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SFPP Norwalk Pump Station
Norwalk, California

Second Quarter 2021 Remediation Progress Report

Final

July 15, 2021

Kinder Morgan, Inc.

SFPP Norwalk Pump Station

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Project Manager:	Eric Davis
Author:	Jacobs, by Committee

Jacobs Engineering Group Inc.

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

Certification

The material and data presented in this report were prepared consistent with current and generally accepted consulting principles and practices. This work was supervised by the following Jacobs licensed professional.

William Breedlove
California Professional Chemical Engineer, No. 5142

July 15, 2021
Date

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Acronyms and Abbreviations

µg/L	microgram(s) per liter
ASTM	ASTM International
$BaCO_3$	barium carbonate
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CH2M	CH2M HILL, now part of Jacobs Engineering Group Inc.
CO_2	carbon dioxide
COPC	contaminant(s) of potential concern
DFSP	Defense Fuel Support Point
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
gal/year	gallon(s) per year
gal/acre/year	gallon(s) per acre per year
GWE	groundwater extraction
GWTS	groundwater treatment system
Jacobs	Jacobs Engineering Group Inc.
Kinder Morgan	Kinder Morgan, Inc.
lb/year	pound(s) per year
LGAC	liquid-phase granular activated carbon
LNAPL	light nonaqueous phase liquid
MTBE	methyl tertiary butyl ether
No.	number
NSZD	natural source zone depletion
OWS	oil-water separator
PID	photoionization detector
ppmv	parts per million by volume
ROC	radius of capture
RSL	regional screening level
RTO	regenerative thermal oxidizer
scfm	standard cubic feet per minute
SFPP	SFPP, L.P., an indirect subsidiary of Kinder Morgan, Inc.
site	SFPP, L.P. Norwalk Pump Station located within Defense Fuel Support Point Norwalk, at 15306 Norwalk Boulevard, Norwalk, California

SVE	soil vapor extraction
TFE	total fluids extraction
TPH	total petroleum hydrocarbons
TPH-g	total petroleum hydrocarbons quantified as gasoline
VOC	volatile organic compound
Water Board	California Regional Water Quality Control Board, Los Angeles Region

1. Introduction

This report summarizes remediation activities performed 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) during the second quarter 2021 reporting period.

This progress report is submitted pursuant to a request from the California Regional Water Quality Control Board, Los Angeles Region (Water Board) in its letter dated October 25, 2006 (Water Board, 2006). Additional site background information can be found in the *Conceptual Site Model and Proposed Alternate Interim Remedy for Soil, Groundwater, and Light Nonaqueous Phase Liquid* report (CH2M[1], 2013), and in previously submitted quarterly remediation progress reports and semiannual groundwater monitoring reports, available for download on "GeoTracker", the Water Board's internet-accessible database system.

This report summarizes the various remediation systems at the site and describes remediation activities for the period of April 1 through June 30, 2021, with documentation of the following tasks:

- Total fluids extraction (TFE) and groundwater extraction (GWE) treatment systems: the southeastern and offsite/south-central systems were deactivated on February 23, 2021, per Water Board approval on January 20, 2021.
- HSVE-01 and BS-03 startup activities, conducted from April 6-8 and May 11-13, 2021, respectively.
- Operation and maintenance of all active remediation systems performed by Kinder Morgan, Inc. (Kinder Morgan) field personnel and outside subcontractors, including laboratory analysis of various compliance and performance samples (Appendix A).
- Completion of remediation system improvements.
- Continued implementation and evaluation of the natural source zone depletion (NSZD) performance monitoring pilot study.

This report also provides interpretation and recommendations regarding ongoing remediation optimization and progress toward achieving remediation technical endpoints, including the following supplemental documentation:

- A summary of NSZD performance in the south-central area (Appendix B), including recently analyzed and calculated NSZD rates using helium diffusion data and the gradient method. Helium diffusion data was collected in October of 2020 at a series of nested soil vapor monitoring locations.
- Documentation of remedial progress in the southeastern area associated with horizontal biosparge well BS-02, NSZD measurements from the southeastern area SVE wells, predicted timeframe to reach a transition to NSZD in the southeastern area, and recommendation to suspend continued hydraulic recovery at GMW-O-15. As supporting evidence, this report also includes supplemental BS-02 monitoring data in Appendix C.
- Documentation of remedial progress in the offsite/south-central area associated with horizontal biosparge (BS-03) well and horizontal SVE well (HSVE-01). Supporting data for treatment operations in this area are in Appendix D.

The remediation activities performed from April through June 2021 and the progress achieved through those activities are summarized in the following sections.

[1] CH2M HILL (CH2M) is now part of Jacobs Engineering Group Inc. (Jacobs).

2. Description of Remediation Systems

Kinder Morgan currently operates three refined fuel pipelines (two 16-inch and one 24-inch) that traverse the southern border of the site. These pipelines previously supplied fuel products to the former tank farm, and various block valves and other connection points were identified as potential sources of historical subsurface releases in the south-central and southeastern areas of the site. Between the third quarter of 2016 and the second quarter of 2017, the pipelines were modified to remove all valves and connections so that the pipelines now span across the site in a continuous manner, reducing the potential for future releases that could have occurred at those connection points.

Kinder Morgan operates remediation systems consisting of vertical and horizontal SVE, horizontal biosparge, TFE (extraction of free product, groundwater, or both, using a top-loading pump), GWE (extraction of groundwater using a bottom-loading pump), and treatment of extracted soil vapors and groundwater to address the south-central and southeastern areas of the site.

The objectives of the remediation systems are to contain and control the migration of hydrocarbon constituents in groundwater and soil vapor, and to remove hydrocarbon mass from soil and groundwater. The remediation systems consist of the following remediation wells:

- South-central area (currently inactive)
  - 13 TFE wells
  - 24 onsite SVE wells
  - 1 horizontal biosparge well (BS-01)
- Offsite/south-central area
  - 7 TFE wells (only GMW-O-12 and GMW-O-20 were temporarily active)
  - 6 offsite SVE wells (five are collocated with TFE wells, inactive)
  - 1 horizontal biosparge well (BS-03, startup and active)
  - 1 horizontal SVE well (HSVE-01, startup and active)
- Southeastern area
  - 4 TFE wells (GM W-O-15, GMW-O-18, GMW-36, and GMW-SF-9, inactive)
  - 1 GWE well (GMW-SF-10, inactive)
  - 9 SVE wells (3 collocated with TFE wells, active)
  - 1 horizontal biosparge well (BS-02, active)

A summary of remediation wells in the south-central, southeastern, and offsite/south-central areas and their operational status at the end of the second quarter 2021 is presented in Table 1. The remediation system layout is shown on Figure 2. A brief description of each system is provided in Sections 2.1 through 2.3.

In addition, as a transitional remedy, in May 2020, Kinder Morgan implemented an NSZD performance monitoring pilot study in the south-central and southeastern areas of the site, as described in the NSZD Work Plan (Jacobs, 2019b), and approved by the Water Board in a letter dated April 8, 2020 (Water Board, 2020). NSZD is a term used to describe the collective, naturally occurring processes of dissolution, volatilization, and biodegradation that result in mass losses of light nonaqueous phase liquid (LNAPL) petroleum hydrocarbon constituents from the subsurface. Under favorable conditions, NSZD processes are often capable of contaminant

reduction rates on par with active remedies. The purpose of the NSZD pilot study is to evaluate the rate of NSZD under the following conditions at the site:

1) South-central area prior to horizontal biosparging operations (based on historical soil vapor probe data)
2) South-central area following nearly 3 years of treatment with horizontal biosparging
3) Southeastern area prior to the startup of the recently installed horizontal biosparging system
4) Southeastern area following the operation of the recently installed horizontal biosparging system

To facilitate the pilot study, previously active remedies (i.e., SVE, TFE, and horizontal biosparge) in the south-central area were temporarily suspended in May 2020 to allow for data collection in that area under ambient conditions. Additionally, TFE and GWE systems were temporarily suspended February 2021, as noted above in Section 1, while other active remedies in the southeastern and offsite/south-central areas remain online.

The pilot study consists of three separate sampling/monitoring events over the course of 18 to 24 months, whereby complementary field methodologies will be used to collect carbon dioxide (CO_2) efflux measurements and soil gas samples for laboratory analysis. The new data, coupled with historical soil vapor monitoring data, will be used to calculate current NSZD rates, which will be evaluated in conjunction with other historical remediation performance monitoring data such as SVE influent and effluent concentrations, groundwater hydrocarbon concentrations, and TFE influent and effluent data. Ultimately, the pilot study will inform the approach for potentially transitioning to an NSZD remedy at the site.

The first (baseline) NSZD sampling/monitoring event was conducted in May 2020, with the south-central remediation systems turned off and just prior to startup of the southeastern remediation systems. The second event was conducted in November 2020; the third event is scheduled to occur in the third or fourth quarter of this year. Additionally, supplemental NSZD data are being collected intermittently from the SVE system to monitor the NSZD rates on an interim basis. The initial NSZD pilot study results are included in Appendix B of this report; updates will be included in subsequent quarterly remediation progress reports. A discussion of current NSZD results is provided in Section 4.1.

2.1 Groundwater Treatment System

The main groundwater treatment system (GWTS) processes free product and groundwater recovered from the south-central, offsite south central, and southeastern parts of the site. Free product and groundwater recovered by pneumatically operated, top-loading total fluid pumps and bottom-loading groundwater pumps are piped to a dissolved air flotation unit (oil-water separator [OWS]). Free product, if any, from the OWS is collected in a storage tank and recycled at an offsite location. Water from the OWS is conveyed to a 300-gallon tank and then treated using liquid-phase granular activated carbon (LGAC) to remove hydrocarbons including benzene, toluene, ethylbenzene, and xylenes (BTEX). Treated water is routed through an onsite 3,000-gallon equalization tank. Two fluidized bed bioreactors installed downstream of the equalization tank treat fuel oxygenates such as tertiary butyl alcohol and methyl tertiary butyl ether (MTBE). The treated groundwater then passes through polishing LGAC units prior to discharge to a storm drain that leads to Coyote Creek. Discharge to Coyote Creek is performed in accordance with a National Pollutant Discharge Elimination System permit (Permit Number [No.] CA0063509; Order No. R4-2016-0309).

No groundwater was extracted during second quarter 2021. Groundwater extraction was suspended on February 23, 2021, in accordance with Water Board approval on January 20, 2021. This temporary pause in hydraulic control is similar to the temporary shutdown of the south-central GWE system in May 2020. Suspension of the GWE system is contingent on the ongoing stability of the dissolved-phase distributions and trends at the site. As a contingency measure, if future groundwater trends indicate unstable conditions, TFE and GWE wells can be selectively restarted, as needed.

2.2 Horizontal Biosparge System

The layout of the horizontal biosparging wells at the site is illustrated on Figure 2. Each well is constructed of 4-inch-diameter polyvinyl chloride with varying screen lengths placed at approximately 45 feet below ground surface (bgs).

2.2.1 Biosparge Well BS-01 (Not Operating)

In December 2014, Kinder Morgan completed installation of a horizontal biosparge system in the south-central area of the site, which consists of a horizontal biosparge well (BS-01) and a 500-standard-cubic-foot-per-minute (scfm) compressor. To reduce the potential for off-gassing of volatile organic compounds (VOCs) while biosparging, the SVE system (described below) has an interlock that will not allow the biosparge to operate without the SVE system running. Further details regarding the construction of the biosparge well are documented in the report titled *Horizontal Biosparge Well and Soil Vapor Monitoring Probe Completion Report* (CH2M, 2015). BS-01 has been offline since December 2019 as part of the NSZD pilot study.

2.2.2 Biosparge Well BS-02 (Operating)

A second horizontal biosparge well (BS-02) was installed in the southeastern area of the site in November 2017. The design of the second biosparge well is similar to the south-central biosparge well. The lateral distance of the screen interval is 240 feet centered below the southeastern area hydrocarbon plume. A construction completion report documenting construction activities and specifications was submitted on July 12, 2018 (Jacobs, 2018). The 500-scfm sparge compressor was turned off temporarily and a new air sparge compressor (883 scfm) was installed in the fourth quarter 2018 to deliver ambient air to both the south-central and southeastern sparge wells. The 500-scfm and 883-scfm compressors are appropriately sized to deliver ambient air to both the south-central and southeastern sparge wells, and to allow for future system expansion. BS-02 was turned on in May 2020 and is currently operating at a flow between 180 and 190 scfm, as of June 2021.

Starting in the first quarter 2021 and continuing as C-14 data is collected, an operational efficiency correction (i.e., system downtime correction) and C-14 modern carbon correction was applied to the cumulative mass removed as detailed in Appendix C. Based on the carbon C-14 isotopic data derived from barium carbonate ($BaC0_3$) samples analyzed this in the first quarter 2021, a mass biodegradation correction was applied to account for CO_2 production from biogenic sources (i.e., hydrocarbon sources other than petroleum). The correction factor was multiplied by the equivalent mass biodegraded by CO_2 to calculate the CO_2 production from petrogenic sources (i.e., degradation of petroleum). This corrected value was added to the cumulative equivalent mass removed as VOCs to calculate the cumulative mass removed and biodegraded. The C-14 correction factor ranged from 0.35 to 0.45 (i.e., for every pound of CO_2 removed, only 35 to 45 percent of that represents petroleum degradation). Section 4.1 provides an in-depth discussion of the NSZD investigation.

2.2.3 Biosparge Well BS-03 (Initial Startup and Operation)

A new horizontal biosparge well (BS-03) was installed in the offsite south central area in December 2019. The length of the BS-03 well screen is 500 feet and the total length of the well is 770 feet. BS-03 is centered below the offsite south central area hydrocarbon plume. A well installation completion report documenting construction activities and specifications was submitted to the Water Board in June 2020 (Jacobs, 2020a). Construction activities to connect the BS-03 wellhead to the treatment system were completed in October 2020.

Startup activities began at BS-03 on May 11, 2021, shortly after startup and sustained operation of HSVE-01 in early April 2021 (see details of HSVE-01 startup and operation in Section 2.3). BS-03 is currently operating at a flow between 200 and 250 scfm, as of June 2021. Additional details regarding the startup and operation of BS-03 during the second quarter 2021 are discussed in Section 4.3.

2.3 Soil Vapor Extraction System

SVE is performed using a blower to remove soil vapors from the south-central and southeastern areas of the site. The extracted vapors are conveyed to a knock-out tank that separates entrained moisture from the soil vapors. Accumulated moisture in the knock-out tank is treated by the main GWTS described in Section 2.1. The soil vapors are then treated in a regenerative thermal oxidizer (RTO) where VOCs are converted to CO_2 and water prior to being discharged to the atmosphere. Operations of the GWTS and SVE system are conducted in accordance with Permits to Operate (Permit No. G46188 A/N 578779 and No. G46187 A/N 578777) issued by the South Coast Air Quality Management District.

The south-central SVE system remains offline as part of the NSZD pilot study. The expanded southeastern SVE system was restarted on May 15, 2020; the well network includes VEW-3, VEW-4, PZ-5, GMW-O-16, GMW-O-19, and MW-8, and TFE/SVE wells GMW-O-15, GMW-O-18, and GMW-36. These wells connect to the RTO via a new dedicated 1,200-foot-long, 6-inch diameter high-density polyethylene header. The expanded southeastern SVE system is currently operating at a combined flow of 220 scfm, under a vacuum pressure of 55 inches of water.

HSVE-01 was installed in the offsite/south-central area in December 2019 and is designed to extract vapors created from operating the new horizontal biosparge well BS-03. HSVE-01 is constructed of 6-inch-diameter Schedule 10 stainless-steel casing and screen and was completed to a depth of approximately 20 feet bgs. The length of the HSVE-01 screen is 500 feet, and the total length of the well is 745 feet. A construction completion report documenting construction activities and specifications was submitted to the Water Board in June 2020 (Jacobs, 2020a). Construction activities to connect the HSVE-01 wellhead to the treatment system were completed in October 2020.

HSVE-01 startup activities began on April 6, 2021. At that time, the vertical SVE well network in the offsite/south-central area was inoperative. Baseline soil vapor data was collected prior to the startup of HSVE-01, along with a radius of influence evaluation at soil vapor monitoring points and select groundwater well locations. In addition, ongoing evaluation and data collection continued following the startup of both HSVE-01 and BS-03. These data helped establish a comprehensive evaluation of subsurface conditions prior to startup and now through sustained operation of both HSVE-01 and BS-03 through the second quarter 2021. HSVE-01 is currently operating at a flow between 450 and 500 scfm, as of June 2021. Additional details regarding the startup and sustained operation of HSVE-01 during the second quarter 2021 are discussed in Section 4.3.

During the startup phases of HSVE-01 in early April 2021, and sustained operation into May 2021 when BS-03 startup activities began (May 11-13, 2021), the vapor extraction portion of dual-phase extraction wells GMW-O-12 and GMW-O-20, which are screened below the water table, were activated for a short period of time to clear vapors that had accumulated around them while BS-03 and HSVE-01 flows were optimized. Since then, these dual-phase extraction wells were plugged below their conveyance lines with inflatable packers to mitigate potential short-circuiting and maintain optimal HSVE-01 vacuum capture. These plugs were installed on May 27, 2021 at GMW-O-12 and June 18, 2021 at GMW-O-20.

3. Remediation System Operation and Maintenance

During the second quarter 2021 reporting period, operation and maintenance of the remediation systems included the following tasks:

- Performed ongoing weekly maintenance on the RTO system.
- Removed, winterized, and stored existing TFE/GWE pumps and prepared associated discharge lines for disposal.
- Performed weekly bioreactor inspections; operating in recirculation mode March 3, 2021 through June 15, 2021. Bioreactors were shutdown on June 15, 2021.
- Conducted as needed supplemental monitoring of the BS-02 (startup in May 2020) and BS-03 (startup activities May 11-13, 2021) biosparging systems and surrounding monitoring points (approximately biweekly).

During the second quarter 2021, the remediation systems operated continuously, with the following exceptions:

- From February 23, 2021, to current date, extraction into the GWTS was discontinued as part of the planned transition away from the pump and treat remediation. GWTS operated in recirculation mode, without pumping or discharging.

During the second quarter 2021, the GWTS did not operate. The SVE system was operational 98.5 percent of the time. The biosparge systems were operational 97.4 percent of the time. Table 2 presents the SVE system operation summary.

Photoionization detector (PID) measurements and analytical results for extracted vapor during the second quarter 2021 are summarized in Tables 3 and 4, respectively. The groundwater remediation system historical operation activities are summarized in Table 5. The historical monthly extracted groundwater analytical results are summarized in Table 6. Table 7 presents the biosparge systems operational summary. Table 8 presents the soil vapor probe analytical results for May 2021. Historical (post-2007) gauging results for select TFE and SVE wells are provided in Table 9.

4. Remediation Progress and Optimization

As summarized in this section, and noted previously, since February 23, 2021 the GWTS operation has been temporarily suspended as detailed in Jacobs *Request for Approval to Temporarily Suspend Hydraulic Control in the Southeastern and Offsite/South-Central Areas, SFPP Norwalk Pump Station, Norwalk, California* submitted to the RWQCB electronically on January 8, 2021 (Jacobs, 2021), and conditionally approved by the RWQCB via electronic mail on January 20, 2021 (RWQCB, 2021).

At the time of the GWTS suspension, the system had not recovered LNAPL since 2017 and has recovered less than 125 pounds of hydrocarbons as dissolved phase on average since 2016. Sitewide decreases in dissolved-phase concentrations (discussed in detail in Section 5) have led to decreases in influent hydrocarbon groundwater concentrations. When compared with the mass removal rates while biosparging is operating (approximately 3,600 to 360,000 pounds per year [lb/year] for BS-01 and currently 18,000 lb/year for BS-02), it is apparent that the biosparging systems represent several orders of magnitude greater mass removal than active hydraulic recovery remedies.

The declines in liquid mass removal rate are an indication of the success of the biosparging and SVE activities at the site, previously at BS-01 and now currently at BS-02 and HSVE-01/BS-03. NSZD rates across the site are approximately 1,400 gallons per year (gal/year) (approximately 10,000 lb/year), which is greater than the current mass removal rate achieved by the GWTS, and nearly on par with the current mass removal rate achieved by biosparging and SVE in the southeastern area. The combination of these data indicates continued operation of the GWTS hydraulic control wells no longer provides a significant remedial benefit.

4.1 Natural Source Zone Depletion Assessment

NSZD is being evaluated at the site to compare active remedies with ambient degradation rates of the remaining petroleum hydrocarbons at the site. To evaluate ambient NSZD at the site, the active remediation systems must be temporarily suspended, including hydraulic control and recovery (that is, groundwater pump and treat), SVE, and biosparging, as recommended in the *Biosparging Effectiveness Evaluation and Recommendations, South-Central Area* (Jacobs, 2019a).

The preliminary results of the baseline NSZD assessment (Technical Memorandum, dated October 29th, 2020) are presented in Appendix B and summarized below. Exhibit 1 illustrates the measured NSZD rate (gallons per acre per year [gal/acre/year]) for each NSZD sample location, as well as the interpolated NSZD distribution over the areas of the site that were characterized as part of the baseline sampling.

The preliminary results of the Phase I NSZD assessment are as follows:

- The highest NSZD rates (approximately 500 gal/acre/year) correspond to the areas adjacent to residual LNAPL that has not been treated with biosparging remediation (i.e., the southeastern area).
- The lowest NSZD rates (approximately 11 gal/acre/year) correspond to the area where horizontal biosparging equipment was historically operated (i.e., the south-central onsite area).
- Measurable NSZD rates are present in all areas of detected dissolved-phase concentrations.
- The total NSZD rate for the south-central onsite area illustrated in Exhibit 1 is 900 gal/year; the rate for the southeastern area illustrated in Exhibit 1 is 500 gal/year (for a sitewide total of 1,400 gal/year).

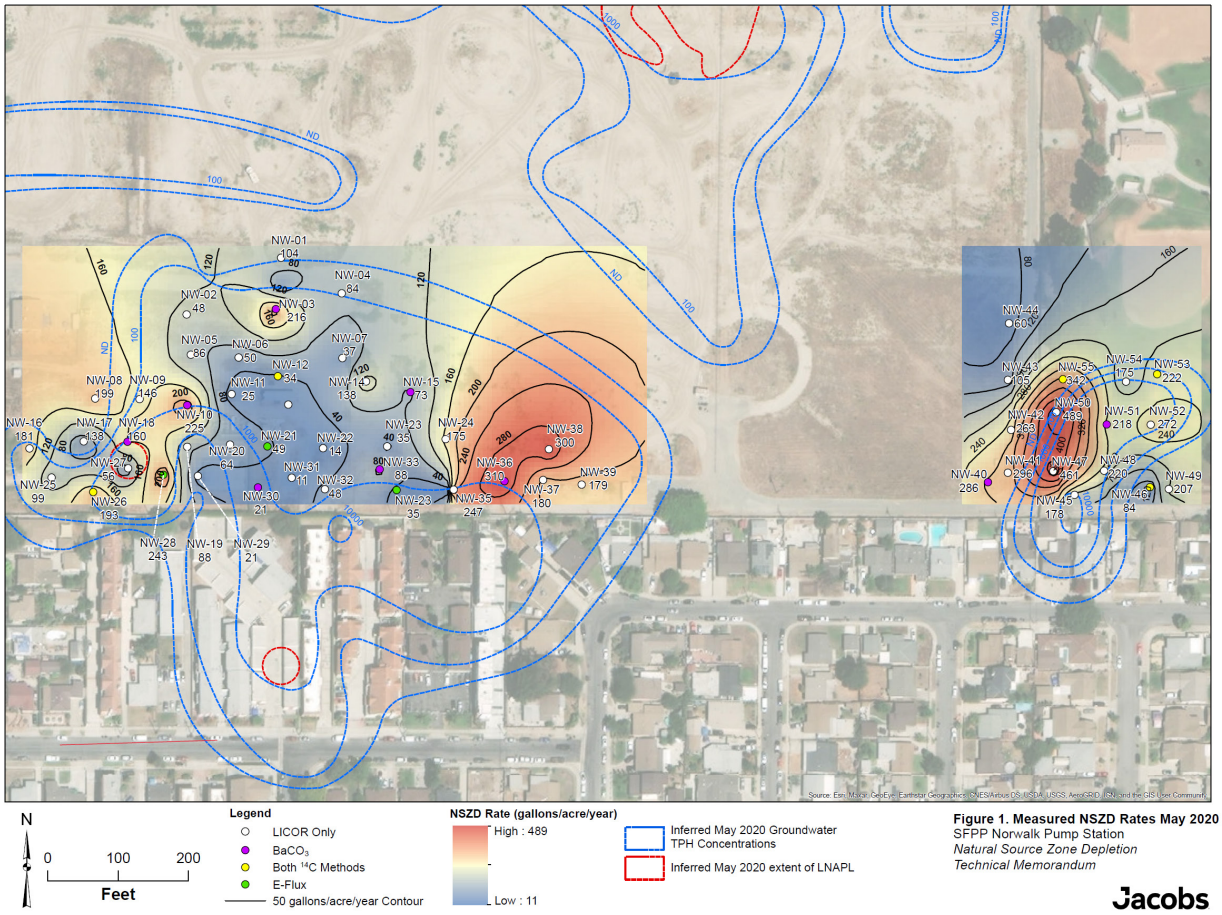

Exhibit 1. Measured NSZD Rates, May 2020

The comparative analysis of E-Flux trap and $^{14}BaCO_3$ sampling techniques for the analysis of the ^{14}C signature of CO_2 efflux showed that both methods produce comparable results. Going forward, $^{14}BaCO_3$ sampling techniques will be used at the site as they allow collection of NSZD data in the offsite south central areas where surface flux meters would not be effective due to the area being mostly paved private (residential) property, and $^{14}BaCO_3$ sampling techniques allow the collection of a higher density of samples across the site.

This NSZD evaluation sought to evaluate NSZD processes occurring in the subsurface with consideration of historical and future horizontal biosparging operations. NSZD rates observed confirm that NSZD can be measured at this site and that significant cumulative rates (up to approximately 1,400 gal/year or 10,000 lb/year) of biodegradation are occurring in the subsurface.

In the offsite/south-central area a majority of the surface cover is buildings and roadways which make it difficult to measure NSZD using traditional NSZD surface flux methods (flux chamber or flux traps) therefore NSZD is calculated using the existing soil vapor monitoring probes and the NSZD gradient method (CRC CARE, 2018). The gradient method requires measuring the permeability in the vadose zone. To determine the permeability, helium diffusion tests were conducted in October 2020. Helium was injected and extracted at a series of nested soil vapor monitoring locations (SVM-9, SVM-12, SVM-17, SVM-18, SVM-19, SVM-20, SVM-21, SVM-23, SVM-24, and SVM-25), each of which has either 2 or 3 depths (approximately – 5 feet, 10+ feet, or ~15+ feet) per location, see Appendix B.1 for soil vapor probe depth details. Note that the locations tested were distributed

across the entire site as the gradient method will be used as a comparative method to evaluate NSZD across all areas of the site. A helium diffusion rate was calculated for each depth interval in the nested locations using the methods outlined in the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Memo No. 44 (CRC CARE, 2018). As additional operational data is collected, location specific helium diffusion values will be used to refine the location specific NSZD rates, however for the purposes of these preliminary calculations the calculated helium diffusion values were averaged and then converted into diffusion rates for oxygen and carbon dioxide using defined stoichiometric ratios. Additionally, the soil type in the vadose zone is relatively homogeneous at the site and averaging the diffusion values (similar to hydraulic conductivity values) provides a representative value.

Mass of oxygen and carbon dioxide was calculated by converting the historic average percent concentration of each respective gas at each location into grams of gas per volume using the method outlined in the CRC CARE Technical Memo No. 44 (CRC CARE, 2018).

The NSZD rate for each location was then calculated using the diffusion and mass gradient values into Fick's Law (CRC CARE, 2018). Finally, these NSZD rates were corrected to account for modern carbon by applying the preliminary correction factor established from $BaCO_3$ samples collected at the site previously (see Appendix B Technical Memorandum). The corrected NSZD rates for the sampled soil vapor monitoring locations across the site ranged from 0 – 527.09 gal/acre/year of hydrocarbon, averaging 101 gal/acre/year of hydrocarbon.

- For the offsite/south-central area the range was 0 – 527 gal/acre/year of hydrocarbon, averaging 90 gal/acre/year of hydrocarbon.
- For the south-central onsite area the range was 0 – 437. gal/acre/year of hydrocarbon, averaging 135 gal/acre/year of hydrocarbon.
- For the southeastern area the range was 0 – 104 gal/acre/year of hydrocarbon, averaging 50 gal/acre/year of hydrocarbon.

A summary table of this analysis is included as Exhibit 2 below. For more detail on the helium diffusion and gradient method calculations please refer to Appendix B.

These NSZD rates calculated from the helium diffusion and gradient method demonstrate another means of quantifying the biodegradation processes occurring in the subsurface at the site. Locations which did not observe an upward CO_2 gradient were assumed to have an NSZD rate of zero. Further evaluation (i.e. by year) at each location over time (previous historical data to present) will be undertaken to evaluate rates in greater detail and account for remedial operational changes. This in-depth evaluation will be outlined in a forthcoming Interim Remedial Action Plan focused on NSZD as the primary treatment method, which is planned to be summitted in late-2021 or early-2022, following the suspension of BS-02 operation. Comparatively, these calculated NSZD rates using the gradient method are within the range of the preliminary results of the Phase I NSZD evaluation detailed in Appendix B.

Location	Probe Location	Depth (m)	Average CO_2 Concentration (2014-2021)	NSZD Rate using Ficks Law (gCO2/ m2day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Applied C14 Correction rate	NSZD Rate using Ficks Law (gCO2/m2 day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Gallons of Hydro carbon per Acre per year
SVM-02D	Offsite South Central	4.57	1.19	0.74	0.21	0.44	0.32	0.09	36.12
SVM-03D	Offsite South Central	4.72	0.48	0.20	0.06	0.44	0.09	0.03	9.97
SVM-05D	Offsite South Central	4.88	0.19	0.01	0.00	0.44	0.00	0.00	0.42
SVM-06D	Offsite South Central	5.03	0.27	0.07	0.02	0.44	0.03	0.01	3.59
SVM-07D	Offsite South Central	4.19	0.69	0.21	0.06	0.44	0.09	0.03	10.14
SVM-10D	Offsite South Central	4.88	3.43	3.81	1.09	0.44	1.68	0.48	186.37
SVM-15D	Offsite South Central	6.86	0.47	0.21	0.06	0.44	0.09	0.03	10.42
SVM-16D	Offsite South Central	6.86	8.64	10.77	3.07	0.44	4.74	1.35	527.10
SVM-16M	Offsite South Central	4.88	0.98	0.64	0.18	0.44	0.28	0.08	31.42
SVM-11D	South Central Onsite	6.86	4.74	3.86	1.10	0.44	1.70	0.48	189.04
SVM-11M	South Central Onsite	4.72	1.78	1.20	0.34	0.44	0.53	0.15	58.58
SVM-12D	South Central Onsite	6.86	8.20	6.29	1.79	0.44	2.77	0.79	307.98
SVM-12M	South Central Onsite	4.72	3.38	2.40	0.68	0.44	1.06	0.30	117.41
SVM-13D	South Central Onsite	7.16	1.70	1.89	0.54	0.44	0.83	0.24	92.25

Location	Probe Location	Depth (m)	Average CO_2 Concentration (2014-2021)	NSZD Rate using Ficks Law (gCO2/ m2day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Applied C14 Correction rate	NSZD Rate using Ficks Law (gCO2/m2 day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Gallons of Hydro carbon per Acre per year
SVM-13M	South Central Onsite	4.88	0.15	0.00	0.00	0.44	0.00	0.00	0.22
SVM-14D	South Central Onsite	6.86	6.49	5.51	1.57	0.44	2.42	0.69	269.40
SVM-14M	South Central Onsite	4.72	2.27	1.78	0.51	0.44	0.78	0.22	87.02
SVM-14RD	South Central Onsite	7.16	3.50	2.53	0.72	0.44	1.11	0.32	123.59
SVM-14RM	South Central Onsite	5.03	1.56	0.78	0.22	0.44	0.34	0.10	38.03
SVP-105D	South Central Onsite	3.20	1.43	0.55	0.16	0.44	0.24	0.07	26.84
SVP-106D	South Central Onsite	3.20	1.15	0.37	0.10	0.44	0.16	0.05	17.89
SVP-108D	South Central Onsite	3.20	5.67	8.93	2.55	0.44	3.93	1.12	437.03
SVM-09D	South eastern	4.57	2.25	1.50	0.43	0.44	0.66	0.19	73.23
SVM-17D	South eastern	3.20	0.55	0.50	0.14	0.44	0.22	0.06	24.57
SVM-18D	South eastern	3.20	1.62	2.13	0.61	0.44	0.94	0.27	104.43
SVM-20D	South eastern	3.20	1.85	0.50	0.14	0.44	0.22	0.06	24.42
SVM-21D	South eastern	4.57	1.15	0.30	0.09	0.44	0.13	0.04	14.81
SVM-22D	South eastern	4.57	0.90	0.05	0.01	0.44	0.02	0.01	2.24
SVM-24D	South eastern	3.20	2.56	2.29	0.65	0.44	1.01	0.29	111.83

Exhibit 2. Calculated NSZD Rates using Helium Diffusion and the Gradient Method

4.2 Summary of Hydrocarbon Mass Removal from the Groundwater Treatment System

No groundwater was extracted during the second quarter 2021 (Table 5). Approximately 109.2 million gallons of groundwater has been extracted since GWTS operations first began in 1996.

Since 1995, a total of 14,426 gallons of product (104,250 pounds) has been removed by TFE, vacuum truck, or manual bailing operations. No product has been removed since 2017. The estimated mass removal (pounds) of hydrocarbons by the GWTS is shown in Table 5. Mass removal estimates between 1996 and 2005 are based on BTEX and MTBE concentrations in the groundwater influent (total petroleum hydrocarbon [TPH] data were not available) and total volume of extracted groundwater. Mass removal estimates between 2006 and 2011 are based on groundwater influent concentrations of TPH quantified as gasoline (TPH-g) and TPH quantified as fuel product, and the total volume of extracted groundwater. Mass removal estimates between 2012 and the first quarter 2021 are based on groundwater influent TPH-total concentrations (TPH-total includes TPH quantified as gasoline, diesel, and oil) and the total volume of extracted groundwater.

Since GWE first began in 1996, hydrocarbon mass removed by the GWTS is estimated to be 18,470 pounds, of which approximately 18,000 pounds had been removed by 2016. Since 2016, less than 500 pounds of hydrocarbon mass has been removed (less than 125 lb/year). No groundwater was extracted since February 2021. Figure 4 includes a time series chart that shows this general decrease in dissolved-phase hydrocarbon concentrations in the extracted groundwater.

4.3 Summary of Hydrocarbon Mass Removal from the Biosparge and Soil Vapor Extraction Systems

Several remedial systems (horizontal biosparge and horizontal SVE) across the site were active in the second quarter 2021. Each of those remedial systems (HSVE-01, BS-02, and BS-03) are detailed in the sections below.

Horizontal Soil Vapor Extraction (HSVE-01):

The offsite/south-central horizontal SVE (HSVE-01) startup activities occurred from April 6-8, 2021. Additional detailed data and narrative of the offsite south central horizontal SVE system is provided in Appendix D.

HSVE-01 initial flow rates were ramped up in steps during startup operations. On April 6, 2021 HSVE-01 flow began at approximately 323 scfm, gradually increasing to 512 and 560 by April 8, 2021. Vacuum (inches H_2O), closely followed this ramp up in flow, achieving approximately 55 inches H_2O by April 8, 2021. Flow and vacuum at HSVE-01 sustained approximately 560 scfm and 55 inches H_2O until BS-03 startup activities began around May 11, 2021. During the startup of BS-03 flows were adjusted up and down for the first 2 weeks while the initial elevated VOC concentrations in HSVE-01 equilibrated. VOC concentrations in HSVE-01 have now stabilized between approximately 300-500 parts per million by volume (ppmv), the approximate VOC levels observed during initial startup of HSVE-01, with BS-03 operating at 250 scfm (see Exhibit 3).

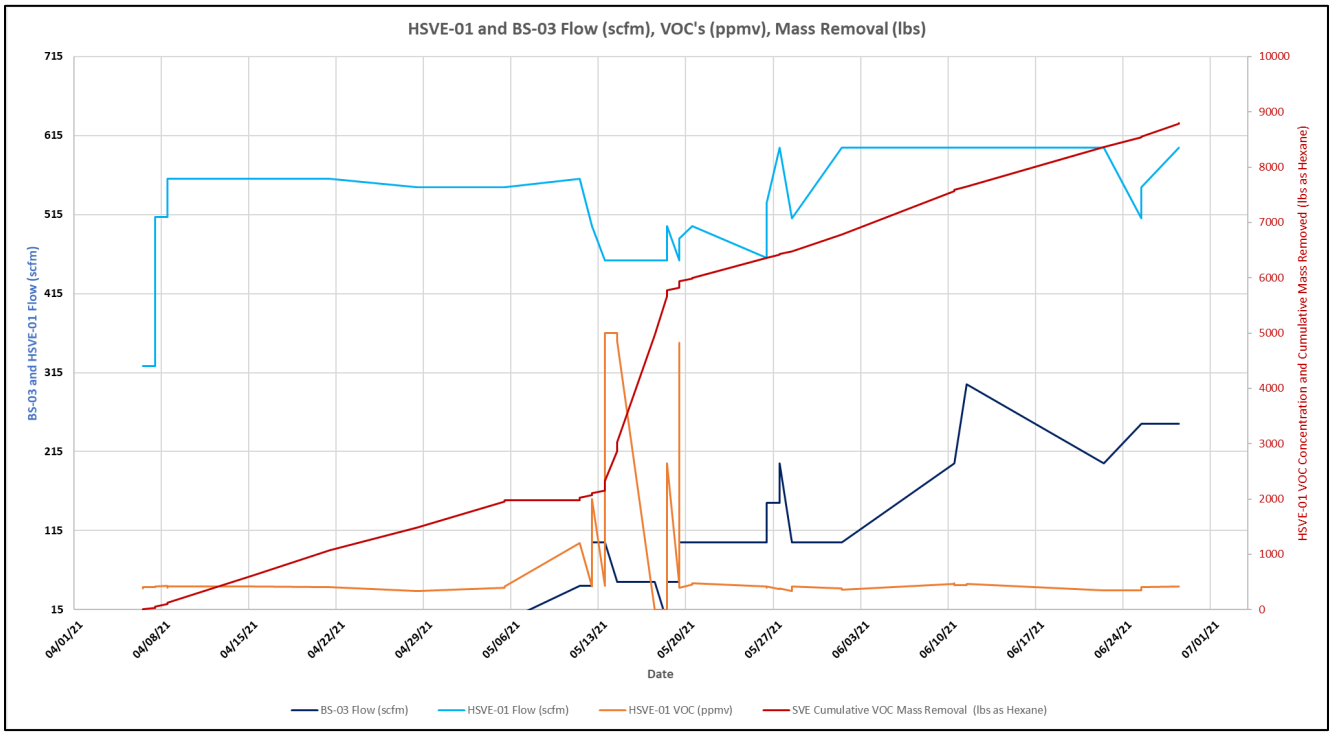

Exhibit 3. HSVE-01 and BS-03 Flow-scfm and VOCs-ppmv from April 2021 through June 2021

Prior to startup, and during operation of HSVE-01, soil vapor field monitoring data was continuously collected. Exhibit 4 illustrates the soil vapor field monitoring data prior to startup and during sustained operation of HSVE-01 and BS-03.

Initial baseline soil vapor monitoring data collected on April 6, prior to HSVE-01 startup, indicated most locations with fixed gases in the following ranges, except as noted:

- Oxygen – 18.1% to 21.3%
  - SVM-10D and SVM-16D were 8.1% and 8.0%, respectively
- Carbon Dioxide – 0.0% to 0.6%
  - SVM-10D and SVM-16D were 5.8% and 8.7%, respectively
- Methane – 0.0%
  - SVM-16D was 2.3%

Existing SVE wells and monitoring wells were included as part of the vapor monitoring program, however their relatively long screens that intersect the water table allow for direct volatilization of vapors from groundwater. Also, these SVE wells contain a large volume of air which is not purged during every sampling event, therefore they can only be directly compared with a subset of soil vapor monitoring points. Generally, these existing SVE wells and monitoring wells contain higher VOC concentrations and over or underestimate actual vacuum or pressure in the subsurface; however, they are still a useful indicator for optimization of BS-03 flows.

Soil vapor field monitoring data post-startup of HSVE-01 (approximately April 8 to May 11, 2021) illustrated three deep locations with slightly elevated (>10.0 ppmv) VOC's, including; SVM-10D (17.9 ppmv), GMW-O-12 (36.5 ppmv), and SVM-1D (33.0 ppmv). All other soil vapor field monitoring data locations post-startup were below 10 ppmv.

After sustained operation of HSVE-01 and startup of BS-03, VOCs were initially elevated at four locations including; GMW-O-12, GMW-O-20, SVM-16D, and GMW-O-5. As indicated previously in Section 2.3, GMW-O-12 and GMW-O-20 were activated for short durations to purge vapor accumulations while BS-03 and HSVE-01 flows were optimized then these wells were plugged below their conveyance lines to maintain HSVE-01 vacuum capture. Prior to this, GMW-O-12 and GMW-O-20 were reading approximately 400-535 ppmv VOC. As of June 28, 2021, SVM-16D was 4.9 ppmv and GMW-O-5 was 1.2 ppmv. Cumulative VOCs captured by HSVE-01 through June 28, 2021 were calculated using the same method as was used for previous SVE mass removal estimates and was approximately 8,000 (lbs) averaging 105 lbs/day over the 83 day operation period. A brief maximum VOC removal rate of 700 lbs per day was observed during the first two weeks of startup, which is approximately double the startup mass removal rate of BS-02, which, notably, is approximately half the length as BS-03 and HSVE-01. See Appendix D for detailed data and operations narrative.

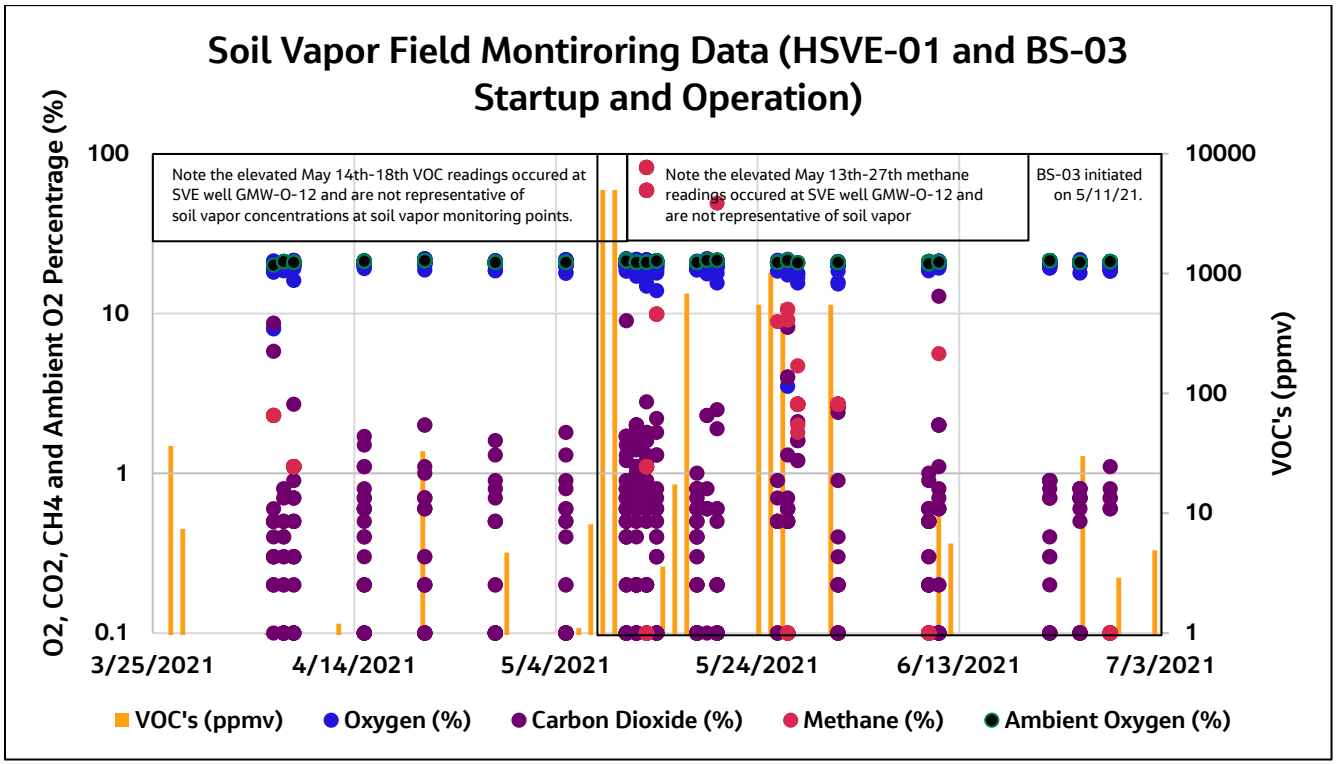

Exhibit 4. Soil Vapor Monitoring Field Screening Data (oxygen-%, carbon dioxide-%, methane-%, ambient oxygen-%, and VOC's-ppmv) from April 2021 through June 2021

Radius of capture (ROC) data was collected in the field at select soil vapor field monitoring locations during HSVE-01 startup and sustained operation after the initiation of BS-03. Appendix D contains detailed data and a narrative regarding the ROC field data. Exhibit 4.1 illustrates the upper bound, lower bound, and average ROC of the measured vacuums vs perpendicular horizontal distance to HSVE-01, which ranges from 200 to 250 feet and averages 225 feet. These ROCs have maintained relatively steady capture, even with the ramp up of BS-03 to 250 scfm.

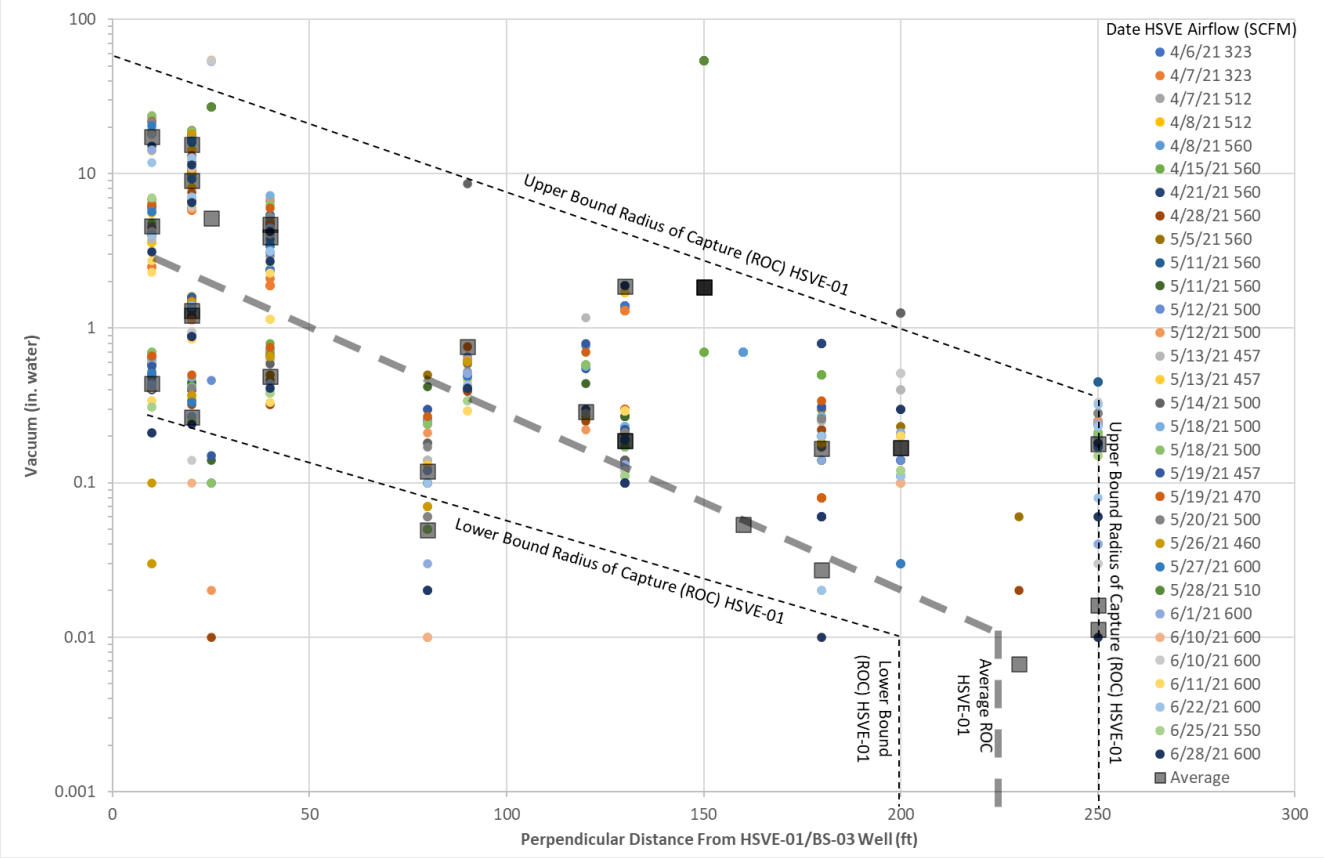

Exhibit 4.1. Radius of Capture (ROC) based from Field Data Collected during Second Quarter 2021 HSVE-01 Startup and Sustained Operation

Overall the combination of limited VOC detection in vapor points in the offsite/south-central area combined with the sustained radius of capture of at least 200 feet supports continued operation and optimization of BS-03 and HSVE-01 without adversely affecting surficial soil vapors or above-ground residential locations.

Biosparge (BS-02):

The southeastern biosparge system (BS-02) operated for 2,127 hours, and 97.4% uptime during the second quarter of 2021 (Table 7). A detailed narrative of the southeastern biosparge system is provided in Appendix C. Exhibit 5 illustrates the SVE mass removal over time at BS-02 and Exhibit 6 illustrates the composition of the mass removal over time at BS-02.

Supplemental data have been collected from the SVE header that extracts air from the southeastern treatment area. These data are summarized in Appendix C. The calculations used to determine the mass removal based on the BS-02 supplemental data are the same as for the overall SVE system. A summary of the supplemental data collected at BS-02 compared with the systemwide SVE data is provided in Exhibit 5. Seasonal variations are apparent over the course of SVE operations, which accounts for the divergence in mass recovery rate near the

beginning of BS-02 startup; however, later operation data indicate that mass removal rates are similar for the overall system mass removal and the southeastern area mass removal. This observation confirms that most mass recovery at the site is from the southeastern area, likely due to the operation of biosparging well BS-02.

Exhibit 5 is an updated version (through the second quarter of 2021) of the vapor mass recovery rate over time graph originally provided in the *Biosparging Effectiveness Evaluation and Recommendations, South-Central Area* (Jacobs, 2019a). The annotated summary of the SVE system provided in Exhibit 5 illustrates the vapor mass recovery rate over time as well as the cumulative vapor mass recovered to date. Annotations illustrate the significant remedial changes that have occurred and are anticipated to occur at the site in relation to the SVE system operation. As previously noted in the operation of BS-01, there was an initial increase (up to 1,000 lb/day, 360,000 lb/year) in vapor recovery rate followed by a steady decrease in vapor recovery rate (down to 10 lb/day, 3,600 lb/year) following the startup and continuous operation of the south-central biosparge system.

The same decline curve pattern can be observed in the startup and operation of BS-02, where initial recovery was approximately 300 lb/day, or approximately 100,000 lb/year. The decline trend in vapor recovery at BS-02 through the second quarter of 2021 (average VOC mass removal rate during second quarter 2021 is currently 19.78 lb/day, or 7,220 lb/year), suggests that a practical transition point to an NSZD-only remedy for the southeastern area will likely occur in 2021.

When compared with the mass removal rates while biosparging is operating (approximately 3,600 to 360,000 lb/year for BS-01 and currently 7,220 lb/year for BS-02), it is apparent that the biosparging systems represent several orders of magnitude greater mass removal than active hydraulic recovery remedies.

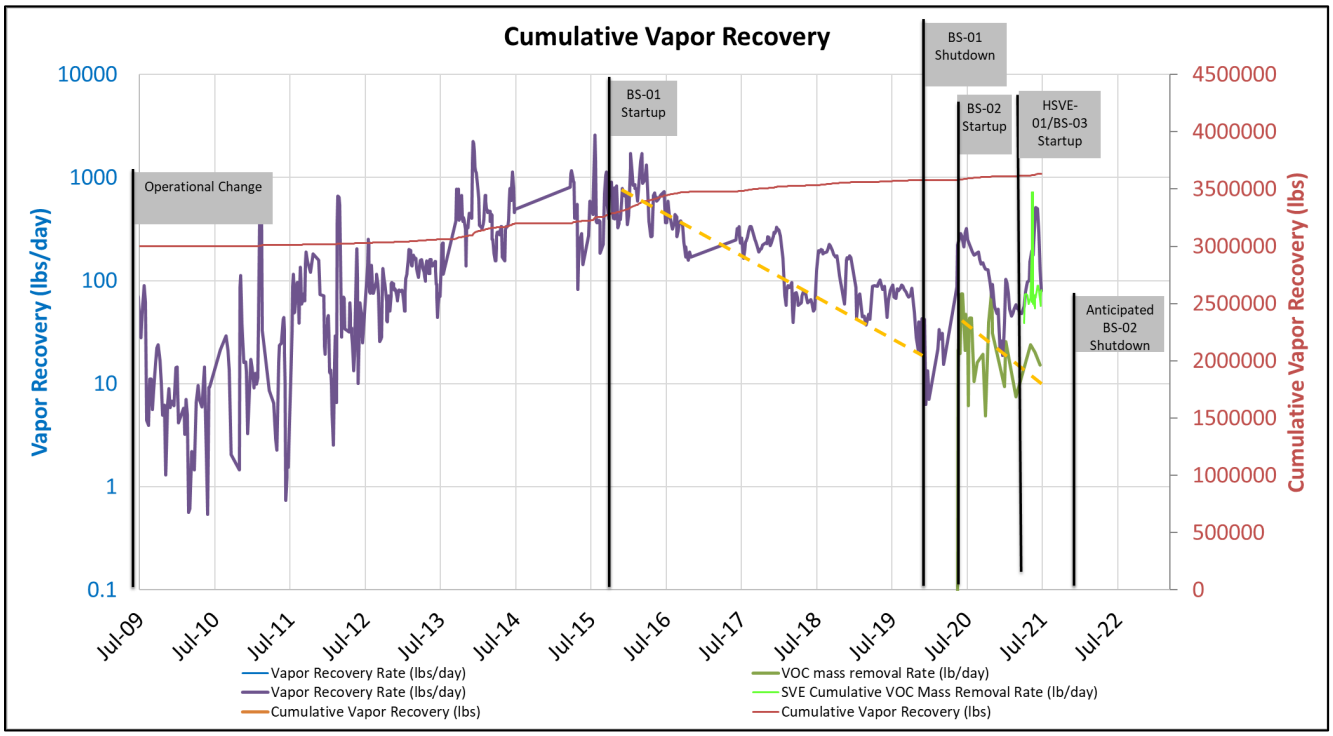

Exhibit 5. Vapor Mass Recovery Rate Over Time

Additionally, C-14 data collected have been used to plot the cumulative mass biodegraded in the southeastern area, which accounts for additional petroleum mass destruction as well as the VOC removal rate of the SVE system. Ranges of modern carbon and C-14 corrected cumulative mass removed are depicted in Exhibit 6. The primary observation from these data is that more than 60 percent of the mass removal occurring in the BS-02 area is occurring through biodegradation and NSZD mechanisms.

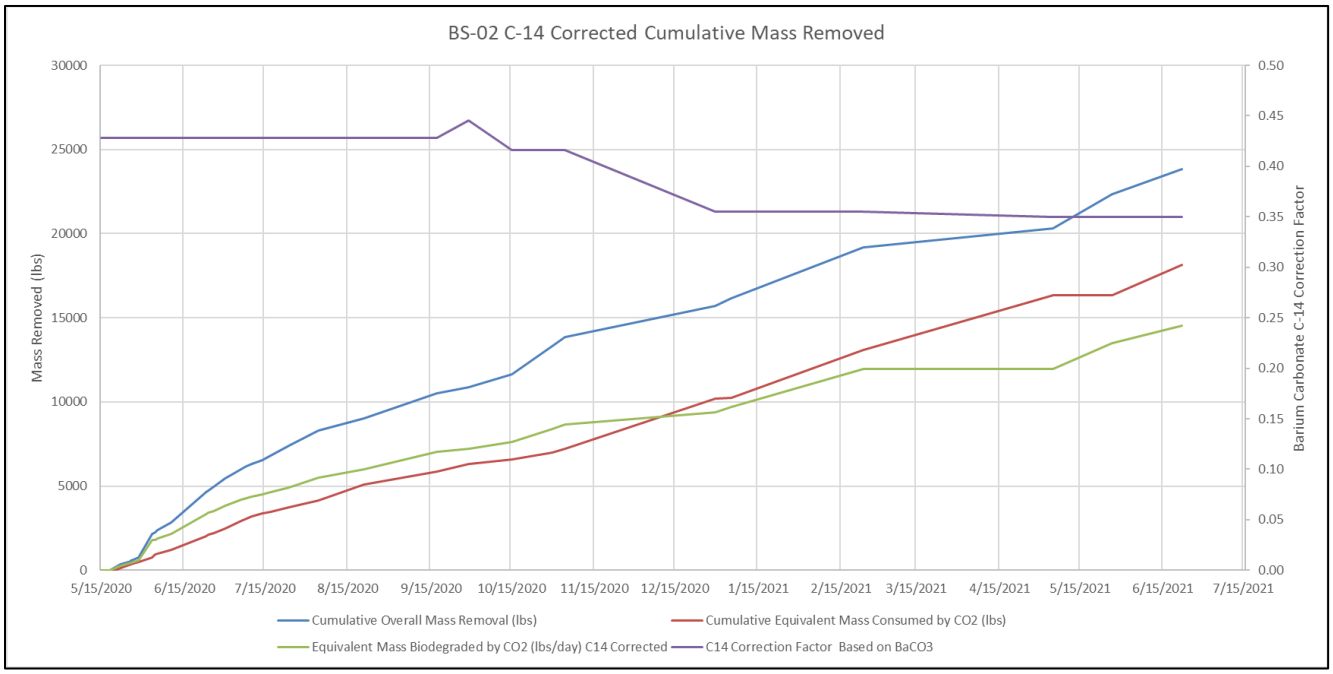

Exhibit 6. BS-02 C-14 Corrected Cumulative Mass Removed

Biosparge (BS-03):

The offsite/south-central biosparge (BS-03) startup activities occurred May 11-13, 2021, and it has operated for 1,151 hours, and 97.9% uptime. The biosparge system flow (air injection) rate ranged from approximately 45 to 250 scfm. The relatively lower flow reflects the gradual, stepwise startup procedure following startup and sustained operation of HSVE-01 (Exhibit 3). Currently, BS-03 is operating at approximately 250 scfm as of June 28, 2021. Additional detailed data and narrative of the offsite/south-central biosparge system is provided in Appendix D.

While some VOC's were initially elevated during startup of BS-03 (detailed above in HSVE-01 text), VOC's have since returned to pre-startup levels with continued and sustained operation through the end of the second quarter 2021.

Groundwater elevations and LNAPL thicknesses were continuously evaluated in the field during startup of HSVE-01 and BS-02. Following initial startup of BS-03, it was noted the previously observed LNAPL thickness in select monitoring well locations were no longer present and average groundwater elevation increased slightly from approximately 31 feet below top of casing, to 29 feet below top of casing. Gradually, groundwater elevations have since decreased back to approximately 30 feet below top of casing at the end of the second quarter 2021 following sustained operation of BS-03. See Appendix D for detailed data and operations narrative.

In addition, soil vapor analytical samples were collected from 14 locations around the south-central, southeastern, and offsite areas on May 25-26, 2021. In accordance with standard procedures while conducting the soil vapor monitoring event, sampling occurred during static conditions with the SVE and biosparge wells offline. See Section 5.3 for details on soil vapor analytical monitoring results.

Monthly vapor samples from the SVE system (influent, influent post-dilution, and effluent) were collected on April 1, May 1, and June 1, 2021. The vapor samples were delivered to Air Technology Laboratories in City of Industry, California, for the following analyses:

- Fixed gases (methane, CO_2, oxygen, and argon) using ASTM International (ASTM) D1946
- VOCs using U.S. Environmental Protection Agency (EPA) Method TO-15
- Total VOCs using EPA Method TO-3

The laboratory analytical reports and chain-of-custody documents for these samples are included in Appendix A.

Based on weekly monitoring of the influent vapor concentration, vapor extraction flow rate, and hours of operation, the total mass of VOCs removed by SVE was 18,546 pounds during the second quarter 2021. Total mass recovered by the SVE system has consistently decreased since the first quarter of 2016 (where a high of 74,148 pounds of VOCs were recovered), when biosparging in the onsite south-central area was implemented (see Figure 3). This finding is consistent with laboratory analytical data demonstrating that the influent VOC concentrations (BTEX and MTBE) have consistently decreased since initiating biosparging activities (Table 4, Figure 5), until startup of BS-02 (May 2020) and BS-03 (May 2021). The cumulative mass of VOCs removed since SVE was implemented in September 1995 is 3,632,984 pounds (Table 2). The cumulative mass removed by SVE does not include the mass removed by naturally occurring in-situ biodegradation.

5. Current Site Conditions, Trends, and Interpretation

Routine sampling and monitoring of groundwater, soil gas, and SVE influent and effluent are performed to evaluate changes to the nature and extent of petroleum hydrocarbon impacts across the site as a result of ongoing remedial activities, including active treatment systems and natural biodegradation. Currently, limited groundwater sampling as part of the BS-02 startup and monitoring operations is performed during the first and third quarter of each year by Jacobs. In addition, sitewide groundwater monitoring is performed by Jacobs and SGI during the second quarter (first semiannual monitoring event) and fourth quarter (second semiannual monitoring event) of each year. The most recent report and data are presented in the *Second Semiannual 2020 Groundwater Monitoring and Sampling Report, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California* (SGI, 2021), submitted to the Water Board in January 2021. The second quarter (first semiannual) groundwater monitoring data and summary will be submitted under separate cover by Jacobs on July 30, 2021.

5.1 Groundwater Monitoring Results and Stability Trend Analysis

In general, groundwater monitoring data indicate that the dissolved-phase plumes are stable, decreasing, or both, across the site as a result of operating treatment systems and from natural biodegradation. A statistical analysis of all site groundwater data was conducted in the first quarter 2021, which included data collected up to February 2021 (*SFPP Norwalk Pump Station, Norwalk, California First Quarter 2021 Remediation Progress Report submitted April 29, 2021*). An update to the statistical trends across the site will be undertaken in the upcoming third quarter 2021 remediation report.

To summarize, the statistical groundwater analysis from the first quarter 2021, demonstrated that the overwhelming majority of wells at the site (213 of 218 analyzed) were either non-detect, decreasing, or stable in trends for TPH-g. These observed trends are anticipated to continue declining as remedial progress continues in each respective area. The exceptions to non-detect, decreasing, or stable trends were at GMW-29 (south-central area), GMW-O-18 (southeastern area), MW-15R (south-central area), PZ-5 (southeastern), and GMW-35R (northern portion of the site). An analysis of more recent data (post-2016 to present) of these four wells illustrates that two are stable (GMW-O-18 and PZ-5) and two have not been sampled recently (GMW-29 in 2016 and MW-15 in 2014 – which is now decommissioned and replaced with MW-15R).

GMW-29 (south-central area) has not been sampled recently (last sampled in 2016) and needs additional confirmatory sampling to understand the remedial operational effects on dissolved-phase trends. GMW-29 had been scheduled for sampling last quarter and contained NAPL (0.27 foot on Feb. 24, 2021) when gauged. Per the letter in response to the Water Board's April 8, 2020, comments on the *Biosparging Effectiveness Evaluation and Recommendations, South-Central Area* (Jacobs, 2019a), GMW-29 and GMW-O-12 (GMW-O-12 also containing NAPL when recently gauged in May 2021) had planned to be sampled last quarter; however, the submersible pumps, which had been left down-well while the wells equilibrated, malfunctioned due to extended exposure to water, so these wells will be sampled in the third quarter of 2021 using an alternate approach.

5.2 Soil Vapor Monitoring Program

During the second quarter 2021, soil vapor samples were collected from 14 probes using 1.4-liter Summa canisters, as indicated in Table 8. The samples were analyzed by the American Analytics laboratory for VOCs using EPA Method TO-15, TPH-g using EPA Method TO-3, and fixed gases (CO_2, methane, and oxygen) using EPA Method 3CM. Included in the TO-15 list of analytes were BTEX, 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 2006 soil gas investigation and human health risk assessment (Geomatrix, 2006).

5.3 Soil Vapor Monitoring Results

Table 8 presents the analytical results for samples collected during the May 2021 sampling event. Laboratory analytical reports are included in Appendix A. A summary of results is provided below:

- During the second quarter 2021 sampling event, no onsite or offsite COPCs were detected. The onsite COPC detections were below residential screening levels, June 2020 Department of Toxic Substances Control (DTSC) modified screening levels (DTSC, 2020), EPA's residential regional screening level (RSL) in air (EPA, 2020), and the attenuation factor in HERO Note 3 for calculating DTSC-modified screening levels (DTSC, 2020).
- Other detected compounds that were also detected during this sampling event included acetone, bromodichloromethane, chlorodibromomethane, chloroform, dichloromethane, tetrachloroethylene (PCE), and TPH-g. All the detected non-COPC concentrations were below DTSC modified screening levels (DTSC, 2020), and EPA RSLs (EPA, 2021), or there are no established screening levels.
- As indicted in previous versions of this report, VOCs detected in the shallow soil vapor still do not pose an unacceptable human health risk to residents (Jacobs, 2019c).

Soil gas sampling from up to 14 double- and/or triple-nested probes located across the site is performed quarterly. A recent review of the offsite south central soil vapor probe network (discussed in the *Review of the Offsite Soil Vapor Monitoring Probe Network* [Jacobs, 2020b] technical memorandum) found that probe locations are distributed evenly within the area's most likely to have the highest vapor concentrations (that is, the areas located directly above observed residual LNAPL and dissolved-phase impacts). In total, the probe locations have greater than 90 percent non-detect values for TPH-g (C_4 to C_{12}) and other COPCs since data collection efforts began in 2012 (Jacobs, 2020b). However, during their review of that technical memorandum, the Water Board issued comments in a letter dated November 18, 2020, in which they identified a data gap in the vapor monitoring network in the offsite/residential area along Cheshire Street, and requested that Kinder Morgan submit a work plan for the installation of additional probes. In response, two new vapor probes will be installed in 2021 along the stretch of Cheshire Street between the south-central and southeastern treatment areas. These probes will be sampled during the next available quarterly sampling event.

6. Observations, Planned Third Quarter Activities, and Path Forward

6.1 Primary Observations

The primary observations detailed in this report are summarized as follows:

- A sustained reduction in liquid mass recovery occurred both in terms of product (no product has been recovered at the site since 2017) and dissolved-phase mass removal (averaging less than 125 lb/year since 2016).
- Ongoing NSZD occurred under ambient conditions at rates of at least 1,400 gal/year (approximately 10,000 lb/year) in the south-central and southeastern areas.
    - Recently analyzed helium diffusion data collected in October 2020 assisted in quantifying NSZD rates using the gradient method at a series of nested soil vapor monitoring locations. These data indicate NSZD rates range from 2.98-429.24 gal/acre/year in the south-central, offsite south central, and southeastern areas of the site at the soil vapor monitoring locations.
- The initial observation of BS-02 biosparging performance with initial mass removal rates of 300 lb/day showed a steady decline in a similar trend as BS-01, and is anticipated to reach a practical NSZD transition point in 2021.
- HSVE-01 and BS-03 startup and sustained operation during the second quarter 2021 have resulted in limited VOC detection in soil vapor points in the offsite/south-central area. Combined with the sustained radius of capture of at least 200 feet, observed system performance supports continued operation and optimization of BS-03 and HSVE-01 without adversely affecting surficial soil vapors or above-ground residential locations.
    - HSVE-01 has removed approximately 8,000 (lbs) of VOC's, averaging 105 lbs/day over the 83 day operation period during the second quarter 2021.
- The stability of the groundwater dissolved-phase plume is based on individual well analysis, with the exception of two isolated wells that contained NAPL during the most recent sampling event (GMW-29 and GMW-O-12). These will be sampled in the upcoming quarter to confirm their long-term trends.

