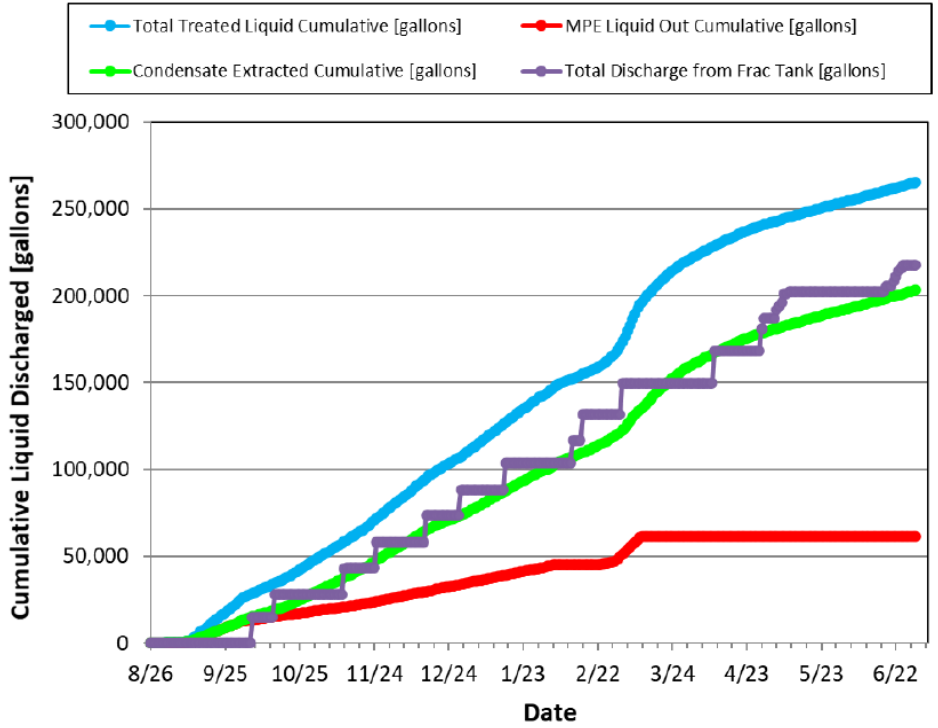
Cumulative Liquid Produced



265,000 total gallons extracted and treated through 6/30

217,500 total gallons treated effluent discharged to OU3 groundwater treatment system through 6/30

Liquid treatment system analytical results for June provided in Table 2

Ambient Air PID Monitoring
June 2021

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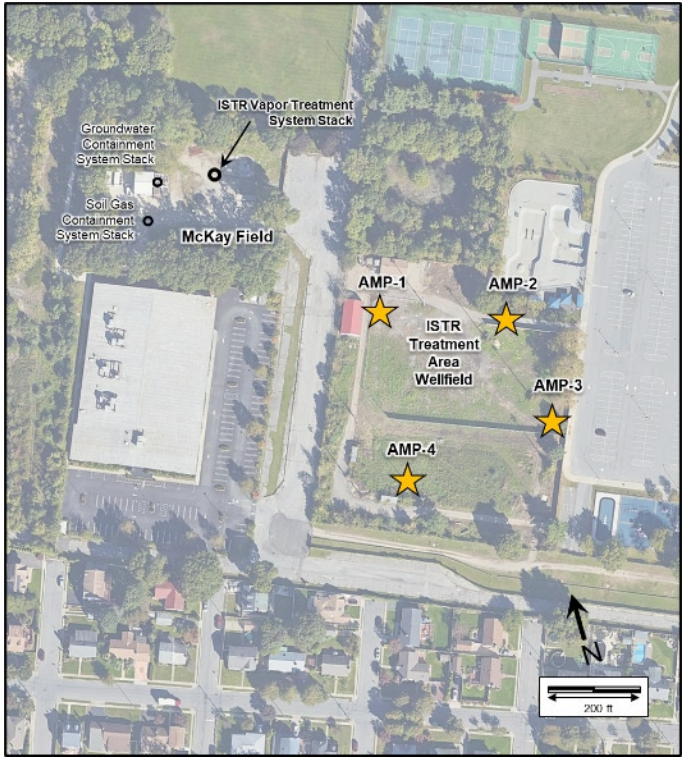
PID levels comply with Community Air Monitoring Plan (CAMP) criteria in the RAWP:

- PID readings recorded continuously at locations AMP-1 through 4
- Results emailed daily to the State and Town of Oyster Bay (Monday through Saturday)
- PID monitoring results did not exceed NYSDEC's CAMP action level (5 ppm TVOCs for a 15-minute average)*

*As described in daily CAMP monitoring emails, condensation buildup in the PID inlet tubing caused some erroneously high PID readings during this reporting period. The remote communications module at AMP-4 malfunctioned and was offline from 6/11 to 6/17.



Ambient Air Summa Canister Monitoring June 2021

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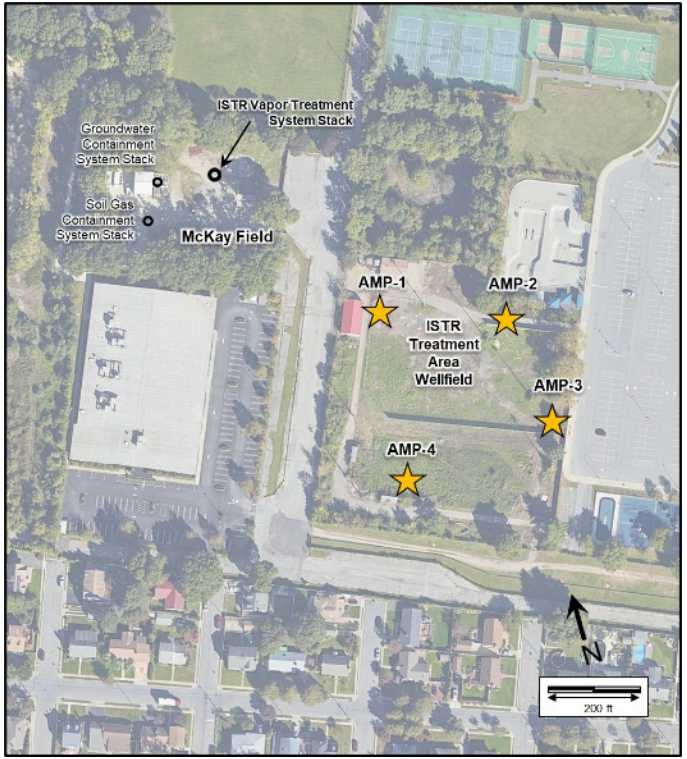
Summa canister levels comply with ambient air criteria in the RAWP:

