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Jacobs

Technical Memorandum

2600 Michelson Drive, Suite 500
Irvine, California 92612
United States
T +1.949.224.7500
F +1.949.224.7501
www.jacobs.com

Subject	**Second 2022 Semiannual Soil Vapor Monitoring Report**	**Project Name**	SFPP Norwalk Pump Station, Norwalk, California
Attention	Mr. Paul Cho/Los Angeles Regional Water Quality Control Board		
Prepared by	Marjory Fure/Jacobs Todd Kremmin/Jacobs		
Reviewed by	Eric Davis/Jacobs		
Date	November 3, 2022		
Copies to	Court Reece/Kinder Morgan		

1. Introduction

Jacobs Engineering Group Inc. (Jacobs) is pleased to submit this technical memorandum (tech memo) on behalf of Santa Fe Pacific Pipelines, L.P. (SFPP), an operating partner of Kinder Morgan, Inc. (Kinder Morgan). This tech memo presents soil vapor monitoring analytical results from the second semiannual sampling event of 2022, conducted in August and September 2022, at the SFPP, L.P. (SFPP) Norwalk Pump Station, located within Defense Fuel Support Point (DFSP) Norwalk, at 15306 Norwalk Boulevard, Norwalk, California (the Site; Figure 1).

This tech memo is being submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) in accordance with an April 11, 2022, decision by the Regional Board allowing Kinder Morgan to temporarily reduce soil vapor monitoring and reporting frequency from quarterly to semiannually due to ongoing construction and redevelopment activities at the Site (Regional Board, 2022a). Therefore, this tech memo serves as the second semiannual soil vapor monitoring tech memo for 2022 and supersedes the prior requirement from the Regional Board requesting that Kinder Morgan conduct and submit quarterly soil vapor monitoring reports (Regional Board, 2021).

At the request of the Regional Board in the Conditional Approval of the Interim Remedial Action Plan (IRAP) letter (Regional Board, 2022b), Kinder Morgan has initiated the process of reviewing the current soil vapor monitoring Sampling and Analysis Plan (SAP) and determining the need to prepare a revised SAP. If a revised SAP is warranted, Kinder Morgan will collaborate with the Regional Board to develop an updated SAP, to be submitted in early 2023.

2. Background

For the first 2022 semiannual sampling event, Kinder Morgan utilized a network of 31 dual- and triple-nested soil vapor monitoring probes (SVPs) located within and around the three areas of ongoing treatment and monitoring at the Site: the south-central area in the 36-acre parcel, the offsite/south-central area in the residential area south of the 36-acre parcel, and the southeastern area in the 15-acre parcel (Figure 2). These SVPs comprised 66 unique sample intervals from approximately 5, 10, 15, and 22 feet below ground surface (ft bgs).

With Regional Board concurrence, several SVPs were destroyed in May 2022, after the first 2022 semiannual sampling event was conducted, because they are in the way of the construction and redevelopment activities mentioned above. The destroyed SVPs include offsite/south-central SVP "SVM-15" and southeastern area SVPs "SVM-17," "SVM-18," "SVM-19," and "SVM-20." Therefore, the SVP network was reduced to 26 dual- and triple-nested SVPs, with 55 unique sample intervals available for sampling (Table 1).

Additional Site background information and historical data from long-term soil vapor monitoring can be found in the *IRAP – Implementing an NSZD Remedy* (Jacobs, 2022a), the *Second Quarter 2022 Remediation Progress Report* (Jacobs, 2022b), and the previous soil vapor monitoring tech memos, available on "GeoTracker", the Regional Board's internet accessible database.

3. Sampling

During the second 2022 semiannual sampling event, 55 native samples were collected from 31 SVPs (Table 1, Figure 2) in August and September using 1.4-liter Summa canisters. Four ambient air samples were also collected, along with three duplicate samples. Sampling was performed in accordance with the Department of Toxic Substances Control's (DTSC) *Advisory for Active Soil Gas Investigations* (DTSC, 2015). The samples were analyzed by the American Analytics laboratory for the following analytes:

- Volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method TO-15
- Total petroleum hydrocarbon – gasoline (TPH-g) using EPA Method TO-3
- Fixed gases (carbon dioxide, methane, and oxygen) using EPA Method 3CM

Included in the TO-15 list of analytes were benzene, toluene, ethylbenzene, and xylene (BTEX), methyl tert-butyl ether (MTBE), naphthalene, tertiary butyl alcohol, 1,2-dichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-butylbenzene, sec-butylbenzene, isopropylbenzene, n-propylbenzene, and 2-propanol (the leak test compound). These constituents were identified as contaminants of potential concern (COPCs) based on the results of the *Vapor Intrusion Sampling and Human Health Risk Assessment* (Geomatrix, 2006).

4. Results

Table 2 presents the analytical results for samples collected during the second 2022 semiannual sampling event compared to DTSC-modified screening levels (DTSC, 2020) and EPA regional screening levels (RSLs) (EPA, 2021), derived with an attenuation factor currently in guidance (DTSC, 2011). It should be noted that there are no established screening levels for certain analytes. Laboratory analytical reports are included in Attachment A. A summary of results is as follows:

- No COPCs were detected in any SVP during the second semiannual sampling event of 2022.
- Non-COPC compounds that were detected include: 2,2,4-trimethylpentane, acetone, bromodichloromethane, carbon disulfide, chloroform, ethanol, tetrachloroethylene (PCE), and TPH-g (C4-C12). The only exceedance of criteria were at deeper sample ports SVP-108-10 (790 micrograms per liter [µg/L]) and SVM-6-13 (22,000 µg/L) for TPH-g (C4-C12), with both locations bounded above by soil vapor samples which did not exceed criteria.

5. Statistical Evaluation

Recent detections of TPH-g in soil vapor were evaluated using statistical analysis (descriptive and quantitative trends). Only TPH-g trend analysis is discussed in this report, as other contaminants are similar to TPH-g results and TPH-g is a more useful (and conservative) proxy for evaluation of both sitewide vapor phase hydrocarbons and light nonaqueous phase liquid (LNAPL). Section 5.1 summarizes the statistical approach (methodology) to the evaluation and the underlying assumptions. The quantitative results of the statistical evaluation are described below in Section 5.2.

5.1 Statistical Methodology

The Mann-Kendall test (Mann, 1945; Kendall, 1975; Gilbert, 1987) and the Theil-Sen slope estimator (Theil, 1950; Sen, 1968) were used for trend testing and estimation of trend magnitude, respectively. These methods are suited for univariate time-series with monotonous trends and no seasonal or other cycles in the data (no autocorrelation in the time-series). Nonparametric methods are preferred to parametric methods (i.e., ordinary linear regression analysis) because they make no assumption about the probability distribution of the data. Additionally, nonparametric methods and, in particular, methods for the estimation of trend magnitude, are robust to the presence of outliers or to abrupt breaks due to inhomogeneous time-series (Hirsch et al., 1982).

The null hypothesis in the Mann-Kendall test assumes that there is no trend (the data are independent and randomly ordered) and this is tested against the alternative hypothesis, which assumes that there is a trend. The calculated probability (p-value) of the test represents the probability that any observed trend would occur purely by chance (given the variability and sample size of the data set). A significance level of 0.05 (i.e., 95 percent confidence) was used to test the null hypothesis that there is no trend in the data. The significance level is the probability that a test erroneously detects a trend when none is present. Only p-values less than 0.05 indicate a statistically significant trend. The result of the Mann-Kendall test is either a significantly increasing or decreasing trend, or a non-significant result (no trend, stable).

Additional details about the statistical methodology used are included in Attachment B (Hollander and Wolfe 1973, p. 201; EPA, 2009; ITRC, 2013; Kaplan and Meier, 1958; EPA, 2015, Helsel, 2012, and Singh et al., 2006).

5.2 Statistical Results

Trend analysis was conducted for TPH-g from September 2015 through September 2022. In 2015 biosparging began in the horizontal wells in the south-central area which establishes a natural starting point (time zero) for statistical analysis at most locations. Attachment B represents a summary table of the trend analysis results along with descriptive statistics. The results are summarized as follows:

- There were 55 sample points evaluated using the Mann-Kendall test
  - One location, SVM-14D, has a statistically significant decreasing trend.
  - No locations had increasing trends.
- There were 38 cases of non-significant test results (i.e. no trend, stable), meaning that the null hypothesis of no trend could not be rejected at the specified 95% confidence level.
  - All cases had no trend because >50% of the results were nondetect.
- There were 30 cases of insufficient data for analysis (IS), meaning that three or fewer observations for that unique location and analyte were available.

6. Conclusions and Recommendations

There were no detections of any COPCs during the second 2022 semiannual sampling event; therefore, no COPCs currently present unacceptable risk at the Site. The only exceedences of criteria were at SVP-06D and SVP-108D. The concentration of TPH-g (C4-C12) at SVM-06D exceeded both the residential and commercial RSLs however the upper bounding sample from SVM-6S from 7-7.5 ft bgs did not exceed criteria. Similarly, the concentration of TPH-g (C4-C12) at SVP-108D exceeded the residential RSLs; however, the upper bounding sample from SVP-108S from 5-5.5 ft bgs did not exceed criteria. A statistical analysis of TPH-g from 2015 through September 2022 demonstrate that there are no increasing trends for TPH-g in soil vapor.

Other detected compounds (non-COPCs) are detected infrequently and at relatively low concentrations, below DTSC-modified screening levels and EPA RSLs, in the shallow soil vapor (defined as the upper 10 feet of soil). Observed transitory increases of non-COPCs, such as TPH-g, are an artifact of ongoing biosparging operations and are closely monitored with field-based observations on a weekly to biweekly basis. Further details and data regarding these observations are provided in the quarterly remediation progress reports.

As concluded in the *IRAP* (Jacobs, 2022a) and other documents such as the *Review of the Offsite Soil Vapor Monitoring Probe Network* (Jacobs, 2020a) and *Updated Human Health Risk Assessment for the Offsite/South-Central and Offsite/Southeastern Areas* (Jacobs, 2020b), exposure pathways at the Site are largely incomplete and insignificant for the petroleum releases in groundwater, subsurface soil, and soil vapor.

Moreover, multiple lines of evidence point to the presence at the Site of a clean, biologically active zone in shallow soil where aerobic biodegradation controls the diffusion of petroleum VOCs to the ground surface, further mitigating potential exposure pathways. This conclusion is also consistent with the conclusions presented in the 2006 human health risk assessment (HHRA) (Geomatrix, 2006) and the HHRAs supporting the closure of the DFSP 15-acre and 36-acre parcels (CH2M, 2017; Jacobs, 2019).

Results from the soil vapor monitoring and sampling in the first half of 2023 will be summarized in a tech memo to be submitted by mid-2023.

7. References

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Tables

Table 1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

Location	Easting	Northing	Top of Screen (ft. bgs.)	Bottom of Screen (ft. bgs.)
SV-10S	6540267.797	1782708.769	5	5.5
SV-12S	6539753.345	1782829.667	5	5.5
SV-14S	6540106.046	1782578.069	5	5.5
SV-17S	6541215.289	1782771.241	5	5.5
SV-2SS	6541235.093	1782827.926	0	0.5
SV-4S	6540608.994	1782810.542	5	5.5
SV-6S	6540261.953	1782812.013	5	5.5
SV-7AS	6540091.235	1782773.231	5.5	6
SV-7ASS	6540091.235	1782773.231	0	0.5
SV-7SS	6540091.235	1782773.231	0	0.5
SV-8ASS	6540091.768	1782718.355	0	0.5
SV-8S	6540091.768	1782718.355	5.5	6
SV-8SS	6540091.768	1782718.355	0	0.5
SV-9SS	6540148.554	1782688.239	0	0.5
SVM-01D	6539934.158	1782751.202	15	15.5
SVM-01S	6539934.158	1782751.202	5	5.5
SVM-02D	6539915.418	1782654.309	14.5	15
SVM-02S	6539915.418	1782654.309	5	5.5
SVM-03D	6540352.913	1782727.013	15	15.5
SVM-03S	6540352.913	1782727.013	5	5.5
SVM-04D	6540443.669	1782822.529	14.5	15
SVM-04S	6540443.669	1782822.529	5	5.5
SVM-05D	6540258.286	1782817.347	15	15.5
SVM-05S	6540258.286	1782817.347	5	5.5
SVM-06D	6540063.541	1782775.007	13	13.5
SVM-06S	6540063.541	1782775.007	7	7.5
SVM-07D	6540126.172	1782701.947	13	13.5
SVM-07S	6540126.172	1782701.947	7	7.5
SVM-08D	6540256.879	1782712.476	15	15.5
SVM-08S	6540256.879	1782712.476	5	5.5
SVM-09D	6541218.214	1782917.453	14.5	15
SVM-09S	6541218.214	1782917.453	5	5.5
SVM-10D	6540114.074	1782567.878	15	15.5
SVM-10S	6540114.074	1782567.878	7.5	8
SVM-11D	6540094.409	1783048.449	22	22.5
SVM-11M	6540094.409	1783048.449	15	15.5
SVM-11S	6540094.409	1783048.449	7	7.5
SVM-12D	6539846.272	1782941.099	22	22.5
SVM-12M	6539846.272	1782941.099	15	15.5
SVM-12S	6539846.272	1782941.099	7	7.5
SVM-13D	6540111.667	1782935.598	22	22.5
SVM-13M	6540111.667	1782935.598	15	15.5
SVM-13S	6540111.667	1782935.598	7	7.5
SVM-14D	6540263.685	1782908.941	22	22.5
SVM-14M	6540263.685	1782908.941	15	15.5
SVM-14RD	6540263.685	1782908.941	22	22.5
SVM-14RM	6540263.685	1782908.941	16	16.5
SVM-14RS	6540263.685	1782908.941	8	8.5
SVM-14S	6540263.685	1782908.941	7	7.5

Table 1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

Location	Easting	Northing	Top of Screen (ft. bgs.)	Bottom of Screen (ft. bgs.)
SVM-15D	6540050.251	1782841.391	22	22.5
SVM-15M	6540050.251	1782841.391	15	15.5
SVM-15S	6540050.251	1782841.391	7	7.5
SVM-16D	6540255.489	1782631.499	22	22.5
SVM-16M	6540255.489	1782631.499	16	16.5
SVM-16S	6540255.489	1782631.499	7	7.5
SVM-17D	6541150.721	1782934.107	14.5	15
SVM-17S	6541150.721	1782934.107	5	5.5
SVM-18D	6541173.614	1783140.197	14.5	15
SVM-18S	6541173.614	1783140.197	5	5.5
SVM-19D	6541044.618	1783056.483	14.5	15
SVM-19S	6541044.618	1783056.483	5	5.5
SVM-20D	6541168.995	1783039.791	14.5	15
SVM-20S	6541168.995	1783039.791	5	5.5
SVM-21D	6541178.744	1782873.691	14.5	15
SVM-21S	6541178.744	1782873.691	5	5.5
SVM-22D	6541265.209	1782872.123	14.5	15
SVM-22S	6541265.209	1782872.123	5	5.5
SVM-23D	6541353.950	1782871.308	14.5	15
SVM-23S	6541353.950	1782871.308	5	5.5
SVM-24D	6541189.441	1782750.500	10	10.5
SVM-24S	6541189.441	1782750.500	5	5.5
SVM-25D	6541358.591	1782748.693	10	10.5
SVM-25S	6541358.591	1782748.693	5	5.5
SVM-26S	6540745.140	1782736.030	10	10.5
SVM-26D	6540745.140	1782736.030	5	5.5
SVM-27S	6541011.400	1782737.530	10	10.5
SVM-27D	6541011.400	1782737.530	5	5.5
SVP-105D	6539634.209	1782925.319	10	10.5
SVP-105S	6539634.209	1782925.319	5	5.5
SVP-106D	6539730.236	1782930.562	10	10.5
SVP-106S	6539730.236	1782930.562	5	5.5
SVP-107D	6539946.272	1782906.510	10	10.5
SVP-107S	6539946.272	1782906.510	5	5.5
SVP-108D	6540562.436	1782924.664	10	10.5
SVP-108S	6540562.436	1782924.664	5	5.5
SVP-109D	6540729.130	1782904.636	10	10.5
SVP-109S	6540729.130	1782904.636	5	5.5

Notes:

D = Deep

ft bgs = feet below ground surface

M = Middle

S = Shallow

SV = Historical Soil Vapor Location (no longer accessible)

SVM = Soil Vapor Monitoring

SVP = Soil Vapor Probe

Text = Destroyed or Abandoned

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – August and September 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-1-5 09/01/22 SVM-1 5-5.5	SVM-1-15 09/01/22 SVM-1 15-15.5	SVM-1-15 DUP 09/01/22 SVM-1 15-15.5	SVM-2-5 09/01/22 SVM-2 5-5.5	SVM-3-5 08/31/22 SVM-3 5-5.5	SVM-3-15 08/31/22 SVM-3 15-15.5	SVM-5-5 08/31/22 SVM-5 5-5.5	SVM-5-15 08/31/22 SVM-5 15-15.5	SVM-6-7 09/01/22 SVM-6 7-7.5	SVM-6-13 09/01/22 SVM-6 13-13.5	SVM-7-7 09/01/22 SVM-7 7-7.5	SVM-7-13 09/01/22 SVM-7 13-13.5	SVM-8-5 08/31/22 SVM-8 5-5.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.18	0.47	< 0.0080 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 48 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.40 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 2400 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0060 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 36 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0060 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 36 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 4.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 24000 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.066**	**2400**	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.033**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	**0.024**
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0050 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	**0.032**	**0.022**	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 30 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Carbon Disulfide	µg/L	730	3,070	< 0.040 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 240 U	< 0.020 U	< 0.020 U	< 0.020 U
	Chloroform	µg/L	0.12	0.53	< 0.0080 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.034**	**0.072**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 48 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Ethanol	µg/L	--	--	< 0.040 U	**0.044**	< 0.020 U	**0.048**	**0.19 J**	**0.049 J**	**0.28 J**	**0.028**	**0.032**	< 240 U	**0.035**	**0.056 J**	**0.096 J**
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.020 U	**0.013**	**0.012**	**0.012**	< 0.010 U	< 0.010 U	< 0.010 U	**0.017**	< 0.010 U	< 120 U	**0.026**	< 0.010 U	< 0.010 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	**0.51**	< 0.50 U	< 0.50 U	< 0.50 U	**1.5**	**22000**	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**14**	**14**	**11**	**18**	**22**	**22**	**21**	**21**	**10**	**4.0**	**18**	**17**	**20**
	Carbon Dioxide	% v/v	--	--	< 0.20 U	**2.0**	**1.7**	**3.5**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**1.0**	**15**	**3.8**	**3.2**	< 0.20 U

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Vapor Intrusion Guidance). October.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006). *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

[1A] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

Bold Values indicates a detectable concentration

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
	Orange highlighting indicates concentration exceeds human health screening level under the commerical scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – August and September 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-8-15 08/31/22 SVM-8 15-15.5	SVM-9-5 08/30/22 SVM-9 5-5.5	SVM-9-14.5 08/30/22 SVM-9 14.5-15	SVM-10-15 09/01/22 SVM-10 15-15.5	SVM-11-7 08/30/22 SVM-11 7-7.5	SVM-11-15 08/30/22 SVM-11 15-15.5	SVM-11-22 08/30/22 SVM-11 22-22.5	SVM-11-22 DUP 08/30/22 SVM-11 22-22.5	SVM-12-7 08/29/22 SVM-12 7-7.5	SVM-12-15 08/29/22 SVM-12 15-15.5	SVM-12-22 08/29/22 SVM-12 22-22.5	SVM-13-7 08/29/22 SVM-13 7-7.5	SVM-13-15 08/29/22 SVM-13 15-15.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.18	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	**0.023**	**0.021**	**0.024**	< 0.020 U	< 0.020 U	< 0.020 U	**0.021**	**0.028**	< 0.020 U	< 0.020 U	< 0.020 U	**0.026**	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Carbon Disulfide	µg/L	730	3,070	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.0048**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Ethanol	µg/L	--	--	**0.30 J**	**0.058 J**	**0.045**	**0.072 J**	**0.036**	**0.033**	**0.029 J**	**0.062 J**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.024**	**0.031**	< 0.010 U	< 0.010 U	**0.020**	< 0.010 U	< 0.010 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**21**	**19**	**21**	**21**	**19**	**19**	**8.0**	**7.8**	**19**	**15**	**8.7**	**21**	**19**
	Carbon Dioxide	% v/v	--	--	< 0.20 U	**3.7**	< 0.20 U	< 0.20 U	**1.6**	**1.8**	**9.1**	**9.0**	**1.9**	**5.1**	**13**	**0.75**	**1.1**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

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[1B] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

Bold Values indicates a detectable concentration

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
	Orange highlighting indicates concentration exceeds human health screening level under the commerical scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – August and September 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-13-22 08/29/22 SVM-13 22-22.5	SVM-14R-7 08/29/22 SVM-14R 7-7.5	SVM-14R-16 08/29/22 SVM-14R 16-16.5	SVM-14R-22 08/29/22 SVM-14R 22-22.5	SVM-16-7 08/31/22 SVM-16 7-7.5	SVM-16-16 08/31/22 SVM-16 16-16.5	SVM-16-22 08/31/22 SVM-16 22-22.5	SVM-21-5 08/30/22 SVM-21 5-5.5	SVM-21-14.5 08/30/22 SVM-21 14.5-15	SVM-22-5 08/30/22 SVM-22 5-5.5	SVM-22-14.5 08/30/22 SVM-22 14.5-15	SVM-23-5 08/30/22 SVM-23 5-5.5	SVM-23-14.5 08/30/22 SVM-23 14.5-15
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.18	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.031**	**0.030**	**0.026**	**0.020**	**0.021**	< 0.020 U	**0.028**	< 0.020 U	**0.025**
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Carbon Disulfide	µg/L	730	3,070	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	**0.045**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.049**	< 0.0040 U	< 0.0040 U	**0.0075**
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	**0.035**	< 0.020 U	< 0.020 U	**0.29 J**	**0.18 J**	**0.023**	**0.029**	< 0.020 U	**0.022**	**0.034**	**0.082 J**
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	**0.014**	**0.019**	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	**0.62**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**16**	**18**	**17**	**8.7**	**22**	**21**	**21**	**21**	**21**	**20**	**21**	**22**	**21**
	Carbon Dioxide	% v/v	--	--	**2.2**	**2.8**	**3.9**	**9.8**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**0.59**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Vapor Intrusion Guidance). October.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006). *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

[1A] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

Bold Values indicates a detectable concentration

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
	Orange highlighting indicates concentration exceeds human health screening level under the commerical scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – August and September 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-24-5 08/31/22 SVM-24 5-5.5	SVM-24-10 08/31/22 SVM-24 10-10.5	SVM-25-5 08/31/22 SVM-25 5-5.5	SVM-25-10 08/31/22 SVM-25 10-10.5	SVM-26-5 08/31/22 SVM-26 5-5.5	SVM-26-10 08/31/22 SVM-26 10-10.5	SVM-27-5 08/31/22 SVM-27 5-5.5	SVM-27-10 08/31/22 SVM-27 10-10.5	SVP-105-5 08/29/22 SVP-105 5-5.5	SVP-105-10 08/29/22 SVP-105 10-10.5	SVP-105-10 DUP 08/29/22 SVP-105 10-10.5	SVP-106-5 08/29/22 SVP-106 5-5.5	SVP-106-10 08/29/22 SVP-106 10-10.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.18	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	**0.050**	**0.064 J**	**0.038**	**0.068 J**	**0.023**	**0.042**	**0.027**	**0.031**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.028**
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Carbon Disulfide	µg/L	730	3,070	**0.023**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	**0.0042**	**0.012**	**0.014**	< 0.0040 U	< 0.0040 U	**0.0085**	**0.062**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Ethanol	µg/L	--	--	**0.050 J**	**0.031**	**0.057 J**	**0.045**	**0.080 J**	**0.040**	**0.042**	**0.034**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.014**	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.018**	**0.019**	**0.014**	< 0.010 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**21**	**21**	**18**	**19**	**20**	**20**	**20**	**21**	**20**	**20**	**19**	**20**	**19**
	Carbon Dioxide	% v/v	--	--	**0.55**	**1.2**	**3.0**	**2.7**	**1.8**	**1.8**	**1.8**	**2.3**	**1.2**	**1.8**	**1.8**	**0.85**	**1.8**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Vapor Intrusion Guidance). October.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006). *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

[1A] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

Bold Values indicates a detectable concentration

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
	Orange highlighting indicates concentration exceeds human health screening level under the commerical scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – August and September 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVP-107-5 08/29/22 SVP-107 5-5.5	SVP-107-10 08/29/22 SVP-107 10-10.5	SVP-108-5 08/29/22 SVP-108 5-5.5	SVP-108-10 08/29/22 SVP-108 10-10.5	SVP-109-5 08/30/22 SVP-109 5-5.5	SVP-109-10 08/30/22 SVP-109 10-10.5	AMBIENT AIR 08/29/22	AMBIENT AIR 08/30/22	AMBIENT AIR 08/31/22	AMBIENT AIR 09/01/22
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.18	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.064 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 3.2 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.048 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.048 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 32 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	**0.026**	**0.032**	< 0.020 U	< 0.32 U	**0.032**	**0.091 J**	< 0.020 U	**0.022**	**0.030**	**0.023**
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.040 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Carbon Disulfide	µg/L	730	3,070	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.064 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**0.032**	**0.038**	**0.026**	**0.071 J**	**0.038**	**0.026**
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.16 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	**1.1**	**790**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**19**	**19**	**16**	**6.7 J**	**22**	**22**	**21**	**21**	**15**	**21**
	Carbon Dioxide	% v/v	--	--	**2.2**	**2.0**	**5.2**	**13 J**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Vapor Intrusion Guidance). October.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006). *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

[1A] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B] https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

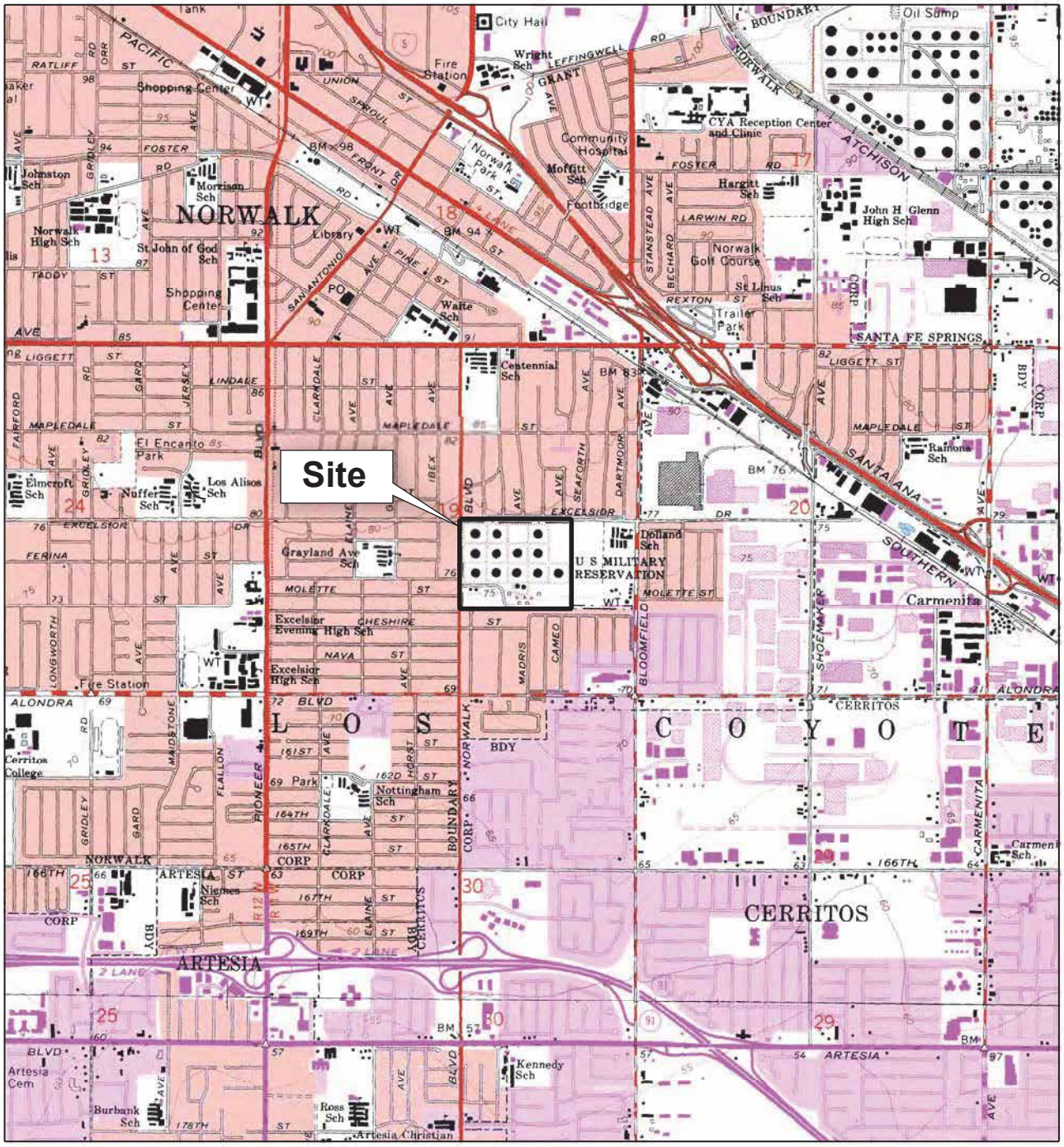
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

Bold Values indicates a detectable concentration

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
	Orange highlighting indicates concentration exceeds human health screening level under the commerical scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Figures



North

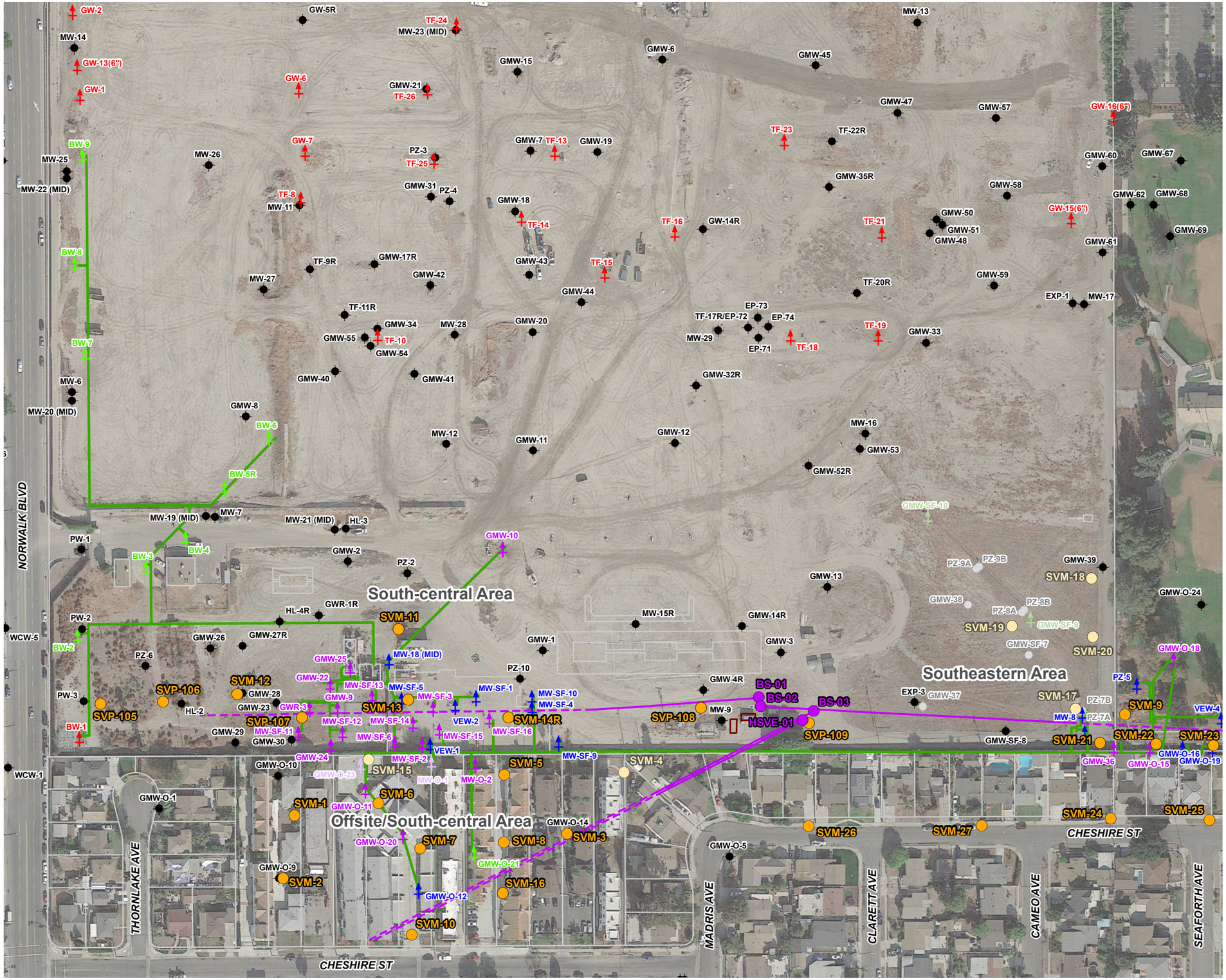
0 1200 2400

Approximate scale in feet

Figure 1. Site Location Map
SFPP Norwalk Pump Station
Norwalk, California

BASEMAP MODIFIED FROM U.S.G.S. 7.5 MINUTE QUADRANGLE MAP
LOS ALAMITOS 1964, CALIFORNIA. PHOTO-REVISED 1981.
WHITTIER 1965, CALIFORNIA. PHOTO-REVISED 1981.