6.2 Planned Third Quarter 2021 Activities

The following maintenance activities and other tasks are planned for the third quarter of 2021:

- Submit a soil vapor monitoring installation workplan and install two nested soil vapor monitoring probes along Cheshire Street.
- Conduct two quarterly soil vapor monitoring events and one quarterly groundwater monitoring event. In addition, collect groundwater samples from select wells containing NAPL (GMW-29 and GMW-O-12).
- Continue to operate and optimize the southeastern horizontal biosparge well, BS-02.
- Continue to optimize the southeastern vertical SVE well system.
- Continue to operate and optimize the offsite/south-central horizontal SVE well, HSVE-01 and horizontal biosparge well, BS-03.
- Continue to optimize the offsite/south-central vertical SVE well system, as needed, in order to enhance the early phases of operation at HSVE-01 and BS-03.
- Measure weekly VOC concentrations (as hexane) at the influent and effluent of the RTO system.

- Collect monthly vapor samples at the influent and effluent of the RTO system and analyze the samples for VOCs using EPA Methods TO-15, total VOCs as hexane using method TO-3, and fixed gases using method ASTM D1946.
- Perform weekly maintenance and monitoring of the offsite south central and southeastern SVE and biosparge systems.
- Measure quarterly individual well vapor concentrations with a PID at the manifold.

6.3 Recommendations and Path Forward

During the third quarter 2021, Kinder Morgan plans to continue remedial activities in the southeastern and offsite/south-central areas of the site with the operation of BS-02, BS-03, and HSVE-01, along with the associated vertical SVE well network. Continued evaluation of monitoring data for these remedial systems (BS-02, BS-03, and HSVE-01) will be collected during the third quarter 2021 operations, with data collection slowly decreasing over time as these systems stabilize and achieve steady-state conditions. These data will be presented in the next quarterly remediation progress report.

With respect to the GWE system, both the TFE and GWE wells will remain offline across all three Kinder Morgan treatment areas until further notice, as described above.

The remediation activities and progress for the third quarter 2021 will be described in the Third Quarter 2021 Remediation Progress Report, to be submitted by October 15, 2021.

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Tables

Table 1. Remediation Well Construction and Status

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Installation Date	Top of Well Casing Elevation (feet msl)	Well Screen Interval (feet bgs)	Remediation Well Function	Well Operation Status During Second Quarter 2021	
						SVE/BS	TFE/GWE
South-Central	MW-SF-1	6/18/1990	78.93	25 - 40	SVE	OFF	OFF
	MW-SF-2	6/18/1990	78.53	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-3	6/18/1990	78.12	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-4	6/19/1990	79.38	25 - 40	SVE	OFF	--
	MW-SF-5	9/19/1990	79.74	23 - 38	SVE	OFF	--
	MW-SF-6	9/19/1990	76.80	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-9	6/15/1995	74.10	--	SVE	OFF	--
	MW-SF-10	9/23/2003	76.53	10 - 30	SVE	OFF	--
	MW-SF-11	6/19/2007	78.56	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-12	6/18/2007	78.07	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-13	6/19/2007	73.40	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-14	6/21/2007	78.16	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-15	6/21/2007	78.27	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-16	6/20/2007	78.21	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-17	--	--	--	SVE	OFF	--
	MW-18 (MID)	6/10/1991	75.67	50 - 60	SVE	OFF	--
	GMW-9	7/8/1991	77.16	20 - 50	SVE; TFE	OFF	OFF
	GMW-10	7/8/1991	N/A	25 - 50	SVE; TFE	OFF	OFF
	GMW-22	8/2/1991	77.24	25 - 60	SVE; TFE	OFF	OFF
	GMW-24	8/5/1991	77.48	25 - 60	SVE; TFE	OFF	OFF
	GMW-25	1/10/1992	78.14	20 - 50	SVE; TFE	OFF	OFF
	GWR-3	1/10/1992	77.60	20 - 50	SVE; TFE	OFF	OFF
	VEW-1	09/19/90	--	5 - 25	SVE	OFF	--
	VEW-2	09/19/90	--	5 - 25	SVE	OFF	--
	BS-01	08/27/14	75.06	--	BIOSPARGE	OFF	--
South-Central Offsite	MW-O-1	1/22/1991	75.48	25 - 40	SVE	OFF	--
	MW-O-2	1/23/1991	71.90	25 - 40	SVE; TFE	OFF	OFF
	GMW-O-11	5/20/1992	74.17	20 - 50	SVE; TFE	ON	OFF
	GMW-O-12	5/21/1992	73.49	20 - 50	SVE	ON	--
	GMW-O-20	6/15/1995	73.32	--	SVE; TFE	ON	OFF
	GMW-O-21	10/1/1997	71.43	26 - 46	TFE	--	OFF
	GMW-O-23	6/25/2007	73.63	20 - 40	SVE; TFE	OFF	OFF
	HSVE-01	12/17/19	--	--	SVE	ON	--
	BS-03	Dec-19	--	--	BIOSPARGE	ON	--
	HW-1	09/06/92	--	--	SVE	Abandoned 2019	
	HW-2	09/06/92	--	--	SVE	Abandoned 2019	

Table 1. Remediation Well Construction and Status

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Installation Date	Top of Well Casing Elevation (feet msl)	Well Screen Interval (feet bgs)	Remediation Well Function	Well Operation Status During Second Quarter 2021	
						SVE/BS	TFE/GWE
Southeastern	GMW-O-15	4/19/1994	74.23	20 - 50	SVE; TFE	ON	OFF
	GMW-O-16	4/19/1994	74.10	20 - 50	SVE	ON	--
	GMW-O-18	7/25/1994	74.36	21 - 40	SVE; TFE	ON	OFF
	GMW-O-19	7/29/1994	74.46	20 40	SVE	ON	--
	GMW-36	4/11/1994	76.66	20 - 50	SVE; TFE	ON	OFF
	GMW-SF-9	4/1/2003	73.05	37 - 46	TFE	--	OFF
	GMW-SF-10	4/2/2003	75.77	37 - 46	TFE	--	OFF
	MW-8	8/24/1990	76.06	18 - 48	SVE	ON	--
	VEW-3	3/7/2019	--	23 - 32.5	SVE	ON	--
	VEW-4	3/8/2019	--	23 - 32.5	SVE	ON	--
	VEW-5	3/8/2019	--	23 - 32.5	SVE	ON	--
	BS-02	11/21/17	--	--	BIOSPARGE	ON	--
West Side Barrier	BW-2	5/20/1996	73.57	27 - 47	GWE	--	OFF
	BW-3	5/17/1996	74.16	31 - 50	GWE	--	OFF
	BW-4	5/20/1996	74.61	28 - 47	GWE	--	OFF
	BW-5	5/23/1996	73.59	27 - 46	GWE	--	OFF
	BW-6	5/22/1996	73.48	28 - 47	GWE	--	OFF
	BW-7	5/22/1996	74.65	27 - 46	GWE	--	OFF
	BW-8	5/21/1996	75.08	27 - 46	GWE	--	OFF
	BW-9	5/21/1996	76.19	27 - 46	GWE	--	OFF

Notes:

-- = information not available or not applicable

bgs = below ground surface

BS = biosparge

GWE = groundwater extraction

HSVE = horizontal soil vapor extraction

msl = above mean sea level based on the National Geodetic Vertical Datum of 1929

SVE = soil vapor extraction

TFE = total fluids extraction

Table 2. Vapor Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Influent PID Reading (ppmv as hexane)	System Flow (scfm)	Header Vacuum (in. H_2O)	Mass Removed (pounds)[a]
1995 Totals	1,240		--	--	--	281,065
1996 Totals	7,208	5,968	--	--	--	516,717
1997 Totals	12,865	5,657	--	--	--	435,631
1998 Totals	17,877	5,012	--	--	--	276,950
1999 Totals	23,600	5,723	--	--	--	390,836
2000 Totals	29,690	6,090	--	--	--	359,092
2001 Totals	33,671	3,981	--	--	--	224,091
2002 Totals	36,358	2,687	--	--	--	79,363
2003 Totals	39,676	3,319	--	--	--	64,671
2004 Totals	44,193	4,517	--	--	--	120,240
2005 Totals	49,750	5,557	--	--	--	212,175
2006 Totals	52,735	2,985	--	--	--	17,263
2007 Totals	58,319	2,058	--	--	--	7,378
2008 Totals	64,233	5,915	--	--	--	5,878
2009 Totals	68,858	4,625	--	--	--	9,387
2010 Totals	72,369	3,511	--	--	--	1,502
2011 Totals	77,489	5,120	--	--	--	14,664
2012 Totals	84,173	6,684	--	--	--	22,260
2013 Totals	90,414	6,241	--	--	--	90,880
2014 Totals	94,083	3,688	--	--	--	67,744
2015 Totals	98,408	4,325	--	--	--	122,706
2016 Totals	104,405	7,694	--	--	--	156,193
2017 Totals	108,262	3,857	--	--	--	42,194
2018 Totals	115,346	7,084	--	--	--	38,999
2019 Totals	122,413	7,067	--	--	--	19,583
2020 Totals	127,703	1,675	--	--	--	32,070
1/1/2021	127,773	70	--	--	--	--
1/5/2021	127,872	99	252	1,411	50	425
1/12/2021	128,040	168	196	1,513	50	601
1/19/2021	128,210	170	146	1,559	50	467
1/26/2021	128,376	166	96	1,458	50	280
2/2/2021	128,543	167	116	1,508	50	352
2/9/2021	128,711	168	108	1,464	50	320
2/16/2021	128,878	167	146	1,435	50	422
2/23/2021	129,023	145	138	1,391	50	336
3/2/2021	129,164	141	134	1,319	50	301
3/9/2021	129,334	170	126	1,491	50	385
3/16/2021	129,501	167	108	1,354	50	295
3/23/2021	129,668	167	126	1,481	50	376
3/30/2021	129,835	167	108	1,604	50	349
First Quarter 2021 Total	**129,835**	**2,132**	--	--	--	**4,908**

Table 2. Vapor Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Influent PID Reading (ppmv as hexane)	System Flow (scfm)	Header Vacuum (in. H_2O)	Mass Removed (pounds)[a]
4/6/2021	130,004	169	184	1,609	50	447
4/13/2021	130,141	137	268	1,561	50	528
4/20/2021	130,306	165	402	1,483	56	703
4/29/2021	130,526	220	288	1,960	55	911
5/4/2021	130,647	121	448	1,602	56	1,047
5/11/2021	130,812	165	394	1,626	56	1,275
5/18/2021	130,978	166	318	1,835	55	1,168
5/25/2021	131,147	169	914	1,760	55	3,279
6/1/2021	131,314	167	1,314	1,479	55	3,914
6/8/2021	131,485	171	1,040	1,445	55	3,099
6/15/2021	131,651	166	498	1,799	55	1,046
6/22/2021	131,820	169	398	1,806	55	761
6/29/2021	131,987	167	210	1,797	55	367
Second Quarter 2021 Total	**131,987**	**2,152**	--	--	--	**18,546**
Cumulative Totals	**131,987**	--	--	--	--	**3,632,984**

Notes:

[a] The total mass removed is based on influent FID or PID readings, hours of operation, and flow rate.

-- = not applicable or not available

FID = flame ionization detector

in. H_2O = inches of water

PID = photoionization detector

ppmv = parts per million by volume

scfm = standard cubic feet per minute

TPH-g = total petroleum hydrocarbons quantified as gasoline (C_4 to C_{12})

Table 3. Remediation Well Vapor Concentrations

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Remediation Well Function	March 16, 2021 (ppmv as Hexane)[a]	June 15, 2021 (ppmv as Hexane)[a]
South-Central	MW-SF-1	SVE	--[b]	--[b]
	MW-SF-2	SVE; TFE	--[b]	--[b]
	MW-SF-3	SVE; TFE	--[b]	--[b]
	MW-SF-4	SVE	--[b]	--[b]
	MW-SF-5	SVE	--[b]	--[b]
	MW-SF-6	SVE; TFE	--[b]	--[b]
	MW-SF-9	SVE	--[b]	--[b]
	MW-SF-10	SVE	--[b]	--[b]
	MW-SF-11	SVE; TFE	--[b]	--[b]
	MW-SF-12	SVE; TFE	--[b]	--[b]
	MW-SF-13	SVE; TFE	--[b]	--[b]
	MW-SF-14	SVE; TFE	--[b]	--[b]
	MW-SF-15	SVE; TFE	--[b]	--[b]
	MW-SF-16	SVE; TFE	--[b]	--[b]
	MW-SF-17	SVE; TFE	--[b]	--[b]
	MW-18 (MID)	SVE	--[b]	--[b]
	GMW-9	SVE; TFE	--[b]	--[b]
	GMW-10	SVE	--[b]	--[b]
	GMW-22	SVE; TFE	--[b]	--[b]
	GMW-24	SVE; TFE	--[b]	--[b]
	GMW-25	SVE; GWE	--[b]	--[b]
	GWR-3	SVE; GWE	--[b]	--[b]
	VEW-1	SVE	--[b]	--[b]
	VEW-2	SVE	--[b]	--[b]
South-Central Offsite	MW-O-1	SVE	--[c]	--[b]
	MW-O-2	SVE; TFE	4	--[b]
	GMW-O-11	SVE; TFE	0	--[b]
	GMW-O-12	SVE	0	212
	GMW-O-20	SVE; TFE	4	--[b]
	GMW-O-23	SVE; TFE	12	--[b]
	HW-1	SVE	Abandoned 2019	
	HW-2	SVE	Abandoned 2019	
	HSVE-01	SVE	--	268
Southeastern	GMW-36	SVE; TFE	88	395
	GMW-O-15	SVE; TFE		
	GMW-O-16	SVE		
	GMW-O-18	SVE; TFE		
	GMW-O-19	SVE		
	MW-8	SVE		
	VEW-3	SVE		
	VEW-4	SVE		
	VEW-5	SVE		

Notes:

[a] Vapor readings measured in the field with an Eagle 2 PID calibrated

[b] Vapor lines remained closed for the natural source zone depletion study.

[c] Vapor readings could not be measured due to water in the PVC pipe.

-- = not applicable or not available

GWE = groundwater extraction

PID = photoionization detector

ppmv = parts per million by volume

PVC = polyvinyl chloride

SVE = soil vapor extraction

TFE = total fluids extraction

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
Date Sampled	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
8/3/2007	<0.5	<0.5	22.0	63	---	---	650	220	1,100	1,420	55
9/5/2007	<0.5	<0.5	22.0	9	---	---	32	48	140	320	18
10/2/2007	<0.5	<0.5	21.9	27	---	---	250	75	430	610	20
11/2/2007	<0.5	<0.5	22.1	5	---	---	40	10	74	95	7
2/1/2008	<0.5	<0.5	21.8	100	---	---	830	260	2,200	1,850	<50
3/4/2008	<0.5	<0.5	21.7	50	---	---	380	98	570	1,250	36
4/8/2008	<0.5	<0.5	22.2	69	---	---	290	110	480	1,040	41
5/23/2008	<0.5	<0.5	21.8	14	---	---	180	24	190	280	23
6/3/2008	<0.5	<0.5	21.7	30	---	---	380	42	400	330	70
7/2/2008	<0.5	<0.5	21.4	49	---	---	32	6	34	45	10
8/19/2008	<0.5	1.7	20.8	50	---	---	390	63	230	450	40
9/5/2008	<0.5	2.0	21.2	22	---	---	130	39	130	340	42
10/7/2008	<0.5	1.43	21.4	10	---	---	41	15	54	181	6.8
11/4/2008	<0.5	2.08	21.1	7.5	---	---	31	47	190	242	<2.0
3/6/2009	<0.5	<0.5	22.0	83	---	---	1,900	180	990	770	240
4/17/2009	<0.5	<0.5	22.2	3.1	---	---	140	8	37	68	26
5/29/2009	<0.5	1.08	21.0	130	---	---	1,700	640	3,700	3,100	100
8/18/2009	<0.5	0.78	21.7	28	---	---	380	37	290	310	33
8/25/2009	<0.5	0.87	20.6	37	---	---	500	44	320	293	20
9/18/2009	<0.5	0.37	21.6	11	---	---	75	11	39	107	3
10/29/2009	<0.5	1.80	18.2	77	---	---	350	45	250	440	4
11/25/2009	<0.5	<0.5	21.1	14	---	---	110	12	110	164	11
12/15/2009	<0.5	<0.5	21.7	7	---	---	28	3	20	47	<3.2
2/26/2010	<0.5	0.4	21.2	20	---	---	300	18	220	260	21
3/26/2010	<0.5	1.0	20.2	18	---	---	380	20	110	90	5
5/4/2010	<0.5	0.4	21.4	13	---	---	100	42	170	222	3
6/29/2010	<0.5	0.4	21.3	9	---	---	74	13	66	82	<5.0
8/3/2010	<0.5	0.6	20.4	29	---	---	210	13	64	85	9
8/31/2010	0.0039[c]	<0.5	21.4	11	---	---	72	12	66	87	8
9/14/2010	<0.5	<0.5	21.6	6	---	---	63	15	57	84	<3.2
11/2/2010	--	--	--	11	---	---	140	<10	31	28	<10
11/17/2010	0.00075	0.4	22.0	--	---	---	--	--	--	--	--
12/28/2010	0.0052	0.27	22.0	16	---	---	160	37	230	324	4.5
1/14/2011	0.016	0.20	22.0	68	---	---	340	34	89	183	<10
2/8/2011	0.026	0.24	21.0	210	---	---	3,000	1,700	11,000	7,400	110
3/29/2011	0.013	0.13	20.0	5	---	---	170	15	18	41.5	<2.5
4/26/2011	0.0011	0.079	20.0	1.9	---	---	16	2.4	8.8	7.7	<1.2
5/17/2011	0.021	0.65	22.0	90	---	---	2,600	140	2,200	1,100	220
6/17/2011	0.001	0.20	22.0	3	---	---	59	8.1	31	56	<0.25
7/19/2011	0.0056	0.49	22.0	80	---	---	1,800	130	2,200	1,000	<31
8/16/2011	0.0026	0.31	22.0	140	---	---	3,000	600	4,000	2,330	490
9/20/2011	--	--	--	100	---	---	2,100	740.0	2,700	2,040	660
11/22/2011	0.070	0.70	20.0	11	---	---	150	12.0	67	35	<5.0
12/20/2011	0.020	0.34	22.0	0	---	---	110	<25	260	216	<25
1/10/2012	0.010	0.66	20.0	11	---	---	150	14	86	160	<12
2/28/2012	0.0067	0.90	20.0	27	---	---	140	42	140	224	<25
3/13/2012	0.0044	0.71	20.0	27	---	---	440	38	450	241	<25
4/27/2012	0.0290	0.22	21.0	39	---	---	540	42	630	299	<25
5/22/2012	0.0100	0.31	20.0	65	---	---	590	350	770	2,070	<12
6/19/2012	0.0028	0.41	21.0	17	---	---	130	26	150	162	<12
7/27/2012	0.0059	0.40	21.0	13	---	---	46	<5	33	78	<5
8/30/2012	0.0049	0.56	21.0	69	---	---	150	<25	66	194	<25
9/25/2012	0.0073	0.80	21.0	57	---	---	190	19	120	283	<2.5
10/30/2012	0.0099	0.96	21.0	50	---	---	380	<50	230	130	<50
12/11/2012	0.0074	0.84	21.0	53	---	---	130	17	110	173	<5.0
1/29/2013	0.0028	0.29	22.0	1.4	---	---	8.7	<1.2	9.4	9.6	<1.2
2/12/2013	0.0057	0.88	21.0	60	---	---	500	<50	440	400	<50
3/19/2013	0.0058	0.80	21.0	77	---	---	560	66	490	520	<40

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
Date Sampled	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
4/16/2013	0.0079	0.74	21.0	53	---	---	430	29	240	193	<25
5/14/2013	0.017	1.6	19	280	---	---	1,700	190	1,800	840	<12
6/28/2013	0.0068	<0.010	21	22	---	---	190	<25	130	131	<25
SVE system down for repair from July 16, 2013, to September 17, 2013.											
9/20/2013	0.014	1	21	590	---	---	4,200	520	3,600	2,830	<40
10/15/2013	0.011	0.68	21	410	---	---	3,500	360	2,800	1,970	<20
11/12/2013	0.012	0.66	21	430	---	---	2,900	440	2,600	1,930	<15
12/10/2013	0.013	0.92	21	910	---	---	8,400	920	7,200	5,500	<50
1/17/2014	0.0077	0.57	21	350	---	---	6,600	6,800	8,200	23,300	3,000
2/11/2014	0.011	0.60	21	640	---	---	6,600	570	6,000	3,800	<100
3/21/2014	0.0050	0.40	21	390	---	---	4,500	290	4,000	1,930	<50
4/21/2014	0.011	0.65	21	700	---	---	6,900	370	6,900	3,400	<40
SVE system down for repair from April 29, 2014, to May 13, 2014.											
5/27/2014	0.011	0.56	21	530	---	---	6,600	570	8,900	3,820	<50
6/13/2014	0.0076	0.49	21	780	---	---	10,000	1,200	15,000	7,100	<80
SVE system down for repair and permit modification from July 1, 2014, to March 27, 2015.											
3/31/2015	0.090	1.3	20	1,400	---	1,300	12,000	1,000	11,000	7,400	<200
4/7/2015	0.014	0.56	21	---	---	710	8,200	8,200	610	3,260	<160
5/5/2015	---	---	---	---	---	760	6,100	1,100	9,600	7,200	<140
6/30/2015	0.0065	0.37	21	---	---	270	3,100	380	3,800	2,820	<160
7/14/2015	0.0094	0.62	21	---	---	650	7,000	950	7,900	6,100	<200
8/4/2015	0.0053	0.49	21	---	---	560	6,200	710	7,700	4,800	<0.097
8/17/2015[c]	---	---	---	---	---	470	4,800	500	5,400	3,600	<0.099
8/17/2015[c]	---	---	---	---	---	470	5,000	520	5,800	3,870	<0.100
8/17/2015[c]	---	---	---	---	---	480	5,100	580	6,100	4,000	<0.097
8/17/2015[c]	---	---	---	---	---	480	5,200	580	6,300	4,100	<0.099
9/1/2015[c]	---	---	---	---	---	670	7,000	850	8,700	6,900	<0.097
9/1/2015[c]	---	---	---	---	---	930	12,000	1,500	14,000	11,400	<0.140
9/1/2015[c]	---	---	---	---	---	890	12,000	2,300	20,000	14,300	<0.140
10/6/2015	0.0067	0.43	21	---	---	960	14,000	3,100	25,000	15,900	<200
11/10/2015	0.0028	0.30	21	---	860	---	9,100	1,800	15,000	9,400	<97
12/10/2015	0.004	0.41	21	---	580	---	6,400	1,200	10,000	7,600	<120
1/4/2016[c]	0.0059	0.27	22	---	750	---	9,600	2,400	20,000	13,500	<220
2/4/2016[c]	0.0038	0.58	21	---	2,000	---	16,000	2,600	29,000	19,300	<610
3/3/2016[c]	0.004	0.64	21	---	1,200	---	11,000	3,000	27,000	27,500	<130
4/5/2016	0.033	0.49	21	---	400	---	3,900	5,500	7,300	4,600	<63
5/13/2016	0.0034	0.50	21	---	290	---	2,200	300	4,300	810	<23
6/7/2016	0.0065	0.32	21	---	150	---	1,000	25 J	1,100	117 J	<36
7/7/2016	0.014	0.48	21	---	170	---	1,000	220	2,500	1,630	<51
8/2/2016	0.0047	0.54	21	---	260	---	1,900	720	5,000	7,400	<22
9/7/2016	0.0066	0.53	21	---	250	---	1,600	680	3,800	5,000	<21
10/13/2016	0.0096	0.67	21	---	250	---	2,700	680	3,800	5,200	<36
11/1/2016	0.0025	0.62	21	---	260	---	1,600	540	3,800	4,600	<40
SVE system was offline for installation of new RTO from November 1, 2016, to June 6, 2017.											
6/7/2017	0.029	1.1	21	--	190	--	960	220	1,200	1,170	<42
7/13/2017	0.055	1.3	20	---	550	---	6,800	1,100	6,600	9,900	<44
8/3/2017	0.013	0.85	21	---	340	--	4,200	750	5,600	7,500	<110
9/12/2017	0.0079	0.89	21	--	290	---	3,000	530	4,600	5,500	510
10/13/2017	0.0091	0.85	21	---	280	--	3,400	540	4,100	5,500	830
11/10/2017	0.0064	0.87	21	---	230	---	3,200	320	2,400	3,050	<84
12/8/2017	0.0040	0.77	21	---	250	---	3,600	350	3,000	3,700	<81
1/4/2018	0.0047	0.72	21	--	230	--	3,900	440	3,100	4,000	970
2/6/2018	0.0042	0.42	22	--	27	--	140	23	150	310	<5.1
3/13/2018	0.0038	0.74	21	--	79	--	680	110	460	1,150	<11
4/15/2018	0.0034	0.49	22	--	33	--	460	53	280	400	<2.0
5/11/2018	0.0046	0.72	21	--	64	--	660	74	410	850	<11
6/7/2018	0.0031	0.65	21	--	58	--	570	83	320	504	<9.7
7/3/2018	0.0063	0.78	21	--	210	--	4,700	570	2,700	3,940	1,100

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
Date Sampled	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
8/2/2018	0.0048	0.69	22	--	160	--	3,000	320	2,300	2,380	<40
9/6/2018	0.0044	0.81	21	--	190	--	3,900	550	4,000	5,000	<42
10/5/2018	0.0034	0.85	22	--	180	--	1,200	180	1,400	1,850	<42
11/20/2018	0.0088	0.80	21	--	150	--	1,200	270	1,100	1,290	<11
12/7/2018	0.0038	0.75	22	--	190	--	1,700	360	2,100	2,140	<20
1/11/2019	0.0061	1.5	19	--	46	--	190	25	160	350	<11
2/7/2019	0.0023	0.82	21	--	74	--	240	67	280	990	<10
3/12/2019	<0.0034	0.58	22	--	31	--	110	31	130	570	<4.9
4/4/2019	0.0044	0.80	21	--	160	--	2,400	400	2,000	2,730	550
5/7/2019	0.023	0.78	21	--	120	--	1,900	330	1,500	2,520	410
6/4/2019	0.0037	0.64	21	--	110	--	1,000	260	880	1,550	<19
7/9/2019	0.036	0.64	21	--	99	--	860	190	820	1,210	400
8/18/2019	0.0037	0.64	21	--	97	--	850	220	940	1,630	230
9/12/2019	0.0019	0.0084	22	--	58[c]	--	640[c]	78[c]	520[c]	880[c]	200[c]
10/4/2019	0.0037	0.64	21	--	17	--	61	21	67	470	<3.6
11/7/2019	0.0067	0.67	21	--	19	--	66	26	56	480	<2.0
12/12/2019	0.023	1.1	20	--	30	--	220	23	100	158	140
January-20	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]
2/14/2020	0.0360	1.1	21	--	17	--	63	7.7	12	480	<5.0
3/1/2020	0.0039	0.68	21	--	23	--	75	19	33	263	<2.8
April-20	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]
5/21/2020	0.017	0.020	21	--	420	--	2,800	190	4,800	1,720	<40
6/2/2020	0.011	0.93	21	--	260	--	2,500	180	3,100	1,480	<40
7/2/2020	0.0088	1.4	21	--	180	--	1,200	130	1,200	1,470	930
8/1/2020	0.0058	0.90	21	--	250	--	1,300	1,000	4,500	9,100	770
9/1/2020	0.011	0.87	21	--	150	--	490	270	2,300	3,310	650
10/1/2020	0.015	0.82	21	--	93	--	320	200	1,700	2,790	470
11/1/2020	0.0084	1.1	21	--	130	--	560	340	2,300	3,440	540
12/4/2020	<0.0024	0.20	22	--	1.6	--	22	2.9	26	35	5.9
1/12/2021	<0.0024	0.60	21	--	54	--	280	120	510	1,720	220
2/2/2021	<0.0024	0.52	22	--	42	--	260	140	850	1,800	190
3/1/2021	<0.0027	0.80	21	--	58	--	470	100	970	2,280	170
4/1/2021	<0.0040	0.44	21	--	30	--	240	65	640	590	130
5/1/2021	<0.0025	1.2	21	--	160	--	520	560	2,100	3,410	<25
6/1/2021	<0.0024	1.2	21	--	320	--	1,400	970	2,900	3,540	<30

Notes:

[a] Influent vapor samples were collected from the manifold conveying soil vapors extracted from the south-central and southeastern areas.

[b] Other detected VOCs are included in the laboratory analytical reports in Appendix A.

[c] Influent vapor samples were collected after dilution before entering the SVE combustion chamber.

[d] System was off for entire month.

J = Resulting analyte concentration is between the reporting limit and the method detection limit

<0.5 = not detected at or above the laboratory reporting limit shown

EPA = U.S. Environmental Protection Agency

ASTM = ASTM International

%v = percent by volume

-- = not applicable

MTBE = methyl tertiary butyl ether

ppbv = parts per billion by volume

ppmv = parts per million by volume

RTO = regenerative thermal oxidizer

SCAQMD = South Coast Air Quality Management District

SVE = soil vapor extraction

TGNMOC = total gaseous nonmethane organic carbon

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TVOC = total volatile organic compound

VOC = volatile organic compound

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (pounds)	Product Recovery (gallons)
1996 Totals	1,802,103	0	1,802,103	--	273	36,098	4,995
1997 Totals	7,031,533	0	7,031,533	--		15,928	2,204
1998 Totals	4,064,700	0	4,064,700	--		6,186	856
1999 Totals	3,891,600	2,338,129	6,229,729	--	385	3,252	450
2000 Totals	2,290,580	2,454,971	4,745,551	--	295	1,662	230
2001 Totals	1,401,473	1,131,700	2,533,173	--	229	0	0
2002 Totals	1,452,229	2,931,167	4,383,396	--	110	0	0
2003 Totals	1,607,095	2,281,956	3,889,051	--	65	72	10
2004 Totals	1,695,361	3,854,470	5,549,831	--	229	0	0
2005 Totals	1,537,925	4,244,674	5,782,599	--	273	0	0
2006 Totals	1,699,567	5,089,615	6,789,182	--	684	600	83
2007 Totals	3,368,481	2,167,724	5,536,205	--		643	89
2008 Totals[b]	4,283,026	405,954	4,688,980	--	520	0	0
2009 Totals	2,309,627	0	2,309,627	--	105	0	0
2010 Totals[c]	3,342,227	2,292	3,344,519	--	363	0	0
2011 Totals	5,530,317	0	5,530,317	--	585	0	0
2012 Totals	7,368,318	0	7,368,318	--	699	0	0
2013 Totals	6,439,733	0	6,439,733	--	568	14	2.0
2014 Totals	3,410,427	0	3,410,427	--	2,236	16,875	2,335
2015 Totals	4,817,906	0	4,817,906	--	5,959	21,162	2,928
2016 Totals	2,428,279	0	2,428,279	--	4,506	1,749	242
2017 Totals	3,858,644	0	3,858,644	--	325	14	2.0
2018 Totals	2,854,384	0	2,854,384	--	37	0	0
2019 Totals	2,326,626	0	2,326,626	--	9.27	0	0
2020 Totals	1,078,986	0	1,078,986		8.12	0	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (pounds)	Product Recovery (gallons)
First Quarter 2021 Total	405,432	0	405,432	--	4.558	0	0
Second Quarter 2021 Total	0	GWTS is offline, last date of groundwater extraction was February 23, 2021				0	0
Cumulative Totals	**82,296,579**	**26,902,652**	**109,199,231**	**--**	**18,470**	**104,256**	**14,426**

Notes:

[a] Estimated hydrocarbon mass removed (pounds) between 1996 and 2005 is based on concentrations of dissolved BTEX and MTBE in the groundwater influent and volume of groundwater extracted. Estimated hydrocarbon mass removed (pounds) between 2006 and 2011 is based on concentrations of TPH-g and TPH-fp in the groundwater influent and volume of groundwater extracted. Estimated hydrocarbon mass removed (pounds) between 2012 and 2015 is based on concentrations of dissolved TPH-total in the groundwater influent and volume of extracted groundwater.

[b] Groundwater removal in the West Side Barrier area was discontinued in August 2008.

[c] Groundwater extraction from West Side Barrier area wells BW-3 and BW-6 was resumed on May 14, 2010, to evaluate the efficacy of blending water with lower selenium concentrations from these wells with groundwater extracted from the south-central and southeastern areas. Groundwater removal from the West Side Barrier area was discontinued again on June 22, 2010.

[d] Groundwater treatment system was operated briefly on April 1, 14, and 15, 2020, for necessary maintenance purposes.

-- = not applicable

µg/L = micrograms per liter

BTEX = benzene, toluene, ethylbenzene, and xylenes

MTBE = methyl tertiary butyl ether

TPH-d = total petroleum hydrocarbons quantified as diesel (C13-C22)

TPH-fp = total petroleum hydrocarbons quantified as fuel product (C7-C28)

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TPH-o = total petroleum hydrocarbons quantified as oil (C23-C36)

TPH-total = total petroleum hydrocarbons quantified as gasoline, diesel, and oil (C4-C36)

Product Density: 0.866 g/cm^2 - Jacobs 2019aa - Biosparging Effectiveness Evaluation and Recommendations, South-Central Area (Report)

1 g/cm3 = 8.345 lb/gal

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
3/6/1996	--	--	--	--	--	2,600	790	7,200	9,100	---	--	--	--	--
7/23/1998	--	--	--	--	--	750	<10	360	300	---	--	--	--	--
8/27/1998	--	--	--	--	--	1,000	71	530	800	---	--	--	--	--
10/1/1998	--	--	--	--	--	1,200	<10	1,400	1,680	---	--	--	--	--
11/19/1998	--	--	--	--	--	1,600	140	2,600	2,900	---	--	--	--	--
12/17/1998	--	--	--	--	--	4,500	380	4,500	3,900	---	--	--	--	--
1/28/1999	--	--	--	--	--	520	79	660	840	---	--	--	--	--
3/25/1999	--	--	--	--	--	540	160	1,800	4,100	---	--	--	--	--
4/2/1999	--	--	--	--	--	620	76	520	1,200	---	--	--	--	--
4/15/1999	--	--	--	--	--	1,400	99	800	1,480	---	--	--	--	--
5/6/1999	--	--	--	--	--	1,340	180	1,240	1,730	---	--	--	--	--
6/3/1999	--	--	--	--	--	3,410	343	2,240	2,770	---	--	--	--	--
8/5/1999	--	--	--	--	--	3,200	780	5,400	5,200	---	--	--	--	--
9/23/1999	--	--	--	--	--	2,700	130	1,200	720	---	--	--	--	--
9/30/1999	--	--	--	--	--	1,300	77	480	560	---	--	--	--	--
10/13/1999	--	--	--	--	--	1,400	100	660	720	---	--	--	--	--
11/4/1999	--	--	--	--	--	3,000	500	5,600	4,500	---	--	--	--	--
12/9/1999	--	--	--	--	--	4,500	280	1,400	1,480	---	--	--	--	--
1/13/2000	--	--	--	--	--	9,000	7,600	14,000	44,000	---	--	--	--	--
2/11/2000	--	--	--	--	--	2,300	<100	1,200	1,240	3,100	--	--	--	--
3/10/2000	--	--	--	--	--	380	20	110	430	740	--	--	--	--
4/13/2000	--	--	--	--	--	1,300	550	450	920	970	--	--	--	--
6/2/2000	--	--	--	--	--	840	56	240	980	920	--	--	--	--
6/15/2000	--	--	--	--	--	1,600	82	900	990	2,700	--	--	--	--
8/3/2000	--	--	--	--	--	1,900	410	3,500	4,400	2,700	--	--	--	--
8/28/2000	--	--	--	--	--	620	33	200	380	1,800	--	--	--	--
9/20/2000	--	--	--	--	--	460	<20	73	255	1,300	--	--	--	--
10/25/2000	--	--	--	--	--	20	<20	<20	216	6,700	--	--	--	--
11/15/2000	--	--	--	--	--	560	24	210	490	3,700	--	--	--	--
3/22/2001	--	--	--	--	--	3,800	360	3,900	3,160	5,500	--	--	--	--
4/30/2001	--	--	--	--	--	4,100	710	5,800	5,600	8,300	--	--	--	--
5/23/2001	--	--	--	--	--	3,400	160	1,100	1,070	3,900	--	--	--	--
6/22/2001	--	--	--	--	--	1,700	85	680	680	2,200	--	--	--	--
7/16/2001	--	--	--	--	--	2,300	130	1,100	1,350	2,100	--	--	--	--
9/5/2001	--	--	--	--	--	1,500	170	1,200	1,890	1,100	--	--	--	--
1/23/2002	--	--	--	--	--	<0.5	<1	<1	<2	2	--	--	--	--
2/28/2002	--	--	--	--	--	<0.5	<1	<1	<2	96	--	--	--	--
3/25/2002	--	--	--	--	--	<0.5	<1	<1	<2	87	--	--	--	--
5/1/2002	--	--	--	--	--	1,900	31	190	480	1,100	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
5/17/2002	--	--	--	--	--	1,400	50	180	970	1,000	--	--	--	--
6/4/2002	--	--	--	--	--	2,700	57	280	530	1,300	--	--	--	--
7/18/2002	--	--	--	--	--	3,800	66	530	1,160	330	--	--	--	--
8/8/2002	--	--	--	--	--	4,800	49	610	1,290	460	--	--	--	--
9/3/2002	--	--	--	--	--	260	<5	5	71	600	--	--	--	--
10/18/2002	--	--	--	--	--	1,200	70	490	820	570	--	--	--	--
11/26/2002	--	--	--	--	--	1,300	68	130	590	860	--	--	--	--
12/27/2002	--	--	--	--	--	1	<1	<1	<2	58	--	--	--	--
1/30/2003	--	--	--	--	--	<0.5	<1	<1	<2	37	--	--	--	--
2/26/2003	--	--	--	--	--	4	<1	<1	4	140	--	--	--	--
3/17/2003	--	--	--	--	--	2,800	23	170	480	570	--	--	--	--
4/30/2003	--	--	--	--	--	3,700	350	2,200	4,600	490	--	--	--	--
6/13/2003	--	--	--	--	--	1,200	17	120	510	740	--	--	--	--
6/19/2003	--	--	--	--	--	680	<10	35	239	680	--	--	--	--
7/3/2003	--	--	--	--	--	2,600	160	610	2,290	450	--	--	--	--
7/25/2003	--	--	--	--	--	300	6	3	39	230	--	--	--	--
8/20/2003	--	--	--	--	--	830	19	130	350	290	--	--	--	--
9/11/2003	--	--	--	--	--	270	<10	<10	46	420	--	--	--	--
10/16/2003	--	--	--	--	--	380	<10	<10	121	490	--	--	--	--
11/17/2003	--	--	--	--	--	93	6	22	106	200	--	--	--	--
12/19/2003	--	--	--	--	--	300	27	110	1,010	62	--	--	--	--
1/30/2004	--	--	--	--	--	700	140	740	1,740	22	--	--	--	--
2/17/2004	--	--	--	--	--	300	47	440	1,150	19	--	--	--	--
3/8/2004	--	--	--	--	--	52	<5.0	10	149	23	--	--	--	--
3/21/2004	--	--	--	--	--	420	11	29	318	120	--	--	--	--
6/28/2004	--	--	--	--	--	740	26	46	337	81	--	--	--	--
7/30/2004	--	--	--	--	--	660	18	68	280	87	--	--	--	--
8/27/2004	--	--	--	--	--	1,500	47	140	530	77	--	--	--	--
9/28/2004	--	--	--	--	--	400	10	32	252	64	--	--	--	--
10/15/2004	--	--	--	--	--	950	31	130	316	64	--	--	--	--
11/12/2004	--	--	--	--	--	2,100	1,500	390	15,800	3,000	--	--	--	--
12/10/2004	--	--	--	--	--	700	320	1,100	3,900	110	--	--	--	--
1/28/2005	--	--	--	--	--	460	140	520	2,260	610	--	--	--	--
2/25/2005	--	--	--	--	--	5,700	200	650	1,560	1,300	--	--	--	--
3/22/2005	--	--	--	--	--	<5	<10	<10	26	1,000	--	--	--	--
4/21/2005	--	--	--	--	--	680	8	21	108	420	--	--	--	--
5/20/2005	--	--	--	--	--	6	<5	9	50	<5	--	--	--	--
6/28/2005	--	--	--	--	--	450	80	690	1,030	1,600	--	--	--	--
7/27/2005	--	--	--	--	--	2,000	170	1,700	5,000	1,200	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
8/31/2005	--	--	--	--	--	660	34	320	670	220	--	--	--	--
9/28/2005	--	--	--	--	--	1,800	310	2,800	4,700	360	--	--	--	--
10/26/2005	--	--	--	--	--	940	330	1,800	3,600	530	--	--	--	--
11/30/2005	--	--	--	--	--	900	170	900	2,790	760	--	--	--	--
12/20/2005	--	--	--	--	--	2,500	350	2,600	4,100	2,300	--	--	--	--
7/11/2007	--	--	--	--	--	4,800	130	890	1,040	690	--	--	--	--
8/7/2007	14,000	--	--	--	11,000	5,400	140	1,100	770	540	--	--	--	--
9/25/2007	12,000	--	--	--	30,000	3,400	310	1,600	2,390	540	--	--	--	--
10/16/2007	8,900	--	--	--	8,400	3,400	94	520	660	390	--	--	--	--
11/2/2007	44,000	--	--	--	6,500	3,200	130	860	1,160	570	--	--	--	--
11/30/2007	6,000	--	--	--	5,200	1,800	48	170	490	450	--	--	--	--
12/21/2007	7,200	--	--	--	4,200	2,100	41	170	430	750	--	--	--	--
1/4/2008	4,300	--	--	--	7,200	3,300	49	300	540	620	--	--	--	--
1/18/2008	11,000	--	--	--	2,200	3,600	140	650	850	620	--	--	--	--
2/1/2008	8,700	--	--	--	5,700	3,600	100	440	930	560	--	--	--	--
3/4/2008	7,200	--	--	--	4,900	3,900	120	510	770	620	--	--	--	--
4/8/2008	8,100	--	--	--	10,000	2,800	96	280	580	640	--	--	--	--
5/6/2008	5,300	--	--	--	2,800	2,900	76	190	328	430	--	--	--	--
6/3/2008	8,400	--	--	--	6,800	3,700	110	450	480	320	--	--	--	--
7/2/2008	9,200	--	--	--	4,300[c]	4,500	75	620	650	400	--	--	--	--
8/19/2008	4,000	--	--	--	6,600	2,600	57	76	215	450	--	--	--	--
9/5/2008	160	--	--	--	<500	<12	<25	<25	<25	<25	--	--	--	--
10/7/2008	<100	--	--	--	<500	0.36 J	<1.0	<1.0	1.59	1.7	--	--	--	--
11/4/2008	12,000	--	--	--	660,000	2,500	140	220	760	160	--	--	--	--
12/4/2008	1,300	--	--	--	1,500	600	8.2	28	73	130	--	--	--	--
1/6/2009	1,500	--	--	--	980	560	23	41	110	320	--	--	--	--
3/6/2009	2,500	--	--	--	1,500	1,100	33	51	114	65	--	--	--	--
4/7/2009	3,100	--	--	--	6,900	1,100	36	230	207	210	--	--	--	--
5/13/2009	690	--	--	--	1,500	120	3.2	14	60	24	--	--	--	--
6/12/2009	150	--	--	--	<500	<0.50	<1.0	<1.0	0.71 J	44	--	--	--	--
7/10/2009	4,500	--	--	--	560	1,500	41	68	175	150	--	--	--	--
8/4/2009	2,000	--	--	--	1,000	1,200	16	18	64	100	--	--	--	--
9/1/2009	4,800	--	--	--	3,500	380	45	25	328	5.4 J	--	--	--	--
10/6/2009	3,900	--	--	--	4,600	3,200	21	15	35	82	--	--	--	--
10/27/2009	1,000	--	--	--	<500	520	4	15	10	180	--	--	--	--
11/3/2009	120	--	--	--	<500	2	0.55 J	0.61 J	3	40	--	--	--	--
11/25/2009	5,700	--	--	--	4,000	3,100	26	13	48	88	--	--	--	--
2/16/2010	8,000	--	--	--	5,900	4,700	110	1,300	800	1,800	--	--	--	--
3/9/2010	7,000	--	--	--	5,900	6,600	110	460	550	410	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
4/20/2010	10,000	--	--	--	11,000	6,000	44	230	174	130	--	--	--	--
5/14/2010	8,500	--	--	--	2,100	3,600	67	380	400	210	--	--	--	--
6/25/2010	4,600	--	--	--	2,600	2,200	61	540	380	170	--	--	--	--
7/20/2010	21,000	--	--	--	21,000	3,400	370	3,000	2,550	2,300	--	--	--	--
8/3/2010	3,400	--	--	--	1,500	1,400	17	140	161	390	--	--	--	--
8/10/2010	5,800	--	--	--	3,400	2,600	40	190	169	140	--	--	--	--
9/14/2010	9,400	--	--	--	10,000	4,900	170	1,100	1,340	380	--	--	--	--
10/12/2010	5,700	--	--	--	1,000	2,200	43	140	138	120	--	--	--	--
11/16/2010	1,100	--	--	--	1,600	290	4	15	78	84	--	--	--	--
12/14/2010	7,100	--	--	--	3,200	2,600	76	200	315	340	--	--	--	--
1/14/2011	7,400	--	--	--	3,500	3,700	56	110	220	280	--	--	--	--
2/8/2011	5,600	--	--	--	3,500	2,400	43	110	190	420	--	--	--	--
3/25/2011	3,100	--	--	--	1,200	1,300	51	92	200	300	--	--	--	--
4/26/2011	1,400	--	--	--	1,200	610	5.8	5.7	20	130	--	--	--	--
5/17/2011	3,300	--	--	--	1,700	3,600	82	180	300	240	--	--	--	--
6/21/2011	1,200	--	--	--	720	860	9.6	31	82	190	2,200	6.6	<0.07	<0.1
7/27/2011	14,000	10,000	44J	--	--[d]	2,800	150	490	2,100	350	2,800	27	<0.07	<0.1
8/26/2011	7,400	--	--	--	57,000	1,400	120	480	1,300	270	1,600	16	<0.07	<0.1
9/23/2011	6,400	--	--	--	2,800	2,800	83.0	160	340	300	1,300	22	<0.07	<0.1
10/25/2011	6,000	--	--	--	2,300	3,000	52	93	200	200	970	20	<0.70	<1.0
11/22/2011	5,900	--	--	--	2,000	3,600	62	140	240	300	2,900	26	<0.07	<0.1
12/20/2011	780	--	--	--	2,000	330	8	14	43	160	1,000	18	<0.07	<0.1
1/10/2012	5,300	--	--	--	1,900	3,400	36	70	170	200	960	26	<0.07	<0.1
2/21/2012	4,900	--	--	--	<13	3,400	19	16	48	120	2,200	21	<0.07	<0.1
3/13/2012	6,100	--	--	--	2,100	2,900	43	79	180	120	1,600	23	<0.07	<0.1
4/27/2012	5,100	--	--	--	2,200	3,800	49	61	150	150	500	38	<0.13	<0.12
5/22/2012	6,800	--	--	--	31,000	2,800	49	140	262	150	690	30	<0.13	<0.12
6/19/2012	5,300	--	--	--	36,000	3,200	45	230	200	220	2,800	33	<0.13	<0.12
7/20/2012	5,600	2,400	210	8,200	--	3,000	71	72	510	170	2,700	26	<0.13	<0.12
8/21/2012	3,600	1,100	140	4,900	--	2,400	26	41	80	110	1,500	22	<0.13	<0.12
9/25/2012	2,100	710	71	2,800	--	1,700	25	35	86	150	690	17	<1.0	<1.0
10/30/2012	2,600	700	74	3,374	--	1,400	15	13	52	54	1,200	14	<0.061	<0.054
11/30/2012	860	8,200	260	9,320	--	1,100	2.4	4.4	12	23	690	<0.038	<0.061	<0.054
12/27/2012	6,200	820	86	7,106	--	2,000	39	76	130	120	1,300	20	<0.061	<0.054
1/15/2013	3,400	14,000	400	17,800	--	800	12	25	130	43	1,200	8.7	<0.061	<0.054
2/12/2013	9,900	3,100	150	13,150	--	2,100	110	440	820	110	330	22	<0.061	<0.054
3/5/2013	3,954	970	80	5,004	--	1,400	21	23	87	63	1,200	15	<0.061	<0.054
3/15/2013	--	--	--	--	--	1,400	25	49	98	74	570	14	<0.061	<0.054
4/16/2013	1,100	1,300	270	2,670	--	370	6	19	56	73	530	17	<0.061	<0.054

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
5/14/2013	4,300	830	99	5,229	--	2,000	52	98	181	61	270	22	<0.061	<0.054
6/28/2013	2,900	870	150	3,920	--	1,100	18	58	76	92	500	11	<0.061	<0.054
7/16/2013	3,600	1,000	130	4,730	--	870	19	47	140	100	600	14	<0.061	<0.054
8/16/2013	3,800	5,900	530	10,230	--	1,400	13	32	85	77	550	27	<0.061	<0.054
9/24/2013	5,800	12,000	550	18,350	--	990	53	400	630	78	440	20	<0.061	<0.054
10/15/2013	3,300	650	120	4,070	--	1,400	11	37	150	43	250	15	<0.061	<0.054
11/12/2013	5,600	3,500	190	9,290	--	570	99	230	660	89	550	20	<0.061	<0.054
12/13/2013	12,500	14,000	400	26,900	--	560	170	690	1,500	52	220	17	<0.061	<0.054
1/17/2014	5,900	980	130	7,010	--	4,200	13	18	61	89	810	40	<0.061	<0.054
2/11/2014	12,000	63,000	2,500	77,500	--	640	130	560	1,990	45	290	12	<0.061	<0.054
3/21/2014	42,000	77,000	2,000	121,000	--	3,700	440	3,300	3,900	100	360	17	<0.061	<0.054
4/21/2014	100,000	30,000	880	130,000	--	6,000	1,300	9,800	9,000	<0.098	<1.0	12	<0.061	<0.054
5/20/2014	33,000	15,000	470	48,000	--	1,400	570	2,700	5,400	30	<0.40	16	<0.061	<0.054
6/13/2014	77,000	33,000	1,100	110,000	--	7,700	1,900	10,000	13,000	38	<0.40	12	<0.061	<0.054
7/12/2014	28,000	82	<52	28,082	--	2,800	820	3,700	6,800	34	<0.40	18J	<25	<25
The GWTS was down between July 29, 2014, and December 1, 2014, to facilitate processing of the modifications to SCAQMD Permit No. F14166 for the GWTS.														
1/15/2015	8,000	5,600	270	13,870	--	2,200	22	140	430	21	390	11	<0.12	<0.11
2/20/2015	120,000	47,000	1,500	170,000	--	3,000	350	1,600	3,000	43	<0.80	17	<0.12	<0.11
3/3/2015	65,000	480,000	15,000	560,000	--	6,600	1,700	9,300	12,000	670	<0.80	11	<0.12	<0.11
4/7/2015	105,000	92,000	2,900	200,000	--	9,000	2,100	18,000	13,000	1,200	<0.80	8.7	<0.12	17
5/19/2015	73,000	90,000	2,400	165,400	--	8,200	1,600	17,000	12,000	380	<0.60	25	<0.078	<0.078
6/2/2015	78,000	89,000	3,100	170,100	--	3,200	530	3,700	7,100	1,100	<0.60	13	<0.078	8.3
7/30/2015	31,000	16,000	570	47,570	--	3,100	720	5,100	6,200	820	<0.60	27	<0.078	6.2
8/6/2015	30,000	17,000	570	37,570	--	2,600	500	3,100	6,200	700	<0.60	16	<0.078	6.4
9/15/2015	50,000	79,000	2,700	129,000	--	3,200	1,800	6,500	14,000	820	<0.60	15	<0.078	7.7
10/8/2015	51,000	55,000	1,800	107,800	--	5,700	1,400	11,000	11,000	680	<0.60	16	<0.078	6.2
11/24/2015	45,000	74,000	2,800	121,800	--	3,400	1,100	7,000	7,800	<0.31	<1.5	16	<0.20	<0.20
12/3/2015	40,000	120,000	4,000	164,000	--	4,800	1,100	7,700	8,300	580	<1.5	19	<0.20	5.9
1/21/2016	88,000	2,500,000	97,000	2,685,000	--	4,200	1,700	10,000	14,000	380	<0.60	12	<0.078	<0.078
2/2/2016	31,000	110,000	4,700	145,700	--	2,600	750	4,600	9,500	430	<0.60	8.6	<0.078	<0.078
4/5/2016	32,000	31,000	1,100	64,100	--	1,500	450	2,200	12,000	390	<3.0	<0.17	<0.39	<0.39
5/3/2016	2,600	20,000	680	23,280	--	990	18	83	260	6.0	100	7.1	<0.039	<0.039
6/14/2016	1,900	4,400	280	6,580	--	290	21	110	400	8.6	<5.0	6.00	<1.0	<1.0
The GWTS was down between June 24, 2016, and September 9, 2016, to facilitate installation of the new DAF/OWS.														
9/20/2016	32	230	130	390	--	<0.036	0.18 J	0.080 J	2.6	2.2	150	10	<0.039	<0.039
10/21/2016	10,000	9,300	360	20,000	--	320	320	1,100	2,700	5.1	<0.30	5.3	<0.039	<0.039
11/8/2016	1,100	1,500	130	2,800	--	2.5	<0.036	2.6	160	2.4	66	9.1	<0.039	<0.039
12/27/2016	140	390	130	660	--	1.2	<0.042	<0.042	2.0 J	1.4	2200	8.7	<0.039	<0.039
1/19/2017	190	340	120	640	--	6.9	0.24 J	0.15 J	<1.5	2.4	2300	8.1	<0.15	<0.12

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SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
2/3/2017	390	490	170	1,000	--	4.2	0.89 J	3.5	30	3.5	1700	5.1	<0.15	<0.12
3/3/2017	790	320	78	1,200	--	180	5	1.7 J	24	4.2	620	3.0	<0.15	<0.12
4/7/2017	1,200	780	140	2,100	--	740	21	23	87	7.5	120	4.8	<0.15	<0.12
5/4/2017	20	300	100	430	--	0.18 J	<0.036	0.12 J	<1.5	1.4	320	<0.017	<0.039	<0.039
6/20/2017	11,000	54,000	3,000	68,000	--	1,400	100	400	2,300	15	<18	8.1 J	<1.5	<1.2
7/20/2017	17 J	400	180	600	--	<1.0	<1.0	<2.0	<2.0	1.2	38	4.2	<1.0	<1.0
8/3/2017	39 J	410	310	760	--	<1.0	<1.0	<2.0	<2.0	1.3	25	4.2	<1.0	<1.0
9/20/2017	940	2,400	1,300	4,600	--	<1.0	0.15 J	0.17 J	4.4	0.59	5.4	0.70 J	<1.0	<1.0
10/10/2017	860	1,200	240	2,300	--	<1.0	5.2	13	120	3.7	26	6.5	<1.0	<1.0
11/8/2017	4,000	27,000	2,000	33,000	--	24	6.7	8.7	690	70	<5.0	8.8	<1.0	<1.0
12/15/2017	1,400	2,300	500	4,200	--	6.0	1.6	5.9	52	120	200	<1.0	<1.0	<1.0
1/4/2018	1,800	1,500	560	3,900	--	190	4.9	30	410	160	240	5.4	<1.0	<1.0
2/8/2018	36	640	530	1,200	--	0.53 J	<1.0	0.62 J	2.4	2.4	<5.0	2.1	<1.0	<1.0
2/27/2018	220	560	240	100	--	3.9	0.55 J	1.6 J	9.3	2.3	26	5.5	<1.0	<1.0
3/27/2018	430	380	330	1,100	--	5.3	0.83 J	<2.0	11	43	410	2.1	<1.0	<1.0
4/24/2018	49 J	370	410	830 J	--	<1.0	<1.0	<2.0	<2.0	1.7	230	1.6	<1.0	<1.0
5/22/2018	45 J	120	180	340	--	<1.0	<1.0	<2.0	<2.0	0.94 J	330	0.45 J	<1.0	<1.0
7/3/2018	4,700	1,300	2,300	8,300	--	220	140	35	1,300	92	1,500	0.91 J	<1.0	<1.0
7/31/2018	200	260	220	680	--	14	1.0	<2.0	3.0	27	320	2.6	<1.0	<1.0
8/31/2018	130	200	460	790	--	5.1	0.35 J	1.0 J	4.8	39	610	<1.0	<1.0	<1.0
9/25/2018	<50	280	350	630	--	<1.0	<1.0	<2.0	<2.0	23	52	2.3	<1.0	<1.0
10/23/2018	74	<32	<80	74 J	--	1.2	<1.0	<2.0	<2.0	2.2	38	3.8	<1.0	<1.0
11/12/2018	<50	120	<100	120	--	<1.0	<1.0	<2.0	<2.0	1.4	120	4.1	<1.0	<1.0
12/14/2018	170	210	77	460	--	1.8	0.49 J	0.94 J	5.3	14	180	1.4	<1.0	<1.0
1/29/2019	100	250	64	410	--	<1.0	<1.0	<2.0	<2.0	2.6	<5.0	1.7	<1.0	<1.0
2/7/2019	36 J	210	93	340	--	<1.0	<1.0	<2.0	2.0 J	1.1	22	0.82 J	<1.0	<1.0
3/8/2019	38 J	270	110	420	--	<1.0	<1.0	<2.0	<2.0	1.7	22	3.8	<1.0	<1.0
4/29/2019	33 J	220	97	350	--	<1.0	<1.0	<2.0	<2.0	1.2	1,100	2.7	<1.0	<1.0
5/28/2019	31 J	270	120	420	--	<1.0	<1.0	<2.0	<2.0	1.8	16	2.6	<1.0	<1.0
6/20/2019	170	210	82	460	--	86	1.1	1.9 J	11	2.8	220	4.5	<1.0	<1.0
7/31/2019	200	130	60	390	--	130	1.9	0.75	11	1.6	320	6.9	<1.0	<1.0
8/22/2019	840	350	420	1,600	--	670	11	2.6	44	2.3	190	11	<1.0	<1.0
9/12/2019	440	180	87	650	--	140	1.8	0.61 J	8	1.2	110	3.4	<1.0	<1.0
10/8/2019	28 J	250	140	420	--	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	0.94 J	<1.0	<1.0
11/19/2019	19[e] B, J	170	150	330	--	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<1.0	<1.0	<1.0
December-19	--[f]	--[f]	--[f]	--[f]	--	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
January-20	--[f]	--[f]	--[f]	--[f]	--	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
February-20	--[f]	--[f]	--[f]	--[f]	--	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
March-20	--[f]	--[f]	--[f]	--[f]	--	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
April-20	--[f]	--[f]	--[f]	--[f]	--	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
5/21/2020	92	140	46	280	--	8.9	0.73 J	0.27 J	1.6 J	5.2	23	2.7	<1.0	<1.0
6/12/2020	39 J	240	69	350	--	0.65 J	<1.0	<2.0	<2.0	2.1	<5.0	3.0	<1.0	<1.0
7/23/2020	320	450	89	860	--	530	1.8	2.1	18	5.3	41	15	<1.0	<1.0
8/11/2020	800	430	110	1,300	--	610	7.0	3.6	21	10	<10	13	<2.0	<2.0
9/29/2020	39 J	46	71	160	--	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<1.0	<1.0	<1.0
10/27/2020	660	260	120	1,000	--	270	1.9	1.0 J	6.8	1.0	8.7	4.0	<1.0	<1.0
11/23/2020	620	810	160	1,600	--	250	2.2	1.1 J	5.5	7.0	70	24	<1.0	<1.0
12/8/2020	890	480	150	1,500	--	490	4.2	1.4 J	8.0	6.3	55	9.9	<1.0	<1.0
1/22/2021	330	430	330	1,100	--	190	8.2	0.87 J	8.0	5.4	86	18	<1.0	<1.0
2/2/2021	370	440	390	1,200	--	140	4.7	0.61 J	4.2	3.0	44	8.9	<1.0	<1.0
March 2021	GWTS is offline, last date of groundwater extraction was February 23, 2021					--	--	--	--	--	--	--	--	--

Notes:

[a] Influent samples were collected from the manifold conveying groundwater extracted from the south-central and southeastern areas.

[b] Other detected VOCs are included in the laboratory analytical reports in Appendix A.

[c] TPH-fp result from extracted groundwater sample collected on July 10, 2008.

[d] The July 27, 2011, sample, and samples collected after July 20, 2012, were analyzed for TPH-g, TPH-d, and TPH-o.

[e] The concentration detected in method blank sample was 12 µg/L (J).

[f] The GWTS remained down for the entire month due to a malfunction with the chart recorder and leaking effluent polishing carbon vessel.

-- = not analyzed

<X = not detected at or above the laboratory reporting limit "X"

J = analyte detected above the laboratory method detection limit and below the laboratory reporting limit; reported value is an estimate.

B = analyte detected in the associated method blank

µg/L = micrograms per liter

ppm = parts per million

DAF = dissolved air flotation

DIPE = di-isopropyl ether

ETBE = ethyl tertiary butyl ether

GWTS = groundwater treatment system

MTBE = methyl tertiary butyl ether

OWS = oil-water separator

SCAQMD = South Coast Air Quality Management District

TAME = tertiary amyl methyl ether

TBA = tertiary butyl alcohol

TPH-d = total petroleum hydrocarbons quantified as diesel (C13-C22)

TPH-fp = total petroleum hydrocarbons quantified as fuel product (C7-C28)

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TPH-o = total petroleum hydrocarbons quantified as oil (C23-C36)

TPH-total = total petroleum hydrocarbons quantified as gasoline, diesel, and oil (C4-C36)

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	BS-02 System Flow (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
2016 Totals	**5,302**	**5,302**	--	--	--	--	--
2017 Totals	**8,580**	**3,278**	--	--	--	--	--
2018 Totals	**14,216**	**5,636**	**64.7**	--	--	--	--
2019 Totals	**20,332**	**6,116**	**69.8**	--	--	--	--
2020 Totals	**25,120**	**4,788**	**54.8**	--	--	--	--
1/5/2021	25,291	171	100	171	2	--	--
1/12/2021	25,458	167	99	194	2	--	--
1/19/2021	25,627	169	100	180	2	--	--
1/26/2021	25,794	167	99	183	2	--	--
2/2/2021	25,961	167	99	178	2	--	--
2/9/2021	26,129	168	100	181	2	--	--
2/16/2021	26,297	168	100	180	2	--	--
2/23/2021	26,373	76	45	80	2	--	--
3/2/2021	26,494	121	72	192	2	--	--
3/9/2021	26,660	166	99	182	2	--	--
3/16/2021	26,825	165	98	193	3	--	--
3/23/2021	26,995	170	100	170	2	--	--
3/30/2021	27,162	167	99	186	2	--	--
First Quarter 2021 Total	**27,162**	**2,042**	**93.5**	--	--	--	--
4/6/2021	27,331	169	100	189	2	--	--
4/13/2021	27,512	181	100	86	2	--	--
4/20/2021	27,634	122	73	176	2	--	--
4/29/2021	27,852	218	100	170	2	--	--
5/4/2021	27,973	121	100	185	2	--	--
5/11/2021	28,138	165	98	193	5	50	2
5/18/2021	--	--	--	--	--	--	--
5/25/2021	28,450	312	93	121	2	164	2
6/1/2021	28,617	167	99	189	2	125	2
6/8/2021	28,785	168	100	100	2	100	2
6/15/2021	28,954	169	100	180	2	94	2
6/22/2021	29,120	166	99	190	2	203	2
6/29/2021	29,289	169	100	189	2	265	4
Second Quarter 2021 Total	**29,289**	**1,151**	**97.9**	--	--	--	--
Cumulative Totals	**29,289**	--	**61.0**	--	--	--	--

Notes:

-- = not applicable or not available

psi = pounds per square inch

scfm = standard cubic feet per minute

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – May 2021

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 05/25/21 SVM-1 5-5.5	SVM-1-15 05/25/21 SVM-1 15-15.5	SVM-2-5 05/25/21 SVM-2 5-5.5	SVM-3-5 05/26/21 SVM-3 5-5.5	SVM-3-15 05/26/21 SVM-3 15-15.5	SVM-5-5 05/26/21 SVM-5 5-5.5	SVM-5-15 05/26/21 SVM-5 15-15.5	SVM-6-7 05/25/21 SVM-6 7-7.5	SVM-6-13 05/25/21 SVM-6 13-13.5	SVM-7-7 05/25/21 SVM-7 7-7.5
Field Measurements	Pressure	inches H_2O	--	--	0.0	0.0	0.0	-0.51	-5.7	-0.19	-1.9	0.0	0.0	0.0
	PID	ppmv	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oxygen	percent	--	--	20.9	20.2	18.5	20.6	20.8	21.3	21.1	21.2	21.2	21.1
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	1,2-Dichloroethane	µg/L	0.11[1A]/7.3[1B]	--	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	1,3,5-Trimethylbenzene	µg/L	63 [1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	2-Propanol (leak test compound)	µg/L	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Benzene	µg/L	0.097[2A]/0.36[1A]/31[1B]	0.42[2A]/13[2B]	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Ethylbenzene	µg/L	1.1[1A] / 1000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Isopropylbenzene (aka Cumene)	µg/L	420[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	m,p-Xylenes	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Methyl tert-butyl ether (MTBE)	µg/L	11[1A] / 3,100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Naphthalene	µg/L	--	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	n-Butylbenzene	µg/L	210[2B]	880[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	n-Propylbenzene (propylbenzene)	µg/L	1,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	o-Xylene	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	sec-Butylbenzene	µg/L	420[2B]	1800[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	tert-Butanol (TBA)	µg/L	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Toluene	µg/L	310[2B]/5,200[1B]	1300[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Other Detected Compounds	Acetone	µg/L	32,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bromodichloromethane	µg/L	0.076[1A]/0.076[2A]/83[2B]	0.33[2A]/350[2A]	<0.020	<0.020	<0.020	**0.051**	**0.029**	<0.020	<0.020	<0.020	<0.020	<0.020
	Chlorodibromomethane	µg/L	--	--	<0.020	<0.020	<0.020	**0.029**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chloroform	µg/L	0.12[1A] / 100[1B]	--	<0.020	<0.020	<0.020	**0.042**	**0.037**	<0.020	<0.020	<0.020	<0.020	<0.020
	Dichloromethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Tetrachloroethylene (PCE)	µg/L	0.46[2A]/11[1A]/42[1B]/42[2B]	2.0[2A]/180[2B]	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	TPH-G (C4-C12)	µg/L	31[1B]	--	<0.50	<0.50	<0.50	<0.50	**0.55**	<0.50	<0.50	<0.50	<0.50	<0.50
Fixed Gases	Methane	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Oxygen	% v/v	--	--	**21**	**20**	**18**	**21**	**22**	**21**	**22**	**21**	**19**	**20**
	Carbon Dioxide	% v/v	--	--	**0.71**	**1.0**	**1.6**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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]-EPA Regional Screening Levels, May 2021 (carcinogenic) https://semspub.epa.gov/work/HQ/400762.pdf

[1B]-EPA Regional Screening Levels, May 2021 (noncarcinogenic) https://semspub.epa.gov/work/HQ/400762.pdf

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

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

5/25/2021 - 5/26/2021 = 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

µg/L = micrograms per liter

COPC = chemical of potential concern

TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – May 2021

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-7-13 05/25/21 SVM-7 13-13.5	SVM-8-5 05/26/21 SVM-8 5-5.5	SVM-8-15 05/26/21 SVM-8 15-15.5	SVM-10-15 05/25/21 SVM-10 15-15.5	SVM-11-7 05/26/21 SVM-11 7-7.5	SVM-11-15 05/26/21 SVM-11 15-15.5	SVM-11-22 05/26/21 SVM-11 22-22.5	SVM-12-7 05/26/21 SVM-12 7-7.5	SVM-12-15 05/26/21 SVM-12 15-15.5	SVM-12-22 05/26/21 SVM-12 22-22.5
Field Measurements	Pressure	inches H_2O	--	--	0.03	-0.40	-3.8	-1.3	0.0	0.0	0.0	0.0	0.0	0.0
	PID	ppmv	--	--	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.0	0.0
	Oxygen	percent	--	--	21.0	21.1	21.1	20.9	20.9	19,7	17.3	19.7	18.1	9.8
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	1,2-Dichloroethane	µg/L	0.11[1A]/7.3[1B]	--	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	1,3,5-Trimethylbenzene	µg/L	63 [1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	2-Propanol (leak test compound)	µg/L	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Benzene	µg/L	0.097[2A]/0.36[1A]/31[1B]	0.42[2A]/13[2B]	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Ethylbenzene	µg/L	1.1[1A] / 1000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Isopropylbenzene (aka Cumene)	µg/L	420[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	m,p-Xylenes	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Methyl tert-butyl ether (MTBE)	µg/L	11[1A] / 3,100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Naphthalene	µg/L	--	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	n-Butylbenzene	µg/L	210[2B]	880[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	n-Propylbenzene (propylbenzene)	µg/L	1,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	o-Xylene	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	sec-Butylbenzene	µg/L	420[2B]	1800[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	tert-Butanol (TBA)	µg/L	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Toluene	µg/L	310[2B]/5,200[1B]	1300[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Other Detected Compounds	Acetone	µg/L	32,000[1B]	--	<0.020	<0.020	<0.020	**0.032**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bromodichloromethane	µg/L	0.076[1A]/0.076[2A]/83[2B]	0.33[2A]/350[2A]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chlorodibromomethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chloroform	µg/L	0.12[1A] / 100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Dichloromethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Tetrachloroethylene (PCE)	µg/L	0.46[2A]/11[1A]/42[1B]/42[2B]	2.0[2A]/180[2B]	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.020**	<0.010	<0.010	**0.018**
	TPH-G (C4-C12)	µg/L	31[1B]	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.73**	<0.50	<0.50	**0.95**
Fixed Gases	Methane	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Oxygen	% v/v	--	--	**20**	**22**	**22**	**21**	**21**	**19**	**16**	**20**	**17**	**5.5**
	Carbon Dioxide	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	**1.4**	**1.0**	**2.5**	<0.20	**2.1**	**9.8**

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.