- Summa canister samples collected 6/1, 6/8, 6/15, 6/22, and 6/29
- Unvalidated results emailed to the State and Town of Oyster Bay
- Summa canister validated results for compounds of interest (COIs) lower than target screening levels in the CAMP (except benzene on 6/1, as previously described)
- Summa canister validated results for non-COIs also lower than target screening levels calculated using CAMP-specified protocol

Ambient air analytical results for June provided in Table 3



Significant Activities
June 2021

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Major equipment repairs and significant downtime:

- None

Other significant activities:

- LNAPL was observed in 8 of 52 VEWs on 6/3 and 6/18.
- 13 bulk bags of spent carbon were removed from the site on 6/18 for regeneration.

Planned Significant Activities During Next Two Months

Maintain system operations, monitoring, and maintenance in preparation for system shutdown.

Submit design for modifications to OU3 soil gas containment system to extract and treat vapors from ISTR VEWs by 8/16.

Implement LNAPL gauging and removal from 8 VEWs where LNAPL observed; started 8/2.

Schedule

Activity	RAWP Schedule	Current Status
Remedial System Operation	Q3/20 – Q1/21	Q3/20 – Q3/21
Post-Treatment Confirmation Sampling	Q1/21	Complete
Remedy Cool-down	Q1/21-Q2-21	Q1/21-Q3/21
Equipment Removal & Site Restoration	Q2/21	Q3/21

ISTR heating system continues to operate at low energy while the extraction system continues to address vapor treatment system influent concentrations.

Pending RAWP Modifications

None

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Table 1. Vapor Treatment System Air Sampling Results
Routine Monitoring - June 2021

Compound (ug/m^3)	Sample ID:	VGAC-1		VGAC-3		KMNO4-5		DUPLICATE		
	Lab Sample ID:	JD26166-1		JD26166-2		JD26166-3		JD26166-4		
	Date Sampled:	6/7/2021		6/7/2021		6/7/2021		6/7/2021		
1,1,1-Trichloroethane		< 47		< 1.8		< 1.5		< 1.8		
1,1-Dichloroethane		111	J	< 0.49		< 0.38		< 0.49		
1,1-Dichloroethylene		< 17		< 0.67		< 0.52		< 0.67		
1,2,4-Trimethylbenzene		319		< 1.6		< 1.3		< 1.6		
1,2-Dibromoethane		< 35		< 1.4		< 1.1		< 1.4		
1,3,5-Trimethylbenzene		211	J	< 1.7		< 1.3		< 1.7		
1,4-Dioxane*		< 47		< 1.9		< 1.5		< 1.9		
2,2,4-Trimethylpentane		464		< 1.0		< 0.79		< 1.0		
2-Hexanone		< 38		< 1.5		< 1.2		< 1.5		
4-Ethyltoluene		< 38		< 1.5		< 1.2		< 1.5		
Acetone*		11,800		58.2		33.3		**52.7**		
Benzene		79.2	J	< 0.38		< 0.30		< 0.38		
Bromoform		< 100		< 3.8		< 3.1		< 3.8		
Carbon disulfide		448		181		< 0.59		**152**		
Carbon tetrachloride		< 38		< 1.5		< 1.2		< 1.5		
Chloroethane		< 34		< 1.3		15		< 1.3		
Chloroform		< 25		< 0.98		< 0.78		< 0.98		
Chloromethane*		< 8.3		24.4		19		**19**		
cis-1,2-Dichloroethylene		9,360		< 0.48		< 0.37		< 0.48		
Cyclohexane		99.5	J	< 0.76		< 0.62		< 0.76		
Dichlorodifluoromethane		< 21		< 0.84		< 0.64		< 0.84		
Ethanol		279		339		35.0		**285**		
Ethyl acetate		< 35		6.8	J	< 1.1		**6.1**	**J**	
Ethylbenzene		3,040		< 0.65		< 0.52		< 0.65		
Heptane		1,180		< 0.74		< 0.57		< 0.74		
Hexane		< 9.9		< 0.39		< 0.30		**6.7**	**J**	
Isopropyl alcohol*		187		8.4		31.0		**7.4**		
m,p-Xylene		8,770		7.4	J	6.5	J	**6.1**	**J**	
m-Dichlorobenzene		< 29		< 1.1		< 0.90		< 1.1		
Methyl ethyl ketone		2,460		< 1.2		3.8	J	< 1.2		
Methyl isobutyl ketone		138	J	< 1.5		< 1.2		< 1.5		
Methylene chloride*		< 13		22		< 0.42		**43.4**		
o-Dichlorobenzene		< 34		< 1.3		< 1.0		< 1.3		
o-Xylene		2,910		< 0.74		< 0.61		< 0.74		
Propylene*		359		345		116		**289**		
Styrene		< 21		< 0.81		< 0.64		< 0.81		
Tertiary butyl alcohol		113	J	3.9	J	< 0.33		**2.9**	**J**	
Tetrachloroethylene		164		< 2.1		16		< 2.1		
Tetrahydrofuran		< 38		< 1.5		< 1.2		< 1.5		
Toluene		52,800		5.3	J	3.5	J	< 0.53		
trans-1,2-Dichloroethylene		228		< 0.29		< 0.23		< 0.29		
Trichloroethylene		15,700		< 1.0		2.4		< 1.0		100%
Trichlorofluoromethane		< 41		< 1.6		< 1.2		< 1.6		
Vinyl acetate		< 31		< 1.2		< 0.95		< 1.2		
Vinyl chloride*		831		976		675		**826**		
Xylenes (total)		11,700		7.4	J	6.5	J	**6.1**	**J**	
TVOCs		112,100		1,977		957		**1,696**		
TVOCs less poor adsorbers*		98,900		500		100		**500**		

Footnotes:

ug/mg^3 micrograms per cubic meter

* Compound is poorly adsorbed by activated carbon.