Jacobs



\\DC1VS01\GISPROJ\KINDERMORGAN\NORWALK\MAPFILES\2022\FIGURE_2_REMEDIATION_SYSTEMS_LAYOUT.MXD AESPEJO 8/17/2022

LEGEND

- Soil Vapor Probe/Soil Vapor Monitoring Probe
- Destroyed Soil Vapor Probe/Soil Vapor Monitoring Probe
- Horizontal Biosparge Well Entry Point
- Existing Groundwater Monitoring Well
- Abandoned/Destroyed Groundwater Monitoring Well
- Existing Remediation Well
- Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
- Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells (Abandoned)
- Kinder Morgan Soil Vapor Extraction Wells
- Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
- Kinder Morgan Total Fluids and/or Groundwater Extraction Wells (Abandoned)
- Kinder Morgan Remediation Piping Layout (Above Ground and Below Ground)
- Horizontal Biosparge Well (Dashed Line Depicts Approximate Lateral Extent of Well Screen)
- Air Compressor System

Imagery Source:
Google Earth December 3, 2017.

N

0 75 150 300
Feet

1 inch = 150 feet

Figure 2. Current and Historical Remediation System Layout(s)
SFPP Norwalk Pump Station
Norwalk, California

Jacobs

Attachment A
Laboratory Analytical Reports

AMERICAN ANALYTICS

9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

October 04, 2022

Eric Davis

CH2M Hill, Inc.

P.O. Box 241329

Denver, CO 80224

Re : KMEP Norwalk Biosparge Startup / 693142

MB187345 / 2H29011

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 08/29/22 14:11 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Allen Aminian

QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases					
SVP-105-5	2H29011-01	Vapor	10	08/29/22 09:47	08/29/22 14:11
SVP-105-10	2H29011-02	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-105-10 DUP	2H29011-03	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-106-5	2H29011-04	Vapor	10	08/29/22 09:55	08/29/22 14:11
SVP-106-10	2H29011-05	Vapor	10	08/29/22 09:56	08/29/22 14:11
SVM-12-7	2H29011-06	Vapor	10	08/29/22 11:43	08/29/22 14:11
SVM-12-15	2H29011-07	Vapor	10	08/29/22 11:40	08/29/22 14:11
SVM-12-22	2H29011-08	Vapor	10	08/29/22 11:41	08/29/22 14:11
SVP-107-5	2H29011-09	Vapor	10	08/29/22 11:45	08/29/22 14:11
SVP-107-10	2H29011-10	Vapor	10	08/29/22 11:48	08/29/22 14:11
SVM-13-7	2H29011-11	Vapor	10	08/29/22 12:03	08/29/22 14:11
SVM-13-15	2H29011-12	Vapor	10	08/29/22 12:05	08/29/22 14:11
SVM-13-22	2H29011-13	Vapor	10	08/29/22 12:03	08/29/22 14:11
SVM-108-5	2H29011-14	Vapor	10	08/29/22 12:45	08/29/22 14:11
SVM-108-10	2H29011-15	Vapor	10	08/29/22 12:47	08/29/22 14:11
Ambiant Air	2H29011-16	Vapor	10	08/29/22 12:58	08/29/22 14:11
SVM-14R-7	2H29011-17	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-16	2H29011-18	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-22	2H29011-19	Vapor	10	08/29/22 13:15	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-11-7	2H29011-20	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-15	2H29011-21	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-22	2H29011-22	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVM-11-22 DUP	2H29011-23	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVP-109-5	2H29011-24	Vapor	10	08/30/22 10:00	08/29/22 14:11
SVP-109-10	2H29011-25	Vapor	10	08/30/22 10:03	08/29/22 14:11
AMBIENT AIR	2H29011-26	Vapor	10	08/30/22 10:32	08/29/22 14:11
SVM-21-5	2H29011-27	Vapor	10	08/30/22 10:38	08/29/22 14:11
SVM-21-14.5	2H29011-28	Vapor	10	08/30/22 10:57	08/29/22 14:11
SVM-22-5	2H29011-29	Vapor	10	08/30/22 11:28	08/29/22 14:11
SVM-22-14.5	2H29011-30	Vapor	10	08/30/22 11:26	08/29/22 14:11
SVM-23-5	2H29011-31	Vapor	10	08/30/22 11:53	08/29/22 14:11
SVM-23-14.5	2H29011-32	Vapor	10	08/30/22 11:50	08/29/22 14:11
SVM-9-5	2H29011-33	Vapor	10	08/30/22 12:25	08/29/22 14:11
SVM-9-14.5	2H29011-34	Vapor	10	08/30/22 12:24	08/29/22 14:11
SVM-26-5	2H29011-35	Vapor	10	08/31/22 09:29	08/29/22 14:11
SVM-26-10	2H29011-36	Vapor	10	08/31/22 09:48	08/29/22 14:11
SVM-27-5	2H29011-37	Vapor	10	08/31/22 09:42	08/29/22 14:11
SVM-27-10	2H29011-38	Vapor	10	08/31/22 09:45	08/29/22 14:11
SVM-24-5	2H29011-39	Vapor	10	08/31/22 09:48	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-24-10	2H29011-40	Vapor	10	08/31/22 09:54	08/29/22 14:11
SVM-25-5	2H29011-41	Vapor	10	08/31/22 10:21	08/29/22 14:11
SVM-25-10	2H29011-42	Vapor	10	08/31/22 10:22	08/29/22 14:11
SVM-16-7	2H29011-43	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-16	2H29011-44	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-22	2H29011-45	Vapor	10	08/31/22 11:03	08/29/22 14:11
SVM-8-5	2H29011-46	Vapor	10	08/31/22 11:08	08/29/22 14:11
SVM-8-15	2H29011-47	Vapor	10	08/31/22 11:06	08/29/22 14:11
SVM-5-5	2H29011-48	Vapor	10	08/31/22 11:14	08/29/22 14:11
SVM-5-15	2H29011-49	Vapor	10	08/31/22 11:12	08/29/22 14:11
AMBIENT AIR	2H29011-50	Vapor	10	08/31/22 11:50	08/29/22 14:11
SVM-3-5	2H29011-51	Vapor	10	08/31/22 11:56	08/29/22 14:11
SVM-3-15	2H29011-52	Vapor	10	08/31/22 11:57	08/29/22 14:11
SVM-2-5	2H29011-53	Vapor	10	09/01/22 08:34	08/29/22 14:11
SVM-1-5	2H29011-54	Vapor	10	09/01/22 08:44	08/29/22 14:11
SVM-1-15	2H29011-55	Vapor	10	09/01/22 08:46	08/29/22 14:11
SVM-1-15 DUP	2H29011-56	Vapor	10	09/01/22 08:46	08/29/22 14:11
SVM-10-15	2H29011-57	Vapor	10	09/01/22 09:10	08/29/22 14:11
SVM-7-7	2H29011-58	Vapor	10	09/01/22 09:35	08/29/22 14:11
SVM-7-13	2H29011-59	Vapor	10	09/01/22 09:35	08/29/22 14:11

Allen Aminian
QA/QC Manager

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Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-6-7	2H29011-60	Vapor	10	09/01/22 09:40	08/29/22 14:11
SVM-6-13	2H29011-61	Vapor	10	09/01/22 09:40	08/29/22 14:11
AMBIENT AIR	2H29011-62	Vapor	10	09/01/22 09:20	08/29/22 14:11
TO-15 (Mid Level)					
SVP-105-5	2H29011-01	Vapor	10	08/29/22 09:47	08/29/22 14:11
SVP-105-10	2H29011-02	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-105-10 DUP	2H29011-03	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-106-5	2H29011-04	Vapor	10	08/29/22 09:55	08/29/22 14:11
SVP-106-10	2H29011-05	Vapor	10	08/29/22 09:56	08/29/22 14:11
SVM-12-7	2H29011-06	Vapor	10	08/29/22 11:43	08/29/22 14:11
SVM-12-15	2H29011-07	Vapor	10	08/29/22 11:40	08/29/22 14:11
SVM-12-22	2H29011-08	Vapor	10	08/29/22 11:41	08/29/22 14:11
SVP-107-5	2H29011-09	Vapor	10	08/29/22 11:45	08/29/22 14:11
SVP-107-10	2H29011-10	Vapor	10	08/29/22 11:48	08/29/22 14:11
SVM-13-7	2H29011-11	Vapor	10	08/29/22 12:03	08/29/22 14:11
SVM-13-15	2H29011-12	Vapor	10	08/29/22 12:05	08/29/22 14:11
SVM-13-22	2H29011-13	Vapor	10	08/29/22 12:03	08/29/22 14:11
SVM-108-5	2H29011-14	Vapor	10	08/29/22 12:45	08/29/22 14:11
SVM-108-10	2H29011-15	Vapor	10	08/29/22 12:47	08/29/22 14:11
Ambiant Air	2H29011-16	Vapor	10	08/29/22 12:58	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

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Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-14R-7	2H29011-17	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-16	2H29011-18	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-22	2H29011-19	Vapor	10	08/29/22 13:15	08/29/22 14:11
SVM-11-7	2H29011-20	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-15	2H29011-21	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-22	2H29011-22	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVM-11-22 DUP	2H29011-23	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVP-109-5	2H29011-24	Vapor	10	08/30/22 10:00	08/29/22 14:11
SVP-109-10	2H29011-25	Vapor	10	08/30/22 10:03	08/29/22 14:11
AMBIENT AIR	2H29011-26	Vapor	10	08/30/22 10:32	08/29/22 14:11
SVM-21-5	2H29011-27	Vapor	10	08/30/22 10:38	08/29/22 14:11
SVM-21-14.5	2H29011-28	Vapor	10	08/30/22 10:57	08/29/22 14:11
SVM-22-5	2H29011-29	Vapor	10	08/30/22 11:28	08/29/22 14:11
SVM-22-14.5	2H29011-30	Vapor	10	08/30/22 11:26	08/29/22 14:11
SVM-23-5	2H29011-31	Vapor	10	08/30/22 11:53	08/29/22 14:11
SVM-23-14.5	2H29011-32	Vapor	10	08/30/22 11:50	08/29/22 14:11
SVM-9-5	2H29011-33	Vapor	10	08/30/22 12:25	08/29/22 14:11
SVM-9-14.5	2H29011-34	Vapor	10	08/30/22 12:24	08/29/22 14:11
SVM-26-5	2H29011-35	Vapor	10	08/31/22 09:29	08/29/22 14:11
SVM-26-10	2H29011-36	Vapor	10	08/31/22 09:48	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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Project No: 693142
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Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-27-5	2H29011-37	Vapor	10	08/31/22 09:42	08/29/22 14:11
SVM-27-10	2H29011-38	Vapor	10	08/31/22 09:45	08/29/22 14:11
SVM-24-5	2H29011-39	Vapor	10	08/31/22 09:48	08/29/22 14:11
SVM-24-10	2H29011-40	Vapor	10	08/31/22 09:54	08/29/22 14:11
SVM-25-5	2H29011-41	Vapor	10	08/31/22 10:21	08/29/22 14:11
SVM-25-10	2H29011-42	Vapor	10	08/31/22 10:22	08/29/22 14:11
SVM-16-7	2H29011-43	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-16	2H29011-44	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-22	2H29011-45	Vapor	10	08/31/22 11:03	08/29/22 14:11
SVM-8-5	2H29011-46	Vapor	10	08/31/22 11:08	08/29/22 14:11
SVM-8-15	2H29011-47	Vapor	10	08/31/22 11:06	08/29/22 14:11
SVM-5-5	2H29011-48	Vapor	10	08/31/22 11:14	08/29/22 14:11
SVM-5-15	2H29011-49	Vapor	10	08/31/22 11:12	08/29/22 14:11
AMBIENT AIR	2H29011-50	Vapor	10	08/31/22 11:50	08/29/22 14:11
SVM-3-5	2H29011-51	Vapor	10	08/31/22 11:56	08/29/22 14:11
SVM-3-15	2H29011-52	Vapor	10	08/31/22 11:57	08/29/22 14:11
SVM-2-5	2H29011-53	Vapor	10	09/01/22 08:34	08/29/22 14:11
SVM-1-5	2H29011-54	Vapor	10	09/01/22 08:44	08/29/22 14:11
SVM-1-15	2H29011-55	Vapor	10	09/01/22 08:46	08/29/22 14:11
SVM-1-15 DUP	2H29011-56	Vapor	10	09/01/22 08:46	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-10-15	2H29011-57	Vapor	10	09/01/22 09:10	08/29/22 14:11
SVM-7-7	2H29011-58	Vapor	10	09/01/22 09:35	08/29/22 14:11
SVM-7-13	2H29011-59	Vapor	10	09/01/22 09:35	08/29/22 14:11
SVM-6-7	2H29011-60	Vapor	10	09/01/22 09:40	08/29/22 14:11
SVM-6-13	2H29011-61	Vapor	10	09/01/22 09:40	08/29/22 14:11
AMBIENT AIR	2H29011-62	Vapor	10	09/01/22 09:20	08/29/22 14:11
TO-3					
SVP-105-5	2H29011-01	Vapor	10	08/29/22 09:47	08/29/22 14:11
SVP-105-10	2H29011-02	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-105-10 DUP	2H29011-03	Vapor	10	08/29/22 09:50	08/29/22 14:11
SVP-106-5	2H29011-04	Vapor	10	08/29/22 09:55	08/29/22 14:11
SVP-106-10	2H29011-05	Vapor	10	08/29/22 09:56	08/29/22 14:11
SVM-12-7	2H29011-06	Vapor	10	08/29/22 11:43	08/29/22 14:11
SVM-12-15	2H29011-07	Vapor	10	08/29/22 11:40	08/29/22 14:11
SVM-12-22	2H29011-08	Vapor	10	08/29/22 11:41	08/29/22 14:11
SVP-107-5	2H29011-09	Vapor	10	08/29/22 11:45	08/29/22 14:11
SVP-107-10	2H29011-10	Vapor	10	08/29/22 11:48	08/29/22 14:11
SVM-13-7	2H29011-11	Vapor	10	08/29/22 12:03	08/29/22 14:11
SVM-13-15	2H29011-12	Vapor	10	08/29/22 12:05	08/29/22 14:11
SVM-13-22	2H29011-13	Vapor	10	08/29/22 12:03	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-108-5	2H29011-14	Vapor	10	08/29/22 12:45	08/29/22 14:11
SVM-108-10	2H29011-15	Vapor	10	08/29/22 12:47	08/29/22 14:11
Ambiant Air	2H29011-16	Vapor	10	08/29/22 12:58	08/29/22 14:11
SVM-14R-7	2H29011-17	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-16	2H29011-18	Vapor	10	08/29/22 13:05	08/29/22 14:11
SVM-14R-22	2H29011-19	Vapor	10	08/29/22 13:15	08/29/22 14:11
SVM-11-7	2H29011-20	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-15	2H29011-21	Vapor	10	08/30/22 08:38	08/29/22 14:11
SVM-11-22	2H29011-22	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVM-11-22 DUP	2H29011-23	Vapor	10	08/30/22 09:18	08/29/22 14:11
SVP-109-5	2H29011-24	Vapor	10	08/30/22 10:00	08/29/22 14:11
SVP-109-10	2H29011-25	Vapor	10	08/30/22 10:03	08/29/22 14:11
AMBIENT AIR	2H29011-26	Vapor	10	08/30/22 10:32	08/29/22 14:11
SVM-21-5	2H29011-27	Vapor	10	08/30/22 10:38	08/29/22 14:11
SVM-21-14.5	2H29011-28	Vapor	10	08/30/22 10:57	08/29/22 14:11
SVM-22-5	2H29011-29	Vapor	10	08/30/22 11:28	08/29/22 14:11
SVM-22-14.5	2H29011-30	Vapor	10	08/30/22 11:26	08/29/22 14:11
SVM-23-5	2H29011-31	Vapor	10	08/30/22 11:53	08/29/22 14:11
SVM-23-14.5	2H29011-32	Vapor	10	08/30/22 11:50	08/29/22 14:11
SVM-9-5	2H29011-33	Vapor	10	08/30/22 12:25	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-9-14.5	2H29011-34	Vapor	10	08/30/22 12:24	08/29/22 14:11
SVM-26-5	2H29011-35	Vapor	10	08/31/22 09:29	08/29/22 14:11
SVM-26-10	2H29011-36	Vapor	10	08/31/22 09:48	08/29/22 14:11
SVM-27-5	2H29011-37	Vapor	10	08/31/22 09:42	08/29/22 14:11
SVM-27-10	2H29011-38	Vapor	10	08/31/22 09:45	08/29/22 14:11
SVM-24-5	2H29011-39	Vapor	10	08/31/22 09:48	08/29/22 14:11
SVM-24-10	2H29011-40	Vapor	10	08/31/22 09:54	08/29/22 14:11
SVM-25-5	2H29011-41	Vapor	10	08/31/22 10:21	08/29/22 14:11
SVM-25-10	2H29011-42	Vapor	10	08/31/22 10:22	08/29/22 14:11
SVM-16-7	2H29011-43	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-16	2H29011-44	Vapor	10	08/31/22 11:02	08/29/22 14:11
SVM-16-22	2H29011-45	Vapor	10	08/31/22 11:03	08/29/22 14:11
SVM-8-5	2H29011-46	Vapor	10	08/31/22 11:08	08/29/22 14:11
SVM-8-15	2H29011-47	Vapor	10	08/31/22 11:06	08/29/22 14:11
SVM-5-5	2H29011-48	Vapor	10	08/31/22 11:14	08/29/22 14:11
SVM-5-15	2H29011-49	Vapor	10	08/31/22 11:12	08/29/22 14:11
AMBIENT AIR	2H29011-50	Vapor	10	08/31/22 11:50	08/29/22 14:11
SVM-3-5	2H29011-51	Vapor	10	08/31/22 11:56	08/29/22 14:11
SVM-3-15	2H29011-52	Vapor	10	08/31/22 11:57	08/29/22 14:11
SVM-2-5	2H29011-53	Vapor	10	09/01/22 08:34	08/29/22 14:11

Allen Aminian
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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-1-5	2H29011-54	Vapor	10	09/01/22 08:44	08/29/22 14:11
SVM-1-15	2H29011-55	Vapor	10	09/01/22 08:46	08/29/22 14:11
SVM-1-15 DUP	2H29011-56	Vapor	10	09/01/22 08:46	08/29/22 14:11
SVM-10-15	2H29011-57	Vapor	10	09/01/22 09:10	08/29/22 14:11
SVM-7-7	2H29011-58	Vapor	10	09/01/22 09:35	08/29/22 14:11
SVM-7-13	2H29011-59	Vapor	10	09/01/22 09:35	08/29/22 14:11
SVM-6-7	2H29011-60	Vapor	10	09/01/22 09:40	08/29/22 14:11
SVM-6-13	2H29011-61	Vapor	10	09/01/22 09:40	08/29/22 14:11
AMBIENT AIR	2H29011-62	Vapor	10	09/01/22 09:20	08/29/22 14:11

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
		Fixed Gases by TCD						
Oxygen	SVP-105-5	**20**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-105-5	**1.2**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-105-10	**20**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-105-10	**1.8**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-105-10 DUP	**19**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-105-10 DUP	**1.8**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-106-5	**20**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-106-5	**0.85**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-106-10	**19**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-106-10	**1.8**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-12-7	**19**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVM-12-7	**1.9**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVM-12-15	**15**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVM-12-15	**5.1**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVM-12-22	**8.7**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVM-12-22	**13**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-107-5	**19**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-107-5	**2.2**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVP-107-10	**19**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Carbon Dioxide	SVP-107-10	**2.0**	0.20	% by Volume	2	09/02/22	09/02/22	ASTM D1946M
Oxygen	SVM-13-7	**21**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-13-7	**0.75**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-13-15	**19**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-13-15	**1.1**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-13-22	**16**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-13-22	**2.2**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-108-5	**16**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-108-5	**5.2**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-108-10	**6.7**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-108-10	**13**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	Ambiant Air	**21**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-14R-7	**18**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M

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QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-14R-7	**2.8**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-14R-16	**17**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-14R-16	**3.9**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-14R-22	**8.7**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-14R-22	**9.8**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-11-7	**19**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-11-7	**1.6**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-11-15	**19**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-11-15	**1.8**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVM-11-22	**8.0**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-11-22	**9.1**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-11-22 DUP	**7.8**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Carbon Dioxide	SVM-11-22 DUP	**9.0**	0.20	% by Volume	2	09/06/22	09/06/22	ASTM D1946M
Oxygen	SVP-109-5	**22**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVP-109-10	**22**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	AMBIENT AIR	**21**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-21-5	**21**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-21-14.5	**21**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Carbon Dioxide	SVM-21-14.5	**0.59**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-22-5	**20**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-22-14.5	**21**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-23-5	**22**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-23-14.5	**21**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-9-5	**19**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Carbon Dioxide	SVM-9-5	**3.7**	0.20	% by Volume	2	09/07/22	09/07/22	ASTM D1946M
Oxygen	SVM-9-14.5	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-26-5	**20**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-26-5	**1.8**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-26-10	**20**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-26-10	**1.8**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-27-5	**20**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-27-5	**1.8**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-27-10	**21**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-27-10	**2.3**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-24-5	**21**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-24-5	**0.55**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-24-10	**21**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-24-10	**1.2**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-25-5	**18**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-25-5	**3.0**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-25-10	**19**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Carbon Dioxide	SVM-25-10	**2.7**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-16-7	**22**	0.20	% by Volume	2	09/14/22	09/14/22	ASTM D1946M
Oxygen	SVM-16-16	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-16-22	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-8-5	**20**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-8-15	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-5-5	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-5-15	**21**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	AMBIENT AIR	**15**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-3-5	**22**	0.20	% by Volume	2	09/21/22	10/03/22	ASTM D1946M
Oxygen	SVM-3-15	**22**	0.20	% by Volume	2	09/26/22	09/26/22	ASTM D1946M
Oxygen	SVM-2-5	**18**	0.20	% by Volume	2	09/26/22	09/26/22	ASTM D1946M
Carbon Dioxide	SVM-2-5	**3.5**	0.20	% by Volume	2	09/26/22	09/26/22	ASTM D1946M
Oxygen	SVM-1-5	**14**	0.20	% by Volume	2	09/26/22	09/26/22	ASTM D1946M

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QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-1-15	**14**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-1-15	**2.0**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	SVM-1-15 DUP	**11**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-1-15 DUP	**1.7**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	SVM-10-15	**21**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	SVM-7-7	**18**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-7-7	**3.8**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	SVM-7-13	**17**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-7-13	**3.2**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	SVM-6-7	**10**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-6-7	**1.0**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M