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[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.

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

5/25/2021 - 5/26/2021 = sample dates

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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

µg/L = micrograms per liter

COPC = chemical of potential concern

TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – May 2021

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-13-7 05/26/21 SVM-13 7-7.5	SVM-13-15 05/26/21 SVM-13 15-15.5	SVM-13-22 05/26/21 SVM-13 22-22.5	SVM-14R-8 05/26/21 SVM-14R 8-8.5	SVM-14R-8 DUP 05/26/21 SVM-14R 8-8.5	SVM-14R-16 05/26/21 SVM-14R 16-16.5	SVM-14R-22 05/26/21 SVM-14R 22-22.5	SVM-15-7 05/25/21 SVM-15 7-7.5	SVM-15-15 05/25/21 SVM-15 15-15.5	SVM-15-22 05/25/21 SVM-15 22-22.5
Field Measurements	Pressure	inches H_2O	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.0	-0.17
	PID	ppmv	--	--	0.0	1.1	0.2	0.7	0.7	0.1	0.0	0.0	0.0	0.0
	Oxygen	percent	--	--	21.7	21.8	16.2	21.0	21.0	19.1	8.9	20.9	20.7	20.3
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	1,2-Dichloroethane	µg/L	0.11[1A]/7.3[1B]	--	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	1,3,5-Trimethylbenzene	µg/L	63 [1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	2-Propanol (leak test compound)	µg/L	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Benzene	µg/L	0.097[2A]/0.36[1A]/31[1B]	0.42[2A]/13[2B]	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Ethylbenzene	µg/L	1.1[1A] / 1000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Isopropylbenzene (aka Cumene)	µg/L	420[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	m,p-Xylenes	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Methyl tert-butyl ether (MTBE)	µg/L	11[1A] / 3,100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Naphthalene	µg/L	--	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	n-Butylbenzene	µg/L	210[2B]	880[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	n-Propylbenzene (propylbenzene)	µg/L	1,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	o-Xylene	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	sec-Butylbenzene	µg/L	420[2B]	1800[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	tert-Butanol (TBA)	µg/L	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Toluene	µg/L	310[2B]/5,200[1B]	1300[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Other Detected Compounds	Acetone	µg/L	32,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bromodichloromethane	µg/L	0.076[1A]/0.076[2A]/83[2B]	0.33[2A]/350[2A]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chlorodibromomethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chloroform	µg/L	0.12[1A] / 100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	**0.025**	<0.020	<0.020	<0.020	<0.020
	Dichloromethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**0.022**	**0.023**
	Tetrachloroethylene (PCE)	µg/L	0.46[2A]/11[1A]/42[1B]/42[2B]	2.0[2A]/180[2B]	**0.035**	<0.010	<0.010	<0.010	<0.010	<0.010	**0.020**	<0.010	<0.010	<0.010
	TPH-G (C4-C12)	µg/L	31[1B]	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fixed Gases	Methane	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Oxygen	% v/v	--	--	**22**	**23**	**17**	**21**	**22**	**20**	**11**	**21**	**22**	**21**
	Carbon Dioxide	% v/v	--	--	<0.20	<0.20	**2.5**	<0.20	<0.20	**2.3**	**6.3**	<0.20	<0.20	<0.20

Notes:

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Field Measurements	Pressure	inches H_2O	--	--	-0.33	-9.3	-16.3	-16.3	---	---
	PID	ppmv	--	--	0.0	0.0	0.8	0.8	---	---
	Oxygen	percent	--	--	20.8	20.8	20.7	20.7	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	1,2-Dichloroethane	µg/L	0.11[1A]/7.3[1B]	--	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	1,3,5-Trimethylbenzene	µg/L	63 [1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	2-Propanol (leak test compound)	µg/L	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Benzene	µg/L	0.097[2A]/0.36[1A]/31[1B]	0.42[2A]/13[2B]	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Ethylbenzene	µg/L	1.1[1A] / 1000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Isopropylbenzene (aka Cumene)	µg/L	420[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	m,p-Xylenes	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Methyl tert-butyl ether (MTBE)	µg/L	11[1A] / 3,100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Naphthalene	µg/L	--	--	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	n-Butylbenzene	µg/L	210[2B]	880[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	n-Propylbenzene (propylbenzene)	µg/L	1,000[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	o-Xylene	µg/L	100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	sec-Butylbenzene	µg/L	420[2B]	1800[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	tert-Butanol (TBA)	µg/L	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Toluene	µg/L	310[2B]/5,200[1B]	1300[2B]	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Other Detected Compounds	Acetone	µg/L	32,000[1B]	--	<0.020	<0.020	**0.027**	**0.025**	<0.020	<0.020
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	Chlorodibromomethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Chloroform	µg/L	0.12[1A] / 100[1B]	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Dichloromethane	µg/L	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Tetrachloroethylene (PCE)	µg/L	0.46[2A]/11[1A]/42[1B]/42[2B]	2.0[2A]/180[2B]	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
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Fixed Gases	Methane	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	**---**	**---**
	Oxygen	% v/v	--	--	**21**	**22**	**21**	**21**	**---**	**---**
	Carbon Dioxide	% v/v	--	--	<0.20	<0.20	<0.20	<0.20	**---**	**---**

Notes:

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µg/L = micrograms per liter

COPC = chemical of potential concern

TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-9	4/30/2007	74.44	26.71	---	---	47.73	Secor
	11/12/2007	74.44	27.32	27.04	0.28	47.34	Secor
	8/8/2008	74.44	28.01	27.96	0.05	46.47	Envent
	10/16/2008	74.44	28.36	28.35	0.01	46.09	Envent
	12/17/2008	74.44	27.61	---	---	46.83	Envent
	1/15/2009	74.44	28.91	---	---	45.53	Envent
	3/27/2009	74.44	29.04	---	---	45.40	Envent
	4/21/2009	74.44	28.16	---	---	46.28	Envent
	7/21/2009	74.44	28.31	---	---	46.13	Envent
	10/19/2009	74.44	NM	---	---	NC	Blaine Tech
	5/24/2010	74.44	30.47	---	---	43.97	Blaine Tech
	5/28/2010	74.44	30.35	---	---	44.09	Blaine Tech
	10/4/2010	74.44	30.30	---	---	44.14	Blaine Tech
	1/10/2011	74.44	32.02	---	---	42.42	Blaine Tech
	4/11/2011	74.44	25.41	---	---	49.03	Blaine Tech
	7/11/2011	74.44	NM	---	---	NC	
	10/10/2011	74.44	28.91	---	---	45.53	Blaine Tech
	4/16/2012	74.44	31.15	---	---	43.29	Blaine Tech
	7/9/2012	---	31.64	---	---	NC	Blaine Tech
	10/15/2012	77.16	31.82	---	---	45.34	Blaine Tech
	1/14/2013	77.16	31.88	---	---	45.28	Blaine Tech
	4/8/2013	77.16	31.83	---	---	45.33	Blaine Tech
	10/7/2013	77.16	35.30	31.25	4.05	45.02	Blaine Tech
	4/14/2014	77.16	37.66	31.65	6.01	44.19	Blaine Tech
	5/5/2014	77.16	37.81	31.76	6.05	44.07	Nieto & Sons
	5/12/2014	77.16	37.39	31.83	5.56	44.11	Nieto & Sons
	5/20/2014	77.16	37.70	33.85	3.85	42.46	Nieto & Sons
	5/27/2014	77.16	32.41	28.84	3.57	47.53	Nieto & Sons
	6/4/2014	77.16	33.20	---	---	43.96	Nieto & Sons
	6/10/2014	77.16	37.51	32.77	4.74	43.35	Nieto & Sons
	7/3/2014	77.16	39.26	32.59	6.67	43.10	Nieto & Sons
	7/8/2014	77.16	38.59	32.45	6.14	43.36	Blaine Tech
	7/18/2014	77.16	37.15	32.73	4.42	43.46	Blaine Tech
	7/24/2014	77.16	37.78	32.48	5.30	43.51	Blaine Tech
	8/1/2014	77.16	36.72	32.30	4.42	43.89	Blaine Tech
	8/8/2014	77.16	36.55	32.26	4.29	43.96	Blaine Tech
	8/13/2014	77.16	36.25	32.33	3.92	43.97	Blaine Tech
	8/19/2014	77.16	36.04	32.38	3.66	43.97	Blaine Tech
	8/29/2014	77.16	36.23	32.33	3.90	43.97	Blaine Tech
	9/5/2014	77.16	36.26	32.35	3.91	43.95	Blaine Tech
	9/11/2014	77.16	36.27	32.33	3.94	43.96	Blaine Tech
	9/18/2014	77.16	36.42	32.37	4.05	43.90	Blaine Tech
	9/26/2014	77.16	36.39	32.35	4.04	43.92	Blaine Tech
	10/1/2014	77.16	36.11	32.42	3.69	43.93	Blaine Tech
	10/6/2014	77.16	35.99	32.42	3.57	43.95	Blaine Tech
	10/14/2014	77.16	36.24	32.34	3.90	43.96	Blaine Tech
	10/23/2014	77.16	36.32	32.35	3.97	43.94	Blaine Tech
	10/27/2014	77.16	36.04	32.42	3.62	43.94	Blaine Tech
	11/3/2014	77.16	36.40	32.35	4.05	43.92	Blaine Tech
	11/10/2014	77.16	36.32	32.41	3.91	43.89	Blaine Tech
	11/18/2014	77.16	36.28	32.43	3.85	43.88	Blaine Tech
	11/25/2014	77.16	36.21	32.49	3.72	43.85	Blaine Tech
	12/3/2014	77.16	36.18	32.43	3.75	43.90	Blaine Tech
	12/12/2014	77.16	36.58	32.74	3.84	43.58	Blaine Tech
	12/19/2014	77.16	37.05	32.76	4.29	43.46	Blaine Tech
	3/6/2015	77.16	39.40	33.13	6.27	42.65	Kinder Morgan
	4/20/2015	77.16	36.98	32.99	3.99	43.29	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-9	10/20/2015	77.16	34.61	34.37	0.24	42.74	Kinder Morgan
Continued	3/14/2016	77.16	36.10	---	---	41.06	Blaine Tech
	4/11/2016	77.16	36.20	---	---	40.96	Blaine Tech
	6/30/2016	77.16	31.02	---	---	46.14	Kinder Morgan
	8/22/2016	77.16	37.27	---	---	39.89	Kinder Morgan
	10/3/2016	77.16	38.02	---	---	39.14	Blaine Tech
	3/7/2017	77.16	35.13	---	---	42.03	CH2M
	4/17/2017	77.16	33.32	---	---	43.84	Blaine Tech
	10/2/2017	77.16	38.43	---	---	38.73	Blaine Tech
	4/16/2018	77.16	37.98	---	---	39.18	Blaine Tech
	11/5/2018	77.16	33.95	---	---	43.21	Blaine Tech
	4/23/2019	77.16	29.72	---	---	47.44	Blaine Tech
	10/28/2019	77.16	37.90	---	---	39.26	Blaine Tech
	5/4/2020	77.16	35.37	---	---	41.79	Blaine Tech
	11/2/2020	77.16	35.90	---	---	41.26	Blaine Tech
	5/3/2021	77.16	36.50	---	---	40.66	Blaine Tech
GMW-10	4/30/2007	74.67	25.90	---	---	48.77	Secor
	11/12/2007	74.67	25.02	25.82	0.83	50.33	Secor
	4/14/2008	74.67	25.38	25.44	0.06	49.34	Secor
	10/13/2008	74.67	24.16	---	---	50.51	Stantec
	4/20/2009	74.67	24.46	---	---	50.21	Blaine Tech
	10/19/2009	74.67	27.20	---	---	47.47	Blaine Tech
	5/24/2010	74.67	26.72	---	---	47.95	Blaine Tech
	5/28/2010	74.67	26.70	---	---	47.97	Blaine Tech
	10/4/2010	74.67	27.15	---	---	47.52	Blaine Tech
	4/11/2011	74.67	25.21	---	---	49.46	Blaine Tech
	10/10/2011	74.67	27.75	---	---	46.92	Blaine Tech
	4/27/2012	74.67	28.47	---	---	46.20	Blaine Tech
	7/9/2012	74.67	NM	---	---	NC	Blaine Tech
	10/15/2012	74.67	29.15	29.02	0.13	45.63	Blaine Tech
	4/8/2013	74.67	33.64	28.12	5.52	45.53	Blaine Tech
	9/26/2013	73.35	36.15	29.25	6.90	42.82	Blaine Tech
	10/7/2013	73.35	31.85	29.32	2.53	43.56	Blaine Tech
	4/14/2014	73.35	29.43	29.01	0.42	44.26	Blaine Tech
	8/19/2014	73.35	29.80	29.53	0.27	43.77	Blaine Tech
	8/29/2014	73.35	29.68	29.25	0.43	44.02	Blaine Tech
	9/26/2014	73.35	29.98	29.23	0.75	43.98	Blaine Tech
	10/1/2014	73.35	29.98	29.19	0.79	44.01	Blaine Tech
	10/6/2014	73.35	30.01	29.16	0.85	44.03	Blaine Tech
	10/14/2014	73.35	30.01	29.18	0.83	44.02	Blaine Tech
	10/23/2014	73.35	30.17	29.15	1.02	44.01	Blaine Tech
	10/27/2014	73.35	30.19	29.12	1.07	44.03	Blaine Tech
	11/3/2014	73.35	30.25	29.13	1.12	44.01	Blaine Tech
	11/10/2014	73.35	29.85	29.28	0.57	43.96	Blaine Tech
	11/18/2014	73.35	29.95	29.28	0.67	43.95	Blaine Tech
	11/25/2014	73.35	30.00	29.27	0.73	43.94	Blaine Tech
	12/3/2014	73.35	30.18	29.27	0.91	43.91	Blaine Tech
	12/12/2014	73.35	30.81	29.45	1.36	43.65	Blaine Tech
	12/19/2014	73.35	30.51	30.35	0.16	42.97	Blaine Tech
	4/20/2015	73.35	34.99	28.42	6.57	43.71	Blaine Tech
	7/17/2015	73.35	36.10	29.41	6.69	42.70	Blaine Tech
	10/20/2015	73.35	32.96	31.02	1.94	41.97	Kinder Morgan
	3/16/2016	73.35	34.47	33.42	1.05	39.74	Kinder Morgan
	4/11/2016	73.35	33.70	32.10	1.60	40.95	Blaine Tech
	6/29/2016	73.35	33.02	---	---	40.33	Blaine Tech
	8/22/2016	73.35	33.82	32.93	0.89	40.26	Blaine Tech
	10/3/2016	73.35	35.10	33.65	1.45	39.43	Blaine Tech
	3/8/2017	73.35	32.75	---	---	40.60	CH2M

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-10	04/17/17	73.35	31.15	---	---	42.20	Blaine Tech
Continued	10/2/2017	73.35	33.48	---	---	39.87	Blaine Tech
	4/16/2018	73.35	33.87	33.74	0.13	39.58	Blaine Tech
	11/5/2018	73.35	34.16	34.14	0.02	39.21	Blaine Tech
	4/16/2019	73.35	30.55	---	---	42.80	Blaine Tech
	10/28/2019	73.35	34.12	33.84	0.28	39.45	Blaine Tech
	5/4/2020	73.35	31.44	---	---	41.91	Blaine Tech
	11/2/2020	73.35	32.00	--	--	41.35	Blaine Tech
	2/24/2021	73.35	32.75	--	--	40.60	Blaine Tech
	5/3/2021	73.35	32.54	--	--	40.81	Blaine Tech
GMW-22	4/30/2007	74.17	25.79	---	---	48.38	Secor
	11/12/2007	74.17	26.45	25.91	0.54	48.16	Stantec
	8/12/2008	74.17	26.70	---	---	47.47	Envent
	10/31/2008	74.17	28.25	27.04	1.21	46.91	Envent
	11/4/2008	74.17	26.97	---	---	47.20	Envent
	12/17/2008	74.17	26.65	---	---	47.52	Envent
	1/15/2009	74.17	27.18	---	---	46.99	Envent
	3/27/2009	74.17	27.86	---	---	46.31	Envent
	4/21/2009	74.17	27.30	27.20	0.10	46.95	Envent
	7/21/2009	74.17	27.70	---	---	46.47	Envent
	10/19/2009	74.17	NM	---	---	NC	Blaine Tech
	11/6/2009	74.17	28.12	---	---	46.05	Kinder Morgan
	9/3/2010	74.17	28.36	25.10	3.26	48.47	Kinder Morgan
	10/4/2010	74.17	27.65	---	---	46.52	Blaine Tech
	4/11/2011	74.17	26.45	---	---	47.72	Blaine Tech
	10/10/2011	74.17	29.68	---	---	44.49	Blaine Tech
	4/16/2012	74.17	31.15	---	---	43.02	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.24	31.05	---	---	46.19	Blaine Tech
	4/8/2013	77.24	31.92	---	---	45.32	Blaine Tech
	10/7/2013	77.24	34.28	31.65	2.63	45.10	Blaine Tech
	4/14/2014	77.24	35.59	32.30	3.29	44.33	Blaine Tech
	5/6/2014	77.24	35.87	32.35	3.52	44.24	Nieto & Sons
	5/12/2014	77.24	35.76	32.28	3.48	44.32	Nieto & Sons
	5/20/2014	77.24	37.90	32.70	5.20	43.58	Nieto & Sons
	5/27/2014	77.24	36.34	32.71	3.63	43.86	Nieto & Sons
	6/4/2014	77.24	33.36	---	---	43.88	Nieto & Sons
	6/10/2014	77.24	36.74	32.82	3.92	43.69	Nieto & Sons
	7/3/2014	77.24	37.66	32.91	4.75	43.45	Nieto & Sons
	7/8/2014	77.24	36.70	32.79	3.91	43.73	Blaine Tech
	7/18/2014	77.24	36.68	32.77	3.91	43.75	Blaine Tech
	7/24/2014	77.24	36.79	32.62	4.17	43.85	Blaine Tech
	8/1/2014	77.24	35.82	32.44	3.38	44.17	Blaine Tech
	8/8/2014	77.24	35.72	32.44	3.28	44.19	Blaine Tech
	8/13/2014	77.24	35.68	32.45	3.23	44.19	Blaine Tech
	8/19/2014	77.24	35.64	32.45	3.19	44.20	Blaine Tech
	8/29/2014	77.24	35.65	32.44	3.21	44.21	Blaine Tech
	9/5/2014	77.24	35.73	32.46	3.27	44.18	Blaine Tech
	9/11/2014	77.24	35.78	32.47	3.31	44.16	Blaine Tech
	9/18/2014	77.24	35.85	32.49	3.36	44.13	Blaine Tech
	9/26/2014	77.24	35.85	32.46	3.39	44.15	Blaine Tech
	10/1/2014	77.24	35.76	32.45	3.31	44.18	Blaine Tech
	10/6/2014	77.24	35.72	32.44	3.28	44.19	Blaine Tech
	10/14/2014	77.24	35.75	32.42	3.33	44.20	Blaine Tech
	10/23/2014	77.24	35.84	32.43	3.41	44.18	Blaine Tech
	10/27/2014	77.24	35.74	32.41	3.33	44.21	Blaine Tech
	11/3/2014	77.24	35.89	32.45	3.44	44.15	Blaine Tech
	11/10/2014	77.24	35.94	32.45	3.49	44.14	Blaine Tech
	11/18/2014	77.24	35.97	32.48	3.49	44.11	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-22	11/25/2014	77.24	35.97	32.51	3.46	44.09	Blaine Tech
Continued	12/3/2014	77.24	35.84	32.45	3.39	44.16	Blaine Tech
	12/12/2014	77.24	36.44	32.65	3.79	43.89	Blaine Tech
	12/19/2014	77.24	36.80	34.71	2.09	42.14	Blaine Tech
	4/20/2015	77.24	36.64	32.84	3.80	43.70	Blaine Tech
	7/24/2015	77.24	39.80	33.70	6.10	42.41	Northstar
	10/20/2015	77.24	36.10	34.92	1.18	42.10	Kinder Morgan
	3/16/2016	77.24	39.73	37.61	2.12	39.24	Kinder Morgan
	4/11/2016	77.24	38.59	35.50	3.09	41.17	Blaine Tech
	6/30/2016	77.24	36.55	---	---	40.69	Blaine Tech
	10/3/2016	77.24	37.70	---	---	39.54	Blaine Tech
	4/17/2017	77.24	34.47	---	---	42.77	Blaine Tech
	10/2/2017	77.24	38.45	---	---	38.79	Blaine Tech
	4/16/2018	77.24	38.23	---	---	39.01	Blaine Tech
	11/5/2018	77.24	38.02	---	---	39.22	Blaine Tech
	4/16/2019	77.24	36.19	---	---	41.05	Blaine Tech
	10/28/2019	77.24	38.65	---	---	38.59	Blaine Tech
	5/4/2020	77.24	35.64	---	---	41.60	Blaine Tech
	11/2/2020	77.24	36.08	---	---	41.16	Blaine Tech
	5/3/2021	77.24	36.66	---	---	40.58	Blaine Tech
GMW-24	4/30/2007	74.04	27.07	---	---	46.97	Secor
	11/12/2007	74.04	27.50	27.46	0.04	46.57	Stantec
	8/12/2008	74.04	NM	---	---	NC	Envent
	8/19/2008	74.04	29.34	28.24	1.10	45.58	Envent
	10/17/2008	74.04	30.88	29.90	0.98	43.94	Envent
	10/21/2008	74.04	29.64	28.30	1.34	45.47	Envent
	12/18/2008	74.04	29.04	---	---	45.00	Envent
	1/15/2009	74.04	30.56	29.80	0.76	44.09	Envent
	3/20/2009	74.04	31.28	---	---	42.76	Envent
	3/27/2009	74.04	30.45	---	---	43.59	Envent
	4/21/2009	74.04	29.91	---	---	44.13	Envent
	7/21/2009	74.04	32.78	---	---	41.26	Envent
	10/19/2009	74.04	NM	---	---	NC	Blaine Tech
	2/4/2010	74.04	29.67	29.40	0.27	44.59	Kinder Morgan
	6/22/2010	74.04	29.47	---	---	44.57	Blaine Tech
	9/3/2010	74.04	29.90	---	---	44.14	Kinder Morgan
	10/4/2010	74.04	29.50	---	---	44.54	Blaine Tech
	4/11/2011	74.04	28.21	---	---	45.83	Blaine Tech
	10/10/2011	74.04	28.78	---	---	45.26	Blaine Tech
	4/16/2012	74.04	30.49	30.31	0.18	43.69	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.48	31.34	---	---	46.14	Blaine Tech
	4/8/2013	77.48	NM	---	---	NC	Blaine Tech
	6/14/2013	77.48	33.35	32.40	0.95	44.89	Blaine Tech
	10/7/2013	77.48	35.42	31.61	3.81	45.11	Blaine Tech
	4/14/2014	77.48	37.74	32.01	5.73	44.32	Blaine Tech
	5/5/2014	77.48	37.81	32.09	5.72	44.25	Nieto & Sons
	5/12/2014	77.48	37.52	32.14	5.38	44.26	Nieto & Sons
	5/20/2014	77.48	37.39	32.21	5.18	44.23	Nieto & Sons
	5/27/2014	77.48	37.95	32.90	5.05	43.57	Nieto & Sons
	6/4/2014	77.48	37.00	32.70	4.30	43.92	Nieto & Sons
	6/10/2014	77.48	37.85	32.98	4.87	43.53	Nieto & Sons
	7/3/2014	77.48	39.60	33.04	6.56	43.13	Nieto & Sons
	7/8/2014	77.48	38.67	32.89	5.78	43.43	Blaine Tech
	7/18/2014	77.48	38.64	32.86	5.78	43.46	Blaine Tech
	7/24/2014	77.48	38.27	32.82	5.45	43.57	Blaine Tech
	8/1/2014	77.48	37.00	32.55	4.45	44.04	Blaine Tech
	8/8/2014	77.48	36.97	32.51	4.46	44.08	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-24	8/13/2014	77.48	36.82	32.54	4.28	44.08	Blaine Tech
Continued	8/19/2014	77.48	36.92	32.55	4.37	44.06	Blaine Tech
	8/29/2014	77.48	36.92	32.51	4.41	44.09	Blaine Tech
	9/5/2014	77.48	36.97	32.55	4.42	44.05	Blaine Tech
	9/11/2014	77.48	37.99	32.57	5.42	43.83	Blaine Tech
	9/18/2014	77.48	36.89	32.60	4.29	44.02	Blaine Tech
	9/26/2014	77.48	36.86	32.58	4.28	44.04	Blaine Tech
	10/1/2014	77.48	36.64	32.61	4.03	44.06	Blaine Tech
	10/6/2014	77.48	36.93	32.92	4.01	43.76	Blaine Tech
	10/14/2014	77.48	36.92	32.88	4.04	43.79	Blaine Tech
	10/23/2014	77.48	37.00	32.90	4.10	43.76	Blaine Tech
	10/27/2014	77.48	36.82	32.91	3.91	43.79	Blaine Tech
	11/3/2014	77.48	37.01	32.99	4.02	43.69	Blaine Tech
	11/10/2014	77.48	37.33	33.95	3.38	42.85	Blaine Tech
	11/18/2014	77.48	36.96	33.01	3.95	43.68	Blaine Tech
	11/25/2014	77.48	36.91	33.55	3.36	43.26	Blaine Tech
	12/3/2014	77.48	36.87	32.99	3.88	43.71	Blaine Tech
	12/12/2014	77.48	37.36	33.25	4.11	43.41	Blaine Tech
	12/19/2014	77.48	37.75	33.31	4.44	43.28	Blaine Tech
	3/10/2015	77.48	36.25	---	---	41.23	Kinder Morgan
	4/20/2015	77.48	36.29	33.82	2.47	43.17	Blaine Tech
	7/24/2015	77.48	39.80	33.70	6.10	42.56	Blaine Tech
	10/20/2015	77.48	35.44	---	---	42.04	Kinder Morgan
	3/16/2016	77.48	38.83	---	---	38.65	Kinder Morgan
	4/11/2016	77.48	37.10	---	---	40.38	Blaine Tech
	6/29/2016	77.48	38.20	---	---	39.28	Blaine Tech
	8/22/2016	77.48	38.40	---	---	39.08	Blaine Tech
	10/3/2016	77.48	38.70	---	---	39.44	Blaine Tech
	4/17/2017	77.48	35.64	35.09	0.55	42.28	Blaine Tech
	10/2/2017	77.48	39.33	---	---	38.15	Blaine Tech
	4/16/2018	77.48	38.98	---	---	38.50	Blaine Tech
	11/5/2018	77.48	38.63	38.19	0.44	39.20	Blaine Tech
	4/16/2019	77.48	38.43	---	---	39.05	Blaine Tech
	10/28/2019	77.48	38.65	---	---	38.83	Blaine Tech
	5/4/2020	77.48	36.24	---	---	41.24	Blaine Tech
	11/2/2020	77.48	36.58	---	---	40.90	Blaine Tech
	5/3/2021	77.48	37.18	---	---	40.30	Blaine Tech
GMW-25	4/30/2007	74.29	26.60	---	---	47.69	Secor
	11/12/2007	74.29	27.30	27.25	0.05	47.03	Stantec
	8/12/2008	74.29	27.81	---	---	46.48	Envent
	10/17/2008	74.29	28.26	---	---	46.03	Envent
	12/18/2008	74.29	29.01	---	---	45.28	Envent
	1/15/2009	74.29	28.62	---	---	45.67	Envent
	3/24/2009	74.29	28.79	---	---	45.50	Envent
	4/21/2009	74.29	28.35	---	---	45.94	Envent
	7/21/2009	74.29	29.80	---	---	44.49	Envent
	10/19/2009	74.29	30.28	---	---	44.01	Blaine Tech
	6/22/2010	74.29	31.64	---	---	42.65	Blaine Tech
	10/4/2010	74.29	29.25	---	---	45.04	Blaine Tech
	4/11/2011	74.29	26.21	---	---	48.08	Blaine Tech
	10/10/2011	74.29	30.02	---	---	44.27	Blaine Tech
	4/16/2012	74.29	31.30	---	---	42.99	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	78.14	31.88	---	---	46.26	Blaine Tech
	4/8/2013	78.14	32.11	---	---	46.03	Blaine Tech
	10/7/2013	78.14	33.23	33.10	0.13	45.01	Blaine Tech
	4/14/2014	78.14	37.40	33.00	4.40	44.13	Blaine Tech
	5/5/2014	78.14	37.51	33.06	4.45	44.06	Nieto & Sons

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-25	5/12/2014	78.14	34.97	33.73	1.24	44.12	Nieto & Sons
Continued	5/20/2014	78.14	36.75	34.30	2.45	43.28	Nieto & Sons
	5/27/2014	78.14	34.64	34.44	0.20	43.65	Nieto & Sons
	6/4/2014	78.14	35.00	---	---	43.14	Nieto & Sons
	6/10/2014	78.14	36.67	34.18	2.49	43.39	Nieto & Sons
	7/3/2014	78.14	34.21	---	---	43.93	Nieto & Sons
	7/24/2014	78.14	34.29	---	---	43.85	Blaine Tech
	8/1/2014	78.14	35.02	33.99	1.03	43.91	Blaine Tech
	8/8/2014	78.14	34.54	34.06	0.48	43.97	Blaine Tech
	8/14/2014	78.14	34.48	34.06	0.42	43.98	Blaine Tech
	8/19/2014	78.14	34.51	34.07	0.44	43.97	Blaine Tech
	8/29/2014	78.14	34.65	33.96	0.69	44.02	Blaine Tech
	9/18/2014	78.14	35.21	34.01	1.20	43.85	Blaine Tech
	9/26/2014	78.14	34.87	34.06	0.81	43.89	Blaine Tech
	10/1/2014	78.14	34.92	33.98	0.94	43.94	Blaine Tech
	10/6/2014	78.14	34.93	33.99	0.94	43.93	Blaine Tech
	10/14/2014	78.14	35.10	33.91	1.19	43.96	Blaine Tech
	10/23/2014	78.14	35.34	33.91	1.43	43.90	Blaine Tech
	10/27/2014	78.14	34.78	33.95	0.83	44.00	Blaine Tech
	11/3/2014	78.14	34.92	33.98	0.94	43.94	Blaine Tech
	11/10/2014	78.14	35.12	34.02	1.10	43.87	Blaine Tech
	11/18/2014	78.14	34.90	34.11	0.79	43.85	Blaine Tech
	11/25/2014	78.14	35.07	34.07	1.00	43.84	Blaine Tech
	12/3/2014	78.14	35.10	33.98	1.12	43.90	Blaine Tech
	12/12/2014	78.14	35.22	34.30	0.92	43.63	Blaine Tech
	12/19/2014	78.14	35.05	34.50	0.55	43.51	Blaine Tech
	4/20/2015	78.14	35.19	34.47	0.72	43.50	Blaine Tech
	6/25/2015	78.14	36.35	35.40	0.95	42.52	Blaine Tech
	10/20/2015	78.14	35.40	35.38	0.02	42.76	Kinder Morgan
	3/16/2016	78.14	38.99	---	---	39.15	Kinder Morgan
	4/12/2016	78.14	37.15	---	---	40.99	Kinder Morgan
	6/29/2016	78.14	38.40	---	---	39.74	Blaine Tech
	8/22/2016	78.14	38.44	---	---	39.70	Blaine Tech
	10/3/2016	78.14	38.70	---	---	39.44	Blaine Tech
	4/17/2017	78.14	35.23	---	---	42.91	Blaine Tech
	10/2/2017	78.14	39.22	---	---	38.92	Blaine Tech
	4/16/2018	78.14	38.85	---	---	39.29	Blaine Tech
	11/5/2018	78.14	38.70	---	---	39.44	Blaine Tech
	4/16/2019	78.14	36.89	---	---	41.25	Blaine Tech
	10/28/2019	78.14	37.10	---	---	41.04	Blaine Tech
	5/4/2020	78.14	36.49	---	---	41.65	Blaine Tech
	11/2/2020	78.14	36.98	---	---	41.16	Blaine Tech
	5/3/2021	78.14	37.42	---	---	40.72	Blaine Tech
GMW-36	3/12/2007	74.53	24.29	---	---	50.24	Secor
	4/30/2007	74.53	24.40	---	---	50.13	Secor
	8/28/2007	74.53	24.31	---	---	50.22	Stantec
	11/12/2007	74.53	24.86	24.85	0.01	49.68	Stantec
	2/19/2008	74.53	25.50	---	---	49.03	Stantec
	4/14/2008	74.53	24.61	---	---	49.92	Stantec
	8/8/2008	74.53	26.20	26.14	0.06	48.38	Envent
	10/16/2008	74.77	26.11	26.09	0.02	48.68	Envent
	12/18/2008	74.53	28.70	28.65	0.05	45.87	Envent
	1/15/2009	74.53	27.73	27.45	0.28	47.02	Envent
	2/20/2009	74.53	26.39	26.35	0.04	48.17	Envent
	2/23/2009	74.53	26.13	25.80	0.33	48.66	Blaine Tech
	3/24/2009	74.53	29.83	---	---	44.70	Envent
	4/20/2009	74.53	25.63	25.59	0.04	48.93	Blaine Tech
	7/17/2009	74.53	27.40	---	---	47.13	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-36	7/20/2009	74.53	25.90	---	---	48.63	Blaine Tech
Continued	7/21/2009	74.53	26.03	---	---	48.50	Envent
	7/22/2009	74.53	25.90	---	---	48.63	Blaine Tech
	10/19/2009	74.53	26.56	26.45	0.11	48.06	Blaine Tech
	2/4/2010	74.53	26.93	26.80	0.13	47.70	Kinder Morgan
	3/15/2010	74.53	26.80	---	---	47.73	Blaine Tech
	4/16/2010	74.53	26.90	---	---	47.63	Blaine Tech
	5/24/2010	74.53	25.96	25.90	0.06	48.62	Blaine Tech
	5/28/2010	74.53	25.94	25.88	0.06	48.64	Blaine Tech
	6/22/2010	74.53	25.94	25.91	0.03	48.61	Blaine Tech
	7/12/2010	74.53	NM	---	---	NC	
	8/12/2010	74.53	NM	---	---	NC	
	9/20/2010	74.53	NM	---	---	NC	
	10/4/2010	74.53	26.90	---	---	47.63	
	10/24/2010	74.53	26.90	---	---	47.63	Blaine Tech
	11/23/2010	74.53	27.35	27.10	0.25	47.38	Blaine Tech
	12/22/2010	74.53	28.35	26.84	1.51	47.39	Blaine Tech
	1/10/2011	74.53	29.10	27.70	1.40	46.55	Blaine Tech
	2/24/2011	74.53	NM	---	---	NC	Blaine Tech
	3/23/2011	74.53	NM	---	---	NC	Blaine Tech
	4/12/2011	74.53	26.98	25.05	1.93	49.09	Blaine Tech
	5/13/2011	74.53	NM	---	---	NC	Blaine Tech
	6/22/2011	74.53	NM	---	---	NC	
	7/11/2011	74.53	NM	---	---	NC	
	8/19/2011	74.53	NM	---	---	NC	
	9/22/2011	74.53	NM	---	---	NC	
	10/10/2011	74.53	25.96	---	---	48.57	Blaine Tech
	11/28/2011	74.53	NM	---	---	NC	
	12/2/2011	74.53	26.71	---	---	47.82	Kinder Morgan
	12/21/2011	74.53	28.17	---	---	46.36	Blaine Tech
	1/9/2012	74.53	27.26	---	---	47.27	Blaine Tech
	2/23/2012	74.53	27.85	---	---	46.68	Blaine Tech
	3/28/2012	74.53	NM	---	---	NC	Blaine Tech
	4/16/2012	74.53	27.34	---	---	47.19	Blaine Tech
	5/25/2012	74.53	NM	---	---	NC	Blaine Tech
	6/15/2012	---	33.27	---	---	NC	Blaine Tech
	7/9/2012	---	33.71	---	---	NC	Blaine Tech
	8/29/2012	---	NM	---	---	NC	Blaine Tech
	9/26/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	76.66	32.11	---	---	44.55	Blaine Tech
	11/29/2012	76.66	33.93	31.68	2.25	44.53	Blaine Tech
	12/26/2012	76.66	34.86	30.36	4.50	45.40	Blaine Tech
	1/14/2013	76.66	34.12	30.42	3.70	45.50	Blaine Tech
	2/20/2013	76.66	NM	---	---	NC	Blaine Tech
	4/10/2013	76.66	32.42	29.75	2.67	46.38	Blaine Tech
	10/7/2013	76.66	34.65	30.72	3.93	45.15	Blaine Tech
	4/25/2014	76.66	34.71	31.12	3.59	44.82	Blaine Tech
	5/20/2014	76.66	34.95	31.50	3.45	44.47	Nieto & Sons
	5/27/2014	76.66	34.53	31.29	3.24	44.72	Nieto & Sons
	6/4/2014	76.66	34.93	31.50	3.43	44.47	Nieto & Sons
	8/13/2014	76.66	34.86	31.27	3.59	44.67	Blaine Tech
	8/19/2014	76.66	34.20	31.39	2.81	44.71	Blaine Tech
	8/29/2014	76.66	34.31	31.32	2.99	44.74	Blaine Tech
	9/5/2014	76.66	34.35	31.37	2.98	44.69	Blaine Tech
	9/11/2014	76.66	35.00	31.23	3.77	44.68	Blaine Tech
	9/18/2014	76.66	34.42	31.50	2.92	44.58	Blaine Tech
	9/26/2014	76.66	34.15	31.48	2.67	44.65	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-36	10/1/2014	76.66	33.51	31.61	1.90	44.67	Blaine Tech
Continued	10/6/2014	76.66	33.29	31.63	1.66	44.70	Blaine Tech
	10/14/2014	76.66	33.48	31.55	1.93	44.72	Blaine Tech
	10/23/2014	76.66	33.64	31.57	2.07	44.68	Blaine Tech
	10/27/2014	76.66	33.02	31.79	1.23	44.62	Blaine Tech
	11/3/2014	76.66	33.75	31.57	2.18	44.65	Blaine Tech
	11/18/2014	76.66	33.17	31.75	1.42	44.63	Blaine Tech
	11/25/2014	76.66	33.13	31.86	1.27	44.55	Blaine Tech
	12/3/2014	76.66	32.93	31.75	1.18	44.67	Blaine Tech
	4/20/2015	76.66	33.64	32.20	1.44	44.17	Blaine Tech
	10/21/2015	76.66	33.55	33.16	0.39	43.42	Blaine Tech
	4/12/2016	76.66	34.30	34.03	0.27	42.58	Kinder Morgan
	10/3/2016	76.66	35.05	34.65	0.40	41.93	Blaine Tech
	3/9/2017	76.66	33.45	---	---	43.21	CH2M
	4/17/2017	76.66	32.96	---	---	43.70	Blaine Tech
	10/2/2017	76.66	34.10	---	---	42.56	Blaine Tech
	4/16/2018	76.66	35.18	---	---	41.48	Blaine Tech
	11/5/2018	76.66	35.91	---	---	40.75	Blaine Tech
	4/23/2019	76.66	33.56	---	---	43.10	Blaine Tech
	10/28/2019	76.66	34.86	34.84	0.02	41.82	Blaine Tech
	5/4/2020	76.66	31.03	---	---	45.63	Blaine Tech
	11/2/2020	76.66	Sludge in well, unable to gauge				Blaine Tech
	2/24/2021	76.66	35.18	---	---	48.82	Blaine Tech
	5/3/2021	76.66	30.69	---	---	45.97	Blaine Tech
GMW-O-11	4/30/2007	74.17	23.91	23.90	0.01	50.27	Secor
	11/12/2007	74.17	24.40	---	---	49.77	Stantec
	8/15/2008	74.17	29.30	---	---	44.87	Envent
	10/17/2008	74.17	24.45	---	---	49.72	Envent
	12/19/2008	74.17	24.85	---	---	49.32	Envent
	1/15/2009	74.17	26.87	24.38	2.49	49.29	Envent
	2/24/2009	74.17	24.31	24.21	0.10	49.94	Envent
	3/27/2009	74.17	31.08	---	---	43.09	Envent
	4/21/2009	74.17	25.36	25.34	0.02	48.83	Envent
	7/21/2009	74.17	26.18	---	---	47.99	Envent
	10/19/2009	74.17	NM	---	---	NC	Blaine Tech
	11/6/2009	74.17	26.33	26.18	0.15	47.96	Kinder Morgan
	10/4/2010	74.17	30.00	---	---	44.17	Blaine Tech
	4/13/2011	74.17	24.19	---	---	49.98	Blaine Tech
	10/10/2011	74.17	24.38	---	---	49.79	Blaine Tech
	4/16/2012	74.17	NM	---	---	NC	Blaine Tech
	7/9/2012	74.17	NM	---	---	NC	Blaine Tech
	10/15/2012	74.17	28.12	---	---	46.05	Blaine Tech
	4/8/2013	74.17	NM	---	---	NC	Blaine Tech
	9/24/2013	74.17	31.25	28.15	3.10	45.40	Blaine Tech
	10/7/2013	74.17	31.19	27.69	3.50	45.78	Blaine Tech
	4/25/2014	74.17	28.96	28.62	0.34	45.48	Blaine Tech
	9/5/2014	74.17	31.13	27.89	3.24	45.63	Blaine Tech
	9/11/2014	74.17	31.12	27.85	3.27	45.67	Blaine Tech
	9/18/2014	74.17	31.22	27.85	3.37	45.65	Blaine Tech
	9/26/2014	74.17	31.34	27.91	3.43	45.57	Blaine Tech
	10/1/2014	74.17	31.19	27.84	3.35	45.66	Blaine Tech
	10/6/2014	74.17	32.19	27.84	4.35	45.46	Blaine Tech
	10/14/2014	74.17	31.18	28.85	2.33	44.85	Blaine Tech
	10/23/2014	74.17	31.34	27.85	3.49	45.62	Blaine Tech
	10/27/2014	74.17	31.28	28.89	2.39	44.80	Blaine Tech
	11/3/2014	74.17	32.34	27.83	4.51	45.44	Blaine Tech
	11/10/2014	74.17	31.46	27.97	3.49	45.50	Blaine Tech
	11/18/2014	74.17	31.41	27.88	3.53	45.58	Blaine Tech
	11/25/2014	74.17	31.48	27.87	3.61	45.58	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-11	12/3/2014	74.17	33.34	29.95	3.39	43.54	Blaine Tech
Continued	12/12/2014	74.17	33.25	29.08	4.17	44.26	Blaine Tech
	12/19/2014	74.17	32.52	28.09	4.43	45.19	Blaine Tech
	4/22/2015	74.17	31.54	28.10	3.44	45.38	Blaine Tech
	10/22/2015	74.17	33.08	29.23	3.85	44.17	Kinder Morgan
	3/16/2016	74.17	33.39	33.16	0.23	40.96	Kinder Morgan
	4/12/2016	74.17	33.33	33.12	0.21	41.01	Kinder Morgan
	6/30/2016	74.17	31.50	---	---	42.67	Kinder Morgan
	8/22/2016	74.17	32.75	32.74	0.01	41.43	Kinder Morgan
	10/3/2016	74.17	32.72	32.71	0.01	41.46	Kinder Morgan
	3/24/2017	74.17	31.50	30.45	1.05	43.51	CH2M
	4/17/2017	74.17	30.12	29.96	0.16	44.18	Blaine Tech
	10/2/2017	74.17	33.54	---	---	40.63	Blaine Tech
	4/16/2018	74.17	NM	---	---	NC	Blaine Tech
	11/5/2018	74.17	33.22	33.11	0.11	41.04	Blaine Tech
	4/16/2019	74.17	NM	---	---	NC	Blaine Tech
	10/28/2019	74.17	NM	---	---	NC	Blaine Tech
	5/4/2020	74.17	30.94	---	---	43.23	Blaine Tech
	8/20/2020	74.17	30.89	---	---	43.28	Blaine Tech
	11/2/2020	74.17	30.30	---	---	43.87	Blaine Tech
	2/24/2021	74.17	32.18	---	---	47.87	Blaine Tech
	5/3/2021	74.17	31.89	---	---	42.28	Blaine Tech
GMW-O-12	4/30/2007	73.49	22.81	---	---	50.68	Secor
	11/12/2007	73.49	23.13	---	---	50.36	Stantec
	4/14/2008	73.49	23.36	---	---	50.13	Stantec
	10/13/2008	73.49	24.20	---	---	49.29	Stantec
	4/20/2009	73.49	24.21	---	---	49.28	Blaine Tech
	10/19/2009	73.49	25.08	---	---	48.41	Blaine Tech
	5/24/2010	73.49	24.80	---	---	48.69	Blaine Tech
	5/28/2010	73.49	24.74	---	---	48.75	Blaine Tech
	10/4/2010	73.49	25.31	25.20	0.11	48.27	Blaine Tech
	1/10/2011	73.49	26.42	26.32	0.10	47.15	Blaine Tech
	4/11/2011	73.49	24.04	---	---	49.45	Blaine Tech
	7/11/2011	73.49	NM	---	---	NC	
	10/10/2011	73.49	24.68	---	---	48.81	Blaine Tech
	1/9/2012	73.49	25.12	---	---	48.37	Blaine Tech
	4/16/2012	73.49	25.40	---	---	48.09	Blaine Tech
	7/9/2012	73.49	26.96	---	---	46.53	Blaine Tech
	10/15/2012	73.49	25.48	25.44	0.04	48.04	Blaine Tech
	1/14/2013	73.49	25.62	25.58	0.04	47.90	Blaine Tech
	4/8/2013	73.49	26.60	26.51	0.09	46.96	Blaine Tech
	9/24/2013	73.49	27.90	27.74	0.16	45.72	Blaine Tech
	10/7/2013	73.49	27.34	27.28	0.06	46.20	Blaine Tech
	4/14/2014	73.49	30.34	26.80	3.54	45.96	Blaine Tech
	5/6/2014	73.49	30.93	26.74	4.19	45.89	Nieto & Sons
	5/12/2014	73.49	30.81	26.82	3.99	45.85	Nieto & Sons
	5/20/2014	73.49	31.78	27.32	4.46	45.26	Nieto & Sons
	5/27/2014	73.49	33.04	26.78	6.26	45.43	Nieto & Sons
	6/4/2014	73.49	33.00	27.75	5.25	44.66	Nieto & Sons
	6/10/2014	73.49	34.53	26.81	7.72	45.10	Nieto & Sons
	7/3/2014	73.49	34.27	26.94	7.33	45.05	Blaine Tech
	7/8/2014	73.49	33.87	26.87	7.00	45.19	Blaine Tech
	7/18/2014	73.49	33.36	27.07	6.29	45.13	Blaine Tech
	7/24/2014	73.49	33.00	26.98	6.02	45.28	Blaine Tech
	8/1/2014	73.49	31.80	26.83	4.97	45.64	Blaine Tech
	8/8/2014	73.49	31.26	26.91	4.35	45.69	Blaine Tech
	8/13/2014	73.49	31.18	26.88	4.30	45.73	Blaine Tech
	8/19/2014	73.49	31.01	26.86	4.15	45.78	Blaine Tech
	8/29/2014	73.49	31.03	26.89	4.14	45.75	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-12	9/5/2014	73.49	31.19	26.88	4.31	45.73	Blaine Tech
Continued	9/18/2014	73.49	31.30	26.82	4.48	45.75	Blaine Tech
	9/26/2014	73.49	31.33	26.89	4.44	45.69	Blaine Tech
	10/1/2014	73.49	31.21	26.85	4.36	45.75	Blaine Tech
	10/6/2014	73.49	31.20	29.84	1.36	43.37	Blaine Tech
	10/14/2014	73.49	31.14	26.86	4.28	45.75	Blaine Tech
	10/23/2014	73.49	31.30	26.85	4.45	45.73	Blaine Tech
	10/27/2014	73.49	31.28	26.90	4.38	45.69	Blaine Tech
	11/3/2014	73.49	32.30	26.84	5.46	45.53	Blaine Tech
	11/10/2014	73.49	31.45	26.91	4.54	45.65	Blaine Tech
	11/18/2014	73.49	32.34	26.90	5.44	45.47	Blaine Tech
	11/25/2014	73.49	31.57	27.87	3.70	44.86	Blaine Tech
	12/3/2014	73.49	33.87	28.81	5.06	43.64	Blaine Tech
	12/19/2014	73.49	32.78	26.97	5.81	45.33	Blaine Tech
	4/20/2015	73.49	33.35	26.91	6.44	45.26	Blaine Tech
	4/22/2015	73.49	33.35	26.91	6.44	45.26	Blaine Tech
	5/21/2015	73.49	34.31	27.35	6.96	44.71	Northstar
	5/29/2015	73.49	34.15	27.24	6.91	44.83	Northstar
	6/2/2015	73.49	34.00	27.27	6.73	44.84	Northstar
	6/5/2015	73.49	34.00	27.50	6.50	44.66	Northstar
	6/12/2015	73.49	33.96	27.35	6.61	44.78	Northstar
	6/19/2015	73.49	33.98	27.58	6.40	44.60	Northstar
	6/26/2015	73.49	33.97	28.15	5.82	44.15	Northstar
	7/2/2015	73.49	33.83	28.20	5.63	44.14	Northstar
	7/7/2015	73.49	33.60	27.93	5.67	44.40	Northstar
	7/17/2015	73.49	33.57	27.85	5.72	44.47	Northstar
	7/24/2015	73.49	33.15	28.25	4.90	44.24	Northstar
	7/29/2015	73.49	33.02	28.10	4.92	44.38	Northstar
	8/11/2015	73.49	33.00	28.90	4.10	43.75	Northstar
	8/18/2015	73.49	32.65	28.23	4.42	44.35	Northstar
	8/28/2015	73.49	32.41	28.17	4.24	44.45	Kinder Morgan
	9/1/2015	73.49	33.18	28.65	4.53	43.91	Kinder Morgan
	9/25/2015	73.49	34.69	28.03	6.66	44.09	Kinder Morgan
	10/16/2015	73.49	34.63	27.83	6.80	44.27	Kinder Morgan
	10/19/2015	73.49	34.65	27.82	6.83	44.27	Blaine Tech
	10/30/2015	73.49	39.38	28.11	11.27	43.07	Kinder Morgan
	3/14/2016	73.49	32.40	31.60	0.80	41.73	Blaine Tech
	4/11/2016	73.49	33.35	26.86	6.49	45.30	Blaine Tech
	6/29/2016	73.49	33.90	33.10	0.80	40.23	Blaine Tech
	8/22/2016	73.49	33.56	31.07	2.49	41.91	Blaine Tech
	10/3/2016	73.49	34.20	31.90	2.30	41.12	Blaine Tech
	4/17/2017	73.49	32.90	28.70	4.20	43.95	Blaine Tech
	10/2/2017	73.49	33.20	32.00	1.20	41.25	Blaine Tech
	4/16/2018	73.49	33.04	31.89	1.15	41.37	Blaine Tech
	11/5/2018	73.49	32.65	32.31	0.34	41.11	Blaine Tech
	4/16/2019	73.49	31.62	31.21	0.41	42.20	Blaine Tech
	10/28/2019	73.49	32.45	31.85	0.60	41.52	Blaine Tech
	5/4/2020	73.49	30.35	30.04	0.31	43.39	Blaine Tech
	8/20/2020	73.49	31.98	31.75	0.23	41.69	Blaine Tech
	11/2/2020	73.49	31.65	30.27	1.38	42.94	Blaine Tech
	2/24/2021	73.49	31.97	31.45	0.52	41.94	Blaine Tech
	5/3/2021	73.49	31.66	31.05	0.61	41.83	Blaine Tech
GMW-O-15	4/30/2007	74.23	23.41	23.30	0.11	50.91	Secor
	11/12/2007	74.23	23.95	23.85	0.10	50.36	Stantec
	4/14/2008	74.23	23.64	---	---	50.59	Stantec
	8/8/2008	74.23	24.60	---	---	49.63	Envent
	8/11/2008	74.23	24.40	24.34	0.06	49.88	Stantec
	10/16/2008	74.23	24.53	---	---	49.70	Envent
	12/18/2008	74.23	24.86	---	---	49.37	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-15	1/2/2009	74.23	24.82	---	---	49.41	Envent
Continued	1/15/2009	74.23	26.01	---	---	48.22	Envent
	2/20/2009	74.23	24.80	---	---	49.43	Envent
	2/23/2009	74.23	24.76	24.74	0.02	49.49	Blaine Tech
	3/24/2009	74.23	25.55	---	---	48.68	Envent
	4/20/2009	74.23	24.66	24.61	0.05	49.61	Blaine Tech
	7/17/2009	74.23	25.01	---	---	49.22	Envent
	7/20/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	7/22/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	10/19/2009	74.23	25.55	25.43	0.12	48.78	Blaine Tech
	2/4/2010	74.23	25.50	25.48	0.02	48.75	Kinder Morgan
	3/15/2010	74.23	NM	---	---	NC	
	4/16/2010	74.23	23.10	---	---	51.13	Blaine Tech
	5/24/2010	74.23	25.67	---	---	48.56	Blaine Tech
	5/28/2010	74.23	25.35	---	---	48.88	Blaine Tech
	6/22/2010	74.23	25.81	---	---	48.42	Blaine Tech
	7/12/2010	74.23	NM	---	---	NC	
	8/12/2010	74.23	NM	---	---	NC	
	9/20/2010	74.23	NM	---	---	NC	
	10/4/2010	74.23	25.85	25.80	0.05	48.42	Blaine Tech
	11/23/2010	74.23	NM	---	---	NC	Blaine Tech
	12/22/2010	74.23	26.31	---	---	47.92	Blaine Tech
	1/10/2011	74.23	25.97	---	---	48.26	Blaine Tech
	2/24/2011	74.23	NM	---	---	NC	Blaine Tech
	3/23/2011	74.23	NM	---	---	NC	Blaine Tech
	4/12/2011	74.23	22.55	22.53	0.02	51.70	Blaine Tech
	5/13/2011	74.23	NM	---	---	NC	Blaine Tech
	6/22/2011	74.23	NM	---	---	NC	
	7/11/2011	74.23	NM	---	---	NC	
	8/19/2011	74.23	NM	---	---	NC	
	9/22/2011	74.23	NM	---	---	NC	
	10/10/2011	74.23	23.79	23.22	0.57	50.90	Blaine Tech
	11/28/2011	74.23	NM	---	---	NC	
	12/2/2011	74.23	23.92	23.86	0.06	50.36	Kinder Morgan
	12/21/2011	74.23	31.13	---	---	43.10	Blaine Tech
	1/9/2012	74.23	27.67	---	---	46.56	Blaine Tech
	2/23/2012	74.23	31.82	---	---	42.41	Blaine Tech
	3/28/2012	74.23	30.30	---	---	43.93	Blaine Tech
	4/16/2012	74.23	26.56	26.51	0.05	47.71	Blaine Tech
	5/25/2012	74.23	26.64	---	---	47.59	Blaine Tech
	6/15/2012	74.23	26.93	---	---	47.30	Blaine Tech
	7/9/2012	74.23	25.47	---	---	48.76	Blaine Tech
	8/29/2012	74.23	NM	---	---	NC	Blaine Tech
	9/26/2012	74.23	30.64	---	---	43.59	Blaine Tech
	10/15/2012	74.23	31.82	---	---	42.41	Blaine Tech
	11/29/2012	74.23	NM	---	---	NC	Blaine Tech
	12/26/2012	74.23	27.41	---	---	46.82	Blaine Tech
	1/14/2013	74.23	27.62	---	---	46.61	Blaine Tech
	2/20/2013	74.23	NM	---	---	NC	Blaine Tech
	4/10/2013	74.23	NM	---	---	NC	Blaine Tech
	4/26/2013	74.23	27.90	---	---	46.33	Kinder Morgan
	10/7/2013	74.23	29.03	28.26	0.77	45.82	Blaine Tech
	4/18/2014	74.23	28.40	28.08	0.32	46.09	Blaine Tech
	8/14/2014	74.23	32.59	28.26	4.33	45.10	Blaine Tech
	8/19/2014	74.23	32.34	28.23	4.11	45.18	Blaine Tech
	8/29/2014	74.23	31.84	28.25	3.59	45.26	Blaine Tech
	9/5/2014	74.23	31.91	28.29	3.62	45.22	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-15	9/11/2014	74.23	32.16	28.79	3.37	44.77	Blaine Tech
Continued	9/18/2014	74.23	32.50	28.23	4.27	45.15	Blaine Tech
	9/26/2014	74.23	32.20	28.27	3.93	45.17	Blaine Tech
	10/1/2014	74.23	31.93	28.28	3.65	45.22	Blaine Tech
	10/6/2014	74.23	31.91	28.27	3.64	45.23	Blaine Tech
	10/14/2014	74.23	31.85	28.29	3.56	45.23	Blaine Tech
	10/23/2014	74.23	32.10	28.30	3.80	45.17	Blaine Tech
	10/27/2014	74.23	31.89	28.30	3.59	45.21	Blaine Tech
	11/18/2014	74.23	31.86	28.39	3.47	45.15	Blaine Tech
	11/25/2014	74.23	32.36	28.35	4.01	45.08	Blaine Tech
	12/3/2014	74.23	31.73	28.36	3.37	45.20	Blaine Tech
	12/12/2014	74.23	32.61	28.54	4.07	44.88	Blaine Tech
	12/19/2014	74.23	32.62	28.37	4.25	45.01	Blaine Tech
	4/20/2015	74.23	31.93	28.82	3.11	44.79	Blaine Tech
	10/19/2015	74.23	31.91	28.89	3.02	44.74	Blaine Tech
	4/12/2016	74.23	29.78	---	---	44.45	Kinder Morgan
	10/3/2016	74.86	31.00	30.92	0.08	43.92	Kinder Morgan
	3/9/2017	74.86	29.94	---	---	44.92	CH2M
	4/17/2017	74.86	29.65	29.52	0.13	45.31	Blaine Tech
	10/2/2017	74.86	31.92	30.33	1.59	44.21	Blaine Tech
	4/16/2018	74.86	31.79	31.67	0.12	43.17	Blaine Tech
	11/5/2018	74.86	32.38	---	---	42.48	Blaine Tech
	4/23/2019	74.86	29.84	29.84	0.00	45.02	Blaine Tech
	10/31/2019	74.86	29.28	---	---	45.58	Blaine Tech
	5/4/2020	74.86	31.13	---	---	43.73	Blaine Tech
	11/2/2020	74.86	26.89	---	---	47.97	Blaine Tech
	5/3/2021	74.86	28.62	---	---	46.24	Blaine Tech
GMW-O-18	4/30/2007	74.36	24.21	---	---	50.15	Secor
	11/12/2007	74.36	22.46	---	---	51.90	Secor
	4/14/2008	74.36	24.50	---	---	49.86	Secor
	10/13/2008	74.36	25.46	---	---	48.90	Stantec
	4/20/2009	74.36	25.59	---	---	48.77	Blaine Tech
	10/19/2009	74.36	26.31	---	---	48.05	Blaine Tech
	3/15/2010	74.36	26.54	---	---	47.82	Blaine Tech
	4/16/2010	74.36	24.25	---	---	50.11	Blaine Tech
	5/24/2010	74.36	26.26	---	---	48.10	Blaine Tech
	5/28/2010	74.36	26.03	---	---	48.33	Blaine Tech
	6/22/2010	74.36	26.41	---	---	47.95	
	7/12/2010	74.36	NM	---	---	NC	
	8/12/2010	74.36	NM	---	---	NC	
	9/20/2010	74.36	NM	---	---	NC	
	10/4/2010	74.36	29.95	---	---	44.41	Blaine Tech
	11/16/2010	74.36	NM	---	---	NC	
	12/22/2010	74.36	NM	---	---	NC	
	1/10/2011	74.36	NM	---	---	NC	
	2/24/2011	74.36	NM	---	---	NC	Blaine Tech
	3/23/2011	74.36	NM	---	---	NC	Blaine Tech
	4/12/2011	74.36	NM	---	---	NC	Blaine Tech
	5/13/2011	74.36	NM	---	---	NC	Blaine Tech
	6/22/2011	74.36	NM	---	---	NC	
	7/11/2011	74.36	NM	---	---	NC	
	8/19/2011	74.36	NM	---	---	NC	
	9/22/2011	74.36	NM	---	---	NC	
	10/10/2011	74.36	23.68	---	---	50.68	Blaine Tech
	11/28/2011	74.36	NM	---	---	NC	
	12/2/2011	74.36	24.22	---	---	50.14	Blaine Tech
	12/21/2011	74.36	27.14	---	---	47.22	Blaine Tech
	2/23/2012	74.36	31.18	---	---	43.18	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-18	3/28/2012	74.36	NM	---	---	NC	Blaine Tech
Continued	4/16/2012	74.36	27.10	---	---	47.26	Blaine Tech
	5/25/2012	74.36	27.31	---	---	47.05	Blaine Tech
	6/15/2012	74.36	35.13	---	---	39.23	Blaine Tech
	7/9/2012	74.36	29.51	---	---	44.85	Blaine Tech
	8/29/2012	74.36	NM	---	---	NC	Blaine Tech
	9/26/2012	74.36	30.83	---	---	43.53	Blaine Tech
	10/15/2012	74.36	29.73	---	---	44.63	Blaine Tech
	11/29/2012	74.36	NM	---	---	NC	Blaine Tech
	12/26/2012	74.36	28.87	---	---	45.49	Blaine Tech
	1/14/2013	74.36	28.92	---	---	45.44	Blaine Tech
	2/20/2013	74.36	NM	---	---	NC	Blaine Tech
	4/10/2013	74.36	28.10	---	---	46.26	Blaine Tech
	10/7/2013	74.36	26.67	---	---	47.69	Blaine Tech
	4/18/2014	74.36	29.43	29.37	0.06	44.98	Blaine Tech
	8/14/2014	74.36	29.87	29.45	0.42	44.83	Blaine Tech
	8/19/2014	74.36	29.97	29.58	0.39	44.70	Blaine Tech
	8/29/2014	74.36	29.77	29.34	0.43	44.93	Blaine Tech
	9/11/2014	74.36	29.96	29.61	0.35	44.68	Blaine Tech
	9/18/2014	74.36	29.95	29.56	0.39	44.72	Blaine Tech
	9/26/2014	74.36	29.97	29.55	0.42	44.73	Blaine Tech
	10/1/2014	74.36	29.90	29.52	0.38	44.76	Blaine Tech
	10/6/2014	74.36	29.94	29.56	0.38	44.72	Blaine Tech
	10/14/2014	74.36	29.94	29.58	0.36	44.71	Blaine Tech
	10/23/2014	74.36	30.00	29.62	0.38	44.66	Blaine Tech
	10/27/2014	74.36	29.95	29.52	0.43	44.75	Blaine Tech
	4/20/2015	74.36	28.53	---	---	45.83	Blaine Tech
	10/19/2015	74.36	30.90	---	---	43.46	Blaine Tech
	4/12/2016	74.36	31.63	---	---	42.73	Blaine Tech
	12/13/2016	74.32	35.95	31.01	4.94	42.32	Blaine Tech
	12/14/2016	74.32	32.60	---	---	41.72	Blaine Tech
	3/6/2017	74.32	33.40	32.60	0.80	41.56	CH2M
	4/17/2017	74.32	31.83	31.80	0.03	42.51	Blaine Tech
	10/2/2017	74.32	31.32	31.30	0.02	43.02	Blaine Tech
	4/16/2018	74.32	NM	---	---	NC	Blaine Tech
	11/5/2018	74.32	33.03	32.90	0.13	41.39	Blaine Tech
	4/16/2019	74.32	30.89	---	---	43.43	Blaine Tech
	10/28/2019	74.32	32.05	---	---	42.27	Blaine Tech
	5/4/2020	74.32	31.68	---	---	42.64	Blaine Tech
	11/2/2020	74.32	27.25	---	---	47.07	Blaine Tech
	5/3/2021	74.32	29.77	---	---	44.55	Blaine Tech
GMW-O-20	8/15/2008	73.32	25.90	---	---	47.42	Envent
	10/17/2008	73.32	25.82	---	---	47.50	Envent
	12/19/2008	73.32	27.15	---	---	46.17	Envent
	1/15/2009	73.32	26.53	26.09	0.44	47.15	Envent
	2/24/2009	73.32	27.85	---	---	45.47	Envent
	3/20/2009	73.32	28.81	---	---	44.51	Envent
	3/27/2009	73.32	27.84	---	---	45.48	Envent
	4/21/2009	73.32	28.70	---	---	44.62	Envent
	7/21/2009	73.32	24.10	---	---	49.22	Envent
	10/19/2009	73.32	NM	---	---	NC	Blaine Tech
	11/9/2009	73.32	25.60	25.40	0.20	47.88	Kinder Morgan
	6/22/2010	73.32	24.76	24.66	0.10	48.64	Blaine Tech
	10/4/2010	73.32	31.20	31.10	0.10	42.20	Blaine Tech
	1/10/2011	73.32	26.62	26.48	0.14	46.81	Blaine Tech
	4/11/2011	73.32	23.82	---	---	49.50	Blaine Tech
	7/11/2011	73.32	NM	---	---	NC	
	10/10/2011	73.32	24.05	---	---	49.27	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-20	1/9/2012	73.32	24.68	---	---	48.64	Blaine Tech
Continued	4/16/2012	73.32	26.18	---	---	47.14	Blaine Tech
	7/9/2012	73.32	32.92	---	---	40.40	Blaine Tech
	10/15/2012	73.32	32.97	32.95	0.02	40.37	Blaine Tech
	1/14/2013	73.32	32.98	32.93	0.05	40.38	Blaine Tech
	4/8/2013	73.32	29.63	26.46	3.17	46.27	Blaine Tech
	9/24/2013	73.32	31.10	27.20	3.90	45.40	Blaine Tech
	10/7/2013	73.32	32.09	27.06	5.03	45.33	Blaine Tech
	4/25/2014	73.32	28.48	28.40	0.08	44.91	Blaine Tech
	9/18/2014	73.32	30.71	27.72	2.99	45.05	Blaine Tech
	9/26/2014	73.32	30.87	27.75	3.12	44.99	Blaine Tech
	10/1/2014	73.32	30.52	27.65	2.87	45.14	Blaine Tech
	10/6/2014	73.32	30.50	27.66	2.84	45.13	Blaine Tech
	10/14/2014	73.32	30.63	27.62	3.01	45.14	Blaine Tech
	10/23/2014	73.32	30.80	27.70	3.10	45.05	Blaine Tech
	10/27/2014	73.32	30.70	27.76	2.94	45.02	Blaine Tech
	11/3/2014	73.32	30.81	27.62	3.19	45.11	Blaine Tech
	11/10/2014	73.32	30.94	27.75	3.19	44.98	Blaine Tech
	11/18/2014	73.32	30.91	27.65	3.26	45.07	Blaine Tech
	11/25/2014	73.32	30.95	27.65	3.30	45.06	Blaine Tech
	12/3/2014	73.32	32.56	27.83	4.73	44.61	Blaine Tech
	12/19/2014	73.32	31.72	27.93	3.79	44.69	Blaine Tech
	4/22/2015	73.32	32.25	27.98	4.27	44.55	Blaine Tech
	10/22/2015	73.32	31.36	29.38	1.98	43.57	Kinder Morgan
	3/16/2016	73.32	32.54	---	---	40.78	Kinder Morgan
	4/12/2016	73.32	32.48	---	---	40.84	Kinder Morgan
	6/29/2016	73.32	32.50	---	---	40.82	Blaine Tech
	8/22/2016	73.32	32.18	---	---	41.14	Blaine Tech
	10/3/2016	73.32	33.12	---	---	40.20	Blaine Tech
	3/23/2017	73.32	30.35	---	---	42.97	CH2M
	4/17/2017	73.32	29.70	---	---	43.62	Blaine Tech
	10/2/2017	73.32	33.03	---	---	40.29	Blaine Tech
	4/16/2018	73.32	32.67	---	---	40.65	Blaine Tech
	11/5/2018	73.32	32.92	---	---	40.40	Blaine Tech
	4/23/2019	73.32	30.55	---	---	42.77	Blaine Tech
	11/1/2019	73.32	32.53	32.50	0.03	40.81	Blaine Tech
	5/4/2020	73.32	30.70	---	---	42.62	Blaine Tech
	8/20/2020	73.32	31.58	---	---	41.74	Blaine Tech
	11/2/2020	73.32	30.97	---	---	42.35	Blaine Tech
	2/24/2021	73.32	31.99	---	---	37.16	Blaine Tech
	5/3/2021	73.32	32.67	---	---	40.65	Blaine Tech
GMW-O-21	12/28/2007	71.43	27.67	---	---	43.76	Geomatrix
	8/15/2008	73.94	NM	---	---	NC	Envent
	10/17/2008	71.43	26.00	---	---	45.43	Envent
	12/19/2008	71.43	24.82	---	---	46.61	Envent
	3/27/2009	71.43	26.41	---	---	45.02	Envent
	7/21/2009	71.43	24.88	---	---	46.55	Envent
	10/19/2009	71.43	NM	---	---	NC	Blaine Tech
	11/9/2009	71.43	25.02	---	---	46.41	Kinder Morgan
	10/4/2010	71.43	25.40	---	---	46.03	Blaine Tech
	4/13/2011	71.43	23.72	---	---	47.71	Blaine Tech
	10/10/2011	71.43	24.65	---	---	46.78	Blaine Tech
	4/16/2012	71.43	NM	---	---	NC	Blaine Tech
	7/9/2012	71.43	NM	---	---	NC	Blaine Tech
	10/15/2012	71.43	32.50	---	---	38.93	Blaine Tech
	4/8/2013	71.43	NM	---	---	NC	Blaine Tech
	9/25/2013	71.43	29.25	---	---	42.18	Blaine Tech
	10/7/2013	71.43	NM	---	---	NC	Blaine Tech
	4/14/2014	71.43	28.65	28.61	0.04	42.81	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-21	9/5/2014	71.43	29.61	28.78	0.83	42.48	Blaine Tech
Continued	9/26/2014	71.43	29.85	28.77	1.08	42.44	Blaine Tech
	10/1/2014	71.43	29.79	28.64	1.15	42.56	Blaine Tech
	10/6/2014	71.43	29.40	28.72	0.68	42.57	Blaine Tech
	10/27/2014	71.43	29.75	28.93	0.82	42.34	Blaine Tech
	11/10/2014	71.43	29.98	28.95	1.03	42.27	Blaine Tech
	11/18/2014	71.43	30.05	28.92	1.13	42.28	Blaine Tech
	11/25/2014	71.43	29.73	28.85	0.88	42.40	Blaine Tech
	12/12/2014	71.43	30.61	29.02	1.59	42.09	Blaine Tech
	12/19/2014	71.43	30.62	29.04	1.58	42.07	Blaine Tech
	4/20/2015	71.43	30.15	28.99	1.16	42.21	Blaine Tech
	6/10/2015	71.43	31.00	30.70	0.30	40.67	Blaine Tech
	7/2/2015	71.43	32.30	29.88	2.42	41.07	Northstar
	7/7/2015	71.43	30.65	30.06	0.59	41.25	Northstar
	7/17/2015	71.43	30.40	30.10	0.30	41.27	Northstar
	7/29/2015	71.43	30.40	30.10	0.30	41.27	Northstar
	8/11/2015	71.43	31.00	30.70	0.30	40.67	Northstar
	10/19/2015	71.43	31.43	31.20	0.23	40.18	Blaine Tech
	3/14/2016	71.43	33.20	33.17	0.03	38.25	Blaine Tech
	4/11/2016	71.43	32.17	31.84	0.33	39.52	Blaine Tech
	6/29/2016	71.43	33.03	32.83	0.20	38.56	Blaine Tech
	8/22/2016	71.43	33.72	---	---	37.71	Blaine Tech
	10/3/2016	71.43	33.45	---	---	37.98	Blaine Tech
	4/17/2017	71.43	30.48	---	---	40.95	Blaine Tech
	10/2/2017	71.43	33.45	---	---	37.98	Blaine Tech
	4/16/2018	71.43	33.13	---	---	38.30	Blaine Tech
	11/5/2018	71.43	33.68	---	---	37.75	Blaine Tech
	4/16/2019	71.43	32.34	---	---	39.09	Blaine Tech
	11/1/2019	71.43	33.00	---	---	38.43	Blaine Tech
	5/4/2020	71.43	31.24	---	---	40.19	Blaine Tech
	8/20/2020	71.43	31.93	---	---	39.50	Blaine Tech
	11/2/2020	71.43	30.30	---	---	41.13	Blaine Tech
	2/24/2021	71.43	32.57	---	---	42.70	Blaine Tech
	5/3/2021	71.43	32.17	---	---	39.26	Blaine Tech
GMW-O-23	8/14/2007	73.63	23.33	---	---	50.30	Geomatrix
	8/21/2007	73.63	23.31	---	---	50.32	Geomatrix
	8/28/2007	73.63	23.00	---	---	50.63	Stantec
	9/11/2007	73.63	23.42	---	---	50.21	Geomatrix
	10/5/2007	73.63	27.79	---	---	45.84	Geomatrix
	11/2/2007	73.63	25.15	---	---	48.48	Geomatrix
	11/13/2007	73.63	23.90	---	---	49.73	Stantec
	12/28/2007	73.63	24.91	---	---	48.72	Geomatrix
	8/15/2008	73.63	26.28	---	---	47.35	Envent
	10/17/2008	73.63	27.16	---	---	46.47	Envent
	12/19/2008	73.63	27.60	---	---	46.03	Envent
	1/15/2009	73.63	27.54	---	---	46.09	Envent
	2/24/2009	73.63	26.19	---	---	47.44	Envent
	3/27/2009	73.63	23.74	---	---	49.89	Envent
	4/21/2009	73.63	27.30	---	---	46.33	Envent
	10/19/2009	73.63	NM	---	---	NC	Blaine Tech
	11/9/2009	73.63	27.50	---	---	46.13	Kinder Morgan
	6/22/2010	73.63	32.10	---	---	41.53	Blaine Tech
	10/4/2010	73.63	25.92	---	---	47.71	Blaine Tech
	1/10/2011	73.63	27.45	---	---	46.18	Blaine Tech
	4/11/2011	73.63	25.03	---	---	48.60	Blaine Tech
	7/11/2011	73.63	NM	---	---	NC	
	10/10/2011	73.63	25.25	---	---	48.38	Blaine Tech
	1/9/2012	73.63	25.91	---	---	47.72	Blaine Tech
	4/16/2012	73.63	27.38	---	---	46.25	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-O-23	7/9/2012	73.63	27.41	---	---	46.22	Blaine Tech
Continued	10/15/2012	73.63	26.48	---	---	47.15	Blaine Tech
	1/14/2013	73.63	29.35	---	---	44.28	Blaine Tech
	4/8/2013	73.63	29.81	27.74	2.07	45.48	Blaine Tech
	9/23/2013	73.63	29.90	---	---	43.73	Blaine Tech
	10/7/2013	73.63	32.86	28.30	4.56	44.42	Blaine Tech
	4/25/2014	73.63	29.81	29.66	0.15	43.94	Blaine Tech
	9/5/2014	73.63	32.57	28.76	3.81	44.11	Blaine Tech
	9/11/2014	73.63	32.94	28.63	4.31	44.14	Blaine Tech
	9/18/2014	73.63	32.80	28.65	4.15	44.15	Blaine Tech
	9/26/2014	73.63	32.87	28.70	4.17	44.10	Blaine Tech
	10/1/2014	73.63	32.56	28.75	3.81	44.12	Blaine Tech
	10/6/2014	73.63	32.50	28.73	3.77	44.15	Blaine Tech
	10/14/2014	73.63	32.75	28.20	4.55	44.52	Blaine Tech
	10/23/2014	73.63	32.80	28.69	4.11	44.12	Blaine Tech
	10/27/2014	73.63	32.51	28.80	3.71	44.09	Blaine Tech
	11/3/2014	73.63	32.82	29.68	3.14	43.32	Blaine Tech
	11/10/2014	73.63	32.80	28.78	4.02	44.05	Blaine Tech
	11/18/2014	73.63	32.78	29.78	3.00	43.25	Blaine Tech
	11/25/2014	73.63	32.64	28.78	3.86	44.08	Blaine Tech
	12/3/2014	73.63	33.25	28.94	4.31	43.83	Blaine Tech
	12/12/2014	73.63	32.58	29.33	3.25	43.65	Blaine Tech
	12/19/2014	73.63	32.71	29.37	3.34	43.59	Blaine Tech
	3/17/2015	73.63	30.40	30.00	0.40	43.55	Kinder Morgan
	4/22/2015	73.63	33.08	30.36	2.72	42.73	Blaine Tech
	10/22/2015	73.63	32.82	30.46	2.36	42.70	Kinder Morgan
	3/16/2016	73.63	34.43	---	---	39.20	Kinder Morgan
	4/12/2016	73.63	32.59	---	---	41.04	Kinder Morgan
	6/29/2016	73.63	33.90	---	---	39.73	Blaine Tech
	8/22/2016	73.63	33.89	---	---	39.74	Blaine Tech
	10/3/2016	73.63	34.90	---	---	38.73	Blaine Tech
	3/23/2017	73.63	31.65	---	---	41.98	CH2M
	4/17/2017	73.63	30.88	---	---	42.75	Blaine Tech
	10/2/2017	73.63	34.70	---	---	38.93	Blaine Tech
	4/16/2018	73.63	34.05	---	---	39.58	Blaine Tech
	11/5/2018	73.63	34.31	---	---	39.32	Blaine Tech
	4/16/2019	73.63	32.99	---	---	40.64	Blaine Tech
	10/28/2019	73.63	34.40	34.39	0.01	39.24	Blaine Tech
	5/4/2020	73.63	31.92	---	---	41.71	Blaine Tech
	8/20/2020	73.63	32.05	---	---	41.58	Blaine Tech
	11/2/2020	73.63	32.24	---	---	41.39	Blaine Tech
	2/24/2021	73.63	33.19	---	---	38.21	Blaine Tech
	5/3/2021	73.63	32.91	---	---	40.72	Blaine Tech
GMW-SF-9	4/21/2009	73.00	24.19	---	---	48.81	Envent
	5/24/2010	73.00	28.31	---	---	44.69	Blaine Tech
	5/28/2010	73.00	28.37	---	---	44.63	Blaine Tech
	10/4/2010	73.00	25.28	---	---	47.72	Blaine Tech
	4/11/2011	73.00	23.90	---	---	49.10	Blaine Tech
	10/10/2011	73.00	24.70	---	---	48.30	Blaine Tech
	4/16/2012	73.00	26.99	---	---	46.01	Blaine Tech
	7/9/2012	73.00	NM	---	---	NC	Blaine Tech
	10/15/2012	73.05	34.21	---	---	38.84	Blaine Tech
	1/14/2013	73.05	34.32	---	---	38.73	Blaine Tech
	4/10/2013	73.05	27.37	---	---	45.68	Blaine Tech
	8/14/2014	73.05	29.35	28.37	0.98	44.48	Blaine Tech
	8/19/2014	73.05	28.46	28.44	0.02	44.61	Blaine Tech
	8/29/2014	73.05	29.32	28.31	1.01	44.54	Blaine Tech
	9/5/2014	73.05	29.33	28.29	1.04	44.55	Blaine Tech
	9/11/2014	73.05	29.49	28.47	1.02	44.38	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-SF-9 Continued	9/18/2014	73.05	28.95	28.91	0.04	44.13	Blaine Tech
	9/26/2014	73.05	28.93	28.59	0.34	44.39	Blaine Tech
	4/20/2015	73.05	29.01	---	---	44.04	Blaine Tech
	10/21/2015	73.05	29.69	---	---	43.36	Blaine Tech
	3/6/2017	73.05	28.88	---	---	44.17	CH2M
GMW-SF-10	4/21/2009	75.77	27.10	---	---	48.67	Envent
	10/4/2010	75.77	28.03	---	---	47.74	Blaine Tech
	4/11/2011	75.77	26.80	---	---	48.97	Blaine Tech
	10/10/2011	75.77	27.60	---	---	48.17	Blaine Tech
	4/16/2012	75.77	28.81	---	---	46.96	Blaine Tech
	7/9/2012	75.77	NM	---	---	NC	Blaine Tech
	10/15/2012	75.77	29.88	---	---	45.89	Blaine Tech
	4/8/2013	75.77	DRY	---	---	NC	Blaine Tech
GWR-3	4/30/2007	74.93	27.97	---	---	46.96	Secor
	11/12/2007	74.93	27.90	---	---	47.03	Stantec
	10/17/2008	74.93	29.88	---	---	45.05	Envent
	12/17/2008	74.93	19.71	---	---	55.22	Envent
	1/15/2009	74.93	29.27	29.26	0.26	45.88	Envent
	3/27/2009	74.93	27.18	---	---	47.75	Envent
	4/21/2009	74.93	29.97	---	---	44.96	Envent
	7/21/2009	74.93	28.77	---	---	46.16	Envent
	10/19/2009	74.93	NM	---	---	NC	Blaine Tech
	10/4/2010	74.93	30.67	---	---	44.26	Blaine Tech
	4/11/2011	74.93	29.94	---	---	44.99	Blaine Tech
	10/10/2011	74.93	29.22	---	---	45.71	Blaine Tech
	4/16/2012	74.93	29.56	---	---	45.37	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.6	31.21	---	---	46.39	Blaine Tech
	4/8/2013	77.6	29.21	29.18	0.03	48.41	Blaine Tech
	10/7/2013	77.6	36.20	31.67	4.53	45.16	Blaine Tech
	4/14/2014	77.6	38.80	32.23	6.57	44.25	Blaine Tech
	5/5/2014	77.6	38.81	32.31	6.50	44.18	Nieto & Sons
	5/12/2014	77.6	36.34	32.77	3.57	44.22	Nieto & Sons
	5/27/2014	77.6	36.11	33.20	2.91	43.91	Nieto & Sons
	6/4/2014	77.6	34.57	31.61	2.96	45.49	Nieto & Sons
	8/8/2014	77.6	37.92	33.38	4.54	43.45	Blaine Tech
	8/13/2014	77.6	35.38	33.18	2.20	44.05	Blaine Tech
	8/19/2014	77.6	35.28	33.25	2.03	44.00	Blaine Tech
	8/29/2014	77.6	35.72	33.12	2.60	44.04	Blaine Tech
	9/5/2014	77.6	35.68	33.19	2.49	43.99	Blaine Tech
	9/11/2014	77.6	36.05	33.04	3.01	44.05	Blaine Tech
	9/18/2014	77.60	35.34	33.27	2.07	43.98	Blaine Tech
	9/26/2014	77.60	35.25	33.24	2.01	44.02	Blaine Tech
	10/1/2014	77.60	36.44	34.01	2.43	43.18	Blaine Tech
	10/6/2014	77.60	34.71	33.33	1.38	44.04	Blaine Tech
	10/14/2014	77.60	35.15	33.20	1.95	44.07	Blaine Tech
	10/23/2014	77.60	35.36	33.20	2.16	44.03	Blaine Tech
	10/27/2014	77.60	34.68	33.49	1.19	43.91	Blaine Tech
	11/3/2014	77.60	35.43	33.18	2.25	44.04	Blaine Tech
	11/10/2014	77.60	35.02	33.32	1.70	43.99	Blaine Tech
	11/18/2014	77.60	35.05	33.34	1.71	43.97	Blaine Tech
	11/25/2014	77.60	35.04	33.36	1.68	43.95	Blaine Tech
	12/3/2014	77.60	34.95	33.34	1.61	43.99	Blaine Tech
	12/12/2014	77.60	35.11	33.64	1.47	43.71	Blaine Tech
	12/19/2014	77.60	35.55	33.67	1.88	43.61	Blaine Tech
	4/20/2015	77.60	37.25	33.34	3.91	43.60	Blaine Tech
	7/24/2015	77.60	41.30	33.95	7.35	42.40	Northstar