< Compound was not detected at or above the indicated value.

J Detected concentration is less than the quantitation limit.

TVOCs Total volatile organic compounds

Detections are highlighted.

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Table 1. Vapor Treatment System Air Sampling Results
Routine Monitoring - June 2021

Compound (ug/m^3)	Sample ID:	VGAC-1		VGAC-3		KMNO4-5		
	Lab Sample ID:	JD26572-1		JD26572-2		JD26572-3		
	Date Sampled:	6/14/2021		6/14/2021		6/14/2021		
1,1,1-Trichloroethane		< 43		< 1.8		< 0.71		
1,1-Dichloroethane		**91.9**	J	< 0.49		< 0.19		
1,1-Dichloroethylene		< 15		< 0.67		< 0.27		
1,2,4-Trimethylbenzene		< 38		< 1.6		< 0.64		
1,2-Dibromoethane		< 32		< 1.4		< 0.55		
1,3,5-Trimethylbenzene		< 39		< 1.7		< 0.64		
1,4-Dioxane*		< 43		< 1.9		< 0.76		
2,2,4-Trimethylpentane		**275**		< 1.0		< 0.41		
2-Hexanone		< 35		< 1.5		< 0.61		
4-Ethyltoluene		< 34		< 1.5		< 0.59		
Acetone*		**12,000**		**20**		**13**		
Benzene		**90.7**	J	< 0.38		< 0.15		
Bromoform		< 91		< 3.8		< 1.6		
Carbon disulfide		**358**		**227**		< 0.29		
Carbon tetrachloride		< 35		< 1.5		< 0.59		
Chloroethane		< 29		**19**		**7.9**		
Chloroform		< 23		< 0.98		< 0.39		
Chloromethane*		< 7.4		**18**		**17**		
cis-1,2-Dichloroethylene		**7,690**		< 0.48		< 0.19		
Cyclohexane		< 18		< 0.76		< 0.30		
Dichlorodifluoromethane		< 19		< 0.84		< 0.33		
Ethanol		**296**		**609**		**17**		
Ethyl acetate		< 32		< 1.4		**4.0**		
Ethylbenzene		**2,070**		< 0.65		< 0.26		
Heptane		**672**		< 0.74		< 0.29		
Hexane		< 8.8		< 0.39		< 0.15		
Isopropyl alcohol*		< 37		< 1.6		**22**		
m,p-Xylene		**5,820**		< 1.5		**4.2**		
m-Dichlorobenzene		< 27		< 1.1		< 0.46		
Methyl ethyl ketone		**2,840**		< 1.2		< 0.50		
Methyl isobutyl ketone		< 35		< 1.5		< 0.57		
Methylene chloride*		< 12		< 0.52		**4.9**		
o-Dichlorobenzene		< 31		< 1.3		< 0.52		
o-Xylene		**1,830**		< 0.74		**1.7**	J	
Propylene*		**318**		**256**		**182**		
Styrene		< 19		< 0.81		< 0.32		
Tertiary butyl alcohol		**98.5**	J	< 0.42		< 0.17		
Tetrachloroethylene		**94.3**		< 2.1		< 0.81		
Tetrahydrofuran		< 35		< 1.5		< 0.59		
Toluene		**32,300**		< 0.53		**4.9**		
trans-1,2-Dichloroethylene		**182**	J	< 0.29		< 0.11		
Trichloroethylene		**11,700**		< 1.0		**1.0**		100%
Trichlorofluoromethane		< 37		< 1.6		< 0.62		
Vinyl acetate		< 28		< 1.2		< 0.49		
Vinyl chloride*		**764**		**838**		**624**		
Xylenes (total)		**7,640**		< 0.74		**5.6**		
TVOCs		**79,480**		**1,987**		**903**		
TVOCs less poor adsorbers*		**66,400**		**900**		**0**		

Footnotes:

ug/mg^3 micrograms per cubic meter

* Compound is poorly adsorbed by activated carbon.

< Compound was not detected at or above the indicated value.

J Detected concentration is less than the quantitation limit.

TVOCs Total volatile organic compounds

Detections are highlighted.

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Table 1. Vapor Treatment System Air Sampling Results
Routine Monitoring - June 2021