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QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-6-13	**4.0**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Carbon Dioxide	SVM-6-13	**15**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
Oxygen	AMBIENT AIR	**21**	0.20	% by Volume	2	09/27/22	09/27/22	ASTM D1946M
VOCs by EPA TO-3								
Gasoline Range Organics (GRO)	SVM-108-5	**1.1**	0.50	ug/L	1	09/09/22	09/10/22	TO-3
Gasoline Range Organics (GRO)	SVM-108-10	**790**	750	ug/L	1500	09/12/22	09/12/22	TO-3
Gasoline Range Organics (GRO)	SVM-21-14.5	**0.62**	0.50	ug/L	1	09/09/22	09/09/22	TO-3
Gasoline Range Organics (GRO)	SVM-3-5	**0.51**	0.50	ug/L	1	09/09/22	09/09/22	TO-3
Gasoline Range Organics (GRO)	SVM-6-7	**1.5**	0.50	ug/L	1	09/12/22	09/12/22	TO-3
Gasoline Range Organics (GRO)	SVM-6-13	**22000**	60	ug/L	120	09/16/22	09/16/22	TO-3
VOCs by GCMS EPA TO-15 (Mid Level)								
Tetrachloroethylene (PCE)	SVP-105-10	**0.018**	0.010	ug/L	1	09/07/22	09/07/22	TO-15
Tetrachloroethylene (PCE)	SVP-105-10 DUP	**0.019**	0.010	ug/L	1	09/07/22	09/07/22	TO-15
Tetrachloroethylene (PCE)	SVP-106-5	**0.014**	0.010	ug/L	1	09/07/22	09/07/22	TO-15
Acetone	SVP-106-10	**0.028**	0.020	ug/L	1	09/07/22	09/07/22	TO-15
Tetrachloroethylene (PCE)	SVM-12-22	**0.020**	0.010	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVP-107-5	**0.026**	0.020	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVP-107-10	**0.032**	0.020	ug/L	1	09/09/22	09/09/22	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result		MRL	Units	Dilution	Prepared	Analyzed	Method
Acetone	SVM-13-7	**0.026**		0.020	ug/L	1	09/09/22	09/10/22	TO-15
Ethanol	Ambiant Air	**0.026**		0.020	ug/L	1	09/27/22	09/27/22	TO-15
Tetrachloroethylene (PCE)	SVM-14R-7	**0.014**		0.010	ug/L	1	09/08/22	09/08/22	TO-15
Chloroform	SVM-14R-16	**0.045**		0.0040	ug/L	1	09/08/22	09/08/22	TO-15
Ethanol	SVM-14R-16	**0.035**		0.020	ug/L	1	09/08/22	09/08/22	TO-15
Tetrachloroethylene (PCE)	SVM-14R-16	**0.019**		0.010	ug/L	1	09/08/22	09/08/22	TO-15
Ethanol	SVM-11-7	**0.036**		0.020	ug/L	1	09/08/22	09/08/22	TO-15
Ethanol	SVM-11-15	**0.033**		0.020	ug/L	1	09/08/22	09/08/22	TO-15
Acetone	SVM-11-22	**0.021**		0.020	ug/L	1	09/08/22	09/08/22	TO-15
Ethanol	SVM-11-22	**0.029**		0.020	ug/L	1	09/08/22	09/08/22	TO-15
Tetrachloroethylene (PCE)	SVM-11-22	**0.024**		0.010	ug/L	1	09/08/22	09/08/22	TO-15
Acetone	SVM-11-22 DUP	**0.028**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	SVM-11-22 DUP	**0.062**	**E**	0.020	ug/L	1	09/08/22	09/09/22	TO-15
Tetrachloroethylene (PCE)	SVM-11-22 DUP	**0.031**		0.010	ug/L	1	09/08/22	09/09/22	TO-15
Acetone	SVP-109-5	**0.032**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	SVP-109-5	**0.032**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Acetone	SVP-109-10	**0.091**	**E**	0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	SVP-109-10	**0.038**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Acetone	AMBIENT AIR	**0.022**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	AMBIENT AIR	**0.071**	**E**	0.020	ug/L	1	09/08/22	09/09/22	TO-15
Acetone	SVM-21-5	**0.020**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-21-5	**0.023**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVM-21-14.5	**0.021**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-21-14.5	**0.029**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Chloroform	SVM-22-5	**0.049**		0.0040	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVM-22-14.5	**0.028**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-22-14.5	**0.022**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-23-5	**0.034**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVM-23-14.5	**0.025**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Chloroform	SVM-23-14.5	**0.0075**		0.0040	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-23-14.5	**0.082**	**E**	0.020	ug/L	1	09/09/22	09/09/22	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result		MRL	Units	Dilution	Prepared	Analyzed	Method
Acetone	SVM-9-5	**0.021**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-9-5	**0.058**	**E**	0.020	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVM-9-14.5	**0.024**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-9-14.5	**0.045**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Acetone	SVM-26-5	**0.023**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-26-5	**0.080**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Tetrachloroethylene (PCE)	SVM-26-5	**0.014**		0.010	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-26-10	**0.042**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-26-10	**0.040**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-27-5	**0.027**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Chloroform	SVM-27-5	**0.0085**		0.0040	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-27-5	**0.042**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-27-10	**0.031**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Chloroform	SVM-27-10	**0.062**		0.0040	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-27-10	**0.034**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-24-5	**0.050**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Carbon Disulfide	SVM-24-5	**0.023**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-24-5	**0.050**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-24-10	**0.064**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Chloroform	SVM-24-10	**0.0042**		0.0040	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-24-10	**0.031**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-25-5	**0.038**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Chloroform	SVM-25-5	**0.012**		0.0040	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-25-5	**0.057**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-25-10	**0.068**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Chloroform	SVM-25-10	**0.014**		0.0040	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-25-10	**0.045**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-16-7	**0.031**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-16-16	**0.030**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-16-16	**0.29**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-16-22	**0.026**		0.020	ug/L	1	09/12/22	09/12/22	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result		MRL	Units	Dilution	Prepared	Analyzed	Method
Ethanol	SVM-16-22	**0.18**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-8-5	**0.024**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-8-5	**0.096**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Acetone	SVM-8-15	**0.023**		0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	SVM-8-15	**0.30**	**E**	0.020	ug/L	1	09/08/22	09/09/22	TO-15
Ethanol	SVM-5-5	**0.28**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-5-15	**0.028**		0.020	ug/L	1	09/12/22	09/13/22	TO-15
Tetrachloroethylene (PCE)	SVM-5-15	**0.017**		0.010	ug/L	1	09/12/22	09/13/22	TO-15
Acetone	AMBIENT AIR	**0.030**		0.020	ug/L	1	09/12/22	09/13/22	TO-15
Ethanol	AMBIENT AIR	**0.038**		0.020	ug/L	1	09/12/22	09/13/22	TO-15
Acetone	SVM-3-5	**0.033**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Bromodichloromethane	SVM-3-5	**0.032**		0.0025	ug/L	1	09/09/22	09/09/22	TO-15
Chloroform	SVM-3-5	**0.034**		0.0040	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-3-5	**0.19**	**E**	0.020	ug/L	1	09/09/22	09/09/22	TO-15
Bromodichloromethane	SVM-3-15	**0.022**		0.0025	ug/L	1	09/09/22	09/09/22	TO-15
Chloroform	SVM-3-15	**0.072**		0.0040	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-3-15	**0.049**	**E**	0.020	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-2-5	**0.048**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Tetrachloroethylene (PCE)	SVM-2-5	**0.012**		0.010	ug/L	1	09/09/22	09/09/22	TO-15
Ethanol	SVM-1-15	**0.044**		0.020	ug/L	1	09/09/22	09/09/22	TO-15
Tetrachloroethylene (PCE)	SVM-1-15	**0.013**		0.010	ug/L	1	09/09/22	09/09/22	TO-15
Tetrachloroethylene (PCE)	SVM-1-15 DUP	**0.012**		0.010	ug/L	1	09/09/22	09/09/22	TO-15
Chloroform	SVM-10-15	**0.0048**		0.0040	ug/L	1	09/09/22	09/10/22	TO-15
Ethanol	SVM-10-15	**0.072**	**E**	0.020	ug/L	1	09/09/22	09/10/22	TO-15
Ethanol	SVM-7-7	**0.035**		0.020	ug/L	1	09/09/22	09/10/22	TO-15
Tetrachloroethylene (PCE)	SVM-7-7	**0.026**		0.010	ug/L	1	09/09/22	09/10/22	TO-15
Ethanol	SVM-7-13	**0.056**	**E**	0.020	ug/L	1	09/12/22	09/12/22	TO-15
Ethanol	SVM-6-7	**0.032**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
2,2,4-Trimethylpentane	SVM-6-7	**0.066**		0.020	ug/L	1	09/12/22	09/12/22	TO-15
2,2,4-Trimethylpentane	SVM-6-13	**2400**		600	ug/L	30000	09/16/22	09/16/22	TO-15
Acetone	AMBIENT AIR	**0.023**		0.020	ug/L	1	09/19/22	09/19/22	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Ethanol	AMBIENT AIR	**0.026**	0.020	ug/L	1	09/19/22	09/19/22	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-01	2H29011-02	2H29011-03	2H29011-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10 DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	112%	104%	110%	112%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187345
Project No:	693142	**Date Received:**	08/29/22
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	10/04/22
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/09/22	09/09/22	
Date Analyzed:	09/07/22	09/07/22	09/09/22	09/09/22	
AA ID No:	2H29011-05	2H29011-06	2H29011-07	2H29011-08	
Client ID No:	SVP-106-10	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	110%	108%	96%	97%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/10/22	09/10/22	
AA ID No:	2H29011-09	2H29011-10	2H29011-11	2H29011-12	
Client ID No:	SVP-107-5	SVP-107-10	SVM-13-7	SVM-13-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	98%	100%	94%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/27/22	
Date Analyzed:	09/10/22	09/10/22	09/12/22	09/27/22	
AA ID No:	2H29011-13	2H29011-14	2H29011-15	2H29011-16	
Client ID No:	SVM-13-22	SVM-108-5	SVM-108-10	Ambiant Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1500	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	**1.1**	**790**	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	96%	98%	115%	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/2022	08/29/2022	08/29/2022	08/30/2022	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/08/22	09/08/22	
AA ID No:	2H29011-17	2H29011-18	2H29011-19	2H29011-20	
Client ID No:	SVM-14R-7	SVM-14R-16	SVM-14R-22	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	109%	109%	111%	110%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/09/22	09/09/22	
Date Analyzed:	09/08/22	09/08/22	09/09/22	09/09/22	
AA ID No:	2H29011-21	2H29011-22	2H29011-23	2H29011-24	
Client ID No:	SVM-11-15	SVM-11-22	SVM-11-22 DUP	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	108%	111%	114%	117%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-25	2H29011-26	2H29011-27	2H29011-28	
Client ID No:	SVP-109-10	AMBIENT AIR	SVM-21-5	SVM-21-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	**0.62**	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	112%	106%	108%	110%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-29	2H29011-30	2H29011-31	2H29011-32	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	107%	111%	108%	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/31/22	08/31/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/09/22	09/09/22	09/12/22	09/12/22	
AA ID No:	2H29011-33	2H29011-34	2H29011-35	2H29011-36	
Client ID No:	SVM-9-5	SVM-9-14.5	SVM-26-5	SVM-26-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	111%	109%	112%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-37	2H29011-38	2H29011-39	2H29011-40	
Client ID No:	SVM-27-5	SVM-27-10	SVM-24-5	SVM-24-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	102%	104%	102%	111%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-41	2H29011-42	2H29011-43	2H29011-44	
Client ID No:	SVM-25-5	SVM-25-10	SVM-16-7	SVM-16-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	103%	105%	110%	112%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/09/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/09/22	09/12/22	
AA ID No:	2H29011-45	2H29011-46	2H29011-47	2H29011-48	
Client ID No:	SVM-16-22	SVM-8-5	SVM-8-15	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	115%	112%	108%	112%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/13/22	09/13/22	09/09/22	09/09/22	
AA ID No:	2H29011-49	2H29011-50	2H29011-51	2H29011-52	
Client ID No:	SVM-5-15	AMBIENT AIR	SVM-3-5	SVM-3-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	**0.51**	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	113%	111%	109%	109%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/12/22	09/09/22	09/09/22	
AA ID No:	2H29011-53	2H29011-54	2H29011-55	2H29011-56	
Client ID No:	SVM-2-5	SVM-1-5	SVM-1-15	SVM-1-15 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	107%	113%	110%	105%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/10/22	09/10/22	09/12/22	09/12/22	
AA ID No:	2H29011-57	2H29011-58	2H29011-59	2H29011-60	
Client ID No:	SVM-10-15	SVM-7-7	SVM-7-13	SVM-6-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	**1.5**	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	109%	107%	107%	105%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	
Date Prepared:	09/16/22	09/19/22	
Date Analyzed:	09/16/22	09/19/22	
AA ID No:	2H29011-61	2H29011-62	
Client ID No:	SVM-6-13	AMBIENT AIR	
Matrix:	Vapor	Vapor	
Dilution Factor:	120	1	MRL
TO-3 (TO-3)			
Gasoline Range Organics (GRO)	**22000**	<0.50	0.50
Surrogates			**%REC Limits**
4-Bromofluorobenzene	113%	111%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-01	2H29011-02	2H29011-03	2H29011-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10 DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-01	2H29011-02	2H29011-03	2H29011-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10 DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	**0.018**	**0.019**	**0.014**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-01	2H29011-02	2H29011-03	2H29011-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10 DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	98%	92%	96%	98%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/09/22	09/09/22	
Date Analyzed:	09/07/22	09/07/22	09/09/22	09/09/22	
AA ID No:	2H29011-05	2H29011-06	2H29011-07	2H29011-08	
Client ID No:	SVP-106-10	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.028**	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/09/22	09/09/22	
Date Analyzed:	09/07/22	09/07/22	09/09/22	09/09/22	
AA ID No:	2H29011-05	2H29011-06	2H29011-07	2H29011-08	
Client ID No:	SVP-106-10	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	**0.020**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/07/22	09/07/22	09/09/22	09/09/22	
Date Analyzed:	09/07/22	09/07/22	09/09/22	09/09/22	
AA ID No:	2H29011-05	2H29011-06	2H29011-07	2H29011-08	
Client ID No:	SVP-106-10	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	98%	96%	89%	86%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/10/22	09/10/22	
AA ID No:	2H29011-09	2H29011-10	2H29011-11	2H29011-12	
Client ID No:	SVP-107-5	SVP-107-10	SVM-13-7	SVM-13-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.026**	**0.032**	**0.026**	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/10/22	09/10/22	
AA ID No:	2H29011-09	2H29011-10	2H29011-11	2H29011-12	
Client ID No:	SVP-107-5	SVP-107-10	SVM-13-7	SVM-13-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/10/22	09/10/22	
AA ID No:	2H29011-09	2H29011-10	2H29011-11	2H29011-12	
Client ID No:	SVP-107-5	SVP-107-10	SVM-13-7	SVM-13-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	92%	94%	91%	87%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/16/22	09/27/22	
Date Analyzed:	09/10/22	09/10/22	09/16/22	09/27/22	
AA ID No:	2H29011-13	2H29011-14	2H29011-15	2H29011-16	
Client ID No:	SVM-13-22	SVM-108-5	SVM-108-10	Ambiant Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	16	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.32	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.32	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.32	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.048	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.32	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.040	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.32	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.32	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.32	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.32	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<32	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.32	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.32	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.32	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.32	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.064	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.32	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.32	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.32	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.32	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.32	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.32	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.32	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.32	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.32	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.064	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.32	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/16/22	09/27/22	
Date Analyzed:	09/10/22	09/10/22	09/16/22	09/27/22	
AA ID No:	2H29011-13	2H29011-14	2H29011-15	2H29011-16	
Client ID No:	SVM-13-22	SVM-108-5	SVM-108-10	Ambiant Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	16	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.32	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.32	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.32	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.32	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.32	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.32	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.32	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.32	<0.020	0.020
Ethanol	<0.020	<0.020	<0.32	**0.026**	0.020
Ethyl Acetate	<0.020	<0.020	<0.32	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.32	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.32	<0.020	0.020
Heptane	<0.020	<0.020	<0.32	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.32	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.32	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.32	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<3.2	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.32	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.32	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.32	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.048	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.32	<0.020	0.020
Styrene	<0.020	<0.020	<0.32	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.32	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.16	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.32	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/09/22	09/09/22	09/16/22	09/27/22	
Date Analyzed:	09/10/22	09/10/22	09/16/22	09/27/22	
AA ID No:	2H29011-13	2H29011-14	2H29011-15	2H29011-16	
Client ID No:	SVM-13-22	SVM-108-5	SVM-108-10	Ambiant Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	16	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.32	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.32	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.32	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.32	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.32	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.32	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.32	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.32	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.32	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.32	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.32	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.32	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.32	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.32	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.32	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.32	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	88%	89%	100%	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/2022	08/29/2022	08/29/2022	08/30/2022	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/08/22	09/08/22	
AA ID No:	2H29011-17	2H29011-18	2H29011-19	2H29011-20	
Client ID No:	SVM-14R-7	SVM-14R-16	SVM-14R-22	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	**0.045**	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/2022	08/29/2022	08/29/2022	08/30/2022	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/08/22	09/08/22	
AA ID No:	2H29011-17	2H29011-18	2H29011-19	2H29011-20	
Client ID No:	SVM-14R-7	SVM-14R-16	SVM-14R-22	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	**0.035**	<0.020	**0.036**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.014**	**0.019**	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/29/2022	08/29/2022	08/29/2022	08/30/2022	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/08/22	09/08/22	
AA ID No:	2H29011-17	2H29011-18	2H29011-19	2H29011-20	
Client ID No:	SVM-14R-7	SVM-14R-16	SVM-14R-22	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	96%	96%	97%	97%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/09/22	09/09/22	
AA ID No:	2H29011-21	2H29011-22	2H29011-23	2H29011-24	
Client ID No:	SVM-11-15	SVM-11-22	SVM-11-22 DUP	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	**0.021**	**0.028**	**0.032**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/09/22	09/09/22	
AA ID No:	2H29011-21	2H29011-22	2H29011-23	2H29011-24	
Client ID No:	SVM-11-15	SVM-11-22	SVM-11-22 DUP	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.033**	**0.029**	**0.062 [1]**	**0.032**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	**0.024**	**0.031**	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/08/22	09/08/22	
Date Analyzed:	09/08/22	09/08/22	09/09/22	09/09/22	
AA ID No:	2H29011-21	2H29011-22	2H29011-23	2H29011-24	
Client ID No:	SVM-11-15	SVM-11-22	SVM-11-22 DUP	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	95%	98%	99%	102%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-25	2H29011-26	2H29011-27	2H29011-28	
Client ID No:	SVP-109-10	AMBIENT AIR	SVM-21-5	SVM-21-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.091 [1]**	**0.022**	**0.020**	**0.021**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-25	2H29011-26	2H29011-27	2H29011-28	
Client ID No:	SVP-109-10	AMBIENT AIR	SVM-21-5	SVM-21-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.038**	**0.071 [1]**	**0.023**	**0.029**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/08/22	09/08/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-25	2H29011-26	2H29011-27	2H29011-28	
Client ID No:	SVP-109-10	AMBIENT AIR	SVM-21-5	SVM-21-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	94%	96%	97%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-29	2H29011-30	2H29011-31	2H29011-32	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	**0.028**	<0.020	**0.025**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.049**	<0.0040	<0.0040	**0.0075**	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-29	2H29011-30	2H29011-31	2H29011-32	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	**0.022**	**0.034**	**0.082 [1]**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/09/22	09/09/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/09/22	09/09/22	09/09/22	
AA ID No:	2H29011-29	2H29011-30	2H29011-31	2H29011-32	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	94%	98%	95%	93%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/31/22	08/31/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/09/22	09/09/22	09/12/22	09/12/22	
AA ID No:	2H29011-33	2H29011-34	2H29011-35	2H29011-36	
Client ID No:	SVM-9-5	SVM-9-14.5	SVM-26-5	SVM-26-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.021**	**0.024**	**0.023**	**0.042**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/31/22	08/31/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/09/22	09/09/22	09/12/22	09/12/22	
AA ID No:	2H29011-33	2H29011-34	2H29011-35	2H29011-36	
Client ID No:	SVM-9-5	SVM-9-14.5	SVM-26-5	SVM-26-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.058 [1]**	**0.045**	**0.080 [1]**	**0.040**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	**0.014**	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/30/22	08/30/22	08/31/22	08/31/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/09/22	09/09/22	09/12/22	09/12/22	
AA ID No:	2H29011-33	2H29011-34	2H29011-35	2H29011-36	
Client ID No:	SVM-9-5	SVM-9-14.5	SVM-26-5	SVM-26-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	98%	96%	99%	90%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-37	2H29011-38	2H29011-39	2H29011-40	
Client ID No:	SVM-27-5	SVM-27-10	SVM-24-5	SVM-24-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.027**	**0.031**	**0.050**	**0.064 [1]**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	**0.023**	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.0085**	**0.062**	<0.0040	**0.0042**	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-37	2H29011-38	2H29011-39	2H29011-40	
Client ID No:	SVM-27-5	SVM-27-10	SVM-24-5	SVM-24-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.042**	**0.034**	**0.050 [1]**	**0.031**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-37	2H29011-38	2H29011-39	2H29011-40	
Client ID No:	SVM-27-5	SVM-27-10	SVM-24-5	SVM-24-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	89%	91%	89%	97%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-41	2H29011-42	2H29011-43	2H29011-44	
Client ID No:	SVM-25-5	SVM-25-10	SVM-16-7	SVM-16-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.038**	**0.068 [1]**	**0.031**	**0.030**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.012**	**0.014**	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-41	2H29011-42	2H29011-43	2H29011-44	
Client ID No:	SVM-25-5	SVM-25-10	SVM-16-7	SVM-16-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.057 [1]**	**0.045**	<0.020	**0.29 [1]**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/12/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/12/22	09/12/22	
AA ID No:	2H29011-41	2H29011-42	2H29011-43	2H29011-44	
Client ID No:	SVM-25-5	SVM-25-10	SVM-16-7	SVM-16-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	91%	93%	96%	99%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/08/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/09/22	09/12/22	
AA ID No:	2H29011-45	2H29011-46	2H29011-47	2H29011-48	
Client ID No:	SVM-16-22	SVM-8-5	SVM-8-15	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.026**	**0.024**	**0.023**	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/08/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/09/22	09/12/22	
AA ID No:	2H29011-45	2H29011-46	2H29011-47	2H29011-48	
Client ID No:	SVM-16-22	SVM-8-5	SVM-8-15	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.18 [1]**	**0.096 [1]**	**0.30 [1]**	**0.28 [1]**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/08/22	09/12/22	
Date Analyzed:	09/12/22	09/12/22	09/09/22	09/12/22	
AA ID No:	2H29011-45	2H29011-46	2H29011-47	2H29011-48	
Client ID No:	SVM-16-22	SVM-8-5	SVM-8-15	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	101%	99%	96%	99%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/13/22	09/13/22	09/09/22	09/09/22	
AA ID No:	2H29011-49	2H29011-50	2H29011-51	2H29011-52	
Client ID No:	SVM-5-15	AMBIENT AIR	SVM-3-5	SVM-3-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	**0.030**	**0.033**	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	**0.032**	**0.022**	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	**0.034**	**0.072**	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/13/22	09/13/22	09/09/22	09/09/22	
AA ID No:	2H29011-49	2H29011-50	2H29011-51	2H29011-52	
Client ID No:	SVM-5-15	AMBIENT AIR	SVM-3-5	SVM-3-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.028**	**0.038**	**0.19 [1]**	**0.049 [1]**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.017**	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/12/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/13/22	09/13/22	09/09/22	09/09/22	
AA ID No:	2H29011-49	2H29011-50	2H29011-51	2H29011-52	
Client ID No:	SVM-5-15	AMBIENT AIR	SVM-3-5	SVM-3-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	98%	96%	96%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/12/22	09/09/22	09/09/22	
AA ID No:	2H29011-53	2H29011-54	2H29011-55	2H29011-56	
Client ID No:	SVM-2-5	SVM-1-5	SVM-1-15	SVM-1-15 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.040	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.040	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.040	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0060	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.040	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0050	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.040	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.040	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.040	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.040	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<4.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.040	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.040	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.040	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.040	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0080	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.040	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.040	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.040	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.040	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.040	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.040	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.040	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.040	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.040	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0080	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.040	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/12/22	09/09/22	09/09/22	
AA ID No:	2H29011-53	2H29011-54	2H29011-55	2H29011-56	
Client ID No:	SVM-2-5	SVM-1-5	SVM-1-15	SVM-1-15 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.040	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.040	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.040	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.040	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.040	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.040	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.040	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.040	<0.020	<0.020	0.020
Ethanol	**0.048**	<0.040	**0.044**	<0.020	0.020
Ethyl Acetate	<0.020	<0.040	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.040	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.040	<0.020	<0.020	0.020
Heptane	<0.020	<0.040	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.040	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.040	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.040	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.40	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.040	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.040	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.040	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0060	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.040	<0.020	<0.020	0.020
Styrene	<0.020	<0.040	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.040	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.012**	<0.020	**0.013**	**0.012**	0.010
Tetrahydrofuran (THF)	<0.020	<0.040	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/12/22	09/09/22	09/09/22	
Date Analyzed:	09/09/22	09/12/22	09/09/22	09/09/22	
AA ID No:	2H29011-53	2H29011-54	2H29011-55	2H29011-56	
Client ID No:	SVM-2-5	SVM-1-5	SVM-1-15	SVM-1-15 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.040	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.040	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.040	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.040	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.040	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.040	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.040	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.040	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.040	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.040	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.040	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.040	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.040	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.040	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.040	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.040	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	94%	102%	97%	93%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/10/22	09/10/22	09/12/22	09/12/22	
AA ID No:	2H29011-57	2H29011-58	2H29011-59	2H29011-60	
Client ID No:	SVM-10-15	SVM-7-7	SVM-7-13	SVM-6-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.0048**	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/10/22	09/10/22	09/12/22	09/12/22	
AA ID No:	2H29011-57	2H29011-58	2H29011-59	2H29011-60	
Client ID No:	SVM-10-15	SVM-7-7	SVM-7-13	SVM-6-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.072 [1]**	**0.035**	**0.056 [1]**	**0.032**	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	**0.026**	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/09/22	09/09/22	09/12/22	09/12/22	
Date Analyzed:	09/10/22	09/10/22	09/12/22	09/12/22	
AA ID No:	2H29011-57	2H29011-58	2H29011-59	2H29011-60	
Client ID No:	SVM-10-15	SVM-7-7	SVM-7-13	SVM-6-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	**0.066**	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	96%	94%	97%	95%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	
Date Prepared:	09/16/22	09/19/22	
Date Analyzed:	09/16/22	09/19/22	
AA ID No:	2H29011-61	2H29011-62	
Client ID No:	SVM-6-13	AMBIENT AIR	
Matrix:	Vapor	Vapor	
Dilution Factor:	12000	1	MRL
TO-15 (Mid Level) (TO-15)			
Acetone	<240	**0.023**	0.020
Allyl chloride	<240	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<240	<0.020	0.020
Benzene	<36	<0.0030	0.0030
Benzyl chloride	<240	<0.020	0.020
Bromodichloromethane	<30	<0.0025	0.0025
Bromoform	<240	<0.020	0.020
Bromomethane	<240	<0.020	0.020
1,3-Butadiene	<240	<0.020	0.020
2-Butanone (MEK)	<240	<0.020	0.020
tert-Butyl Alcohol (TBA)	<24000	<2.0	2.0
Carbon Disulfide	<240	<0.020	0.020
Carbon Tetrachloride	<240	<0.020	0.020
Chlorobenzene	<240	<0.020	0.020
Chloroethane	<240	<0.020	0.020
Chloroform	<48	<0.0040	0.0040
Chloromethane	<240	<0.020	0.020
Cyclohexane	<240	<0.020	0.020
Dibromochloromethane	<240	<0.020	0.020
1,2-Dibromoethane (EDB)	<240	<0.020	0.020
1,2-Dichlorobenzene	<240	<0.020	0.020
1,3-Dichlorobenzene	<240	<0.020	0.020
1,4-Dichlorobenzene	<240	<0.020	0.020
Dichlorodifluoromethane (R12)	<240	<0.020	0.020
1,1-Dichloroethane	<240	<0.020	0.020
1,2-Dichloroethane (EDC)	<48	<0.0040	0.0040
cis-1,2-Dichloroethylene	<240	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	
Date Prepared:	09/16/22	09/19/22	
Date Analyzed:	09/16/22	09/19/22	
AA ID No:	2H29011-61	2H29011-62	
Client ID No:	SVM-6-13	AMBIENT AIR	
Matrix:	Vapor	Vapor	
Dilution Factor:	12000	1	MRL
TO-15 (Mid Level) (TO-15) (continued)			
1,1-Dichloroethylene	<240	<0.020	0.020
trans-1,2-Dichloroethylene	<240	<0.020	0.020
1,2-Dichloropropane	<240	<0.020	0.020
trans-1,3-Dichloropropylene	<240	<0.020	0.020
cis-1,3-Dichloropropylene	<240	<0.020	0.020
Dichlorotetrafluoroethane	<240	<0.020	0.020
Diisopropyl ether (DIPE)	<240	<0.020	0.020
1,4-Dioxane	<240	<0.020	0.020
Ethanol	<240	**0.026**	0.020
Ethyl Acetate	<240	<0.020	0.020
Ethylbenzene	<240	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<240	<0.020	0.020
4-Ethyltoluene	<240	<0.020	0.020
Heptane	<240	<0.020	0.020
Hexachlorobutadiene	<240	<0.020	0.020
n-Hexane	<240	<0.020	0.020
2-Hexanone (MBK)	<240	<0.020	0.020
Isopropanol (IPA)	<2400	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<240	<0.020	0.020
Methylene Chloride	<240	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<240	<0.020	0.020
Naphthalene	<36	<0.0030	0.0030
Propylene	<240	<0.020	0.020
Styrene	<240	<0.020	0.020
1,1,2,2-Tetrachloroethane	<240	<0.020	0.020
Tetrachloroethylene (PCE)	<120	<0.010	0.010
Tetrahydrofuran (THF)	<240	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: ug/L

Date Sampled:	09/01/22	09/01/22	
Date Prepared:	09/16/22	09/19/22	
Date Analyzed:	09/16/22	09/19/22	
AA ID No:	2H29011-61	2H29011-62	
Client ID No:	SVM-6-13	AMBIENT AIR	
Matrix:	Vapor	Vapor	
Dilution Factor:	12000	1	MRL
TO-15 (Mid Level) (TO-15) (continued)			
Toluene	<240	<0.020	0.020
1,2,4-Trichlorobenzene	<240	<0.020	0.020
1,1,2-Trichloroethane	<240	<0.020	0.020
1,1,1-Trichloroethane	<240	<0.020	0.020
Trichloroethylene (TCE)	<240	<0.020	0.020
Trichlorofluoromethane (R11)	<240	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<240	<0.020	0.020
1,3,5-Trimethylbenzene	<240	<0.020	0.020
1,2,4-Trimethylbenzene	<240	<0.020	0.020
2,2,4-Trimethylpentane	**2400**	<0.020	0.020
Vinyl acetate	<240	<0.020	0.020
Vinyl bromide	<240	<0.020	0.020
Vinyl chloride	<240	<0.020	0.020
o-Xylene	<240	<0.020	0.020
m,p-Xylenes	<240	<0.020	0.020
1,2,3-Trichloropropane	<240	<0.020	0.020
sec-Butylbenzene	<240	<0.020	0.020
Isopropylbenzene	<240	<0.020	0.020
n-Propylbenzene	<240	<0.020	0.020
4-Isopropyltoluene	<240	<0.020	0.020
n-Butylbenzene	<240	<0.020	0.020
Surrogates			**%REC Limits**
4-Bromofluorobenzene	100%	97%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/02/22	09/02/22	09/02/22	09/02/22	
Date Analyzed:	09/02/22	09/02/22	09/02/22	09/02/22	
AA ID No:	2H29011-01	2H29011-02	2H29011-03	2H29011-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10 DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**20**	**19**	**20**	0.10
Carbon Dioxide	**1.2**	**1.8**	**1.8**	**0.85**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/02/22	09/02/22	09/02/22	09/02/22	
Date Analyzed:	09/02/22	09/02/22	09/02/22	09/02/22	
AA ID No:	2H29011-05	2H29011-06	2H29011-07	2H29011-08	
Client ID No:	SVP-106-10	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**19**	**15**	**8.7**	0.10
Carbon Dioxide	**1.8**	**1.9**	**5.1**	**13**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/02/22	09/02/22	09/06/22	09/06/22	
Date Analyzed:	09/02/22	09/02/22	09/06/22	09/06/22	
AA ID No:	2H29011-09	2H29011-10	2H29011-11	2H29011-12	
Client ID No:	SVP-107-5	SVP-107-10	SVM-13-7	SVM-13-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**19**	**21**	**19**	0.10
Carbon Dioxide	**2.2**	**2.0**	**0.75**	**1.1**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/29/22	08/29/22	08/29/22	08/29/22	
Date Prepared:	09/06/22	09/06/22	09/06/22	09/06/22	
Date Analyzed:	09/06/22	09/06/22	09/06/22	09/06/22	
AA ID No:	2H29011-13	2H29011-14	2H29011-15	2H29011-16	
Client ID No:	SVM-13-22	SVM-108-5	SVM-108-10	Ambiant Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**16**	**16**	**6.7**	**21**	0.10
Carbon Dioxide	**2.2**	**5.2**	**13**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/29/2022	08/29/2022	08/29/2022	08/30/2022	
Date Prepared:	09/06/22	09/06/22	09/06/22	09/06/22	
Date Analyzed:	09/06/22	09/06/22	09/06/22	09/06/22	
AA ID No:	2H29011-17	2H29011-18	2H29011-19	2H29011-20	
Client ID No:	SVM-14R-7	SVM-14R-16	SVM-14R-22	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**18**	**17**	**8.7**	**19**	0.10
Carbon Dioxide	**2.8**	**3.9**	**9.8**	**1.6**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/06/22	09/06/22	09/06/22	09/07/22	
Date Analyzed:	09/06/22	09/06/22	09/06/22	09/07/22	
AA ID No:	2H29011-21	2H29011-22	2H29011-23	2H29011-24	
Client ID No:	SVM-11-15	SVM-11-22	SVM-11-22 DUP	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**8.0**	**7.8**	**22**	0.10
Carbon Dioxide	**1.8**	**9.1**	**9.0**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-25	2H29011-26	2H29011-27	2H29011-28	
Client ID No:	SVP-109-10	AMBIENT AIR	SVM-21-5	SVM-21-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**22**	**21**	**21**	**21**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	**0.59**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/30/22	08/30/22	08/30/22	08/30/22	
Date Prepared:	09/07/22	09/07/22	09/07/22	09/07/22	
Date Analyzed:	09/07/22	09/07/22	09/07/22	09/07/22	
AA ID No:	2H29011-29	2H29011-30	2H29011-31	2H29011-32	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**21**	**22**	**21**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/30/22	08/30/22	08/31/22	08/31/22	
Date Prepared:	09/07/22	09/21/22	09/14/22	09/14/22	
Date Analyzed:	09/07/22	10/03/22	09/14/22	09/14/22	
AA ID No:	2H29011-33	2H29011-34	2H29011-35	2H29011-36	
Client ID No:	SVM-9-5	SVM-9-14.5	SVM-26-5	SVM-26-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**21**	**20**	**20**	0.10
Carbon Dioxide	**3.7**	<0.20	**1.8**	**1.8**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/14/22	09/14/22	09/14/22	09/14/22	
Date Analyzed:	09/14/22	09/14/22	09/14/22	09/14/22	
AA ID No:	2H29011-37	2H29011-38	2H29011-39	2H29011-40	
Client ID No:	SVM-27-5	SVM-27-10	SVM-24-5	SVM-24-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**21**	**21**	**21**	0.10
Carbon Dioxide	**1.8**	**2.3**	**0.55**	**1.2**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/14/22	09/14/22	09/14/22	09/21/22	
Date Analyzed:	09/14/22	09/14/22	09/14/22	10/03/22	
AA ID No:	2H29011-41	2H29011-42	2H29011-43	2H29011-44	
Client ID No:	SVM-25-5	SVM-25-10	SVM-16-7	SVM-16-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**18**	**19**	**22**	**21**	0.10
Carbon Dioxide	**3.0**	**2.7**	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/21/22	09/21/22	09/21/22	09/21/22	
Date Analyzed:	10/03/22	10/03/22	10/03/22	10/03/22	
AA ID No:	2H29011-45	2H29011-46	2H29011-47	2H29011-48	
Client ID No:	SVM-16-22	SVM-8-5	SVM-8-15	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**20**	**21**	**21**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	08/31/22	08/31/22	08/31/22	08/31/22	
Date Prepared:	09/21/22	09/21/22	09/21/22	09/26/22	
Date Analyzed:	10/03/22	10/03/22	10/03/22	09/26/22	
AA ID No:	2H29011-49	2H29011-50	2H29011-51	2H29011-52	
Client ID No:	SVM-5-15	AMBIENT AIR	SVM-3-5	SVM-3-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**15**	**22**	**22**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/26/22	09/26/22	09/27/22	09/27/22	
Date Analyzed:	09/26/22	09/26/22	09/27/22	09/27/22	
AA ID No:	2H29011-53	2H29011-54	2H29011-55	2H29011-56	
Client ID No:	SVM-2-5	SVM-1-5	SVM-1-15	SVM-1-15 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**18**	**14**	**14**	**11**	0.10
Carbon Dioxide	**3.5**	<0.20	**2.0**	**1.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	09/01/22	09/01/22	09/01/22	09/01/22	
Date Prepared:	09/27/22	09/27/22	09/27/22	09/27/22	
Date Analyzed:	09/27/22	09/27/22	09/27/22	09/27/22	
AA ID No:	2H29011-57	2H29011-58	2H29011-59	2H29011-60	
Client ID No:	SVM-10-15	SVM-7-7	SVM-7-13	SVM-6-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**18**	**17**	**10**	0.10
Carbon Dioxide	<0.20	**3.8**	**3.2**	**1.0**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22
Units: % by Volume