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GWR-3	8/12/2015	77.60	37.03	34.42	2.61	42.74	Northstar
Continued	10/20/2015	77.60	35.98	34.65	1.33	42.72	Blaine Tech
	3/16/2016	77.60	38.60	---	---	39.00	Kinder Morgan
	4/11/2016	77.60	36.90	---	---	40.70	Blaine Tech
	6/29/2016	77.60	37.77	---	---	39.83	Blaine Tech
	8/22/2016	77.60	38.24	---	---	39.36	Blaine Tech
	10/3/2016	77.60	39.20	39.15	0.05	38.44	Blaine Tech
	3/7/2017	77.60	35.62	---	---	41.98	CH2M
	4/17/2017	77.60	34.88	---	---	42.72	Blaine Tech
	10/2/2017	77.60	38.92	---	---	38.68	Blaine Tech
	4/16/2018	77.60	38.73	---	---	38.87	Blaine Tech
	11/5/2018	77.60	38.42	---	---	39.18	Blaine Tech
	4/16/2019	77.60	37.16	---	---	40.44	Blaine Tech
	10/28/2019	77.60	38.58	---	---	39.02	Blaine Tech
	5/4/2020	77.60	36.02	---	---	41.58	Blaine Tech
	11/2/2020	77.60	35.51	---	---	42.09	Blaine Tech
	5/3/2021	77.60	36.18	---	---	41.42	Blaine Tech
MW-18 (MID)	4/30/2007	75.67	29.77	---	---	45.90	Secor
	11/12/2007	75.67	30.23	---	---	45.44	Secor
	4/14/2008	75.67	30.45	---	---	45.22	Secor
	10/13/2008	75.67	31.15	---	---	44.52	Stantec
	4/20/2009	75.67	31.49	---	---	44.18	Blaine Tech
	10/19/2009	75.67	32.62	---	---	43.05	Blaine Tech
	5/24/2010	75.67	32.26	---	---	43.41	Blaine Tech
	5/28/2010	75.67	32.17	---	---	43.50	Blaine Tech
	10/4/2010	75.67	32.30	---	---	43.37	Blaine Tech
	4/11/2011	75.67	31.28	---	---	44.39	Blaine Tech
	10/10/2011	75.67	31.51	---	---	44.16	Blaine Tech
	4/16/2012	75.67	31.75	---	---	43.92	Blaine Tech
	7/9/2012	75.67	NM	---	---	NC	Blaine Tech
	10/15/2012	75.67	33.41	---	---	42.26	Blaine Tech
	4/8/2013	75.67	30.68	---	---	44.99	Blaine Tech
	10/7/2013	75.67	35.33	---	---	40.34	Blaine Tech
	4/14/2014	75.67	35.40	---	---	40.27	Blaine Tech
	10/27/2014	75.67	35.81	---	---	39.86	Blaine Tech
	4/20/2015	75.67	36.29	---	---	39.38	Blaine Tech
	10/19/2015	75.67	36.99	---	---	38.68	Blaine Tech
	3/14/2016	75.67	40.70	---	---	34.97	Blaine Tech
	4/11/2016	75.67	38.89	---	---	36.78	Blaine Tech
	6/29/2016	75.67	39.94	---	---	35.73	Blaine Tech
	8/22/2016	75.67	40.14	---	---	35.53	Blaine Tech
	10/3/2016	75.67	40.93	---	---	34.74	Blaine Tech
	4/17/2017	75.67	37.50	---	---	38.17	Blaine Tech
	10/2/2017	75.67	40.26	---	---	35.41	Blaine Tech
	4/16/2018	75.67	40.46	---	---	35.21	Blaine Tech
	11/5/2018	75.67	40.50	---	---	35.17	Blaine Tech
	4/16/2019	75.67	38.39	---	---	37.28	Blaine Tech
	10/28/2019	75.67	40.42	---	---	35.25	Blaine Tech
	5/4/2020	75.67	37.96	---	---	37.71	Blaine Tech
	11/2/2020	75.67	34.83	---	---	40.84	Blaine Tech
	5/3/2021	75.67	38.57	---	---	37.10	Blaine Tech
MW-O-1	4/30/2007	75.48	24.10	23.98	0.12	51.48	Secor
	8/14/2007	75.48	25.31	23.78	1.53	51.39	Geomatrix
	8/21/2007	75.48	23.84	23.58	0.26	51.85	Geomatrix
	8/28/2007	75.48	23.07	23.06	0.01	52.42	Stantec
	9/11/2007	75.48	23.86	23.48	0.38	51.92	Geomatrix
	10/5/2007	75.48	24.67	---	---	50.81	Geomatrix
	11/2/2007	75.48	24.25	---	---	51.23	Geomatrix
	11/12/2007	75.48	24.27	24.25	0.02	51.23	Stantec

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-O-1	12/28/2007	75.48	25.54	25.51	0.03	49.96	Geomatrix
Continued	8/15/2008	75.48	NM	---	---	NC	Envent
	8/19/2008	75.48	25.18	25.13	0.05	50.34	Envent
	10/17/2008	75.48	25.30	---	---	50.18	Envent
	12/19/2008	75.48	26.31	---	---	49.17	Envent
	1/15/2009	75.48	25.84	---	---	49.64	Envent
	4/21/2009	75.48	25.41	---	---	50.07	Envent
	10/19/2009	75.48	26.30	---	---	49.18	Blaine Tech
	10/4/2010	75.48	26.90	---	---	48.58	Blaine Tech
	4/11/2011	75.48	25.59	---	---	49.89	Blaine Tech
	10/10/2011	75.48	26.52	---	---	48.96	Blaine Tech
	4/16/2012	75.48	27.25	---	---	48.23	Blaine Tech
	7/9/2012	75.48	NM	---	---	NC	Blaine Tech
	10/15/2012	75.48	28.94	---	---	46.54	Blaine Tech
	4/8/2013	75.48	28.81	---	---	46.67	Blaine Tech
	10/7/2013	75.48	29.21	---	---	46.27	Blaine Tech
	4/14/2014	75.48	29.82	---	---	45.66	Blaine Tech
	10/27/2014	75.48	29.92	---	---	45.56	Blaine Tech
	4/20/2015	75.48	30.39	---	---	45.09	Blaine Tech
	10/27/2015	75.48	27.67	---	---	47.81	Blaine Tech
	3/14/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/11/2016	75.48	DRY	---	---	NC	Blaine Tech
	6/29/2016	75.48	DRY	---	---	NC	Blaine Tech
	8/22/2016	75.48	DRY	---	---	NC	Blaine Tech
	10/3/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/17/2017	75.48	DRY	---	---	NC	Blaine Tech
	10/2/2017	75.48	DRY	---	---	NC	Blaine Tech
	4/16/2018	75.48	DRY	---	---	NC	Blaine Tech
	11/5/2018	75.48	DRY	---	---	NC	Blaine Tech
	4/16/2019	75.48	32.09	---	---	43.39	Blaine Tech
	10/28/2019	75.48	DRY	---	---	NC	Blaine Tech
	5/4/2020	75.48	31.98	---	---	43.50	Blaine Tech
	8/20/2020	75.48	32.86	---	---	42.62	Blaine Tech
	11/2/2020	75.48	DRY	---	---	NC	Blaine Tech
	2/24/2021	75.48	33.02	---	---	34.37	Blaine Tech
	5/3/2021	75.48	DRY	---	---	34.37	Blaine Tech
MW-O-2	4/30/2007	74.31	22.53	---	---	51.78	Secor
	11/12/2007	71.90	23.10	---	---	48.80	Stantec
	8/15/2008	71.90	NM	---	---	NC	Envent
	10/17/2008	71.90	24.85	---	---	47.05	Envent
	12/19/2008	71.90	25.51	---	---	46.39	Envent
	3/27/2009	71.90	25.22	---	---	46.68	Envent
	4/21/2009	71.90	NM	---	---	NC	Envent
	7/21/2009	71.90	23.63	---	---	48.27	Envent
	10/19/2009	71.90	NM	---	---	NC	Blaine Tech
	11/9/2009	71.90	25.39	---	---	46.51	Kinder Morgan
	10/4/2010	71.90	26.05	---	---	45.85	Blaine Tech
	4/13/2011	71.90	23.31	---	---	48.59	Blaine Tech
	10/10/2011	71.90	27.53	---	---	44.37	Blaine Tech
	1/9/2012	71.90	28.13	---	---	43.77	Blaine Tech
	4/16/2012	71.90	NM	---	---	NC	Blaine Tech
	7/9/2012	71.90	26.53	---	---	45.37	Blaine Tech
	10/15/2012	71.90	26.89	---	---	45.01	Blaine Tech
	1/14/2013	71.90	26.93	---	---	44.97	Blaine Tech
	4/8/2013	71.90	NM	---	---	NC	Blaine Tech
	6/6/2013	71.90	28.99	---	---	42.91	Blaine Tech
	10/7/2013	71.90	29.06	---	---	42.84	Blaine Tech
	4/14/2014	71.90	29.36	---	---	42.54	Blaine Tech
	10/27/2014	71.90	29.81	29.65	0.16	42.22	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-O-2 Continued	4/20/2015	71.90	30.94	29.34	1.60	42.24	Blaine Tech
	5/21/2015	71.90	32.50	27.31	5.19	43.55	Northstar
	5/29/2015	71.90	31.52	30.20	1.32	41.44	Northstar
	6/5/2015	71.90	31.45	30.57	0.88	41.15	Northstar
	6/12/2015	71.90	31.05	30.60	0.45	41.21	Northstar
	6/19/2015	71.90	31.10	30.90	0.20	40.96	Northstar
	6/26/2015	71.90	31.66	31.37	0.29	40.47	Northstar
	10/19/2015	71.90	32.39	30.53	1.86	41.00	Blaine Tech
	3/14/2016	71.90	35.49	34.86	0.63	36.91	Blaine Tech
	4/11/2016	71.90	33.03	32.54	0.49	39.26	Blaine Tech
	6/30/2016	71.90	34.20	---	---	37.70	Kinder Morgan
	8/22/2016	71.90	33.93	---	---	37.97	Kinder Morgan
	10/3/2016	71.90	34.30	34.22	0.08	37.66	Blaine Tech
	4/17/2017	71.90	30.91	30.85	0.06	41.04	Blaine Tech
	10/2/2017	71.90	34.67	---	---	37.23	Blaine Tech
	4/16/2018	71.90	34.18	34.16	0.02	37.74	Blaine Tech
	11/5/2018	71.90	34.30	---	---	37.60	Blaine Tech
	4/16/2019	71.90	31.44	---	---	40.46	Blaine Tech
	10/28/2019	71.90	NM	---	---	NC	Blaine Tech
	5/4/2020	71.90	31.87	---	---	40.03	Blaine Tech
	8/20/2020	71.90	32.08	---	---	39.82	Blaine Tech
	11/2/2020	71.90	30.60	---	---	41.30	Blaine Tech
	2/24/2021	71.90	33.16	---	---	41.37	Blaine Tech
	5/3/2021	71.90	32.94	---	---	38.96	Blaine Tech
MW-SF-1	3/12/2007	78.93	28.71	---	---	50.22	Secor
	4/30/2007	78.93	28.44	---	---	50.49	Secor
	8/28/2007	78.93	27.94	---	---	50.99	Stantec
	11/12/2007	78.93	28.76	---	---	50.17	Stantec
	2/19/2008	78.93	29.50	---	---	49.43	Stantec
	4/14/2008	78.93	29.16	---	---	49.77	Stantec
	8/11/2008	78.93	29.75	---	---	49.18	Stantec
	10/13/2008	78.93	29.86	---	---	49.07	Stantec
	2/23/2009	78.93	30.00	---	---	48.93	Blaine Tech
	4/20/2009	78.93	29.97	---	---	48.96	Blaine Tech
	7/20/2009	78.93	30.98	---	---	47.95	Blaine Tech
	7/22/2009	78.93	30.98	---	---	47.95	Blaine Tech
	10/19/2009	78.93	31.11	---	---	47.82	Blaine Tech
	3/15/2010	78.93	31.74	---	---	47.19	Blaine Tech
	5/24/2010	78.93	30.79	---	---	48.14	Blaine Tech
	5/28/2010	78.93	30.57	---	---	48.36	Blaine Tech
	6/22/2010	78.93	30.84	---	---	48.09	Blaine Tech
	7/12/2010	78.93	30.51	---	---	48.42	Blaine Tech
	10/4/2010	78.93	30.88	---	---	48.05	Blaine Tech
	1/10/2011	78.93	32.51	---	---	46.42	Blaine Tech
	4/11/2011	78.93	29.87	---	---	49.06	Blaine Tech
	7/11/2011	78.93	29.84	---	---	49.09	Blaine Tech
	10/10/2011	78.93	29.60	---	---	49.33	Blaine Tech
	1/9/2012	78.93	31.25	---	---	47.68	Blaine Tech
	4/16/2012	78.93	32.59	---	---	46.34	Blaine Tech
	7/9/2012	78.93	31.24	---	---	47.69	Blaine Tech
	10/15/2012	78.93	32.23	---	---	46.70	Blaine Tech
	1/14/2013	78.93	33.88	---	---	45.05	Blaine Tech
	4/8/2013	78.93	33.38	---	---	45.55	Blaine Tech
	10/7/2013	78.93	37.14	31.72	5.42	46.13	Blaine Tech
	4/14/2014	78.93	37.40	32.69	4.71	45.30	Blaine Tech
	5/6/2014	78.93	39.99	32.82	7.17	44.68	Nieto & Sons
	5/12/2014	78.93	37.31	33.55	3.76	44.63	Nieto & Sons
	5/20/2014	78.93	37.10	34.60	2.50	43.83	Nieto & Sons
	5/27/2014	78.93	36.62	34.30	2.32	44.17	Nieto & Sons

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-1	6/4/2014	78.93	35.98	35.27	0.71	43.52	Nieto & Sons
Continued	6/10/2014	78.93	36.91	34.48	2.43	43.96	Nieto & Sons
	7/3/2014	78.93	36.72	34.71	2.01	43.82	Nieto & Sons
	7/8/2014	78.93	36.60	34.45	2.15	44.05	Blaine Tech
	7/18/2014	78.93	35.18	34.77	0.41	44.08	Blaine Tech
	7/24/2014	78.93	35.30	34.62	0.68	44.17	Blaine Tech
	8/1/2014	78.93	34.74	34.44	0.30	44.43	Blaine Tech
	8/14/2014	78.93	34.75	34.41	0.34	44.45	Blaine Tech
	8/19/2014	78.93	34.66	34.37	0.29	44.50	Blaine Tech
	8/29/2014	78.93	35.65	35.38	0.27	43.50	Blaine Tech
	9/18/2014	78.93	34.85	34.49	0.36	44.37	Blaine Tech
	9/26/2014	78.93	34.78	34.45	0.33	44.41	Blaine Tech
	10/1/2014	78.93	34.77	34.41	0.36	44.45	Blaine Tech
	10/6/2014	78.93	34.78	34.42	0.36	44.44	Blaine Tech
	10/14/2014	78.93	34.65	34.41	0.24	44.47	Blaine Tech
	10/23/2014	78.93	34.84	34.45	0.39	44.40	Blaine Tech
	10/27/2014	78.93	34.80	34.43	0.37	44.43	Blaine Tech
	11/10/2014	78.93	34.91	34.51	0.40	44.34	Blaine Tech
	11/18/2014	78.93	34.80	34.43	0.37	44.43	Blaine Tech
	11/25/2014	78.93	34.53	34.51	0.02	44.42	Blaine Tech
	12/12/2014	78.93	35.18	34.78	0.40	44.07	Blaine Tech
	12/19/2014	78.93	35.34	34.88	0.46	43.96	Blaine Tech
	4/20/2015	78.93	34.89	34.48	0.41	44.37	Blaine Tech
	5/19/2015	78.93	38.45	34.55	3.90	43.60	Northstar
	5/29/2015	78.93	36.36	35.22	1.14	43.48	Northstar
	6/5/2015	78.93	36.50	35.43	1.07	43.29	Northstar
	6/12/2015	78.93	35.80	35.41	0.39	43.44	Northstar
	6/19/2015	78.93	36.02	35.42	0.60	43.39	Northstar
	6/26/2015	78.93	36.60	36.45	0.15	42.45	Northstar
	10/19/2015	78.93	36.35	35.53	0.82	43.24	Blaine Tech
	11/17/2015	78.93	35.65	---	---	43.28	Kinder Morgan
	3/14/2016	78.93	40.40	---	---	38.53	Blaine Tech
	4/11/2016	78.93	37.96	---	---	40.97	Blaine Tech
	6/29/2016	78.93	39.05	---	---	39.88	Blaine Tech
	8/22/2016	78.93	39.04	---	---	39.87	Blaine Tech
	10/3/2016	78.93	39.20	---	---	39.73	Blaine Tech
	4/17/2017	78.93	35.75	---	---	43.18	Blaine Tech
	10/2/2017	78.93	39.98	---	---	38.95	Blaine Tech
	4/16/2018	78.93	39.43	---	---	39.50	Blaine Tech
	11/5/2018	78.93	39.20	---	---	39.73	Blaine Tech
	4/16/2019	78.93	37.94	---	---	40.99	Blaine Tech
	10/28/2019	78.93	39.41	---	---	39.52	Blaine Tech
	5/4/2020	78.93	36.65	---	---	42.28	Blaine Tech
	11/2/2020	78.93	37.39	---	---	41.54	Blaine Tech
	5/3/2021	78.93	38.03	---	---	40.90	Blaine Tech
MW-SF-2	4/30/2007	78.45	28.35	28.34	0.01	50.11	Secor
	11/12/2007	78.45	29.18	28.71	0.47	49.65	Stantec
	8/12/2008	78.45	31.11	---	---	47.34	Envent
	10/17/2008	78.45	31.55	31.50	0.05	46.94	Envent
	12/18/2008	78.53	32.75	32.55	0.20	45.94	Envent
	1/15/2009	78.53	30.84	30.57	0.27	47.91	Envent
	3/24/2009	78.53	28.85	---	---	49.68	Envent
	4/21/2009	78.53	29.98	---	---	48.55	Envent
	7/21/2009	78.53	29.85	---	---	48.68	Envent
	10/19/2009	78.53	NM	---	---	NC	Blaine Tech
	12/9/2009	78.53	31.45	---	---	47.08	Kinder Morgan
	10/4/2010	78.53	30.96	30.75	0.21	47.74	Blaine Tech
	1/10/2011	78.53	32.62	32.50	0.12	46.01	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-2	4/11/2011	78.53	29.83	---	---	48.70	Blaine Tech
Continued	7/11/2011	78.53	NM	---	---	NC	
	10/10/2011	78.53	29.82	---	---	48.71	Blaine Tech
	1/9/2012	78.53	30.52	---	---	48.01	Blaine Tech
	4/16/2012	78.53	31.28	---	---	47.25	Blaine Tech
	7/9/2012	78.53	33.18	---	---	45.35	Blaine Tech
	10/15/2012	78.53	32.11	---	---	46.42	Blaine Tech
	1/14/2013	78.53	33.59	---	---	44.94	Blaine Tech
	4/8/2013	78.53	33.32	---	---	45.21	Blaine Tech
	10/7/2013	78.53	34.58	33.08	1.50	45.15	Blaine Tech
	4/14/2014	78.53	37.50	33.27	4.23	44.41	Blaine Tech
	5/6/2014	78.53	37.71	33.24	4.47	44.40	Nieto & Sons
	5/12/2014	78.53	37.53	33.34	4.19	44.35	Nieto & Sons
	5/20/2014	78.53	37.62	33.51	4.11	44.20	Nieto & Sons
	5/27/2014	78.53	38.24	33.77	4.47	43.87	Nieto & Sons
	6/4/2014	78.53	34.63	---	---	43.90	Nieto & Sons
	6/10/2014	78.53	38.49	34.00	4.49	43.63	Nieto & Sons
	8/8/2014	78.53	36.23	33.82	2.41	44.23	Blaine Tech
	8/13/2014	78.53	36.75	33.59	3.16	44.31	Blaine Tech
	8/19/2014	78.53	36.90	33.60	3.30	44.27	Blaine Tech
	8/29/2014	78.53	37.11	33.53	3.58	44.28	Blaine Tech
	9/5/2014	78.53	37.09	33.51	3.58	44.30	Blaine Tech
	9/11/2014	78.53	37.12	33.51	3.61	44.30	Blaine Tech
	9/18/2014	78.53	36.89	33.60	3.29	44.27	Blaine Tech
	9/26/2014	78.53	37.28	33.54	3.74	44.24	Blaine Tech
	10/1/2014	78.53	37.18	33.56	3.62	44.25	Blaine Tech
	10/6/2014	78.53	37.16	33.59	3.57	44.23	Blaine Tech
	10/14/2014	78.53	37.15	33.64	3.51	44.19	Blaine Tech
	10/23/2014	78.53	37.24	33.61	3.63	44.19	Blaine Tech
	10/27/2014	78.53	37.04	33.54	3.50	44.29	Blaine Tech
	11/3/2014	78.53	37.14	33.55	3.59	44.26	Blaine Tech
	11/10/2014	78.53	37.33	33.56	3.77	44.22	Blaine Tech
	11/18/2014	78.53	37.21	33.64	3.57	44.18	Blaine Tech
	11/25/2014	78.53	37.40	33.69	3.71	44.10	Blaine Tech
	12/3/2014	78.53	37.16	33.60	3.56	44.22	Blaine Tech
	12/12/2014	78.53	38.05	33.91	4.14	43.79	Blaine Tech
	12/19/2014	78.53	38.40	33.95	4.45	43.69	Blaine Tech
	4/20/2015	78.53	36.15	34.73	1.42	43.52	Blaine Tech
	6/25/2015	78.53	38.95	35.57	3.38	42.28	Blaine Tech
	10/21/2015	78.53	36.32	36.13	0.19	42.36	Kinder Morgan
	3/16/2016	78.53	39.27	---	---	39.26	Kinder Morgan
	4/11/2016	78.53	37.47	---	---	41.06	Blaine Tech
	6/29/2016	78.53	38.08	---	---	40.45	Blaine Tech
	8/22/2016	78.53	38.83	---	---	39.70	Blaine Tech
	10/3/2016	78.53	39.60	---	---	38.93	Blaine Tech
	3/10/2017	78.53	36.47	---	---	42.06	CH2M
	4/17/2017	78.53	35.78	---	---	42.75	Blaine Tech
	10/2/2017	78.53	39.68	---	---	38.85	Blaine Tech
	4/16/2018	78.53	39.47	---	---	39.06	Blaine Tech
	11/5/2018	78.53	39.55	---	---	38.98	Blaine Tech
	4/16/2019	78.53	37.95	---	---	40.58	Blaine Tech
	10/28/2019	78.53	39.26	---	---	39.27	Blaine Tech
	5/4/2020	78.53	36.66	---	---	41.87	Blaine Tech
	11/2/2020	78.53	37.14	---	---	41.39	Blaine Tech
	5/3/2021	78.53	37.82	---	---	40.71	Blaine Tech
MW-SF-3	4/30/2007	77.62	27.72	27.45	0.27	50.12	Secor
	11/12/2007	77.62	29.34	28.28	1.06	49.13	Stantec
	8/12/2008	77.62	30.30	29.05	1.25	48.32	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-3	10/17/2008	77.62	29.45	---	---	48.17	Envent
Continued	12/18/2008	78.12	31.08	30.82	0.26	47.25	Envent
	1/15/2009	78.12	29.96	29.94	0.02	48.18	Envent
	3/20/2009	78.12	31.10	---	---	47.02	Envent
	3/24/2009	78.12	27.82	---	---	50.30	Envent
	4/21/2009	78.12	29.51	29.50	0.01	48.62	Envent
	7/21/2009	78.12	30.07	---	---	48.05	Envent
	10/19/2009	78.12	NM	---	---	NC	Blaine Tech
	11/6/2009	78.12	30.37	30.35	0.02	47.77	Kinder Morgan
	12/9/2009	78.12	30.53	---	---	47.59	Kinder Morgan
	9/3/2010	78.12	30.97	30.42	0.55	47.59	Kinder Morgan
	10/4/2010	78.12	30.88	30.30	0.58	47.70	Blaine Tech
	4/12/2011	78.12	29.44	---	---	48.68	Blaine Tech
	10/10/2011	78.12	30.75	---	---	47.37	Blaine Tech
	4/16/2012	78.12	NM	---	---	NC	Blaine Tech
	7/9/2012	78.12	NM	---	---	NC	Blaine Tech
	10/15/2012	78.12	32.47	---	---	45.65	Blaine Tech
	5/24/2013	78.12	33.35	32.51	0.84	45.44	Blaine Tech
	9/25/2013	78.12	34.40	---	---	43.72	Blaine Tech
	10/7/2013	78.12	NM	---	---	NC	Blaine Tech
	11/14/2013	78.12	33.26	---	---	44.86	Blaine Tech
	4/18/2014	78.12	33.72	33.62	0.10	44.48	Blaine Tech
	8/8/2014	78.12	34.07	33.71	0.36	44.34	Blaine Tech
	10/14/2014	78.12	34.55	33.92	0.63	44.07	Blaine Tech
	10/23/2014	78.12	34.57	33.94	0.63	44.05	Blaine Tech
	10/27/2014	78.12	34.49	33.85	0.64	44.14	Blaine Tech
	11/10/2014	78.12	34.65	33.94	0.71	44.04	Blaine Tech
	11/18/2014	78.12	34.62	33.88	0.74	44.09	Blaine Tech
	11/25/2014	78.12	34.22	33.94	0.28	44.12	Blaine Tech
	12/12/2014	78.12	34.89	34.38	0.51	43.64	Blaine Tech
	12/19/2014	78.12	35.04	34.43	0.61	43.57	Blaine Tech
	4/20/2015	78.12	34.52	---	---	43.60	Blaine Tech
	10/21/2015	78.12	35.18	---	---	42.94	Kinder Morgan
	3/14/2016	78.12	39.43	39.40	0.03	38.71	Blaine Tech
	4/11/2016	78.12	37.17	---	---	40.95	Blaine Tech
	6/30/2016	78.12	38.28	---	---	39.84	Kinder Morgan
	8/22/2016	78.12	38.33	---	---	39.79	Kinder Morgan
	10/3/2016	78.12	39.40	---	---	38.72	Kinder Morgan
	3/8/2017	78.12	35.75	---	---	42.37	CH2M
	4/17/2017	78.12	35.15	---	---	42.97	Blaine Tech
	10/2/2017	78.12	39.20	---	---	38.92	Blaine Tech
	4/16/2018	78.12	38.81	---	---	39.31	Blaine Tech
	11/5/2018	78.12	38.69	---	---	39.43	Blaine Tech
	4/16/2019	78.12	NM	---	---	NC	Blaine Tech
	10/28/2019	78.12	38.77	---	---	39.35	Blaine Tech
	5/4/2020	78.12	36.19	---	---	41.93	Blaine Tech
	11/2/2020	78.12	36.55	---	---	41.57	Blaine Tech
	5/3/2021	78.12	37.51	---	---	40.61	Blaine Tech
MW-SF-4	3/12/2007	79.38	30.01	29.41	0.60	49.85	Secor
	4/30/2007	79.38	29.96	29.11	0.85	50.10	Secor
	8/14/2007	79.38	30.34	28.38	1.96	50.60	Geomatrix
	8/28/2007	79.38	29.95	28.30	1.65	50.74	Stantec
	9/11/2007	79.38	29.98	28.43	1.55	50.63	Geomatrix
	10/5/2007	79.38	30.68	28.85	1.83	50.15	Geomatrix
	10/12/2007	79.38	30.27	29.96	0.31	49.36	Geomatrix
	10/19/2007	79.38	30.28	---	---	49.10	Geomatrix
	10/26/2007	79.38	30.52	---	---	48.86	Geomatrix
	11/2/2007	79.38	30.68	---	---	48.70	Geomatrix