Compound (ug/m^3)	Sample ID:	VGAC-1		VGAC-3		KMNO4-5		
	Lab Sample ID:	JD26987-1		JD26987-2		JD26987-3		
	Date Sampled:	6/21/2021		6/21/2021		6/21/2021		
1,1,1-Trichloroethane		< 46		< 1.5		< 0.71		
1,1-Dichloroethane		**111**	J	< 0.38		< 0.19		
1,1-Dichloroethylene		**65.0**	J	**1.7**	J	< 0.27		
1,2,4-Trimethylbenzene		< 41		< 1.3		< 0.64		
1,2-Dibromoethane		< 35		< 1.1		< 0.55		
1,3,5-Trimethylbenzene		< 42		< 1.3		< 0.64		
1,4-Dioxane*		< 47		< 1.5		< 0.76		
2,2,4-Trimethylpentane		**266**		< 0.79		< 0.41		
2-Hexanone		< 38		< 1.2		< 0.61		
4-Ethyltoluene		< 37		< 1.2		< 0.59		
Acetone*		**8,810**		**618**		**14**		
Benzene		**60.1**	J	< 0.30		< 0.15		
Bromoform		< 99		< 3.1		< 1.6		
Carbon disulfide		**380**		**436**		< 0.29		
Carbon tetrachloride		< 38		< 1.2		< 0.59		
Chloroethane		< 32		**17**		**4.7**		
Chloroform		< 25		< 0.78		< 0.39		
Chloromethane*		< 8.1		**21.1**		**17**		
cis-1,2-Dichloroethylene		**7,570**		**1.8**	J	< 0.19		
Cyclohexane		< 19		< 0.62		< 0.30		
Dichlorodifluoromethane		< 21		< 0.64		**2.0**	J	
Ethanol		**454**		**258**		**10**		
Ethyl acetate		< 35		**35**		**27**		
Ethylbenzene		**1,160**		< 0.52		< 0.26		
Heptane		**611**		< 0.57		< 0.29		
Hexane		< 9.5		< 0.30		< 0.15		
Isopropyl alcohol*		**189**		**4.7**		**14**		
m,p-Xylene		**3,250**		**9.1**		< 0.61		
m-Dichlorobenzene		< 29		< 0.90		< 0.46		
Methyl ethyl ketone		**1,960**		< 1.0		**2.1**	J	
Methyl isobutyl ketone		< 38		< 1.2		< 0.57		
Methylene chloride*		< 13		**7.3**		**8.0**		
o-Dichlorobenzene		< 34		< 1.0		< 0.52		
o-Xylene		**999**		< 0.61		< 0.30		
Propylene*		**306**		**265**		**240**		
Styrene		< 20		< 0.64		< 0.32		
Tertiary butyl alcohol		< 11		< 0.33		< 0.17		
Tetrachloroethylene		< 54		< 1.7		< 0.81		
Tetrahydrofuran		< 38		< 1.2		< 0.59		
Toluene		**22,800**		**15**		**2.9**	J	
trans-1,2-Dichloroethylene		**201**	J	< 0.23		**1.9**	J	
Trichloroethylene		**10,700**		**4.9**		< 0.41		100%
Trichlorofluoromethane		< 40		< 1.2		< 0.62		
Vinyl acetate		< 31		< 0.95		< 0.49		
Vinyl chloride*		**603**		**670**		**792**		
Xylenes (total)		**4,250**		**9.1**		< 0.30		
TVOCs		**60,500**		**2,365**		**1,140**		
TVOCs less poor adsorbers*		**50,600**		**800**		**100**		

Footnotes:

ug/mg^3 micrograms per cubic meter

* Compound is poorly adsorbed by activated carbon.

< Compound was not detected at or above the indicated value.

J Detected concentration is less than the quantitation limit.

TVOCs Total volatile organic compounds

Detections are highlighted.

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Table 1. Vapor Treatment System Air Sampling Results
Routine Monitoring - June 2021

Compound (ug/m^3)	Sample ID: / Lab Sample ID: / Date Sampled:	VGAC-1 JD27463-1 6/28/2021		VGAC-3 JD27463-2 6/28/2021		KMNO4-5 JD27463-3 6/28/2021		
1,1,1-Trichloroethane		< 49		< 1.5		< 0.71		
1,1-Dichloroethane		< 13		< 0.38		< 0.19		
1,1-Dichloroethylene		< 18		**8.3**		< 0.27		
1,2,4-Trimethylbenzene		**138**	J	< 1.3		< 0.64		
1,2-Dibromoethane		< 37		< 1.1		< 0.55		
1,3,5-Trimethylbenzene		< 44		< 1.3		< 0.64		
1,4-Dioxane*		< 50		< 1.5		< 0.76		
2,2,4-Trimethylpentane		**223**	J	< 0.79		< 0.41		
2-Hexanone		**179**	J	< 1.2		< 0.61		
4-Ethyltoluene		< 39		< 1.2		< 0.59		
Acetone*		**12,000**		**2,450**		**66.3**		
Benzene		**117**	J	< 0.30		< 0.15		
Bromoform		< 100		< 3.1		< 1.6		
Carbon disulfide		**498**		**414**		< 0.29		
Carbon tetrachloride		< 40		< 1.2		< 0.59		
Chloroethane		< 34		**24**		**22**		
Chloroform		< 26		< 0.78		< 0.39		
Chloromethane*		< 8.5		**20.7**		**22.3**		
cis-1,2-Dichloroethylene		**6,780**		< 0.37		< 0.19		
Cyclohexane		< 20		< 0.62		< 0.30		
Dichlorodifluoromethane		< 22		< 0.64		**2.6**	J	
Ethanol		**974**		**183**		**30.9**		
Ethyl acetate		< 36		**92.1**		**84.9**		
Ethylbenzene		**1,470**		< 0.52		< 0.26		
Heptane		**549**		< 0.57		< 0.29		
Hexane		**1,720**		< 0.30		< 0.15		
Isopropyl alcohol*		**7,280**		**7.6**		**18**		
m,p-Xylene		**4,390**		**5.6**	J	< 0.61		
m-Dichlorobenzene		< 31		< 0.90		< 0.46		
Methyl ethyl ketone		**2,070**		**2.4**	J	**6.5**		
Methyl isobutyl ketone		**142**	J	< 1.2		< 0.57		
Methylene chloride*		**427**		**10**		**25**		
o-Dichlorobenzene		< 35		< 1.0		< 0.52		
o-Xylene		**1,400**		< 0.61		< 0.30		
Propylene*		**230**	J	**194**		**208**		
Styrene		**227**	J	< 0.64		< 0.32		
Tertiary butyl alcohol		**180**		< 0.33		**4.2**		
Tetrachloroethylene		**301**		< 1.7		< 0.81		
Tetrahydrofuran		**110**	J	< 1.2		< 0.59		
Toluene		**22,200**		**9.4**		**3.8**		
trans-1,2-Dichloroethylene		**153**	J	< 0.23		< 0.11		
Trichloroethylene		**10,500**		**4.9**		< 0.41		100%
Trichlorofluoromethane		< 43		< 1.2		< 0.62		
Vinyl acetate		< 32		< 0.95		**3.3**		
Vinyl chloride*		**585**		**759**		**933**		
Xylenes (total)		**5,780**		**5.6**	J	< 0.30		
TVOCs		**74,800**		**4,190**		**1,431**		
TVOCs less poor adsorbers*		**54,300**		**700**		**200**		

Footnotes:

ug/mg^3 micrograms per cubic meter

* Compound is poorly adsorbed by activated carbon.