Date Sampled:	09/01/22	09/01/22	
Date Prepared:	09/27/22	09/27/22	
Date Analyzed:	09/27/22	09/27/22	
AA ID No:	2H29011-61	2H29011-62	
Client ID No:	SVM-6-13	AMBIENT AIR	
Matrix:	Vapor	Vapor	
Dilution Factor:	2	2	MRL
Fixed Gases (ASTM D1946M)			
Methane	<0.20	<0.20	0.10
Oxygen	**4.0**	**21**	0.10
Carbon Dioxide	**15**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B2I0902 - *** DEFAULT PREP ****										
Blank (B2I0902-BLK1)				Prepared & Analyzed: 09/08/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0394*		*ug/L*	*0.0358*		*110*	*70-130*			
LCS (B2I0902-BS1)				Prepared & Analyzed: 09/09/22						
Gasoline Range Organics (GRO)	**0.881**	0.50	ug/L	0.802		110	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0403*		*ug/L*	*0.0358*		*113*	*70-130*			
LCS Dup (B2I0902-BSD1)				Prepared & Analyzed: 09/09/22						
Gasoline Range Organics (GRO)	**0.881**	0.50	ug/L	0.802		110	70-130	0.00928	30	
Surrogate: 4-Bromofluorobenzene	*0.0401*		*ug/L*	*0.0358*		*112*	*70-130*			
*Batch B2I1220 - *** DEFAULT PREP ****										
Blank (B2I1220-BLK1)				Prepared & Analyzed: 09/09/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0324*		*ug/L*	*0.0358*		*90.6*	*70-130*			
LCS (B2I1220-BS1)				Prepared & Analyzed: 09/10/22						
Gasoline Range Organics (GRO)	**0.933**	0.50	ug/L	0.802		116	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0364*		*ug/L*	*0.0358*		*102*	*70-130*			
LCS Dup (B2I1220-BSD1)				Prepared & Analyzed: 09/10/22						
Gasoline Range Organics (GRO)	**0.949**	0.50	ug/L	0.802		118	70-130	1.74	30	
Surrogate: 4-Bromofluorobenzene	*0.0376*		*ug/L*	*0.0358*		*105*	*70-130*			
*Batch B2I1616 - *** DEFAULT PREP ****										
Blank (B2I1616-BLK1)				Prepared & Analyzed: 09/07/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0402*		*ug/L*	*0.0358*		*112*	*70-130*			
LCS (B2I1616-BS1)				Prepared: 09/07/22 Analyzed: 09/08/22						
Gasoline Range Organics (GRO)	**0.803**	0.50	ug/L	0.802		100	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0399*		*ug/L*	*0.0358*		*111*	*70-130*			
LCS Dup (B2I1616-BSD1)				Prepared: 09/07/22 Analyzed: 09/08/22						
Gasoline Range Organics (GRO)	**0.808**	0.50	ug/L	0.802		101	70-130	0.594	30	

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B2I1616 - *** DEFAULT PREP ****										
LCS Dup (B2I1616-BSD1) Continued				Prepared: 09/07/22 Analyzed: 09/08/22						
Surrogate: 4-Bromofluorobenzene	*0.0403*		*ug/L*	*0.0358*		*113*	*70-130*			
Duplicate (B2I1616-DUP1)		**Source: 2H29011-02**		Prepared & Analyzed: 09/07/22						
Gasoline Range Organics (GRO)	**<0.50**	0.50	ug/L		<0.50				30	
Surrogate: 4-Bromofluorobenzene	*0.0394*		*ug/L*	*0.0358*		*110*	*70-130*			
*Batch B2I2025 - *** DEFAULT PREP ****										
Blank (B2I2025-BLK1)				Prepared & Analyzed: 09/19/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0384*		*ug/L*	*0.0358*		*107*	*70-130*			
LCS (B2I2025-BS1)				Prepared & Analyzed: 09/19/22						
Gasoline Range Organics (GRO)	**0.872**	0.50	ug/L	0.802		109	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0388*		*ug/L*	*0.0358*		*108*	*70-130*			
LCS Dup (B2I2025-BSD1)				Prepared & Analyzed: 09/19/22						
Gasoline Range Organics (GRO)	**0.878**	0.50	ug/L	0.802		109	70-130	0.650	30	
Surrogate: 4-Bromofluorobenzene	*0.0390*		*ug/L*	*0.0358*		*109*	*70-130*			
*Batch B2I2036 - *** DEFAULT PREP ****										
Blank (B2I2036-BLK1)				Prepared & Analyzed: 09/16/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0358*		*ug/L*	*0.0358*		*100*	*70-130*			
LCS (B2I2036-BS1)				Prepared & Analyzed: 09/16/22						
Gasoline Range Organics (GRO)	**0.853**	0.50	ug/L	0.802		106	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0399*		*ug/L*	*0.0358*		*111*	*70-130*			
LCS Dup (B2I2036-BSD1)				Prepared & Analyzed: 09/16/22						
Gasoline Range Organics (GRO)	**0.868**	0.50	ug/L	0.802		108	70-130	1.79	30	
Surrogate: 4-Bromofluorobenzene	*0.0397*		*ug/L*	*0.0358*		*111*	*70-130*			
*Batch B2I2131 - *** DEFAULT PREP ****										
Blank (B2I2131-BLK1)				Prepared & Analyzed: 09/12/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B2I2131 - *** DEFAULT PREP ****										
Blank (B2I2131-BLK1) Continued				Prepared & Analyzed: 09/12/22						
Surrogate: 4-Bromofluorobenzene	*0.0366*		*ug/L*	*0.0358*		*102*	*70-130*			
LCS (B2I2131-BS1)				Prepared & Analyzed: 09/12/22						
Gasoline Range Organics (GRO)	**0.748**	0.50	ug/L	0.802		93.3	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0377*		*ug/L*	*0.0358*		*105*	*70-130*			
*Batch B2I2208 - *** DEFAULT PREP ****										
Blank (B2I2208-BLK1)				Prepared & Analyzed: 09/12/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0339*		*ug/L*	*0.0358*		*94.6*	*70-130*			
LCS (B2I2208-BS1)				Prepared: 09/12/22 Analyzed: 09/13/22						
Gasoline Range Organics (GRO)	**0.773**	0.50	ug/L	0.802		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0402*		*ug/L*	*0.0358*		*112*	*70-130*			
LCS Dup (B2I2208-BSD1)				Prepared: 09/12/22 Analyzed: 09/13/22						
Gasoline Range Organics (GRO)	**0.777**	0.50	ug/L	0.802		96.9	70-130	0.438	30	
Surrogate: 4-Bromofluorobenzene	*0.0402*		*ug/L*	*0.0358*		*112*	*70-130*			
*Batch B2I2212 - *** DEFAULT PREP ****										
Blank (B2I2212-BLK1)				Prepared & Analyzed: 09/09/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0383*		*ug/L*	*0.0358*		*107*	*70-130*			
LCS (B2I2212-BS1)				Prepared: 09/09/22 Analyzed: 09/10/22						
Gasoline Range Organics (GRO)	**0.863**	0.50	ug/L	0.802		108	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0379*		*ug/L*	*0.0358*		*106*	*70-130*			
LCS Dup (B2I2212-BSD1)				Prepared: 09/09/22 Analyzed: 09/10/22						
Gasoline Range Organics (GRO)	**0.868**	0.50	ug/L	0.802		108	70-130	0.614	30	
Surrogate: 4-Bromofluorobenzene	*0.0388*		*ug/L*	*0.0358*		*108*	*70-130*			
*Batch B2I2828 - *** DEFAULT PREP ****										
Blank (B2I2828-BLK1)				Prepared & Analyzed: 09/27/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B2I2828 - *** DEFAULT PREP ****										
Blank (B2I2828-BLK1) Continued				Prepared & Analyzed: 09/27/22						
Surrogate: 4-Bromofluorobenzene	*0.0382*		*ug/L*	*0.0358*		*107*	*70-130*			
LCS (B2I2828-BS1)				Prepared: 09/27/22 Analyzed: 09/28/22						
Gasoline Range Organics (GRO)	**0.823**	0.50	ug/L	0.802		103	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0382*		*ug/L*	*0.0358*		*107*	*70-130*			
LCS Dup (B2I2828-BSD1)				Prepared: 09/27/22 Analyzed: 09/28/22						
Gasoline Range Organics (GRO)	**0.839**	0.50	ug/L	0.802		105	70-130	1.95	30	
Surrogate: 4-Bromofluorobenzene	*0.0386*		*ug/L*	*0.0358*		*108*	*70-130*			
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Blank (B2I0811-BLK1)				Prepared & Analyzed: 09/07/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Blank (B2I0811-BLK1) Continued				Prepared & Analyzed: 09/07/22						
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Blank (B2I0811-BLK1) Continued				Prepared & Analyzed: 09/07/22						
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0353*		*ug/L*	*0.0358*		*98.6*	*70-130*			
LCS (B2I0811-BS1)				Prepared: 09/07/22 Analyzed: 09/08/22						
Acetone	**0.0244**	0.020	ug/L	0.0238		103	70-130			
Benzene	**0.0328**	0.0030	ug/L	0.0319		103	70-130			
Benzyl chloride	**0.0517**	0.020	ug/L	0.0518		99.9	70-130			
Bromodichloromethane	**0.0664**	0.0025	ug/L	0.0670		99.1	70-130			
Bromoform	**0.105**	0.020	ug/L	0.103		101	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

*Batch B2I0811 - *** DEFAULT PREP ****

LCS (B2I0811-BS1) Continued Prepared: 09/07/22 Analyzed: 09/08/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Bromomethane	**0.0431**	0.020	ug/L	0.0388		111	70-130			
2-Butanone (MEK)	**0.0292**	0.020	ug/L	0.0295		99.1	70-130			
Carbon Disulfide	**0.0339**	0.020	ug/L	0.0311		109	70-130			
Carbon Tetrachloride	**0.0650**	0.020	ug/L	0.0629		103	70-130			
Chlorobenzene	**0.0489**	0.020	ug/L	0.0460		106	70-130			
Chloroethane	**0.0289**	0.020	ug/L	0.0264		110	70-130			
Chloroform	**0.0512**	0.0040	ug/L	0.0488		105	70-130			
Chloromethane	**0.0221**	0.020	ug/L	0.0207		107	70-130			
Dibromochloromethane	**0.0853**	0.020	ug/L	0.0852		100	70-130			
1,2-Dibromoethane (EDB)	**0.0847**	0.020	ug/L	0.0768		110	70-130			
1,2-Dichlorobenzene	**0.0720**	0.020	ug/L	0.0601		120	70-130			
1,3-Dichlorobenzene	**0.0647**	0.020	ug/L	0.0601		108	70-130			
1,4-Dichlorobenzene	**0.0730**	0.020	ug/L	0.0601		122	70-130			
Dichlorodifluoromethane (R12)	**0.0545**	0.020	ug/L	0.0495		110	70-130			
1,1-Dichloroethane	**0.0401**	0.020	ug/L	0.0405		99.1	70-130			
1,2-Dichloroethane (EDC)	**0.0403**	0.0040	ug/L	0.0405		99.6	70-130			
cis-1,2-Dichloroethylene	**0.0402**	0.020	ug/L	0.0396		101	70-130			
1,1-Dichloroethylene	**0.0430**	0.020	ug/L	0.0396		108	70-130			
trans-1,2-Dichloroethylene	**0.0386**	0.020	ug/L	0.0396		97.4	70-130			
1,2-Dichloropropane	**0.0479**	0.020	ug/L	0.0462		104	70-130			
trans-1,3-Dichloropropylene	**0.0490**	0.020	ug/L	0.0454		108	70-130			
cis-1,3-Dichloropropylene	**0.0478**	0.020	ug/L	0.0454		105	70-130			
Dichlorotetrafluoroethane	**0.0640**	0.020	ug/L	0.0699		91.6	70-130			
Ethylbenzene	**0.0438**	0.020	ug/L	0.0434		101	70-130			
4-Ethyltoluene	**0.0480**	0.020	ug/L	0.0492		97.6	70-130			
Hexachlorobutadiene	**0.0958**	0.020	ug/L	0.107		89.8	70-130			
2-Hexanone (MBK)	**0.0419**	0.020	ug/L	0.0410		102	70-130			
Isopropanol (IPA)	**0.0247**	0.20	ug/L	0.0246		101	70-130			
Methylene Chloride	**0.0351**	0.020	ug/L	0.0347		101	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0376**	0.020	ug/L	0.0410		91.9	70-130			
Styrene	**0.0446**	0.020	ug/L	0.0426		105	70-130			
1,1,2,2-Tetrachloroethane	**0.0687**	0.020	ug/L	0.0687		100	70-130			

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
LCS (B2I0811-BS1) Continued				Prepared: 09/07/22 Analyzed: 09/08/22						
Tetrachloroethylene (PCE)	**0.0790**	0.010	ug/L	0.0679		116	70-130			
Toluene	**0.0404**	0.020	ug/L	0.0377		107	70-130			
1,2,4-Trichlorobenzene	**0.0623**	0.020	ug/L	0.0742		84.0	70-130			
1,1,2-Trichloroethane	**0.0587**	0.020	ug/L	0.0546		108	70-130			
1,1,1-Trichloroethane	**0.0555**	0.020	ug/L	0.0546		102	70-130			
Trichloroethylene (TCE)	**0.0614**	0.020	ug/L	0.0537		114	70-130			
Trichlorofluoromethane (R11)	**0.0629**	0.020	ug/L	0.0562		112	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0867**	0.020	ug/L	0.0766		113	70-130			
1,3,5-Trimethylbenzene	**0.0528**	0.020	ug/L	0.0492		107	70-130			
1,2,4-Trimethylbenzene	**0.0533**	0.020	ug/L	0.0492		108	70-130			
Vinyl acetate	**0.0341**	0.020	ug/L	0.0352		96.8	70-130			
Vinyl chloride	**0.0272**	0.020	ug/L	0.0256		106	70-130			
o-Xylene	**0.0443**	0.020	ug/L	0.0434		102	70-130			
m,p-Xylenes	**0.0897**	0.020	ug/L	0.0868		103	70-130			
1,2,3-Trichloropropane	**0.0590**	0.020	ug/L	0.0603		97.9	70-130			
sec-Butylbenzene	**0.0575**	0.020	ug/L	0.0549		105	70-130			
Isopropylbenzene	**0.0515**	0.020	ug/L	0.0492		105	70-130			
n-Propylbenzene	**0.0489**	0.020	ug/L	0.0492		99.5	70-130			
4-Isopropyltoluene	**0.0592**	0.020	ug/L	0.0549		108	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0344*		*ug/L*	*0.0358*		*96.2*	*70-130*			
LCS Dup (B2I0811-BSD1)				Prepared: 09/07/22 Analyzed: 09/08/22						
Acetone	**0.0246**	0.020	ug/L	0.0238		104	70-130	0.970	30	
Benzene	**0.0324**	0.0030	ug/L	0.0319		102	70-130	1.27	30	
Benzyl chloride	**0.0530**	0.020	ug/L	0.0518		102	70-130	2.47	30	
Bromodichloromethane	**0.0677**	0.0025	ug/L	0.0670		101	70-130	1.90	30	
Bromoform	**0.106**	0.020	ug/L	0.103		102	70-130	1.18	30	
Bromomethane	**0.0429**	0.020	ug/L	0.0388		111	70-130	0.361	30	
2-Butanone (MEK)	**0.0291**	0.020	ug/L	0.0295		98.8	70-130	0.303	30	
Carbon Disulfide	**0.0339**	0.020	ug/L	0.0311		109	70-130	0.0919	30	
Carbon Tetrachloride	**0.0669**	0.020	ug/L	0.0629		106	70-130	2.86	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
LCS Dup (B2I0811-BSD1) Continued				Prepared: 09/07/22 Analyzed: 09/08/22						
Chlorobenzene	**0.0491**	0.020	ug/L	0.0460		107	70-130	0.376	30	
Chloroethane	**0.0287**	0.020	ug/L	0.0264		109	70-130	0.549	30	
Chloroform	**0.0513**	0.0040	ug/L	0.0488		105	70-130	0.0953	30	
Chloromethane	**0.0219**	0.020	ug/L	0.0207		106	70-130	1.03	30	
Dibromochloromethane	**0.0859**	0.020	ug/L	0.0852		101	70-130	0.697	30	
1,2-Dibromoethane (EDB)	**0.0854**	0.020	ug/L	0.0768		111	70-130	0.813	30	
1,2-Dichlorobenzene	**0.0723**	0.020	ug/L	0.0601		120	70-130	0.333	30	
1,3-Dichlorobenzene	**0.0643**	0.020	ug/L	0.0601		107	70-130	0.653	30	
1,4-Dichlorobenzene	**0.0802**	0.020	ug/L	0.0601		133	70-130	9.34	30	QL-03
Dichlorodifluoromethane (R12)	**0.0534**	0.020	ug/L	0.0495		108	70-130	2.20	30	
1,1-Dichloroethane	**0.0401**	0.020	ug/L	0.0405		99.1	70-130	0.00	30	
1,2-Dichloroethane (EDC)	**0.0410**	0.0040	ug/L	0.0405		101	70-130	1.79	30	
cis-1,2-Dichloroethylene	**0.0401**	0.020	ug/L	0.0396		101	70-130	0.198	30	
1,1-Dichloroethylene	**0.0438**	0.020	ug/L	0.0396		110	70-130	1.74	30	
trans-1,2-Dichloroethylene	**0.0388**	0.020	ug/L	0.0396		97.9	70-130	0.512	30	
1,2-Dichloropropane	**0.0479**	0.020	ug/L	0.0462		104	70-130	0.0965	30	
trans-1,3-Dichloropropylene	**0.0501**	0.020	ug/L	0.0454		110	70-130	2.11	30	
cis-1,3-Dichloropropylene	**0.0479**	0.020	ug/L	0.0454		106	70-130	0.284	30	
Dichlorotetrafluoroethane	**0.0610**	0.020	ug/L	0.0699		87.2	70-130	4.92	30	
Ethylbenzene	**0.0439**	0.020	ug/L	0.0434		101	70-130	0.198	30	
4-Ethyltoluene	**0.0481**	0.020	ug/L	0.0492		97.8	70-130	0.205	30	
Hexachlorobutadiene	**0.0984**	0.020	ug/L	0.107		92.3	70-130	2.75	30	
2-Hexanone (MBK)	**0.0424**	0.020	ug/L	0.0410		103	70-130	1.17	30	
Isopropanol (IPA)	**0.0244**	0.20	ug/L	0.0246		99.3	70-130	1.30	30	
Methylene Chloride	**0.0350**	0.020	ug/L	0.0347		101	70-130	0.396	30	
4-Methyl-2-pentanone (MIBK)	**0.0383**	0.020	ug/L	0.0410		93.6	70-130	1.83	30	
Styrene	**0.0449**	0.020	ug/L	0.0426		105	70-130	0.762	30	
1,1,2,2-Tetrachloroethane	**0.0687**	0.020	ug/L	0.0687		100	70-130	0.00	30	
Tetrachloroethylene (PCE)	**0.0807**	0.010	ug/L	0.0679		119	70-130	2.12	30	
Toluene	**0.0409**	0.020	ug/L	0.0377		108	70-130	1.30	30	
1,2,4-Trichlorobenzene	**0.0632**	0.020	ug/L	0.0742		85.2	70-130	1.42	30	
1,1,2-Trichloroethane	**0.0590**	0.020	ug/L	0.0546		108	70-130	0.557	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
LCS Dup (B2I0811-BSD1) Continued				Prepared: 09/07/22 Analyzed: 09/08/22						
1,1,1-Trichloroethane	**0.0555**	0.020	ug/L	0.0546		102	70-130	0.00	30	
Trichloroethylene (TCE)	**0.0623**	0.020	ug/L	0.0537		116	70-130	1.56	30	
Trichlorofluoromethane (R11)	**0.0630**	0.020	ug/L	0.0562		112	70-130	0.178	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0874**	0.020	ug/L	0.0766		114	70-130	0.793	30	
1,3,5-Trimethylbenzene	**0.0531**	0.020	ug/L	0.0492		108	70-130	0.650	30	
1,2,4-Trimethylbenzene	**0.0538**	0.020	ug/L	0.0492		110	70-130	1.01	30	
Vinyl acetate	**0.0343**	0.020	ug/L	0.0352		97.5	70-130	0.721	30	
Vinyl chloride	**0.0275**	0.020	ug/L	0.0256		108	70-130	1.31	30	
o-Xylene	**0.0446**	0.020	ug/L	0.0434		103	70-130	0.586	30	
m,p-Xylenes	**0.0908**	0.020	ug/L	0.0868		104	70-130	1.15	30	
1,2,3-Trichloropropane	**0.0599**	0.020	ug/L	0.0603		99.3	70-130	1.42	30	
sec-Butylbenzene	**0.0585**	0.020	ug/L	0.0549		106	70-130	1.61	30	
Isopropylbenzene	**0.0521**	0.020	ug/L	0.0492		106	70-130	1.14	30	
n-Propylbenzene	**0.0504**	0.020	ug/L	0.0492		103	70-130	3.07	30	
4-Isopropyltoluene	**0.0599**	0.020	ug/L	0.0549		109	70-130	1.20	30	
Surrogate: 4-Bromofluorobenzene	*0.0345*		*ug/L*	*0.0358*		*96.4*	*70-130*			
Duplicate (B2I0811-DUP1)				**Source: 2H29011-02** Prepared & Analyzed: 09/07/22						
Acetone	**<0.020**	0.020	ug/L		<0.020				30	
Allyl chloride	**<0.020**	0.020	ug/L		<0.020				30	
tert-Amyl-Methyl Ether (TAME)	**<0.020**	0.020	ug/L		<0.020				30	
Benzene	**<0.0030**	0.0030	ug/L		<0.0030				30	
Benzyl chloride	**<0.020**	0.020	ug/L		<0.020				30	
Bromodichloromethane	**<0.0025**	0.0025	ug/L		<0.0025				30	
Bromoform	**<0.020**	0.020	ug/L		<0.020				30	
Bromomethane	**<0.020**	0.020	ug/L		<0.020				30	
1,3-Butadiene	**<0.020**	0.020	ug/L		<0.020				30	
2-Butanone (MEK)	**<0.020**	0.020	ug/L		<0.020				30	
tert-Butyl Alcohol (TBA)	**<2.0**	2.0	ug/L		<2.0				30	
Carbon Disulfide	**<0.020**	0.020	ug/L		<0.020				30	
Carbon Tetrachloride	**<0.020**	0.020	ug/L		<0.020				30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Duplicate (B2I0811-DUP1) Continued				**Source: 2H29011-02**	Prepared & Analyzed: 09/07/22					
Chlorobenzene	**<0.020**	0.020	ug/L		<0.020				30	
Chloroethane	**<0.020**	0.020	ug/L		<0.020				30	
Chloroform	**<0.0040**	0.0040	ug/L		<0.0040				30	
Chloromethane	**<0.020**	0.020	ug/L		<0.020				30	
Cyclohexane	**<0.020**	0.020	ug/L		<0.020				30	
Dibromochloromethane	**<0.020**	0.020	ug/L		<0.020				30	
1,2-Dibromoethane (EDB)	**<0.020**	0.020	ug/L		<0.020				30	
1,2-Dichlorobenzene	**<0.020**	0.020	ug/L		<0.020				30	
1,3-Dichlorobenzene	**<0.020**	0.020	ug/L		<0.020				30	
1,4-Dichlorobenzene	**<0.020**	0.020	ug/L		<0.020				30	
Dichlorodifluoromethane (R12)	**<0.020**	0.020	ug/L		<0.020				30	
1,1-Dichloroethane	**<0.020**	0.020	ug/L		<0.020				30	
1,2-Dichloroethane (EDC)	**<0.0040**	0.0040	ug/L		<0.0040				30	
cis-1,2-Dichloroethylene	**<0.020**	0.020	ug/L		<0.020				30	
1,1-Dichloroethylene	**<0.020**	0.020	ug/L		<0.020				30	
trans-1,2-Dichloroethylene	**<0.020**	0.020	ug/L		<0.020				30	
1,2-Dichloropropane	**<0.020**	0.020	ug/L		<0.020				30	
trans-1,3-Dichloropropylene	**<0.020**	0.020	ug/L		<0.020				30	
cis-1,3-Dichloropropylene	**<0.020**	0.020	ug/L		<0.020				30	
Dichlorotetrafluoroethane	**<0.020**	0.020	ug/L		<0.020				30	
Diisopropyl ether (DIPE)	**<0.020**	0.020	ug/L		<0.020				30	
1,4-Dioxane	**<0.020**	0.020	ug/L		<0.020				30	
Ethanol	**<0.020**	0.020	ug/L		<0.020				30	
Ethyl Acetate	**<0.020**	0.020	ug/L		<0.020				30	
Ethylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
Ethyl-tert-Butyl Ether (ETBE)	**<0.020**	0.020	ug/L		<0.020				30	
4-Ethyltoluene	**<0.020**	0.020	ug/L		<0.020				30	
Heptane	**<0.020**	0.020	ug/L		<0.020				30	
Hexachlorobutadiene	**<0.020**	0.020	ug/L		<0.020				30	
n-Hexane	**<0.020**	0.020	ug/L		<0.020				30	
2-Hexanone (MBK)	**<0.020**	0.020	ug/L		<0.020				30	
Isopropanol (IPA)	**<0.20**	0.20	ug/L		<0.20				30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Duplicate (B2I0811-DUP1) Continued				**Source: 2H29011-02**	Prepared & Analyzed: 09/07/22					
Methyl-tert-Butyl Ether (MTBE)	**<0.020**	0.020	ug/L		<0.020				30	
Methylene Chloride	**<0.020**	0.020	ug/L		<0.020				30	
4-Methyl-2-pentanone (MIBK)	**<0.020**	0.020	ug/L		<0.020				30	
Naphthalene	**<0.0030**	0.0030	ug/L		<0.0030				30	
Propylene	**<0.020**	0.020	ug/L		<0.020				30	
Styrene	**<0.020**	0.020	ug/L		<0.020				30	
1,1,2,2-Tetrachloroethane	**<0.020**	0.020	ug/L		<0.020				30	
Tetrachloroethylene (PCE)	**0.0191**	0.010	ug/L		0.0181			5.46	30	
Tetrahydrofuran (THF)	**<0.020**	0.020	ug/L		<0.020				30	
Toluene	**<0.020**	0.020	ug/L		<0.020				30	
1,2,4-Trichlorobenzene	**<0.020**	0.020	ug/L		<0.020				30	
1,1,2-Trichloroethane	**<0.020**	0.020	ug/L		<0.020				30	
1,1,1-Trichloroethane	**<0.020**	0.020	ug/L		<0.020				30	
Trichloroethylene (TCE)	**<0.020**	0.020	ug/L		<0.020				30	
Trichlorofluoromethane (R11)	**<0.020**	0.020	ug/L		<0.020				30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**<0.020**	0.020	ug/L		<0.020				30	
1,3,5-Trimethylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
1,2,4-Trimethylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
2,2,4-Trimethylpentane	**<0.020**	0.020	ug/L		<0.020				30	
Vinyl acetate	**<0.020**	0.020	ug/L		<0.020				30	
Vinyl bromide	**<0.020**	0.020	ug/L		<0.020				30	
Vinyl chloride	**<0.020**	0.020	ug/L		<0.020				30	
o-Xylene	**<0.020**	0.020	ug/L		<0.020				30	
m,p-Xylenes	**<0.020**	0.020	ug/L		<0.020				30	
1,2,3-Trichloropropane	**<0.020**	0.020	ug/L		<0.020				30	
sec-Butylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
Isopropylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
n-Propylbenzene	**<0.020**	0.020	ug/L		<0.020				30	
4-Isopropyltoluene	**<0.020**	0.020	ug/L		<0.020				30	
n-Butylbenzene	**<0.020**	0.020	ug/L		<0.020				200	