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-4	11/12/2007	79.38	29.70	29.69	0.01	49.69	Stantec
Continued	12/21/2007	79.38	30.69	---	---	48.69	Geomatrix
	2/19/2008	79.38	30.22	---	---	49.16	Stantec
	3/21/2008	79.38	30.07	---	---	49.31	Envent
	4/14/2008	79.38	29.95	---	---	49.43	Stantec
	8/8/2008	79.38	30.51	---	---	48.87	Envent
	8/11/2008	79.38	30.57	---	---	48.81	Stantec
	10/16/2008	79.38	30.77	---	---	48.61	Envent
	1/15/2009	79.38	31.14	---	---	48.24	Envent
	2/20/2009	79.38	30.84	---	---	48.54	Envent
	2/23/2009	79.38	30.96	---	---	48.42	Blaine Tech
	4/20/2009	79.38	30.02	29.94	0.08	49.42	Blaine Tech
	4/28/2009	79.38	30.78	---	---	48.60	Envent
	7/17/2009	79.38	31.85	---	---	47.53	Envent
	7/20/2009	79.38	31.65	31.61	0.04	47.76	Blaine Tech
	7/22/2009	79.38	31.65	31.61	0.04	47.76	Blaine Tech
	10/19/2009	79.38	31.93	31.90	0.03	47.47	Blaine Tech
	3/15/2010	79.38	31.95	31.91	0.04	47.46	Blaine Tech
	5/24/2010	79.38	31.60	---	---	47.78	Blaine Tech
	5/28/2010	79.38	26.40	---	---	52.98	Blaine Tech
	6/22/2010	79.38	31.63	---	---	47.75	Blaine Tech
	7/12/2010	79.38	31.37	---	---	48.01	Blaine Tech
	10/4/2010	79.38	31.81	---	---	47.57	Blaine Tech
	1/10/2011	79.38	32.99	---	---	46.39	Blaine Tech
	4/11/2011	79.38	30.85	---	---	48.53	Blaine Tech
	7/11/2011	79.38	30.35	---	---	49.03	Blaine Tech
	10/10/2011	79.38	NM	---	---	NC	Blaine Tech
	1/9/2012	79.38	32.07	---	---	47.31	Blaine Tech
	4/16/2012	79.38	33.35	---	---	46.03	Blaine Tech
	7/9/2012	79.38	32.11	---	---	47.27	Blaine Tech
	10/15/2012	79.38	34.04	---	---	45.34	Blaine Tech
	1/14/2013	79.38	34.52	---	---	44.86	Blaine Tech
	4/8/2013	79.38	DRY	---	---	NC	Blaine Tech
	10/7/2013	79.38	DRY	---	---	NC	Blaine Tech
	4/25/2014	79.38	40.03	34.23	5.80	43.96	Blaine Tech
	5/6/2014	79.38	39.78	33.91	5.87	44.27	Nieto & Sons
	5/12/2014	79.38	37.02	34.64	2.38	44.25	Nieto & Sons
	5/20/2014	79.38	36.60	35.60	1.00	43.58	Nieto & Sons
	5/27/2014	79.38	36.12	35.45	0.67	43.79	Nieto & Sons
	6/4/2014	79.38	36.54	35.91	0.63	43.34	Nieto & Sons
	6/10/2014	79.38	37.02	35.38	1.64	43.66	Nieto & Sons
	7/3/2014	79.38	36.98	35.63	1.35	43.47	Nieto & Sons
	7/8/2014	79.38	36.78	35.34	1.44	43.74	Blaine Tech
	7/18/2014	79.38	35.88	35.55	0.33	43.76	Blaine Tech
	7/24/2014	79.38	35.98	35.42	0.56	43.85	Blaine Tech
	8/1/2014	79.38	35.57	35.30	0.27	44.02	Blaine Tech
	8/14/2014	79.38	35.42	35.23	0.19	44.11	Blaine Tech
	8/19/2014	79.38	35.36	35.21	0.15	44.14	Blaine Tech
	8/29/2014	79.38	35.32	35.20	0.12	44.16	Blaine Tech
	9/18/2014	79.38	35.55	35.30	0.25	44.03	Blaine Tech
	9/26/2014	79.38	35.56	35.30	0.26	44.03	Blaine Tech
	10/1/2014	79.38	35.56	35.24	0.32	44.07	Blaine Tech
	10/6/2014	79.38	35.48	35.22	0.26	44.11	Blaine Tech
	10/14/2014	79.38	35.33	35.20	0.13	44.15	Blaine Tech
	10/23/2014	79.38	35.51	35.22	0.29	44.10	Blaine Tech
	10/27/2014	79.38	35.54	35.25	0.29	44.07	Blaine Tech
	11/18/2014	79.38	35.56	35.25	0.31	44.07	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-4	11/25/2014	79.38	35.66	35.32	0.34	43.99	Blaine Tech
Continued	12/12/2014	79.38	35.81	35.58	0.23	43.75	Blaine Tech
	12/19/2014	79.38	35.75	35.62	0.13	43.73	Blaine Tech
	4/20/2015	79.38	37.78	35.29	2.49	43.58	Blaine Tech
	5/19/2015	79.38	39.22	35.28	3.94	43.29	Northstar
	5/29/2015	79.38	37.10	35.80	1.30	43.31	Northstar
	6/5/2015	79.38	36.85	36.15	0.70	43.09	Northstar
	6/12/2015	79.38	36.55	36.15	0.40	43.15	Northstar
	6/19/2015	79.38	36.68	36.42	0.26	42.91	Northstar
	6/26/2015	79.38	37.23	36.96	0.27	42.36	Northstar
	10/19/2015	79.38	38.12	36.25	1.87	42.75	Blaine Tech
	11/17/2015	79.38	37.83	35.98	1.85	43.02	Kinder Morgan
	3/14/2016	79.38	40.80	---	---	38.58	Kinder Morgan
	4/11/2016	79.38	37.76	---	---	41.62	Blaine Tech
	6/29/2016	79.38	39.54	---	---	39.84	Blaine Tech
	8/22/2016	79.38	39.76	---	---	39.62	Blaine Tech
	10/3/2016	79.38	41.05	---	---	38.33	Blaine Tech
	4/17/2017	79.38	36.67	---	---	42.71	Blaine Tech
	10/2/2017	79.38	40.07	---	---	39.31	Blaine Tech
	4/16/2018	79.38	39.90	---	---	39.48	Blaine Tech
	11/5/2018	79.38	39.78	---	---	39.60	Blaine Tech
	4/16/2019	79.38	38.45	---	---	40.93	Blaine Tech
	10/28/2019	79.38	39.75	---	---	39.63	Blaine Tech
	5/4/2020	79.38	37.13	---	---	42.25	Blaine Tech
	11/2/2020	79.38	37.46	---	---	41.92	Blaine Tech
	5/3/2021	79.38	38.30	---	---	41.08	Blaine Tech
MW-SF-5	4/30/2007	79.74	29.54	---	---	50.20	Secor
	8/21/2007	79.74	28.36	---	---	51.38	Geomatrix
	8/28/2007	79.74	28.84	---	---	50.90	Stantec
	10/5/2007	79.74	29.50	---	---	50.24	Geomatrix
	11/2/2007	79.74	31.50	---	---	48.24	Geomatrix
	11/12/2007	79.74	29.93	---	---	49.81	Stantec
	12/21/2007	79.74	31.00	---	---	48.74	Geomatrix
	4/14/2008	79.74	30.20	---	---	49.54	Stantec
	8/11/2008	79.74	30.85	---	---	48.89	Stantec
	10/13/2008	79.74	30.93	---	---	48.81	Stantec
	4/20/2009	79.74	30.99	---	---	48.75	Blaine Tech
	10/19/2009	79.74	NM	---	---	NC	Blaine Tech
	5/24/2010	79.74	31.55	---	---	48.19	Blaine Tech
	5/28/2010	79.74	31.44	---	---	48.30	Blaine Tech
	6/22/2010	79.74	31.57	---	---	48.17	Blaine Tech
	10/4/2010	79.74	31.39	---	---	48.35	Blaine Tech
	1/10/2011	79.74	33.80	---	---	45.94	Blaine Tech
	4/11/2011	79.74	31.03	---	---	48.71	Blaine Tech
	7/11/2011	79.74	NM	---	---	NC	
	10/10/2011	79.74	31.28	---	---	48.46	Blaine Tech
	1/9/2012	79.74	32.12	---	---	47.62	Blaine Tech
	4/16/2012	79.74	33.30	---	---	46.44	Blaine Tech
	7/9/2012	79.74	34.45	---	---	45.29	Blaine Tech
	10/15/2012	79.74	33.28	---	---	46.46	Blaine Tech
	1/14/2013	79.74	33.37	---	---	46.37	Blaine Tech
	4/8/2013	79.74	34.28	---	---	45.46	Blaine Tech
	10/7/2013	79.74	34.58	---	---	45.16	Blaine Tech
	4/14/2014	79.74	35.33	---	---	44.41	Blaine Tech
	10/27/2014	79.74	35.48	---	---	44.26	Blaine Tech
	4/20/2015	79.74	36.05	---	---	43.69	Blaine Tech
	10/19/2015	79.74	36.82	---	---	42.92	Blaine Tech
	3/14/2016	79.74	DRY	---	---	NC	Blaine Tech
	4/11/2016	79.74	DRY	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-5 Continued	6/29/2016	79.74	DRY	---	---	NC	Blaine Tech
	8/22/2016	79.74	DRY	---	---	NC	Blaine Tech
	10/3/2016	79.74	DRY	---	---	NC	Blaine Tech
	4/17/2017	79.74	36.88	---	---	42.86	Blaine Tech
	10/2/2017	79.74	DRY	---	---	NC	Blaine Tech
	4/16/2018	79.74	DRY	---	---	NC	Blaine Tech
	11/5/2018	79.74	DRY	---	---	NC	Blaine Tech
	4/16/2019	79.74	DRY	---	---	NC	Blaine Tech
	10/28/2019	79.74	DRY	---	---	NC	Blaine Tech
	5/4/2020	79.74	37.86	---	---	41.88	Blaine Tech
	11/2/2020	79.74	DRY	---	---	NC	Blaine Tech
	5/3/2021	79.74	DRY	---	---	NC	Blaine Tech
MW-SF-6	4/30/2007	79.96	27.44	27.20	0.24	52.71	Secor
	11/12/2007	79.96	27.14	---	---	52.82	Stantec
	8/12/2008	79.96	29.82	---	---	50.14	Envent
	10/17/2008	79.96	29.75	---	---	50.21	Envent
	12/18/2008	76.8	30.73	---	---	46.07	Envent
	1/15/2009	76.8	31.35	---	---	45.45	Envent
	3/24/2009	76.80	30.50	---	---	46.30	Envent
	4/21/2009	76.80	28.45	---	---	48.35	Envent
	7/21/2009	76.80	27.22	---	---	49.58	Envent
	10/19/2009	76.80	NM	---	---	NC	Blaine Tech
	11/6/2009	76.80	29.10	---	---	47.70	Kinder Morgan
	12/9/2009	76.80	31.35	---	---	45.45	Kinder Morgan
	10/4/2010	76.80	29.09	---	---	47.71	Blaine Tech
	1/10/2011	76.80	30.87	---	---	45.93	Blaine Tech
	4/11/2011	76.80	28.16	---	---	48.64	Blaine Tech
	7/11/2011	76.80	NM	---	---	NC	
	10/10/2011	76.80	28.21	---	---	48.59	Blaine Tech
	1/9/2012	76.80	29.03	---	---	47.77	Blaine Tech
	4/16/2012	76.80	29.66	---	---	47.14	Blaine Tech
	7/9/2012	76.80	31.46	---	---	45.34	Blaine Tech
	10/15/2012	76.80	31.44	---	---	45.36	Blaine Tech
	1/14/2013	76.80	31.53	---	---	45.27	Blaine Tech
	4/8/2013	76.80	30.21	28.81	1.40	47.71	Blaine Tech
	10/7/2013	76.80	NM	---	---	NC	Blaine Tech
	11/14/2013	76.80	31.90	---	---	44.90	Blaine Tech
	4/18/2014	76.80	33.30	32.15	1.15	44.42	Blaine Tech
	8/8/2014	76.8	34.50	33.31	1.19	43.25	Blaine Tech
	8/13/2014	76.8	32.95	32.54	0.41	44.18	Blaine Tech
	8/19/2014	76.8	32.87	32.62	0.25	44.13	Blaine Tech
	8/29/2014	76.8	32.79	32.56	0.23	44.19	Blaine Tech
	9/5/2014	76.8	32.81	32.59	0.22	44.17	Blaine Tech
	9/18/2014	76.8	32.95	32.65	0.30	44.09	Blaine Tech
	9/26/2014	76.8	32.94	32.61	0.33	44.12	Blaine Tech
	10/1/2014	76.8	32.91	32.60	0.31	44.14	Blaine Tech
	10/6/2014	76.8	32.90	32.61	0.29	44.13	Blaine Tech
	10/14/2014	76.8	33.72	33.60	0.12	43.18	Blaine Tech
	10/23/2014	76.8	34.57	33.94	0.63	42.73	Blaine Tech
	10/27/2014	76.8	32.92	32.58	0.34	44.15	Blaine Tech
	11/18/2014	76.8	32.99	32.62	0.37	44.11	Blaine Tech
	11/25/2014	76.8	32.66	32.58	0.08	44.20	Blaine Tech
	12/12/2014	76.8	33.45	33.07	0.38	43.65	Blaine Tech
	12/19/2014	76.8	33.60	33.15	0.45	43.56	Blaine Tech
	4/20/2015	76.8	33.23	33.11	0.12	43.67	Blaine Tech
	10/21/2015	76.8	34.28	---	---	42.52	Kinder Morgan
	3/14/2016	76.8	38.10	38.08	0.02	38.72	Blaine Tech
	4/11/2016	76.8	35.83	---	---	40.97	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-6 Continued	6/29/2016	76.8	36.89	---	---	39.91	Blaine Tech
	8/22/2016	76.8	37.11	---	---	39.69	Blaine Tech
	10/3/2016	76.8	38.45	---	---	38.35	Blaine Tech
	4/17/2017	76.8	34.03	---	---	42.77	Blaine Tech
	10/2/2017	76.8	37.89	---	---	38.91	Blaine Tech
	4/16/2018	76.8	37.65	---	---	39.15	Blaine Tech
	11/5/2018	76.8	37.70	---	---	39.10	Blaine Tech
	4/16/2019	76.8	36.13	---	---	40.67	Blaine Tech
	10/28/2019	76.8	37.41	---	---	39.39	Blaine Tech
	5/4/2020	76.8	34.90	---	---	41.90	Blaine Tech
	11/2/2020	76.8	35.35	---	---	41.45	Blaine Tech
	5/3/2021	76.8	35.86	---	---	40.94	Blaine Tech
MW-SF-9	4/30/2007	74.1	22.66	---	---	51.44	Secor
	8/14/2007	74.1	28.73	28.61	0.12	45.47	Geomatrix
	8/21/2007	74.1	26.55	---	---	47.55	Geomatrix
	8/28/2007	74.1	20.55	---	---	53.55	Stantec
	9/11/2007	74.1	19.40	---	---	54.70	Geomatrix
	10/5/2007	74.1	26.84	---	---	47.26	Geomatrix
	11/2/2007	74.1	22.76	---	---	51.34	Geomatrix
	11/12/2007	74.1	22.96	---	---	51.14	Stantec
	12/21/2007	74.1	24.05	---	---	50.05	Geomatrix
	4/14/2008	74.1	24.23	---	---	49.87	Stantec
	10/13/2008	74.1	24.83	---	---	49.27	Stantec
	4/20/2009	74.10	25.27	---	---	48.83	Blaine Tech
	10/19/2009	74.10	26.45	---	---	47.65	Blaine Tech
	5/24/2010	74.10	25.80	---	---	48.30	Blaine Tech
	5/28/2010	74.10	25.66	---	---	48.44	Blaine Tech
	6/22/2010	74.10	25.84	---	---	48.26	Blaine Tech
	10/4/2010	74.10	26.10	---	---	48.00	Blaine Tech
	1/10/2011	74.10	27.41	---	---	46.69	Blaine Tech
	4/11/2011	74.10	24.16	---	---	49.94	Blaine Tech
	7/11/2011	74.10	NM	---	---	NC	
	10/10/2011	74.10	25.02	---	---	49.08	Blaine Tech
	1/9/2012	74.10	25.98	---	---	48.12	Blaine Tech
	4/16/2012	74.10	25.92	---	---	48.18	Blaine Tech
	7/9/2012	74.10	26.44	---	---	47.66	Blaine Tech
	10/15/2012	74.10	NM	---	---	NC	Blaine Tech
	4/8/2013	74.10	DRY	---	---	NC	Blaine Tech
	6/6/2013	74.10	28.53	---	---	45.57	Blaine Tech
	10/7/2013	74.10	28.95	---	---	45.15	Blaine Tech
	4/25/2014	74.10	34.75	27.95	6.80	44.89	Blaine Tech
	5/5/2014	74.10	37.81	31.76	6.05	41.22	Nieto & Sons
	5/12/2014	74.10	32.32	29.11	3.21	44.40	Nieto & Sons
	5/20/2014	74.10	30.75	29.95	0.80	44.00	Nieto & Sons
	5/27/2014	74.1	38.08	32.32	5.76	40.71	Nieto & Sons
	6/4/2014	74.1	32.19	28.61	3.58	44.83	Nieto & Sons
	6/10/2014	74.1	36.27	28.85	7.42	43.88	Nieto & Sons
	7/3/2014	74.1	39.26	32.59	6.67	40.28	Nieto & Sons
	7/8/2014	74.1	36.40	28.60	7.80	44.06	Blaine Tech
	7/18/2014	74.1	31.04	29.66	1.38	44.18	Blaine Tech
	7/24/2014	74.1	31.15	29.85	1.30	44.01	Blaine Tech
	8/1/2014	74.1	30.25	29.85	0.40	44.18	Blaine Tech
	8/14/2014	74.1	30.13	29.82	0.31	44.22	Blaine Tech
	8/19/2014	74.1	30.08	29.85	0.23	44.21	Blaine Tech
	8/29/2014	74.1	30.10	29.81	0.29	44.24	Blaine Tech
	9/5/2014	74.1	30.13	29.84	0.29	44.21	Blaine Tech
	9/11/2014	74.1	29.49	28.47	1.02	45.44	Blaine Tech
	9/18/2014	74.1	30.29	29.90	0.39	44.13	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-9	9/26/2014	74.1	30.25	29.84	0.41	44.18	Blaine Tech
Continued	10/1/2014	74.1	30.24	29.84	0.40	44.19	Blaine Tech
	10/6/2014	74.1	30.24	29.83	0.41	44.19	Blaine Tech
	10/14/2014	74.1	30.12	29.81	0.31	44.23	Blaine Tech
	10/23/2014	74.1	30.27	29.85	0.42	44.17	Blaine Tech
	10/27/2014	74.1	30.29	29.89	0.40	44.14	Blaine Tech
	11/18/2014	74.1	30.35	29.86	0.49	44.15	Blaine Tech
	11/25/2014	74.1	30.42	29.91	0.51	44.10	Blaine Tech
	12/12/2014	74.1	30.65	30.10	0.55	43.90	Blaine Tech
	12/19/2014	74.1	30.80	30.13	0.67	43.85	Blaine Tech
	4/20/2015	74.1	36.69	27.67	9.02	44.76	Blaine Tech
	5/19/2015	74.1	35.68	26.83	8.85	45.63	Blaine Tech
	5/21/2015	74.1	32.50	27.31	5.19	45.83	Northstar
	5/29/2015	74.1	32.95	30.10	2.85	43.47	Northstar
	6/2/2015	74.1	31.67	30.45	1.22	43.42	Northstar
	6/5/2015	74.10	31.85	30.60	1.25	43.27	Northstar
	6/12/2015	74.10	31.28	30.75	0.53	43.25	Northstar
	6/19/2015	74.10	31.30	31.00	0.30	43.04	Northstar
	6/26/2015	74.10	31.20	29.50	1.70	44.29	Northstar
	8/11/2015	74.10	36.90	29.90	7.00	42.90	Northstar
	8/18/2015	74.10	35.19	30.25	4.94	42.94	Northstar
	8/28/2015	74.10	31.60	30.75	0.85	43.19	Kinder Morgan
	9/1/2015	74.10	31.78	30.90	0.88	43.04	Kinder Morgan
	10/16/2015	74.10	31.60	31.09	0.51	42.92	Blaine Tech
	10/19/2015	74.10	31.44	31.04	0.40	42.99	Kinder Morgan
	10/30/2015	74.10	32.60	32.06	0.54	41.94	Kinder Morgan
	11/17/2015	74.10	31.71	31.68	0.03	42.41	Kinder Morgan
	3/14/2016	74.10	34.14	---	---	39.96	Blaine Tech
	4/11/2016	74.10	32.89	---	---	41.21	Blaine Tech
	6/29/2016	74.10	34.00	---	---	40.10	Blaine Tech
	5/4/2020	74.10	DRY	---	---	NC	Blaine Tech
	11/2/2020	74.10	DRY	---	---	NC	Blaine Tech
	5/3/2021	74.10	DRY	---	---	NC	Blaine Tech
MW-SF-10	10/17/2008	76.53	27.49	---	---	49.04	Envent
	10/19/2009	76.53	28.61	---	---	47.92	Blaine Tech
	10/4/2010	76.53	28.50	28.36	0.14	48.14	Blaine Tech
	4/11/2011	76.53	27.41	27.37	0.04	49.15	Blaine Tech
	10/10/2011	76.53	27.60	---	---	48.93	Blaine Tech
	4/16/2012	76.53	28.81	---	---	47.72	Blaine Tech
	7/9/2012	76.53	NM	---	---	NC	Blaine Tech
	10/15/2012	76.53	29.27	---	---	47.26	Blaine Tech
	4/8/2013	76.53	DRY	---	---	NC	Blaine Tech
	10/7/2013	76.53	DRY	---	---	NC	Blaine Tech
	4/14/2014	76.53	DRY	---	---	NC	Blaine Tech
	10/27/2014	76.53	DRY	---	---	NC	Blaine Tech
	4/20/2015	76.53	DRY	---	---	NC	Blaine Tech
	10/19/2015	76.53	DRY	---	---	NC	Blaine Tech
	3/14/2016	76.53	DRY	---	---	NC	Blaine Tech
	4/11/2016	76.53	DRY	---	---	NC	Blaine Tech
	6/29/2016	76.53	DRY	---	---	NC	Blaine Tech
	8/22/2016	76.53	DRY	---	---	NC	Blaine Tech
	10/3/2016	76.53	DRY	---	---	NC	Blaine Tech
	4/17/2017	76.53	DRY	---	---	NC	Blaine Tech
	10/2/2017	76.53	DRY	---	---	NC	Blaine Tech
	4/16/2018	76.53	DRY	---	---	NC	Blaine Tech
	11/5/2018	76.53	DRY	---	---	NC	Blaine Tech
	4/16/2019	76.53	DRY	---	---	NC	Blaine Tech
	10/28/2019	76.53	DRY	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-10 Continued	5/4/2020	76.53	DRY	---	---	NC	Blaine Tech
	11/2/2020	76.53	DRY	---	---	NC	Blaine Tech
	5/3/2021	76.53	DRY	---	---	NC	Blaine Tech
MW-SF-11	8/14/2007	78.56	28.58	28.30	0.28	50.20	Geomatrix
	8/21/2007	78.56	28.76	28.63	0.13	49.90	Geomatrix
	8/28/2007	78.56	28.22	---	---	50.34	Stantec
	9/11/2007	78.56	26.90	---	---	51.66	Geomatrix
	10/5/2007	78.56	28.43	---	---	50.13	Geomatrix
	11/2/2007	78.56	29.48	29.38	0.10	49.16	Geomatrix
	11/12/2007	78.56	29.03	---	---	49.53	Stantec
	8/15/2008	78.56	30.13	---	---	48.43	Envent
	10/17/2008	78.56	30.50	---	---	48.06	Envent
	12/18/2008	78.56	29.92	---	---	48.64	Envent
	1/15/2009	78.56	30.32	---	---	48.24	Envent
	3/24/2009	78.56	31.05	---	---	47.51	Envent
	4/21/2009	78.56	30.03	---	---	48.53	Envent
	7/21/2009	78.56	30.89	---	---	47.67	Envent
	10/19/2009	78.56	NM	---	---	NC	Blaine Tech
	11/9/2009	78.56	31.00	---	---	47.56	Kinder Morgan
	9/3/2010	78.56	31.22	---	---	47.34	Kinder Morgan
	10/4/2010	78.56	30.94	---	---	47.62	Blaine Tech
	4/12/2011	78.56	30.82	---	---	47.74	Blaine Tech
	10/10/2011	78.56	30.10	---	---	48.46	Blaine Tech
	4/16/2012	78.56	NM	---	---	NC	Blaine Tech
	7/9/2012	78.56	NM	---	---	NC	Blaine Tech
	10/15/2012	78.56	33.28	---	---	45.28	Blaine Tech
	4/8/2013	78.56	33.11	---	---	45.45	Blaine Tech
	10/7/2013	78.56	33.91	---	---	44.65	Blaine Tech
	4/14/2014	78.56	35.20	34.95	0.25	43.56	Blaine Tech
	5/5/2014	78.56	36.52	33.71	2.81	44.29	Nieto & Sons
	5/12/2014	78.56	35.45	33.87	1.58	44.37	Nieto & Sons
	5/27/2014	78.56	35.38	34.65	0.73	43.76	Nieto & Sons
	6/4/2014	78.56	35.40	35.32	0.08	43.22	Nieto & Sons
	8/8/2014	78.56	36.22	33.11	3.11	44.83	Blaine Tech
	8/13/2014	78.56	36.22	33.47	2.75	44.54	Blaine Tech
	8/19/2014	78.56	36.46	33.94	2.52	44.12	Blaine Tech
	8/29/2014	78.56	36.68	33.83	2.85	44.16	Blaine Tech
	9/5/2014	78.56	36.62	33.80	2.82	44.20	Blaine Tech
	9/11/2014	78.56	37.15	33.78	3.37	44.11	Blaine Tech
	9/18/2014	78.56	36.79	33.93	2.86	44.06	Blaine Tech
	9/26/2014	78.56	36.89	33.88	3.01	44.08	Blaine Tech
	10/1/2014	78.56	34.95	33.32	1.63	44.91	Blaine Tech
	10/6/2014	78.56	36.36	33.95	2.41	44.13	Blaine Tech
	10/14/2014	78.56	36.67	33.86	2.81	44.14	Blaine Tech
	10/23/2014	78.56	36.86	33.86	3.00	44.10	Blaine Tech
	10/27/2014	78.56	36.20	33.99	2.21	44.13	Blaine Tech
	11/3/2014	78.56	36.91	33.84	3.07	44.11	Blaine Tech
	11/18/2014	78.56	36.78	33.95	2.83	44.04	Blaine Tech
	11/25/2014	78.56	36.65	34.03	2.62	44.01	Blaine Tech
	12/3/2014	78.56	36.71	33.94	2.77	44.07	Blaine Tech
	12/12/2014	78.56	37.29	34.08	3.21	43.84	Blaine Tech
	12/19/2014	78.56	38.03	34.04	3.99	43.72	Blaine Tech
	3/17/2015	78.56	35.94	35.50	0.44	42.97	Kinder Morgan
	4/20/2015	78.56	38.89	34.86	4.03	42.89	Kinder Morgan
	10/20/2015	78.56	37.42	35.38	2.04	42.77	Kinder Morgan
	3/16/2016	78.56	39.56	---	---	39.00	Kinder Morgan
	4/11/2016	78.56	37.62	---	---	40.94	Blaine Tech
	6/29/2016	78.56	37.06	---	---	41.50	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-11	8/22/2016	78.56	39.25	---	---	39.31	Blaine Tech
Continued	10/3/2016	78.56	40.05	---	---	38.51	Blaine Tech
	3/10/2017	78.56	36.56	---	---	42.00	CH2M
	4/17/2017	78.56	35.91	---	---	42.65	Blaine Tech
	10/2/2017	78.56	40.09	---	---	38.47	Blaine Tech
	4/16/2018	78.56	39.90	---	---	38.66	Blaine Tech
	11/5/2018	78.56	39.52	---	---	39.04	Blaine Tech
	4/16/2019	78.56	38.52	---	---	40.04	Blaine Tech
	10/28/2019	78.56	39.13	---	---	39.43	Blaine Tech
	5/4/2020	78.56	36.95	---	---	41.61	Blaine Tech
	11/2/2020	78.56	37.18	---	---	41.38	Blaine Tech
	5/3/2021	78.56	37.38	---	---	41.18	Blaine Tech
MW-SF-12	8/14/2007	78.07	27.76	---	---	50.31	Geomatrix
	8/21/2007	78.07	27.43	---	---	50.64	Geomatrix
	8/28/2007	78.07	27.58	---	---	50.49	Stantec
	9/11/2007	78.07	27.73	---	---	50.34	Geomatrix
	10/5/2007	78.07	28.06	---	---	50.01	Geomatrix
	11/2/2007	78.07	29.59	---	---	48.48	Geomatrix
	11/12/2007	78.07	28.33	---	---	49.74	Stantec
	8/12/2008	78.07	30.02	---	---	48.05	Envent
	10/17/2008	78.07	30.42	---	---	47.65	Envent
	12/18/2008	78.07	31.55	---	---	46.52	Envent
	1/15/2009	78.07	30.11	---	---	47.96	Envent
	3/24/2009	78.07	29.41	---	---	48.66	Envent
	4/21/2009	78.07	29.52	---	---	48.55	Envent
	7/21/2009	78.07	28.58	---	---	49.49	Envent
	10/19/2009	78.07	NM	---	---	NC	Blaine Tech
	11/4/2009	78.07	30.36	---	---	47.71	Kinder Morgan
	2/4/2010	78.07	29.20	---	---	48.87	Kinder Morgan
	10/4/2010	78.07	30.70	---	---	47.37	Blaine Tech
	4/11/2011	78.07	29.47	---	---	48.60	Blaine Tech
	10/10/2011	78.07	26.60	---	---	51.47	Blaine Tech
	4/16/2012	78.07	31.40	---	---	46.67	Blaine Tech
	7/9/2012	78.07	NM	---	---	NC	Blaine Tech
	10/15/2012	78.07	32.12	---	---	45.95	Blaine Tech
	4/8/2013	78.07	DRY	---	---	NC	Blaine Tech
	10/7/2013	78.07	NM	---	---	NC	Blaine Tech
	4/14/2014	78.07	38.04	32.67	5.37	44.33	Blaine Tech
	5/20/2014	78.07	37.80	32.90	4.90	44.19	Nieto & Sons
	5/27/2014	78.07	33.27	---	---	44.80	Nieto & Sons
	6/4/2014	78.07	32.78	---	---	45.29	Nieto & Sons
	6/10/2014	78.07	33.76	---	---	44.31	Nieto & Sons
	7/3/2014	78.07	NM	33.58	---	NC	Nieto & Sons
	7/24/2014	78.07	NM	33.35	3.97	NC	Blaine Tech
	8/1/2014	78.07	37.20	33.17	4.03	44.09	Blaine Tech
	9/5/2014	78.07	38.52	32.93	5.59	44.02	Blaine Tech
	9/11/2014	78.07	38.56	32.98	5.58	43.97	Blaine Tech
	9/18/2014	78.07	38.25	33.09	5.16	43.95	Blaine Tech
	9/26/2014	78.07	38.03	33.03	5.00	44.04	Blaine Tech
	10/1/2014	78.07	37.82	33.08	4.74	44.04	Blaine Tech
	10/6/2014	78.07	37.63	33.07	4.56	44.09	Blaine Tech
	10/14/2014	78.07	37.56	33.13	4.43	44.05	Blaine Tech
	10/23/2014	78.07	37.56	33.06	4.50	44.11	Blaine Tech
	10/27/2014	78.07	37.40	33.08	4.32	44.13	Blaine Tech
	11/3/2014	78.07	37.48	33.09	4.39	44.10	Blaine Tech
	11/18/2014	78.07	37.44	33.15	4.29	44.06	Blaine Tech
	11/25/2014	78.07	37.35	33.21	4.14	44.03	Blaine Tech
	12/3/2014	78.07	37.31	33.12	4.19	44.11	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-12	12/12/2014	78.07	37.92	33.45	4.47	43.73	Blaine Tech
Continued	12/19/2014	78.07	38.25	33.50	4.75	43.62	Blaine Tech
	3/17/2015	78.07	36.42	34.05	2.37	43.55	Kinder Morgan
	4/20/2015	78.07	36.42	34.05	2.37	43.55	Blaine Tech
	10/20/2015	78.07	36.78	34.84	1.94	42.84	Kinder Morgan
	3/16/2016	78.07	39.03	---	---	39.04	Kinder Morgan
	4/11/2016	78.07	37.13	---	---	40.94	Blaine Tech
	6/29/2016	78.07	38.34	38.28	0.06	39.78	Blaine Tech
	8/22/2016	78.07	38.60	---	---	39.47	Blaine Tech
	10/3/2016	78.07	39.45	---	---	38.62	Blaine Tech
	3/10/2017	78.07	36.09	---	---	41.98	CH2M
	4/17/2017	78.07	35.12	---	---	42.95	Blaine Tech
	10/2/2017	78.07	39.31	---	---	38.76	Blaine Tech
	4/16/2018	78.07	39.09	---	---	38.98	Blaine Tech
	11/5/2018	78.07	38.96	---	---	39.11	Blaine Tech
	4/16/2019	78.07	37.53	---	---	40.54	Blaine Tech
	10/28/2019	78.07	38.78	---	---	39.29	Blaine Tech
	5/4/2020	78.07	36.36	---	---	41.71	Blaine Tech
	11/2/2020	78.07	36.53	---	---	41.54	Blaine Tech
	5/3/2021	78.07	36.19	---	---	41.88	Blaine Tech
MW-SF-13	8/14/2007	73.40	22.98	---	---	50.42	Geomatrix
	8/21/2007	73.40	23.11	---	---	50.29	Geomatrix
	8/28/2007	73.40	22.85	---	---	50.55	Stantec
	9/11/2007	73.40	23.10	---	---	50.30	Geomatrix
	10/5/2007	73.40	28.11	---	---	45.29	Geomatrix
	11/2/2007	73.40	25.43	25.41	0.02	47.99	Geomatrix
	11/12/2007	73.40	23.70	---	---	49.70	Stantec
	12/21/2007	73.40	24.45	24.42	0.03	48.97	Geomatrix
	8/15/2008	73.40	27.38	24.11	3.27	48.47	Envent
	10/17/2008	73.40	27.28	24.33	2.95	48.33	Envent
	10/21/2008	73.40	27.14	24.26	2.88	48.42	Envent
	12/17/2008	73.40	26.21	24.70	1.51	48.32	Envent
	1/15/2009	73.40	26.90	24.80	2.10	48.08	Envent
	3/27/2009	73.40	26.46	25.49	0.97	47.67	Envent
	4/21/2009	73.40	24.86	24.78	0.08	48.60	Envent
	7/21/2009	73.40	25.72	25.48	0.24	47.86	Envent
	10/19/2009	73.40	NM	---	---	NC	Blaine Tech
	11/6/2009	73.40	25.72	---	---	47.68	Kinder Morgan
	2/4/2010	73.40	25.43	25.30	0.13	48.07	Kinder Morgan
	9/3/2010	73.40	27.40	25.71	1.69	47.27	Kinder Morgan
	10/4/2010	73.40	26.95	25.92	1.03	47.22	Blaine Tech
	4/12/2011	73.40	24.79	24.78	0.01	48.62	Blaine Tech
	10/10/2011	73.40	26.00	---	---	47.40	Blaine Tech
	4/16/2012	73.40	27.19	---	---	46.21	Blaine Tech
	7/9/2012	73.40	NM	---	---	NC	Blaine Tech
	10/15/2012	73.40	27.01	---	---	46.39	Blaine Tech
	4/8/2013	73.40	27.90	---	---	45.50	Blaine Tech
	10/7/2013	73.40	NM	---	---	NC	Blaine Tech
	11/14/2013	73.40	29.95	28.25	1.70	44.73	Blaine Tech
	4/14/2014	73.40	31.36	28.47	2.89	44.21	Blaine Tech
	5/5/2014	73.40	31.62	28.49	3.13	44.13	Nieto & Sons
	5/12/2014	73.40	30.02	28.88	1.14	44.24	Nieto & Sons
	5/20/2014	73.40	31.10	29.77	1.33	43.30	Nieto & Sons
	5/27/2014	73.40	30.17	29.48	0.69	43.75	Nieto & Sons
	6/4/2014	73.40	30.22	---	---	43.18	Nieto & Sons
	6/10/2014	73.40	30.20	29.76	0.44	43.53	Nieto & Sons
	7/3/2014	73.40	30.49	29.88	0.61	43.37	Nieto & Sons
	7/24/2014	73.40	30.50	29.54	0.96	43.62	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-13	8/1/2014	73.40	29.82	29.25	0.57	44.01	Blaine Tech
Continued	8/8/2014	73.40	34.07	33.71	0.36	39.60	Blaine Tech
	8/14/2014	73.40	29.96	29.13	0.83	44.06	Blaine Tech
	8/19/2014	73.40	29.91	29.15	0.76	44.06	Blaine Tech
	8/29/2014	73.40	30.15	29.02	1.13	44.10	Blaine Tech
	9/5/2014	73.40	30.19	29.08	1.11	44.04	Blaine Tech
	9/11/2014	73.40	30.66	28.91	1.75	44.05	Blaine Tech
	9/18/2014	73.40	30.41	29.15	1.26	43.94	Blaine Tech
	9/26/2014	73.40	30.18	29.14	1.04	44.00	Blaine Tech
	10/1/2014	73.40	30.38	29.05	1.33	44.02	Blaine Tech
	10/6/2014	73.40	30.10	29.12	0.98	44.04	Blaine Tech
	10/13/2014	73.40	30.28	29.07	1.21	44.03	Blaine Tech
	10/23/2014	73.40	30.72	28.95	1.77	44.01	Blaine Tech
	10/27/2014	73.40	30.21	29.06	1.15	44.05	Blaine Tech
	11/3/2014	73.40	30.62	28.93	1.69	44.05	Blaine Tech
	11/18/2014	73.40	30.54	29.11	1.43	43.93	Blaine Tech
	11/25/2014	73.40	29.48	29.14	0.34	44.18	Blaine Tech
	12/3/2014	73.40	31.02	28.93	2.09	43.95	Blaine Tech
	12/12/2014	73.40	31.05	29.40	1.65	43.59	Blaine Tech
	12/19/2014	73.40	31.11	29.40	1.71	43.57	Blaine Tech
	4/20/2015	73.40	32.44	29.04	3.40	43.51	Blaine Tech
	10/19/2015	73.40	35.16	29.31	5.85	42.63	Blaine Tech
	3/14/2016	73.40	34.72	---	---	38.68	Blaine Tech
	4/11/2016	73.40	32.28	---	---	41.12	Blaine Tech
	6/29/2016	73.40	33.62	---	---	39.78	Blaine Tech
	8/22/2016	73.40	33.66	---	---	39.74	Blaine Tech
	10/3/2016	73.40	34.20	---	---	39.20	Blaine Tech
	3/24/2017	73.40	31.25	---	---	42.15	CH2M
	4/17/2017	73.40	30.40	---	---	43.00	Blaine Tech
	10/2/2017	73.40	34.52	---	---	38.88	Blaine Tech
	4/16/2018	73.40	34.26	---	---	39.14	Blaine Tech
	11/5/2018	73.40	34.43	---	---	38.97	Blaine Tech
	4/16/2019	73.40	32.29	---	---	41.11	Blaine Tech
	11/1/2019	73.40	33.76	---	---	39.64	Blaine Tech
	5/4/2020	73.40	31.52	---	---	41.88	Blaine Tech
	11/2/2020	73.40	32.05	---	---	41.35	Blaine Tech
	5/3/2021	73.40	32.48	---	---	40.92	Blaine Tech
MW-SF-14	8/14/2007	78.16	27.68	---	---	50.48	Geomatrix
	8/21/2007	78.16	27.60	---	---	50.56	Geomatrix
	8/28/2007	78.16	27.53	---	---	50.63	Stantec
	9/11/2007	78.16	27.66	---	---	50.50	Geomatrix
	10/5/2007	78.16	27.75	---	---	50.41	Geomatrix
	11/2/2007	78.16	29.83	---	---	48.33	Geomatrix
	11/12/2007	78.16	NM	---	---	NC	Secor
	8/15/2008	78.16	29.77	29.24	0.53	48.81	Envent
	10/17/2008	78.16	29.52	29.50	0.02	48.66	Envent
	12/18/2008	78.16	30.62	---	---	47.54	Envent
	1/15/2009	78.16	30.08	---	---	48.08	Envent
	3/24/2009	78.16	29.73	---	---	48.43	Envent
	4/21/2009	78.16	29.61	---	---	48.55	Envent
	7/21/2009	78.16	29.20	---	---	48.96	Envent
	10/19/2009	78.16	NM	---	---	NC	Blaine Tech
	11/6/2009	78.16	30.48	---	---	47.68	Kinder Morgan
	12/9/2009	78.16	30.68	---	---	47.48	Kinder Morgan
	6/22/2010	78.16	26.17	---	---	51.99	Blaine Tech
	10/4/2010	78.16	30.54	---	---	47.62	Blaine Tech
	4/12/2011	78.16	29.55	---	---	48.61	Blaine Tech
	10/10/2011	78.16	29.84	---	---	48.32	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-14	4/16/2012	78.16	NM	---	---	NC	Blaine Tech
Continued	7/9/2012	78.16	NM	---	---	NC	Blaine Tech
	10/15/2012	78.16	30.02	---	---	48.14	Blaine Tech
	4/8/2013	78.16	32.75	---	---	45.41	Blaine Tech
	5/24/2013	78.16	32.75	---	---	45.41	Blaine Tech
	9/26/2013	78.16	34.50	34.25	0.25	43.86	Blaine Tech
	10/7/2013	78.16	NM	---	---	NC	Blaine Tech
	11/14/2013	78.16	33.57	33.19	0.38	44.89	Blaine Tech
	4/14/2014	78.16	34.81	33.56	1.25	44.35	Blaine Tech
	8/8/2014	78.16	34.24	33.98	0.26	44.13	Blaine Tech
	10/14/2014	78.16	34.36	33.80	0.56	44.25	Blaine Tech
	10/23/2014	78.16	34.49	34.43	0.06	43.72	Blaine Tech
	10/27/2014	78.16	34.40	33.97	0.43	44.10	Blaine Tech
	11/18/2014	78.16	34.27	34.07	0.20	44.05	Blaine Tech
	4/20/2015	78.16	34.48	---	---	43.68	Blaine Tech
	10/21/2015	78.16	35.25	---	---	42.91	Blaine Tech
	3/14/2016	78.16	36.21	---	---	41.95	Blaine Tech
	4/11/2016	78.16	37.14	---	---	41.02	Blaine Tech
	6/29/2016	78.16	37.36	---	---	40.80	Blaine Tech
	8/22/2016	78.16	DRY	---	---	NC	Blaine Tech
	10/3/2016	78.16	DRY	---	---	NC	Blaine Tech
	4/17/2017	78.16	35.40	---	---	42.76	Blaine Tech
	10/2/2017	78.16	DRY	---	---	NC	Blaine Tech
	4/16/2018	78.16	DRY	---	---	NC	Blaine Tech
	11/5/2018	78.16	DRY	---	---	NC	Blaine Tech
	4/16/2019	78.16	DRY	---	---	NC	Blaine Tech
	10/28/2019	78.16	DRY	---	---	NC	Blaine Tech
	5/4/2020	78.16	DRY	---	---	NC	Blaine Tech
	11/2/2020	78.16	DRY	---	---	NC	Blaine Tech
	5/3/2021	78.16	DRY	---	---	NC	Blaine Tech
MW-SF-15	8/14/2007	78.27	27.78	27.75	0.03	50.51	Geomatrix
	8/21/2007	78.27	27.69	27.65	0.04	50.61	Geomatrix
	8/28/2007	78.27	27.65	27.61	0.04	50.65	Stantec
	9/11/2007	78.27	27.62	---	---	50.65	Geomatrix
	10/5/2007	78.27	28.15	---	---	50.12	Geomatrix
	11/2/2007	78.27	30.45	30.20	0.25	48.02	Geomatrix
	11/12/2007	78.27	28.75	---	---	49.52	Stantec
	8/15/2008	78.27	30.12	29.35	0.77	48.77	Envent
	10/17/2008	78.27	30.80	29.44	1.36	48.56	Envent
	10/21/2008	78.27	30.80	29.31	1.49	48.66	Envent
	12/18/2008	78.27	32.11	30.56	1.55	47.40	Envent
	1/15/2009	78.27	31.75	29.70	2.05	48.16	Envent
	3/24/2009	78.27	30.32	29.93	0.39	48.26	Envent
	4/21/2009	78.27	29.96	29.60	0.36	48.60	Envent
	7/21/2009	78.27	30.45	---	---	47.82	Envent
	10/19/2009	78.27	NM	---	---	NC	Blaine Tech
	11/4/2009	78.27	31.10	30.45	0.36	47.46	Kinder Morgan
	12/9/2009	78.27	30.87	---	---	47.40	Kinder Morgan
	10/4/2010	78.27	30.66	30.65	0.01	47.62	Blaine Tech
	4/12/2011	78.27	30.50	29.40	1.10	48.65	Blaine Tech
	10/10/2011	78.27	29.60	---	---	48.67	Blaine Tech
	12/2/2011	78.27	31.40	30.05	1.35	47.95	Blaine Tech
	4/16/2012	78.27	32.48	32.39	0.09	45.86	Blaine Tech
	7/9/2012	78.27	NM	---	---	NC	Blaine Tech
	10/15/2012	78.16	33.04	---	---	45.12	Blaine Tech
	4/8/2013	78.27	33.90	---	---	44.37	Blaine Tech
	5/24/2013	78.27	33.90	---	---	44.37	Blaine Tech
	10/7/2013	78.27	NM	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-15	11/14/2013	78.27	33.41	33.38	0.03	44.88	Blaine Tech
Continued	4/18/2014	78.27	33.85	---	---	44.42	Blaine Tech
	8/8/2014	78.27	34.87	33.96	0.91	44.13	Blaine Tech
	8/13/2014	78.27	34.89	33.95	0.94	44.13	Blaine Tech
	8/19/2014	78.27	34.90	33.94	0.96	44.14	Blaine Tech
	8/29/2014	78.27	35.65	35.38	0.27	42.84	Blaine Tech
	10/27/2014	78.27	35.82	---	---	42.45	Blaine Tech
	4/20/2015	78.27	36.63	34.12	2.51	43.65	Blaine Tech
	10/19/2015	78.27	37.90	34.87	3.03	42.79	Blaine Tech
	11/17/2015	78.27	37.71	35.36	2.35	42.44	Kinder Morgan
	3/14/2016	78.27	39.70	---	---	38.57	Blaine Tech
	4/11/2016	78.27	37.24	---	---	41.03	Blaine Tech
	6/29/2016	78.27	38.70	---	---	39.57	Blaine Tech
	8/22/2016	78.27	38.78	---	---	39.49	Blaine Tech
	10/3/2016	78.27	39.56	---	---	38.71	Blaine Tech
	3/23/2017	78.27	36.10	---	---	42.17	CH2M
	4/17/2017	78.27	35.39	---	---	42.88	Blaine Tech
	10/2/2017	78.27	39.40	---	---	38.87	Blaine Tech
	4/16/2018	78.27	39.10	---	---	39.17	Blaine Tech
	11/5/2018	78.27	39.00	---	---	39.27	Blaine Tech
	4/23/2019	78.27	36.15	---	---	42.12	Blaine Tech
	10/28/2019	78.27	38.92	---	---	39.35	Blaine Tech
	5/4/2020	78.27	36.37	---	---	41.90	Blaine Tech
	11/2/2020	78.27	36.72	---	---	41.55	Blaine Tech
	5/3/2021	78.27	37.53	---	---	40.74	Blaine Tech
MW-SF-16	8/14/2007	78.21	27.68	---	---	50.53	Geomatrix
	8/21/2007	78.21	27.33	---	---	50.88	Geomatrix
	8/28/2007	78.21	27.51	---	---	50.70	Stantec
	9/11/2007	78.21	27.59	---	---	50.62	Geomatrix
	10/5/2007	78.21	28.10	---	---	50.11	Geomatrix
	11/2/2007	78.21	29.81	---	---	48.40	Geomatrix
	11/12/2007	78.21	28.40	---	---	49.81	Stantec
	8/15/2008	78.21	29.36	---	---	48.85	Envent
	10/17/2008	78.21	29.51	---	---	48.70	Envent
	12/18/2008	78.21	30.94	---	---	47.27	Envent
	1/15/2009	78.21	30.01	30.00	0.01	48.21	Envent
	3/24/2009	78.21	29.82	---	---	48.39	Envent
	4/21/2009	78.21	29.60	---	---	48.61	Envent
	7/21/2009	78.21	30.36	---	---	47.85	Envent
	10/19/2009	78.21	NM	---	---	NC	Blaine Tech
	11/4/2009	78.21	30.58	---	---	47.63	Kinder Morgan
	2/4/2010	78.21	30.36	---	---	47.85	Kinder Morgan
	9/3/2010	78.21	30.25	---	---	47.96	Kinder Morgan
	10/4/2010	78.21	30.49	---	---	47.72	Blaine Tech
	4/12/2011	78.21	29.52	---	---	48.69	Blaine Tech
	10/10/2011	78.21	29.85	---	---	48.36	Blaine Tech
	4/16/2012	78.21	NM	---	---	NC	Blaine Tech
	7/9/2012	78.21	NM	---	---	NC	Blaine Tech
	10/15/2012	78.21	32.47	---	---	45.74	Blaine Tech
	4/8/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	5/24/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	10/7/2013	78.21	NM	---	---	NC	Blaine Tech
	11/14/2013	78.21	33.80	33.21	0.59	44.88	Blaine Tech
	4/18/2014	78.21	34.20	33.65	0.55	44.45	Blaine Tech
	8/8/2014	78.21	34.06	34.05	0.01	44.16	Blaine Tech
	10/27/2014	78.21	34.25	---	---	43.96	Blaine Tech
	4/20/2015	78.21	34.52	---	---	43.69	Blaine Tech
	6/8/2015	78.21	35.17	35.00	0.17	43.18	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-16 continued	10/21/2015	78.21	34.56	---	---	43.65	Kinder Morgan
	3/14/2016	78.21	39.60	---	---	38.61	Blaine Tech
	4/11/2016	78.21	37.15	---	---	41.06	Blaine Tech
	6/29/2016	78.21	38.35	---	---	39.86	Blaine Tech
	8/22/2016	78.21	38.51	---	---	39.70	Blaine Tech
	10/3/2016	78.21	39.35	---	---	38.86	Blaine Tech
	4/17/2017	78.21	35.20	---	---	43.01	Blaine Tech
	10/2/2017	78.21	DRY	---	---	NC	Blaine Tech
	4/16/2018	78.21	DRY	---	---	NC	Blaine Tech
	11/5/2018	78.21	DRY	---	---	NC	Blaine Tech
	4/16/2019	78.21	DRY	---	---	NC	Blaine Tech
	10/28/2019	78.21	DRY	---	---	NC	Blaine Tech
	5/4/2020	78.21	DRY	---	---	NC	Blaine Tech
	11/2/2020	78.21	DRY	---	---	NC	Blaine Tech
	5/3/2021	78.21	DRY	---	---	NC	Blaine Tech

Notes:

Corrected groundwater elevations are based on specific gravity data collected during baildown testing, or a default value of 0.8 foot msl was used for wells not tested.

--- = not detected or not applicable

DRY = no measurable water observed in the well

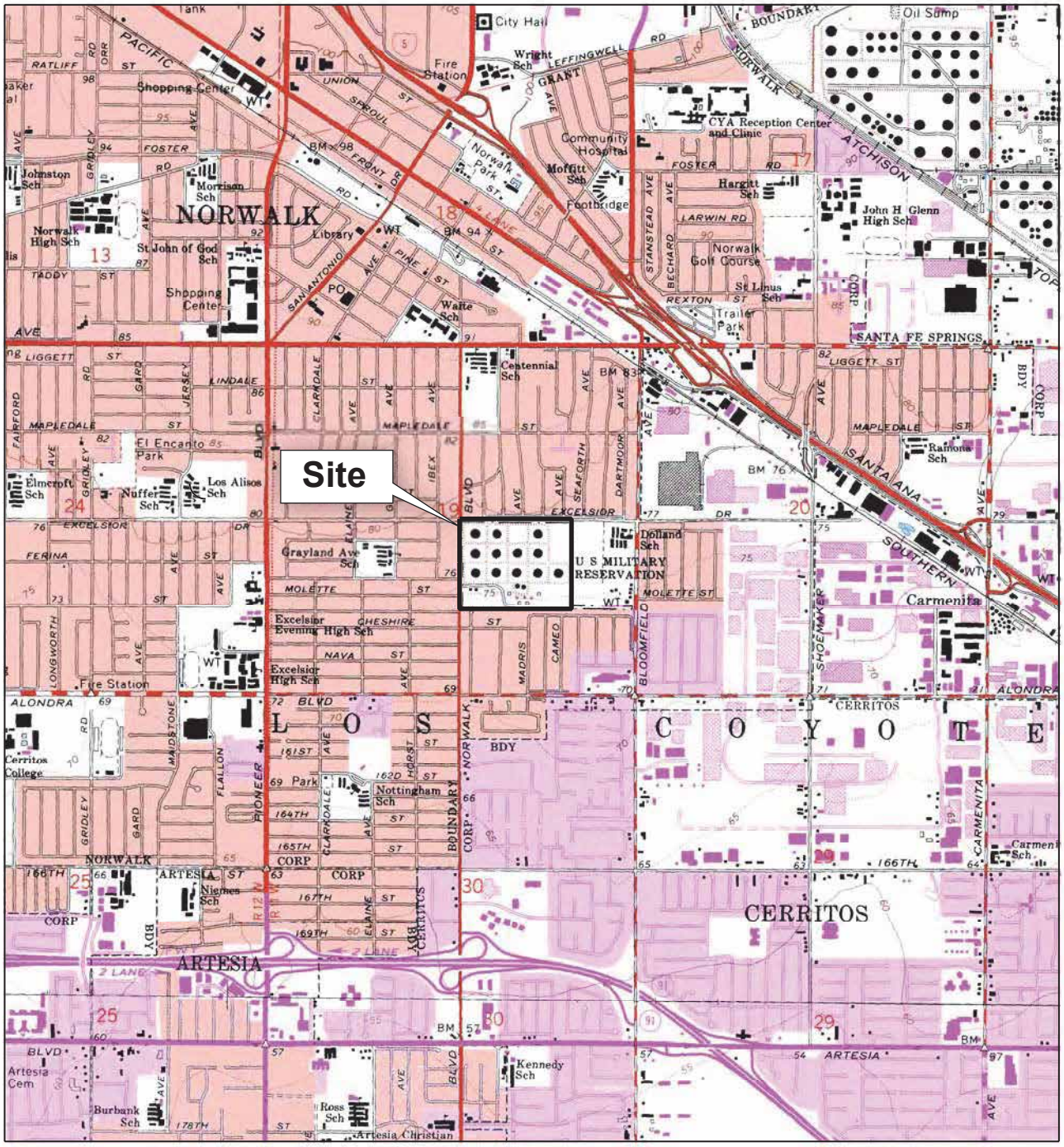
feet btoc = feet below top of casing

feet msl = feet above mean sea level based on National Geodetic Vertical Datum of 1929

NC = not calculated

NM = not measured

Figures



North

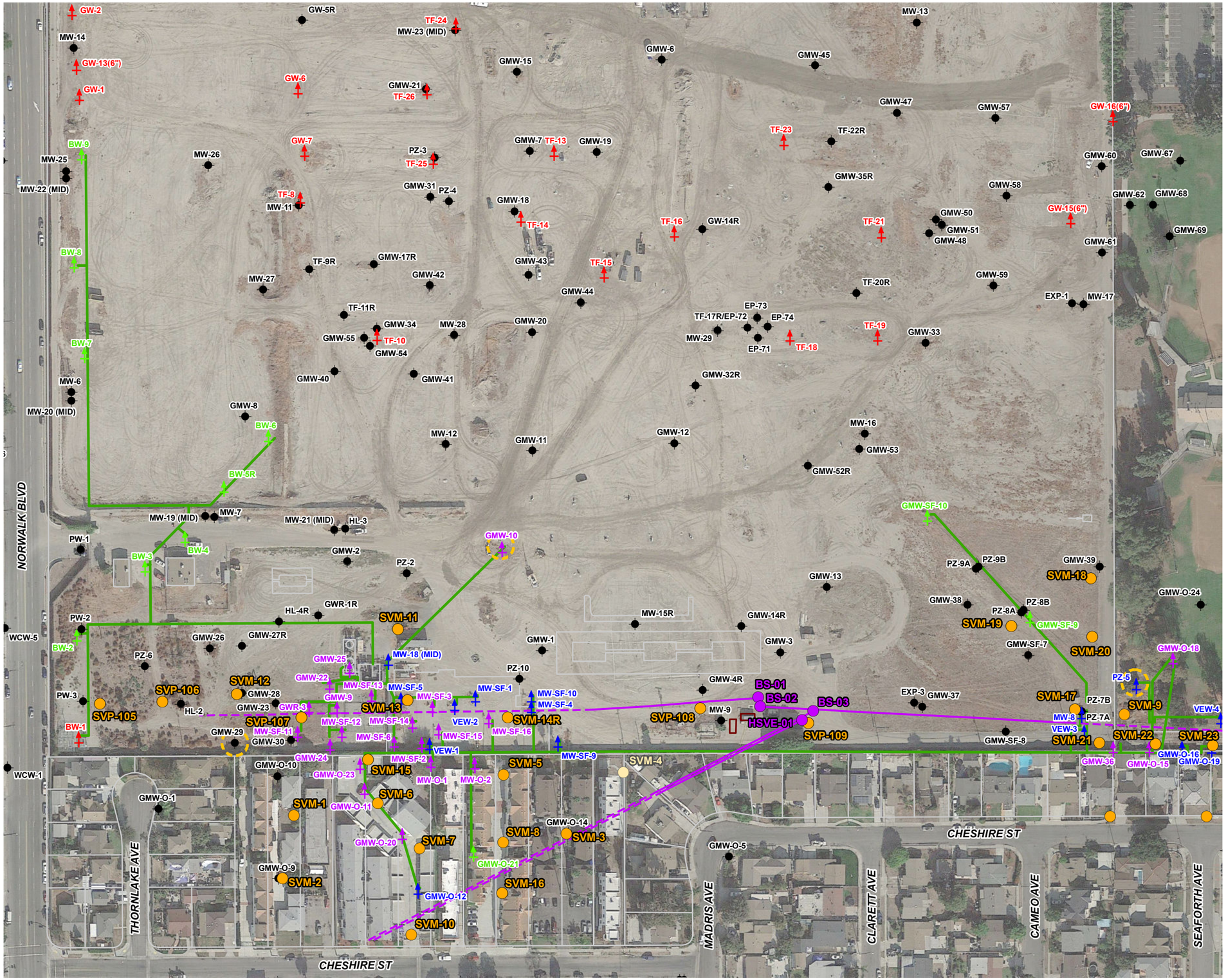
0 1200 2400

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



LEGEND

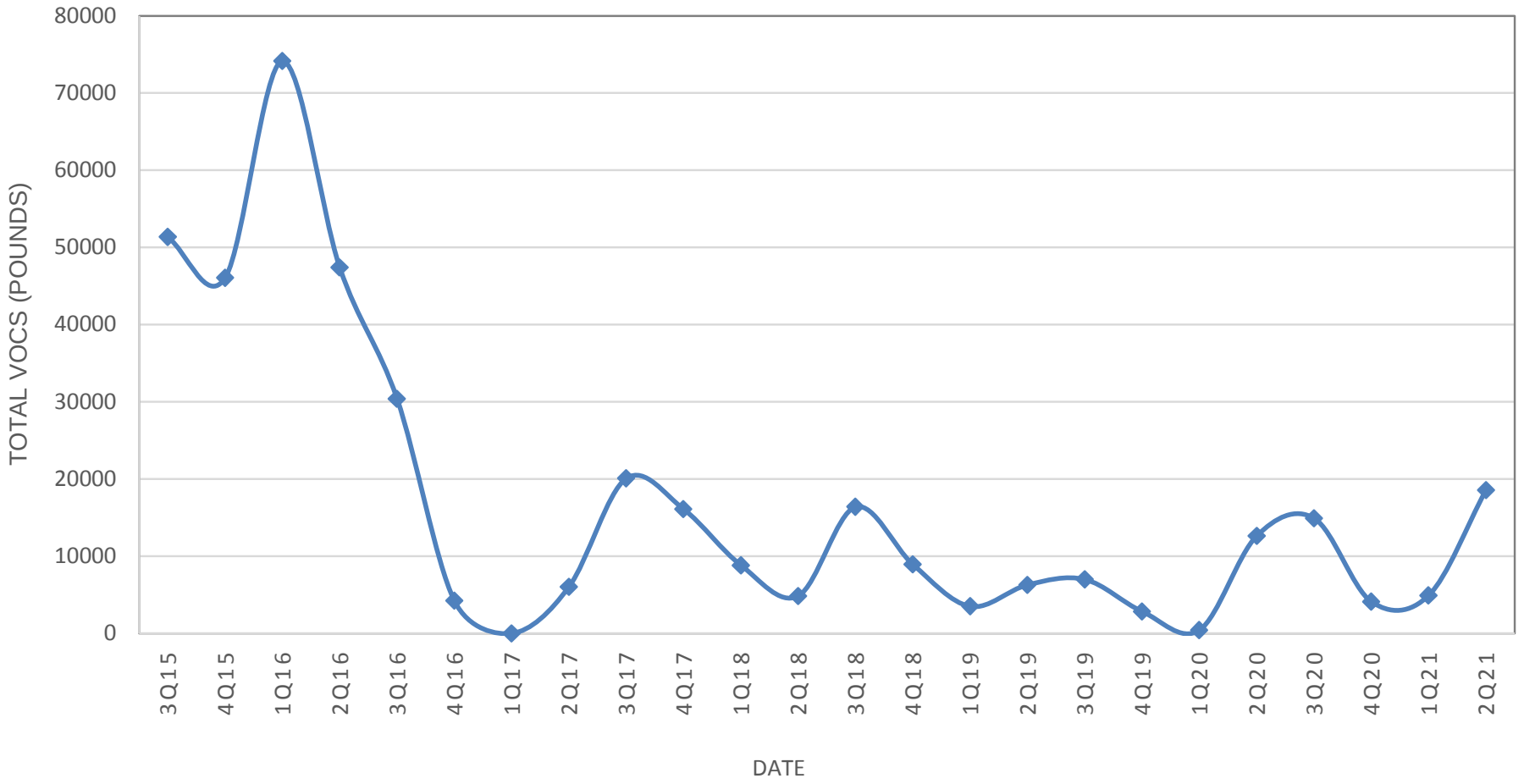
- Soil Vapor Probe/Soil Vapor Monitoring Probe
- Destroyed Soil Vapor Probe/Soil Vapor Monitoring Probe
- Horizontal Biosparge Well Entry Point
- Existing Groundwater Monitoring Well
- Existing Remediation Well
- Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
- Kinder Morgan Soil Vapor Extraction Wells
- Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
- 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
- Wells with Increasing Dissolved Phase Trends. All Other Wells Illustrate Stable or Decreasing Dissolved Phase Trends

Imagery Source:
Google Earth December 3, 2017.

Figure 2. Remediation System Layout
SFPP Norwalk Pump Station
Norwalk, California

Jacobs

\\DC1VS01\GISPROJ\K\KINDERMORGAN\NORWALK\MAPFILES\2020\FIGURE_2_REMEDIATION_SYSTEM_LAYOUT.MXD AESPEJO 10/26/2020



Note:
VOC = volatile organic compound

Figure 3. Mass of VOCs Removed Quarterly by the Soil Vapor Extraction System
SFPP Norwalk Pump Station
Norwalk, California

FES0709211137SCO

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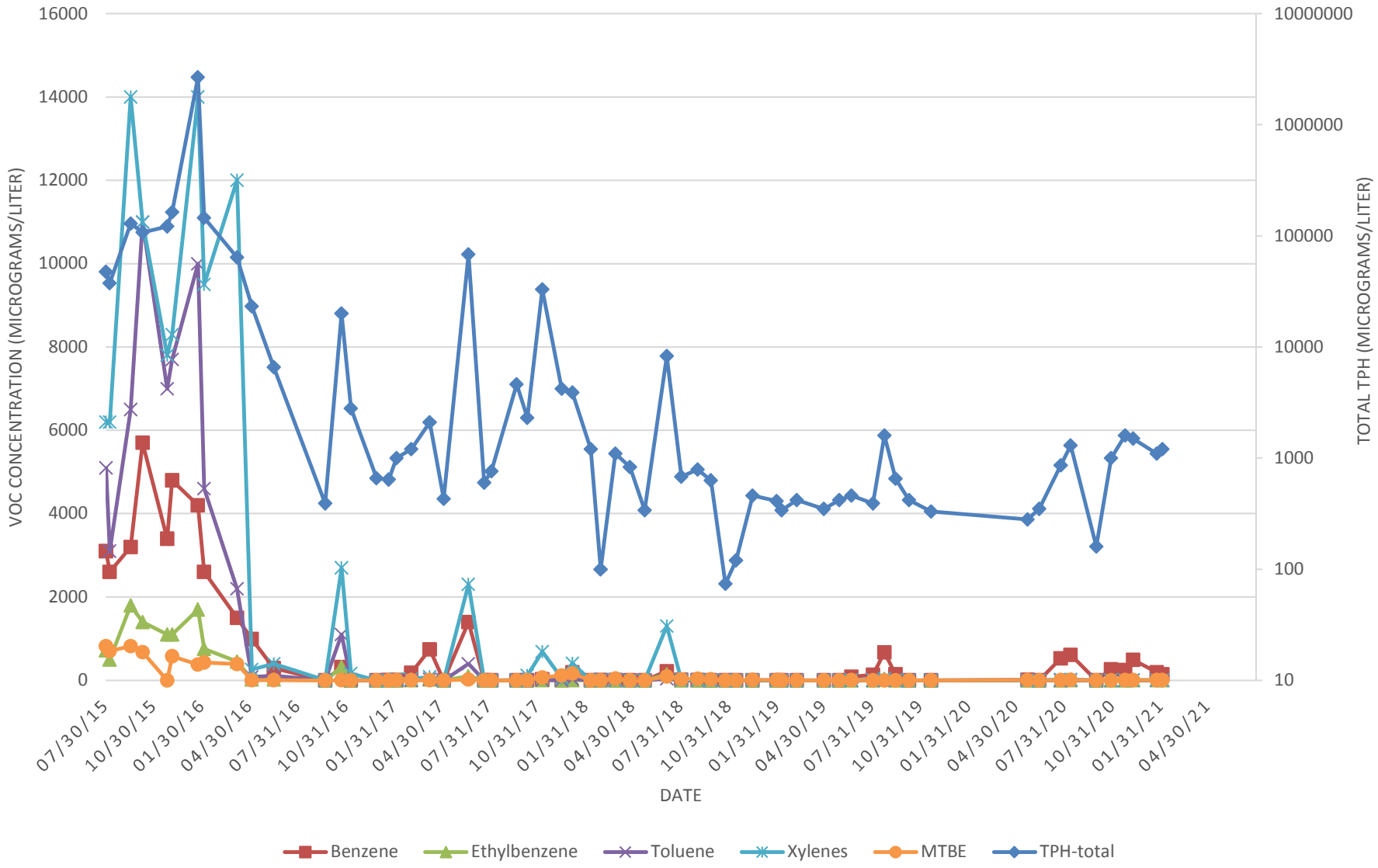

Note:
VOC = volatile organic compound

Figure 4. Influent VOC and TPH-Total Concentrations into the Groundwater Extraction System
SFPP Norwalk Pump Station
Norwalk, California

FES0709211137SCO

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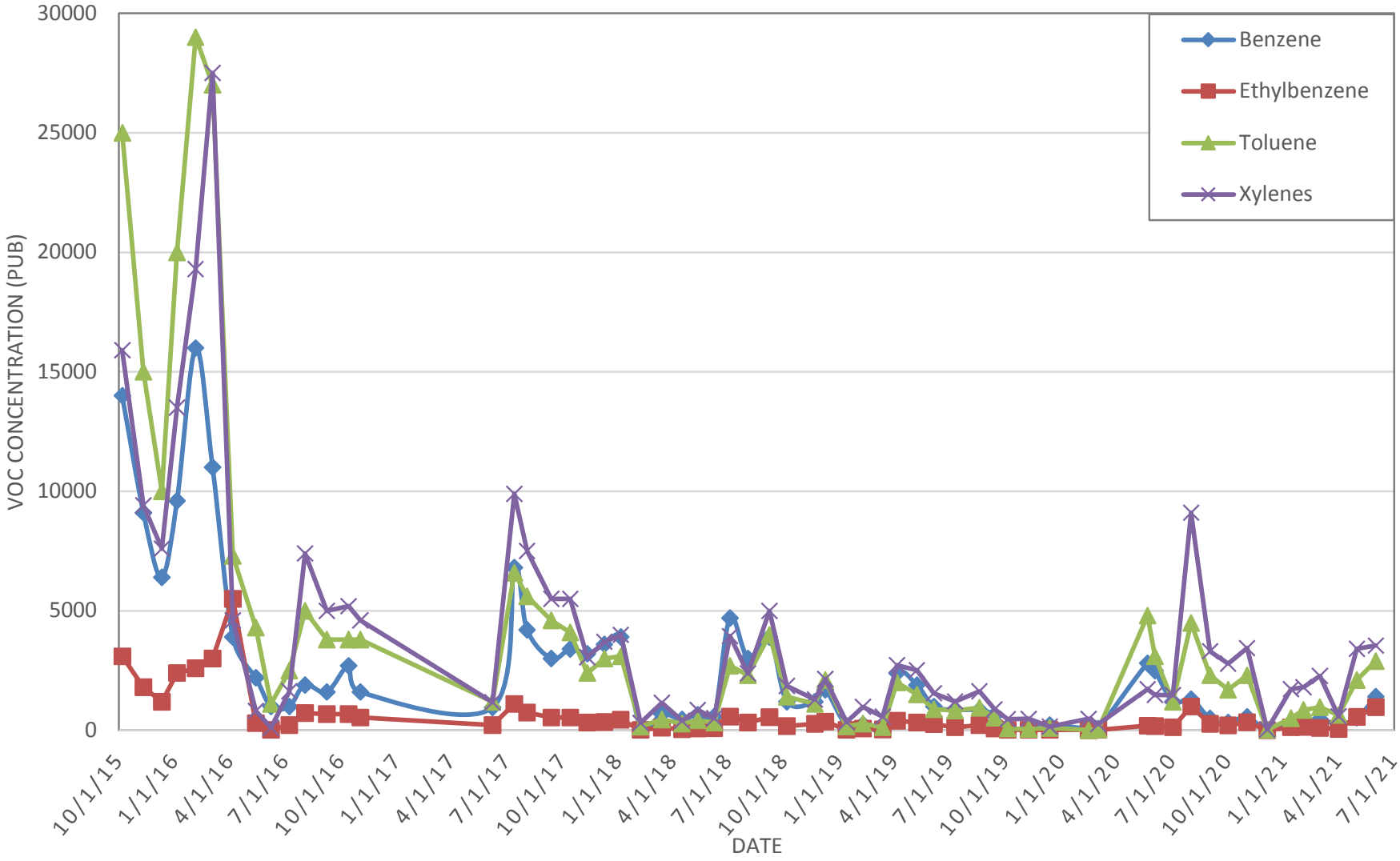

Note:
VOC = volatile organic compound

Figure 5. Influent VOC Concentrations into the Soil Vapor Extraction System
SFPP Norwalk Pump Station
Norwalk, California

FES0709211137SCO

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Appendix A
Laboratory Analytical Reports

AirTECHNOLOGY
Laboratories, Inc.

April 16, 2021

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M040205-01/04

Enclosed are results for sample(s) received 4/02/21 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 4/15/21.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

M040205-01/04

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

CHAIN OF CUSTODY RECORD

DATE: 4/1/21
PAGE: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	Section D Sampler Information:
Company: **Jacobs** **Attention: Eric Davis**	Report To: Eric Davis	Attention: Eric Davis	Sampler Name: James Dye
Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Copy To: Court Reece	Company Name: Jacobs	Sampler Signature:
Email To: eric.davis@jacobs.com	Purchase Order No.:	Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Sample Date: 4/1/21
Phone: 404-323-1600 Fax:	Project Name: **SFPP Norwalk**	Project Manager: Joann De La Ossa	

Section E Required Sample Information

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test	TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Argon, CO2, CH4, N2)	Comments
1	VEFF-040121	Effluent (stack)	Vapor	G	4/1/21	1000	1		X	X		Individually Certified 6-Liter SUMMA
2	VEFF-040121 D	Effluent (stack) (duplicate)	Vapor	G	4/1/21	1000	1		X	X		Individually Certified 6-Liter SUMMA
3	VPOST-040121	Influent (post-dilution)	Vapor	G	4/1/21	1015	1		X	X		Individually Certified 1-Liter SUMMA
4	VINF-040121	Influent (pre-dilution)	Vapor	G	4/1/21	1025	1		X	X	X	Batch Certified 1-Liter Summa
5	SD 4/5/21											Target analytes includes Historical VOCs and remaining ATLI list per subcontract
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
JAMES DYE	4/1/21 1430	FEDEX	4/1/21 1430
FEDEX	4/2/21		4/2/21 1135

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M040205-01			M040205-02			M040205-03			M040205-04		
Client Sample I.D.:	VEFF-0401			VEFF-0401-D			VPOST-0401			VINF-0401		
Date/Time Sampled:	4/1/21 10:00			4/1/21 10:00			4/1/21 10:15			4/1/21 10:25		
Date/Time Analyzed:	4/6/21 18:05			4/6/21 18:40			4/6/21 19:51			4/6/21 19:16		
QC Batch No.:	210406MS2A1			210406MS2A1			210406MS2A1			210406MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.7			2.5			2.5			2.6		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.0027	0.00041	ND	0.0025	0.00039	0.00065 J	0.0025	0.00039	0.00062 J	0.0026	0.00040
Chloromethane	ND	0.0053	0.00058	ND	0.0051	0.00056	ND	0.0051	0.00056	ND	0.0052	0.00057
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0027	0.00053	ND	0.0025	0.00051	ND	0.0025	0.00051	ND	0.0026	0.00052
Vinyl Chloride	ND	0.0027	0.00043	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.0026	0.00042
Bromomethane	ND	0.0027	0.00078	ND	0.0025	0.00074	ND	0.0025	0.00074	ND	0.0026	0.00076
Chloroethane	ND	0.0027	0.0022	ND	0.0025	0.0021	ND	0.0025	0.0021	ND	0.0026	0.0022
Trichlorofluoromethane (11)	ND	0.0027	0.00057	ND	0.0025	0.00054	ND	0.0025	0.00054	ND	0.0026	0.00056
1,1-Dichloroethene	ND	0.0027	0.00060	ND	0.0025	0.00057	ND	0.0025	0.00057	ND	0.0026	0.00059
Carbon Disulfide	0.0017 J	0.013	0.00064	0.0023 J	0.013	0.00061	0.0050 J	0.013	0.00061	0.0083 J	0.013	0.00062
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0027	0.00071	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.0026	0.00070
Acetone	0.19	0.013	0.00077	0.18	0.013	0.00073	0.41	0.013	0.00073	0.47	0.013	0.00075
Methylene Chloride	ND	0.0027	0.00076	ND	0.0025	0.00072	ND	0.0025	0.00072	ND	0.0026	0.00074
t-1,2-Dichloroethene	ND	0.0027	0.00080	ND	0.0025	0.00076	ND	0.0025	0.00076	ND	0.0026	0.00078
1,1-Dichloroethane	ND	0.0027	0.00036	ND	0.0025	0.00034	ND	0.0025	0.00034	ND	0.0026	0.00035
c-1,2-Dichloroethene	ND	0.0027	0.00051	ND	0.0025	0.00049	ND	0.0025	0.00049	ND	0.0026	0.00050
2-Butanone	0.0044	0.0027	0.0016	0.0040	0.0025	0.0016	0.0036	0.0025	0.0016	0.0086	0.0026	0.0016
t-Butyl Methyl Ether (MTBE)	ND	0.0027	0.00059	ND	0.0025	0.00056	0.054	0.0025	0.00056	0.13	0.0026	0.00058
Chloroform	ND	0.0027	0.00037	ND	0.0025	0.00035	ND	0.0025	0.00035	ND	0.0026	0.00036
1,1,1-Trichloroethane	ND	0.0027	0.00027	ND	0.0025	0.00025	ND	0.0025	0.00025	ND	0.0026	0.00026
Carbon Tetrachloride	ND	0.0027	0.00046	ND	0.0025	0.00044	ND	0.0025	0.00044	ND	0.0026	0.00045
Benzene	0.0013 J	0.0027	0.00026	0.0014 J	0.0025	0.00024	0.15	0.0025	0.00024	0.24	0.0026	0.00025
1,2-Dichloroethane	ND	0.0027	0.00020	ND	0.0025	0.00019	ND	0.0025	0.00019	0.0018 J	0.0026	0.00019
Trichloroethene	ND	0.0027	0.00038	ND	0.0025	0.00036	ND	0.0025	0.00036	ND	0.0026	0.00037
1,2-Dichloropropane	ND	0.0027	0.00048	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.0026	0.00047
Bromodichloromethane	ND	0.0027	0.00016	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.0026	0.00016
c-1,3-Dichloropropene	ND	0.0027	0.00032	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.0026	0.00031
4-Methyl-2-Pentanone	ND	0.0027	0.00018	ND	0.0025	0.00017	ND	0.0025	0.00017	ND	0.0026	0.00017
Toluene	0.0038	0.0027	0.00021	0.0040	0.0025	0.00020	0.29	0.0025	0.00020	0.64	0.0026	0.00021
t-1,3-Dichloropropene	ND	0.0027	0.00027	ND	0.0025	0.00026	ND	0.0025	0.00026	ND	0.0026	0.00027
1,1,2-Trichloroethane	ND	0.0027	0.00043	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.0026	0.00042
1,3-Dichloropropane	ND	0.0027	0.00013	ND	0.0025	0.00013	ND	0.0025	0.00013	ND	0.0026	0.00013
Tetrachloroethene	ND	0.0027	0.00032	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.0026	0.00031
2-Hexanone	ND	0.0027	0.00055	ND	0.0025	0.00052	ND	0.0025	0.00052	ND	0.0026	0.00053
Dibromochloromethane	ND	0.0027	0.00048	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.0026	0.00047
1,2-Dibromoethane	ND	0.0027	0.00024	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.0026	0.00024
Chlorobenzene	ND	0.0027	0.00021	ND	0.0025	0.00020	0.0017 J	0.0025	0.00020	0.0035	0.0026	0.00020
Ethylbenzene	0.0063	0.0027	0.00015	0.0063	0.0025	0.00015	0.038	0.0025	0.00015	0.065	0.0026	0.00015
p,&m-Xylene	0.052	0.0027	0.00030	0.050	0.0025	0.00029	0.26	0.0025	0.00029	0.43	0.0026	0.00029
o-Xylene	0.016	0.0027	0.00032	0.015	0.0025	0.00031	0.15	0.0025	0.00031	0.16	0.0026	0.00031

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M040205-01			M040205-02			M040205-03			M040205-04		
Client Sample I.D.:	VEFF-0401			VEFF-0401-D			VPOST-0401			VINF-0401		
Date/Time Sampled:	4/1/21 10:00			4/1/21 10:00			4/1/21 10:15			4/1/21 10:25		
Date/Time Analyzed:	4/6/21 18:05			4/6/21 18:40			4/6/21 19:51			4/6/21 19:16		
QC Batch No.:	210406MS2A1			210406MS2A1			210406MS2A1			210406MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.7			2.5			2.5			2.6		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Styrene	0.00068 J	0.0027	0.00034	0.00073 J	0.0025	0.00032	0.0047	0.0025	0.00032	0.0049	0.0026	0.00033
Bromoform	ND	0.0027	0.00015	ND	0.0025	0.00014	ND	0.0025	0.00014	ND	0.0026	0.00014
Isopropyl benzene	ND	0.0027	0.00028	ND	0.0025	0.00026	0.0038	0.0025	0.00026	0.0047	0.0026	0.00027
1,1,2,2-Tetrachloroethane	ND	0.0053	0.00016	ND	0.0051	0.00015	ND	0.0051	0.00015	ND	0.0052	0.00016
Benzyl Chloride	ND	0.0027	0.00049	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.0026	0.00048
1,2,3-Trichloropropane	ND	0.0027	0.00071	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.0026	0.00070
n-Propyl Benzene	0.00074 J	0.0027	0.00015	0.00082 J	0.0025	0.00015	0.0076	0.0025	0.00015	0.013	0.0026	0.00015
4-Ethyl Toluene	0.0029	0.0027	0.00017	0.0026	0.0025	0.00016	0.088	0.0025	0.00016	0.12	0.0026	0.00016
1,3,5-Trimethylbenzene	0.0013 J	0.0053	0.00046	0.0012 J	0.0051	0.00044	0.059	0.0051	0.00044	0.065	0.0052	0.00045
4-Chlorotoluene	ND	0.0027	0.00032	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.0026	0.00031
tert-Butylbenzene	ND	0.0027	0.00024	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.0026	0.00023
1,2,4-Trimethylbenzene	0.0037 J	0.0053	0.00030	0.0034 J	0.0051	0.00029	0.063	0.0051	0.00029	0.084	0.0052	0.00029
sec-Butylbenzene	ND	0.0027	0.00026	ND	0.0025	0.00024	0.0020 J	0.0025	0.00024	0.0026	0.0026	0.00025
p-Isopropyltoluene	ND	0.0027	0.00035	0.00097 J	0.0025	0.00033	0.0027	0.0025	0.00033	0.0041	0.0026	0.00034
1,3-Dichlorobenzene	0.0022 J	0.0027	0.00032	0.0021 J	0.0025	0.00031	0.0029	0.0025	0.00031	0.0033	0.0026	0.00031
1,4-Dichlorobenzene	ND	0.0027	0.00039	ND	0.0025	0.00037	ND	0.0025	0.00037	ND	0.0026	0.00038
n-Butylbenzene	0.0013 J	0.0027	0.00019	0.0012 J	0.0025	0.00018	ND	0.0025	0.00018	ND	0.0026	0.00019
1,2-Dichlorobenzene	ND	0.0027	0.00033	ND	0.0025	0.00031	ND	0.0025	0.00031	ND	0.0026	0.00032
1,2,4-Trichlorobenzene	ND	0.0053	0.00044	ND	0.0051	0.00042	ND	0.0051	0.00042	ND	0.0052	0.00043
Hexachlorobutadiene	ND	0.0027	0.00016	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.0026	0.00015
t-Butanol	0.0019 J	0.013	0.00051	0.0025 J	0.013	0.00048	0.022	0.013	0.00048	0.059	0.013	0.00050
n-Hexane	0.0011 J	0.013	0.00036	0.0010 J	0.013	0.00034	0.36	0.013	0.00034	1.0 d	0.013	0.00035
Isopropyl ether	ND	0.013	0.00030	ND	0.013	0.00028	ND	0.013	0.00028	ND	0.013	0.00029
t-Butyl ethyl ether	ND	0.013	0.00053	ND	0.013	0.00050	ND	0.013	0.00050	ND	0.013	0.00052
2,2-Dichloropropane	ND	0.013	0.00025	ND	0.013	0.00024	ND	0.013	0.00024	ND	0.013	0.00025
t-Amyl methyl ether	ND	0.013	0.00019	ND	0.013	0.00018	ND	0.013	0.00018	ND	0.013	0.00018
1,4-Dioxane	ND	0.013	0.00046	ND	0.013	0.00044	ND	0.013	0.00044	ND	0.013	0.00045
Naphthalene	0.0014 J	0.013	0.0010	ND	0.013	0.00097	0.0015 J	0.013	0.00097	0.0024 J	0.013	0.00100
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.
d = Analyte reported from secondary dilution.

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	4/6/21 14:19
QC Batch No.:	210406MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.00020	0.000031
Chloromethane	ND	0.00040	0.000044
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040
Vinyl Chloride	ND	0.00020	0.000032
Bromomethane	ND	0.00020	0.000059
Chloroethane	ND	0.00020	0.00017
Trichlorofluoromethane (11)	ND	0.00020	0.000043
1,1-Dichloroethene	ND	0.00020	0.000045
Carbon Disulfide	ND	0.0010	0.000048
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054
Acetone	ND	0.0010	0.000058
Methylene Chloride	ND	0.00020	0.000057
t-1,2-Dichloroethene	ND	0.00020	0.000060
1,1-Dichloroethane	ND	0.00020	0.000027
c-1,2-Dichloroethene	ND	0.00020	0.000039
2-Butanone	ND	0.00020	0.00012
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045
Chloroform	ND	0.00020	0.000028
1,1,1-Trichloroethane	ND	0.00020	0.000020
Carbon Tetrachloride	ND	0.00020	0.000035
Benzene	0.000027 J	0.00020	0.000019
1,2-Dichloroethane	ND	0.00020	0.000015
Trichloroethene	ND	0.00020	0.000028
1,2-Dichloropropane	ND	0.00020	0.000036
Bromodichloromethane	ND	0.00020	0.000012
c-1,3-Dichloropropene	ND	0.00020	0.000024
4-Methyl-2-Pentanone	ND	0.00020	0.000013
Toluene	ND	0.00020	0.000016
t-1,3-Dichloropropene	ND	0.00020	0.000021
1,1,2-Trichloroethane	ND	0.00020	0.000032
1,3-Dichloropropane	ND	0.00020	0.0000099
Tetrachloroethene	ND	0.00020	0.000024
2-Hexanone	ND	0.00020	0.000041
Dibromochloromethane	ND	0.00020	0.000036
1,2-Dibromoethane	ND	0.00020	0.000018
Chlorobenzene	ND	0.00020	0.000016
Ethylbenzene	ND	0.00020	0.000011
p,&m-Xylene	ND	0.00020	0.000023
o-Xylene	ND	0.00020	0.000024

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	4/6/21 14:19
QC Batch No.:	210406MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Styrene	ND	0.00020	0.000026
Bromoform	ND	0.00020	0.000011
Isopropyl benzene	ND	0.00020	0.000021
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012
Benzyl Chloride	ND	0.00020	0.000037
1,2,3-Trichloropropane	ND	0.00020	0.000054
n-Propyl Benzene	ND	0.00020	0.000012
4-Ethyl Toluene	ND	0.00020	0.000013
1,3,5-Trimethylbenzene	ND	0.00040	0.000035
4-Chlorotoluene	ND	0.00020	0.000024
tert-Butylbenzene	ND	0.00020	0.000018
1,2,4-Trimethylbenzene	ND	0.00040	0.000023
sec-Butylbenzene	ND	0.00020	0.000019
p-Isopropyltoluene	ND	0.00020	0.000026
1,3-Dichlorobenzene	ND	0.00020	0.000024
1,4-Dichlorobenzene	ND	0.00020	0.000029
n-Butylbenzene	ND	0.00020	0.000015
1,2-Dichlorobenzene	ND	0.00020	0.000025
1,2,4-Trichlorobenzene	ND	0.00040	0.000033
Hexachlorobutadiene	ND	0.00020	0.000012
t-Butanol	ND	0.0010	0.000038
n-Hexane	ND	0.0010	0.000027
Isopropyl ether	ND	0.0010	0.000022
t-Butyl ethyl ether	ND	0.0010	0.000040
2,2-Dichloropropane	ND	0.0010	0.000019
t-Amyl methyl ether	ND	0.0010	0.000014
1,4-Dioxane	ND	0.0010	0.000035
Naphthalene	ND	0.0010	0.000077
1,2,3-Trichlorobenzene (TIC)	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 210406MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	4/6/21 14:19			4/6/21 13:07		4/6/21 13:42					
Analyst Initials:	DT			DT		DT					
Dilution Factor:	0.20			1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.010	0.0100	100	0.0100	100	0.3	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.0103	103	0.0106	106	2.6	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00959	95.9	0.00968	96.8	0.9	70	130	30.0
Toluene	ND	0.00020	0.010	0.0104	104	0.0104	104	0.0	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00946	94.6	0.00973	97.3	2.7	70	130	30.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date:** 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	M040205-01		M040205-02		M040205-03		M040205-04	
Client Sample I.D.:	VEFF-0401		VEFF-0401-D		VPOST-0401		VINF-0401	
Date/Time Sampled:	4/1/21 10:00		4/1/21 10:00		4/1/21 10:15		4/1/21 10:25	
Date/Time Analyzed:	4/8/21 12:22		4/8/21 12:44		4/8/21 16:06		4/8/21 16:29	
QC Batch No.:	210408GC11A1		210408GC11A1		210408GC11A1		210408GC11A1	
Analyst Initials:	CM		CM		CM		CM	
Dilution Factor:	2.7		2.5		2.5		4.0	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	3.1	2.7	ND	2.5	12	2.5	30	4.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210408GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	4/8/21 10:53		4/8/21 10:08		4/8/21 10:31					
Analyst Initials:	CM		CM		CM					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	4.87	97	4.83	97	0.8	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 04/02/21
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	M040205-04							
Client Sample I.D.:	VINF-0401							
Date/Time Sampled:	4/1/21 10:25							
Date/Time Analyzed:	4/7/21 12:38							
QC Batch No.:	210407GC8A1							
Analyst Initials:	CM							
Dilution Factor:	4.0							
ANALYTE	Result % v/v	RL % v/v						
Carbon Dioxide	0.44	0.040						
Oxygen/Argon	21	2.0						
Nitrogen	78	4.0						
Methane	ND	0.0040						

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210407GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	4/7/21 10:35			4/7/21 9:51		4/7/21 10:06					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.71	97	9.41	94	3.2	70	130	30
Oxygen/Argon	ND	0.50	15	14.5	98	14.9	101	2.5	70	130	30
Nitrogen	ND	1.0	70	66.3	95	67.4	96	1.8	70	130	30
Methane	ND	0.0010	0.10	0.0927	93	0.0912	91	1.6	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 4/14/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY
Laboratories, Inc.