< Compound was not detected at or above the indicated value.

J Detected concentration is less than the quantitation limit.

TVOCs Total volatile organic compounds

Detections are highlighted.

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Table 2. Liquid Treatment System Sampling Results - June 2021

HSW

Analyte	TOGS 111 Effluent Limitations (GA)	SPDES Permit Equivalent Daily Maximum Discharge Limitations	Sample ID:	OU3 AIR STRIPPER FINAL EFF-2021	FRAC1-A2949-2021625	LGAC-INF-20210625	LGAC-MID-20210625
			Lab Sample ID:	JD26875-1	JD27348-1 / 1A	JD27348-2 / 2A	JD27348-3 / 3A
			Date Sampled:	6/18/2021	6/25/2021	6/25/2021	6/25/2021
Volatile Organic Compounds, Detections Only (ug/L):							
2-Butanone (MEK)	50			-	< 6.9	**681**	< 69
2-Hexanone	50			-	< 2.0	**86.2**	< 20
4-Methyl-2-pentanone (MIBK)	--			-	< 1.9	**20.4**	< 19
Acetone*	50			-	**1,250**	**3,610**	**11,400**
cis-1,2-Dichloroethene	5	5		-	< 0.51	**9.4**	< 5.1
Ethylbenzene	5			-	**0.66 J**	**2.6**	< 6.0
m,p-Xylene	5			-	< 0.78	**9.8**	< 7.8
Methyl Acetate	--			-	< 0.80	**2.9 J**	< 8.0
o-Xylene	5			-	< 0.59	**5.8**	< 5.9
Toluene	5			-	< 0.53	**27.3**	< 5.3
Trichloroethene	5	5		-	< 0.53	**4.2**	< 5.3
Xylene (total)	5			-	< 0.59	**15.6**	< 5.9
TVOCs	--			-	**1,250**	**4,460**	**11,400**
TVOCs less poor adsorbers*	--			-	**0**	**850**	**0**
Semivolatile Organic Compounds, Detections Only (ug/L):							
1,1'-Biphenyl	5			-	< 0.20	**1.3**	< 0.21
1,4-Dioxane	--			-	< 0.63	**14.4**	**25.6**
2,4-Dimethylphenol	1			-	< 2.3	**97.9**	< 2.4
2-Methylnaphthalene	--			-	< 0.20	**1.1**	< 0.20
2-Methylphenol	2**			-	< 0.85	**66.1**	< 0.86
3&4-Methylphenol	2**			-	< 0.84	**183**	< 0.85
Acetophenone	--			-	< 0.20	**129**	**0.24 J**
Anthracene	50			-	< 0.20	**0.26 J**	< 0.20
Benzaldehyde	--			-	< 0.28	**200**	**0.39 J**
Dibenzofuran	--			-	< 0.21	**0.49 J**	< 0.21
Dimethyl phthalate	50			-	< 0.21	**7.4**	< 0.21
Fluoranthene	50			-	< 0.16	**0.84 J**	< 0.17
Fluorene	50			-	< 0.16	**0.66 J**	< 0.17
Naphthalene	10			-	< 0.22	**1.6**	< 0.23
Phenanthrene	50			-	< 0.17	**4.6**	< 0.17
Phenol	1			-	< 0.37	**197**	**0.42 J**
Pyrene	50			-	< 0.21	**0.76 J**	< 0.21
1,4-Dioxane	--			-	< 0.048	**12.6**	**23.4**
Aroclor 1248	0.09			-	< 0.097	**3.0**	< 0.097
Iron	300	600		**315**	**6,310**	**34,300**	**10,600**
Manganese	300	600		**53.9**	**252**	**281**	**202**
Sum of total iron and manganese		1000		**369**	**6,562**	**34,581**	**10,802**
Nitrogen, Total Kjeldahl	-			-	**0.79**	**2.1**	**1.3**

Footnotes:

ug/L	micrograms per liter
mg/L	milligrams per liter
TOGS 111	Technical and Operational Guidance Series 1.1.1., Groundwater Effluent Limitations, Class GA, New York State.
*	Poorly adsorbed on activated carbon.
**	Applies to sum of phenolic compounds.
***	Generated by Method 6010D; all other metals results generated by Method 200.7.
<	Analyte was not detected at or above the indicated value.
J	Detected concentration is less than the laboratory quantitation limit.
J1	Low recovery reported for the matrix spike duplicate.
ND	Not Determined
TVOCs	Total volatile organic compounds

Table 3: Ambient Air Laboratory Results (2021-05-25 through 2021-06-01)