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0811 - *** DEFAULT PREP ****										
Duplicate (B2I0811-DUP1) Continued				**Source: 2H29011-02**			Prepared & Analyzed: 09/07/22			
Surrogate: 4-Bromofluorobenzene	*0.0345*		*ug/L*	*0.0358*		*96.4*	*70-130*			
*Batch B2I0901 - *** DEFAULT PREP ****										
Blank (B2I0901-BLK1)							Prepared & Analyzed: 09/08/22			
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
Blank (B2I0901-BLK1) Continued				Prepared & Analyzed: 09/08/22						
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
Blank (B2I0901-BLK1) Continued				Prepared & Analyzed: 09/08/22						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0345*		*ug/L*	*0.0358*		*96.4*	*70-130*			
LCS (B2I0901-BS1)				Prepared: 09/08/22 Analyzed: 09/09/22						
Acetone	**0.0266**	0.020	ug/L	0.0238		112	70-130			
Benzene	**0.0325**	0.0030	ug/L	0.0319		102	70-130			
Benzyl chloride	**0.0470**	0.020	ug/L	0.0518		90.8	70-130			
Bromodichloromethane	**0.0722**	0.0025	ug/L	0.0670		108	70-130			
Bromoform	**0.107**	0.020	ug/L	0.103		103	70-130			
Bromomethane	**0.0456**	0.020	ug/L	0.0388		118	70-130			
2-Butanone (MEK)	**0.0297**	0.020	ug/L	0.0295		101	70-130			
Carbon Disulfide	**0.0345**	0.020	ug/L	0.0311		111	70-130			
Carbon Tetrachloride	**0.0763**	0.020	ug/L	0.0629		121	70-130			
Chlorobenzene	**0.0510**	0.020	ug/L	0.0460		111	70-130			
Chloroethane	**0.0304**	0.020	ug/L	0.0264		115	70-130			
Chloroform	**0.0545**	0.0040	ug/L	0.0488		112	70-130			
Chloromethane	**0.0221**	0.020	ug/L	0.0207		107	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
LCS (B2I0901-BS1) Continued				Prepared: 09/08/22 Analyzed: 09/09/22						
Dibromochloromethane	**0.0870**	0.020	ug/L	0.0852		102	70-130			
1,2-Dibromoethane (EDB)	**0.0867**	0.020	ug/L	0.0768		113	70-130			
1,2-Dichlorobenzene	**0.0755**	0.020	ug/L	0.0601		126	70-130			
1,3-Dichlorobenzene	**0.0680**	0.020	ug/L	0.0601		113	70-130			
1,4-Dichlorobenzene	**0.0750**	0.020	ug/L	0.0601		125	70-130			
Dichlorodifluoromethane (R12)	**0.0580**	0.020	ug/L	0.0495		117	70-130			
1,1-Dichloroethane	**0.0423**	0.020	ug/L	0.0405		104	70-130			
1,2-Dichloroethane (EDC)	**0.0455**	0.0040	ug/L	0.0405		112	70-130			
cis-1,2-Dichloroethylene	**0.0423**	0.020	ug/L	0.0396		107	70-130			
1,1-Dichloroethylene	**0.0483**	0.020	ug/L	0.0396		122	70-130			
trans-1,2-Dichloroethylene	**0.0403**	0.020	ug/L	0.0396		102	70-130			
1,2-Dichloropropane	**0.0491**	0.020	ug/L	0.0462		106	70-130			
trans-1,3-Dichloropropylene	**0.0530**	0.020	ug/L	0.0454		117	70-130			
cis-1,3-Dichloropropylene	**0.0496**	0.020	ug/L	0.0454		109	70-130			
Dichlorotetrafluoroethane	**0.0635**	0.020	ug/L	0.0699		90.8	70-130			
Ethylbenzene	**0.0465**	0.020	ug/L	0.0434		107	70-130			
4-Ethyltoluene	**0.0454**	0.020	ug/L	0.0492		92.4	70-130			
Hexachlorobutadiene	**0.0949**	0.020	ug/L	0.107		89.0	70-130			
2-Hexanone (MBK)	**0.0429**	0.020	ug/L	0.0410		105	70-130			
Isopropanol (IPA)	**0.0264**	0.20	ug/L	0.0246		107	70-130			
Methylene Chloride	**0.0387**	0.020	ug/L	0.0347		111	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0393**	0.020	ug/L	0.0410		95.9	70-130			
Styrene	**0.0469**	0.020	ug/L	0.0426		110	70-130			
1,1,2,2-Tetrachloroethane	**0.0723**	0.020	ug/L	0.0687		105	70-130			
Tetrachloroethylene (PCE)	**0.0814**	0.010	ug/L	0.0679		120	70-130			
Toluene	**0.0417**	0.020	ug/L	0.0377		111	70-130			
1,2,4-Trichlorobenzene	**0.0618**	0.020	ug/L	0.0742		83.3	70-130			
1,1,2-Trichloroethane	**0.0597**	0.020	ug/L	0.0546		109	70-130			
1,1,1-Trichloroethane	**0.0612**	0.020	ug/L	0.0546		112	70-130			
Trichloroethylene (TCE)	**0.0642**	0.020	ug/L	0.0537		120	70-130			
Trichlorofluoromethane (R11)	**0.0699**	0.020	ug/L	0.0562		124	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
LCS (B2I0901-BS1) Continued				Prepared: 09/08/22 Analyzed: 09/09/22						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0953**	0.020	ug/L	0.0766		124	70-130			
1,3,5-Trimethylbenzene	**0.0557**	0.020	ug/L	0.0492		113	70-130			
1,2,4-Trimethylbenzene	**0.0567**	0.020	ug/L	0.0492		115	70-130			
Vinyl acetate	**0.0364**	0.020	ug/L	0.0352		103	70-130			
Vinyl chloride	**0.0294**	0.020	ug/L	0.0256		115	70-130			
o-Xylene	**0.0480**	0.020	ug/L	0.0434		110	70-130			
m,p-Xylenes	**0.0973**	0.020	ug/L	0.0868		112	70-130			
1,2,3-Trichloropropane	**0.0633**	0.020	ug/L	0.0603		105	70-130			
sec-Butylbenzene	**0.0598**	0.020	ug/L	0.0549		109	70-130			
Isopropylbenzene	**0.0547**	0.020	ug/L	0.0492		111	70-130			
n-Propylbenzene	**0.0512**	0.020	ug/L	0.0492		104	70-130			
4-Isopropyltoluene	**0.0604**	0.020	ug/L	0.0549		110	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0351*		*ug/L*	*0.0358*		*98.2*	*70-130*			
LCS Dup (B2I0901-BSD1)				Prepared: 09/08/22 Analyzed: 09/09/22						
Acetone	**0.0262**	0.020	ug/L	0.0238		110	70-130	1.53	30	
Benzene	**0.0316**	0.0030	ug/L	0.0319		98.9	70-130	2.69	30	
Benzyl chloride	**0.0461**	0.020	ug/L	0.0518		89.1	70-130	1.89	30	
Bromodichloromethane	**0.0699**	0.0025	ug/L	0.0670		104	70-130	3.21	30	
Bromoform	**0.104**	0.020	ug/L	0.103		101	70-130	2.65	30	
Bromomethane	**0.0442**	0.020	ug/L	0.0388		114	70-130	3.11	30	
2-Butanone (MEK)	**0.0293**	0.020	ug/L	0.0295		99.5	70-130	1.20	30	
Carbon Disulfide	**0.0304**	0.020	ug/L	0.0311		97.6	70-130	12.6	30	
Carbon Tetrachloride	**0.0735**	0.020	ug/L	0.0629		117	70-130	3.69	30	
Chlorobenzene	**0.0491**	0.020	ug/L	0.0460		107	70-130	3.68	30	
Chloroethane	**0.0297**	0.020	ug/L	0.0264		112	70-130	2.37	30	
Chloroform	**0.0534**	0.0040	ug/L	0.0488		109	70-130	1.99	30	
Chloromethane	**0.0217**	0.020	ug/L	0.0207		105	70-130	1.51	30	
Dibromochloromethane	**0.0857**	0.020	ug/L	0.0852		101	70-130	1.48	30	
1,2-Dibromoethane (EDB)	**0.0853**	0.020	ug/L	0.0768		111	70-130	1.70	30	
1,2-Dichlorobenzene	**0.0738**	0.020	ug/L	0.0601		123	70-130	2.25	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
LCS Dup (B2I0901-BSD1) Continued				Prepared: 09/08/22 Analyzed: 09/09/22						
1,3-Dichlorobenzene	**0.0669**	0.020	ug/L	0.0601		111	70-130	1.60	30	
1,4-Dichlorobenzene	**0.0750**	0.020	ug/L	0.0601		125	70-130	0.00	30	
Dichlorodifluoromethane (R12)	**0.0554**	0.020	ug/L	0.0495		112	70-130	4.45	30	
1,1-Dichloroethane	**0.0414**	0.020	ug/L	0.0405		102	70-130	1.93	30	
1,2-Dichloroethane (EDC)	**0.0444**	0.0040	ug/L	0.0405		110	70-130	2.52	30	
cis-1,2-Dichloroethylene	**0.0415**	0.020	ug/L	0.0396		105	70-130	1.99	30	
1,1-Dichloroethylene	**0.0467**	0.020	ug/L	0.0396		118	70-130	3.42	30	
trans-1,2-Dichloroethylene	**0.0396**	0.020	ug/L	0.0396		100	70-130	1.69	30	
1,2-Dichloropropane	**0.0476**	0.020	ug/L	0.0462		103	70-130	3.25	30	
trans-1,3-Dichloropropylene	**0.0517**	0.020	ug/L	0.0454		114	70-130	2.43	30	
cis-1,3-Dichloropropylene	**0.0487**	0.020	ug/L	0.0454		107	70-130	1.75	30	
Dichlorotetrafluoroethane	**0.0598**	0.020	ug/L	0.0699		85.5	70-130	6.01	30	
Ethylbenzene	**0.0454**	0.020	ug/L	0.0434		104	70-130	2.55	30	
4-Ethyltoluene	**0.0443**	0.020	ug/L	0.0492		90.2	70-130	2.41	30	
Hexachlorobutadiene	**0.0909**	0.020	ug/L	0.107		85.2	70-130	4.36	30	
2-Hexanone (MBK)	**0.0417**	0.020	ug/L	0.0410		102	70-130	2.71	30	
Isopropanol (IPA)	**0.0262**	0.20	ug/L	0.0246		107	70-130	0.654	30	
Methylene Chloride	**0.0378**	0.020	ug/L	0.0347		109	70-130	2.18	30	
4-Methyl-2-pentanone (MIBK)	**0.0384**	0.020	ug/L	0.0410		93.7	70-130	2.32	30	
Styrene	**0.0456**	0.020	ug/L	0.0426		107	70-130	2.85	30	
1,1,2,2-Tetrachloroethane	**0.0697**	0.020	ug/L	0.0687		102	70-130	3.68	30	
Tetrachloroethylene (PCE)	**0.0798**	0.010	ug/L	0.0679		118	70-130	2.02	30	
Toluene	**0.0406**	0.020	ug/L	0.0377		108	70-130	2.66	30	
1,2,4-Trichlorobenzene	**0.0604**	0.020	ug/L	0.0742		81.4	70-130	2.31	30	
1,1,2-Trichloroethane	**0.0577**	0.020	ug/L	0.0546		106	70-130	3.44	30	
1,1,1-Trichloroethane	**0.0596**	0.020	ug/L	0.0546		109	70-130	2.53	30	
Trichloroethylene (TCE)	**0.0623**	0.020	ug/L	0.0537		116	70-130	3.06	30	
Trichlorofluoromethane (R11)	**0.0685**	0.020	ug/L	0.0562		122	70-130	2.03	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0924**	0.020	ug/L	0.0766		121	70-130	3.10	30	
1,3,5-Trimethylbenzene	**0.0541**	0.020	ug/L	0.0492		110	70-130	2.86	30	
1,2,4-Trimethylbenzene	**0.0556**	0.020	ug/L	0.0492		113	70-130	2.01	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I0901 - *** DEFAULT PREP ****										
LCS Dup (B2I0901-BSD1) Continued				Prepared: 09/08/22 Analyzed: 09/09/22						
Vinyl acetate	**0.0358**	0.020	ug/L	0.0352		102	70-130	1.66	30	
Vinyl chloride	**0.0287**	0.020	ug/L	0.0256		112	70-130	2.20	30	
o-Xylene	**0.0468**	0.020	ug/L	0.0434		108	70-130	2.57	30	
m,p-Xylenes	**0.0950**	0.020	ug/L	0.0868		109	70-130	2.39	30	
1,2,3-Trichloropropane	**0.0612**	0.020	ug/L	0.0603		102	70-130	3.29	30	
sec-Butylbenzene	**0.0587**	0.020	ug/L	0.0549		107	70-130	1.85	30	
Isopropylbenzene	**0.0536**	0.020	ug/L	0.0492		109	70-130	2.00	30	
n-Propylbenzene	**0.0501**	0.020	ug/L	0.0492		102	70-130	2.23	30	
4-Isopropyltoluene	**0.0590**	0.020	ug/L	0.0549		108	70-130	2.30	30	
Surrogate: 4-Bromofluorobenzene	*0.0353*		*ug/L*	*0.0358*		*98.6*	*70-130*			
*Batch B2I1610 - *** DEFAULT PREP ****										
Blank (B2I1610-BLK1)				Prepared & Analyzed: 09/09/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
Blank (B2I1610-BLK1) Continued				Prepared & Analyzed: 09/09/22						
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
Blank (B2I1610-BLK1) Continued				Prepared & Analyzed: 09/09/22						
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0339*		*ug/L*	*0.0358*		*94.8*	*70-130*			
LCS (B2I1610-BS1)				Prepared: 09/09/22 Analyzed: 09/10/22						
Acetone	**0.0308**	0.020	ug/L	0.0238		130	70-130			
Benzene	**0.0382**	0.0030	ug/L	0.0319		120	70-130			
Benzyl chloride	**0.0496**	0.020	ug/L	0.0518		95.8	70-130			
Bromodichloromethane	**0.0752**	0.0025	ug/L	0.0670		112	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
LCS (B2I1610-BS1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
Bromoform	**0.109**	0.020	ug/L	0.103		106	70-130			
Bromomethane	**0.0495**	0.020	ug/L	0.0388		128	70-130			
2-Butanone (MEK)	**0.0336**	0.020	ug/L	0.0295		114	70-130			
Carbon Disulfide	**0.0327**	0.020	ug/L	0.0311		105	70-130			
Carbon Tetrachloride	**0.0761**	0.020	ug/L	0.0629		121	70-130			
Chlorobenzene	**0.0534**	0.020	ug/L	0.0460		116	70-130			
Chloroethane	**0.0325**	0.020	ug/L	0.0264		123	70-130			
Chloroform	**0.0624**	0.0040	ug/L	0.0488		128	70-130			
Chloromethane	**0.0168**	0.020	ug/L	0.0207		81.4	70-130			
Dibromochloromethane	**0.0919**	0.020	ug/L	0.0852		108	70-130			
1,2-Dibromoethane (EDB)	**0.0932**	0.020	ug/L	0.0768		121	70-130			
1,2-Dichlorobenzene	**0.0780**	0.020	ug/L	0.0601		130	70-130			
1,3-Dichlorobenzene	**0.0741**	0.020	ug/L	0.0601		123	70-130			
1,4-Dichlorobenzene	**0.0723**	0.020	ug/L	0.0601		120	70-130			
Dichlorodifluoromethane (R12)	**0.0628**	0.020	ug/L	0.0495		127	70-130			
1,1-Dichloroethane	**0.0483**	0.020	ug/L	0.0405		119	70-130			
1,2-Dichloroethane (EDC)	**0.0491**	0.0040	ug/L	0.0405		121	70-130			
cis-1,2-Dichloroethylene	**0.0476**	0.020	ug/L	0.0396		120	70-130			
1,1-Dichloroethylene	**0.0513**	0.020	ug/L	0.0396		129	70-130			
trans-1,2-Dichloroethylene	**0.0450**	0.020	ug/L	0.0396		114	70-130			
1,2-Dichloropropane	**0.0531**	0.020	ug/L	0.0462		115	70-130			
trans-1,3-Dichloropropylene	**0.0552**	0.020	ug/L	0.0454		122	70-130			
cis-1,3-Dichloropropylene	**0.0533**	0.020	ug/L	0.0454		117	70-130			
Dichlorotetrafluoroethane	**0.0675**	0.020	ug/L	0.0699		96.5	70-130			
Ethylbenzene	**0.0492**	0.020	ug/L	0.0434		113	70-130			
4-Ethyltoluene	**0.0500**	0.020	ug/L	0.0492		102	70-130			
Hexachlorobutadiene	**0.0814**	0.020	ug/L	0.107		76.3	70-130			
2-Hexanone (MBK)	**0.0447**	0.020	ug/L	0.0410		109	70-130			
Isopropanol (IPA)	**0.0315**	0.20	ug/L	0.0246		128	70-130			
Methylene Chloride	**0.0434**	0.020	ug/L	0.0347		125	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0420**	0.020	ug/L	0.0410		103	70-130			
Styrene	**0.0489**	0.020	ug/L	0.0426		115	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
LCS (B2I1610-BS1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
1,1,2,2-Tetrachloroethane	**0.0754**	0.020	ug/L	0.0687		110	70-130			
Tetrachloroethylene (PCE)	**0.0881**	0.010	ug/L	0.0679		130	70-130			
Toluene	**0.0447**	0.020	ug/L	0.0377		119	70-130			
1,2,4-Trichlorobenzene	**0.0502**	0.020	ug/L	0.0742		67.6	70-130			QL-02
1,1,2-Trichloroethane	**0.0651**	0.020	ug/L	0.0546		119	70-130			
1,1,1-Trichloroethane	**0.0665**	0.020	ug/L	0.0546		122	70-130			
Trichloroethylene (TCE)	**0.0698**	0.020	ug/L	0.0537		130	70-130			
Trichlorofluoromethane (R11)	**0.0767**	0.020	ug/L	0.0562		136	70-130			QL-02
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0919**	0.020	ug/L	0.0766		120	70-130			
1,3,5-Trimethylbenzene	**0.0574**	0.020	ug/L	0.0492		117	70-130			
1,2,4-Trimethylbenzene	**0.0615**	0.020	ug/L	0.0492		125	70-130			
Vinyl acetate	**0.0427**	0.020	ug/L	0.0352		121	70-130			
Vinyl chloride	**0.0302**	0.020	ug/L	0.0256		118	70-130			
o-Xylene	**0.0506**	0.020	ug/L	0.0434		117	70-130			
m,p-Xylenes	**0.101**	0.020	ug/L	0.0868		116	70-130			
1,2,3-Trichloropropane	**0.0661**	0.020	ug/L	0.0603		110	70-130			
sec-Butylbenzene	**0.0665**	0.020	ug/L	0.0549		121	70-130			
Isopropylbenzene	**0.0573**	0.020	ug/L	0.0492		116	70-130			
n-Propylbenzene	**0.0561**	0.020	ug/L	0.0492		114	70-130			
4-Isopropyltoluene	**0.0664**	0.020	ug/L	0.0549		121	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0337*		*ug/L*	*0.0358*		*94.2*	*70-130*			
LCS Dup (B2I1610-BSD1)				Prepared: 09/09/22 Analyzed: 09/10/22						
Acetone	**0.0277**	0.020	ug/L	0.0238		116	70-130	10.6	30	
Benzene	**0.0352**	0.0030	ug/L	0.0319		110	70-130	8.18	30	
Benzyl chloride	**0.0483**	0.020	ug/L	0.0518		93.2	70-130	2.75	30	
Bromodichloromethane	**0.0732**	0.0025	ug/L	0.0670		109	70-130	2.71	30	
Bromoform	**0.108**	0.020	ug/L	0.103		105	70-130	1.04	30	
Bromomethane	**0.0483**	0.020	ug/L	0.0388		124	70-130	2.62	30	
2-Butanone (MEK)	**0.0316**	0.020	ug/L	0.0295		107	70-130	6.15	30	
Carbon Disulfide	**0.0373**	0.020	ug/L	0.0311		120	70-130	13.3	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
LCS Dup (B2I1610-BSD1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
Carbon Tetrachloride	**0.0737**	0.020	ug/L	0.0629		117	70-130	3.19	30	
Chlorobenzene	**0.0537**	0.020	ug/L	0.0460		117	70-130	0.516	30	
Chloroethane	**0.0327**	0.020	ug/L	0.0264		124	70-130	0.648	30	
Chloroform	**0.0562**	0.0040	ug/L	0.0488		115	70-130	10.4	30	
Chloromethane	**0.0239**	0.020	ug/L	0.0207		116	70-130	34.8	30	QR-02
Dibromochloromethane	**0.0896**	0.020	ug/L	0.0852		105	70-130	2.53	30	
1,2-Dibromoethane (EDB)	**0.0914**	0.020	ug/L	0.0768		119	70-130	2.00	30	
1,2-Dichlorobenzene	**0.0760**	0.020	ug/L	0.0601		126	70-130	2.58	30	
1,3-Dichlorobenzene	**0.0685**	0.020	ug/L	0.0601		114	70-130	7.93	30	
1,4-Dichlorobenzene	**0.0690**	0.020	ug/L	0.0601		115	70-130	4.77	30	
Dichlorodifluoromethane (R12)	**0.0561**	0.020	ug/L	0.0495		114	70-130	11.1	30	
1,1-Dichloroethane	**0.0444**	0.020	ug/L	0.0405		110	70-130	8.48	30	
1,2-Dichloroethane (EDC)	**0.0449**	0.0040	ug/L	0.0405		111	70-130	8.87	30	
cis-1,2-Dichloroethylene	**0.0442**	0.020	ug/L	0.0396		112	70-130	7.43	30	
1,1-Dichloroethylene	**0.0495**	0.020	ug/L	0.0396		125	70-130	3.46	30	
trans-1,2-Dichloroethylene	**0.0423**	0.020	ug/L	0.0396		107	70-130	6.27	30	
1,2-Dichloropropane	**0.0521**	0.020	ug/L	0.0462		113	70-130	1.85	30	
trans-1,3-Dichloropropylene	**0.0546**	0.020	ug/L	0.0454		120	70-130	1.07	30	
cis-1,3-Dichloropropylene	**0.0523**	0.020	ug/L	0.0454		115	70-130	1.80	30	
Dichlorotetrafluoroethane	**0.0638**	0.020	ug/L	0.0699		91.2	70-130	5.65	30	
Ethylbenzene	**0.0484**	0.020	ug/L	0.0434		112	70-130	1.51	30	
4-Ethyltoluene	**0.0489**	0.020	ug/L	0.0492		99.5	70-130	2.29	30	
Hexachlorobutadiene	**0.0921**	0.020	ug/L	0.107		86.4	70-130	12.4	30	
2-Hexanone (MBK)	**0.0441**	0.020	ug/L	0.0410		108	70-130	1.20	30	
Isopropanol (IPA)	**0.0278**	0.20	ug/L	0.0246		113	70-130	12.3	30	
Methylene Chloride	**0.0397**	0.020	ug/L	0.0347		114	70-130	8.86	30	
4-Methyl-2-pentanone (MIBK)	**0.0408**	0.020	ug/L	0.0410		99.5	70-130	3.07	30	
Styrene	**0.0491**	0.020	ug/L	0.0426		115	70-130	0.522	30	
1,1,2,2-Tetrachloroethane	**0.0751**	0.020	ug/L	0.0687		109	70-130	0.365	30	
Tetrachloroethylene (PCE)	**0.0862**	0.010	ug/L	0.0679		127	70-130	2.18	30	
Toluene	**0.0446**	0.020	ug/L	0.0377		118	70-130	0.253	30	
1,2,4-Trichlorobenzene	**0.0597**	0.020	ug/L	0.0742		80.4	70-130	17.3	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1610 - *** DEFAULT PREP ****										
LCS Dup (B2I1610-BSD1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
1,1,2-Trichloroethane	**0.0639**	0.020	ug/L	0.0546		117	70-130	1.95	30	
1,1,1-Trichloroethane	**0.0615**	0.020	ug/L	0.0546		113	70-130	7.84	30	
Trichloroethylene (TCE)	**0.0678**	0.020	ug/L	0.0537		126	70-130	2.89	30	
Trichlorofluoromethane (R11)	**0.0717**	0.020	ug/L	0.0562		128	70-130	6.66	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0982**	0.020	ug/L	0.0766		128	70-130	6.69	30	
1,3,5-Trimethylbenzene	**0.0578**	0.020	ug/L	0.0492		118	70-130	0.683	30	
1,2,4-Trimethylbenzene	**0.0578**	0.020	ug/L	0.0492		118	70-130	6.10	30	
Vinyl acetate	**0.0380**	0.020	ug/L	0.0352		108	70-130	11.7	30	
Vinyl chloride	**0.0312**	0.020	ug/L	0.0256		122	70-130	3.33	30	
o-Xylene	**0.0495**	0.020	ug/L	0.0434		114	70-130	2.25	30	
m,p-Xylenes	**0.101**	0.020	ug/L	0.0868		116	70-130	0.129	30	
1,2,3-Trichloropropane	**0.0649**	0.020	ug/L	0.0603		108	70-130	1.84	30	
sec-Butylbenzene	**0.0608**	0.020	ug/L	0.0549		111	70-130	8.97	30	
Isopropylbenzene	**0.0577**	0.020	ug/L	0.0492		117	70-130	0.770	30	
n-Propylbenzene	**0.0559**	0.020	ug/L	0.0492		114	70-130	0.263	30	
4-Isopropyltoluene	**0.0616**	0.020	ug/L	0.0549		112	70-130	7.46	30	
Surrogate: 4-Bromofluorobenzene	*0.0339*		*ug/L*	*0.0358*		*94.8*	*70-130*			
*Batch B2I1613 - *** DEFAULT PREP ****										
Blank (B2I1613-BLK1)				Prepared & Analyzed: 09/09/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
Blank (B2I1613-BLK1) Continued				Prepared & Analyzed: 09/09/22						
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
Blank (B2I1613-BLK1) Continued				Prepared & Analyzed: 09/09/22						
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
Blank (B2I1613-BLK1) Continued				Prepared & Analyzed: 09/09/22						
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0302*		*ug/L*	*0.0358*		*84.4*	*70-130*			
LCS (B2I1613-BS1)				Prepared: 09/09/22 Analyzed: 09/10/22						
Acetone	**0.0204**	0.020	ug/L				70-130			
Benzene	**0.0325**	0.0030	ug/L				70-130			
Benzyl chloride	**0.0528**	0.020	ug/L				70-130			
Bromodichloromethane	**0.0572**	0.0025	ug/L				70-130			
Bromoform	**0.0862**	0.020	ug/L				70-130			
Bromomethane	**0.0289**	0.020	ug/L				70-130			
2-Butanone (MEK)	**0.0299**	0.020	ug/L				70-130			
Carbon Disulfide	**0.0293**	0.020	ug/L				70-130			
Carbon Tetrachloride	**0.0482**	0.020	ug/L				70-130			
Chlorobenzene	**0.0413**	0.020	ug/L				70-130			
Chloroethane	**0.0212**	0.020	ug/L				70-130			
Chloroform	**0.0456**	0.0040	ug/L				70-130			
Chloromethane	**0.0158**	0.020	ug/L				70-130			
Dibromochloromethane	**0.0752**	0.020	ug/L				70-130			
1,2-Dibromoethane (EDB)	**0.0711**	0.020	ug/L				70-130			
1,2-Dichlorobenzene	**0.0582**	0.020	ug/L				70-130			
1,3-Dichlorobenzene	**0.0578**	0.020	ug/L				70-130			
1,4-Dichlorobenzene	**0.0574**	0.020	ug/L				70-130			
Dichlorodifluoromethane (R12)	**0.0303**	0.020	ug/L				70-130			
1,1-Dichloroethane	**0.0378**	0.020	ug/L				70-130			
1,2-Dichloroethane (EDC)	**0.0368**	0.0040	ug/L				70-130			
cis-1,2-Dichloroethylene	**0.0387**	0.020	ug/L				70-130			
1,1-Dichloroethylene	**0.0353**	0.020	ug/L				70-130			
trans-1,2-Dichloroethylene	**0.0406**	0.020	ug/L				70-130			
1,2-Dichloropropane	**0.0416**	0.020	ug/L				70-130			
trans-1,3-Dichloropropylene	**0.0395**	0.020	ug/L				70-130			
cis-1,3-Dichloropropylene	**0.0402**	0.020	ug/L				70-130			
Dichlorotetrafluoroethane	**0.0570**	0.020	ug/L				70-130			

Allen Aminian
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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
LCS (B2I1613-BS1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
Ethylbenzene	**0.0406**	0.020	ug/L				70-130			
4-Ethyltoluene	**0.0503**	0.020	ug/L				70-130			
Hexachlorobutadiene	**0.115**	0.020	ug/L				70-130			
2-Hexanone (MBK)	**0.0377**	0.020	ug/L				70-130			
Isopropanol (IPA)	**0.0211**	0.20	ug/L				70-130			
Methylene Chloride	**0.0283**	0.020	ug/L				70-130			
4-Methyl-2-pentanone (MIBK)	**0.0365**	0.020	ug/L				70-130			
Styrene	**0.0401**	0.020	ug/L				70-130			
1,1,2,2-Tetrachloroethane	**0.0635**	0.020	ug/L				70-130			
Tetrachloroethylene (PCE)	**0.0600**	0.010	ug/L				70-130			
Toluene	**0.0348**	0.020	ug/L				70-130			
1,2,4-Trichlorobenzene	**0.0698**	0.020	ug/L				70-130			
1,1,2-Trichloroethane	**0.0512**	0.020	ug/L				70-130			
1,1,1-Trichloroethane	**0.0500**	0.020	ug/L				70-130			
Trichloroethylene (TCE)	**0.0463**	0.020	ug/L				70-130			
Trichlorofluoromethane (R11)	**0.0453**	0.020	ug/L				70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0700**	0.020	ug/L				70-130			
1,3,5-Trimethylbenzene	**0.0482**	0.020	ug/L				70-130			
1,2,4-Trimethylbenzene	**0.0496**	0.020	ug/L				70-130			
Vinyl acetate	**0.0334**	0.020	ug/L				70-130			
Vinyl chloride	**0.0185**	0.020	ug/L				70-130			
o-Xylene	**0.0396**	0.020	ug/L				70-130			
m,p-Xylenes	**0.0775**	0.020	ug/L				70-130			
1,2,3-Trichloropropane	**0.0530**	0.020	ug/L				70-130			
sec-Butylbenzene	**0.0489**	0.020	ug/L				70-130			
Isopropylbenzene	**0.0443**	0.020	ug/L				70-130			
n-Propylbenzene	**0.0438**	0.020	ug/L				70-130			
4-Isopropyltoluene	**0.0479**	0.020	ug/L				70-130			
Surrogate: 4-Bromofluorobenzene	*0.0359*		*ug/L*	*0.0358*		*100*	*70-130*			
LCS Dup (B2I1613-BSD1)				Prepared: 09/09/22 Analyzed: 09/10/22						