May 19, 2021

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M050506-01/04

Enclosed are results for sample(s) received 5/05/21 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 5/18/21.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

M050506-01/04

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

CHAIN OF CUSTODY RECORD

DATE: 5/1/21
PAGE: 1 of 1

Section A (Required Client Information)	Section B (Required Project Information)	Section C (Invoice Information)	Section D (Sampler Information)
Company: **Jacobs** **Attention: Eric Davis**	Report To: Eric Davis	Attention: Eric Davis	Sampler Name: James Dye
Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Copy To: Court Reece	Company Name: Jacobs	Sampler Signature:
Email To: eric.davis@jacobs.com	Purchase Order No.:	Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Sample Date: 5/1/21
Phone: 404-323-1600 Fax:	Project Name: **SFPP Norwalk**	Project Manager: Joann De La Ossa	

Section E (Required Sample Information)

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test	TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Argon, CO2, CH4, N2)	Comments
1	VEFF-050121	Effluent (stack)	Vapor	G	5/1/21	0700	1		X	X		Individually Certified 6-Liter SUMMA
2	VEFF-050121 D	Effluent (stack) (duplicate)	Vapor	G	5/1/21	0700	1		X	X		Individually Certified 6-Liter SUMMA
3	VPOST-050121	Influent (post-dilution)	Vapor	G	5/1/21	0715	1		X	X		Individually Certified 1-Liter SUMMA
4	VINF-050121	Influent (pre-dilution)	Vapor	G	5/1/21	0725	1		X	X	X	Batch Certified 1-Liter Summa
5	050121											Target analytes includes Historical VOCs and remaining ATLI list per subcontract
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name)	Date / Time	Relinquished by (Signature and Printed Name)	Date / Time
James Dye	5/4/21 1430	FED EX	5/4/21 1430
FED EX	5/5/21		5/5/21 1130

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M050506-01			M050506-02			M050506-03			M050506-04		
Client Sample I.D.:	VEFF-050121			VEFF-050121D			VPOST-050121			VINF-050121		
Date/Time Sampled:	5/1/21 7:00			5/1/21 7:00			5/1/21 7:15			5/1/21 7:25		
Date/Time Analyzed:	5/12/21 20:48			5/12/21 21:23			5/13/21 10:15			5/13/21 10:51		
QC Batch No.:	210512MS2A1			210512MS2A1			210513MS2A1			210513MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			20			25		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Benzene	0.0022 J	0.0025	0.00024	0.0024 J	0.0025	0.00024	0.36	0.020	0.0019	0.52	0.025	0.0024
Chloroform	ND	0.0025	0.00035	ND	0.0025	0.00035	ND	0.020	0.0028	ND	0.025	0.0035
Carbon Tetrachloride	ND	0.0025	0.00044	ND	0.0025	0.00044	ND	0.020	0.0035	ND	0.025	0.0044
1,4-Dioxane	ND	0.013	0.00044	ND	0.013	0.00044	ND	0.10	0.0035	ND	0.13	0.0044
1,4-Dichlorobenzene	ND	0.0025	0.00037	ND	0.0025	0.00037	ND	0.020	0.0030	ND	0.025	0.0037
1,1-Dichloroethane	ND	0.0025	0.00034	ND	0.0025	0.00034	ND	0.020	0.0028	ND	0.025	0.0034
Ethylbenzene	0.0068	0.0025	0.00015	0.0069	0.0025	0.00015	0.34	0.020	0.0012	0.56	0.025	0.0015
1,2-Dichloroethane	ND	0.0025	0.00019	ND	0.0025	0.00019	0.0064 J	0.020	0.0015	0.0085 J	0.025	0.0019
Methylene Chloride	ND	0.0025	0.00072	ND	0.0025	0.00072	ND	0.020	0.0058	ND	0.025	0.0072
t-Butyl Methyl Ether (MTBE)	ND	0.0025	0.00056	ND	0.0025	0.00056	ND	0.020	0.0045	ND	0.025	0.0056
Tetrachloroethene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.020	0.0024	ND	0.025	0.0030
1,1,2-Trichloroethane	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.020	0.0033	ND	0.025	0.0041
Trichloroethene	ND	0.0025	0.00036	ND	0.0025	0.00036	ND	0.020	0.0029	ND	0.025	0.0036
Vinyl Chloride	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.020	0.0033	ND	0.025	0.0041
Naphthalene	ND	0.013	0.00097	ND	0.013	0.00097	ND	0.10	0.0078	ND	0.13	0.0097
c-1,2-Dichloroethene	ND	0.0025	0.00049	ND	0.0025	0.00049	ND	0.020	0.0039	ND	0.025	0.0049
2-Butanone	0.011	0.0025	0.0016	0.013	0.0025	0.0016	0.024	0.020	0.012	ND	0.025	0.016
Dichlorodifluoromethane (12)	ND	0.0025	0.00039	ND	0.0025	0.00039	ND	0.020	0.0031	ND	0.025	0.0039
Chloromethane	ND	0.0051	0.00056	ND	0.0051	0.00056	ND	0.040	0.0044	ND	0.051	0.0056
1,1,1-Trichloroethane	ND	0.0025	0.00025	ND	0.0025	0.00025	ND	0.020	0.0020	ND	0.025	0.0025
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0025	0.00051	ND	0.0025	0.00051	ND	0.020	0.0041	ND	0.025	0.0051
Bromomethane	ND	0.0025	0.00074	ND	0.0025	0.00074	ND	0.020	0.0059	ND	0.025	0.0074
Chloroethane	ND	0.0025	0.0021	ND	0.0025	0.0021	ND	0.020	0.017	ND	0.025	0.021
Trichlorofluoromethane (11)	ND	0.0025	0.00054	ND	0.0025	0.00054	ND	0.020	0.0043	ND	0.025	0.0054
1,2-Dichloropropane	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.020	0.0037	ND	0.025	0.0046
Bromodichloromethane	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.020	0.0012	ND	0.025	0.0015
c-1,3-Dichloropropene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.020	0.0024	ND	0.025	0.0030
4-Methyl-2-Pentanone	ND	0.0025	0.00017	ND	0.0025	0.00017	ND	0.020	0.0014	ND	0.025	0.0017
Toluene	0.0073	0.0025	0.00020	0.0075	0.0025	0.00020	1.4	0.020	0.0016	2.1	0.025	0.0020
t-1,3-Dichloropropene	ND	0.0025	0.00026	ND	0.0025	0.00026	ND	0.020	0.0021	ND	0.025	0.0026
1,1-Dichloroethene	ND	0.0025	0.00057	ND	0.0025	0.00057	ND	0.020	0.0046	ND	0.025	0.0057
1,3-Dichloropropane	ND	0.0025	0.00013	ND	0.0025	0.00013	ND	0.020	0.0010	ND	0.025	0.0013
Carbon Disulfide	0.072	0.013	0.00061	0.048	0.013	0.00061	0.12	0.10	0.0048	0.088 J	0.13	0.0061
2-Hexanone	ND	0.0025	0.00052	ND	0.0025	0.00052	ND	0.020	0.0042	ND	0.025	0.0052
Dibromochloromethane	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.020	0.0037	ND	0.025	0.0046
1,2-Dibromoethane	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.020	0.0018	ND	0.025	0.0023
Chlorobenzene	ND	0.0025	0.00020	ND	0.0025	0.00020	0.0059 J	0.020	0.0016	0.0094 J	0.025	0.0020
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.020	0.0054	ND	0.025	0.0068
p,&m-Xylene	0.053	0.0025	0.00029	0.053	0.0025	0.00029	2.1	0.020	0.0023	2.7	0.025	0.0029

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M050506-01			M050506-02			M050506-03			M050506-04		
Client Sample I.D.:	VEFF-050121			VEFF-050121D			VPOST-050121			VINF-050121		
Date/Time Sampled:	5/1/21 7:00			5/1/21 7:00			5/1/21 7:15			5/1/21 7:25		
Date/Time Analyzed:	5/12/21 20:48			5/12/21 21:23			5/13/21 10:15			5/13/21 10:51		
QC Batch No.:	210512MS2A1			210512MS2A1			210513MS2A1			210513MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			20			25		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
o-Xylene	0.018	0.0025	0.00031	0.018	0.0025	0.00031	0.31	0.020	0.0025	0.71	0.025	0.0031
Styrene	0.0014 J	0.0025	0.00032	0.0011 J	0.0025	0.00032	0.0091 J	0.020	0.0026	0.020 J	0.025	0.0032
Bromoform	ND	0.0025	0.00014	ND	0.0025	0.00014	ND	0.020	0.0011	ND	0.025	0.0014
Isopropyl benzene	0.00050 J	0.0025	0.00026	0.00049 J	0.0025	0.00026	0.025	0.020	0.0021	0.040	0.025	0.0026
1,1,2,2-Tetrachloroethane	ND	0.0051	0.00015	ND	0.0051	0.00015	ND	0.040	0.0012	ND	0.051	0.0015
Benzyl Chloride	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.020	0.0037	ND	0.025	0.0046
1,2,3-Trichloropropane	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.020	0.0054	ND	0.025	0.0068
n-Propyl Benzene	0.0015 J	0.0025	0.00015	0.0013 J	0.0025	0.00015	0.043	0.020	0.0012	0.069	0.025	0.0015
4-Ethyl Toluene	0.0049	0.0025	0.00016	0.0043	0.0025	0.00016	0.28	0.020	0.0013	0.47	0.025	0.0016
1,3,5-Trimethylbenzene	0.0022 J	0.0051	0.00044	0.0020 J	0.0051	0.00044	0.17	0.040	0.0035	0.30	0.051	0.0044
4-Chlorotoluene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.020	0.0024	ND	0.025	0.0030
tert-Butylbenzene	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.020	0.0018	ND	0.025	0.0023
1,2,4-Trimethylbenzene	0.0055	0.0051	0.00029	0.0041 J	0.0051	0.00029	0.074	0.040	0.0023	0.14	0.051	0.0029
sec-Butylbenzene	ND	0.0025	0.00024	ND	0.0025	0.00024	0.0050 J	0.020	0.0020	0.0078 J	0.025	0.0024
p-Isopropyltoluene	0.013	0.0025	0.00033	0.0016 J	0.0025	0.00033	0.011 J	0.020	0.0026	0.0087 J	0.025	0.0033
1,3-Dichlorobenzene	ND	0.0025	0.00031	ND	0.0025	0.00031	ND	0.020	0.0025	ND	0.025	0.0031
Acetone	0.089	0.013	0.00073	0.085	0.013	0.00073	0.20	0.10	0.0058	0.18	0.13	0.0073
n-Butylbenzene	0.00060 J	0.0025	0.00018	0.00025 J	0.0025	0.00018	ND	0.020	0.0015	ND	0.025	0.0018
1,2-Dichlorobenzene	ND	0.0025	0.00031	ND	0.0025	0.00031	ND	0.020	0.0025	ND	0.025	0.0031
1,2,4-Trichlorobenzene	ND	0.0051	0.00042	ND	0.0051	0.00042	ND	0.040	0.0033	ND	0.051	0.0042
Hexachlorobutadiene	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.020	0.0012	ND	0.025	0.0015
t-Butanol	0.0036 J	0.013	0.00048	0.0024 J	0.013	0.00048	0.028 J	0.10	0.0039	0.026 J	0.13	0.0048
n-Hexane	0.0064 J	0.013	0.00034	0.0066 J	0.013	0.00034	2.9	0.10	0.0027	4.2	0.13	0.0034
Isopropyl ether	ND	0.013	0.00028	ND	0.013	0.00028	ND	0.10	0.0022	ND	0.13	0.0028
t-Butyl ethyl ether	ND	0.013	0.00050	ND	0.013	0.00050	ND	0.10	0.0040	ND	0.13	0.0050
2,2-Dichloropropane	ND	0.013	0.00024	ND	0.013	0.00024	ND	0.10	0.0019	ND	0.13	0.0024
t-Amyl methyl ether	ND	0.013	0.00018	ND	0.013	0.00018	ND	0.10	0.0014	ND	0.13	0.0018
t-1,2-Dichloroethene	ND	0.0025	0.00076	ND	0.0025	0.00076	ND	0.020	0.0060	ND	0.025	0.0076
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 5-18-21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK		
Client Sample I.D.:	-			-		
Date/Time Sampled:	-			-		
Date/Time Analyzed:	5/12/21 14:33			5/13/21 6:26		
QC Batch No.:	210512MS2A1			210513MS2A1		
Analyst Initials:	DT			DT		
Dilution Factor:	0.20			0.20		

ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Benzene	0.000052 J	0.00020	0.000019	ND	0.00020	0.000019
Chloroform	ND	0.00020	0.000028	ND	0.00020	0.000028
Carbon Tetrachloride	ND	0.00020	0.000035	ND	0.00020	0.000035
1,4-Dioxane	ND	0.0010	0.000035	ND	0.0010	0.000035
1,4-Dichlorobenzene	ND	0.00020	0.000029	ND	0.00020	0.000029
1,1-Dichloroethane	ND	0.00020	0.000027	ND	0.00020	0.000027
Ethylbenzene	ND	0.00020	0.000011	ND	0.00020	0.000011
1,2-Dichloroethane	ND	0.00020	0.000015	ND	0.00020	0.000015
Methylene Chloride	ND	0.00020	0.000057	ND	0.00020	0.000057
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045	ND	0.00020	0.000045
Tetrachloroethene	ND	0.00020	0.000024	ND	0.00020	0.000024
1,1,2-Trichloroethane	ND	0.00020	0.000032	ND	0.00020	0.000032
Trichloroethene	ND	0.00020	0.000028	ND	0.00020	0.000028
Vinyl Chloride	ND	0.00020	0.000032	ND	0.00020	0.000032
Naphthalene	ND	0.0010	0.000077	ND	0.0010	0.000077
c-1,2-Dichloroethene	ND	0.00020	0.000039	ND	0.00020	0.000039
2-Butanone	ND	0.00020	0.00012	ND	0.00020	0.00012
Dichlorodifluoromethane (12)	ND	0.00020	0.000031	ND	0.00020	0.000031
Chloromethane	ND	0.00040	0.000044	ND	0.00040	0.000044
1,1,1-Trichloroethane	ND	0.00020	0.000020	ND	0.00020	0.000020
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040	ND	0.00020	0.000040
Bromomethane	ND	0.00020	0.000059	ND	0.00020	0.000059
Chloroethane	ND	0.00020	0.00017	ND	0.00020	0.00017
Trichlorofluoromethane (11)	ND	0.00020	0.000043	ND	0.00020	0.000043
1,2-Dichloropropane	ND	0.00020	0.000036	ND	0.00020	0.000036
Bromodichloromethane	ND	0.00020	0.000012	ND	0.00020	0.000012
c-1,3-Dichloropropene	ND	0.00020	0.000024	ND	0.00020	0.000024
4-Methyl-2-Pentanone	ND	0.00020	0.000013	ND	0.00020	0.000013
Toluene	0.000057 J	0.00020	0.000016	ND	0.00020	0.000016
t-1,3-Dichloropropene	ND	0.00020	0.000021	ND	0.00020	0.000021
1,1-Dichloroethene	ND	0.00020	0.000045	ND	0.00020	0.000045
1,3-Dichloropropane	ND	0.00020	0.0000099	ND	0.00020	0.0000099
Carbon Disulfide	ND	0.0010	0.000048	ND	0.0010	0.000048
2-Hexanone	ND	0.00020	0.000041	ND	0.00020	0.000041
Dibromochloromethane	ND	0.00020	0.000036	ND	0.00020	0.000036
1,2-Dibromoethane	ND	0.00020	0.000018	ND	0.00020	0.000018
Chlorobenzene	ND	0.00020	0.000016	ND	0.00020	0.000016
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054	ND	0.00020	0.000054
p,&m-Xylene	0.000055 J	0.00020	0.000023	ND	0.00020	0.000023

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK								
Client Sample I.D.:	-			-								
Date/Time Sampled:	-			-								
Date/Time Analyzed:	5/12/21 14:33			5/13/21 6:26								
QC Batch No.:	210512MS2A1			210513MS2A1								
Analyst Initials:	DT			DT								
Dilution Factor:	0.20			0.20								
ANALYTE	**Result ppmv**	**RL ppmv**	**MDL ppmv**	**Result ppmv**	**RL ppmv**	**MDL ppmv**						
o-Xylene	0.000024 J	0.00020	0.000024	ND	0.00020	0.000024						
Styrene	ND	0.00020	0.000026	ND	0.00020	0.000026						
Bromoform	ND	0.00020	0.000011	ND	0.00020	0.000011						
Isopropyl benzene	ND	0.00020	0.000021	ND	0.00020	0.000021						
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012	ND	0.00040	0.000012						
Benzyl Chloride	ND	0.00020	0.000037	ND	0.00020	0.000037						
1,2,3-Trichloropropane	ND	0.00020	0.000054	ND	0.00020	0.000054						
n-Propyl Benzene	ND	0.00020	0.000012	ND	0.00020	0.000012						
4-Ethyl Toluene	ND	0.00020	0.000013	ND	0.00020	0.000013						
1,3,5-Trimethylbenzene	ND	0.00040	0.000035	ND	0.00040	0.000035						
4-Chlorotoluene	ND	0.00020	0.000024	ND	0.00020	0.000024						
tert-Butylbenzene	ND	0.00020	0.000018	ND	0.00020	0.000018						
1,2,4-Trimethylbenzene	ND	0.00040	0.000023	ND	0.00040	0.000023						
sec-Butylbenzene	ND	0.00020	0.000019	ND	0.00020	0.000019						
p-Isopropyltoluene	ND	0.00020	0.000026	ND	0.00020	0.000026						
1,3-Dichlorobenzene	ND	0.00020	0.000024	ND	0.00020	0.000024						
Acetone	ND	0.0010	0.000058	ND	0.0010	0.000058						
n-Butylbenzene	ND	0.00020	0.000015	ND	0.00020	0.000015						
1,2-Dichlorobenzene	ND	0.00020	0.000025	ND	0.00020	0.000025						
1,2,4-Trichlorobenzene	ND	0.00040	0.000033	ND	0.00040	0.000033						
Hexachlorobutadiene	ND	0.00020	0.000012	ND	0.00020	0.000012						
t-Butanol	ND	0.0010	0.000038	ND	0.0010	0.000038						
n-Hexane	ND	0.0010	0.000027	ND	0.0010	0.000027						
Isopropyl ether	ND	0.0010	0.000022	ND	0.0010	0.000022						
t-Butyl ethyl ether	ND	0.0010	0.000040	ND	0.0010	0.000040						
2,2-Dichloropropane	ND	0.0010	0.000019	ND	0.0010	0.000019						
t-Amyl methyl ether	ND	0.0010	0.000014	ND	0.0010	0.000014						
t-1,2-Dichloroethene	ND	0.00020	0.000060	ND	0.00020	0.000060						
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--						

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 5-18-21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 210512MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK				LCS		LCSD					
Date/Time Analyzed:	5/12/21 14:33				5/12/21 13:21		5/12/21 13:56					
Analyst Initials:	DT				DT		DT					
Dilution Factor:	0.20				1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.000015	0.010	0.0108	108	0.0114	114	4.7	70	130	30.0
Methylene Chloride	ND	0.00020	0.000028	0.010	0.0106	106	0.0108	108	2.0	70	130	30.0
Trichloroethene	ND	0.00020	0.000011	0.010	0.0103	103	0.0105	105	1.4	70	130	30.0
Toluene	0.000057 J	0.00020	0.0000088	0.010	0.0106	106	0.0109	109	2.9	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.000020	0.010	0.0106	106	0.0106	106	0.0	70	130	30.0

ND = Not Detected (below MDL)
RL = Reporting Limit
MDL = Method Detection Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ **Date:** 5-18-21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 210513MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK				LCS		LCSD					
Date/Time Analyzed:	5/13/21 6:26				5/13/21 3:57		5/13/21 4:33					
Analyst Initials:	DT				DT		DT					
Dilution Factor:	0.20				1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.000015	0.010	0.0111	111	0.0110	110	0.9	70	130	30.0
Methylene Chloride	ND	0.00020	0.000028	0.010	0.0106	106	0.0110	110	3.7	70	130	30.0
Trichloroethene	ND	0.00020	0.000011	0.010	0.0105	105	0.0106	106	0.5	70	130	30.0
Toluene	ND	0.00020	0.0000088	0.010	0.0107	107	0.0107	107	0.1	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.000020	0.010	0.0103	103	0.0102	102	1.1	70	130	30.0

ND = Not Detected (below MDL)
RL = Reporting Limit
MDL = Method Detection Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date: 5-18-21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	M050506-01		M050506-02		M050506-03		M050506-04	
Client Sample I.D.:	VEFF-050121		VEFF-050121D		VPOST-050121		VINF-050121	
Date/Time Sampled:	5/1/21 7:00		5/1/21 7:00		5/1/21 7:15		5/1/21 7:25	
Date/Time Analyzed:	5/13/21 14:02		5/13/21 14:25		5/13/21 14:48		5/13/21 15:16	
QC Batch No.:	210512GC11A1		210512GC11A1		210512GC11A1		210512GC11A1	
Analyst Initials:	CM		CM		CM		CM	
Dilution Factor:	2.5		2.5		2.5		2.5	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.5	ND	2.5	110	2.5	160	2.5

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 5.18.21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210512GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	5/12/21 20:24		5/12/21 18:31		5/12/21 18:53					
Analyst Initials:	CM		CM		CM					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	5.09	102	5.09	102	0.0	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 5-18-21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 05/05/21
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	M050506-04
Client Sample I.D.:	VINF-050121
Date/Time Sampled:	5/1/21 7:25
Date/Time Analyzed:	5/13/21 14:50
QC Batch No.:	210513GC8A1
Analyst Initials:	CM
Dilution Factor:	2.5

ANALYTE	Result % v/v	RL % v/v
Carbon Dioxide	1.2	0.025
Oxygen/Argon	21	1.3
Nitrogen	78	2.5
Methane	ND	0.0025

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 5-18-21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210513GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	5/13/21 9:11			5/13/21 9:26		5/13/21 9:41					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.59	96	9.60	96	0.2	70	130	30
Oxygen/Argon	ND	0.50	15	16.1	109	16.2	109	0.3	70	130	30
Nitrogen	ND	1.0	70	71.1	102	71.1	102	0.0	70	130	30
Methane	ND	0.0010	0.10	0.0954	95	0.0944	94	1.1	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 5-18-21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Air TECHNOLOGY
Laboratories, Inc.

June 18, 2021

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M060206-01/04

Enclosed are results for sample(s) received 6/02/21 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 6/17/21.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

M060206-61/64

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

CHAIN OF CUSTODY RECORD

DATE: 6/1/21
PAGE: 1 of 1

Section A (Required Client Information)		Section B (Required Project Information)	Section C (Invoice Information)		Section D (Sampler Information)	
Company:	**Jacobs** **Attention: Eric Davis**	Report To: Eric Davis	Attention:	Eric Davis	Sampler Name:	James Dye
Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Copy To: Court Reece	Company Name:	Jacobs	Sampler Signature:	
Email To:	eric.davis@jacobs.com	Purchase Order No.:	Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Sample Date:	6/1/21
Phone: 404-323-1600	Fax:	Project Name: **SFPP Norwalk**	Project Manager:	Joann De La Ossa		

Section E (Required Sample Information)

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test: TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Argon, CO2, CH4, N2)	Comments
	CONTAINER TYPE										
	# OF CONTAINERS										
	PRESERVATIVE										
	VOLUME (mL)										
1	VEFF-060121	Effluent (stack)	Vapor	G	6/1/21	0700	1	X	X		Individually Certified 6-Liter SUMMA
2	VEFF-060121D	Effluent (stack) (duplicate)	Vapor	G	6/1/21	0700	1	X	X		Individually Certified 6-Liter SUMMA
3	VPOST-060121	Influent (post-dilution)	Vapor	G	6/1/21	0715	1	X	X		Individually Certified 1-Liter SUMMA
4	VINF-060121	Influent (pre-dilution)	Vapor	G	6/1/21	0725	1	X	X	X	Batch Certified 1-Liter Summa
5											Target analytes includes Historical VOCs and remaining ATLI list per subcontract
6											
7											
8											
9											
10											

Relinquished by (Signature and Printed Name) / Date / Time	Relinquished by (Signature and Printed Name) / Date / Time
JAMES DYE 6/1/21 1400	FEDEX 6/1/21 1400
FED EX 6/2/21	[illegible] 6/2/21 1310

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M060206-01			M060206-02			M060206-03			M060206-04		
Client Sample I.D.:	VEFF-060121			VEFF-060121-D			VPOST-060121			VINF-060121		
Date/Time Sampled:	6/1/21 7:00			6/1/21 7:00			6/1/21 7:15			6/1/21 7:25		
Date/Time Analyzed:	6/14/21 21:39			6/14/21 22:14			6/15/21 8:09			6/15/21 8:44		
QC Batch No.:	210614MS2A1			210614MS2A1			210615MS2A1			210615MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			24			30		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Benzene	0.0060	0.0025	0.00024	0.0084	0.0025	0.00024	1.1	0.024	0.0023	1.4	0.030	0.0029
Chloroform	ND	0.0025	0.00035	ND	0.0025	0.00035	ND	0.024	0.0034	ND	0.030	0.0042
Carbon Tetrachloride	ND	0.0025	0.00044	ND	0.0025	0.00044	ND	0.024	0.0042	ND	0.030	0.0052
1,4-Dioxane	ND	0.013	0.00044	ND	0.013	0.00044	ND	0.12	0.0042	ND	0.15	0.0053
1,4-Dichlorobenzene	ND	0.0025	0.00037	ND	0.0025	0.00037	ND	0.024	0.0035	ND	0.030	0.0044
1,1-Dichloroethane	ND	0.0025	0.00034	ND	0.0025	0.00034	ND	0.024	0.0033	ND	0.030	0.0041
Ethylbenzene	0.0093	0.0025	0.00015	0.014	0.0025	0.00015	0.95	0.024	0.0014	0.97	0.030	0.0017
1,2-Dichloroethane	ND	0.0025	0.00019	ND	0.0025	0.00019	0.017 J	0.024	0.0018	0.017 J	0.030	0.0022
Methylene Chloride	ND	0.0025	0.00072	ND	0.0025	0.00072	ND	0.024	0.0069	ND	0.030	0.0086
t-Butyl Methyl Ether (MTBE)	ND	0.0025	0.00056	ND	0.0025	0.00056	ND	0.024	0.0054	ND	0.030	0.0067
Tetrachloroethene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.024	0.0029	ND	0.030	0.0036
1,1,2-Trichloroethane	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.024	0.0039	ND	0.030	0.0049
Trichloroethene	ND	0.0025	0.00036	ND	0.0025	0.00036	ND	0.024	0.0034	ND	0.030	0.0043
Vinyl Chloride	ND	0.0025	0.00041	ND	0.0025	0.00041	ND	0.024	0.0039	ND	0.030	0.0049
Naphthalene	ND	0.013	0.00097	ND	0.013	0.00097	ND	0.12	0.0092	ND	0.15	0.012
c-1,2-Dichloroethene	ND	0.0025	0.00049	ND	0.0025	0.00049	ND	0.024	0.0046	ND	0.030	0.0058
2-Butanone	0.010	0.0025	0.0016	0.0052	0.0025	0.0016	0.042	0.024	0.015	0.045	0.030	0.019
Dichlorodifluoromethane (12)	ND	0.0025	0.00039	ND	0.0025	0.00039	ND	0.024	0.0037	ND	0.030	0.0046
Chloromethane	ND	0.0051	0.00056	ND	0.0051	0.00056	ND	0.048	0.0053	ND	0.060	0.0066
1,1,1-Trichloroethane	ND	0.0025	0.00025	ND	0.0025	0.00025	ND	0.024	0.0024	ND	0.030	0.0030
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0025	0.00051	ND	0.0025	0.00051	ND	0.024	0.0048	ND	0.030	0.0060
Bromomethane	ND	0.0025	0.00074	ND	0.0025	0.00074	ND	0.024	0.0071	ND	0.030	0.0088
Chloroethane	ND	0.0025	0.0021	ND	0.0025	0.0021	ND	0.024	0.020	ND	0.030	0.025
Trichlorofluoromethane (11)	ND	0.0025	0.00054	ND	0.0025	0.00054	ND	0.024	0.0052	ND	0.030	0.0065
1,2-Dichloropropane	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.024	0.0044	ND	0.030	0.0054
Bromodichloromethane	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.024	0.0014	ND	0.030	0.0018
c-1,3-Dichloropropene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.024	0.0029	ND	0.030	0.0036
4-Methyl-2-Pentanone	ND	0.0025	0.00017	ND	0.0025	0.00017	ND	0.024	0.0016	ND	0.030	0.0020
Toluene	0.023	0.0025	0.00020	0.033	0.0025	0.00020	1.9	0.024	0.0019	2.9	0.030	0.0024
t-1,3-Dichloropropene	ND	0.0025	0.00026	ND	0.0025	0.00026	ND	0.024	0.0025	ND	0.030	0.0031
1,1-Dichloroethene	ND	0.0025	0.00057	ND	0.0025	0.00057	ND	0.024	0.0055	ND	0.030	0.0068
1,3-Dichloropropane	ND	0.0025	0.00013	ND	0.0025	0.00013	ND	0.024	0.0012	ND	0.030	0.0015
Carbon Disulfide	0.0090 J	0.013	0.00061	0.025	0.013	0.00061	0.059 J	0.12	0.0058	0.040 J	0.15	0.0072
2-Hexanone	ND	0.0051	0.00052	ND	0.0051	0.00052	ND	0.048	0.0050	ND	0.060	0.0062
Dibromochloromethane	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.024	0.0044	ND	0.030	0.0055
1,2-Dibromoethane	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.024	0.0022	ND	0.030	0.0027
Chlorobenzene	ND	0.0025	0.00020	ND	0.0025	0.00020	0.017 J	0.024	0.0019	0.017 J	0.030	0.0023
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.024	0.0065	ND	0.030	0.0081
p,&m-Xylene	0.067	0.0025	0.00029	0.099	0.0025	0.00029	3.2	0.024	0.0027	3.1	0.030	0.0034

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	M060206-01			M060206-02			M060206-03			M060206-04		
Client Sample I.D.:	VEFF-060121			VEFF-060121-D			VPOST-060121			VINF-060121		
Date/Time Sampled:	6/1/21 7:00			6/1/21 7:00			6/1/21 7:15			6/1/21 7:25		
Date/Time Analyzed:	6/14/21 21:39			6/14/21 22:14			6/15/21 8:09			6/15/21 8:44		
QC Batch No.:	210614MS2A1			210614MS2A1			210615MS2A1			210615MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			24			30		
ANALYTE	**Result ppmv**	**RL ppmv**	**MDL ppmv**	**Result ppmv**	**RL ppmv**	**MDL ppmv**	**Result ppmv**	**RL ppmv**	**MDL ppmv**	**Result ppmv**	**RL ppmv**	**MDL ppmv**
o-Xylene	0.027	0.0025	0.00031	0.040	0.0025	0.00031	0.43	0.024	0.0029	0.44	0.030	0.0037
Styrene	0.0012 J	0.0025	0.00032	0.0021 J	0.0025	0.00032	0.015 J	0.024	0.0031	0.015 J	0.030	0.0039
Bromoform	ND	0.0025	0.00014	ND	0.0025	0.00014	ND	0.024	0.0013	ND	0.030	0.0017
Isopropyl benzene	0.00046 J	0.0025	0.00026	0.00072 J	0.0025	0.00026	0.013 J	0.024	0.0025	0.014 J	0.030	0.0031
1,1,2,2-Tetrachloroethane	ND	0.0051	0.00015	ND	0.0051	0.00015	ND	0.048	0.0015	ND	0.060	0.0018
Benzyl Chloride	ND	0.0025	0.00046	ND	0.0025	0.00046	ND	0.024	0.0044	ND	0.030	0.0055
1,2,3-Trichloropropane	ND	0.0025	0.00068	ND	0.0025	0.00068	ND	0.024	0.0065	ND	0.030	0.0081
n-Propyl Benzene	0.0012 J	0.0025	0.00015	0.0018 J	0.0025	0.00015	0.023 J	0.024	0.0014	0.019 J	0.030	0.0017
4-Ethyl Toluene	0.0080	0.0025	0.00016	0.013	0.0025	0.00016	0.21	0.024	0.0015	0.17	0.030	0.0019
1,3,5-Trimethylbenzene	0.0044 J	0.0051	0.00044	0.0072	0.0051	0.00044	0.14	0.048	0.0042	0.11	0.060	0.0052
4-Chlorotoluene	ND	0.0025	0.00030	ND	0.0025	0.00030	ND	0.024	0.0029	ND	0.030	0.0036
tert-Butylbenzene	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.024	0.0022	ND	0.030	0.0027
1,2,4-Trimethylbenzene	0.0067	0.0051	0.00029	0.011	0.0051	0.00029	0.12	0.048	0.0027	0.12	0.060	0.0034
sec-Butylbenzene	ND	0.0025	0.00024	ND	0.0025	0.00024	ND	0.024	0.0023	ND	0.030	0.0029
p-Isopropyltoluene	0.0013 J	0.0025	0.00033	0.0025 J	0.0025	0.00033	0.0035 J	0.024	0.0031	ND	0.030	0.0039
1,3-Dichlorobenzene	ND	0.0025	0.00031	ND	0.0025	0.00031	ND	0.024	0.0029	ND	0.030	0.0036
Acetone	0.100	0.013	0.00073	0.10	0.013	0.00073	0.51	0.12	0.0069	0.39	0.15	0.0087
n-Butylbenzene	0.00042 J	0.0025	0.00018	ND	0.0025	0.00018	ND	0.024	0.0018	ND	0.030	0.0022
1,2-Dichlorobenzene	ND	0.0025	0.00031	ND	0.0025	0.00031	ND	0.024	0.0030	ND	0.030	0.0037
1,2,4-Trichlorobenzene	ND	0.0051	0.00042	ND	0.0051	0.00042	ND	0.048	0.0040	ND	0.060	0.0050
Hexachlorobutadiene	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.024	0.0014	ND	0.030	0.0018
t-Butanol	0.0025 J	0.013	0.00048	0.0018 J	0.013	0.00048	0.040 J	0.12	0.0046	0.066 J	0.15	0.0058
n-Hexane	0.0094 J	0.013	0.00034	0.015	0.013	0.00034	5.4	0.12	0.0032	6.0	0.15	0.0040
Isopropyl ether	ND	0.013	0.00028	ND	0.013	0.00028	0.013 J	0.12	0.0027	0.013 J	0.15	0.0033
t-Butyl ethyl ether	ND	0.013	0.00050	ND	0.013	0.00050	ND	0.12	0.0048	ND	0.15	0.0060
2,2-Dichloropropane	ND	0.013	0.00024	ND	0.013	0.00024	ND	0.12	0.0023	ND	0.15	0.0029
t-Amyl methyl ether	ND	0.013	0.00018	ND	0.013	0.00018	ND	0.12	0.0017	ND	0.15	0.0021
t-1,2-Dichloroethene	ND	0.0025	0.00076	ND	0.0025	0.00076	ND	0.024	0.0072	ND	0.030	0.0090
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 6/7/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK		
Client Sample I.D.:	-			-		
Date/Time Sampled:	-			-		
Date/Time Analyzed:	6/14/21 10:52			6/15/21 3:00		
QC Batch No.:	210614MS2A1			210615MS2A1		
Analyst Initials:	DT			DT		
Dilution Factor:	0.20			0.20		

ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Benzene	0.000057 J	0.00020	0.000019	0.000040 J	0.00020	0.000019
Chloroform	ND	0.00020	0.000028	ND	0.00020	0.000028
Carbon Tetrachloride	ND	0.00020	0.000035	ND	0.00020	0.000035
1,4-Dioxane	ND	0.0010	0.000035	ND	0.0010	0.000035
1,4-Dichlorobenzene	ND	0.00020	0.000029	ND	0.00020	0.000029
1,1-Dichloroethane	ND	0.00020	0.000027	ND	0.00020	0.000027
Ethylbenzene	ND	0.00020	0.000011	ND	0.00020	0.000011
1,2-Dichloroethane	ND	0.00020	0.000015	ND	0.00020	0.000015
Methylene Chloride	ND	0.00020	0.000057	ND	0.00020	0.000057
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045	ND	0.00020	0.000045
Tetrachloroethene	ND	0.00020	0.000024	ND	0.00020	0.000024
1,1,2-Trichloroethane	ND	0.00020	0.000032	ND	0.00020	0.000032
Trichloroethene	ND	0.00020	0.000028	ND	0.00020	0.000028
Vinyl Chloride	ND	0.00020	0.000032	ND	0.00020	0.000032
Naphthalene	ND	0.0010	0.000077	ND	0.0010	0.000077
c-1,2-Dichloroethene	ND	0.00020	0.000039	ND	0.00020	0.000039
2-Butanone	ND	0.00020	0.00012	ND	0.00020	0.00012
Dichlorodifluoromethane (12)	ND	0.00020	0.000031	ND	0.00020	0.000031
Chloromethane	ND	0.00040	0.000044	ND	0.00040	0.000044
1,1,1-Trichloroethane	ND	0.00020	0.000020	ND	0.00020	0.000020
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040	ND	0.00020	0.000040
Bromomethane	ND	0.00020	0.000059	ND	0.00020	0.000059
Chloroethane	ND	0.00020	0.00017	ND	0.00020	0.00017
Trichlorofluoromethane (11)	ND	0.00020	0.000043	ND	0.00020	0.000043
1,2-Dichloropropane	ND	0.00020	0.000036	ND	0.00020	0.000036
Bromodichloromethane	ND	0.00020	0.000012	ND	0.00020	0.000012
c-1,3-Dichloropropene	ND	0.00020	0.000024	ND	0.00020	0.000024
4-Methyl-2-Pentanone	ND	0.00020	0.000013	ND	0.00020	0.000013
Toluene	ND	0.00020	0.000016	ND	0.00020	0.000016
t-1,3-Dichloropropene	ND	0.00020	0.000021	ND	0.00020	0.000021
1,1-Dichloroethene	ND	0.00020	0.000045	ND	0.00020	0.000045
1,3-Dichloropropane	ND	0.00020	0.0000099	ND	0.00020	0.0000099
Carbon Disulfide	ND	0.0010	0.000048	ND	0.0010	0.000048
2-Hexanone	ND	0.00040	0.000041	ND	0.00040	0.000041
Dibromochloromethane	ND	0.00020	0.000036	ND	0.00020	0.000036
1,2-Dibromoethane	ND	0.00020	0.000018	ND	0.00020	0.000018
Chlorobenzene	ND	0.00020	0.000016	ND	0.00020	0.000016
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054	ND	0.00020	0.000054
p,&m-Xylene	ND	0.00020	0.000023	ND	0.00020	0.000023

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK								
Client Sample I.D.:	-			-								
Date/Time Sampled:	-			-								
Date/Time Analyzed:	6/14/21 10:52			6/15/21 3:00								
QC Batch No.:	210614MS2A1			210615MS2A1								
Analyst Initials:	DT			DT								
Dilution Factor:	0.20			0.20								
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv						
o-Xylene	ND	0.00020	0.000024	ND	0.00020	0.000024						
Styrene	ND	0.00020	0.000026	ND	0.00020	0.000026						
Bromoform	ND	0.00020	0.000011	ND	0.00020	0.000011						
Isopropyl benzene	ND	0.00020	0.000021	ND	0.00020	0.000021						
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012	ND	0.00040	0.000012						
Benzyl Chloride	ND	0.00020	0.000037	ND	0.00020	0.000037						
1,2,3-Trichloropropane	ND	0.00020	0.000054	ND	0.00020	0.000054						
n-Propyl Benzene	ND	0.00020	0.000012	ND	0.00020	0.000012						
4-Ethyl Toluene	ND	0.00020	0.000013	ND	0.00020	0.000013						
1,3,5-Trimethylbenzene	ND	0.00040	0.000035	ND	0.00040	0.000035						
4-Chlorotoluene	ND	0.00020	0.000024	ND	0.00020	0.000024						
tert-Butylbenzene	ND	0.00020	0.000018	ND	0.00020	0.000018						
1,2,4-Trimethylbenzene	ND	0.00040	0.000023	ND	0.00040	0.000023						
sec-Butylbenzene	ND	0.00020	0.000019	ND	0.00020	0.000019						
p-Isopropyltoluene	ND	0.00020	0.000026	ND	0.00020	0.000026						
1,3-Dichlorobenzene	ND	0.00020	0.000024	ND	0.00020	0.000024						
Acetone	ND	0.0010	0.000058	0.00016 J	0.0010	0.000058						
n-Butylbenzene	ND	0.00020	0.000015	ND	0.00020	0.000015						
1,2-Dichlorobenzene	ND	0.00020	0.000025	ND	0.00020	0.000025						
1,2,4-Trichlorobenzene	ND	0.00040	0.000033	ND	0.00040	0.000033						
Hexachlorobutadiene	ND	0.00020	0.000012	ND	0.00020	0.000012						
t-Butanol	ND	0.0010	0.000038	ND	0.0010	0.000038						
n-Hexane	ND	0.0010	0.000027	ND	0.0010	0.000027						
Isopropyl ether	ND	0.0010	0.000022	ND	0.0010	0.000022						
t-Butyl ethyl ether	ND	0.0010	0.000040	ND	0.0010	0.000040						
2,2-Dichloropropane	ND	0.0010	0.000019	ND	0.0010	0.000019						
t-Amyl methyl ether	ND	0.0010	0.000014	ND	0.0010	0.000014						
t-1,2-Dichloroethene	ND	0.00020	0.000060	ND	0.00020	0.000060						
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--						

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 6/17/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 210614MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/14/21 10:52			6/14/21 9:39		6/14/21 10:15					
Analyst Initials:	DT			DT		DT					
Dilution Factor:	0.20			1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.010	0.00985	98.5	0.0102	102	3.0	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.00968	96.8	0.00951	95.1	1.8	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.0101	101	0.0102	102	1.5	70	130	30.0
Toluene	ND	0.00020	0.010	0.00941	94.1	0.00946	94.6	0.5	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00991	99.1	0.0101	101	2.0	70	130	30.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date:** 6/17/21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	M060206-01		M060206-02		M060206-03		M060206-04	
Client Sample I.D.:	VEFF-060121		VEFF-060121-D		VPOST-060121		VINF-060121	
Date/Time Sampled:	6/1/21 7:00		6/1/21 7:00		6/1/21 7:15		6/1/21 7:25	
Date/Time Analyzed:	6/8/21 9:03		6/7/21 15:34		6/7/21 15:56		6/7/21 16:19	
QC Batch No.:	210607GC11A1		210607GC11A1		210607GC11A1		210607GC11A1	
Analyst Initials:	CM		CM		CM		CM	
Dilution Factor:	2.5		2.5		2.4		2.4	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.5	ND	2.5	260	2.4	320	2.4

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 6/16/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210607GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	6/7/21 14:48		6/7/21 14:07		6/7/21 14:29					
Analyst Initials:	CM		CM		CM					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	5.07	101	5.17	103	2.0	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 6/16/21
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 06/02/21
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	**M060206-04**							
Client Sample I.D.:	**VINF-060121**							
Date/Time Sampled:	**6/1/21 7:25**							
Date/Time Analyzed:	**6/8/21 9:53**							
QC Batch No.:	**210608GC8A1**							
Analyst Initials:	**CM**							
Dilution Factor:	**2.4**							
ANALYTE	**Result % v/v**	**RL % v/v**						
Carbon Dioxide	**1.2**	0.024						
Oxygen/Argon	**21**	1.2						
Nitrogen	**78**	2.4						
Methane	**ND**	0.0024						

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 6/10/21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 210608GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	6/8/21 8:49			6/8/21 9:04		6/8/21 9:18					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.72	97	9.74	97	0.2	70	130	30
Oxygen/Argon	ND	0.50	15	15.6	105	15.6	105	0.0	70	130	30
Nitrogen	ND	1.0	70	70.7	101	70.6	101	0.1	70	130	30
Methane	ND	0.0010	0.10	0.103	103	0.102	102	1.3	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 6/16/21

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AMERICAN ANALYTICS

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

June 24, 2021

Eric Davis

CH2M Hill, Inc.

P.O. Box 241329

Denver, CO 80224

Re : KMEP Norwalk Biosparge Startup / 693142

MB187338 / 1E25005

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 05/25/21 12:56 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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases					
SVM-1-5	1E25005-01	Vapor	10	05/25/21 08:34	05/25/21 12:56
SVM-1-15	1E25005-02	Vapor	10	05/25/21 08:34	05/25/21 12:56
SVM-2-5	1E25005-03	Vapor	10	05/25/21 08:49	05/25/21 12:56
SVM-15-7	1E25005-05	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-15-15	1E25005-06	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-15-22	1E25005-07	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-6-7	1E25005-08	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-6-13	1E25005-09	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-7-7	1E25005-10	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-7-13	1E25005-11	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-10-15	1E25005-12	Vapor	10	05/25/21 10:07	05/25/21 12:56
SVM-16-7	1E25005-13	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-16	1E25005-14	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22	1E25005-15	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22 DUP	1E25005-16	Vapor	10	05/25/21 10:28	05/25/21 12:56
TO-15 (Mid Level)					
SVM-1-5	1E25005-01	Vapor	10	05/25/21 08:34	05/25/21 12:56
SVM-1-15	1E25005-02	Vapor	10	05/25/21 08:34	05/25/21 12:56

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-2-5	1E25005-03	Vapor	10	05/25/21 08:49	05/25/21 12:56
Ambient Air	1E25005-04	Vapor	10	05/25/21 09:00	05/25/21 12:56
SVM-15-7	1E25005-05	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-15-15	1E25005-06	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-15-22	1E25005-07	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-6-7	1E25005-08	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-6-13	1E25005-09	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-7-7	1E25005-10	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-7-13	1E25005-11	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-10-15	1E25005-12	Vapor	10	05/25/21 10:07	05/25/21 12:56
SVM-16-7	1E25005-13	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-16	1E25005-14	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22	1E25005-15	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22 DUP	1E25005-16	Vapor	10	05/25/21 10:28	05/25/21 12:56
TO-3					
SVM-1-5	1E25005-01	Vapor	10	05/25/21 08:34	05/25/21 12:56
SVM-1-15	1E25005-02	Vapor	10	05/25/21 08:34	05/25/21 12:56
SVM-2-5	1E25005-03	Vapor	10	05/25/21 08:49	05/25/21 12:56
Ambient Air	1E25005-04	Vapor	10	05/25/21 09:00	05/25/21 12:56
SVM-15-7	1E25005-05	Vapor	10	05/25/21 09:10	05/25/21 12:56

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-15-15	1E25005-06	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-15-22	1E25005-07	Vapor	10	05/25/21 09:10	05/25/21 12:56
SVM-6-7	1E25005-08	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-6-13	1E25005-09	Vapor	10	05/25/21 09:30	05/25/21 12:56
SVM-7-7	1E25005-10	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-7-13	1E25005-11	Vapor	10	05/25/21 09:49	05/25/21 12:56
SVM-10-15	1E25005-12	Vapor	10	05/25/21 10:07	05/25/21 12:56
SVM-16-7	1E25005-13	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-16	1E25005-14	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22	1E25005-15	Vapor	10	05/25/21 10:28	05/25/21 12:56
SVM-16-22 DUP	1E25005-16	Vapor	10	05/25/21 10:28	05/25/21 12:56

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
			Fixed Gases by TCD					
Oxygen	SVM-1-5	**21**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Carbon Dioxide	SVM-1-5	**0.71**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-1-15	**20**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Carbon Dioxide	SVM-1-15	**1.0**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-2-5	**18**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Carbon Dioxide	SVM-2-5	**1.6**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-15-7	**21**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-15-15	**22**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-15-22	**21**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-6-7	**21**	0.20	% by Volume	2	06/02/21	06/02/21	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-6-13	**19**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-7-7	**20**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-7-13	**20**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-10-15	**21**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-16-7	**21**	0.20	% by Volume	2	06/02/21	06/02/21	ASTM D1946M
Oxygen	SVM-16-16	**22**	0.20	% by Volume	2	06/03/21	06/03/21	ASTM D1946M
Oxygen	SVM-16-22	**21**	0.20	% by Volume	2	06/03/21	06/03/21	ASTM D1946M
Oxygen	SVM-16-22 DUP	**21**	0.20	% by Volume	2	06/03/21	06/03/21	ASTM D1946M
VOCs by EPA TO-3								
Gasoline Range Organics (GRO)	SVM-16-22	**0.60**	0.50	ug/L	1	05/28/21	05/28/21	TO-3
Gasoline Range Organics (GRO)	SVM-16-22 DUP	**0.54**	0.50	ug/L	1	05/28/21	05/28/21	TO-3

VOCs by GCMS EPA TO-15 (Mid Level)

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Methylene Chloride	SVM-15-15	**0.022 AA-C1**	0.020	ug/L	1	05/27/21	05/27/21	TO-15
Methylene Chloride	SVM-15-22	**0.023 AA-C1**	0.020	ug/L	1	05/27/21	05/27/21	TO-15
Acetone	SVM-10-15	**0.032**	0.020	ug/L	1	05/27/21	05/28/21	TO-15
Acetone	SVM-16-22	**0.027**	0.020	ug/L	1	05/28/21	05/28/21	TO-15
Acetone	SVM-16-22 DUP	**0.025**	0.020	ug/L	1	05/28/21	05/28/21	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-01	1E25005-02	1E25005-03	1E25005-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
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	98%	96%	98%	100%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/28/21	05/27/21	05/27/21	05/27/21	
AA ID No:	1E25005-05	1E25005-06	1E25005-07	1E25005-08	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	105%	108%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/27/21	05/27/21	05/27/21	05/28/21	
AA ID No:	1E25005-09	1E25005-10	1E25005-11	1E25005-12	
Client ID No:	SVM-6-13	SVM-7-7	SVM-7-13	SVM-10-15	
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	104%	110%	104%	108%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-13	1E25005-14	1E25005-15	1E25005-16	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-16-22 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	**0.60**	**0.54**	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	99%	101%	101%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-01	1E25005-02	1E25005-03	1E25005-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-01	1E25005-02	1E25005-03	1E25005-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-01	1E25005-02	1E25005-03	1E25005-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
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	113%	109%	113%	116%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/28/21	05/27/21	05/27/21	05/27/21	
AA ID No:	1E25005-05	1E25005-06	1E25005-07	1E25005-08	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/28/21	05/27/21	05/27/21	05/27/21	
AA ID No:	1E25005-05	1E25005-06	1E25005-07	1E25005-08	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	<0.020	<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	**0.022 [1]**	**0.023 [1]**	<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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/28/21	05/27/21	05/27/21	05/27/21	
AA ID No:	1E25005-05	1E25005-06	1E25005-07	1E25005-08	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	<0.020	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	115%	97%	99%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/27/21	05/27/21	05/27/21	05/28/21	
AA ID No:	1E25005-09	1E25005-10	1E25005-11	1E25005-12	
Client ID No:	SVM-6-13	SVM-7-7	SVM-7-13	SVM-10-15	
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	**0.032**	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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/27/21	05/27/21	05/27/21	05/28/21	
AA ID No:	1E25005-09	1E25005-10	1E25005-11	1E25005-12	
Client ID No:	SVM-6-13	SVM-7-7	SVM-7-13	SVM-10-15	
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/27/21	05/27/21	05/27/21	05/27/21	
Date Analyzed:	05/27/21	05/27/21	05/27/21	05/28/21	
AA ID No:	1E25005-09	1E25005-10	1E25005-11	1E25005-12	
Client ID No:	SVM-6-13	SVM-7-7	SVM-7-13	SVM-10-15	
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	96%	101%	95%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-13	1E25005-14	1E25005-15	1E25005-16	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-16-22 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	**0.027**	**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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-13	1E25005-14	1E25005-15	1E25005-16	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-16-22 DUP	
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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E25005-13	1E25005-14	1E25005-15	1E25005-16	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-16-22 DUP	
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	114%	112%	118%	118%	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	06/02/21	06/02/21	06/02/21	06/02/21	
Date Analyzed:	06/02/21	06/02/21	06/02/21	06/02/21	
AA ID No:	1E25005-01	1E25005-02	1E25005-03	1E25005-05	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
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**	**20**	**18**	**21**	0.10
Carbon Dioxide	**0.71**	**1.0**	**1.6**	<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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	06/02/21	06/02/21	06/02/21	06/02/21	
Date Analyzed:	06/02/21	06/02/21	06/02/21	06/02/21	
AA ID No:	1E25005-06	1E25005-07	1E25005-08	1E25005-09	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
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**	**19**	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/25/21	05/25/21	05/25/21	05/25/21	
Date Prepared:	06/02/21	06/02/21	06/02/21	06/02/21	
Date Analyzed:	06/02/21	06/02/21	06/02/21	06/02/21	
AA ID No:	1E25005-10	1E25005-11	1E25005-12	1E25005-13	
Client ID No:	SVM-7-7	SVM-7-13	SVM-10-15	SVM-16-7	
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	**20**	**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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/25/21	05/25/21	05/25/21	
Date Prepared:	06/03/21	06/03/21	06/03/21	
Date Analyzed:	06/03/21	06/03/21	06/03/21	
AA ID No:	1E25005-14	1E25005-15	1E25005-16	
Client ID No:	SVM-16-16	SVM-16-22	SVM-16-22 DUP	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	MRL
Fixed Gases (ASTM D1946M)				
Methane	<0.20	<0.20	<0.20	0.10
Oxygen	**22**	**21**	**21**	0.10
Carbon Dioxide	<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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B1F0230 - *** DEFAULT PREP ****										
Blank (B1F0230-BLK1)				Prepared & Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0350*		*ug/L*	*0.0358*		*97.8*	*70-130*			
LCS (B1F0230-BS1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Gasoline Range Organics (GRO)	**0.641**	0.50	ug/L	0.802		80.0	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0351*		*ug/L*	*0.0358*		*98.2*	*70-130*			
LCS Dup (B1F0230-BSD1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Gasoline Range Organics (GRO)	**0.698**	0.50	ug/L	0.802		87.1	70-130	8.47	30	
Surrogate: 4-Bromofluorobenzene	*0.0358*		*ug/L*	*0.0358*		*100*	*70-130*			
*Batch B1F0231 - *** DEFAULT PREP ****										
Blank (B1F0231-BLK1)				Prepared & Analyzed: 05/27/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0346*		*ug/L*	*0.0358*		*96.6*	*70-130*			
LCS (B1F0231-BS1)				Prepared & Analyzed: 05/27/21						
Gasoline Range Organics (GRO)	**0.642**	0.50	ug/L	0.802		80.1	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0351*		*ug/L*	*0.0358*		*98.2*	*70-130*			
LCS Dup (B1F0231-BSD1)				Prepared: 05/27/21 Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	**0.616**	0.50	ug/L	0.802		76.8	70-130	4.17	30	
Surrogate: 4-Bromofluorobenzene	*0.0346*		*ug/L*	*0.0358*		*96.8*	*70-130*			
*Batch B1F0233 - *** DEFAULT PREP ****										
Blank (B1F0233-BLK1)				Prepared & Analyzed: 05/27/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0316*		*ug/L*	*0.0358*		*88.4*	*70-130*			
LCS (B1F0233-BS1)				Prepared: 05/27/21 Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	**0.842**	0.50	ug/L	0.802		105	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0379*		*ug/L*	*0.0358*		*106*	*70-130*			
LCS Dup (B1F0233-BSD1)				Prepared: 05/27/21 Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	**0.819**	0.50	ug/L	0.802		102	70-130	2.71	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B1F0233 - *** DEFAULT PREP ****										
LCS Dup (B1F0233-BSD1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
Surrogate: 4-Bromofluorobenzene	*0.0361*		*ug/L*	*0.0358*		*101*	*70-130*			
Duplicate (B1F0233-DUP1)		**Source: 1E21008-02**		Prepared & Analyzed: 05/27/21						
Gasoline Range Organics (GRO)	**<0.50**	0.50	ug/L						30	
Surrogate: 4-Bromofluorobenzene	*0.0383*		*ug/L*	*0.0358*		*107*	*70-130*			
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1)				Prepared & Analyzed: 05/28/21						
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	<0.020	0.020	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	<0.020	0.020	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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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							
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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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	*0.162*		*ug/L*	*0.143*		*113*	*70-130*			
LCS (B1E2737-BS1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Acetone	**0.115**	0.020	ug/L	0.0950		121	70-130		30	
Benzene	**0.118**	0.0030	ug/L	0.128		92.0	70-130		30	
Benzyl chloride	**0.150**	0.020	ug/L	0.178		84.0	70-130		30	
Bromodichloromethane	**0.240**	0.020	ug/L	0.268		89.6	70-130		30	
Bromoform	**0.373**	0.020	ug/L	0.413		90.2	70-130		30	
Bromomethane	**0.200**	0.020	ug/L	0.155		129	70-130		30	
2-Butanone (MEK)	**0.118**	0.020	ug/L	0.118		99.7	70-130		30	
Carbon Disulfide	**0.141**	0.020	ug/L	0.125		113	70-130		30	
Carbon Tetrachloride	**0.235**	0.020	ug/L	0.252		93.3	70-130		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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS (B1E2737-BS1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
Chlorobenzene	**0.167**	0.020	ug/L	0.184		90.9	70-130		30	
Chloroethane	**0.149**	0.020	ug/L	0.106		141	70-130		30	QL-04
Chloroform	**0.188**	0.020	ug/L	0.195		96.4	70-130		30	
Chloromethane	**0.104**	0.020	ug/L	0.0826		126	70-130		30	
Dibromochloromethane	**0.330**	0.020	ug/L	0.341		96.8	70-130		30	
1,2-Dibromoethane (EDB)	**0.306**	0.020	ug/L	0.307		99.6	70-130		30	
1,2-Dichlorobenzene	**0.312**	0.020	ug/L	0.240		130	70-130		30	
1,3-Dichlorobenzene	**0.285**	0.020	ug/L	0.240		119	70-130		30	
1,4-Dichlorobenzene	**0.288**	0.020	ug/L	0.240		120	70-130		30	
Dichlorodifluoromethane (R12)	**0.223**	0.020	ug/L	0.198		113	70-130		30	
1,1-Dichloroethane	**0.180**	0.020	ug/L	0.162		111	70-130		30	
1,2-Dichloroethane (EDC)	**0.161**	0.0040	ug/L	0.162		99.2	70-130		30	
cis-1,2-Dichloroethylene	**0.147**	0.020	ug/L	0.159		92.5	70-130		30	
1,1-Dichloroethylene	**0.240**	0.020	ug/L	0.159		151	70-130		30	QL-04
trans-1,2-Dichloroethylene	**0.178**	0.020	ug/L	0.159		112	70-130		30	
1,2-Dichloropropane	**0.159**	0.020	ug/L	0.185		86.0	70-130		30	
trans-1,3-Dichloropropylene	**0.173**	0.020	ug/L	0.182		95.1	70-130		30	
cis-1,3-Dichloropropylene	**0.171**	0.020	ug/L	0.182		94.1	70-130		30	
Dichlorotetrafluoroethane	**0.345**	0.020	ug/L	0.280		123	70-130		30	
Ethylbenzene	**0.147**	0.020	ug/L	0.174		84.8	70-130		30	
4-Ethyltoluene	**0.169**	0.020	ug/L	0.197		85.9	70-130		30	
Hexachlorobutadiene	**1.16**	0.020	ug/L	0.427		272	70-130		30	QL-04
2-Hexanone (MBK)	**0.151**	0.020	ug/L	0.164		92.4	70-130		30	
Isopropanol (IPA)	**0.115**	0.20	ug/L	0.0865		133	70-130		30	QL-02
Methylene Chloride	**0.154**	0.020	ug/L	0.139		111	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.146**	0.020	ug/L	0.164		89.2	70-130		30	
Styrene	**0.162**	0.020	ug/L	0.170		94.8	70-130		30	
1,1,2,2-Tetrachloroethane	**0.239**	0.020	ug/L	0.275		87.0	70-130		30	
Tetrachloroethylene (PCE)	**0.282**	0.010	ug/L	0.271		104	70-130		30	
Toluene	**0.141**	0.020	ug/L	0.151		93.3	70-130		30	
1,2,4-Trichlorobenzene	**0.880**	0.020	ug/L	0.297		296	70-130		30	QL-04
1,1,2-Trichloroethane	**0.209**	0.020	ug/L	0.218		95.7	70-130		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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS (B1E2737-BS1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
1,1,1-Trichloroethane	**0.208**	0.020	ug/L	0.218		95.2	70-130		30	
Trichloroethylene (TCE)	**0.201**	0.020	ug/L	0.215		93.3	70-130		30	
Trichlorofluoromethane (R11)	**0.337**	0.020	ug/L	0.225		150	70-130		30	QL-04
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.384**	0.020	ug/L	0.307		125	70-130		30	
1,3,5-Trimethylbenzene	**0.223**	0.020	ug/L	0.197		113	70-130		30	
1,2,4-Trimethylbenzene	**0.222**	0.020	ug/L	0.197		113	70-130		30	
Vinyl acetate	**0.123**	0.020	ug/L	0.118		104	70-130		30	
Vinyl chloride	**0.131**	0.020	ug/L	0.102		128	70-130		30	
o-Xylene	**0.150**	0.020	ug/L	0.174		86.5	70-130		30	
m,p-Xylenes	**0.299**	0.020	ug/L	0.347		86.1	70-130		30	
1,2,3-Trichloropropane	**0.182**	0.020	ug/L	0.241		75.6	70-130		30	
sec-Butylbenzene	**0.181**	0.020	ug/L	0.220		82.3	70-130		30	
Isopropylbenzene	**0.169**	0.020	ug/L	0.197		86.0	70-130		30	
n-Propylbenzene	**0.159**	0.020	ug/L	0.197		80.8	70-130		30	
4-Isopropyltoluene	**0.193**	0.020	ug/L	0.220		87.9	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.157*		*ug/L*	*0.143*		*110*	*70-130*			
LCS Dup (B1E2737-BSD1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Acetone	**0.114**	0.020	ug/L	0.0950		120	70-130	1.18	30	
Benzene	**0.120**	0.0030	ug/L	0.128		93.6	70-130	1.80	30	
Benzyl chloride	**0.133**	0.020	ug/L	0.178		74.8	70-130	11.6	30	
Bromodichloromethane	**0.242**	0.020	ug/L	0.268		90.2	70-130	0.779	30	
Bromoform	**0.336**	0.020	ug/L	0.413		81.4	70-130	10.3	30	
Bromomethane	**0.197**	0.020	ug/L	0.155		127	70-130	1.60	30	
2-Butanone (MEK)	**0.108**	0.020	ug/L	0.118		91.8	70-130	8.22	30	
Carbon Disulfide	**0.131**	0.020	ug/L	0.125		106	70-130	7.00	30	
Carbon Tetrachloride	**0.230**	0.020	ug/L	0.252		91.2	70-130	2.25	30	
Chlorobenzene	**0.159**	0.020	ug/L	0.184		86.3	70-130	5.16	30	
Chloroethane	**0.143**	0.020	ug/L	0.106		136	70-130	3.79	30	QL-04
Chloroform	**0.191**	0.020	ug/L	0.195		97.8	70-130	1.39	30	
Chloromethane	**0.0978**	0.020	ug/L	0.0826		118	70-130	6.24	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS Dup (B1E2737-BSD1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
Dibromochloromethane	**0.352**	0.020	ug/L	0.341		103	70-130	6.42	30	
1,2-Dibromoethane (EDB)	**0.339**	0.020	ug/L	0.307		110	70-130	10.2	30	
1,2-Dichlorobenzene	**0.286**	0.020	ug/L	0.240		119	70-130	8.55	30	
1,3-Dichlorobenzene	**0.255**	0.020	ug/L	0.240		106	70-130	11.2	30	
1,4-Dichlorobenzene	**0.258**	0.020	ug/L	0.240		107	70-130	10.8	30	
Dichlorodifluoromethane (R12)	**0.181**	0.020	ug/L	0.198		91.6	70-130	20.8	30	
1,1-Dichloroethane	**0.148**	0.020	ug/L	0.162		91.3	70-130	19.6	30	
1,2-Dichloroethane (EDC)	**0.166**	0.0040	ug/L	0.162		103	70-130	3.42	30	
cis-1,2-Dichloroethylene	**0.149**	0.020	ug/L	0.159		93.8	70-130	1.40	30	
1,1-Dichloroethylene	**0.247**	0.020	ug/L	0.159		155	70-130	2.64	30	QL-04
trans-1,2-Dichloroethylene	**0.148**	0.020	ug/L	0.159		93.2	70-130	18.4	30	
1,2-Dichloropropane	**0.157**	0.020	ug/L	0.185		84.8	70-130	1.46	30	
trans-1,3-Dichloropropylene	**0.167**	0.020	ug/L	0.182		92.1	70-130	3.23	30	
cis-1,3-Dichloropropylene	**0.160**	0.020	ug/L	0.182		88.4	70-130	6.27	30	
Dichlorotetrafluoroethane	**0.311**	0.020	ug/L	0.280		111	70-130	10.4	30	
Ethylbenzene	**0.132**	0.020	ug/L	0.174		76.3	70-130	10.6	30	
4-Ethyltoluene	**0.151**	0.020	ug/L	0.197		77.0	70-130	10.9	30	
Hexachlorobutadiene	**1.25**	0.020	ug/L	0.427		293	70-130	7.36	30	QL-04
2-Hexanone (MBK)	**0.156**	0.020	ug/L	0.164		95.1	70-130	2.85	30	
Isopropanol (IPA)	**0.0987**	0.20	ug/L	0.0865		114	70-130	15.4	30	
Methylene Chloride	**0.156**	0.020	ug/L	0.139		113	70-130	1.75	30	
4-Methyl-2-pentanone (MIBK)	**0.137**	0.020	ug/L	0.164		83.5	70-130	6.57	30	
Styrene	**0.146**	0.020	ug/L	0.170		85.5	70-130	10.3	30	
1,1,2,2-Tetrachloroethane	**0.212**	0.020	ug/L	0.275		77.4	70-130	11.7	30	
Tetrachloroethylene (PCE)	**0.290**	0.010	ug/L	0.271		107	70-130	2.78	30	
Toluene	**0.151**	0.020	ug/L	0.151		100	70-130	7.43	30	
1,2,4-Trichlorobenzene	**0.941**	0.020	ug/L	0.297		317	70-130	6.78	30	QL-04
1,1,2-Trichloroethane	**0.200**	0.020	ug/L	0.218		91.8	70-130	4.16	30	
1,1,1-Trichloroethane	**0.211**	0.020	ug/L	0.218		96.8	70-130	1.69	30	
Trichloroethylene (TCE)	**0.198**	0.020	ug/L	0.215		92.3	70-130	1.10	30	
Trichlorofluoromethane (R11)	**0.322**	0.020	ug/L	0.225		143	70-130	4.57	30	QL-04