Analyte	Target Screening Level (µg/m³)[1,3]	95% of Concentration Distribution NYSDOH Background Air (µg/m³)[2]	Ambient Air Concentration (µg/m³)				
			Sample Location				
			AMP-01	AMP-02	AMP-03	AMP-04	AMP-04-DUP
Site-specific Compounds of Interest[1]							
1,1,1-Trichloroethane	520	0.7	< 0.48	< 0.37	< 0.38	< 0.37	< 0.37
1,1-Dichloroethane	45	< 0.25	< 0.35	< 0.28	< 0.28	< 0.28	< 0.28
1,1-Dichloroethene	8	<0.25	< 0.17	< 0.14	< 0.14	< 0.14	< 0.14
1,2-Dichloroethane	3	< 0.25	< 0.35	< 0.28	< 0.28	< 0.28	< 0.28
Benzene	8	5.8	**12**	**2.3**	< 0.55	**2.0**	**1.2**
Ethyl-benzene	29	1.9	**10**	**2.8**	< 0.30	**2.4**	**1.4**
m,p-Xylene	10	3.1	**2.1**	**0.86**	< 0.60	**0.71**	< 0.59
o-Xylene	10	2.3	**0.48**	< 0.30	< 0.30	< 0.30	< 0.30
Tetrachloroethene	30	1.6	< 0.59	< 0.46	< 0.47	< 0.46	< 0.46
Toluene	521	21	**0.91**	**0.65**	**0.65**	**0.68**	< 0.64
trans-1,2-Dichloroethene	82	NA2	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4
Trichloroethene	2	0.5	< 0.47	< 0.37	< 0.37	< 0.37	< 0.37
Vinyl Chloride	8	< 0.25	< 0.11	< 0.087	< 0.088	< 0.087	< 0.087
Other Compounds[3]							
1,1,2,2-Tetrachloroethane	1.3	< 0.25	< 0.60	< 0.47	< 0.48	< 0.47	< 0.47
1,1,2-Trichloroethane	0.21	< 0.25	< 0.48	< 0.37	< 0.38	< 0.37	< 0.37
1,2-Dibromoethane (EDB)	0.12	< 0.25	< 0.67	< 0.52	< 0.53	< 0.52	< 0.52
1,4-Dichlorobenzene	7	0.8	< 0.52	< 0.41	< 0.42	< 0.41	< 0.41
Carbon Tetrachloride	12	1	< 0.55	**0.48**	**0.46**	**0.48**	< 0.43
Chloroethane	417	0.4	< 0.58	< 0.45	< 0.46	< 0.45	< 0.45
Chloroform	3	0.5	< 0.43	< 0.33	< 0.34	< 0.33	< 0.33
Chloromethane	310	4.6	< 4.5	< 3.5	< 3.6	< 3.5	< 3.5
cis-1,2-Dichloroethene	NA1	< 0.25	< 0.35	< 0.27	< 0.27	< 0.27	< 0.27
Freon 114	NA1	1.3	< 0.61	< 0.48	< 0.48	< 0.48	< 0.48
Freon 12	100	11	**2.2**	**2.4**	**2.4**	**2.4**	**2.3**
Methyl tert-butyl ether	260	NA2	**2.7**	< 1.2	< 1.2	< 1.2	< 1.2

Notes:

µg/m³ - micrograms per cubic meter

Bold - indicates detections

R - rejected after data validation

< - indicates not detected at or above the indicated value

NA1 - no criteria given in the EPA RSL Calculator

J - indicates sample result is estimated

NA2 - NYSDOH did not include this compound in the guidance document[2]

[1] Target Screening Levels for site-specific compounds of interest provided in Bethpage Ambient Air Monitoring Plan and are based on a one-year exposure duration (B&B Engineers & Geologists of New York, P.C., May 2020)

[2] NYSDOH Outdoor Air Background Values from Appendix C (Table C1) of Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)

[3] Target Screening Levels for other compounds calculated using the EPA RSL calculator with the same inputs as described in the Bethpage Ambient Air Monitoring Plan

Table 3: Ambient Air Laboratory Results (2021-06-01 through 2021-06-08)

Analyte	Target Screening Level (µg/m³)[1,3]	95% of Concentration Distribution NYSDOH Background Air (µg/m³)[2]	Ambient Air Concentration (µg/m³)				
			Sample Location				
			AMP-01	AMP-02	AMP-03	AMP-04	AMP-01-DUP
Site-specific Compounds of Interest[1]							
1,1,1-Trichloroethane	520	0.7	< 0.37	< 0.38	< 0.38	< 0.38	< 0.38
1,1-Dichloroethane	45	< 0.25	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1-Dichloroethene	8	<0.25	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
1,2-Dichloroethane	3	< 0.25	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Benzene	8	5.8	< 0.55	**0.66**	**0.58**	< 0.56	< 0.55
Ethyl-benzene	29	1.9	< 0.30	< 0.30	< 0.30	< 0.31	< 0.30
m,p-Xylene	10	3.1	**0.70**	< 0.60	< 0.60	< 0.61	< 0.60
o-Xylene	10	2.3	**0.30**	< 0.30	< 0.30	< 0.31	< 0.30
Tetrachloroethene	30	1.6	< 0.46	< 0.47	< 0.47	< 0.48	< 0.47
Toluene	521	21	**1.3**	**1.2**	**1.5**	**1.1**	**1.1**
trans-1,2-Dichloroethene	82	NA2	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Trichloroethene	2	0.5	< 0.37	< 0.37	< 0.37	< 0.38	< 0.37
Vinyl Chloride	8	< 0.25	< 0.087	< 0.089	< 0.089	< 0.090	< 0.088
Other Compounds[3]							
1,1,2,2-Tetrachloroethane	1.3	< 0.25	< 0.47	< 0.48	< 0.48	< 0.48	< 0.47
1,1,2-Trichloroethane	0.21	< 0.25	< 0.37	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dibromoethane (EDB)	0.12	< 0.25	< 0.52	< 0.53	< 0.53	< 0.54	< 0.53
1,4-Dichlorobenzene	7	0.8	< 0.41	< 0.42	< 0.42	< 0.42	< 0.41
Carbon Tetrachloride	12	1	**0.45**	**0.50**	**0.47**	**0.50**	**0.47**
Chloroethane	417	0.4	< 0.45	< 0.46	< 0.46	< 0.46	< 0.45
Chloroform	3	0.5	< 0.33	< 0.34	< 0.34	< 0.34	< 0.34
Chloromethane	310	4.6	< 3.5	< 3.6	< 3.6	< 3.6	< 3.6
cis-1,2-Dichloroethene	NA1	< 0.25	< 0.27	< 0.28	< 0.28	< 0.28	< 0.27
Freon 114	NA1	1.3	< 0.48	< 0.49	< 0.49	< 0.49	< 0.48
Freon 12	100	11	**2.3**	**2.4**	**2.4**	**2.3**	**2.3**
Methyl tert-butyl ether	260	NA2	< 1.2	< 1.2	< 1.2	< 1.3	< 1.2

Notes:

µg/m³ - micrograms per cubic meter

Bold - indicates detections

R - rejected after data validation

< - indicates not detected at or above the indicated value

NA1 - no criteria given in the EPA RSL Calculator

J - indicates sample result is estimated

NA2 - NYSDOH did not include this compound in the guidance document[2]

[1] Target Screening Levels for site-specific compounds of interest provided in Bethpage Ambient Air Monitoring Plan and are based on a one-year exposure duration (B&B Engineers & Geologists of New York, P.C., May 2020)