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
LCS Dup (B2I1613-BSD1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
Acetone	**0.0196**	0.020	ug/L				70-130	4.04	30	
Benzene	**0.0319**	0.0030	ug/L				70-130	2.08	30	
Benzyl chloride	**0.0521**	0.020	ug/L				70-130	1.28	30	
Bromodichloromethane	**0.0563**	0.0025	ug/L				70-130	1.65	30	
Bromoform	**0.0841**	0.020	ug/L				70-130	2.43	30	
Bromomethane	**0.0293**	0.020	ug/L				70-130	1.34	30	
2-Butanone (MEK)	**0.0289**	0.020	ug/L				70-130	3.41	30	
Carbon Disulfide	**0.0296**	0.020	ug/L				70-130	0.952	30	
Carbon Tetrachloride	**0.0471**	0.020	ug/L				70-130	2.24	30	
Chlorobenzene	**0.0401**	0.020	ug/L				70-130	3.05	30	
Chloroethane	**0.0208**	0.020	ug/L				70-130	1.76	30	
Chloroform	**0.0444**	0.0040	ug/L				70-130	2.71	30	
Chloromethane	**0.0146**	0.020	ug/L				70-130	7.88	30	
Dibromochloromethane	**0.0738**	0.020	ug/L				70-130	1.94	30	
1,2-Dibromoethane (EDB)	**0.0699**	0.020	ug/L				70-130	1.74	30	
1,2-Dichlorobenzene	**0.0580**	0.020	ug/L				70-130	0.310	30	
1,3-Dichlorobenzene	**0.0561**	0.020	ug/L				70-130	3.06	30	
1,4-Dichlorobenzene	**0.0449**	0.020	ug/L				70-130	24.3	30	
Dichlorodifluoromethane (R12)	**0.0276**	0.020	ug/L				70-130	9.23	30	
1,1-Dichloroethane	**0.0345**	0.020	ug/L				70-130	8.96	30	
1,2-Dichloroethane (EDC)	**0.0365**	0.0040	ug/L				70-130	0.552	30	
cis-1,2-Dichloroethylene	**0.0379**	0.020	ug/L				70-130	1.86	30	
1,1-Dichloroethylene	**0.0343**	0.020	ug/L				70-130	2.96	30	
trans-1,2-Dichloroethylene	**0.0400**	0.020	ug/L				70-130	1.28	30	
1,2-Dichloropropane	**0.0406**	0.020	ug/L				70-130	2.47	30	
trans-1,3-Dichloropropylene	**0.0392**	0.020	ug/L				70-130	0.692	30	
cis-1,3-Dichloropropylene	**0.0396**	0.020	ug/L				70-130	1.48	30	
Dichlorotetrafluoroethane	**0.0552**	0.020	ug/L				70-130	3.36	30	
Ethylbenzene	**0.0390**	0.020	ug/L				70-130	4.03	30	
4-Ethyltoluene	**0.0491**	0.020	ug/L				70-130	2.37	30	
Hexachlorobutadiene	**0.116**	0.020	ug/L				70-130	1.20	30	
2-Hexanone (MBK)	**0.0380**	0.020	ug/L				70-130	0.758	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1613 - *** DEFAULT PREP ****										
LCS Dup (B2I1613-BSD1) Continued				Prepared: 09/09/22 Analyzed: 09/10/22						
Isopropanol (IPA)	**0.0197**	0.20	ug/L				70-130	7.00	30	
Methylene Chloride	**0.0277**	0.020	ug/L				70-130	2.48	30	
4-Methyl-2-pentanone (MIBK)	**0.0360**	0.020	ug/L				70-130	1.24	30	
Styrene	**0.0388**	0.020	ug/L				70-130	3.24	30	
1,1,2,2-Tetrachloroethane	**0.0616**	0.020	ug/L				70-130	3.07	30	
Tetrachloroethylene (PCE)	**0.0583**	0.010	ug/L				70-130	2.87	30	
Toluene	**0.0338**	0.020	ug/L				70-130	2.86	30	
1,2,4-Trichlorobenzene	**0.0798**	0.020	ug/L				70-130	13.3	30	
1,1,2-Trichloroethane	**0.0503**	0.020	ug/L				70-130	1.83	30	
1,1,1-Trichloroethane	**0.0487**	0.020	ug/L				70-130	2.65	30	
Trichloroethylene (TCE)	**0.0448**	0.020	ug/L				70-130	3.31	30	
Trichlorofluoromethane (R11)	**0.0457**	0.020	ug/L				70-130	0.988	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0672**	0.020	ug/L				70-130	4.02	30	
1,3,5-Trimethylbenzene	**0.0469**	0.020	ug/L				70-130	2.79	30	
1,2,4-Trimethylbenzene	**0.0482**	0.020	ug/L				70-130	2.82	30	
Vinyl acetate	**0.0339**	0.020	ug/L				70-130	1.36	30	
Vinyl chloride	**0.0209**	0.020	ug/L				70-130	12.3	30	
o-Xylene	**0.0383**	0.020	ug/L				70-130	3.45	30	
m,p-Xylenes	**0.0745**	0.020	ug/L				70-130	4.00	30	
1,2,3-Trichloropropane	**0.0511**	0.020	ug/L				70-130	3.59	30	
sec-Butylbenzene	**0.0476**	0.020	ug/L				70-130	2.62	30	
Isopropylbenzene	**0.0433**	0.020	ug/L				70-130	2.36	30	
n-Propylbenzene	**0.0423**	0.020	ug/L				70-130	3.31	30	
4-Isopropyltoluene	**0.0464**	0.020	ug/L				70-130	3.15	30	
Surrogate: 4-Bromofluorobenzene	*0.0359*		*ug/L*	*0.0358*		*100*	*70-130*			
*Batch B2I1614 - *** DEFAULT PREP ****										
Blank (B2I1614-BLK1)				Prepared & Analyzed: 09/12/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
Blank (B2I1614-BLK1) Continued				Prepared & Analyzed: 09/12/22						
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
Blank (B2I1614-BLK1) Continued				Prepared & Analyzed: 09/12/22						
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
Blank (B2I1614-BLK1) Continued				Prepared & Analyzed: 09/12/22						
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0339*		*ug/L*	*0.0358*		*94.6*	*70-130*			
LCS (B2I1614-BS1)				Prepared: 09/12/22 Analyzed: 09/13/22						
Acetone	**0.0237**	0.020	ug/L	0.0238		99.7	70-130			
Benzene	**0.0301**	0.0030	ug/L	0.0319		94.1	70-130			
Benzyl chloride	**0.0414**	0.020	ug/L	0.0518		80.0	70-130			
Bromodichloromethane	**0.0639**	0.0025	ug/L	0.0670		95.3	70-130			
Bromoform	**0.0938**	0.020	ug/L	0.103		90.7	70-130			
Bromomethane	**0.0414**	0.020	ug/L	0.0388		107	70-130			
2-Butanone (MEK)	**0.0268**	0.020	ug/L	0.0295		91.0	70-130			
Carbon Disulfide	**0.0320**	0.020	ug/L	0.0311		103	70-130			
Carbon Tetrachloride	**0.0656**	0.020	ug/L	0.0629		104	70-130			
Chlorobenzene	**0.0457**	0.020	ug/L	0.0460		99.3	70-130			
Chloroethane	**0.0277**	0.020	ug/L	0.0264		105	70-130			
Chloroform	**0.0485**	0.0040	ug/L	0.0488		99.3	70-130			
Chloromethane	**0.0207**	0.020	ug/L	0.0207		100	70-130			
Dibromochloromethane	**0.0784**	0.020	ug/L	0.0852		92.0	70-130			
1,2-Dibromoethane (EDB)	**0.0794**	0.020	ug/L	0.0768		103	70-130			
1,2-Dichlorobenzene	**0.0661**	0.020	ug/L	0.0601		110	70-130			
1,3-Dichlorobenzene	**0.0596**	0.020	ug/L	0.0601		99.2	70-130			
1,4-Dichlorobenzene	**0.0617**	0.020	ug/L	0.0601		103	70-130			
Dichlorodifluoromethane (R12)	**0.0421**	0.020	ug/L	0.0495		85.2	70-130			
1,1-Dichloroethane	**0.0389**	0.020	ug/L	0.0405		96.1	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
LCS (B2I1614-BS1) Continued				Prepared: 09/12/22 Analyzed: 09/13/22						
1,2-Dichloroethane (EDC)	**0.0387**	0.0040	ug/L	0.0405		95.6	70-130			
cis-1,2-Dichloroethylene	**0.0374**	0.020	ug/L	0.0396		94.4	70-130			
1,1-Dichloroethylene	**0.0420**	0.020	ug/L	0.0396		106	70-130			
trans-1,2-Dichloroethylene	**0.0361**	0.020	ug/L	0.0396		91.0	70-130			
1,2-Dichloropropane	**0.0452**	0.020	ug/L	0.0462		97.9	70-130			
trans-1,3-Dichloropropylene	**0.0467**	0.020	ug/L	0.0454		103	70-130			
cis-1,3-Dichloropropylene	**0.0457**	0.020	ug/L	0.0454		101	70-130			
Dichlorotetrafluoroethane	**0.0452**	0.020	ug/L	0.0699		64.7	70-130			QL-07
Ethylbenzene	**0.0419**	0.020	ug/L	0.0434		96.6	70-130			
4-Ethyltoluene	**0.0431**	0.020	ug/L	0.0492		87.6	70-130			
Hexachlorobutadiene	**0.0802**	0.020	ug/L	0.107		75.2	70-130			
2-Hexanone (MBK)	**0.0381**	0.020	ug/L	0.0410		93.0	70-130			
Isopropanol (IPA)	**0.0235**	0.20	ug/L	0.0246		95.6	70-130			
Methylene Chloride	**0.0340**	0.020	ug/L	0.0347		97.8	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0354**	0.020	ug/L	0.0410		86.3	70-130			
Styrene	**0.0418**	0.020	ug/L	0.0426		98.1	70-130			
1,1,2,2-Tetrachloroethane	**0.0641**	0.020	ug/L	0.0687		93.4	70-130			
Tetrachloroethylene (PCE)	**0.0744**	0.010	ug/L	0.0679		110	70-130			
Toluene	**0.0385**	0.020	ug/L	0.0377		102	70-130			
1,2,4-Trichlorobenzene	**0.0528**	0.020	ug/L	0.0742		71.2	70-130			
1,1,2-Trichloroethane	**0.0549**	0.020	ug/L	0.0546		101	70-130			
1,1,1-Trichloroethane	**0.0530**	0.020	ug/L	0.0546		97.1	70-130			
Trichloroethylene (TCE)	**0.0598**	0.020	ug/L	0.0537		111	70-130			
Trichlorofluoromethane (R11)	**0.0613**	0.020	ug/L	0.0562		109	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0842**	0.020	ug/L	0.0766		110	70-130			
1,3,5-Trimethylbenzene	**0.0521**	0.020	ug/L	0.0492		106	70-130			
1,2,4-Trimethylbenzene	**0.0523**	0.020	ug/L	0.0492		106	70-130			
Vinyl acetate	**0.0323**	0.020	ug/L	0.0352		91.6	70-130			
Vinyl chloride	**0.0265**	0.020	ug/L	0.0256		104	70-130			
o-Xylene	**0.0425**	0.020	ug/L	0.0434		97.9	70-130			
m,p-Xylenes	**0.0866**	0.020	ug/L	0.0868		99.7	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
LCS (B2I1614-BS1) Continued				Prepared: 09/12/22 Analyzed: 09/13/22						
1,2,3-Trichloropropane	**0.0559**	0.020	ug/L	0.0603		92.7	70-130			
sec-Butylbenzene	**0.0532**	0.020	ug/L	0.0549		96.9	70-130			
Isopropylbenzene	**0.0494**	0.020	ug/L	0.0492		100	70-130			
n-Propylbenzene	**0.0486**	0.020	ug/L	0.0492		98.8	70-130			
4-Isopropyltoluene	**0.0532**	0.020	ug/L	0.0549		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0348*		*ug/L*	*0.0358*		*97.2*	*70-130*			
LCS Dup (B2I1614-BSD1)				Prepared: 09/12/22 Analyzed: 09/13/22						
Acetone	**0.0239**	0.020	ug/L	0.0238		101	70-130	1.10	30	
Benzene	**0.0301**	0.0030	ug/L	0.0319		94.3	70-130	0.212	30	
Benzyl chloride	**0.0413**	0.020	ug/L	0.0518		79.7	70-130	0.376	30	
Bromodichloromethane	**0.0649**	0.0025	ug/L	0.0670		96.8	70-130	1.56	30	
Bromoform	**0.0947**	0.020	ug/L	0.103		91.6	70-130	0.987	30	
Bromomethane	**0.0415**	0.020	ug/L	0.0388		107	70-130	0.281	30	
2-Butanone (MEK)	**0.0271**	0.020	ug/L	0.0295		91.9	70-130	0.984	30	
Carbon Disulfide	**0.0315**	0.020	ug/L	0.0311		101	70-130	1.37	30	
Carbon Tetrachloride	**0.0663**	0.020	ug/L	0.0629		105	70-130	1.15	30	
Chlorobenzene	**0.0460**	0.020	ug/L	0.0460		100	70-130	0.702	30	
Chloroethane	**0.0280**	0.020	ug/L	0.0264		106	70-130	1.14	30	
Chloroform	**0.0487**	0.0040	ug/L	0.0488		99.8	70-130	0.502	30	
Chloromethane	**0.0208**	0.020	ug/L	0.0207		100	70-130	0.399	30	
Dibromochloromethane	**0.0797**	0.020	ug/L	0.0852		93.6	70-130	1.72	30	
1,2-Dibromoethane (EDB)	**0.0804**	0.020	ug/L	0.0768		105	70-130	1.25	30	
1,2-Dichlorobenzene	**0.0654**	0.020	ug/L	0.0601		109	70-130	1.19	30	
1,3-Dichlorobenzene	**0.0588**	0.020	ug/L	0.0601		97.8	70-130	1.42	30	
1,4-Dichlorobenzene	**0.0613**	0.020	ug/L	0.0601		102	70-130	0.685	30	
Dichlorodifluoromethane (R12)	**0.0415**	0.020	ug/L	0.0495		83.9	70-130	1.54	30	
1,1-Dichloroethane	**0.0387**	0.020	ug/L	0.0405		95.7	70-130	0.417	30	
1,2-Dichloroethane (EDC)	**0.0397**	0.0040	ug/L	0.0405		98.0	70-130	2.48	30	
cis-1,2-Dichloroethylene	**0.0382**	0.020	ug/L	0.0396		96.3	70-130	1.99	30	
1,1-Dichloroethylene	**0.0431**	0.020	ug/L	0.0396		109	70-130	2.52	30	
trans-1,2-Dichloroethylene	**0.0364**	0.020	ug/L	0.0396		91.9	70-130	0.984	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
LCS Dup (B2I1614-BSD1) Continued				Prepared: 09/12/22 Analyzed: 09/13/22						
1,2-Dichloropropane	**0.0453**	0.020	ug/L	0.0462		98.0	70-130	0.102	30	
trans-1,3-Dichloropropylene	**0.0480**	0.020	ug/L	0.0454		106	70-130	2.78	30	
cis-1,3-Dichloropropylene	**0.0462**	0.020	ug/L	0.0454		102	70-130	0.889	30	
Dichlorotetrafluoroethane	**0.0417**	0.020	ug/L	0.0699		59.7	70-130	8.04	30	QL-07
Ethylbenzene	**0.0418**	0.020	ug/L	0.0434		96.2	70-130	0.415	30	
4-Ethyltoluene	**0.0432**	0.020	ug/L	0.0492		87.9	70-130	0.342	30	
Hexachlorobutadiene	**0.0806**	0.020	ug/L	0.107		75.6	70-130	0.530	30	
2-Hexanone (MBK)	**0.0387**	0.020	ug/L	0.0410		94.4	70-130	1.49	30	
Isopropanol (IPA)	**0.0240**	0.20	ug/L	0.0246		97.8	70-130	2.28	30	
Methylene Chloride	**0.0348**	0.020	ug/L	0.0347		100	70-130	2.32	30	
4-Methyl-2-pentanone (MIBK)	**0.0358**	0.020	ug/L	0.0410		87.3	70-130	1.15	30	
Styrene	**0.0418**	0.020	ug/L	0.0426		98.1	70-130	0.00	30	
1,1,2,2-Tetrachloroethane	**0.0643**	0.020	ug/L	0.0687		93.7	70-130	0.321	30	
Tetrachloroethylene (PCE)	**0.0759**	0.010	ug/L	0.0679		112	70-130	1.99	30	
Toluene	**0.0387**	0.020	ug/L	0.0377		103	70-130	0.683	30	
1,2,4-Trichlorobenzene	**0.0540**	0.020	ug/L	0.0742		72.7	70-130	2.08	30	
1,1,2-Trichloroethane	**0.0553**	0.020	ug/L	0.0546		101	70-130	0.693	30	
1,1,1-Trichloroethane	**0.0537**	0.020	ug/L	0.0546		98.5	70-130	1.43	30	
Trichloroethylene (TCE)	**0.0601**	0.020	ug/L	0.0537		112	70-130	0.538	30	
Trichlorofluoromethane (R11)	**0.0621**	0.020	ug/L	0.0562		111	70-130	1.37	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0853**	0.020	ug/L	0.0766		111	70-130	1.27	30	
1,3,5-Trimethylbenzene	**0.0519**	0.020	ug/L	0.0492		106	70-130	0.378	30	
1,2,4-Trimethylbenzene	**0.0501**	0.020	ug/L	0.0492		102	70-130	4.13	30	
Vinyl acetate	**0.0327**	0.020	ug/L	0.0352		93.0	70-130	1.52	30	
Vinyl chloride	**0.0267**	0.020	ug/L	0.0256		104	70-130	0.672	30	
o-Xylene	**0.0425**	0.020	ug/L	0.0434		97.9	70-130	0.00	30	
m,p-Xylenes	**0.0865**	0.020	ug/L	0.0868		99.6	70-130	0.0502	30	
1,2,3-Trichloropropane	**0.0551**	0.020	ug/L	0.0603		91.3	70-130	1.52	30	
sec-Butylbenzene	**0.0529**	0.020	ug/L	0.0549		96.4	70-130	0.517	30	
Isopropylbenzene	**0.0494**	0.020	ug/L	0.0492		100	70-130	0.00	30	
n-Propylbenzene	**0.0485**	0.020	ug/L	0.0492		98.7	70-130	0.101	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1614 - *** DEFAULT PREP ****										
LCS Dup (B2I1614-BSD1) Continued				Prepared: 09/12/22 Analyzed: 09/13/22						
4-Isopropyltoluene	**0.0535**	0.020	ug/L	0.0549		97.4	70-130	0.412	30	
Surrogate: 4-Bromofluorobenzene	*0.0354*		*ug/L*	*0.0358*		*98.8*	*70-130*			
*Batch B2I1615 - *** DEFAULT PREP ****										
Blank (B2I1615-BLK1)				Prepared & Analyzed: 09/12/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1615 - *** DEFAULT PREP ****										
Blank (B2I1615-BLK1) Continued				Prepared & Analyzed: 09/12/22						
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1615 - *** DEFAULT PREP ****										
Blank (B2I1615-BLK1) Continued				Prepared & Analyzed: 09/12/22						
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0331*		*ug/L*	*0.0358*		*92.6*	*70-130*			
LCS (B2I1615-BS1)				Prepared & Analyzed: 09/12/22						
Acetone	**0.0198**	0.020	ug/L	0.0238		83.3	70-130			
Benzene	**0.0332**	0.0030	ug/L	0.0319		104	70-130			
Benzyl chloride	**0.0527**	0.020	ug/L	0.0518		102	70-130			
Bromodichloromethane	**0.0567**	0.0025	ug/L	0.0670		84.6	70-130			
Bromoform	**0.0823**	0.020	ug/L	0.103		79.6	70-130			
Bromomethane	**0.0294**	0.020	ug/L	0.0388		75.7	70-130			
2-Butanone (MEK)	**0.0299**	0.020	ug/L	0.0295		102	70-130			
Carbon Disulfide	**0.0308**	0.020	ug/L	0.0311		98.8	70-130			
Carbon Tetrachloride	**0.0460**	0.020	ug/L	0.0629		73.1	70-130			
Chlorobenzene	**0.0396**	0.020	ug/L	0.0460		86.1	70-130			
Chloroethane	**0.0213**	0.020	ug/L	0.0264		80.6	70-130			
Chloroform	**0.0454**	0.0040	ug/L	0.0488		92.9	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1615 - *** DEFAULT PREP ****										
LCS (B2I1615-BS1) Continued				Prepared & Analyzed: 09/12/22						
Chloromethane	**0.0178**	0.020	ug/L	0.0207		86.1	70-130			
Dibromochloromethane	**0.0741**	0.020	ug/L	0.0852		87.0	70-130			
1,2-Dibromoethane (EDB)	**0.0722**	0.020	ug/L	0.0768		94.0	70-130			
1,2-Dichlorobenzene	**0.0575**	0.020	ug/L	0.0601		95.6	70-130			
1,3-Dichlorobenzene	**0.0553**	0.020	ug/L	0.0601		91.9	70-130			
1,4-Dichlorobenzene	**0.0548**	0.020	ug/L	0.0601		91.2	70-130			
Dichlorodifluoromethane (R12)	**0.0261**	0.020	ug/L	0.0495		52.8	70-130			QL-11
1,1-Dichloroethane	**0.0373**	0.020	ug/L	0.0405		92.2	70-130			
1,2-Dichloroethane (EDC)	**0.0369**	0.0040	ug/L	0.0405		91.2	70-130			
cis-1,2-Dichloroethylene	**0.0394**	0.020	ug/L	0.0396		99.4	70-130			
1,1-Dichloroethylene	**0.0348**	0.020	ug/L	0.0396		87.7	70-130			
trans-1,2-Dichloroethylene	**0.0415**	0.020	ug/L	0.0396		105	70-130			
1,2-Dichloropropane	**0.0417**	0.020	ug/L	0.0462		90.3	70-130			
trans-1,3-Dichloropropylene	**0.0406**	0.020	ug/L	0.0454		89.5	70-130			
cis-1,3-Dichloropropylene	**0.0415**	0.020	ug/L	0.0454		91.4	70-130			
Dichlorotetrafluoroethane	**0.0541**	0.020	ug/L	0.0699		77.4	70-130			
Ethylbenzene	**0.0387**	0.020	ug/L	0.0434		89.1	70-130			
4-Ethyltoluene	**0.0486**	0.020	ug/L	0.0492		98.9	70-130			
Hexachlorobutadiene	**0.118**	0.020	ug/L	0.107		110	70-130			
2-Hexanone (MBK)	**0.0390**	0.020	ug/L	0.0410		95.2	70-130			
Isopropanol (IPA)	**0.0205**	0.20	ug/L	0.0246		83.2	70-130			
Methylene Chloride	**0.0282**	0.020	ug/L	0.0347		81.1	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0372**	0.020	ug/L	0.0410		90.8	70-130			
Styrene	**0.0391**	0.020	ug/L	0.0426		91.8	70-130			
1,1,2,2-Tetrachloroethane	**0.0606**	0.020	ug/L	0.0687		88.3	70-130			
Tetrachloroethylene (PCE)	**0.0597**	0.010	ug/L	0.0679		88.0	70-130			
Toluene	**0.0350**	0.020	ug/L	0.0377		92.9	70-130			
1,2,4-Trichlorobenzene	**0.0812**	0.020	ug/L	0.0742		109	70-130			
1,1,2-Trichloroethane	**0.0515**	0.020	ug/L	0.0546		94.4	70-130			
1,1,1-Trichloroethane	**0.0494**	0.020	ug/L	0.0546		90.6	70-130			
Trichloroethylene (TCE)	**0.0457**	0.020	ug/L	0.0537		85.1	70-130			
Trichlorofluoromethane (R11)	**0.0448**	0.020	ug/L	0.0562		79.8	70-130			

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AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I1615 - *** DEFAULT PREP ****										
LCS (B2I1615-BS1) Continued				Prepared & Analyzed: 09/12/22						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0677**	0.020	ug/L	0.0766		88.4	70-130			
1,3,5-Trimethylbenzene	**0.0469**	0.020	ug/L	0.0492		95.5	70-130			
1,2,4-Trimethylbenzene	**0.0487**	0.020	ug/L	0.0492		99.1	70-130			
Vinyl acetate	**0.0342**	0.020	ug/L	0.0352		97.2	70-130			
Vinyl chloride	**0.0206**	0.020	ug/L	0.0256		80.5	70-130			
o-Xylene	**0.0380**	0.020	ug/L	0.0434		87.6	70-130			
m,p-Xylenes	**0.0746**	0.020	ug/L	0.0868		85.9	70-130			
1,2,3-Trichloropropane	**0.0511**	0.020	ug/L	0.0603		84.7	70-130			
sec-Butylbenzene	**0.0473**	0.020	ug/L	0.0549		86.2	70-130			
Isopropylbenzene	**0.0425**	0.020	ug/L	0.0492		86.5	70-130			
n-Propylbenzene	**0.0418**	0.020	ug/L	0.0492		85.0	70-130			
4-Isopropyltoluene	**0.0462**	0.020	ug/L	0.0549		84.2	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0368*		*ug/L*	*0.0358*		*103*	*70-130*			
*Batch B2I2130 - *** DEFAULT PREP ****										
Blank (B2I2130-BLK1)				Prepared & Analyzed: 09/16/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2130 - *** DEFAULT PREP ****										
Blank (B2I2130-BLK1) Continued				Prepared & Analyzed: 09/16/22						
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2130 - *** DEFAULT PREP ****										
Blank (B2I2130-BLK1) Continued				Prepared & Analyzed: 09/16/22						
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0312*		*ug/L*	*0.0358*		*87.2*	*70-130*			
LCS (B2I2130-BS1)				Prepared & Analyzed: 09/16/22						

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Date Received: 08/29/22
Date Reported: 10/04/22

VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

*Batch B2I2130 - *** DEFAULT PREP ****

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (B2I2130-BS1) Continued				Prepared & Analyzed: 09/16/22						
Acetone	**0.0245**	0.020	ug/L	0.0238		103	70-130			
Benzene	**0.0317**	0.0030	ug/L	0.0319		99.1	70-130			
Benzyl chloride	**0.0497**	0.020	ug/L	0.0518		95.9	70-130			
Bromodichloromethane	**0.0712**	0.0025	ug/L	0.0670		106	70-130			
Bromoform	**0.105**	0.020	ug/L	0.103		101	70-130			
Bromomethane	**0.0417**	0.020	ug/L	0.0388		107	70-130			
2-Butanone (MEK)	**0.0279**	0.020	ug/L	0.0295		94.5	70-130			
Carbon Disulfide	**0.0278**	0.020	ug/L	0.0311		89.2	70-130			
Carbon Tetrachloride	**0.0762**	0.020	ug/L	0.0629		121	70-130			
Chlorobenzene	**0.0477**	0.020	ug/L	0.0460		104	70-130			
Chloroethane	**0.0270**	0.020	ug/L	0.0264		102	70-130			
Chloroform	**0.0526**	0.0040	ug/L	0.0488		108	70-130			
Chloromethane	**0.0213**	0.020	ug/L	0.0207		103	70-130			
Dibromochloromethane	**0.0894**	0.020	ug/L	0.0852		105	70-130			
1,2-Dibromoethane (EDB)	**0.0851**	0.020	ug/L	0.0768		111	70-130			
1,2-Dichlorobenzene	**0.0673**	0.020	ug/L	0.0601		112	70-130			
1,3-Dichlorobenzene	**0.0601**	0.020	ug/L	0.0601		100	70-130			
1,4-Dichlorobenzene	**0.0687**	0.020	ug/L	0.0601		114	70-130			
Dichlorodifluoromethane (R12)	**0.0581**	0.020	ug/L	0.0495		118	70-130			
1,1-Dichloroethane	**0.0410**	0.020	ug/L	0.0405		101	70-130			
1,2-Dichloroethane (EDC)	**0.0444**	0.0040	ug/L	0.0405		110	70-130			
cis-1,2-Dichloroethylene	**0.0414**	0.020	ug/L	0.0396		104	70-130			
1,1-Dichloroethylene	**0.0463**	0.020	ug/L	0.0396		117	70-130			
trans-1,2-Dichloroethylene	**0.0389**	0.020	ug/L	0.0396		98.2	70-130			
1,2-Dichloropropane	**0.0476**	0.020	ug/L	0.0462		103	70-130			
trans-1,3-Dichloropropylene	**0.0516**	0.020	ug/L	0.0454		114	70-130			
cis-1,3-Dichloropropylene	**0.0491**	0.020	ug/L	0.0454		108	70-130			
Dichlorotetrafluoroethane	**0.0688**	0.020	ug/L	0.0699		98.4	70-130			
Ethylbenzene	**0.0442**	0.020	ug/L	0.0434		102	70-130			
4-Ethyltoluene	**0.0470**	0.020	ug/L	0.0492		95.6	70-130			
Hexachlorobutadiene	**0.0802**	0.020	ug/L	0.107		75.2	70-130			
2-Hexanone (MBK)	**0.0430**	0.020	ug/L	0.0410		105	70-130			

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Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2130 - *** DEFAULT PREP ****										
LCS (B2I2130-BS1) Continued				Prepared & Analyzed: 09/16/22						
Isopropanol (IPA)	**0.0235**	0.20	ug/L	0.0246		95.7	70-130			
Methylene Chloride	**0.0353**	0.020	ug/L	0.0347		102	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0392**	0.020	ug/L	0.0410		95.7	70-130			
Styrene	**0.0429**	0.020	ug/L	0.0426		101	70-130			
1,1,2,2-Tetrachloroethane	**0.0657**	0.020	ug/L	0.0687		95.7	70-130			
Tetrachloroethylene (PCE)	**0.0808**	0.010	ug/L	0.0679		119	70-130			
Toluene	**0.0409**	0.020	ug/L	0.0377		108	70-130			
1,2,4-Trichlorobenzene	**0.0522**	0.020	ug/L	0.0742		70.4	70-130			
1,1,2-Trichloroethane	**0.0577**	0.020	ug/L	0.0546		106	70-130			
1,1,1-Trichloroethane	**0.0605**	0.020	ug/L	0.0546		111	70-130			
Trichloroethylene (TCE)	**0.0636**	0.020	ug/L	0.0537		118	70-130			
Trichlorofluoromethane (R11)	**0.0682**	0.020	ug/L	0.0562		121	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0822**	0.020	ug/L	0.0766		107	70-130			
1,3,5-Trimethylbenzene	**0.0515**	0.020	ug/L	0.0492		105	70-130			
1,2,4-Trimethylbenzene	**0.0526**	0.020	ug/L	0.0492		107	70-130			
Vinyl acetate	**0.0348**	0.020	ug/L	0.0352		98.9	70-130			
Vinyl chloride	**0.0263**	0.020	ug/L	0.0256		103	70-130			
o-Xylene	**0.0450**	0.020	ug/L	0.0434		104	70-130			
m,p-Xylenes	**0.0922**	0.020	ug/L	0.0868		106	70-130			
1,2,3-Trichloropropane	**0.0561**	0.020	ug/L	0.0603		93.1	70-130			
sec-Butylbenzene	**0.0527**	0.020	ug/L	0.0549		96.0	70-130			
Isopropylbenzene	**0.0500**	0.020	ug/L	0.0492		102	70-130			
n-Propylbenzene	**0.0480**	0.020	ug/L	0.0492		97.7	70-130			
4-Isopropyltoluene	**0.0531**	0.020	ug/L	0.0549		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0350*		*ug/L*	*0.0358*		*97.8*	*70-130*			
LCS Dup (B2I2130-BSD1)				Prepared & Analyzed: 09/16/22						
Acetone	**0.0247**	0.020	ug/L	0.0238		104	70-130	0.771	30	
Benzene	**0.0321**	0.0030	ug/L	0.0319		101	70-130	1.50	30	
Benzyl chloride	**0.0512**	0.020	ug/L	0.0518		98.8	70-130	2.98	30	
Bromodichloromethane	**0.0715**	0.0025	ug/L	0.0670		107	70-130	0.376	30	