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS Dup (B1E2737-BSD1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.376**	0.020	ug/L	0.307		123	70-130	2.20	30	
1,3,5-Trimethylbenzene	**0.201**	0.020	ug/L	0.197		102	70-130	10.4	30	
1,2,4-Trimethylbenzene	**0.200**	0.020	ug/L	0.197		102	70-130	10.5	30	
Vinyl acetate	**0.105**	0.020	ug/L	0.118		88.4	70-130	16.1	30	
Vinyl chloride	**0.121**	0.020	ug/L	0.102		119	70-130	7.47	30	
o-Xylene	**0.136**	0.020	ug/L	0.174		78.1	70-130	10.3	30	
m,p-Xylenes	**0.261**	0.020	ug/L	0.347		75.1	70-130	13.7	30	
1,2,3-Trichloropropane	**0.161**	0.020	ug/L	0.241		66.8	70-130	12.3	30	QL-03
sec-Butylbenzene	**0.162**	0.020	ug/L	0.220		73.9	70-130	10.8	30	
Isopropylbenzene	**0.151**	0.020	ug/L	0.197		76.6	70-130	11.6	30	
n-Propylbenzene	**0.143**	0.020	ug/L	0.197		72.5	70-130	10.8	30	
4-Isopropyltoluene	**0.173**	0.020	ug/L	0.220		79.0	70-130	10.7	30	
Surrogate: 4-Bromofluorobenzene	*0.140*		*ug/L*	*0.143*		*97.9*	*70-130*			
*Batch B1F0236 - *** DEFAULT PREP ****										
Blank (B1F0236-BLK1)				Prepared & Analyzed: 05/27/21						
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	<0.020	0.020	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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
Blank (B1F0236-BLK1) Continued				Prepared & Analyzed: 05/27/21						
Chloroform	<0.020	0.020	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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
Blank (B1F0236-BLK1) Continued				Prepared & Analyzed: 05/27/21						
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	*0.115*		*ug/L*	*0.143*		*80.4*	*70-130*			
LCS (B1F0236-BS1)				Prepared: 05/27/21			Analyzed: 05/28/21			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
LCS (B1F0236-BS1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
Acetone	**0.0257**	0.020	ug/L	0.0238		108	70-130		30	
Benzene	**0.0317**	0.0030	ug/L	0.0319		99.3	70-130		30	
Benzyl chloride	**0.0443**	0.020	ug/L	0.0445		99.5	70-130		30	
Bromodichloromethane	**0.0702**	0.020	ug/L	0.0670		105	70-130		30	
Bromoform	**0.107**	0.020	ug/L	0.103		104	70-130		30	
Bromomethane	**0.0411**	0.020	ug/L	0.0388		106	70-130		30	
2-Butanone (MEK)	**0.0300**	0.020	ug/L	0.0295		102	70-130		30	
Carbon Disulfide	**0.0300**	0.020	ug/L	0.0311		96.3	70-130		30	
Carbon Tetrachloride	**0.0696**	0.020	ug/L	0.0629		111	70-130		30	
Chlorobenzene	**0.0550**	0.020	ug/L	0.0460		120	70-130		30	
Chloroethane	**0.0297**	0.020	ug/L	0.0264		112	70-130		30	
Chloroform	**0.0481**	0.020	ug/L	0.0488		98.6	70-130		30	
Chloromethane	**0.0204**	0.020	ug/L	0.0207		98.7	70-130		30	
Dibromochloromethane	**0.0925**	0.020	ug/L	0.0852		109	70-130		30	
1,2-Dibromoethane (EDB)	**0.0842**	0.020	ug/L	0.0768		110	70-130		30	
1,2-Dichlorobenzene	**0.0563**	0.020	ug/L	0.0601		93.7	70-130		30	
1,3-Dichlorobenzene	**0.0613**	0.020	ug/L	0.0601		102	70-130		30	
1,4-Dichlorobenzene	**0.0581**	0.020	ug/L	0.0601		96.7	70-130		30	
Dichlorodifluoromethane (R12)	**0.0463**	0.020	ug/L	0.0495		93.7	70-130		30	
1,1-Dichloroethane	**0.0416**	0.020	ug/L	0.0405		103	70-130		30	
1,2-Dichloroethane (EDC)	**0.0399**	0.0040	ug/L	0.0405		98.7	70-130		30	
cis-1,2-Dichloroethylene	**0.0403**	0.020	ug/L	0.0396		102	70-130		30	
1,1-Dichloroethylene	**0.0445**	0.020	ug/L	0.0396		112	70-130		30	
trans-1,2-Dichloroethylene	**0.0397**	0.020	ug/L	0.0396		100	70-130		30	
1,2-Dichloropropane	**0.0528**	0.020	ug/L	0.0462		114	70-130		30	
trans-1,3-Dichloropropylene	**0.0492**	0.020	ug/L	0.0454		108	70-130		30	
cis-1,3-Dichloropropylene	**0.0486**	0.020	ug/L	0.0454		107	70-130		30	
Dichlorotetrafluoroethane	**0.0746**	0.020	ug/L	0.0699		107	70-130		30	
Ethylbenzene	**0.0542**	0.020	ug/L	0.0434		125	70-130		30	
4-Ethyltoluene	**0.0540**	0.020	ug/L	0.0492		110	70-130		30	
Hexachlorobutadiene	**0.0693**	0.020	ug/L	0.107		65.0	70-130		30	QL-07
2-Hexanone (MBK)	**0.0372**	0.020	ug/L	0.0410		90.8	70-130		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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
LCS (B1F0236-BS1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
Isopropanol (IPA)	**0.0244**	0.20	ug/L	0.0216		113	70-130		30	
Methylene Chloride	**0.0389**	0.020	ug/L	0.0347		112	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.0390**	0.020	ug/L	0.0410		95.1	70-130		30	
Styrene	**0.0524**	0.020	ug/L	0.0426		123	70-130		30	
1,1,2,2-Tetrachloroethane	**0.0834**	0.020	ug/L	0.0687		122	70-130		30	
Tetrachloroethylene (PCE)	**0.0713**	0.010	ug/L	0.0679		105	70-130		30	
Toluene	**0.0420**	0.020	ug/L	0.0377		111	70-130		30	
1,2,4-Trichlorobenzene	**0.0232**	0.020	ug/L	0.0742		31.3	70-130		30	QL-07
1,1,2-Trichloroethane	**0.0620**	0.020	ug/L	0.0546		114	70-130		30	
1,1,1-Trichloroethane	**0.0545**	0.020	ug/L	0.0546		99.9	70-130		30	
Trichloroethylene (TCE)	**0.0585**	0.020	ug/L	0.0537		109	70-130		30	
Trichlorofluoromethane (R11)	**0.0607**	0.020	ug/L	0.0562		108	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0818**	0.020	ug/L	0.0766		107	70-130		30	
1,3,5-Trimethylbenzene	**0.0584**	0.020	ug/L	0.0492		119	70-130		30	
1,2,4-Trimethylbenzene	**0.0572**	0.020	ug/L	0.0492		116	70-130		30	
Vinyl acetate	**0.0313**	0.020	ug/L	0.0296		106	70-130		30	
Vinyl chloride	**0.0270**	0.020	ug/L	0.0256		106	70-130		30	
o-Xylene	**0.0535**	0.020	ug/L	0.0434		123	70-130		30	
m,p-Xylenes	**0.103**	0.020	ug/L	0.0868		119	70-130		30	
1,2,3-Trichloropropane	**0.0704**	0.020	ug/L	0.0603		117	70-130		30	
sec-Butylbenzene	**0.0613**	0.020	ug/L	0.0549		112	70-130		30	
Isopropylbenzene	**0.0585**	0.020	ug/L	0.0492		119	70-130		30	
n-Propylbenzene	**0.0596**	0.020	ug/L	0.0492		121	70-130		30	
4-Isopropyltoluene	**0.0625**	0.020	ug/L	0.0549		114	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.140*		*ug/L*	*0.143*		*98.0*	*70-130*			
LCS Dup (B1F0236-BSD1)				Prepared: 05/27/21 Analyzed: 05/28/21						
Acetone	**0.0196**	0.020	ug/L	0.0238		82.4	70-130	27.1	30	
Benzene	**0.0303**	0.0030	ug/L	0.0319		94.8	70-130	4.64	30	
Benzyl chloride	**0.0388**	0.020	ug/L	0.0445		87.2	70-130	13.2	30	
Bromodichloromethane	**0.0674**	0.020	ug/L	0.0670		101	70-130	3.99	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
LCS Dup (B1F0236-BSD1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
Bromoform	**0.0969**	0.020	ug/L	0.103		93.7	70-130	10.1	30	
Bromomethane	**0.0379**	0.020	ug/L	0.0388		97.5	70-130	8.26	30	
2-Butanone (MEK)	**0.0243**	0.020	ug/L	0.0295		82.5	70-130	20.7	30	
Carbon Disulfide	**0.0287**	0.020	ug/L	0.0311		92.2	70-130	4.35	30	
Carbon Tetrachloride	**0.0679**	0.020	ug/L	0.0629		108	70-130	2.56	30	
Chlorobenzene	**0.0503**	0.020	ug/L	0.0460		109	70-130	9.01	30	
Chloroethane	**0.0272**	0.020	ug/L	0.0264		103	70-130	8.63	30	
Chloroform	**0.0468**	0.020	ug/L	0.0488		95.8	70-130	2.88	30	
Chloromethane	**0.0198**	0.020	ug/L	0.0207		96.1	70-130	2.67	30	
Dibromochloromethane	**0.0860**	0.020	ug/L	0.0852		101	70-130	7.25	30	
1,2-Dibromoethane (EDB)	**0.0808**	0.020	ug/L	0.0768		105	70-130	4.19	30	
1,2-Dichlorobenzene	**0.0518**	0.020	ug/L	0.0601		86.1	70-130	8.45	30	
1,3-Dichlorobenzene	**0.0530**	0.020	ug/L	0.0601		88.2	70-130	14.4	30	
1,4-Dichlorobenzene	**0.0536**	0.020	ug/L	0.0601		89.1	70-130	8.18	30	
Dichlorodifluoromethane (R12)	**0.0462**	0.020	ug/L	0.0495		93.4	70-130	0.321	30	
1,1-Dichloroethane	**0.0399**	0.020	ug/L	0.0405		98.7	70-130	4.07	30	
1,2-Dichloroethane (EDC)	**0.0396**	0.0040	ug/L	0.0405		97.9	70-130	0.814	30	
cis-1,2-Dichloroethylene	**0.0391**	0.020	ug/L	0.0396		98.5	70-130	3.10	30	
1,1-Dichloroethylene	**0.0395**	0.020	ug/L	0.0396		99.7	70-130	11.9	30	
trans-1,2-Dichloroethylene	**0.0392**	0.020	ug/L	0.0396		98.9	70-130	1.21	30	
1,2-Dichloropropane	**0.0505**	0.020	ug/L	0.0462		109	70-130	4.56	30	
trans-1,3-Dichloropropylene	**0.0447**	0.020	ug/L	0.0454		98.4	70-130	9.58	30	
cis-1,3-Dichloropropylene	**0.0462**	0.020	ug/L	0.0454		102	70-130	5.07	30	
Dichlorotetrafluoroethane	**0.0705**	0.020	ug/L	0.0699		101	70-130	5.59	30	
Ethylbenzene	**0.0430**	0.020	ug/L	0.0434		99.1	70-130	23.0	30	
4-Ethyltoluene	**0.0422**	0.020	ug/L	0.0492		85.9	70-130	24.5	30	
Hexachlorobutadiene	**0.0580**	0.020	ug/L	0.107		54.4	70-130	17.8	30	QL-07
2-Hexanone (MBK)	**0.0390**	0.020	ug/L	0.0410		95.2	70-130	4.73	30	
Isopropanol (IPA)	**0.0210**	0.20	ug/L	0.0216		97.2	70-130	14.7	30	
Methylene Chloride	**0.0366**	0.020	ug/L	0.0347		106	70-130	5.98	30	
4-Methyl-2-pentanone (MIBK)	**0.0397**	0.020	ug/L	0.0410		97.0	70-130	1.98	30	
Styrene	**0.0423**	0.020	ug/L	0.0426		99.4	70-130	21.3	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
LCS Dup (B1F0236-BSD1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
1,1,2,2-Tetrachloroethane	**0.0689**	0.020	ug/L	0.0687		100	70-130	19.1	30	
Tetrachloroethylene (PCE)	**0.0710**	0.010	ug/L	0.0679		105	70-130	0.477	30	
Toluene	**0.0386**	0.020	ug/L	0.0377		102	70-130	8.52	30	
1,2,4-Trichlorobenzene	**0.0358**	0.020	ug/L	0.0742		48.3	70-130	42.7	30	QL-07
1,1,2-Trichloroethane	**0.0567**	0.020	ug/L	0.0546		104	70-130	8.92	30	
1,1,1-Trichloroethane	**0.0534**	0.020	ug/L	0.0546		97.9	70-130	2.02	30	
Trichloroethylene (TCE)	**0.0573**	0.020	ug/L	0.0537		107	70-130	2.04	30	
Trichlorofluoromethane (R11)	**0.0566**	0.020	ug/L	0.0562		101	70-130	7.00	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0785**	0.020	ug/L	0.0766		102	70-130	4.11	30	
1,3,5-Trimethylbenzene	**0.0448**	0.020	ug/L	0.0492		91.2	70-130	26.4	30	
1,2,4-Trimethylbenzene	**0.0450**	0.020	ug/L	0.0492		91.5	70-130	24.0	30	
Vinyl acetate	**0.0249**	0.020	ug/L	0.0296		84.0	70-130	23.1	30	
Vinyl chloride	**0.0254**	0.020	ug/L	0.0256		99.5	70-130	6.14	30	
o-Xylene	**0.0435**	0.020	ug/L	0.0434		100	70-130	20.7	30	
m,p-Xylenes	**0.0856**	0.020	ug/L	0.0868		98.5	70-130	18.8	30	
1,2,3-Trichloropropane	**0.0558**	0.020	ug/L	0.0603		92.5	70-130	23.1	30	
sec-Butylbenzene	**0.0468**	0.020	ug/L	0.0549		85.2	70-130	26.9	30	
Isopropylbenzene	**0.0454**	0.020	ug/L	0.0492		92.4	70-130	25.2	30	
n-Propylbenzene	**0.0467**	0.020	ug/L	0.0492		95.0	70-130	24.3	30	
4-Isopropyltoluene	**0.0467**	0.020	ug/L	0.0549		85.0	70-130	29.1	30	
Surrogate: 4-Bromofluorobenzene	*0.140*		*ug/L*	*0.143*		*97.9*	*70-130*			
Duplicate (B1F0236-DUP1)				**Source: 1E21008-02** Prepared & Analyzed: 05/27/21						
Acetone	**<0.020**	0.020	ug/L						30	
Allyl chloride	**<0.020**	0.020	ug/L						30	
tert-Amyl-Methyl Ether (TAME)	**<0.020**	0.020	ug/L						30	
Benzene	**<0.0030**	0.0030	ug/L						30	
Benzyl chloride	**<0.020**	0.020	ug/L						30	
Bromodichloromethane	**<0.020**	0.020	ug/L						30	
Bromoform	**<0.020**	0.020	ug/L						30	
Bromomethane	**<0.020**	0.020	ug/L						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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
Duplicate (B1F0236-DUP1) Continued	**Source: 1E21008-02**		Prepared & Analyzed: 05/27/21							
1,3-Butadiene	**<0.020**	0.020	ug/L						30	
2-Butanone (MEK)	**<0.020**	0.020	ug/L						30	
tert-Butyl Alcohol (TBA)	**<2.0**	2.0	ug/L						30	
Carbon Disulfide	**<0.020**	0.020	ug/L						30	
Carbon Tetrachloride	**<0.020**	0.020	ug/L						30	
Chlorobenzene	**<0.020**	0.020	ug/L						30	
Chloroethane	**<0.020**	0.020	ug/L						30	
Chloroform	**<0.020**	0.020	ug/L						30	
Chloromethane	**<0.020**	0.020	ug/L						30	
Cyclohexane	**<0.020**	0.020	ug/L						30	
Dibromochloromethane	**<0.020**	0.020	ug/L						30	
1,2-Dibromoethane (EDB)	**<0.020**	0.020	ug/L						30	
1,2-Dichlorobenzene	**<0.020**	0.020	ug/L						30	
1,3-Dichlorobenzene	**<0.020**	0.020	ug/L						30	
1,4-Dichlorobenzene	**<0.020**	0.020	ug/L						30	
Dichlorodifluoromethane (R12)	**<0.020**	0.020	ug/L						30	
1,1-Dichloroethane	**<0.020**	0.020	ug/L						30	
1,2-Dichloroethane (EDC)	**<0.0040**	0.0040	ug/L						30	
cis-1,2-Dichloroethylene	**<0.020**	0.020	ug/L						30	
1,1-Dichloroethylene	**<0.020**	0.020	ug/L						30	
trans-1,2-Dichloroethylene	**<0.020**	0.020	ug/L						30	
1,2-Dichloropropane	**<0.020**	0.020	ug/L						30	
trans-1,3-Dichloropropylene	**<0.020**	0.020	ug/L						30	
cis-1,3-Dichloropropylene	**<0.020**	0.020	ug/L						30	
Dichlorotetrafluoroethane	**<0.020**	0.020	ug/L						30	
Diisopropyl ether (DIPE)	**<0.020**	0.020	ug/L						30	
1,4-Dioxane	**<0.020**	0.020	ug/L						30	
Ethanol	**<0.020**	0.020	ug/L						30	
Ethyl Acetate	**<0.020**	0.020	ug/L						30	
Ethylbenzene	**<0.020**	0.020	ug/L						30	
Ethyl-tert-Butyl Ether (ETBE)	**<0.020**	0.020	ug/L						30	
4-Ethyltoluene	**<0.020**	0.020	ug/L						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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
Duplicate (B1F0236-DUP1) Continued	**Source: 1E21008-02**	Prepared & Analyzed: 05/27/21								
Heptane	**<0.020**	0.020	ug/L						30	
Hexachlorobutadiene	**<0.020**	0.020	ug/L						30	
n-Hexane	**<0.020**	0.020	ug/L						30	
2-Hexanone (MBK)	**<0.020**	0.020	ug/L						30	
Isopropanol (IPA)	**<0.20**	0.20	ug/L						30	
Methyl-tert-Butyl Ether (MTBE)	**<0.020**	0.020	ug/L						30	
Methylene Chloride	**<0.020**	0.020	ug/L						30	
4-Methyl-2-pentanone (MIBK)	**<0.020**	0.020	ug/L						30	
Naphthalene	**<0.0030**	0.0030	ug/L						30	
Propylene	**<0.020**	0.020	ug/L						30	
Styrene	**<0.020**	0.020	ug/L						30	
1,1,2,2-Tetrachloroethane	**<0.020**	0.020	ug/L						30	
Tetrachloroethylene (PCE)	**0.128**	0.010	ug/L		0.139			7.72	30	
Tetrahydrofuran (THF)	**<0.020**	0.020	ug/L						30	
Toluene	**<0.020**	0.020	ug/L						30	
1,2,4-Trichlorobenzene	**<0.020**	0.020	ug/L						30	
1,1,2-Trichloroethane	**<0.020**	0.020	ug/L						30	
1,1,1-Trichloroethane	**<0.020**	0.020	ug/L						30	
Trichloroethylene (TCE)	**<0.020**	0.020	ug/L						30	
Trichlorofluoromethane (R11)	**<0.020**	0.020	ug/L						30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**<0.020**	0.020	ug/L						30	
1,3,5-Trimethylbenzene	**<0.020**	0.020	ug/L						30	
1,2,4-Trimethylbenzene	**<0.020**	0.020	ug/L						30	
2,2,4-Trimethylpentane	**<0.020**	0.020	ug/L						30	
Vinyl acetate	**<0.020**	0.020	ug/L						30	
Vinyl bromide	**<0.020**	0.020	ug/L						30	
Vinyl chloride	**<0.020**	0.020	ug/L						30	
o-Xylene	**<0.020**	0.020	ug/L						30	
m,p-Xylenes	**<0.020**	0.020	ug/L						30	
1,2,3-Trichloropropane	**<0.020**	0.020	ug/L						30	
sec-Butylbenzene	**<0.020**	0.020	ug/L						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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0236 - *** DEFAULT PREP ****										
Duplicate (B1F0236-DUP1) Continued			**Source: 1E21008-02**	Prepared & Analyzed: 05/27/21						
Isopropylbenzene	**<0.020**	0.020	ug/L						30	
n-Propylbenzene	**<0.020**	0.020	ug/L						30	
4-Isopropyltoluene	**<0.020**	0.020	ug/L						30	
n-Butylbenzene	**<0.020**	0.020	ug/L						30	
Surrogate: 4-Bromofluorobenzene	*0.142*		*ug/L*	*0.143*		*99.1*	*70-130*			
*Batch B1F0237 - *** DEFAULT PREP ****										
Blank (B1F0237-BLK1)				Prepared & Analyzed: 05/27/21						
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	<0.020	0.020	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	<0.020	0.020	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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
Blank (B1F0237-BLK1) Continued				Prepared & Analyzed: 05/27/21						
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							
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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
Blank (B1F0237-BLK1) Continued				Prepared & Analyzed: 05/27/21						
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	*0.160*		*ug/L*	*0.143*		*112*	*70-130*			
LCS (B1F0237-BS1)				Prepared & Analyzed: 05/27/21						
Acetone	**0.102**	0.020	ug/L	0.0950		107	70-130		30	
Benzene	**0.105**	0.0030	ug/L	0.128		81.8	70-130		30	
Benzyl chloride	**0.143**	0.020	ug/L	0.178		80.6	70-130		30	
Bromodichloromethane	**0.222**	0.020	ug/L	0.268		82.8	70-130		30	
Bromoform	**0.347**	0.020	ug/L	0.413		84.0	70-130		30	
Bromomethane	**0.167**	0.020	ug/L	0.155		108	70-130		30	
2-Butanone (MEK)	**0.110**	0.020	ug/L	0.118		93.6	70-130		30	
Carbon Disulfide	**0.120**	0.020	ug/L	0.125		96.0	70-130		30	
Carbon Tetrachloride	**0.213**	0.020	ug/L	0.252		84.6	70-130		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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
LCS (B1F0237-BS1) Continued				Prepared & Analyzed: 05/27/21						
Chlorobenzene	**0.159**	0.020	ug/L	0.184		86.4	70-130		30	
Chloroethane	**0.123**	0.020	ug/L	0.106		116	70-130		30	
Chloroform	**0.177**	0.020	ug/L	0.195		90.4	70-130		30	
Chloromethane	**0.0770**	0.020	ug/L	0.0826		93.2	70-130		30	
Dibromochloromethane	**0.285**	0.020	ug/L	0.341		83.7	70-130		30	
1,2-Dibromoethane (EDB)	**0.273**	0.020	ug/L	0.307		89.0	70-130		30	
1,2-Dichlorobenzene	**0.299**	0.020	ug/L	0.240		124	70-130		30	
1,3-Dichlorobenzene	**0.269**	0.020	ug/L	0.240		112	70-130		30	
1,4-Dichlorobenzene	**0.265**	0.020	ug/L	0.240		110	70-130		30	
Dichlorodifluoromethane (R12)	**0.147**	0.020	ug/L	0.198		74.4	70-130		30	
1,1-Dichloroethane	**0.148**	0.020	ug/L	0.162		91.4	70-130		30	
1,2-Dichloroethane (EDC)	**0.144**	0.0040	ug/L	0.162		88.9	70-130		30	
cis-1,2-Dichloroethylene	**0.147**	0.020	ug/L	0.159		92.8	70-130		30	
1,1-Dichloroethylene	**0.216**	0.020	ug/L	0.159		136	70-130		30	QL-02
trans-1,2-Dichloroethylene	**0.149**	0.020	ug/L	0.159		94.2	70-130		30	
1,2-Dichloropropane	**0.142**	0.020	ug/L	0.185		76.9	70-130		30	
trans-1,3-Dichloropropylene	**0.154**	0.020	ug/L	0.182		84.9	70-130		30	
cis-1,3-Dichloropropylene	**0.152**	0.020	ug/L	0.182		83.9	70-130		30	
Dichlorotetrafluoroethane	**0.238**	0.020	ug/L	0.280		85.1	70-130		30	
Ethylbenzene	**0.142**	0.020	ug/L	0.174		81.8	70-130		30	
4-Ethyltoluene	**0.166**	0.020	ug/L	0.197		84.5	70-130		30	
Hexachlorobutadiene	**1.10**	0.020	ug/L	0.427		258	70-130		30	QL-04
2-Hexanone (MBK)	**0.137**	0.020	ug/L	0.164		83.9	70-130		30	
Isopropanol (IPA)	**0.102**	0.20	ug/L	0.0865		118	70-130		30	
Methylene Chloride	**0.134**	0.020	ug/L	0.139		96.7	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.130**	0.020	ug/L	0.164		79.6	70-130		30	
Styrene	**0.154**	0.020	ug/L	0.170		90.2	70-130		30	
1,1,2,2-Tetrachloroethane	**0.227**	0.020	ug/L	0.275		82.8	70-130		30	
Tetrachloroethylene (PCE)	**0.252**	0.010	ug/L	0.271		92.8	70-130		30	
Toluene	**0.130**	0.020	ug/L	0.151		86.3	70-130		30	
1,2,4-Trichlorobenzene	**0.831**	0.020	ug/L	0.297		280	70-130		30	QL-04
1,1,2-Trichloroethane	**0.182**	0.020	ug/L	0.218		83.6	70-130		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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
LCS (B1F0237-BS1) Continued				Prepared & Analyzed: 05/27/21						
1,1,1-Trichloroethane	**0.180**	0.020	ug/L	0.218		82.5	70-130		30	
Trichloroethylene (TCE)	**0.183**	0.020	ug/L	0.215		84.9	70-130		30	
Trichlorofluoromethane (R11)	**0.287**	0.020	ug/L	0.225		128	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.328**	0.020	ug/L	0.307		107	70-130		30	
1,3,5-Trimethylbenzene	**0.211**	0.020	ug/L	0.197		107	70-130		30	
1,2,4-Trimethylbenzene	**0.213**	0.020	ug/L	0.197		108	70-130		30	
Vinyl acetate	**0.105**	0.020	ug/L	0.118		88.9	70-130		30	
Vinyl chloride	**0.104**	0.020	ug/L	0.102		102	70-130		30	
o-Xylene	**0.144**	0.020	ug/L	0.174		83.1	70-130		30	
m,p-Xylenes	**0.278**	0.020	ug/L	0.347		79.9	70-130		30	
1,2,3-Trichloropropane	**0.174**	0.020	ug/L	0.241		72.3	70-130		30	
sec-Butylbenzene	**0.170**	0.020	ug/L	0.220		77.5	70-130		30	
Isopropylbenzene	**0.159**	0.020	ug/L	0.197		80.7	70-130		30	
n-Propylbenzene	**0.153**	0.020	ug/L	0.197		77.7	70-130		30	
4-Isopropyltoluene	**0.182**	0.020	ug/L	0.220		82.8	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.153*		*ug/L*	*0.143*		*107*	*70-130*			
LCS Dup (B1F0237-BSD1)				Prepared: 05/27/21 Analyzed: 05/28/21						
Acetone	**0.0951**	0.020	ug/L	0.0950		100	70-130	6.78	30	
Benzene	**0.110**	0.0030	ug/L	0.128		85.9	70-130	4.92	30	
Benzyl chloride	**0.150**	0.020	ug/L	0.178		84.0	70-130	4.13	30	
Bromodichloromethane	**0.202**	0.020	ug/L	0.268		75.5	70-130	9.20	30	
Bromoform	**0.367**	0.020	ug/L	0.413		88.7	70-130	5.50	30	
Bromomethane	**0.165**	0.020	ug/L	0.155		107	70-130	1.12	30	
2-Butanone (MEK)	**0.104**	0.020	ug/L	0.118		88.4	70-130	5.69	30	
Carbon Disulfide	**0.111**	0.020	ug/L	0.125		89.2	70-130	7.40	30	
Carbon Tetrachloride	**0.215**	0.020	ug/L	0.252		85.3	70-130	0.765	30	
Chlorobenzene	**0.165**	0.020	ug/L	0.184		89.7	70-130	3.80	30	
Chloroethane	**0.119**	0.020	ug/L	0.106		113	70-130	2.93	30	
Chloroform	**0.180**	0.020	ug/L	0.195		92.2	70-130	1.92	30	
Chloromethane	**0.0833**	0.020	ug/L	0.0826		101	70-130	7.84	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
LCS Dup (B1F0237-BSD1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
Dibromochloromethane	**0.262**	0.020	ug/L	0.341		76.8	70-130	8.57	30	
1,2-Dibromoethane (EDB)	**0.249**	0.020	ug/L	0.307		81.0	70-130	9.38	30	
1,2-Dichlorobenzene	**0.311**	0.020	ug/L	0.240		130	70-130	4.04	30	
1,3-Dichlorobenzene	**0.277**	0.020	ug/L	0.240		115	70-130	3.17	30	
1,4-Dichlorobenzene	**0.283**	0.020	ug/L	0.240		118	70-130	6.78	30	
Dichlorodifluoromethane (R12)	**0.191**	0.020	ug/L	0.198		96.3	70-130	25.7	30	
1,1-Dichloroethane	**0.141**	0.020	ug/L	0.162		87.3	70-130	4.62	30	
1,2-Dichloroethane (EDC)	**0.150**	0.0040	ug/L	0.162		92.7	70-130	4.19	30	
cis-1,2-Dichloroethylene	**0.142**	0.020	ug/L	0.159		89.6	70-130	3.59	30	
1,1-Dichloroethylene	**0.206**	0.020	ug/L	0.159		130	70-130	4.70	30	
trans-1,2-Dichloroethylene	**0.140**	0.020	ug/L	0.159		88.3	70-130	6.52	30	
1,2-Dichloropropane	**0.132**	0.020	ug/L	0.185		71.4	70-130	7.38	30	
trans-1,3-Dichloropropylene	**0.143**	0.020	ug/L	0.182		78.9	70-130	7.35	30	
cis-1,3-Dichloropropylene	**0.138**	0.020	ug/L	0.182		76.2	70-130	9.59	30	
Dichlorotetrafluoroethane	**0.279**	0.020	ug/L	0.280		99.9	70-130	15.9	30	
Ethylbenzene	**0.147**	0.020	ug/L	0.174		84.8	70-130	3.54	30	
4-Ethyltoluene	**0.168**	0.020	ug/L	0.197		85.7	70-130	1.35	30	
Hexachlorobutadiene	**1.19**	0.020	ug/L	0.427		279	70-130	7.99	30	QL-04
2-Hexanone (MBK)	**0.124**	0.020	ug/L	0.164		75.4	70-130	10.6	30	
Isopropanol (IPA)	**0.101**	0.20	ug/L	0.0865		116	70-130	1.02	30	
Methylene Chloride	**0.132**	0.020	ug/L	0.139		95.2	70-130	1.54	30	
4-Methyl-2-pentanone (MIBK)	**0.118**	0.020	ug/L	0.164		72.2	70-130	9.79	30	
Styrene	**0.159**	0.020	ug/L	0.170		93.6	70-130	3.65	30	
1,1,2,2-Tetrachloroethane	**0.233**	0.020	ug/L	0.275		85.0	70-130	2.68	30	
Tetrachloroethylene (PCE)	**0.241**	0.010	ug/L	0.271		88.9	70-130	4.24	30	
Toluene	**0.117**	0.020	ug/L	0.151		77.9	70-130	10.3	30	
1,2,4-Trichlorobenzene	**0.919**	0.020	ug/L	0.297		310	70-130	10.1	30	QL-04
1,1,2-Trichloroethane	**0.167**	0.020	ug/L	0.218		76.4	70-130	8.88	30	
1,1,1-Trichloroethane	**0.194**	0.020	ug/L	0.218		88.8	70-130	7.32	30	
Trichloroethylene (TCE)	**0.170**	0.020	ug/L	0.215		79.2	70-130	6.94	30	
Trichlorofluoromethane (R11)	**0.278**	0.020	ug/L	0.225		124	70-130	3.42	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

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 B1F0237 - *** DEFAULT PREP ****										
LCS Dup (B1F0237-BSD1) Continued				Prepared: 05/27/21 Analyzed: 05/28/21						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.311**	0.020	ug/L	0.307		101	70-130	5.33	30	
1,3,5-Trimethylbenzene	**0.221**	0.020	ug/L	0.197		113	70-130	4.64	30	
1,2,4-Trimethylbenzene	**0.221**	0.020	ug/L	0.197		112	70-130	3.78	30	
Vinyl acetate	**0.0989**	0.020	ug/L	0.118		83.6	70-130	6.11	30	
Vinyl chloride	**0.101**	0.020	ug/L	0.102		99.0	70-130	2.67	30	
o-Xylene	**0.150**	0.020	ug/L	0.174		86.4	70-130	3.92	30	
m,p-Xylenes	**0.291**	0.020	ug/L	0.347		83.7	70-130	4.68	30	
1,2,3-Trichloropropane	**0.177**	0.020	ug/L	0.241		73.3	70-130	1.30	30	
sec-Butylbenzene	**0.179**	0.020	ug/L	0.220		81.6	70-130	5.12	30	
Isopropylbenzene	**0.167**	0.020	ug/L	0.197		85.0	70-130	5.22	30	
n-Propylbenzene	**0.158**	0.020	ug/L	0.197		80.6	70-130	3.67	30	
4-Isopropyltoluene	**0.193**	0.020	ug/L	0.220		87.8	70-130	5.77	30	
Surrogate: 4-Bromofluorobenzene	*0.156*		*ug/L*	*0.143*		*109*	*70-130*			
Fixed Gases by TCD - Quality Control										
*Batch B1F0227 - *** DEFAULT PREP ****										
Blank (B1F0227-BLK1)				Prepared: 06/02/21 Analyzed: 06/03/21						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1F0227-BS1)				Prepared: 06/02/21 Analyzed: 06/03/21						
Methane	**2.60**	0.10	% by Volume	2.25		115	70-130			
Oxygen	**2.40**	0.10	% by Volume	2.00		120	70-130			
Carbon Dioxide	**7.54**	0.10	% by Volume	7.50		101	70-130			
LCS Dup (B1F0227-BSD1)				Prepared: 06/02/21 Analyzed: 06/03/21						

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B1F0227 - *** DEFAULT PREP ****										
LCS Dup (B1F0227-BSD1) Continued				Prepared: 06/02/21 Analyzed: 06/03/21						
Methane	**2.68**	0.10	% by Volume	2.25		119	70-130	3.30	30	
Oxygen	**2.39**	0.10	% by Volume	2.00		119	70-130	0.376	30	
Carbon Dioxide	**7.75**	0.10	% by Volume	7.50		103	70-130	2.70	30	
Duplicate (B1F0227-DUP1)			**Source: 1E25005-06**	Prepared: 06/02/21 Analyzed: 06/03/21						
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**21.5**	0.20	% by Volume		21.7			1.04	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	
*Batch B1F0325 - *** DEFAULT PREP ****										
Blank (B1F0325-BLK1)				Prepared & Analyzed: 06/03/21						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1F0325-BS1)				Prepared & Analyzed: 06/03/21						
Methane	**2.55**	0.10	% by Volume	2.25		113	70-130			
Oxygen	**2.27**	0.10	% by Volume	2.00		113	70-130			
Carbon Dioxide	**7.42**	0.10	% by Volume	7.50		99.0	70-130			
LCS Dup (B1F0325-BSD1)				Prepared & Analyzed: 06/03/21						
Methane	**2.68**	0.10	% by Volume	2.25		119	70-130	5.00	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: MB187338
Date Received: 05/25/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B1F0325 - *** DEFAULT PREP ****										
LCS Dup (B1F0325-BSD1) Continued				Prepared & Analyzed: 06/03/21						
Oxygen	**2.36**	0.10	% by Volume	2.00		118	70-130	3.81	30	
Carbon Dioxide	**7.70**	0.10	% by Volume	7.50		103	70-130	3.62	30	
Duplicate (B1F0325-DUP1)			**Source: 1E25005-14**	Prepared & Analyzed: 06/03/21						
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**20.8**	0.20	% by Volume		21.5			3.49	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187338
Project No:	693142	**Date Received:**	05/25/21
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	06/24/21

Special Notes

[1] = **AA-C1** : Possible lab contaminant

[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-04** : The recovery for this analyte in the LCS and LCSD is marginally above the upper control limit. Since the analyte was not detected in any of the associated samples, the analytical results for this analyte are valid.

[5] = **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.

Allen Aminian
QA/QC Manager

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 22725
20204364
Page 1 of 1

Client: Jacobs	**Project Name / No.:** DFSP Norwalk	**Sampler's Name:** Jean Rodr	
Project Manager:	**Site Address:** 15036 Norwalk blvd	**Sampler's Signature:**	
Phone:	**City:** Norwalk	**P.O. No.:**	
Fax:	**State & Zip:** CA	**Quote No.:**	

TAT Turnaround Codes **

① = Same Day Rush ④ = 72 Hour Rush
② = 24 Hour Rush ⑤ = 5 Day Rush
③ = 48 Hour Rush X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name) — Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO-3	Fixed Gas								Special Instructions Can ID #
SVM-1-5	1E25005 -01	5/25/21	834	Sum a	1	X	X	X								11075
SVM-1-15	-02		834			X		X								4330
SVM-2-5	-03		849			X		X								11413
Ambient Air	-04		900			X										11441
SVM-15-7	-05		910			X		X								10616
SVM-15-15	-06		910			X										2039
SVM-15-22	-07		910			X										1237
SVM-6-7	-08		930			X										11428
SVM-6-13	-09		936			X										11199
SVM-7-7	-10		949			X										1555
SVM-7-13	-11		949			X										6301
SVM-10-15	-12		1007			X										11022
SVM-16-7	-13		1028			X										574
SVM-16-16	-14		1028			X										2358
SVM-16-22	-15		1029			X										11443

For Laboratory Use

REVIEWED
Date: 5/25/21 Time: 14:37
TAT: 10 Days Sign:

A.A. Project No.: MBK 1338 / 1E25005

Relinquished by	Date	Time	Received by
Danny Hsu	5/25/21	1048	
	5/25/21	1256	

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 22726
20204365
Page 2 of 2

Client: Jacobs		Project Name / No.: Norwalk		Sampler's Name:	
Project Manager:		Site Address: 15036 Norwalk		Sampler's Signature:	
Phone:		City: Norwalk		P.O. No.:	
Fax:		State & Zip: CA		Quote No.:	

TAT Turnaround Codes **

1 = Same Day Rush
2 = 24 Hour Rush
3 = 48 Hour Rush
4 = 72 Hour Rush
5 = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO3	Fixed Gases								Special Instructions
SVW-16-22R4		5/25/21	1028	Summa	1	X	X	X								Can ID # 11294
																Sampling Atm
																199, 103, 197
																157, 127, 140
																147, 207, 212
																117, 198, 188
																192, 209, 204

For Laboratory Use	Relinquished by	Date	Time	Received by
RECEIVED Date 5/25/21 Time 14:37	Danny Hill	5/25/21	1045	
	Relinquished by	5/25/21	12 56	Received by
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB81338 / 1E25005

AMERICAN ANALYTICS

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

June 24, 2021

Eric Davis

CH2M Hill, Inc.

P.O. Box 241329

Denver, CO 80224

Re : KMEP Norwalk Biosparge Startup / 693142

MB187339 / 1E26011

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 05/26/21 13:32 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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases					
SVM-3-5	1E26011-01	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-3-15	1E26011-02	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-5-5	1E26011-03	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-5-15	1E26011-04	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-8-5	1E26011-05	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-8-15	1E26011-06	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-12-7	1E26011-07	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-15	1E26011-08	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-22	1E26011-09	Vapor	10	05/26/21 09:53	05/26/21 13:32
SVM-11-7	1E26011-11	Vapor	10	05/26/21 10:32	05/26/21 13:32
SVM-11-15	1E26011-12	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-11-22	1E26011-13	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-13-7	1E26011-14	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-15	1E26011-15	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-22	1E26011-16	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-14R-8	1E26011-17	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-8 DUP	1E26011-18	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-16	1E26011-19	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-22	1E26011-20	Vapor	10	05/26/21 11:30	05/26/21 13:32

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
TO-15 (Mid Level)					
SVM-3-5	1E26011-01	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-3-15	1E26011-02	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-5-5	1E26011-03	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-5-15	1E26011-04	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-8-5	1E26011-05	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-8-15	1E26011-06	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-12-7	1E26011-07	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-15	1E26011-08	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-22	1E26011-09	Vapor	10	05/26/21 09:53	05/26/21 13:32
Ambient Air	1E26011-10	Vapor	10	05/26/21 11:05	05/26/21 13:32
SVM-11-7	1E26011-11	Vapor	10	05/26/21 10:32	05/26/21 13:32
SVM-11-15	1E26011-12	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-11-22	1E26011-13	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-13-7	1E26011-14	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-15	1E26011-15	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-22	1E26011-16	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-14R-8	1E26011-17	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-8 DUP	1E26011-18	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-16	1E26011-19	Vapor	10	05/26/21 11:35	05/26/21 13:32

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-14R-22	1E26011-20	Vapor	10	05/26/21 11:30	05/26/21 13:32
TO-3					
SVM-3-5	1E26011-01	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-3-15	1E26011-02	Vapor	10	05/26/21 08:24	05/26/21 13:32
SVM-5-5	1E26011-03	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-5-15	1E26011-04	Vapor	10	05/26/21 08:51	05/26/21 13:32
SVM-8-5	1E26011-05	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-8-15	1E26011-06	Vapor	10	05/26/21 09:08	05/26/21 13:32
SVM-12-7	1E26011-07	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-15	1E26011-08	Vapor	10	05/26/21 09:52	05/26/21 13:32
SVM-12-22	1E26011-09	Vapor	10	05/26/21 09:53	05/26/21 13:32
Ambient Air	1E26011-10	Vapor	10	05/26/21 11:05	05/26/21 13:32
SVM-11-7	1E26011-11	Vapor	10	05/26/21 10:32	05/26/21 13:32
SVM-11-15	1E26011-12	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-11-22	1E26011-13	Vapor	10	05/26/21 10:31	05/26/21 13:32
SVM-13-7	1E26011-14	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-15	1E26011-15	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-13-22	1E26011-16	Vapor	10	05/26/21 11:00	05/26/21 13:32
SVM-14R-8	1E26011-17	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-8 DUP	1E26011-18	Vapor	10	05/26/21 11:35	05/26/21 13:32

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-14R-16	1E26011-19	Vapor	10	05/26/21 11:35	05/26/21 13:32
SVM-14R-22	1E26011-20	Vapor	10	05/26/21 11:30	05/26/21 13:32

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
			Fixed Gases by TCD					
Oxygen	SVM-3-5	**21**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-3-15	**22**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-5-5	**21**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-5-15	**22**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-8-5	**22**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-8-15	**22**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-12-7	**20**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-12-15	**17**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Carbon Dioxide	SVM-12-15	**2.1**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-12-22	**5.5**	0.20	% by Volume	2	06/08/21	06/08/21	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-12-22	**9.8**	0.20	% by Volume	2	06/08/21	06/08/21	ASTM D1946M
Oxygen	SVM-11-7	**21**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-11-7	**1.4**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-11-15	**19**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-11-15	**1.0**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-11-22	**16**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-11-22	**2.5**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-13-7	**22**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-13-15	**23**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-13-22	**17**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-13-22	**2.5**	0.20	% by Volume	2	06/09/21	06/09/21	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-14R-8	**21**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-14R-8 DUP	**22**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-14R-16	**20**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-14R-16	**2.3**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Oxygen	SVM-14R-22	**11**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
Carbon Dioxide	SVM-14R-22	**6.3**	0.20	% by Volume	2	06/09/21	06/09/21	ASTM D1946M
VOCs by EPA TO-3								
Gasoline Range Organics (GRO)	SVM-3-15	**0.55**	0.50	ug/L	1	05/28/21	05/28/21	TO-3
Gasoline Range Organics (GRO)	SVM-12-22	**0.95**	0.50	ug/L	1	05/28/21	05/28/21	TO-3
Gasoline Range Organics (GRO)	SVM-11-22	**0.73**	0.50	ug/L	1	05/28/21	05/28/21	TO-3
VOCs by GCMS EPA TO-15 (Mid Level)								
Bromodichloromethane	SVM-3-5	**0.051**	0.020	ug/L	1	05/28/21	05/28/21	TO-15
Chloroform	SVM-3-5	**0.042**	0.020	ug/L	1	05/28/21	05/28/21	TO-15
Dibromochloromethane	SVM-3-5	**0.029**	0.020	ug/L	1	05/28/21	05/28/21	TO-15
Bromodichloromethane	SVM-3-15	**0.029**	0.020	ug/L	1	05/28/21	05/28/21	TO-15
Chloroform	SVM-3-15	**0.037**	0.020	ug/L	1	05/28/21	05/28/21	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Tetrachloroethylene (PCE)	SVM-12-22	**0.018**	0.010	ug/L	1	05/28/21	05/28/21	TO-15
Tetrachloroethylene (PCE)	SVM-11-22	**0.020**	0.010	ug/L	1	05/28/21	05/28/21	TO-15
Tetrachloroethylene (PCE)	SVM-13-7	**0.035**	0.010	ug/L	1	05/28/21	05/28/21	TO-15
Chloroform	SVM-14R-16	**0.025**	0.020	ug/L	1	05/28/21	05/29/21	TO-15
Tetrachloroethylene (PCE)	SVM-14R-22	**0.020**	0.010	ug/L	1	05/28/21	05/29/21	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/29/21	05/29/21	
AA ID No:	1E26011-01	1E26011-02	1E26011-03	1E26011-04	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	**0.55**	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	102%	98%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/29/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-05	1E26011-06	1E26011-07	1E26011-08	
Client ID No:	SVM-8-5	SVM-8-15	SVM-12-7	SVM-12-15	
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%	97%	98%	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 EPA TO-3

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-09	1E26011-10	1E26011-11	1E26011-12	
Client ID No:	SVM-12-22	Ambient Air	SVM-11-7	SVM-11-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**0.95**	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	102%	103%	106%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-13	1E26011-14	1E26011-15	1E26011-16	
Client ID No:	SVM-11-22	SVM-13-7	SVM-13-15	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**0.73**	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	105%	108%	109%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/2021	05/26/2021	05/26/2021	05/26/2021	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-17	1E26011-18	1E26011-19	1E26011-20	
Client ID No:	SVM-14R-8	SVM-14R-8 DUP	SVM-14R-16	SVM-14R-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	109%	104%	105%	100%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/29/21	05/29/21	
AA ID No:	1E26011-01	1E26011-02	1E26011-03	1E26011-04	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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	**0.051**	**0.029**	<0.020	<0.020	0.020
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	**0.042**	**0.037**	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	**0.029**	<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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/29/21	05/29/21	
AA ID No:	1E26011-01	1E26011-02	1E26011-03	1E26011-04	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/29/21	05/29/21	
AA ID No:	1E26011-01	1E26011-02	1E26011-03	1E26011-04	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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	112%	116%	113%	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 GCMS EPA TO-15 (Mid Level)

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/29/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-05	1E26011-06	1E26011-07	1E26011-08	
Client ID No:	SVM-8-5	SVM-8-15	SVM-12-7	SVM-12-15	
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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/29/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-05	1E26011-06	1E26011-07	1E26011-08	
Client ID No:	SVM-8-5	SVM-8-15	SVM-12-7	SVM-12-15	
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/29/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-05	1E26011-06	1E26011-07	1E26011-08	
Client ID No:	SVM-8-5	SVM-8-15	SVM-12-7	SVM-12-15	
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	113%	112%	113%	115%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-09	1E26011-10	1E26011-11	1E26011-12	
Client ID No:	SVM-12-22	Ambient Air	SVM-11-7	SVM-11-15	
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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-09	1E26011-10	1E26011-11	1E26011-12	
Client ID No:	SVM-12-22	Ambient Air	SVM-11-7	SVM-11-15	
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)	**0.018**	<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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-09	1E26011-10	1E26011-11	1E26011-12	
Client ID No:	SVM-12-22	Ambient Air	SVM-11-7	SVM-11-15	
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	98%	95%	97%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-13	1E26011-14	1E26011-15	1E26011-16	
Client ID No:	SVM-11-22	SVM-13-7	SVM-13-15	SVM-13-22	
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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	<0.020	<0.020	0.020
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-13	1E26011-14	1E26011-15	1E26011-16	
Client ID No:	SVM-11-22	SVM-13-7	SVM-13-15	SVM-13-22	
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)	**0.020**	**0.035**	<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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/28/21	05/28/21	05/28/21	
AA ID No:	1E26011-13	1E26011-14	1E26011-15	1E26011-16	
Client ID No:	SVM-11-22	SVM-13-7	SVM-13-15	SVM-13-22	
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	96%	100%	101%	101%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/2021	05/26/2021	05/26/2021	05/26/2021	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-17	1E26011-18	1E26011-19	1E26011-20	
Client ID No:	SVM-14R-8	SVM-14R-8 DUP	SVM-14R-16	SVM-14R-22	
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	<0.020	<0.020	<0.020	<0.020	0.020
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	<0.020	<0.020	**0.025**	<0.020	0.020
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/2021	05/26/2021	05/26/2021	05/26/2021	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-17	1E26011-18	1E26011-19	1E26011-20	
Client ID No:	SVM-14R-8	SVM-14R-8 DUP	SVM-14R-16	SVM-14R-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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: ug/L

Date Sampled:	05/26/2021	05/26/2021	05/26/2021	05/26/2021	
Date Prepared:	05/28/21	05/28/21	05/28/21	05/28/21	
Date Analyzed:	05/28/21	05/29/21	05/29/21	05/29/21	
AA ID No:	1E26011-17	1E26011-18	1E26011-19	1E26011-20	
Client ID No:	SVM-14R-8	SVM-14R-8 DUP	SVM-14R-16	SVM-14R-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	100%	96%	97%	91%	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	06/08/21	06/08/21	06/08/21	06/08/21	
Date Analyzed:	06/08/21	06/08/21	06/08/21	06/08/21	
AA ID No:	1E26011-01	1E26011-02	1E26011-03	1E26011-04	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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**	**22**	**21**	**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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	06/08/21	06/08/21	06/08/21	06/08/21	
Date Analyzed:	06/08/21	06/08/21	06/08/21	06/08/21	
AA ID No:	1E26011-05	1E26011-06	1E26011-07	1E26011-08	
Client ID No:	SVM-8-5	SVM-8-15	SVM-12-7	SVM-12-15	
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	**22**	**22**	**20**	**17**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	**2.1**	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	06/08/21	06/09/21	06/09/21	06/09/21	
Date Analyzed:	06/09/21	06/09/21	06/09/21	06/09/21	
AA ID No:	1E26011-09	1E26011-11	1E26011-12	1E26011-13	
Client ID No:	SVM-12-22	SVM-11-7	SVM-11-15	SVM-11-22	
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	**5.5**	**21**	**19**	**16**	0.10
Carbon Dioxide	**9.8**	**1.4**	**1.0**	**2.5**	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/26/21	05/26/21	05/26/21	05/26/21	
Date Prepared:	06/09/21	06/09/21	06/09/21	06/09/21	
Date Analyzed:	06/09/21	06/09/21	06/09/21	06/09/21	
AA ID No:	1E26011-14	1E26011-15	1E26011-16	1E26011-17	
Client ID No:	SVM-13-7	SVM-13-15	SVM-13-22	SVM-14R-8	
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**	**23**	**17**	**21**	0.10
Carbon Dioxide	<0.20	<0.20	**2.5**	<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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21
Units: % by Volume

Date Sampled:	05/26/2021	05/26/2021	05/26/2021	
Date Prepared:	06/09/21	06/09/21	06/09/21	
Date Analyzed:	06/09/21	06/09/21	06/09/21	
AA ID No:	1E26011-18	1E26011-19	1E26011-20	
Client ID No:	SVM-14R-8 DUP	SVM-14R-16	SVM-14R-22	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	MRL
Fixed Gases (ASTM D1946M)				
Methane	<0.20	<0.20	<0.20	0.10
Oxygen	**22**	**20**	**11**	0.10
Carbon Dioxide	<0.20	**2.3**	**6.3**	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B1F0230 - *** DEFAULT PREP ****										
Blank (B1F0230-BLK1)				Prepared & Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0350*		*ug/L*	*0.0358*		*97.8*	*70-130*			
LCS (B1F0230-BS1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Gasoline Range Organics (GRO)	**0.641**	0.50	ug/L	0.802		80.0	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0351*		*ug/L*	*0.0358*		*98.2*	*70-130*			
LCS Dup (B1F0230-BSD1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Gasoline Range Organics (GRO)	**0.698**	0.50	ug/L	0.802		87.1	70-130	8.47	30	
Surrogate: 4-Bromofluorobenzene	*0.0358*		*ug/L*	*0.0358*		*100*	*70-130*			
*Batch B1F0232 - *** DEFAULT PREP ****										
Blank (B1F0232-BLK1)				Prepared & Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0321*		*ug/L*	*0.0358*		*89.6*	*70-130*			
LCS (B1F0232-BS1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Gasoline Range Organics (GRO)	**0.835**	0.50	ug/L	0.802		104	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0352*		*ug/L*	*0.0358*		*98.4*	*70-130*			
LCS Dup (B1F0232-BSD1)				Prepared & Analyzed: 05/28/21						
Gasoline Range Organics (GRO)	**0.902**	0.50	ug/L	0.802		113	70-130	7.69	30	
Surrogate: 4-Bromofluorobenzene	*0.0336*		*ug/L*	*0.0358*		*94.0*	*70-130*			
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1)				Prepared & Analyzed: 05/28/21						
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	<0.020	0.020	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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	<0.020	0.020	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
Blank (B1E2737-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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	*0.162*		*ug/L*	*0.143*		*113*	*70-130*			
LCS (B1E2737-BS1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Acetone	**0.115**	0.020	ug/L	0.0950		121	70-130		30	
Benzene	**0.118**	0.0030	ug/L	0.128		92.0	70-130		30	
Benzyl chloride	**0.150**	0.020	ug/L	0.178		84.0	70-130		30	
Bromodichloromethane	**0.240**	0.020	ug/L	0.268		89.6	70-130		30	
Bromoform	**0.373**	0.020	ug/L	0.413		90.2	70-130		30	
Bromomethane	**0.200**	0.020	ug/L	0.155		129	70-130		30	
2-Butanone (MEK)	**0.118**	0.020	ug/L	0.118		99.7	70-130		30	
Carbon Disulfide	**0.141**	0.020	ug/L	0.125		113	70-130		30	
Carbon Tetrachloride	**0.235**	0.020	ug/L	0.252		93.3	70-130		30	
Chlorobenzene	**0.167**	0.020	ug/L	0.184		90.9	70-130		30	
Chloroethane	**0.149**	0.020	ug/L	0.106		141	70-130		30	QL-04
Chloroform	**0.188**	0.020	ug/L	0.195		96.4	70-130		30	
Chloromethane	**0.104**	0.020	ug/L	0.0826		126	70-130		30	
Dibromochloromethane	**0.330**	0.020	ug/L	0.341		96.8	70-130		30	
1,2-Dibromoethane (EDB)	**0.306**	0.020	ug/L	0.307		99.6	70-130		30	
1,2-Dichlorobenzene	**0.312**	0.020	ug/L	0.240		130	70-130		30	
1,3-Dichlorobenzene	**0.285**	0.020	ug/L	0.240		119	70-130		30	
1,4-Dichlorobenzene	**0.288**	0.020	ug/L	0.240		120	70-130		30	
Dichlorodifluoromethane (R12)	**0.223**	0.020	ug/L	0.198		113	70-130		30	
1,1-Dichloroethane	**0.180**	0.020	ug/L	0.162		111	70-130		30	
1,2-Dichloroethane (EDC)	**0.161**	0.0040	ug/L	0.162		99.2	70-130		30	
cis-1,2-Dichloroethylene	**0.147**	0.020	ug/L	0.159		92.5	70-130		30	
1,1-Dichloroethylene	**0.240**	0.020	ug/L	0.159		151	70-130		30	QL-04
trans-1,2-Dichloroethylene	**0.178**	0.020	ug/L	0.159		112	70-130		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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS (B1E2737-BS1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
1,2-Dichloropropane	**0.159**	0.020	ug/L	0.185		86.0	70-130		30	
trans-1,3-Dichloropropylene	**0.173**	0.020	ug/L	0.182		95.1	70-130		30	
cis-1,3-Dichloropropylene	**0.171**	0.020	ug/L	0.182		94.1	70-130		30	
Dichlorotetrafluoroethane	**0.345**	0.020	ug/L	0.280		123	70-130		30	
Ethylbenzene	**0.147**	0.020	ug/L	0.174		84.8	70-130		30	
4-Ethyltoluene	**0.169**	0.020	ug/L	0.197		85.9	70-130		30	
Hexachlorobutadiene	**1.16**	0.020	ug/L	0.427		272	70-130		30	QL-04
2-Hexanone (MBK)	**0.151**	0.020	ug/L	0.164		92.4	70-130		30	
Isopropanol (IPA)	**0.115**	0.20	ug/L	0.0865		133	70-130		30	QL-02
Methylene Chloride	**0.154**	0.020	ug/L	0.139		111	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.146**	0.020	ug/L	0.164		89.2	70-130		30	
Styrene	**0.162**	0.020	ug/L	0.170		94.8	70-130		30	
1,1,2,2-Tetrachloroethane	**0.239**	0.020	ug/L	0.275		87.0	70-130		30	
Tetrachloroethylene (PCE)	**0.282**	0.010	ug/L	0.271		104	70-130		30	
Toluene	**0.141**	0.020	ug/L	0.151		93.3	70-130		30	
1,2,4-Trichlorobenzene	**0.880**	0.020	ug/L	0.297		296	70-130		30	QL-04
1,1,2-Trichloroethane	**0.209**	0.020	ug/L	0.218		95.7	70-130		30	
1,1,1-Trichloroethane	**0.208**	0.020	ug/L	0.218		95.2	70-130		30	
Trichloroethylene (TCE)	**0.201**	0.020	ug/L	0.215		93.3	70-130		30	
Trichlorofluoromethane (R11)	**0.337**	0.020	ug/L	0.225		150	70-130		30	QL-04
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.384**	0.020	ug/L	0.307		125	70-130		30	
1,3,5-Trimethylbenzene	**0.223**	0.020	ug/L	0.197		113	70-130		30	
1,2,4-Trimethylbenzene	**0.222**	0.020	ug/L	0.197		113	70-130		30	
Vinyl acetate	**0.123**	0.020	ug/L	0.118		104	70-130		30	
Vinyl chloride	**0.131**	0.020	ug/L	0.102		128	70-130		30	
o-Xylene	**0.150**	0.020	ug/L	0.174		86.5	70-130		30	
m,p-Xylenes	**0.299**	0.020	ug/L	0.347		86.1	70-130		30	
1,2,3-Trichloropropane	**0.182**	0.020	ug/L	0.241		75.6	70-130		30	
sec-Butylbenzene	**0.181**	0.020	ug/L	0.220		82.3	70-130		30	
Isopropylbenzene	**0.169**	0.020	ug/L	0.197		86.0	70-130		30	
n-Propylbenzene	**0.159**	0.020	ug/L	0.197		80.8	70-130		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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS (B1E2737-BS1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
4-Isopropyltoluene	**0.193**	0.020	ug/L	0.220		87.9	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.157*		*ug/L*	*0.143*		*110*	*70-130*			
LCS Dup (B1E2737-BSD1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Acetone	**0.114**	0.020	ug/L	0.0950		120	70-130	1.18	30	
Benzene	**0.120**	0.0030	ug/L	0.128		93.6	70-130	1.80	30	
Benzyl chloride	**0.133**	0.020	ug/L	0.178		74.8	70-130	11.6	30	
Bromodichloromethane	**0.242**	0.020	ug/L	0.268		90.2	70-130	0.779	30	
Bromoform	**0.336**	0.020	ug/L	0.413		81.4	70-130	10.3	30	
Bromomethane	**0.197**	0.020	ug/L	0.155		127	70-130	1.60	30	
2-Butanone (MEK)	**0.108**	0.020	ug/L	0.118		91.8	70-130	8.22	30	
Carbon Disulfide	**0.131**	0.020	ug/L	0.125		106	70-130	7.00	30	
Carbon Tetrachloride	**0.230**	0.020	ug/L	0.252		91.2	70-130	2.25	30	
Chlorobenzene	**0.159**	0.020	ug/L	0.184		86.3	70-130	5.16	30	
Chloroethane	**0.143**	0.020	ug/L	0.106		136	70-130	3.79	30	QL-04
Chloroform	**0.191**	0.020	ug/L	0.195		97.8	70-130	1.39	30	
Chloromethane	**0.0978**	0.020	ug/L	0.0826		118	70-130	6.24	30	
Dibromochloromethane	**0.352**	0.020	ug/L	0.341		103	70-130	6.42	30	
1,2-Dibromoethane (EDB)	**0.339**	0.020	ug/L	0.307		110	70-130	10.2	30	
1,2-Dichlorobenzene	**0.286**	0.020	ug/L	0.240		119	70-130	8.55	30	
1,3-Dichlorobenzene	**0.255**	0.020	ug/L	0.240		106	70-130	11.2	30	
1,4-Dichlorobenzene	**0.258**	0.020	ug/L	0.240		107	70-130	10.8	30	
Dichlorodifluoromethane (R12)	**0.181**	0.020	ug/L	0.198		91.6	70-130	20.8	30	
1,1-Dichloroethane	**0.148**	0.020	ug/L	0.162		91.3	70-130	19.6	30	
1,2-Dichloroethane (EDC)	**0.166**	0.0040	ug/L	0.162		103	70-130	3.42	30	
cis-1,2-Dichloroethylene	**0.149**	0.020	ug/L	0.159		93.8	70-130	1.40	30	
1,1-Dichloroethylene	**0.247**	0.020	ug/L	0.159		155	70-130	2.64	30	QL-04
trans-1,2-Dichloroethylene	**0.148**	0.020	ug/L	0.159		93.2	70-130	18.4	30	
1,2-Dichloropropane	**0.157**	0.020	ug/L	0.185		84.8	70-130	1.46	30	
trans-1,3-Dichloropropylene	**0.167**	0.020	ug/L	0.182		92.1	70-130	3.23	30	
cis-1,3-Dichloropropylene	**0.160**	0.020	ug/L	0.182		88.4	70-130	6.27	30	
Dichlorotetrafluoroethane	**0.311**	0.020	ug/L	0.280		111	70-130	10.4	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1E2737 - *** DEFAULT PREP ****										
LCS Dup (B1E2737-BSD1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
Ethylbenzene	**0.132**	0.020	ug/L	0.174		76.3	70-130	10.6	30	
4-Ethyltoluene	**0.151**	0.020	ug/L	0.197		77.0	70-130	10.9	30	
Hexachlorobutadiene	**1.25**	0.020	ug/L	0.427		293	70-130	7.36	30	QL-04
2-Hexanone (MBK)	**0.156**	0.020	ug/L	0.164		95.1	70-130	2.85	30	
Isopropanol (IPA)	**0.0987**	0.20	ug/L	0.0865		114	70-130	15.4	30	
Methylene Chloride	**0.156**	0.020	ug/L	0.139		113	70-130	1.75	30	
4-Methyl-2-pentanone (MIBK)	**0.137**	0.020	ug/L	0.164		83.5	70-130	6.57	30	
Styrene	**0.146**	0.020	ug/L	0.170		85.5	70-130	10.3	30	
1,1,2,2-Tetrachloroethane	**0.212**	0.020	ug/L	0.275		77.4	70-130	11.7	30	
Tetrachloroethylene (PCE)	**0.290**	0.010	ug/L	0.271		107	70-130	2.78	30	
Toluene	**0.151**	0.020	ug/L	0.151		100	70-130	7.43	30	
1,2,4-Trichlorobenzene	**0.941**	0.020	ug/L	0.297		317	70-130	6.78	30	QL-04
1,1,2-Trichloroethane	**0.200**	0.020	ug/L	0.218		91.8	70-130	4.16	30	
1,1,1-Trichloroethane	**0.211**	0.020	ug/L	0.218		96.8	70-130	1.69	30	
Trichloroethylene (TCE)	**0.198**	0.020	ug/L	0.215		92.3	70-130	1.10	30	
Trichlorofluoromethane (R11)	**0.322**	0.020	ug/L	0.225		143	70-130	4.57	30	QL-04
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.376**	0.020	ug/L	0.307		123	70-130	2.20	30	
1,3,5-Trimethylbenzene	**0.201**	0.020	ug/L	0.197		102	70-130	10.4	30	
1,2,4-Trimethylbenzene	**0.200**	0.020	ug/L	0.197		102	70-130	10.5	30	
Vinyl acetate	**0.105**	0.020	ug/L	0.118		88.4	70-130	16.1	30	
Vinyl chloride	**0.121**	0.020	ug/L	0.102		119	70-130	7.47	30	
o-Xylene	**0.136**	0.020	ug/L	0.174		78.1	70-130	10.3	30	
m,p-Xylenes	**0.261**	0.020	ug/L	0.347		75.1	70-130	13.7	30	
1,2,3-Trichloropropane	**0.161**	0.020	ug/L	0.241		66.8	70-130	12.3	30	QL-03
sec-Butylbenzene	**0.162**	0.020	ug/L	0.220		73.9	70-130	10.8	30	
Isopropylbenzene	**0.151**	0.020	ug/L	0.197		76.6	70-130	11.6	30	
n-Propylbenzene	**0.143**	0.020	ug/L	0.197		72.5	70-130	10.8	30	
4-Isopropyltoluene	**0.173**	0.020	ug/L	0.220		79.0	70-130	10.7	30	
Surrogate: 4-Bromofluorobenzene	*0.140*		*ug/L*	*0.143*		*97.9*	*70-130*			
*Batch B1F0120 - *** 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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
Blank (B1F0120-BLK1)				Prepared & Analyzed: 05/28/21						
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	<0.020	0.020	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	<0.020	0.020	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
Blank (B1F0120-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
Blank (B1F0120-BLK1) Continued				Prepared & Analyzed: 05/28/21						
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	*0.119*		*ug/L*	*0.143*		*82.8*	*70-130*			
LCS (B1F0120-BS1)				Prepared & Analyzed: 05/28/21						
Acetone	**0.0232**	0.020	ug/L	0.0238		97.6	70-130		30	
Benzene	**0.0337**	0.0030	ug/L	0.0319		106	70-130		30	
Benzyl chloride	**0.0371**	0.020	ug/L	0.0445		83.3	70-130		30	
Bromodichloromethane	**0.0703**	0.020	ug/L	0.0670		105	70-130		30	
Bromoform	**0.105**	0.020	ug/L	0.103		102	70-130		30	
Bromomethane	**0.0410**	0.020	ug/L	0.0388		106	70-130		30	
2-Butanone (MEK)	**0.0248**	0.020	ug/L	0.0295		84.2	70-130		30	
Carbon Disulfide	**0.0296**	0.020	ug/L	0.0311		95.1	70-130		30	
Carbon Tetrachloride	**0.0643**	0.020	ug/L	0.0629		102	70-130		30	
Chlorobenzene	**0.0530**	0.020	ug/L	0.0460		115	70-130		30	
Chloroethane	**0.0285**	0.020	ug/L	0.0264		108	70-130		30	
Chloroform	**0.0500**	0.020	ug/L	0.0488		102	70-130		30	
Chloromethane	**0.0210**	0.020	ug/L	0.0207		102	70-130		30	
Dibromochloromethane	**0.0920**	0.020	ug/L	0.0852		108	70-130		30	
1,2-Dibromoethane (EDB)	**0.0857**	0.020	ug/L	0.0768		112	70-130		30	
1,2-Dichlorobenzene	**0.0547**	0.020	ug/L	0.0601		90.9	70-130		30	
1,3-Dichlorobenzene	**0.0598**	0.020	ug/L	0.0601		99.4	70-130		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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
LCS (B1F0120-BS1) Continued				Prepared & Analyzed: 05/28/21						
1,4-Dichlorobenzene	**0.0584**	0.020	ug/L	0.0601		97.2	70-130		30	
Dichlorodifluoromethane (R12)	**0.0529**	0.020	ug/L	0.0495		107	70-130		30	
1,1-Dichloroethane	**0.0421**	0.020	ug/L	0.0405		104	70-130		30	
1,2-Dichloroethane (EDC)	**0.0428**	0.0040	ug/L	0.0405		106	70-130		30	
cis-1,2-Dichloroethylene	**0.0403**	0.020	ug/L	0.0396		102	70-130		30	
1,1-Dichloroethylene	**0.0447**	0.020	ug/L	0.0396		113	70-130		30	
trans-1,2-Dichloroethylene	**0.0387**	0.020	ug/L	0.0396		97.7	70-130		30	
1,2-Dichloropropane	**0.0537**	0.020	ug/L	0.0462		116	70-130		30	
trans-1,3-Dichloropropylene	**0.0479**	0.020	ug/L	0.0454		106	70-130		30	
cis-1,3-Dichloropropylene	**0.0486**	0.020	ug/L	0.0454		107	70-130		30	
Dichlorotetrafluoroethane	**0.0744**	0.020	ug/L	0.0699		106	70-130		30	
Ethylbenzene	**0.0490**	0.020	ug/L	0.0434		113	70-130		30	
4-Ethyltoluene	**0.0483**	0.020	ug/L	0.0492		98.3	70-130		30	
Hexachlorobutadiene	**0.0605**	0.020	ug/L	0.107		56.7	70-130		30	QL-02
2-Hexanone (MBK)	**0.0352**	0.020	ug/L	0.0410		86.0	70-130		30	
Isopropanol (IPA)	**0.0243**	0.20	ug/L	0.0216		112	70-130		30	
Methylene Chloride	**0.0405**	0.020	ug/L	0.0347		117	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.0345**	0.020	ug/L	0.0410		84.3	70-130		30	
Styrene	**0.0477**	0.020	ug/L	0.0426		112	70-130		30	
1,1,2,2-Tetrachloroethane	**0.0719**	0.020	ug/L	0.0687		105	70-130		30	
Tetrachloroethylene (PCE)	**0.0714**	0.010	ug/L	0.0679		105	70-130		30	
Toluene	**0.0412**	0.020	ug/L	0.0377		109	70-130		30	
1,2,4-Trichlorobenzene	**0.0346**	0.020	ug/L	0.0742		46.6	70-130		30	QL-07
1,1,2-Trichloroethane	**0.0596**	0.020	ug/L	0.0546		109	70-130		30	
1,1,1-Trichloroethane	**0.0543**	0.020	ug/L	0.0546		99.6	70-130		30	
Trichloroethylene (TCE)	**0.0564**	0.020	ug/L	0.0537		105	70-130		30	
Trichlorofluoromethane (R11)	**0.0613**	0.020	ug/L	0.0562		109	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0808**	0.020	ug/L	0.0766		105	70-130		30	
1,3,5-Trimethylbenzene	**0.0501**	0.020	ug/L	0.0492		102	70-130		30	
1,2,4-Trimethylbenzene	**0.0468**	0.020	ug/L	0.0492		95.2	70-130		30	
Vinyl acetate	**0.0289**	0.020	ug/L	0.0296		97.9	70-130		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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
LCS (B1F0120-BS1) Continued				Prepared & Analyzed: 05/28/21						
Vinyl chloride	**0.0273**	0.020	ug/L	0.0256		107	70-130		30	
o-Xylene	**0.0490**	0.020	ug/L	0.0434		113	70-130		30	
m,p-Xylenes	**0.0965**	0.020	ug/L	0.0868		111	70-130		30	
1,2,3-Trichloropropane	**0.0614**	0.020	ug/L	0.0603		102	70-130		30	
sec-Butylbenzene	**0.0499**	0.020	ug/L	0.0549		90.9	70-130		30	
Isopropylbenzene	**0.0511**	0.020	ug/L	0.0492		104	70-130		30	
n-Propylbenzene	**0.0510**	0.020	ug/L	0.0492		104	70-130		30	
4-Isopropyltoluene	**0.0484**	0.020	ug/L	0.0549		88.1	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.145*		*ug/L*	*0.143*		*101*	*70-130*			
LCS Dup (B1F0120-BSD1)				Prepared: 05/28/21 Analyzed: 05/29/21						
Acetone	**0.0248**	0.020	ug/L	0.0238		104	70-130	6.73	30	
Benzene	**0.0326**	0.0030	ug/L	0.0319		102	70-130	3.47	30	
Benzyl chloride	**0.0453**	0.020	ug/L	0.0445		102	70-130	19.9	30	
Bromodichloromethane	**0.0813**	0.020	ug/L	0.0670		121	70-130	14.5	30	
Bromoform	**0.127**	0.020	ug/L	0.103		123	70-130	18.9	30	
Bromomethane	**0.0418**	0.020	ug/L	0.0388		108	70-130	1.97	30	
2-Butanone (MEK)	**0.0286**	0.020	ug/L	0.0295		97.0	70-130	14.1	30	
Carbon Disulfide	**0.0318**	0.020	ug/L	0.0311		102	70-130	7.20	30	
Carbon Tetrachloride	**0.0791**	0.020	ug/L	0.0629		126	70-130	20.7	30	
Chlorobenzene	**0.0579**	0.020	ug/L	0.0460		126	70-130	8.80	30	
Chloroethane	**0.0284**	0.020	ug/L	0.0264		108	70-130	0.464	30	
Chloroform	**0.0499**	0.020	ug/L	0.0488		102	70-130	0.293	30	
Chloromethane	**0.0210**	0.020	ug/L	0.0207		102	70-130	0.295	30	
Dibromochloromethane	**0.112**	0.020	ug/L	0.0852		131	70-130	19.3	30	QL-03
1,2-Dibromoethane (EDB)	**0.103**	0.020	ug/L	0.0768		134	70-130	18.5	30	QL-03
1,2-Dichlorobenzene	**0.0668**	0.020	ug/L	0.0601		111	70-130	20.0	30	
1,3-Dichlorobenzene	**0.0608**	0.020	ug/L	0.0601		101	70-130	1.79	30	
1,4-Dichlorobenzene	**0.0624**	0.020	ug/L	0.0601		104	70-130	6.57	30	
Dichlorodifluoromethane (R12)	**0.0495**	0.020	ug/L	0.0495		100	70-130	6.57	30	
1,1-Dichloroethane	**0.0429**	0.020	ug/L	0.0405		106	70-130	2.00	30	
1,2-Dichloroethane (EDC)	**0.0412**	0.0040	ug/L	0.0405		102	70-130	3.86	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
LCS Dup (B1F0120-BSD1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
cis-1,2-Dichloroethylene	**0.0411**	0.020	ug/L	0.0396		104	70-130	1.95	30	
1,1-Dichloroethylene	**0.0470**	0.020	ug/L	0.0396		119	70-130	5.10	30	
trans-1,2-Dichloroethylene	**0.0416**	0.020	ug/L	0.0396		105	70-130	7.11	30	
1,2-Dichloropropane	**0.0611**	0.020	ug/L	0.0462		132	70-130	13.0	30	QL-03
trans-1,3-Dichloropropylene	**0.0562**	0.020	ug/L	0.0454		124	70-130	16.0	30	
cis-1,3-Dichloropropylene	**0.0573**	0.020	ug/L	0.0454		126	70-130	16.5	30	
Dichlorotetrafluoroethane	**0.0779**	0.020	ug/L	0.0699		111	70-130	4.59	30	
Ethylbenzene	**0.0611**	0.020	ug/L	0.0434		141	70-130	21.9	30	QL-03
4-Ethyltoluene	**0.0577**	0.020	ug/L	0.0492		117	70-130	17.6	30	
Hexachlorobutadiene	**0.0824**	0.020	ug/L	0.107		77.3	70-130	30.7	30	
2-Hexanone (MBK)	**0.0496**	0.020	ug/L	0.0410		121	70-130	33.9	30	QR-02
Isopropanol (IPA)	**0.0262**	0.20	ug/L	0.0216		121	70-130	7.40	30	
Methylene Chloride	**0.0407**	0.020	ug/L	0.0347		117	70-130	0.428	30	
4-Methyl-2-pentanone (MIBK)	**0.0489**	0.020	ug/L	0.0410		119	70-130	34.4	30	QR-02
Styrene	**0.0547**	0.020	ug/L	0.0426		128	70-130	13.7	30	
1,1,2,2-Tetrachloroethane	**0.0880**	0.020	ug/L	0.0687		128	70-130	20.1	30	
Tetrachloroethylene (PCE)	**0.0876**	0.010	ug/L	0.0679		129	70-130	20.3	30	
Toluene	**0.0497**	0.020	ug/L	0.0377		132	70-130	18.7	30	
1,2,4-Trichlorobenzene	**0.0443**	0.020	ug/L	0.0742		59.7	70-130	24.6	30	QL-07
1,1,2-Trichloroethane	**0.0722**	0.020	ug/L	0.0546		132	70-130	19.0	30	QL-03
1,1,1-Trichloroethane	**0.0555**	0.020	ug/L	0.0546		102	70-130	2.09	30	
Trichloroethylene (TCE)	**0.0682**	0.020	ug/L	0.0537		127	70-130	18.9	30	
Trichlorofluoromethane (R11)	**0.0611**	0.020	ug/L	0.0562		109	70-130	0.367	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0867**	0.020	ug/L	0.0766		113	70-130	7.05	30	
1,3,5-Trimethylbenzene	**0.0628**	0.020	ug/L	0.0492		128	70-130	22.5	30	
1,2,4-Trimethylbenzene	**0.0595**	0.020	ug/L	0.0492		121	70-130	23.9	30	
Vinyl acetate	**0.0318**	0.020	ug/L	0.0296		108	70-130	9.50	30	
Vinyl chloride	**0.0275**	0.020	ug/L	0.0256		108	70-130	0.746	30	
o-Xylene	**0.0584**	0.020	ug/L	0.0434		134	70-130	17.5	30	QL-03
m,p-Xylenes	**0.115**	0.020	ug/L	0.0868		133	70-130	17.6	30	
1,2,3-Trichloropropane	**0.0757**	0.020	ug/L	0.0603		126	70-130	20.9	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