[2] NYSDOH Outdoor Air Background Values from Appendix C (Table C1) of Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)

[3] Target Screening Levels for other compounds calculated using the EPA RSL calculator with the same inputs as described in the Bethpage Ambient Air Monitoring Plan

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Table 3: Ambient Air Laboratory Results (2021-06-08 through 2021-06-15)

Analyte	Target Screening Level (µg/m³)[1,3]	95% of Concentration Distribution NYSDOH Background Air (µg/m³)[2]	Ambient Air Concentration (µg/m³)				
			Sample Location				
			AMP-01	AMP-02	AMP-03	AMP-04	AMP-02-DUP
Site-specific Compounds of Interest[1]							
1,1,1-Trichloroethane	520	0.7	< 0.36	< 0.42	< 0.39	< 0.35	< 0.41
1,1-Dichloroethane	45	< 0.25	< 0.27	< 0.31	< 0.29	< 0.26	< 0.3
1,1-Dichloroethene	8	<0.25	< 0.13	< 0.15	< 0.14	< 0.13	< 0.15
1,2-Dichloroethane	3	< 0.25	< 0.27	< 0.31	< 0.29	< 0.26	< 0.3
Benzene	8	5.8	< 0.53	< 0.61	< 0.58	< 0.52	< 0.6
Ethyl-benzene	29	1.9	< 0.29	< 0.33	< 0.31	< 0.28	< 0.33
m,p-Xylene	10	3.1	< 0.58	< 0.66	**0.77**	< 0.56	< 0.65
o-Xylene	10	2.3	< 0.29	< 0.33	**0.33**	< 0.28	< 0.33
Tetrachloroethene	30	1.6	< 0.45	< 0.52	< 0.49	< 0.44	< 0.51
Toluene	521	21	**1.5**	**0.97**	**1.8**	**0.84**	**0.86**
trans-1,2-Dichloroethene	82	NA2	< 1.3	< 1.5	< 1.4	< 1.3	< 1.5
Trichloroethene	2	0.5	< 0.36	< 0.41	< 0.39	< 0.35	< 0.4
Vinyl Chloride	8	< 0.25	< 0.085	< 0.098	< 0.092	< 0.083	< 0.096
Other Compounds[3]							
1,1,2,2-Tetrachloroethane	1.3	< 0.25	< 0.46	< 0.52	< 0.5	< 0.45	< 0.52
1,1,2-Trichloroethane	0.21	< 0.25	< 0.36	< 0.42	< 0.39	< 0.35	< 0.41
1,2-Dibromoethane (EDB)	0.12	< 0.25	< 0.51	< 0.59	< 0.55	< 0.5	< 0.58
1,4-Dichlorobenzene	7	0.8	< 0.4	< 0.46	< 0.43	< 0.39	< 0.45
Carbon Tetrachloride	12	1	<0.42	< 0.48	< 0.45	**0.41**	< 0.47
Chloroethane	417	0.4	< 0.44	< 0.5	< 0.48	< 0.43	< 0.5
Chloroform	3	0.5	< 0.32	< 0.37	< 0.35	< 0.32	< 0.37
Chloromethane	310	4.6	< 3.4	< 3.9	< 3.7	< 3.4	< 3.9
cis-1,2-Dichloroethene	NA1	< 0.25	< 0.26	< 0.3	< 0.29	< 0.26	< 0.3
Freon 114	NA1	1.3	< 0.46	< 0.53	< 0.5	< 0.45	< 0.53
Freon 12	100	11	**2.2**	**2.2**	**2.2**	**2.2**	**2.3**
Methyl tert-butyl ether	260	NA2	< 1.2	< 1.4	< 1.3	< 1.2	< 1.4

Notes:

µg/m³ - micrograms per cubic meter

Bold - indicates detections

R - rejected after data validation

< - indicates not detected at or above the indicated value

NA1 - no criteria given in the EPA RSL Calculator

J - indicates sample result is estimated

NA2 - NYSDOH did not include this compound in the guidance document[2]

[1] Target Screening Levels for site-specific compounds of interest provided in Bethpage Ambient Air Monitoring Plan and are based on a one-year exposure duration (B&B Engineers & Geologists of New York, P.C., May 2020)

[2] NYSDOH Outdoor Air Background Values from Appendix C (Table C1) of Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)

[3] Target Screening Levels for other compounds calculated using the EPA RSL calculator with the same inputs as described in the Bethpage Ambient Air Monitoring Plan

Table 3: Ambient Air Laboratory Results (2021-06-15 through 2021-06-22)