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AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2130 - *** DEFAULT PREP ****										
LCS Dup (B2I2130-BSD1) Continued				Prepared & Analyzed: 09/16/22						
Bromoform	**0.106**	0.020	ug/L	0.103		103	70-130	1.86	30	
Bromomethane	**0.0424**	0.020	ug/L	0.0388		109	70-130	1.66	30	
2-Butanone (MEK)	**0.0280**	0.020	ug/L	0.0295		94.9	70-130	0.422	30	
Carbon Disulfide	**0.0283**	0.020	ug/L	0.0311		90.9	70-130	1.89	30	
Carbon Tetrachloride	**0.0749**	0.020	ug/L	0.0629		119	70-130	1.75	30	
Chlorobenzene	**0.0491**	0.020	ug/L	0.0460		107	70-130	2.76	30	
Chloroethane	**0.0274**	0.020	ug/L	0.0264		104	70-130	1.65	30	
Chloroform	**0.0532**	0.0040	ug/L	0.0488		109	70-130	1.11	30	
Chloromethane	**0.0218**	0.020	ug/L	0.0207		106	70-130	2.49	30	
Dibromochloromethane	**0.0890**	0.020	ug/L	0.0852		104	70-130	0.382	30	
1,2-Dibromoethane (EDB)	**0.0851**	0.020	ug/L	0.0768		111	70-130	0.0903	30	
1,2-Dichlorobenzene	**0.0688**	0.020	ug/L	0.0601		114	70-130	2.21	30	
1,3-Dichlorobenzene	**0.0635**	0.020	ug/L	0.0601		106	70-130	5.54	30	
1,4-Dichlorobenzene	**0.0856**	0.020	ug/L	0.0601		142	70-130	21.8	30	QL-03
Dichlorodifluoromethane (R12)	**0.0567**	0.020	ug/L	0.0495		115	70-130	2.41	30	
1,1-Dichloroethane	**0.0406**	0.020	ug/L	0.0405		100	70-130	0.992	30	
1,2-Dichloroethane (EDC)	**0.0437**	0.0040	ug/L	0.0405		108	70-130	1.47	30	
cis-1,2-Dichloroethylene	**0.0417**	0.020	ug/L	0.0396		105	70-130	0.668	30	
1,1-Dichloroethylene	**0.0466**	0.020	ug/L	0.0396		118	70-130	0.768	30	
trans-1,2-Dichloroethylene	**0.0393**	0.020	ug/L	0.0396		99.1	70-130	0.912	30	
1,2-Dichloropropane	**0.0472**	0.020	ug/L	0.0462		102	70-130	0.780	30	
trans-1,3-Dichloropropylene	**0.0517**	0.020	ug/L	0.0454		114	70-130	0.176	30	
cis-1,3-Dichloropropylene	**0.0491**	0.020	ug/L	0.0454		108	70-130	0.0924	30	
Dichlorotetrafluoroethane	**0.0685**	0.020	ug/L	0.0699		98.0	70-130	0.407	30	
Ethylbenzene	**0.0452**	0.020	ug/L	0.0434		104	70-130	2.24	30	
4-Ethyltoluene	**0.0474**	0.020	ug/L	0.0492		96.5	70-130	0.937	30	
Hexachlorobutadiene	**0.0820**	0.020	ug/L	0.107		76.9	70-130	2.24	30	
2-Hexanone (MBK)	**0.0430**	0.020	ug/L	0.0410		105	70-130	0.00	30	
Isopropanol (IPA)	**0.0236**	0.20	ug/L	0.0246		96.2	70-130	0.521	30	
Methylene Chloride	**0.0362**	0.020	ug/L	0.0347		104	70-130	2.53	30	
4-Methyl-2-pentanone (MIBK)	**0.0392**	0.020	ug/L	0.0410		95.6	70-130	0.105	30	
Styrene	**0.0417**	0.020	ug/L	0.0426		97.9	70-130	2.72	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2130 - *** DEFAULT PREP ****										
LCS Dup (B2I2130-BSD1) Continued				Prepared & Analyzed: 09/16/22						
1,1,2,2-Tetrachloroethane	**0.0647**	0.020	ug/L	0.0687		94.3	70-130	1.47	30	
Tetrachloroethylene (PCE)	**0.0825**	0.010	ug/L	0.0679		122	70-130	2.08	30	
Toluene	**0.0413**	0.020	ug/L	0.0377		110	70-130	0.917	30	
1,2,4-Trichlorobenzene	**0.0539**	0.020	ug/L	0.0742		72.6	70-130	3.08	30	
1,1,2-Trichloroethane	**0.0578**	0.020	ug/L	0.0546		106	70-130	0.189	30	
1,1,1-Trichloroethane	**0.0612**	0.020	ug/L	0.0546		112	70-130	1.17	30	
Trichloroethylene (TCE)	**0.0638**	0.020	ug/L	0.0537		119	70-130	0.337	30	
Trichlorofluoromethane (R11)	**0.0683**	0.020	ug/L	0.0562		122	70-130	0.165	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0832**	0.020	ug/L	0.0766		109	70-130	1.30	30	
1,3,5-Trimethylbenzene	**0.0521**	0.020	ug/L	0.0492		106	70-130	1.14	30	
1,2,4-Trimethylbenzene	**0.0535**	0.020	ug/L	0.0492		109	70-130	1.85	30	
Vinyl acetate	**0.0352**	0.020	ug/L	0.0352		99.9	70-130	1.01	30	
Vinyl chloride	**0.0267**	0.020	ug/L	0.0256		105	70-130	1.64	30	
o-Xylene	**0.0439**	0.020	ug/L	0.0434		101	70-130	2.44	30	
m,p-Xylenes	**0.0934**	0.020	ug/L	0.0868		108	70-130	1.31	30	
1,2,3-Trichloropropane	**0.0563**	0.020	ug/L	0.0603		93.3	70-130	0.215	30	
sec-Butylbenzene	**0.0537**	0.020	ug/L	0.0549		97.9	70-130	1.96	30	
Isopropylbenzene	**0.0479**	0.020	ug/L	0.0492		97.4	70-130	4.42	30	
n-Propylbenzene	**0.0480**	0.020	ug/L	0.0492		97.6	70-130	0.102	30	
4-Isopropyltoluene	**0.0543**	0.020	ug/L	0.0549		98.9	70-130	2.25	30	
Surrogate: 4-Bromofluorobenzene	*0.0342*		*ug/L*	*0.0358*		*95.6*	*70-130*			
*Batch B2I2622 - *** DEFAULT PREP ****										
Blank (B2I2622-BLK1)				Prepared & Analyzed: 09/19/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
Blank (B2I2622-BLK1) Continued				Prepared & Analyzed: 09/19/22						
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
Blank (B2I2622-BLK1) Continued				Prepared & Analyzed: 09/19/22						
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							

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QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
Blank (B2I2622-BLK1) Continued				Prepared & Analyzed: 09/19/22						
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0338*		*ug/L*	*0.0358*		*94.4*	*70-130*			
LCS (B2I2622-BS1)				Prepared & Analyzed: 09/19/22						
Acetone	**0.0253**	0.020	ug/L	0.0238		106	70-130			
Benzene	**0.0355**	0.0030	ug/L	0.0319		111	70-130			
Benzyl chloride	**0.0523**	0.020	ug/L	0.0518		101	70-130			
Bromodichloromethane	**0.0717**	0.0025	ug/L	0.0670		107	70-130			
Bromoform	**0.109**	0.020	ug/L	0.103		106	70-130			
Bromomethane	**0.0454**	0.020	ug/L	0.0388		117	70-130			
2-Butanone (MEK)	**0.0305**	0.020	ug/L	0.0295		104	70-130			
Carbon Disulfide	**0.0319**	0.020	ug/L	0.0311		102	70-130			
Carbon Tetrachloride	**0.0714**	0.020	ug/L	0.0629		114	70-130			
Chlorobenzene	**0.0526**	0.020	ug/L	0.0460		114	70-130			
Chloroethane	**0.0297**	0.020	ug/L	0.0264		113	70-130			
Chloroform	**0.0548**	0.0040	ug/L	0.0488		112	70-130			
Chloromethane	**0.0231**	0.020	ug/L	0.0207		112	70-130			
Dibromochloromethane	**0.0898**	0.020	ug/L	0.0852		105	70-130			
1,2-Dibromoethane (EDB)	**0.0901**	0.020	ug/L	0.0768		117	70-130			
1,2-Dichlorobenzene	**0.0696**	0.020	ug/L	0.0601		116	70-130			
1,3-Dichlorobenzene	**0.0705**	0.020	ug/L	0.0601		117	70-130			
1,4-Dichlorobenzene	**0.0723**	0.020	ug/L	0.0601		120	70-130			
Dichlorodifluoromethane (R12)	**0.0519**	0.020	ug/L	0.0495		105	70-130			
1,1-Dichloroethane	**0.0443**	0.020	ug/L	0.0405		109	70-130			
1,2-Dichloroethane (EDC)	**0.0425**	0.0040	ug/L	0.0405		105	70-130			
cis-1,2-Dichloroethylene	**0.0428**	0.020	ug/L	0.0396		108	70-130			
1,1-Dichloroethylene	**0.0463**	0.020	ug/L	0.0396		117	70-130			
trans-1,2-Dichloroethylene	**0.0403**	0.020	ug/L	0.0396		102	70-130			

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
LCS (B2I2622-BS1) Continued				Prepared & Analyzed: 09/19/22						
1,2-Dichloropropane	**0.0525**	0.020	ug/L	0.0462		114	70-130			
trans-1,3-Dichloropropylene	**0.0523**	0.020	ug/L	0.0454		115	70-130			
cis-1,3-Dichloropropylene	**0.0513**	0.020	ug/L	0.0454		113	70-130			
Dichlorotetrafluoroethane	**0.0617**	0.020	ug/L	0.0699		88.2	70-130			
Ethylbenzene	**0.0478**	0.020	ug/L	0.0434		110	70-130			
4-Ethyltoluene	**0.0492**	0.020	ug/L	0.0492		100	70-130			
Hexachlorobutadiene	**0.0804**	0.020	ug/L	0.107		75.4	70-130			
2-Hexanone (MBK)	**0.0444**	0.020	ug/L	0.0410		108	70-130			
Isopropanol (IPA)	**0.0253**	0.20	ug/L	0.0246		103	70-130			
Methylene Chloride	**0.0380**	0.020	ug/L	0.0347		109	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0407**	0.020	ug/L	0.0410		99.3	70-130			
Styrene	**0.0467**	0.020	ug/L	0.0426		110	70-130			
1,1,2,2-Tetrachloroethane	**0.0723**	0.020	ug/L	0.0687		105	70-130			
Tetrachloroethylene (PCE)	**0.0849**	0.010	ug/L	0.0679		125	70-130			
Toluene	**0.0445**	0.020	ug/L	0.0377		118	70-130			
1,2,4-Trichlorobenzene	**0.0531**	0.020	ug/L	0.0742		71.6	70-130			
1,1,2-Trichloroethane	**0.0632**	0.020	ug/L	0.0546		116	70-130			
1,1,1-Trichloroethane	**0.0597**	0.020	ug/L	0.0546		110	70-130			
Trichloroethylene (TCE)	**0.0670**	0.020	ug/L	0.0537		125	70-130			
Trichlorofluoromethane (R11)	**0.0691**	0.020	ug/L	0.0562		123	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0947**	0.020	ug/L	0.0766		124	70-130			
1,3,5-Trimethylbenzene	**0.0536**	0.020	ug/L	0.0492		109	70-130			
1,2,4-Trimethylbenzene	**0.0543**	0.020	ug/L	0.0492		110	70-130			
Vinyl acetate	**0.0367**	0.020	ug/L	0.0352		104	70-130			
Vinyl chloride	**0.0285**	0.020	ug/L	0.0256		112	70-130			
o-Xylene	**0.0480**	0.020	ug/L	0.0434		111	70-130			
m,p-Xylenes	**0.0989**	0.020	ug/L	0.0868		114	70-130			
1,2,3-Trichloropropane	**0.0596**	0.020	ug/L	0.0603		98.8	70-130			
sec-Butylbenzene	**0.0557**	0.020	ug/L	0.0549		101	70-130			
Isopropylbenzene	**0.0519**	0.020	ug/L	0.0492		106	70-130			
n-Propylbenzene	**0.0498**	0.020	ug/L	0.0492		101	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
LCS (B2I2622-BS1) Continued				Prepared & Analyzed: 09/19/22						
4-Isopropyltoluene	**0.0554**	0.020	ug/L	0.0549		101	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0331*		*ug/L*	*0.0358*		*92.4*	*70-130*			
LCS Dup (B2I2622-BSD1)				Prepared & Analyzed: 09/19/22						
Acetone	**0.0260**	0.020	ug/L	0.0238		110	70-130	2.96	30	
Benzene	**0.0354**	0.0030	ug/L	0.0319		111	70-130	0.180	30	
Benzyl chloride	**0.0524**	0.020	ug/L	0.0518		101	70-130	0.198	30	
Bromodichloromethane	**0.0722**	0.0025	ug/L	0.0670		108	70-130	0.652	30	
Bromoform	**0.109**	0.020	ug/L	0.103		105	70-130	0.380	30	
Bromomethane	**0.0462**	0.020	ug/L	0.0388		119	70-130	1.78	30	
2-Butanone (MEK)	**0.0305**	0.020	ug/L	0.0295		104	70-130	0.00	30	
Carbon Disulfide	**0.0314**	0.020	ug/L	0.0311		101	70-130	1.77	30	
Carbon Tetrachloride	**0.0725**	0.020	ug/L	0.0629		115	70-130	1.49	30	
Chlorobenzene	**0.0523**	0.020	ug/L	0.0460		114	70-130	0.614	30	
Chloroethane	**0.0301**	0.020	ug/L	0.0264		114	70-130	1.15	30	
Chloroform	**0.0548**	0.0040	ug/L	0.0488		112	70-130	0.00	30	
Chloromethane	**0.0230**	0.020	ug/L	0.0207		112	70-130	0.447	30	
Dibromochloromethane	**0.0904**	0.020	ug/L	0.0852		106	70-130	0.662	30	
1,2-Dibromoethane (EDB)	**0.0902**	0.020	ug/L	0.0768		117	70-130	0.0852	30	
1,2-Dichlorobenzene	**0.0698**	0.020	ug/L	0.0601		116	70-130	0.259	30	
1,3-Dichlorobenzene	**0.0700**	0.020	ug/L	0.0601		116	70-130	0.684	30	
1,4-Dichlorobenzene	**0.0729**	0.020	ug/L	0.0601		121	70-130	0.828	30	
Dichlorodifluoromethane (R12)	**0.0505**	0.020	ug/L	0.0495		102	70-130	2.70	30	
1,1-Dichloroethane	**0.0438**	0.020	ug/L	0.0405		108	70-130	1.10	30	
1,2-Dichloroethane (EDC)	**0.0435**	0.0040	ug/L	0.0405		108	70-130	2.26	30	
cis-1,2-Dichloroethylene	**0.0433**	0.020	ug/L	0.0396		109	70-130	1.20	30	
1,1-Dichloroethylene	**0.0477**	0.020	ug/L	0.0396		120	70-130	2.95	30	
trans-1,2-Dichloroethylene	**0.0411**	0.020	ug/L	0.0396		104	70-130	2.05	30	
1,2-Dichloropropane	**0.0515**	0.020	ug/L	0.0462		112	70-130	1.87	30	
trans-1,3-Dichloropropylene	**0.0534**	0.020	ug/L	0.0454		118	70-130	1.98	30	
cis-1,3-Dichloropropylene	**0.0518**	0.020	ug/L	0.0454		114	70-130	0.880	30	
Dichlorotetrafluoroethane	**0.0593**	0.020	ug/L	0.0699		84.8	70-130	3.93	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2622 - *** DEFAULT PREP ****										
LCS Dup (B2I2622-BSD1) Continued				Prepared & Analyzed: 09/19/22						
Ethylbenzene	**0.0477**	0.020	ug/L	0.0434		110	70-130	0.182	30	
4-Ethyltoluene	**0.0493**	0.020	ug/L	0.0492		100	70-130	0.300	30	
Hexachlorobutadiene	**0.0801**	0.020	ug/L	0.107		75.1	70-130	0.399	30	
2-Hexanone (MBK)	**0.0444**	0.020	ug/L	0.0410		108	70-130	0.0923	30	
Isopropanol (IPA)	**0.0256**	0.20	ug/L	0.0246		104	70-130	1.16	30	
Methylene Chloride	**0.0372**	0.020	ug/L	0.0347		107	70-130	1.94	30	
4-Methyl-2-pentanone (MIBK)	**0.0409**	0.020	ug/L	0.0410		99.8	70-130	0.502	30	
Styrene	**0.0462**	0.020	ug/L	0.0426		108	70-130	1.10	30	
1,1,2,2-Tetrachloroethane	**0.0715**	0.020	ug/L	0.0687		104	70-130	1.05	30	
Tetrachloroethylene (PCE)	**0.0849**	0.010	ug/L	0.0679		125	70-130	0.00	30	
Toluene	**0.0441**	0.020	ug/L	0.0377		117	70-130	1.11	30	
1,2,4-Trichlorobenzene	**0.0528**	0.020	ug/L	0.0742		71.1	70-130	0.701	30	
1,1,2-Trichloroethane	**0.0628**	0.020	ug/L	0.0546		115	70-130	0.693	30	
1,1,1-Trichloroethane	**0.0605**	0.020	ug/L	0.0546		111	70-130	1.27	30	
Trichloroethylene (TCE)	**0.0670**	0.020	ug/L	0.0537		125	70-130	0.00	30	
Trichlorofluoromethane (R11)	**0.0704**	0.020	ug/L	0.0562		125	70-130	1.85	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0925**	0.020	ug/L	0.0766		121	70-130	2.37	30	
1,3,5-Trimethylbenzene	**0.0533**	0.020	ug/L	0.0492		108	70-130	0.460	30	
1,2,4-Trimethylbenzene	**0.0544**	0.020	ug/L	0.0492		111	70-130	0.0905	30	
Vinyl acetate	**0.0370**	0.020	ug/L	0.0352		105	70-130	0.669	30	
Vinyl chloride	**0.0289**	0.020	ug/L	0.0256		113	70-130	1.51	30	
o-Xylene	**0.0472**	0.020	ug/L	0.0434		109	70-130	1.82	30	
m,p-Xylenes	**0.0979**	0.020	ug/L	0.0868		113	70-130	1.02	30	
1,2,3-Trichloropropane	**0.0595**	0.020	ug/L	0.0603		98.6	70-130	0.203	30	
sec-Butylbenzene	**0.0550**	0.020	ug/L	0.0549		100	70-130	1.19	30	
Isopropylbenzene	**0.0505**	0.020	ug/L	0.0492		103	70-130	2.59	30	
n-Propylbenzene	**0.0497**	0.020	ug/L	0.0492		101	70-130	0.0989	30	
4-Isopropyltoluene	**0.0551**	0.020	ug/L	0.0549		100	70-130	0.596	30	
Surrogate: 4-Bromofluorobenzene	*0.0326*		*ug/L*	*0.0358*		*91.2*	*70-130*			
*Batch B2I2833 - *** DEFAULT PREP ****										

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2833 - *** DEFAULT PREP ****										
Blank (B2I2833-BLK1)				Prepared & Analyzed: 09/27/22						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.0025	0.0025	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.0040	0.0040	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2833 - *** DEFAULT PREP ****										
Blank (B2I2833-BLK1) Continued				Prepared & Analyzed: 09/27/22						
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2833 - *** DEFAULT PREP ****										
Blank (B2I2833-BLK1) Continued				Prepared & Analyzed: 09/27/22						
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0336*		*ug/L*	*0.0358*		*94.0*	*70-130*			
LCS (B2I2833-BS1)				Prepared & Analyzed: 09/27/22						
Acetone	**0.0275**	0.020	ug/L	0.0238		116	70-130			
Benzene	**0.0355**	0.0030	ug/L	0.0319		111	70-130			
Benzyl chloride	**0.0507**	0.020	ug/L	0.0518		97.9	70-130			
Bromodichloromethane	**0.0738**	0.0025	ug/L	0.0670		110	70-130			
Bromoform	**0.110**	0.020	ug/L	0.103		107	70-130			
Bromomethane	**0.0486**	0.020	ug/L	0.0388		125	70-130			
2-Butanone (MEK)	**0.0315**	0.020	ug/L	0.0295		107	70-130			
Carbon Disulfide	**0.0321**	0.020	ug/L	0.0311		103	70-130			
Carbon Tetrachloride	**0.0740**	0.020	ug/L	0.0629		118	70-130			
Chlorobenzene	**0.0527**	0.020	ug/L	0.0460		114	70-130			
Chloroethane	**0.0317**	0.020	ug/L	0.0264		120	70-130			
Chloroform	**0.0561**	0.0040	ug/L	0.0488		115	70-130			
Chloromethane	**0.0239**	0.020	ug/L	0.0207		116	70-130			
Dibromochloromethane	**0.0913**	0.020	ug/L	0.0852		107	70-130			
1,2-Dibromoethane (EDB)	**0.0902**	0.020	ug/L	0.0768		117	70-130			
1,2-Dichlorobenzene	**0.0663**	0.020	ug/L	0.0601		110	70-130			
1,3-Dichlorobenzene	**0.0656**	0.020	ug/L	0.0601		109	70-130			

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LABORATORY ANALYSIS RESULTS

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Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2833 - *** DEFAULT PREP ****										
LCS (B2I2833-BS1) Continued				Prepared & Analyzed: 09/27/22						
1,4-Dichlorobenzene	**0.0665**	0.020	ug/L	0.0601		111	70-130			
Dichlorodifluoromethane (R12)	**0.0330**	0.020	ug/L	0.0495		66.7	70-130			QL-11
1,1-Dichloroethane	**0.0444**	0.020	ug/L	0.0405		110	70-130			
1,2-Dichloroethane (EDC)	**0.0440**	0.0040	ug/L	0.0405		109	70-130			
cis-1,2-Dichloroethylene	**0.0439**	0.020	ug/L	0.0396		111	70-130			
1,1-Dichloroethylene	**0.0492**	0.020	ug/L	0.0396		124	70-130			
trans-1,2-Dichloroethylene	**0.0419**	0.020	ug/L	0.0396		106	70-130			
1,2-Dichloropropane	**0.0525**	0.020	ug/L	0.0462		114	70-130			
trans-1,3-Dichloropropylene	**0.0533**	0.020	ug/L	0.0454		118	70-130			
cis-1,3-Dichloropropylene	**0.0520**	0.020	ug/L	0.0454		114	70-130			
Dichlorotetrafluoroethane	**0.0357**	0.020	ug/L	0.0699		51.1	70-130			QL-11
Ethylbenzene	**0.0473**	0.020	ug/L	0.0434		109	70-130			
4-Ethyltoluene	**0.0500**	0.020	ug/L	0.0492		102	70-130			
Hexachlorobutadiene	**0.0749**	0.020	ug/L	0.107		70.2	70-130			
2-Hexanone (MBK)	**0.0449**	0.020	ug/L	0.0410		110	70-130			
Isopropanol (IPA)	**0.0270**	0.20	ug/L	0.0246		110	70-130			
Methylene Chloride	**0.0396**	0.020	ug/L	0.0347		114	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0419**	0.020	ug/L	0.0410		102	70-130			
Styrene	**0.0455**	0.020	ug/L	0.0426		107	70-130			
1,1,2,2-Tetrachloroethane	**0.0708**	0.020	ug/L	0.0687		103	70-130			
Tetrachloroethylene (PCE)	**0.0844**	0.010	ug/L	0.0679		124	70-130			
Toluene	**0.0448**	0.020	ug/L	0.0377		119	70-130			
1,2,4-Trichlorobenzene	**0.0488**	0.020	ug/L	0.0742		65.7	70-130			QL-11
1,1,2-Trichloroethane	**0.0630**	0.020	ug/L	0.0546		116	70-130			
1,1,1-Trichloroethane	**0.0618**	0.020	ug/L	0.0546		113	70-130			
Trichloroethylene (TCE)	**0.0677**	0.020	ug/L	0.0537		126	70-130			
Trichlorofluoromethane (R11)	**0.0726**	0.020	ug/L	0.0562		129	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0917**	0.020	ug/L	0.0766		120	70-130			
1,3,5-Trimethylbenzene	**0.0515**	0.020	ug/L	0.0492		105	70-130			
1,2,4-Trimethylbenzene	**0.0516**	0.020	ug/L	0.0492		105	70-130			
Vinyl acetate	**0.0375**	0.020	ug/L	0.0352		106	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2I2833 - *** DEFAULT PREP ****										
LCS (B2I2833-BS1) Continued				Prepared & Analyzed: 09/27/22						
Vinyl chloride	**0.0306**	0.020	ug/L	0.0256		120	70-130			
o-Xylene	**0.0472**	0.020	ug/L	0.0434		109	70-130			
m,p-Xylenes	**0.0966**	0.020	ug/L	0.0868		111	70-130			
1,2,3-Trichloropropane	**0.0634**	0.020	ug/L	0.0603		105	70-130			
sec-Butylbenzene	**0.0633**	0.020	ug/L	0.0549		115	70-130			
Isopropylbenzene	**0.0568**	0.020	ug/L	0.0492		116	70-130			
n-Propylbenzene	**0.0548**	0.020	ug/L	0.0492		112	70-130			
4-Isopropyltoluene	**0.0641**	0.020	ug/L	0.0549		117	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0333*		*ug/L*	*0.0358*		*93.0*	*70-130*			
Fixed Gases by TCD - Quality Control										
*Batch B2I0205 - *** DEFAULT PREP ****										
Blank (B2I0205-BLK1)				Prepared & Analyzed: 09/02/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I0205-BS1)				Prepared & Analyzed: 09/02/22						
Methane	**2.20**	0.10	% by Volume	2.25		97.9	70-130			
Oxygen	**2.36**	0.10	% by Volume	2.00		118	70-130			
Carbon Dioxide	**9.23**	0.10	% by Volume	7.50		123	70-130			
LCS Dup (B2I0205-BSD1)				Prepared & Analyzed: 09/02/22						
Methane	**2.22**	0.10	% by Volume	2.25		98.5	70-130	0.634	30	
Oxygen	**2.52**	0.10	% by Volume	2.00		126	70-130	6.35	30	

Allen Aminian
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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B2I0205 - *** DEFAULT PREP ****										
LCS Dup (B2I0205-BSD1) Continued				Prepared & Analyzed: 09/02/22						
Carbon Dioxide	**9.24**	0.10	% by Volume	7.50		123	70-130	0.173	30	
*Batch B2I0609 - *** DEFAULT PREP ****										
Blank (B2I0609-BLK1)				Prepared & Analyzed: 09/06/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I0609-BS1)				Prepared & Analyzed: 09/06/22						
Methane	**2.16**	0.10	% by Volume	2.25		96.1	70-130			
Oxygen	**2.30**	0.10	% by Volume	2.00		115	70-130			
Carbon Dioxide	**9.28**	0.10	% by Volume	7.50		124	70-130			
LCS Dup (B2I0609-BSD1)				Prepared & Analyzed: 09/06/22						
Methane	**2.17**	0.10	% by Volume	2.25		96.4	70-130	0.323	30	
Oxygen	**2.32**	0.10	% by Volume	2.00		116	70-130	0.911	30	
Carbon Dioxide	**9.33**	0.10	% by Volume	7.50		124	70-130	0.526	30	
Duplicate (B2I0609-DUP1)				**Source: 2H29011-15**	Prepared & Analyzed: 09/06/22					
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**9.12**	0.20	% by Volume		6.70			30.7	30	QR-03
Carbon Dioxide	**8.69**	0.20	% by Volume		13.1			40.5	30	QR-03
*Batch B2I0713 - *** DEFAULT PREP ****										

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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B2I0713 - *** DEFAULT PREP ****										
Blank (B2I0713-BLK1)				Prepared & Analyzed: 09/07/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I0713-BS1)				Prepared & Analyzed: 09/07/22						
Methane	**2.13**	0.10	% by Volume	2.25		94.6	70-130			
Oxygen	**2.29**	0.10	% by Volume	2.00		115	70-130			
Carbon Dioxide	**9.25**	0.10	% by Volume	7.50		123	70-130			
LCS Dup (B2I0713-BSD1)				Prepared & Analyzed: 09/07/22						
Methane	**2.13**	0.10	% by Volume	2.25		94.5	70-130	0.141	30	
Oxygen	**2.28**	0.10	% by Volume	2.00		114	70-130	0.613	30	
Carbon Dioxide	**9.25**	0.10	% by Volume	7.50		123	70-130	0.0216	30	
Duplicate (B2I0713-DUP1)			**Source: 2H29011-30**	Prepared & Analyzed: 09/07/22						
Methane	**<0.10**	0.10	% by Volume		<0.20				30	
Oxygen	**21.9**	0.20	% by Volume		21.4			2.03	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	
*Batch B2I1413 - *** DEFAULT PREP ****										
Blank (B2I1413-BLK1)				Prepared & Analyzed: 09/14/22						
Methane	<0.10	0.10	% by Volume							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B2I1413 - *** DEFAULT PREP ****										
Blank (B2I1413-BLK1) Continued				Prepared & Analyzed: 09/14/22						
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I1413-BS1)				Prepared & Analyzed: 09/14/22						
Methane	**1.96**	0.10	% by Volume	2.25		87.1	70-130			
Oxygen	**2.28**	0.10	% by Volume	2.00		114	70-130			
Carbon Dioxide	**9.16**	0.10	% by Volume	7.50		122	70-130			
LCS Dup (B2I1413-BSD1)				Prepared & Analyzed: 09/14/22						
Methane	**1.98**	0.10	% by Volume	2.25		88.1	70-130	1.17	30	
Oxygen	**2.29**	0.10	% by Volume	2.00		115	70-130	0.613	30	
Carbon Dioxide	**9.32**	0.10	% by Volume	7.50		124	70-130	1.67	30	
*Batch B2I2125 - *** DEFAULT PREP ****										
Blank (B2I2125-BLK1)				Prepared: 09/21/22 Analyzed: 10/03/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I2125-BS1)				Prepared: 09/21/22 Analyzed: 10/03/22						
Methane	**2.26**	0.10	% by Volume	2.25		100	70-130			
Oxygen	**2.32**	0.10	% by Volume	2.00		116	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B2I2125 - *** DEFAULT PREP ****										
LCS (B2I2125-BS1) Continued				Prepared: 09/21/22 Analyzed: 10/03/22						
Carbon Dioxide	**9.33**	0.10	% by Volume	7.50		124	70-130			
LCS Dup (B2I2125-BSD1)				Prepared: 09/21/22 Analyzed: 10/03/22						
Methane	**2.23**	0.10	% by Volume	2.25		99.0	70-130	1.34	30	
Oxygen	**2.25**	0.10	% by Volume	2.00		113	70-130	3.06	30	
Carbon Dioxide	**9.07**	0.10	% by Volume	7.50		121	70-130	2.79	30	
*Batch B2I2616 - *** DEFAULT PREP ****										
Blank (B2I2616-BLK1)				Prepared & Analyzed: 09/26/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I2616-BS1)				Prepared & Analyzed: 09/26/22						
Methane	**2.46**	0.10	% by Volume	2.25		110	70-130			
Oxygen	**2.27**	0.10	% by Volume	2.00		114	70-130			
Carbon Dioxide	**9.09**	0.10	% by Volume	7.50		121	70-130			
LCS Dup (B2I2616-BSD1)				Prepared & Analyzed: 09/26/22						
Methane	**2.29**	0.10	% by Volume	2.25		102	70-130	7.28	30	
Oxygen	**2.24**	0.10	% by Volume	2.00		112	70-130	1.64	30	
Carbon Dioxide	**9.04**	0.10	% by Volume	7.50		121	70-130	0.618	30	
*Batch B2I2717 - *** DEFAULT PREP ****										

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187345
Date Received: 08/29/22
Date Reported: 10/04/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B2I2717 - *** DEFAULT PREP ****										
Blank (B2I2717-BLK1)				Prepared & Analyzed: 09/27/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2I2717-BS1)				Prepared & Analyzed: 09/27/22						
Methane	**2.28**	0.10	% by Volume	2.25		101	70-130			
Oxygen	**2.25**	0.10	% by Volume	2.00		113	70-130			
Carbon Dioxide	**9.05**	0.10	% by Volume	7.50		121	70-130			
LCS Dup (B2I2717-BSD1)				Prepared & Analyzed: 09/27/22						
Methane	**2.30**	0.10	% by Volume	2.25		102	70-130	0.875	30	
Oxygen	**2.25**	0.10	% by Volume	2.00		112	70-130	0.178	30	
Carbon Dioxide	**8.96**	0.10	% by Volume	7.50		120	70-130	0.955	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187345
Project No:	693142	**Date Received:**	08/29/22
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	10/04/22

Special Notes

[1] = **E** : The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.

[2] = **QL-02** : The recovery for this analyte is outside of the acceptance control limits for the LCS. The data was validated based on the acceptable recovery for this analyte in the LCSD.

[3] = **QL-03** : The recovery for this analyte is outside of the acceptance control limits for the LCSD. The data was validated based on the acceptable recovery for this analyte in the LCS.

[4] = **QL-07** : The recovery for this analyte in the LCS and LCSD is marginally below the lower control limit, therefore the reported concentration for this analyte may be biased low.

[5] = **QL-11** : The recovery for this analyte in the LCS is marginally below the lower control limit, therefore the reported concentration for this analyte may be biased low.

[6] = **QR-02** : The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

[7] = **QR-03** : The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

Allen Aminian
QA/QC Manager

American Analytics **Air Toxics** Chain-Of-Custody Record (1)

A.A. COC#: 25289

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	fixed gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									Please Enter Codes		TAT Codes						
1	SVP-105-5	2H29011-01	12226	184	8/29/22	935	8/29/22	947	1.4	SG		X	X	X	-27	-3	
2	SVP-105-10	-02	11496	166		935		950				X	X	X	-28	-3	
3	SVP-105-10 Dup	-03	12242	166		935		950				X	X	X	-28	-3	
4	SVP-106-5	-04	20473	154		937		955				X	X	X	-27	-3	
5	SVP-106-10	-05	11286	113		937		956				X	X	X	-27	-3	
6	SVM-12-7	-06	4326	266		1120		1143				X	X	X	-27	-3	
7	SVM-12-15	-07	4340	265		1120		1140				X	X	X	-27	-3	
8	SVM-12-22	-08	11316	100		1120		1141				X	X	X	-28	-3	
9	SVP-107-5	-09	12257	192		1125		1145				X	X	X	-28	-3	
10	SVP-107-10	-10	12206	209		1125		1148				X	X	X	-27	-3	
11	SVM-13-7	-11	10608	207		1154		1203				X	X	X	-27	-3	
12	SVM-13-15	-12	12234	208		1154		1205				X	X	X	-27	-3	
13	SVM-13-22	-13	12300	255		1154		1203				X	X	X	-28	-3	
14	SVP-108-5	-14	5132	189		1230		1245				X	X	X	-28	-3	22 AUG 29 15:16
15	SVP-108-10	-15	12192	261		1230		1247				X	X	X	-28	-3	

For Laboratory Use

REVIEWED

Date 8/29/22 Time 17:05

TAT 10 Days Sign:

Relinquished By	Date	Time	Received By
	8/29/22	1516	
Relinquished By	Date	Time	Received By
Relinquished By	Date	Time	Received By

A.A. Project No.: MB187345/2H29011

☐ I, the client, scanned or photographed a copy for my records, or

Client: Total Number Of Cans Received: Number Of Cans Not Used:

AA: Please Scan and email a copy to Client ☐ Sampler ☐

Note: By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

American Analytics **Air Toxics** Chain-Of-Custody Record (1)

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

A.A. COC#: 25290

Page 2 of 2

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	Fixed Gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									TAT Codes Please Enter Codes								
1	Ambient Air	24290II - 16	1237	159	8/29/22	1740	8/29/22	1258	1.4	AA		X	X	X	-28	-3	
2	SVM-14R-7	- 17	2030	231	↓	1255	↓	1305	↓	SG		X	X	X	-27	-3	
3	SVM-14R-16	- 18	6292	186		1255		1305		↓		X	X	X	-27	-3	
4	SVM-14R-22	- 19	11394	263		1255		1315				X	X	X	-27	-3	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	'22 AUG 29 15:16
13																	
14																	
15																	

For Laboratory Use

REVIEWED

Date 8/29/22 Time 17:05

TAT 10 Days Sign:

A.A. Project No. MB1457345/24290II

Relinquished By	Date	Time	Received By
	8/29/22	1516	
Relinquished By	Date	Time	Received By
Relinquished By	Date	Time	Received By

☐ I, the client, scanned or photographed a copy for my records, or

Client: Total Number Of Cans Received: Number Of Cans Not Used:

AA: Please Scan and email a copy to Client ☐ Sampler ☐

Note: By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

American Analytics **Air Toxics** Chain-Of-Custody Record (1)

A.A. COC#: 25296

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

Page 1 Of 1

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	Fixed Gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									Please Enter Codes		TAT Codes						
1	SVM-11-7	2H29011-20	11249	267	8/30/22	825	8/30/22	838	6.4	SG		X	X	X	-27	-3	
2	SVM-11-15	-21	12265	144		825		838				X	X	X	-28	-3	
3	SVM-11-22	-22	2355	185		825		918				X	X	X	-27	-3	
4	SVM-11-22 Dup	-23	581	185		825		918				X	X	X	-27	-3	
5	SVP-109-5	-24	12289	141		946		1000				X	X	X	-27	-3	
6	SVP-109-10	-25	10622	202		946		1003				X	X	X	-27	-3	
7	Ambient Air	-26	12287	149		1022		1032		AA		X	X	X	-28	-3	
8	SVM-21-5	-27	12256	140		1030		1038		SG		X	X	X	-27	-3	
9	SVM-21-14.5	-28	4778	108		1030		1057				X	X	X	-27	-3	
10	SVM-22-5	-29	1546	248		1110		1128				X	X	X	-27	-3	
11	SVM-22-14.5	-30	12201	258		1110		1126				X	X	X	-28	-3	
12	SVM-23-5	-31	5136	199		1139		1153				X	X	X	-28	-3	
13	SVM-23-14.5	-32	4329	226		1139		1150				X	X	X	-27	-3	'22 AUG 30 14:03
14	SVM-9-5	-33	12272	272		1212		1225				X	X	X	-27	-3	
15	SVM-9-14.5	-34	12275	228		1217		1224				X	X	X	-27	-3	

For Laboratory Use

REVIEWED

Date 8/31/22 Time 10:02

TAT 10 Days Sign:

A.A. Project No.: MB18T345/2H29011

Relinquished By	Date	Time	Received By
	8/30/22	1403	

☐ I, the client, scanned or photographed a copy for my records, or

Client: Total Number Of Cans Received: Number Of Cans Not Used: Number Of Cans Returned:

AA: Please Scan and email a copy to Client ☐ Sampler ☐

Note: By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

American Analytics Air Toxics Chain-Of-Custody Record (1)

A.A. COC#: 25306

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

Page 1 Of 2

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	Fixed gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									Please Enter Codes		TAT Codes						
1	SVM-26-5	24290II -35	4330	189	8/31/22	921	8/31/22	929	1.4	SG		X	X	X	-27	-3	
2	SVM-26-10	- 36	11453	251		921		948				X	X	X	-27	-3	
3	SVM-27-5	- 37	12199	199		924		942				X	X	X	-27	-3	
4	SVM-27-10	- 38	12270	208		924		945				X	X	X	-28	-3	
5	SVM-24-5	- 39	12261	226		927		948				X	X	X	-28	-3	
6	SVM-24-10	- 40	12250	272		927		954				X	X	X	-27	-3	
7	SVM-25-5	- 41	5139	220		1012		1021				X	X	X	-28	-3	
8	SVM-25-10	- 42	12232	217		1012		1022				X	X	X	-27	-3	
9	SVM-16-7	- 43	4571	115		1052		1102				X	X	X	-27	-3	
10	SVM-16-16	- 44	12269	247		1052		1102				X	X	X	-28	-3	
11	SVM-16-22	- 45	1545	184		1052		1103				X	X	X	-27	-3	
12	SVM-8-5	- 46	10606	267		1055		1108				X	X	X	-27	-3	
13	SVM-8-15	- 47	2357	212		1055		1106				X	X	X	-27	-3	
14	SVM-5-5	- 48	1252	145		1059		1114				X	X	X	-28	-3	'22 AUG 31 1358
15	SVM-5-15	- 49	5141	175		1059		1112				X	X	X	-28	-3	

For Laboratory Use

REVIEWED

Date 9/1/22 Time 10:50

TAT 10 Days Sign:

A.A. Project No.: M318734S/24290II

Relinquished By	Date	Time	Received By
	8/31/22	1358	
Relinquished By	Date	Time	Received By
Relinquished By	Date	Time	Received By

☐ I, the client, scanned or photographed a copy for my records, or

Client: Total Number Of Cans Received: Number Of Cans Not Used: Number Of Cans Returned:

AA: Please Scan and email a copy to Client ☐ Sampler ☐

Note: By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

American Analytics Air Toxics Chain-Of-Custody Record (1)

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

A.A. COC#: 25307

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	Fixed gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									TAT Codes Please Enter Codes								
1	Ambient Air	2H29011 - 50	1558	137	8/31/22	1138	8/31/22	1150	1.4	AA			X	X	X	-28	-3
2	SVM-3-5	- 51	2053	233	↓	1147	↓	1156	↓	SG			X	X	X	-27	-3
3	SVM-3-15	- 52	4558	246	↓	1147	↓	1157	↓	↓			X	X	X	-27	-3
4																	
5																	
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12																	
13																	
14																	
15																	

22 AUG 31 13:58

For Laboratory Use

REVIEWED

Date 9/1/22 Time 10:50

TAT 10 Days Sign:

A.A. Project No.: MB187345/2H29011

Relinquished By	Date	Time	Received By
	8/31/22	1358	
Relinquished By	Date	Time	Received By
Relinquished By	Date	Time	Received By

☐ I, the client, scanned or photographed a copy for my records, or

AA: Please scan and email a copy to Client ☐ Sampler ☐

Client: Total Number Of Cans Received: Number Of Cans Not Used: Number Of Cans Returned:

Note: By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

American Analytics Air Toxics Chain-Of-Custody Record (1)

9765 Eton Ave., Chatsworth, CA 91311 Tel: 818-998-5547 Support@AmericanAnalytics.com

A.A. COC#: 25312

Page 1 Of 1

Client Information		Project Information		Sampler Information		TAT Codes
Client:	Kinder Morgan	Project Name:	Norwalk	Name:	Kris B.	1 = Same Day Rush
Project Manager:		Street Address:	15306 Norwalk Blvd	Landline:		24 = 24 HR Rush
Address:		City		Cell:		48 = 48 HR Rush
		Sample Matrix Code (SMC*)	Container Code (CC*)	Email:		72 = 72 HR Rush
Landline:		AA Ambient Air	1.4L Cans: 1.4			5 = 5 Day Rush
Cell:		SG Soil Gas	6L Can: 6			X = 10 Work Days (Standard)
Email:		O Other	Tedlar Bag: T			

	Client I.D.	A.A. I.D.	Can I.D.	Sample Train/Flow Controller I.D.	Start Date	Start Time	End Date	End Time	CC*	SMC*	TO-15-SIM	TO-15	TO-3	Fixed gases	Can Vac in Hg Start	Can Vac in Hg End	Comments And Instructions
									TAT Codes Please Enter Codes								
1	SVM-2-5	22H2901 -53	1553	173	9/1/22	825	9/1/22	834	1.4	SG		X	X	X	-28	-3	
2	SVM-1-5	-54	4331	201		835		844				X	X	X	-28	-3	
3	SVM-1-15	-55	2350	117		835		846				X	X	X	-27	-3	
4	SVM-1-15 Dup	-56	1239	117		835		846				X	X	X	-27	-3	
5	SVM-10-15	-57	2352	139		859		910				X	X	X	-28	-3	
6	SVM-7-7	-58	12187	266		918		935				X	X	X	-27	-3	
7	SVM-7-13	-59	11455	159		918		935				X	X	X	-27	-3	
8	SVM-6-7	-60	2047	255		930		940				X	X	X	-27	-3	
9	SVM-6-13	-61	11413	100		930		940				X	X	X	-27	-3	
10	Ambient Air	-62	2037	267		909		920		AA		X	X	X	-28	-3	
11																	
12																	
13																	22 SEP 1 13:09
14																	
15																	

REVIEWED

For Laboratory Use

Date 9/1/22 Time 14:17

TAT 10 Days Sign:

Relinquished By	Date	Time	Received By
	9/1/22	1309	
Relinquished By	Date	Time	Received By
Relinquished By	Date	Time	Received By

A.A. Project No.: MB1497345/22H2901

☐ I, the client, scanned or photographed a copy for my records, or

Client: Total Number Of Cans Received: Number Of Cans Not Used: Number Of Cans Returned:

AA: Please Scan and email a copy to Client ☐ Sampler ☐

Note. By relinquishing samples to American Analytics, Inc. (AA), the client agrees to pay for services requested on this chain of custody form and any additional client-requested analyses performed on this project. Charges will be according to AA's standard price list at the time of the analysis, or per valid quote or agreement with the client. Unless agreed otherwise, payment for services is due within 30 days from the date of invoice. Late payments are subject to 2% interest per month, or as allowed by law. (1) Unless the client has made a special arrangement, in writing, with AA's project manager, sample(s) will be held for up to 1 week following the submittal of results to the client. Longer sample storage times can be arranged for a fee. Clients will receive a list of delivered items (2 copies) when accepting cans, gauges, & other related hardware. Please return a signed copy of the list with the chain-of-custody.

Attachment B
Statistical Analysis Summary Table

Attachment B

Statistical Methodology

The Mann-Kendall test is a nonparametric procedure used to assess if there is a monotonic upward or downward trend of the variable of interest over time. A monotonic upward (downward) trend means that the variable consistently increases (decreases) through time, but the trend may or may not be linear. The data values are evaluated as an ordered time series. Each data value is compared to all subsequent data values. Thus, the test can be viewed as a nonparametric test for zero slope of the linear regression of time-ordered data versus time, as illustrated by Hollander and Wolfe 1973, p. 201.

The Mann-Kendall test compares the relative magnitudes of sample data rather than the data values themselves. One benefit of this is that the data need not conform to any distribution. Additionally, the test has a low sensitivity to abrupt breaks due to non-homogeneous time series. Data reported as nondetects are included in the test by assigning them a common value that is less than the smallest measured value in the data set (EPA, 2009).

The Mann-Kendall test statistic (S) is found by counting the number of "concordant observations", where the later-in-time observation has a larger value for the series, and subtracting the number of "discordant observations", where the later-in-time observation has a smaller value for the series. This is done for all pairs of observations in the data set. The total difference is denoted S. Positive values of S indicate an increase in constituent concentrations over time, whereas negative values indicate a decrease in constituent concentrations over time. The strength of the trend is proportional to the magnitude of the S (i.e., the larger the absolute value of S, the stronger the evidence for a real increasing or decreasing trend).

Let $x_1, x_2, \ldots x_n$ represent n data points where x_j represents the data point at time j. Then the Mann-Kendall statistic (S) is given by:

$$S = \sum_{k=1}^{n-1} \sum_{j=k+1}^{n} sign(x_j - x_k)$$

Where:

$$sign(x_j - x_k) = 1 \; if \; x_j - x_k > 0$$
$$= \; 0 \; if \; x_j - x_k = 0$$
$$= -1 \; if \; x_j - x_k < 0$$

The null hypothesis in the Mann-Kendall test assumes that there is no trend (the data are independent and randomly ordered) and this is tested against the alternative hypothesis, which assumes that there is a trend. The calculated probability (p-value) of the test represents the probability that any observed trend would occur purely by chance (given the variability and sample size of the data set). A significance level of 0.05 (i.e., 95 percent confidence) was used to test the null hypothesis that there is no trend in the data.

The significance level is the probability that a test erroneously detects a trend when none is present. Only p-values less than 0.05 indicate a statistically significant trend. The result of the Mann-Kendall test is either a significantly increasing or decreasing trend, or a non-significant result (no trend, stable).

To gauge the magnitude of the trend, the Theil-Sen slope was calculated for wells exhibiting a statistically significant trend in constituent concentrations. Although nonparametric, the Theil-Sen slope estimator does not use data ranks but rather the concentrations themselves. The method is nonparametric because the median pairwise slope is utilized, thus ignoring extreme values that might otherwise skew the slope estimate. Consequently, the Theil-Sen line estimates the change in median concentration over time and not the mean as in linear regression. The Theil-Sen method handles nondetects in the same manner as the Mann-Kendall test; it assigns each nondetect a common value less than any detected measurement (EPA, 2009). Unlike the Mann-Kendall test, however, the actual concentration values are important in computing the slope estimate in the Theil-Sen procedure. Therefore, the approach is not appropriate when more than 50 percent of the concentration measurements are nondetects (ITRC, 2013).

Where there was insufficient evidence for identifying a significant, non-zero trend at the 95 percent confidence level, concentrations were deemed stable if the coefficient of variation (CV) is less than 1. The CV is recognized as an acceptable measure of intrinsic variability in positive-valued data sets (EPA, 2009) and can be used as an indication of stability. The CV is a relative measure of variation described by the ratio of the sample standard deviation to the sample mean. Values less than or near 1 indicate that the data form a relatively close group about the mean value. Values larger than 1 indicate that the data show a greater degree of scatter about the mean. It should be noted that the CV is a relative measure of variation in groundwater concentration data and can be affected by the magnitude of concentration (EPA, 2009). As such, relatively higher concentrations can include significant variation while exhibiting a small CV.

Descriptive statistics (mean, median, standard deviation, and CV) were calculated using the Kaplan-Meier (KM) product-limit estimator (Kaplan and Meier, 1958) for nondetects. The KM method is a standard nonparametric method for computing descriptive statistics of censored data. It is widely used in survival or lifetime data analysis to incorporate data with multiple censoring levels and does not require specification of an assumed distribution. A percentile is assigned to each detected observation, starting at the largest detected value and working down the data set, based on the number of detects and nondetects above and below each observation. Percentiles are not assigned to nondetects, but nondetects affect the percentiles calculated for detected observations. The survival curve, a step function plot of the cumulative distribution function, gives the shape of the data set. Estimates of the mean and standard deviation are computed from the estimated cumulative distribution function and these estimates then can be used in parametric statistical tests. EPA (2009) recommends the use of the KM method when dealing with environmental data sets containing multiple detection or reporting limits.

The details of the various estimation methods including the KM method can be found in EPA, 2015, Helsel, 2012, and Singh et al., 2006. Field duplicate data and duplicate samples were not incorporated into this evaluation; only normal sample data were used.

Attachment B. Statistical Trend Results

SFPP Norwalk Pump Station, Norwalk, California

Mann-Kendall TestData Preparation (All Data)																					
LOCATION	Analyte	COUNT	DET	CEN	PER.DET	MIN.CEN	MAX.CEN	MIN.DET	MAX.DET	MEAN	MEDIAN	SD	CV	LASTVALUE	LASTDATE	S	PVAL	SLOPE	RESULT	TREND	STABILITY	MIN.LAG
SVM-01D	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Sep-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-01S	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Sep-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-02S	TPH-g	18	1	17	5.56	0.5	20	0.81	0.81	15.6839	20	8.3091	0.5298	ND (0.5)	Sep-2022	13	0.327	---	67.3% (+)	No Trend	>50% ND	20
SVM-03D	TPH-g	18	1	17	5.56	0.5	20	0.55	0.55	15.6694	20	8.3366	0.532	ND (0.5)	Aug-2022	11	0.354	---	64.6% (+)	No Trend	>50% ND	20
SVM-03S	TPH-g	18	1	17	5.56	0.5	20	0.51	0.51	15.6672	20	8.3409	0.5324	0.51	Aug-2022	17	0.275	---	72.5% (+)	No Trend	>50% ND	20
SVM-05D	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-05S	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-06D	TPH-g	20	2	18	10	0.5	20	31	22000	1102	20	4794.3346	4.3506	22000	Sep-2022	9	0.399	---	60.1% (+)	No Trend	>50% ND	1
SVM-06S	TPH-g	18	1	17	5.56	0.5	20	1.5	1.5	15.7222	20	8.2377	0.524	1.5	Sep-2022	17	0.275	---	72.5% (+)	No Trend	>50% ND	20
SVM-07D	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Sep-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-07S	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Sep-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-08D	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-08S	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-09D	TPH-g	6	0	6	0	0.5	20	---	---	13.5	20	10.0698	0.7459	ND (0.5)	Aug-2022	0	0.5773	---	42.3% (+)	No Trend	>50% ND	156
SVM-09S	TPH-g	6	0	6	0	0.5	20	---	---	13.5	20	10.0698	0.7459	ND (0.5)	Aug-2022	0	0.5773	---	42.3% (+)	No Trend	>50% ND	156
SVM-10D	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Sep-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-10S	TPH-g	1	0	1	0	20	20	---	---	20	20	---	---	ND (20)	Apr-2016	IS	IS	IS	IS	IS	IS	
SVM-11D	TPH-g	18	1	17	5.56	0.5	20	0.73	0.73	15.6794	20	8.3175	0.5305	ND (0.5)	Aug-2022	11	0.354	---	64.6% (+)	No Trend	>50% ND	20
SVM-11M	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-11S	TPH-g	18	1	17	5.56	0.5	20	830	830	60.6667	20	192.1784	3.1678	ND (0.5)	Aug-2022	-5	0.441	---	55.9% (-)	No Trend	>50% ND	20
SVM-12D	TPH-g	19	5	14	26.32	0.5	20	0.95	3300	365.2204	20	874.8706	2.3955	ND (0.5)	Aug-2022	-16	0.302	---	69.8% (-)	No Trend	>50% ND	20
SVM-12M	TPH-g	19	1	18	5.26	0.5	20	510	510	41.6842	20	113.6972	2.7276	ND (0.5)	Aug-2022	-4	0.459	---	54.1% (-)	No Trend	>50% ND	20
SVM-12S	TPH-g	19	0	19	0	0.5	40	---	---	16.9474	20	9.8431	0.5808	ND (0.5)	Aug-2022	0	0.514	---	48.6% (+)	No Trend	>50% ND	20
SVM-13D	TPH-g	19	2	17	10.53	0.5	20	74	1500	83.2895	20	334.3237	4.014	ND (0.5)	Aug-2022	-31	0.149	---	85.1% (-)	No Trend	>50% ND	21
SVM-13M	TPH-g	20	0	20	0	0.5	20	---	---	15.125	20	8.6631	0.5728	ND (0.5)	Aug-2022	0	0.513	---	48.7% (+)	No Trend	>50% ND	21
SVM-13S	TPH-g	19	0	19	0	0.5	20	---	---	15.8947	20	8.1677	0.5139	ND (0.5)	Aug-2022	0	0.514	---	48.6% (+)	No Trend	>50% ND	21
SVM-14D	TPH-g	10	10	0	100	---	---	27	57000	8686.9	2300	17472.9719	2.0114	300	Oct-2017	-33	0.001	-6319.8941	99.9% (sig -)	Decreasing	---	21
SVM-14M	TPH-g	10	2	8	20	20	20	570	4100	483	20	1216.7666	2.5192	ND (20)	Oct-2017	-11	0.19	---	81% (-)	No Trend	>50% ND	21
SVM-14RD	TPH-g	9	2	7	22.22	0.5	20	0.6	35	4.3556	20	10.8345	2.4875	ND (0.5)	Aug-2022	-1	0.5	---	50% (-)	No Trend	>50% ND	70
SVM-14RM	TPH-g	9	0	9	0	0.5	20	---	---	11.3333	20	10.2774	0.9068	ND (0.5)	Aug-2022	0	0.54	---	46% (+)	No Trend	>50% ND	70
SVM-14RS	TPH-g	9	0	9	0	0.5	20	---	---	11.3333	20	10.2774	0.9068	ND (0.5)	Aug-2022	0	0.54	---	46% (+)	No Trend	>50% ND	70
SVM-14S	TPH-g	10	2	8	20	20	20	890	1600	265	20	515.0777	1.9437	ND (20)	Oct-2017	-11	0.19	---	81% (-)	No Trend	>50% ND	21
SVM-15D	TPH-g	17	1	16	5.88	0.5	20	310	310	33.6176	20	71.6276	2.1307	ND (0.5)	Nov-2021	-12	0.328	---	67.2% (-)	No Trend	>50% ND	20
SVM-15M	TPH-g	17	0	17	0	0.5	20	---	---	16.5588	20	7.6626	0.4627	ND (0.5)	Nov-2021	0	0.516	---	48.4% (+)	No Trend	>50% ND	20
SVM-15S	TPH-g	17	0	17	0	0.5	20	---	---	16.5588	20	7.6626	0.4627	ND (0.5)	Nov-2021	0	0.516	---	48.4% (+)	No Trend	>50% ND	20
SVM-16D	TPH-g	19	4	15	21.05	0.5	20	0.6	9100	569.1592	20	2046.1146	3.595	ND (0.5)	Aug-2022	16	0.302	---	69.8% (+)	No Trend	>50% ND	1
SVM-16M	TPH-g	19	0	19	0	0.5	20	---	---	15.8947	20	8.1677	0.5139	ND (0.5)	Aug-2022	0	0.514	---	48.6% (+)	No Trend	>50% ND	1
SVM-16S	TPH-g	18	0	18	0	0.5	20	---	---	15.6667	20	8.342	0.5325	ND (0.5)	Aug-2022	0	0.515	---	48.5% (+)	No Trend	>50% ND	20
SVM-17D	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	535
SVM-17S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	535
SVM-18D	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	534
SVM-18S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	534
SVM-19S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	535
SVM-20D	TPH-g	2	0	2	0	0.5	20	---	---	10.25	10.25	13.7886	1.3452	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	1468
SVM-20S	TPH-g	2	0	2	0	0.5	20	---	---	10.25	10.25	13.7886	1.3452	ND (0.5)	Nov-2021	IS	IS	IS	IS	IS	IS	1468
SVM-21D	TPH-g	3	1	2	33.33	0.5	20	0.62	0.62	7.04	0.62	11.2238	1.5943	0.62	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-21S	TPH-g	3	0	3	0	0.5	20	---	---	7	0.5	11.2583	1.6083	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-22D	TPH-g	3	0	3	0	0.5	20	---	---	7	0.5	11.2583	1.6083	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-22S	TPH-g	3	0	3	0	0.5	20	---	---	7	0.5	11.2583	1.6083	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-23D	TPH-g	3	0	3	0	0.5	20	---	---	7	0.5	11.2583	1.6083	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-23S	TPH-g	3	0	3	0	0.5	20	---	---	7	0.5	11.2583	1.6083	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	301
SVM-24D	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-24S	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-25D	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-25S	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-26D	TPH-g	3	0	3	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	141
SVM-26S	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-27D	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVM-27S	TPH-g	2	0	2	0	0.5	0.5	---	---	0.5	0.5	0	0	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	302
SVP-105D	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21
SVP-105S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21
SVP-106D	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21
SVP-106S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21

Attachment B. Statistical Trend Results

SFPP Norwalk Pump Station, Norwalk, California

Mann-Kendall TestData Preparation (All Data)																					
LOCATION	**Analyte**	**COUNT**	**DET**	**CEN**	**PER.DET**	**MIN.CEN**	**MAX.CEN**	**MIN.DET**	**MAX.DET**	**MEAN**	**MEDIAN**	**SD**	**CV**	**LASTVALUE**	**LASTDATE**	**S**	**PVAL**	**SLOPE**	**RESULT**	**TREND**	**STABILITY**	**MIN.LAG**
SVP-107D	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21
SVP-107S	TPH-g	3	0	3	0	0.5	20	---	---	13.5	20	11.2583	0.834	ND (0.5)	Aug-2022	IS	IS	IS	IS	IS	IS	21
SVP-108D	TPH-g	3	3	0	100	---	---	790	9100	5763.3333	7400	4390.1063	0.7617	790	Aug-2022	IS	IS	IS	IS	IS	IS	20
SVP-108S	TPH-g	3	1	2	33.33	20	20	1.1	1.1	13.7	20	10.9119	0.7965	1.1	Aug-2022	IS	IS	IS	IS	IS	IS	20
SVP-109D	TPH-g	4	0	4	0	0.5	20	---	---	15.125	20	9.75	0.6446	ND (0.5)	Aug-2022	0	0.625	---	37.5% (+)	No Trend	>50% ND	21
SVP-109S	TPH-g	4	0	4	0	0.5	20	---	---	15.125	20	9.75	0.6446	ND (0.5)	Aug-2022	0	0.625	---	37.5% (+)	No Trend	>50% ND	21

Notes:

ND	Non-Detect
N/A	Not Applicable
IS	Insufficient Data for trend analysis (valid statistical trend analysis requires 3 or more observations)
>50% ND	Valid statistical trend analysis requires 3 or more observations, with less than 50% nondetect values per well
Stable	CV is <1.0
Not Stable	CV is >1.0
No Trend	Trend in well is not statistically significant in a positive or negative direction
Increasing	Statistically significant increasing trend observed in the data over time
Decreasing	Statistically significant decreasing trend observed in the data over time
COUNT	Count of Sample Results
DET	Number of Detections
CEN	Number of Non-Detections
PER.DET	Percent Detections
MIN.CEN	Minimum Non-Detect Value in Dataset
MAX.CEN	Maximum Non-Detect Value in Dataset
MIN.DET	Minimum Detected Value in Dataset
MAX.DET	Maximum Detected Value in Dataset
SD	Standard Deviation
CV	Coefficient of Variation
LASTVALUE	Last Analytical Result Value
LASTDATE	Last Analytical Result Date
S	S Statistic for Mann-Kendall Analysis
PVAL	Probability Value
MIN.LAG	Minimum Spacing Between Consecutive Measurements in Dataset (Days)