Analyte	Target Screening Level (µg/m³)[1,3]	95% of Concentration Distribution NYSDOH Background Air (µg/m³)[2]	Ambient Air Concentration (µg/m³)				
			Sample Location				
			AMP-01	AMP-02	AMP-03	AMP-04	AMP-03-DUP
Site-specific Compounds of Interest[1]							
1,1,1-Trichloroethane	520	0.7	< 0.39	< 0.40	< 0.41	< 0.36	< 0.41
1,1-Dichloroethane	45	< 0.25	< 0.29	< 0.30	< 0.30	< 0.27	< 0.30
1,1-Dichloroethene	8	<0.25	< 0.14	< 0.15	< 0.15	< 0.13	< 0.15
1,2-Dichloroethane	3	< 0.25	< 0.29	< 0.30	< 0.30	< 0.27	< 0.30
Benzene	8	5.8	< 0.57	< 0.59	< 0.60	< 0.53	< 0.60
Ethyl-benzene	29	1.9	< 0.31	< 0.32	< 0.33	< 0.29	< 0.33
m,p-Xylene	10	3.1	< 0.62	< 0.64	< 0.65	< 0.58	< 0.65
o-Xylene	10	2.3	< 0.31	< 0.32	< 0.33	< 0.29	< 0.33
Tetrachloroethene	30	1.6	< 0.48	< 0.50	< 0.51	< 0.45	< 0.51
Toluene	521	21	**0.81**	**0.80**	**0.74**	**1.4**	**0.71**
trans-1,2-Dichloroethene	82	NA2	< 1.4	< 1.5	< 1.5	< 1.3	< 1.5
Trichloroethene	2	0.5	< 0.38	< 0.40	< 0.40	< 0.36	< 0.40
Vinyl Chloride	8	< 0.25	< 0.091	< 0.094	< 0.096	< 0.085	< 0.096
Other Compounds[3]							
1,1,2,2-Tetrachloroethane	1.3	< 0.25	< 0.49	< 0.51	< 0.52	< 0.46	< 0.52
1,1,2-Trichloroethane	0.21	< 0.25	< 0.39	< 0.40	< 0.41	< 0.36	< 0.41
1,2-Dibromoethane (EDB)	0.12	< 0.25	< 0.54	< 0.57	< 0.58	< 0.51	< 0.58
1,4-Dichlorobenzene	7	0.8	< 0.43	< 0.44	< 0.45	< 0.40	< 0.45
Carbon Tetrachloride	12	1	< 0.45	< 0.46	< 0.47	**0.60**	< 0.47
Chloroethane	417	0.4	< 0.47	< 0.49	< 0.50	< 0.44	< 0.50
Chloroform	3	0.5	< 0.35	< 0.36	< 0.37	< 0.32	< 0.37
Chloromethane	310	4.6	< 3.7	< 3.8	< 3.9	< 3.4	< 3.9
cis-1,2-Dichloroethene	NA1	< 0.25	< 0.28	< 0.29	< 0.30	< 0.26	< 0.30
Freon 114	NA1	1.3	< 0.50	< 0.52	< 0.53	< 0.46	< 0.53
Freon 12	100	11	**2.0**	**2.0**	**2.1**	**2.0**	**2.0**
Methyl tert-butyl ether	260	NA2	< 1.3	< 1.3	< 1.4	< 1.2	< 1.4

Notes:

µg/m³ - micrograms per cubic meter

Bold - indicates detections

R - rejected after data validation

< - indicates not detected at or above the indicated value

NA1 - no criteria given in the EPA RSL Calculator

J - indicates sample result is estimated

NA2 - NYSDOH did not include this compound in the guidance document[2]

[1] Target Screening Levels for site-specific compounds of interest provided in Bethpage Ambient Air Monitoring Plan and are based on a one-year exposure duration (B&B Engineers & Geologists of New York, P.C., May 2020)

[2] NYSDOH Outdoor Air Background Values from Appendix C (Table C1) of Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)

[3] Target Screening Levels for other compounds calculated using the EPA RSL calculator with the same inputs as described in the Bethpage Ambient Air Monitoring Plan

Table 3: Ambient Air Laboratory Results (2021-06-22 through 2021-06-29)

Analyte	Target Screening Level (µg/m³)[1,3]	95% of Concentration Distribution NYSDOH Background Air (µg/m³)[2]	Ambient Air Concentration (µg/m³)				
			Sample Location				
			AMP-01	AMP-02	AMP-03	AMP-04	AMP-04-DUP
Site-specific Compounds of Interest[1]							
1,1,1-Trichloroethane	520	0.7	< 0.39	< 0.40	< 0.39	< 0.39	< 0.40
1,1-Dichloroethane	45	< 0.25	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
1,1-Dichloroethene	8	<0.25	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
1,2-Dichloroethane	3	< 0.25	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
Benzene	8	5.8	< 0.57	< 0.58	< 0.58	< 0.58	< 0.58
Ethyl-benzene	29	1.9	< 0.31	< 0.32	< 0.31	< 0.31	< 0.32
m,p-Xylene	10	3.1	< 0.62	< 0.63	< 0.63	< 0.63	< 0.63
o-Xylene	10	2.3	< 0.31	< 0.32	< 0.31	< 0.31	< 0.32
Tetrachloroethene	30	1.6	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49
Toluene	521	21	**0.77**	< 0.68	**0.72**	**1.0**	**0.84**
trans-1,2-Dichloroethene	82	NA2	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Trichloroethene	2	0.5	< 0.38	< 0.39	< 0.39	< 0.39	< 0.39
Vinyl Chloride	8	< 0.25	< 0.092	< 0.093	< 0.092	< 0.092	< 0.093
Other Compounds[3]							
1,1,2,2-Tetrachloroethane	1.3	< 0.25	< 0.49	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane	0.21	< 0.25	< 0.39	< 0.40	< 0.39	< 0.39	< 0.40
1,2-Dibromoethane (EDB)	0.12	< 0.25	< 0.55	< 0.56	< 0.55	< 0.55	< 0.56
1,4-Dichlorobenzene	7	0.8	< 0.43	< 0.44	< 0.43	< 0.43	< 0.44
Carbon Tetrachloride	12	1	< 0.45	< 0.46	< 0.45	< 0.45	< 0.46
Chloroethane	417	0.4	< 0.47	< 0.48	< 0.48	< 0.48	< 0.48
Chloroform	3	0.5	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
Chloromethane	310	4.6	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
cis-1,2-Dichloroethene	NA1	< 0.25	< 0.28	< 0.29	< 0.29	< 0.29	< 0.29
Freon 114	NA1	1.3	< 0.50	< 0.51	< 0.50	< 0.50	< 0.51
Freon 12	100	11	**2.0**	**2.1**	**2.0**	**2.1**	**2.1**
Methyl tert-butyl ether	260	NA2	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3

Notes:

µg/m³ - micrograms per cubic meter

Bold - indicates detections

R - rejected after data validation

< - indicates not detected at or above the indicated value

NA1 - no criteria given in the EPA RSL Calculator

J - indicates sample result is estimated

NA2 - NYSDOH did not include this compound in the guidance document[2]

[1] Target Screening Levels for site-specific compounds of interest provided in Bethpage Ambient Air Monitoring Plan and are based on a one-year exposure duration (B&B Engineers & Geologists of New York, P.C., May 2020)

[2] NYSDOH Outdoor Air Background Values from Appendix C (Table C1) of Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)

[3] Target Screening Levels for other compounds calculated using the EPA RSL calculator with the same inputs as described in the Bethpage Ambient Air Monitoring Plan


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