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 B1F0120 - *** DEFAULT PREP ****										
LCS Dup (B1F0120-BSD1) Continued				Prepared: 05/28/21 Analyzed: 05/29/21						
sec-Butylbenzene	**0.0655**	0.020	ug/L	0.0549		119	70-130	27.0	30	
Isopropylbenzene	**0.0638**	0.020	ug/L	0.0492		130	70-130	22.0	30	
n-Propylbenzene	**0.0639**	0.020	ug/L	0.0492		130	70-130	22.4	30	
4-Isopropyltoluene	**0.0631**	0.020	ug/L	0.0549		115	70-130	26.5	30	
Surrogate: 4-Bromofluorobenzene	*0.126*		*ug/L*	*0.143*		*88.0*	*70-130*			
Fixed Gases by TCD - Quality Control										
*Batch B1F0817 - *** DEFAULT PREP ****										
Blank (B1F0817-BLK1)				Prepared & Analyzed: 06/08/21						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1F0817-BS1)				Prepared & Analyzed: 06/08/21						
Methane	**2.65**	0.10	% by Volume	2.25		118	70-130			
Oxygen	**2.32**	0.10	% by Volume	2.00		116	70-130			
Carbon Dioxide	**7.60**	0.10	% by Volume	7.50		101	70-130			
LCS Dup (B1F0817-BSD1)				Prepared & Analyzed: 06/08/21						
Methane	**2.64**	0.10	% by Volume	2.25		117	70-130	0.454	30	
Oxygen	**2.33**	0.10	% by Volume	2.00		117	70-130	0.473	30	
Carbon Dioxide	**7.50**	0.10	% by Volume	7.50		99.9	70-130	1.38	30	
Duplicate (B1F0817-DUP1)			**Source: 1E26011-09**	Prepared: 06/08/21 Analyzed: 06/09/21						
Methane	**9.82**	0.20	% by Volume		<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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B1F0817 - *** DEFAULT PREP ****										
Duplicate (B1F0817-DUP1) Continued			**Source: 1E26011-09**	Prepared: 06/08/21			Analyzed: 06/09/21			
Oxygen	**5.55**	0.20	% by Volume		5.51			0.723	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		9.84				30	
*Batch B1F0916 - *** DEFAULT PREP ****										
Blank (B1F0916-BLK1)				Prepared & Analyzed: 06/09/21						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1F0916-BS1)				Prepared & Analyzed: 06/09/21						
Methane	**2.67**	0.10	% by Volume	2.25		119	70-130			
Oxygen	**2.40**	0.10	% by Volume	2.00		120	70-130			
Carbon Dioxide	**7.63**	0.10	% by Volume	7.50		102	70-130			
LCS Dup (B1F0916-BSD1)				Prepared & Analyzed: 06/09/21						
Methane	**2.63**	0.10	% by Volume	2.25		117	70-130	1.47	30	
Oxygen	**2.28**	0.10	% by Volume	2.00		114	70-130	4.83	30	
Carbon Dioxide	**7.47**	0.10	% by Volume	7.50		99.6	70-130	2.15	30	
Duplicate (B1F0916-DUP1)			**Source: 1E26011-17**	Prepared & Analyzed: 06/09/21						
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**22.1**	0.20	% by Volume		21.0			5.08	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: MB187339
Date Received: 05/26/21
Date Reported: 06/24/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B1F0916 - *** DEFAULT PREP ****										
Duplicate (B1F0916-DUP1) Continued		**Source: 1E26011-17**		Prepared & Analyzed: 06/09/21						
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187339
Project No:	693142	**Date Received:**	05/26/21
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	06/24/21

Special Notes

[1] = **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.

[2] = **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.

[3] = **QL-04** : The recovery for this analyte in the LCS and LCSD is marginally above the upper control limit. Since the analyte was not detected in any of the associated samples, the analytical results for this analyte are valid.

[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] = **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.

Allen Aminian
QA/QC Manager

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 22734
20204353
Page 1 of 2

Client: Jacobs	**Project Name / No.:** Norwalk	**Sampler's Name:** Dan Rodgers	
Project Manager: Niels	**Site Address:** 15036 Norwalk blvd	**Sampler's Signature:**	
Phone:	**City:** Norwalk	**P.O. No.:**	
Fax:	**State & Zip:** CA	**Quote No.:**	

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO-15	TO-3	Field Bag	Special Instructions / Con ID #
Svm-3-5	1E26011-01	5/20/21	824	Sum	1	X	X	X	2382
Svm-3-15	-02		824			X			4585
Svm-5-5	-03		851			X			10610
Svm-5-15	-04		851			X			4337
Svm-8-5	-05		908			X			1233
Svm-8-15	-06		904			X			6295
Svm-12-7	-07		952			X			4573
Svm-12-15	-08		952			X			10605
Svm 12-22	-09		953			X		↓	10607 [illegible]
Ambient Air	-10		1105			X			2357
Svm-11-7	-11		1032			X		X	1234
Svm-11-15	-12		1031			X			4572
Svm-11-22	-13		1031			X			4336
Svm 13-7	-14		1100			X			4341
Svm 13-15	-15	↓	1100	↓	↓	X	↓	↓	4779

For Laboratory Use

REVIEWED
Date 5/27/21 Time 14:25
TAT 10 Days Sign:

A.A. Project No.: M1816339 / 1E26011

	Relinquished by	Date	Time	Received by
1		5/24/21	1140	
2		5/26/21	13 32	
3		Date	Time	Received by

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 22735
20204352
Page 2 of 2

Client: Jacobs	**Project Name / No.:** Norwalk	**Sampler's Name:** Jon Rodrigue	
Project Manager: Nels	**Site Address:** 15036 Norwalk Blvd	**Sampler's Signature:**	
Phone:	**City:** Norwalk	**P.O. No.:**	
Fax:	**State & Zip:** CA	**Quote No.:**	

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO-15	TO-3	Field Grab	Special Instructions
SVM-13-22	1E26011-16	5/20/21	1100	Sum	1	X	X	X	Can ID # 6286
SVM-14R-8	-17		1135			X			11352
SVM-14R-8Dup	-18		1135			X			4576
SVM-14R-16	-19		1135			X			4582
~~SVM-14R-22~~	-20		1135			X			4773
SVM-14R-22									sampling Train #
									209, 161, 118, 108, 190
									115, 197, 127, 157, 192
									163, 269, 198, 191
									176, 210, 165, 149, 195
									103, 157, 140, 122, 117
									189, 199, 209, 258, 188, 136
									Can ID (No sampling)
									10619 322, 1247, 1457

For Laboratory Use

REVIEWED
Date 5/27/21 Time 14:25
TAT 10 Days Signature

A.A. Project No.: M38 7334 / 1E26011

Relinquished by	Date	Time	Received by
	5/26/21	1140	
Relinquished by	Date	Time	Received by
	5/26/21	13 32	
Relinquished by	Date	Time	Received by

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

Appendix B
Phase I Natural Source Zone Depletion Preliminary Results – Technical Memorandum and Helium Diffusion Calculations

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	**Natural Source Zone Depletion Preliminary Results, SFPP Norwalk Pump Station, Norwalk, California**	**Project Name**	SFPP Norwalk Pump Station, Norwalk, California
Attention	Ryan Koch/Kinder Morgan, Inc.		
From	Lindsay Reynolds/Jacobs Wyatt Nolan/Jacobs Trevre Andrews/Jacobs		
Date	October 29, 2020		
Copies to	Eric Davis/Jacobs		

This technical memorandum provides an update on the current natural source zone depletion (NSZD) evaluation at the SFPP, L.P. (SFPP) Norwalk Pump Station, located at 15306 Norwalk Boulevard, Norwalk, California (the site). The overall goal of this project is to evaluate the rate of NSZD under ambient conditions.

1. Introduction

As part of this effort, active remedies at the site were transitioned from their current operation to a configuration that allowed the assessment of NSZD rates under ambient conditions. Specifically, this involved a temporary suspension of hydraulic control and recovery (i.e., groundwater pump and treat), soil vapor extraction (SVE), and biosparging in the south-central area, as recommended in the *Biosparging Effectiveness Evaluation and Recommendations – South-Central Area* (Jacobs, 2019).

2. Objectives

NSZD processes occur in the subsurface and are often capable of contaminant reduction rates of active remedies. This site provides opportunities to evaluate NSZD rates under the following conditions:

1. South-central area following nearly 3 years of treatment with horizontal biosparging.
2. Southeastern area prior to the startup of the recently installed horizontal biosparging system.
3. Southeastern area following the operation of the recently installed horizontal biosparging system.
4. Evaluation of two ^{14}C (a radioactive isotope of carbon) sampling methodologies to determine the most viable technique for the future of site-specific NSZD work. Not all sampling methodologies are effective in each area of the site, in particular, determination of NSZD rates in the south-central offsite area where a majority of the surface is covered by structures requires the use of soil vapor probes rather than surface flux meters to determine NSZD rates.

3. Methodology

Petroleum hydrocarbon constituents in light nonaqueous phase liquid (LNAPL) undergo a variety of degradation processes, including volatilization, dissolution, and biodegradation (Kostecki and Calabrese, 1989; NRC, 1993; Johnson et al., 2006). NSZD is a term used to describe the collective, naturally occurring processes of dissolution, volatilization, and biodegradation in the subsurface that act to degrade LNAPL and convert petroleum hydrocarbon constituents to innocuous aqueous and gaseous by-products. These processes physically degrade the LNAPL by mass transfer of chemical components to the aqueous phase where they are biologically broken down to benign end products such as carbon dioxide (CO_2). CO_2 subsequently transports into and through the vadose zone and can be measured at the ground surface as CO_2 efflux.

NSZD rates were evaluated using three technologies at the site:

- LI-COR CO_2 efflux measurements
- E-Flux CO_2 traps
- Field precipitation of $^{14}BaCO_3$

E-Flux CO_2 traps and $^{14}BaCO_3$ samples utilize the radioisotope ^{14}C to allow for the apportionment of petroleum-degradation-derived CO_2 from LI-COR CO_2 measured efflux.

3.1 LI-COR CO_2 Efflux Measurements

The NSZD field investigation was conducted between April 16 and 23, 2020, and May 5 and 7, 2020. Soil CO_2 efflux was measured using the LI-COR Biosciences Inc. (LI-COR) 870 and Smart Chamber dynamic closed chamber (DCC) assembly. A LI-COR survey involves embedding shallow soil collars into the ground surface at various locations across the site. Using an infrared CO_2 gas analyzer (IRGA) and chamber unit, the LI-COR DCC methodology directly measures the concentrations of CO_2 emitted into a vented, ground-surface-mounted chamber over a short time. The LI-COR DCC system involves the collection of large amounts of discrete, time series CO_2 concentration data ultimately allowing for the calculation of CO_2 efflux and a stoichiometrically back-calculated NSZD rate. Using the automated IRGA and intermittent chamber closure, the system measures the change in chamber CO_2 concentration over a set time from each location. A summary of all LI-COR CO_2 measurement locations, dates, and atmospheric conditions is presented in Table 1.

After the field survey, the raw data were tabulated, and the concentration versus time curve fit was optimized for each observation. Following curve fit optimization, the method detection limit was calculated using field blank values, the data were validated removing outliers and poor-quality data, and nondetect values were assigned, where appropriate.

3.2 E-Flux CO_2 Traps

The CO_2 traps used in this study were designed by Colorado State University and were made commercially available by E-Flux. The E-Flux traps are designed for longer-term, in situ monitoring of CO_2 efflux. The E-Flux trap assembly consists of three parts: an approximately 6-inch length of 4-inch inside-diameter polyvinyl chloride (PVC) receiver pipe with basal metal angle anchors, a short PVC E-Flux trap equipped

with a moisture-resistant media (SODASORB) that adsorbs CO_2, and a 6-inch (15-centimeter)-diameter protective rain cover. The receiver pipe is installed in the shallow ground surface and soil is compacted to pre-existing conditions inside and outside the pipe to allow soil vapor to pass up through the pipe in approximately undisturbed conditions (E-Flux, 2019).

The E-Flux trap is a flow-through methodology intended to capture and sorb CO_2 as it migrates upward through the receiver pipe. The E-Flux trap contains two sorbent pucks; the upper sorbent is used to scrub atmospheric CO_2 and prevent it from migrating into the lower sorbent puck. The lower sorbent is used to capture the CO_2 solely emitted from the underlying subsurface. The upper sorbent puck is discarded at the laboratory after verifying that atmospheric CO_2 did not break through the upper puck, and the lower puck is analyzed to estimate the efflux. Unlike the LI-COR system, no pumping or field measurements are required. Over a pre-established period of time, on the order of 2 to 3 weeks, the E-Flux trap passively allows soil vapor to move through and sorbs the CO_2 mass. Analogous to a trip blank used for a groundwater volatile organic compound (VOC) sampling program, a separate E-Flux trap accompanies the samples and remains capped, containerized, and onsite for the duration of deployment. Upon termination of the deployment period, the sorbent E-Flux traps are sent back to the E-Flux laboratory for CO_2 and ^{14}C analysis.

3.3 Field Precipitation of $^{14}BaCO_3$

The $BaCO_3$ radiocarbon sampling method was developed by the University of Ottawa in 2019. This method uses compact, commercially available sampling equipment and laboratory-prepared sample containers. The sample containers are 4.5-milliliter (mL) exetainers with a butyl septum cap and hold approximately 0.5 mL of a barium hydroxide solution. Sampling produces a precipitated mineral, witherite ($BaCO_3$) for later analysis of radiocarbon isotopic signatures. The precipitate is the product of the reaction between a barium hydroxide ($Ba(OH)_2$) solution housed in the sampling container and the CO_2 from the subsurface soil gas.

$$Ba(OH)_2 + CO_2 \rightarrow BaCO_3 + H_2O$$

Soil gas is drawn from soil probes manufactured by AMS Inc. (American Falls, Idaho). Soil probes are installed to a depth of approximately 12 inches below the ground surface with a rubber mallet. The top of the soil probe is fitted with a 3/16-inch adapter manufactured by AMS Inc., that is connected to 3/16-inch inner diameter flexible tubing. Bev-A-Line tubing is used because it is impermeable to CO_2, which prevents atmospheric CO_2 sample contamination. Tubing is connected to a three-way gas lock to direct air flow during the sampling procedure. The other two ports on the gas lock are connected to a 60-mL syringe and a 3-inch-long, 22-gauge needle. The needle is used to pierce the sample container septum and the gas lock is turned to allow the soil gas to be pushed out through the needle and into the barium hydroxide solution. Each sample container has soil CO_2 added to it twice, 24 hours apart.

Samples are shipped to the University of Ottawa's A.E. Lalonde Accelerator Mass Spectrometer Laboratory for analysis and subsequent reporting.

Mineralogical samples were shipped to the University of Ottawa A.E. Lalonde Laboratory for analysis by Accelerator Mass Spectrometry (AMS) for ^{14}C fraction. ^{14}C signatures were measured using a

3-millivolt (mV) accelerator mass spectrometer and were corrected using laboratory standard blank and modern standards.

The NSZD monitoring program performed at the site between April 16 and 23, 2020, and May 5 and 7, 2020, included monitoring of 50 LI-COR locations plus 5 replicates, E-Flux trap sampling at 8 locations, and ^{14}C radiocarbon sampling at 14 locations plus 1 duplicate.

4. Results

4.1 CO_2 Efflux Survey

CO_2 efflux survey locations were selected throughout the site in varying levels of previously identified groundwater impacts or measured LNAPL (Figure 1). Furthermore, the survey locations were selected to encompass both the south-central and southeastern areas of the site. The south-central area of the site represents NSZD rates following nearly 3 years of treatment with horizontal biosparging. The southeastern area of the site represents NSZD rates prior to the startup of the recently installed horizontal biosparging system.

NSZD rates are often reported in many different units. Laboratory and field data are typically reported in micromoles per square meter per second (µmol/m^2/s). Typically, hydrocarbon mass degraded per unit area per unit time is more relevant to remedial progress. To convert from field units to a unit mass of hydrocarbon at a site, a representative hydrocarbon molecule must be selected. Octane was selected as the representative hydrocarbon molecule for the site because the majority of the hydrocarbons released were in the gasoline range.

Once the measured CO_2 efflux is corrected to reflect the component that is attributable to hydrocarbon degradation, the rate can be stoichiometrically converted to the LNAPL degradation/loss occurring via NSZD (Davidson et al., 2002; Molins et al., 2010; Sihota et al., 2011a, 2011b, 2013). To estimate the mass of hydrocarbon degraded from CO_2 efflux, a representative hydrocarbon compound is assumed by reviewing historical soil and groundwater impacts. The microbially mediated oxidation reaction can be approximated as follows, with the molecular formula C_8H_{18}:

$$C_8H_{18} + 8.5O_2 \rightarrow 8CO_2 + 9H_2O$$

Using isotopically corrected CO_2 efflux values and a representative hydrocarbon, efflux rates measured in µmol/m^2/sec can be converted to the rate of NSZD in units of gallons per acre per year (gal/acre/year).

$$R_{NSZD} = Efflux_{Fossil\ Fuel} * \frac{1\ mol}{1\ x\ 10^6\ \mu mol} * \frac{1\ mol\ C_8H_{18}}{8\ mol\ CO_2} * \frac{114.23\ g\ C_8H_{18}}{1\ mol\ C_8H_{18}} * \frac{86400\ sec}{1\ day} * \frac{365\ day}{1\ year} * \frac{1\ ml\ C_8H_{18}}{0.702\ gC_8H_{18}} * \frac{1\ L}{1000\ mL} * \frac{1\ gallon}{3.785\ L} * \frac{1\ m^2}{0.000247\ acre}$$

$$R_{NSZD} = \frac{gallon}{acre\ year}$$

Using this methodology, it can be determined that NSZD rates attributed to the biodegradation of octane can be calculated with a conversion factor of 624.

$$R_{NSZD} = Efflux_{Fossil\ Fuel} * 624$$

This conversion results in approximately 1 µmol/m^2/s at this site being equivalent to 624 gallons of octane per acre per year.

CO_2 rates are calculated using either exponential or linear regression methods to fit the observed dataset. Typically, the fitting method that best matches the data trend is used. In most cases, exponential fitting best matches the data. However, using exponential efflux calculations can overestimate CO_2 respiration, as there is not necessarily enough carbon substrate to warrant the calculated rates (Tracy, 2015). Based on this, the data were fit using linear regression methods; the results of the regression are included in Table 1.

4.2 NSZD Quality Control Results

To assess the variability in LI-COR measurements at immediately adjacent locations during the May 2020 survey, five replicate LI-COR collars (NW-08D, NW-27D, NW-38D, NW-43D, and NW-48D) were installed during the CO_2 efflux event. The difference in total CO_2 efflux between the parent and duplicate collars ranged from 0.06 µmol/m^2/s (NW-27/NW-27D) to 2.51 µmol/m^2/s (NW-48/NW-48D) (Table 2). The relative percent difference (RPD) ranged from 6 percent (NW-27/NW-27D) to 40 percent (NW-38/NW-38D).

Standards for soil gas efflux sample variability have not been established to date. An RPD of 30 percent is generally considered acceptable for environmental samples such as soil. The higher difference observed for the parent and duplicate pair for NW-48 is likely attributable to naturally occurring heterogeneities within the shallow subsurface that affect soil gas flow. Therefore, the associated results from NW-08, NW-38, and NW-48 should be considered less reliable, but still relevant estimates because of low field duplicate precision.

4.3 E-Flux Traps

E-Flux traps for the collection of the radiocarbon signature of carbon dioxide ($^{14}CO_2$) were installed throughout the site complementary to LI-COR collars as a part of the NSZD survey (Figure 1).

Standard quality control procedure for the use of E-Flux traps involves the use of a field blank set up to be stored onsite during trap deployment and subsequent analysis alongside deployed field traps. The field blank stored on the site in this survey was measured to have 0.68 fraction modern carbon (FmC), which was used to correct analyzed ^{14}C values from all other traps. The data are presented in Table 1.

4.4 $^{14}BaCO_3$ Sampling

Soil probes for $^{14}BaCO_3$ sample collection of the radiocarbon signature of carbon dioxide ($^{14}CO_2$) were installed throughout the site complementary to LI-COR collars as a part of the NSZD survey (Figure 1).

$^{14}CO_2$ measured at the site ranged from 0.62 FmC (NW-40) to 0.99 FmC (NW-53). The ^{14}C results are summarized in Table 1.

^{14}C Quality Control Results

One duplicate $^{14}CO_2$ sample was collected at NW-10 during the NSZD survey to assess the variability in $^{14}CO_2$ measurements at immediately adjacent locations during the April 2020 survey. The sample did not yield adequate sample volumes to be analyzed by the laboratory.

4.5 Comparison of $^{14}CO_2$ Sampling Techniques

Four locations were chosen to conduct a side by side comparison of both the E-Flux trap and $^{14}BaCO_3$ sampling techniques. Comparative data are presented in Table 3.

Standards for soil gas efflux sample variability have not been established to date. An RPD of 30 percent is generally considered acceptable for environmental samples such as soil.

5. Discussion

Overall hydrocarbon degradation rates calculated at the site (Table 1) vary between approximately 11 (NW-31) and 489 (NW-50) gal/acre/year, which confirms natural biodegradation of hydrocarbon constituents is occurring at various rates around the site.

Using the corrected ^{14}C fossil fuel fraction (modern carbon vs. hydrocarbon) allows for a more accurate and refined estimate of subsurface hydrocarbon degradation rates versus solely using LI-COR efflux results. These annual estimates assume that NSZD rates, which are in part driven by subsurface temperatures, remain constant throughout the year, or that the rates measured in mid- to late-spring are representative of the annual mean.

The hydrocarbon degradation rate measured varies primarily due to the proximity of hydrocarbon constituents to a given measurement, but also due to variability in degradation rates and the volatile gas migration capability through heterogeneities in the vadose zone at each location. For the purposes of this study, it is assumed that the NSZD rates at different locations are mainly driven by the primary factor — proximity to hydrocarbon constituents.

Figure 1 shows the measured NSZD rate (gal/acre/year) for each sample location. The southeastern area of the site shows that the higher the dissolved-phase concentrations, the higher the likelihood that residual LNAPL is present and degrading near those concentrations. Based on a comparison of NSZD rates and spatial distribution of the dissolved phase, areas of residual LNAPL that are likely present and degrading, and location of the historically operated horizontal biosparging equipment, the following observations can be made:

- The highest NSZD rates (approximately 500 gal/acre/year) correspond to the areas adjacent to residual LNAPL that has not been treated with biosparging remediation (i.e., the southeastern area).
- The lowest NSZD rates (approximately 11 gal/acre/year) correspond to the area where horizontal biosparging equipment was historically operated (i.e., the south-central onsite area).
- Measurable NSZD rates are present in all areas of detected dissolved-phase concentrations.

- The total NSZD rate for the south-central onsite area illustrated on Figure 1 is 900 gallons/year.
- The total NSZD rate for the southeastern area illustrated on Figure 1 is 500 gallons/year.

The comparative analysis of E-Flux trap and $^{14}BaCO_3$ sampling techniques for the analysis of the ^{14}C signature of CO_2 efflux showed that both methods produce comparable results. Going forward, $^{14}BaCO_3$ sampling techniques will be used at the site as they allow collection of NSZD data in the south-central offsite areas where surface flux meters would not be effective and $^{14}BaCO_3$ sampling techniques allow the collection of a higher density of samples across the site.

6. Conclusions

As part of this effort, active remedies at the site were transitioned from their current operation to a configuration that allowed the assessment of the NSZD rates under ambient conditions. Specifically, this involved a temporary suspension of hydraulic control and recovery (i.e., groundwater pump and treat), SVE, and biosparging in the south-central area, as recommended in the *Biosparging Effectiveness Evaluation and Recommendations – South-Central Area* (Jacobs, 2019).

This NSZD evaluation sought to evaluate NSZD processes occurring in the subsurface with consideration of historical and future horizontal biosparging operations. NSZD rates observed confirm that NSZD can be measured at this site and that significant rates (up to approximately 1,400 gal/acre/year) of biodegradation are occurring in the subsurface. Reduced NSZD rates were observed in the south-central onsite area, which has undergone biosparging operations. Higher rates of NSZD were observed in the southeastern area, which has not undergone biosparging operations.

This study also sought to evaluate two methods for sampling the ^{14}C signature of CO_2 efflux. Results of this study show both methods produce comparable technical results that will allow the continued use of ^{14}C barium carbonate sampling to correct NSZD rates at the site, in particular in the south-central offsite areas where NSZD rates must be measured using vapor probes due to the degree of ground cover.

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Tables

Table 1. Summary of Sitewide NSZD Measurements, May 2020

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Pressure (kPa)	Temperature (°F)	Total CO_2 Efflux ($\mu mol/m^2/s$)	Closest ^{14}C Sample	Normalized ^{14}C	^{14}C Fossil Fuel Fraction	^{14}C Corrected CO_2 Efflux ($\mu mol/m^2/s$)	Estimated Hydrocarbon Degradation ($g/m^2/day$)	Estimated Hydrocarbon Degraded (gallon/acre/year)
South-Central Area										
NW-01	06-May-20	101.3	95.2	1.75	NW-03	0.90	0.10	0.1672	0.2059	104
NW-02	06-May-20	101.3	90.3	0.81	NW-03	0.90	0.10	0.0775	0.0954	48
NW-03	06-May-20	101.3	91.8	3.64	NW-03	0.90	0.10	0.3470	0.4272	216
NW-04	06-May-20	101.3	90.9	1.41	NW-03	0.90	0.10	0.1344	0.1655	84
NW-05	06-May-20	101.3	90.3	1.11	NW-10	0.88	0.12	0.1375	0.1693	86
NW-06	06-May-20	101.3	87.0	1.36	NW-12	0.94	0.06	0.0807	0.0993	50
NW-07	06-May-20	101.3	90.8	1.00	NW-12	0.94	0.06	0.0596	0.0734	37
NW-08	06-May-20	101.3	85.9	2.85	NW-18	0.89	0.11	0.3196	0.3934	199
NW-08D	06-May-20	101.3	85.1	2.03	NW-18	0.89	0.11	0.2276	0.2802	142
NW-09	06-May-20	101.3	89.6	2.10	NW-18	0.89	0.11	0.2347	0.2889	146
NW-10	06-May-20	101.3	90.6	2.91	NW-10	0.88	0.12	0.3611	0.4446	225
NW-11	06-May-20	101.3	91.3	0.32	NW-10	0.88	0.12	0.0398	0.0490	25
NW-12	06-May-20	101.3	71.2	0.91	NW-12	0.94	0.06	0.0541	0.0666	34
NW-13	06-May-20	101.3	95.1	0.67	NW-12	0.94	0.06	0.0400	0.0492	25
NW-14	06-May-20	101.3	93.9	0.98	NW-15	0.77	0.23	0.2212	0.2723	138
NW-15	06-May-20	101.3	92.4	0.52	NW-15	0.77	0.23	0.1177	0.1449	73
NW-16	06-May-20	101.3	68.9	3.56	NW-26	0.92	0.08	0.2903	0.3574	181
NW-17	06-May-20	101.3	74.4	0.96	NW-26	0.92	0.08	0.0784	0.0966	49
NW-18	06-May-20	101.3	87.0	2.28	NW-18	0.89	0.11	0.2557	0.3149	160
NW-19	06-May-20	101.3	86.0	1.13	NW-10	0.88	0.12	0.1406	0.1731	88
NW-20	06-May-20	101.3	85.8	1.83	NW-21	0.94	0.06	0.1022	0.1259	64
NW-21	06-May-20	101.3	96.0	1.42	NW-21	0.94	0.06	0.0793	0.0976	49
NW-22	06-May-20	101.2	98.8	0.41	NW-21	0.94	0.06	0.0229	0.0281	14
NW-23	06-May-20	101.2	97.6	0.50	NW-33	0.89	0.11	0.0557	0.0686	35
NW-24	06-May-20	101.2	96.6	1.24	NW-15	0.77	0.23	0.2801	0.3449	175
NW-25	06-May-20	101.3	76.3	1.95	NW-26	0.92	0.08	0.1588	0.1955	99
NW-26	06-May-20	101.3	76.9	3.80	NW-26	0.92	0.08	0.3095	0.3810	193
NW-27	06-May-20	101.3	83.3	1.10	NW-26	0.92	0.08	0.0898	0.1106	56
NW-27D	06-May-20	101.3	81.5	1.04	NW-26	0.92	0.08	0.0849	0.1045	53
NW-28	06-May-20	101.3	83.5	2.90	NW-28	0.87	0.13	0.3903	0.4805	243
NW-29	06-May-20	101.3	82.1	0.41	NW-26	0.92	0.08	0.0332	0.0408	21
NW-30	06-May-20	101.3	98.7	0.91	NW-30	0.96	0.04	0.0336	0.0414	21
NW-31	06-May-20	101.3	99.5	0.47	NW-30	0.96	0.04	0.0174	0.0215	11
NW-32	06-May-20	101.3	99.2	0.69	NW-33	0.89	0.11	0.0766	0.0943	48
NW-33	06-May-20	101.2	97.9	1.26	NW-33	0.89	0.11	0.1409	0.1734	88
NW-34	07-May-20	101.2	99.7	0.90	NW-34	0.95	0.05	0.0445	0.0548	28
NW-35	06-May-20	101.2	99.1	1.20	NW-36	0.67	0.33	0.3954	0.4868	247
NW-36	06-May-20	101.2	98.4	1.50	NW-36	0.67	0.33	0.4966	0.6114	310
NW-37	06-May-20	101.2	100.9	0.87	NW-36	0.67	0.33	0.2892	0.3561	180

Table 1. Summary of Sitewide NSZD Measurements, May 2020

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Pressure (kPa)	Temperature (°F)	Total CO_2 Efflux (µmol/m^2/s)	Closest ^{14}C Sample	Normalized ^{14}C	^{14}C Fossil Fuel Fraction	^{14}C Corrected CO_2 Efflux (µmol/m^2/s)	Estimated Hydrocarbon Degradation (g/m^2/day)	Estimated Hydrocarbon Degraded (gallon/acre/year)
NW-38	06-May-20	101.2	99.4	1.46	NW-36	0.67	0.33	0.4816	0.5929	300
NW-38D	06-May-20	101.2	99.7	0.97	NW-36	0.67	0.33	0.3222	0.3967	201
NW-39	06-May-20	101.1	100.6	0.87	NW-36	0.67	0.33	0.2876	0.3541	179
Southeastern Area										
NW-40	05-May-20	101.5	72.8	1.11	NW-40	0.59	0.41	0.4584	0.5644	286
NW-41	05-May-20	101.5	73.2	1.15	NW-40	0.59	0.41	0.4744	0.5841	296
NW-42	05-May-20	101.5	71.4	1.03	NW-40	0.59	0.41	0.4222	0.5198	263
NW-43	05-May-20	101.5	69.2	1.55	NW-55	0.89	0.11	0.1679	0.2067	105
NW-43D	05-May-20	101.5	69.4	1.80	NW-55	0.89	0.11	0.1955	0.2407	122
NW-44	05-May-20	101.5	68.0	0.89	NW-55	0.89	0.11	0.0969	0.1193	60
NW-45	05-May-20	101.5	76.3	4.45	NW-46	0.94	0.06	0.2852	0.3511	178
NW-46	05-May-20	101.5	72.2	2.10	NW-46	0.94	0.06	0.1346	0.1657	84
NW-47	05-May-20	101.5	84.1	1.80	NW-40	0.59	0.41	0.7393	0.9102	461
NW-48	05-May-20	101.5	79.9	5.52	NW-46	0.94	0.06	0.3533	0.4350	220
NW-48D	05-May-20	101.5	85.0	8.03	NW-46	0.94	0.06	0.5140	0.6328	321
NW-49	05-May-20	101.5	87.8	5.17	NW-46	0.94	0.06	0.3311	0.4077	207
NW-50	05-May-20	101.5	83.0	7.24	NW-55	0.89	0.11	0.7841	0.9654	489
NW-51	05-May-20	101.5	87.9	9.15	NW-51	0.96	0.04	0.3492	0.4299	218
NW-52	05-May-20	101.5	85.1	11.43	NW-51	0.96	0.04	0.4361	0.5370	272
NW-53	05-May-20	101.5	89.5	10.32	NW-53	0.97	0.03	0.3564	0.4388	222
NW-54	05-May-20	101.5	89.4	8.12	NW-53	0.97	0.03	0.2807	0.3456	175
NW-55	05-May-20	101.5	80.0	5.06	NW-55	0.89	0.11	0.5486	0.6754	342

Notes:

Octane (C_8H_{18}) was used as the representative hydrocarbon.

NSZD results represent order of magnitude values and may vary from reporting period to reporting period as additional site information is added and analytical methods are refined; however, the overall conclusions drawn from the NSZD results do not change the remedial implications except when noted.

°F = degrees Fahrenheit

µmol/m^2/s = micromoles per square meter per second

^{14}C = radiocarbon

g/m^2/d = grams per square meter per day

kPa = kilo Pascals

Table 2. Quality Assurance and Quality Control of LI-COR Total CO_2 Efflux

SFPP Norwalk Pump Station, Norwalk, California

Location	Parent CO_2 Efflux (µmol/m^2/s)	Replicate CO_2 Efflux (µmol/m^2/s)	Difference in Efflux (µmol/m^2/s)	RPD
NW-08	2.85	2.03	0.82	34%
NW-27	1.10	1.04	0.06	6%
NW-38	1.46	0.97	0.48	40%
NW-43	1.55	1.80	0.25	15%
NW-48	5.52	8.03	2.51	37%

Notes:

RPD = relative percent difference = |Parent-Replicate|/((Parent + Replicate)/2)

µmol/m^2/s = micromole per meter squared per second

Table 3. Comparative Results of E-Flux Trap and $^{14}BaCO_3$ Sampling Techniques

SFPP Norwalk Pump Station, Norwalk, California

Location	E-Flux Trap	$^{14}BaCO_3$ Sample	RPD
NW-26	0.92	0.92	0.3%
NW-46	0.95	0.94	1.0%
NW-53	0.97	0.97	0.1%
NW-55	0.95	0.89	6.3%

Notes:

RPD = relative percent difference = |Parent-Replicate|/((Parent + Replicate)/2)

µmol/m^2/s = micromole per meter squared per second

Figure

N

0 100 200

Feet

Legend

- LICOR Only
- $BaCO_3$
- Both ^{14}C Methods
- E-Flux
- 50 gallons/acre/year Contour

NSZD Rate (gallons/acre/year)

High : 489

Low : 11

- Inferred May 2020 Groundwater TPH Concentrations
- Inferred May 2020 extent of LNAPL

Figure 1. Measured NSZD Rates May 2020
SFPP Norwalk Pump Station
Natural Source Zone Depletion Technical Memorandum

Jacobs

Appendix B.1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

LOCATION	EASTING	NORTHING	TOS	BOS
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	14.5	15
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	15.5	16
SVM-05S	6540258.286	1782817.347	5	5.5
SVM-06D	6540063.541	1782775.007	16	16.5
SVM-06S	6540063.541	1782775.007	6.5	7
SVM-07D	6540126.172	1782701.947	13.25	13.75
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	15.5	16
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	23	23.5
SVM-13M	6540111.667	1782935.598	15.5	16
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	23	23.5
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
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

Appendix B.1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

LOCATION	EASTING	NORTHING	TOS	BOS
SVM-16M	6540255.489	1782631.499	15.5	16
SVM-16S	6540255.489	1782631.499	7	7.5
SVM-17D	6541150.721	1782934.107	10	10.5
SVM-17S	6541150.721	1782934.107	5	5.5
SVM-18D	6541173.614	1783140.197	10	10.5
SVM-18S	6541173.614	1783140.197	5	5.5
SVM-19D	6541044.618	1783056.483	10	10.5
SVM-19S	6541044.618	1783056.483	5	5.5
SVM-20D	6541168.995	1783039.791	10	10.5
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
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

Appendix B.2. Helium Diffusion Calculations

SFPP Norwalk Pump Station, Norwalk, California

Location	Probe Location	Depth (m)	Average (2014-2021)	NSZD Rate using Ficks Law (gCO2/m2day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Applied C14 Correction Rate	NSZD Rate using Ficks Law (gCO2/m2day)	CO2 into Octane Correction of NSZD Rate (grams octane/ m2day)	Gallons of Hydrocarbon per Acre per year
SVM-02D	Offsite South Central	4.57	1.19	0.74	0.21	0.44	0.32	0.09	36.12
SVM-03D	Offsite South Central	4.72	0.48	0.20	0.06	0.44	0.09	0.03	9.97
SVM-05D	Offsite South Central	4.88	0.19	0.01	0.00	0.44	0.00	0.00	0.42
SVM-06D	Offsite South Central	5.03	0.27	0.07	0.02	0.44	0.03	0.01	3.59
SVM-07D	Offsite South Central	4.19	0.69	0.21	0.06	0.44	0.09	0.03	10.14
SVM-10D	Offsite South Central	4.88	3.43	3.81	1.09	0.44	1.68	0.48	186.37
SVM-15D	Offsite South Central	6.86	0.47	0.21	0.06	0.44	0.09	0.03	10.42
SVM-16D	Offsite South Central	6.86	8.64	10.77	3.07	0.44	4.74	1.35	527.10
SVM-16M	Offsite South Central	4.88	0.98	0.64	0.18	0.44	0.28	0.08	31.42
SVM-11D	South Central Onsite	6.86	4.74	3.86	1.10	0.44	1.70	0.48	189.04
SVM-11M	South Central Onsite	4.72	1.78	1.20	0.34	0.44	0.53	0.15	58.58
SVM-12D	South Central Onsite	6.86	8.20	6.29	1.79	0.44	2.77	0.79	307.98
SVM-12M	South Central Onsite	4.72	3.38	2.40	0.68	0.44	1.06	0.30	117.41
SVM-13D	South Central Onsite	7.16	1.70	1.89	0.54	0.44	0.83	0.24	92.25
SVM-13M	South Central Onsite	4.88	0.15	0.00	0.00	0.44	0.00	0.00	0.22
SVM-14D	South Central Onsite	6.86	6.49	5.51	1.57	0.44	2.42	0.69	269.40
SVM-14M	South Central Onsite	4.72	2.27	1.78	0.51	0.44	0.78	0.22	87.02
SVM-14RD	South Central Onsite	7.16	3.50	2.53	0.72	0.44	1.11	0.32	123.59
SVM-14RM	South Central Onsite	5.03	1.56	0.78	0.22	0.44	0.34	0.10	38.03
SVP-105D	South Central Onsite	3.20	1.43	0.55	0.16	0.44	0.24	0.07	26.84
SVP-106D	South Central Onsite	3.20	1.15	0.37	0.10	0.44	0.16	0.05	17.89
SVP-108D	South Central Onsite	3.20	5.67	8.93	2.55	0.44	3.93	1.12	437.03
SVM-09D	Southeastern	4.57	2.25	1.50	0.43	0.44	0.66	0.19	73.23
SVM-17D	Southeastern	3.20	0.55	0.50	0.14	0.44	0.22	0.06	24.57
SVM-18D	Southeastern	3.20	1.62	2.13	0.61	0.44	0.94	0.27	104.43
SVM-20D	Southeastern	3.20	1.85	0.50	0.14	0.44	0.22	0.06	24.42
SVM-21D	Southeastern	4.57	1.15	0.30	0.09	0.44	0.13	0.04	14.81
SVM-22D	Southeastern	4.57	0.90	0.05	0.01	0.44	0.02	0.01	2.24
SVM-24D	Southeastern	3.20	2.56	2.29	0.65	0.44	1.01	0.29	111.83

Appendix C
BS-02 Narrative and Operations Data

Appendix C. BS-02 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

	Operational Data						VOC Mass Removal				O2 Calculations					
Date	SVE Influent Max of CO2 (%)	SVE Influent Max of O2 (%)	SVE Influent Max of VOCs (ppmv)	Max of SVE Influent Flow (scfm)	Operational Efficency	Corrected SVE Flow (scfm)	Removal Rate (VOC ppm/ ft3/minute)	VOC Mass Removal Rate (lb/minute)	VOC Mass Removal Rate (lb/day)	Cumulative Equivalent Mass Removed (lbs)	O2 Depletion (%)	O2 Depletion (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/day)	Cumulative Equivalent Mass Consumed by O2 (lbs)	Difference O2 vs CO2
5/15/20 11:30	2.40	17.20	0.00	196.00	0.00	0.31	0.00	0.00000	0.00	0	4.8	0.00	0.00	0.46	0	0
5/15/20 12:46	2.70	17.70	263.50	188.00	0.00	0.29	77.40	0.00002	0.02	0	4.3	0.00	0.00	0.39	0	0
5/18/20 8:20	2.20	19.30	563.00	166.00	0.00	0.26	146.03	0.00003	0.05	0	2.7	0.00	0.00	0.22	1	0
5/18/20 8:20	2.20	19.30	0.00	166.00	0.00	0.26	0.00	0.00000	0.00	0	2.7	0.00	0.00	0.22	1	0
5/18/20 11:58	1.60	19.20	655.00	160.00	0.00	0.25	163.75	0.00004	0.05	0	2.8	0.00	0.00	0.22	1	0
5/20/20 8:25	1.70	18.20	403.00	168.00	1.00	168.00	67704.00	0.01488	21.42	20	3.8	0.49	0.14	199.38	186	-185
5/20/20 8:25	1.70	18.20	0.00	168.00	1.00	168.00	0.00	0.00000	0.00	20	3.8	0.49	0.14	199.38	186	-185
5/20/20 11:18	1.50	18.80	252.00	168.00	1.00	168.00	42336.00	0.00930	13.40	21	3.2	0.41	0.12	167.90	208	-199
5/22/20 14:15	1.30	18.80	533.00	179.00	1.00	179.00	95407.00	0.02097	30.19	67	3.2	0.44	0.12	178.89	576	-435
5/22/20 14:15	1.30	18.80	0.00	179.00	1.00	179.00	0.00	0.00000	0.00	67	3.2	0.44	0.12	178.89	576	-435
5/26/20 8:46	1.10	18.70	526.00	168.00	1.00	168.00	88368.00	0.01942	27.96	120	3.3	0.42	0.12	173.14	1240	-882
5/26/20 14:18	1.00	18.50	397.00	177.00	1.00	177.00	70269.00	0.01544	22.24	126	3.5	0.47	0.13	193.48	1282	-913
5/27/20 8:10	1.20	18.90	383.00	168.00	1.00	168.00	64344.00	0.01414	20.36	141	3.1	0.40	0.11	162.65	1415	-1013
5/29/20 9:13	1.20	19.20	368.00	168.00	1.00	167.22	61537.78	0.01352	19.47	182	2.8	0.36	0.10	146.23	1730	-1227
6/3/20 14:48	5.40	19.20	1129.00	172.00	1.00	172.00	194188.00	0.04267	61.45	394	2.8	0.37	0.10	150.41	2506	-1744
6/4/20 10:08	0.80	19.90	687.10	180.00	1.00	180.00	123678.00	0.02718	39.14	434	2.1	0.29	0.08	118.05	2614	-1667
6/5/20 13:00	1.10	19.00	1300.00	180.00	1.00	180.00	234000.00	0.05142	74.05	498	3	0.41	0.12	168.65	2775	-1788
6/5/20 13:00	1.10	19.00	0.00	180.00	1.00	180.00	0.00	0.00000	0.00	498	3	0.41	0.12	168.65	2775	-1788
6/10/20 10:45	1.10	19.00	1050.00	224.00	1.00	224.00	235200.00	0.05168	74.43	680	3	0.51	0.15	209.87	3703	-2477
6/23/20 10:30	1.80	18.40	323.00	206.00	1.00	205.18	66273.96	0.01456	20.97	1300	3.6	0.57	0.16	230.69	6565	-4547
6/24/20 11:20	1.00	18.90	650.00	205.00	0.99	203.78	132456.85	0.02911	41.91	1332	3.1	0.48	0.14	197.29	6786	-4674
6/26/20 7:45	1.30	17.80	706.00	212.00	0.99	210.74	148781.10	0.03269	47.08	1415	4.2	0.68	0.19	276.42	7225	-5020
6/30/20 12:49	1.50	19.10	560.00	202.92	1.00	202.92	113635.20	0.02497	35.96	1590	2.9	0.45	0.13	183.78	8194	-5704
7/6/20 11:34	1.10	19.20	575.00	209.00	1.00	209.00	120175.00	0.02641	38.03	1810	2.8	0.45	0.13	182.76	9284	-6347
7/8/20 13:02	1.20	18.50	98.80	208.00	0.95	197.18	19481.08	0.00428	6.16	1855	3.5	0.53	0.15	215.53	9694	-6640
7/10/20 14:30	0.90	19.00	638.50	209.68	0.95	198.77	126914.32	0.02789	40.16	1903	3	0.46	0.13	186.23	10108	-6934
7/14/20 10:30	0.70	19.30	699.10	205.70	0.95	195.00	136322.12	0.02996	43.14	2000	2.7	0.40	0.11	164.43	10814	-7415
7/17/20 8:13	0.70	19.30	699.10	205.70	0.95	195.00	136322.12	0.02996	43.14	2184	2.7	0.40	0.11	164.43	11290	-7817
7/24/20 13:30	0.80	19.60	675.00	210.00	0.97	204.54	138062.09	0.03034	43.69	2497	2.4	0.38	0.11	153.31	12437	-8721
8/4/20 13:35	1.00	17.30	152.60	226.83	0.95	216.52	33040.88	0.00726	10.46	2795	4.7	0.78	0.22	317.82	15029	-10868
8/21/2020 15:25	0.80	19.70	340.00	150.00	1.00	149.56	50850.00	0.01117	16.09	3022	2.3	0.26	0.07	107.43	18660	-13586
9/17/2020 8:10	0.80	19.50	320.00	200.00	0.96	191.74	61358.20	0.01348	19.42	3496	2.5	0.37	0.10	149.71	22092	-16229
9/29/2020 13:30	0.30	21.50	70.00	221.00	0.99	219.85	15389.80	0.00338	4.87	3644	0.5	0.08	0.02	34.33	23217	-16891
10/15/2020 10:30	0.70	19.80	801.00	169.00	0.92	155.02	124171.81	0.02729	39.29	3994	2.2	0.26	0.07	106.51	24335	-17740
10/30/2020 12:20	1.10	19.20	1346.00	230.43	0.85	195.01	262487.41	0.05768	83.06	4917	2.8	0.42	0.12	170.53	26423	-19436
11/4/2020 9:12	0.80	19.80	354.50	273.22	1.00	273.22	96856.49	0.02128	30.65	5194	2.2	0.46	0.13	187.72	27295	-20057
12/30/20 11:16	0.30	20.30	144.50	272.29	0.76	206.28	29807.73	0.00655	9.43	6318	1.7	0.27	0.08	109.52	35631	-25452
1/5/21 9:00	1.30	19.60	373.00	225.00	0.97	218.25	81407.25	0.01789	25.76	6422	2.4	0.40	0.11	163.59	36437	-26183
2/23/21 10:00	1.00	20.90	106.00	229.33	0.97	222.45	23579.71	0.00518	7.46	7236	1.1	0.19	0.05	76.42	42323	-29222
5/5/21 8:30	0.00	18.00	380.00	205.00	0.97	198.24	75329.30	0.01655	23.84	8346	4	0.61	0.17	247.64	53817	-37488
5/27/21 8:55	1.40	19.43	255.06	257.40	0.98	250.97	64011.04	0.01407	20.26	8832	2.6	0.49	0.14	201.81	58765	-42436
6/22/21 8:10	0.90	19.60	219.50	220.00	1.00	219.34	48145.13	0.01058	15.23	9292	2.4	0.40	0.11	164.40	63520	-45353

Appendix C. BS-02 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

	Biodegradation							Cumulative Mass Removed	Flow
	CO2			C14 Correction Applied					
Date	CO2 Production (scf/minute)	CO2 Production (lbs/minute)	C14 Correction Factor Based on BaCO3	Equivalent Mass Biodegraded by CO2 (lbs/minute) C14 Corrected	Equivalent Mass Biodegraded by CO2 (lbs/day) C14 Corrected	Cumulative Equivalent Mass Consumed by CO2 (lbs)	Total Biodegraded Mass (lbs) C14 Corrected	Cumulative Overall Mass Removal (lbs)	BS-02 Flow (scfm)
5/15/20 11:30	0.01	0.00	0.43	0.00	0.18	0	0	0	0
5/15/20 12:46	0.01	0.00	0.43	0.00	0.20	0	0	0	26
5/18/20 8:20	0.01	0.00	0.43	0.00	0.14	1	0	1	23
5/18/20 8:20	0.01	0.00	0.43	0.00	0.14	1	0	1	30
5/18/20 11:58	0.00	0.00	0.43	0.00	0.10	1	0	1	70
5/20/20 8:25	2.86	0.35	0.43	0.05	70.54	1	131	151	70
5/20/20 8:25	2.86	0.35	0.43	0.05	70.54	1	131	151	100
5/20/20 11:18	2.52	0.31	0.43	0.04	62.24	9	139	159	100
5/22/20 14:15	2.33	0.29	0.43	0.04	57.48	141	261	328	100
5/22/20 14:15	2.33	0.29	0.43	0.04	57.48	141	261	328	135
5/26/20 8:46	1.85	0.23	0.43	0.03	45.65	358	433	553	135
5/26/20 14:18	1.77	0.22	0.43	0.03	43.72	369	443	568	135
5/27/20 8:10	2.02	0.25	0.43	0.03	49.80	401	480	621	135
5/29/20 9:13	2.01	0.25	0.43	0.03	49.56	503	581	763	135
6/3/20 14:48	9.29	1.14	0.43	0.16	229.41	762	1782	2175	135
6/4/20 10:08	1.44	0.18	0.43	0.02	35.57	947	1810	2245	135
6/5/20 13:00	1.98	0.24	0.43	0.03	48.91	987	1865	2363	135
6/5/20 13:00	1.98	0.24	0.43	0.03	48.91	987	1865	2363	100
6/10/20 10:45	2.46	0.30	0.43	0.04	60.86	1227	2164	2844	100
6/23/20 10:30	3.69	0.45	0.43	0.06	91.22	2017	3349	4648	3
6/24/20 11:20	2.04	0.25	0.43	0.03	50.33	2112	3401	4733	70
6/26/20 7:45	2.74	0.34	0.43	0.05	67.67	2205	3526	4941	100
6/30/20 12:49	3.04	0.37	0.43	0.05	75.18	2490	3842	5432	100
7/6/20 11:34	2.30	0.28	0.43	0.04	56.79	2937	4180	5990	100
7/8/20 13:02	2.37	0.29	0.43	0.04	58.44	3054	4301	6156	105
7/10/20 14:30	1.79	0.22	0.43	0.03	44.19	3175	4392	6295	129
7/14/20 10:30	1.36	0.17	0.43	0.02	33.71	3399	4521	6521	160
7/17/20 8:13	1.36	0.17	0.43	0.02	33.71	3472	4619	6802	185
7/24/20 13:30	1.64	0.20	0.43	0.03	40.42	3716	4911	7408	180
8/4/20 13:35	2.17	0.27	0.43	0.04	53.48	4161	5499	8294	162
8/21/2020 15:25	1.20	0.15	0.43	0.02	29.55	5074	6004	9025	170
9/17/2020 8:10	1.53	0.19	0.43	0.03	37.89	5863	7015	10511	180
9/29/2020 13:30	0.66	0.08	0.45	0.01	16.94	6326	7222	10866	180
10/15/2020 10:30	1.09	0.13	0.42	0.02	26.04	6595	7636	11630	174
10/30/2020 12:20	2.15	0.26	0.42	0.04	51.47	6987	8412	13328	83
11/4/2020 9:12	2.19	0.27	0.42	0.04	52.44	7238	8667	13861	188
12/30/20 11:16	0.62	0.08	0.35	0.01	12.66	10179	9377	15695	170
1/5/21 9:00	2.84	0.35	0.35	0.04	58.04	10254	9720	16141	170
2/23/21 10:00	2.22	0.27	0.35	0.03	45.51	13100	11952	19188	170
5/5/21 8:30	0.00	0.00	0.35	0.00	0.00	16329	11952	20298	171
5/27/21 8:55	3.51	0.43	0.35	0.05	70.77	16329	13510	22341	172
6/22/21 8:10	1.97	0.24	0.35	0.03	39.83	18166	14544	23837	173

Appendix D
HSVE-01 and BS-03 Narrative and Operations Data

Appendix D.1. HSVE-01 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Time	Biosparge Flow (scfm)	SVE VOC (ppmv)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	SVE Flow (scfm)	SVE Vacuum (in H2O)	Comment
HSVE-1	4/6/2021	12:25	0	381	13.4	6	1	323	28.3	Step 1
HSVE-1	4/6/2021	16:00	0	405	13.4	6.2	1.1	323	29.0	Step 1
HSVE-1	4/7/2021	7:35	0	406.6	15.5	5.6	0.8	323	24.3	Step 1
HSVE-1	4/7/2021	12:45	0	421.5	15.6	4.7	0.8	512	47.1	Step 2
HSVE-1	4/7/2021	15:25	0	418	16.2	4.4	0.8	512	48.1	Step 2
HSVE-1	4/8/2021	7:35	0	425	17.1	4	0.6	512	48.2	Step 2
HSVE-1	4/8/2021	11:00	0	401.1	17.5	3.4	0.6	512	48.2	Step 2
HSVE-1	4/8/2021	12:00	0	398.1	17	3.4	0.6	560	55.0	Step 3
HSVE-1	4/8/2021	15:00	0	414.2	17.9	3.3	0.6	560	55.0	Step 3
HSVE-1	4/15/2021	9:00	0	421	17.7	3.5	0.6	560	55.0	
HSVE-1	4/21/2021	13:00	0	408	17.5	3.4	0.5	560	55.0	
HSVE-1	4/28/2021	11:00	0	340	19.9	1.4	0.5	550	55.0	Step 3 continued
HSVE-1	5/5/2021	9:00	0	390	18.9	1.3	0.5	550	55.0	
HSVE-1	5/5/2021	15:45	0	418	18.9	1.3	0.5	550	55.0	
HSVE-1	5/11/2021	16:45	45	1200	20.1	0.8	0.5	560	56.0	
HSVE-1	5/12/2021	8:15	45	422	19.9	1.3	0.1	500	56.0	
HSVE-1	5/12/2021	15:00	100	2000	20.2	1	0.5	500	56.0	
HSVE-1	5/13/2021	9:00	100	431.8	19.8	1.3	1.1	457	54.0	
HSVE-1	5/13/2021	14:52	100	5000	19.8	1	1	457	55.0	
HSVE-1	5/14/2021	8:30	50	5000	19.9	1.1	0.4	457	55.0	
HSVE-1	5/14/2021	14:18	50	4852	19.8	0.2	0.8	457	55.0	
HSVE-1	5/18/2021	9:00	50	1410	17.4	1.9	1	500	55.0	
HSVE-1	5/18/2021	12:52	50	1900	18.7	1.2	0.5	500	55.0	
HSVE-1	5/18/2021	15:30	50	2650	19.5	1.2	0.5	500	55.0	
HSVE-1	5/19/2021	9:30	50	440	19.7	1.2	1.1	457	49.0	
HSVE-1	5/19/2021	13:10	100	4830	20	0.9	0.6	470	49.0	
HSVE-1	5/19/2021	16:15	100	390	19.9	0.8	0.6	485	49.0	
HSVE-1	5/20/2021	9:30	100	455	19.6	1.4	1.2	500	56.0	
HSVE-1	5/20/2021	11:49	100	475	19.5	0.9	0.8	500	56.0	
HSVE-1	5/26/2021	11:02	100	415	19.3	1.2	1.1	460	54.0	
HSVE-1	5/26/2021	12:15	150	395	18.9	1.1	1.2	460	54.0	
HSVE-1	5/26/2021	14:01	150	418	19.4	0.9	0.9	530	54.0	
HSVE-1	5/27/2021	7:48	150	374.2	19.5	1.2	1.3	600	56.0	
HSVE-1	5/27/2021	11:20	200	379.1	19.2	1	1	600	54.5	
HSVE-1	5/28/2021	10:15	100	335	18.5	1.3	1.1	510	53.5	
HSVE-1	5/28/2021	11:30	100	421	18.7	1	1.2	510	55.6	

Appendix D.1. HSVE-01 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Time	Biosparge Flow (scfm)	SVE VOC (ppmv)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	SVE Flow (scfm)	SVE Vacuum (in H2O)	Comment
HSVE-1	6/1/2021	12:40	100	386.2	18.5	1.2	1	600	56.0	SVE flow was between 500-600.
HSVE-1	6/1/2021	14:45	100	360.1	18.8	1	0.5	600	56.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	10:35	200	468.3	18	1.3	0.8	600	56.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	12:58	200	472.5	18.1	1.4	0.8	600	55.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	15:09	200	442.5	18.5	1	0.6	600	55.0	SVE flow was between 500-600.
HSVE-1	6/11/2021	7:55	300	441	19.4	1.4	1	600	56.0	SVE flow was between 500-600.
HSVE-1	6/11/2021	10:28	300	468	19.1	0.9	0.6	600	56.0	SVE flow was between 500-600.
HSVE-1	6/22/2021	7:55	200	344.9	18.8	1.3	0.4	600	56.0	SVE flow was between 500-600.
HSVE-1	6/25/2021	8:45	250	354	16.6	1.6	0.6	510	54.5	SVE flow was between 460-510.
HSVE-1	6/25/2021	11:02	250	405	19.2	1	0.5	550	55.1	SVE flow was between 450-550.
HSVE-1	6/28/2021	11:00	250	422	18.4	1.1	0.5	600	56.0	SVE flow was between 450-600.
HSVE-1	6/28/2021	11:10	250	424	18.3	1.1	0.5	600	56.0	SVE flow was between 450-600.
HSVE-1	6/28/2021	13:50	250	415	18.4	1	0.6	600	56.0	SVE flow was between 450-600.

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-02S	160	4/7/2021	12:33	20.1	0.7	0	0.1	21.1
SVM-03D	10	4/7/2021	12:40	20.9	0.3	0	0.2	21.1
SVM-03S	10	4/7/2021	12:41	20.9	0.3	0	0.3	21.1
SVM-05D	130	4/7/2021	12:51	20.8	0.1	0	0.1	21.1
SVM-05S	130	4/7/2021	12:50	20.9	0.1	0	0.2	21.1
SVM-06D	180	4/7/2021	13:42	20	0.1	0	4	21.1
SVM-06S	180	4/7/2021	13:45	19.7	0.1	0	2.4	21.1
SVM-07D	80	4/7/2021	13:25	19.9	0.2	0	5.3	21.1
SVM-07S	80	4/7/2021	13:28	19.1	0.5	0	4.1	21.1
SVM-08D	40	4/7/2021	12:56	20.9	0	0	0.1	21.1
SVM-08S	40	4/7/2021	12:55	20.8	0.2	0	0.2	21.1
SVM-10D	-20	4/7/2021	13:16	18.5	0.8	0	17.9	21.1
SVM-15D	250	4/7/2021	13:52	19	0.5	0	1.8	21.1
SVM-15M	250	4/7/2021	14:01	19.5	0.4	0	0.8	21.1
SVM-15S	250	4/7/2021	14:03	19.5	0.4	0	2	21.1
GMW-O-12	25	4/7/2021	14:23	20.9	0	0	36.5	21.1
GMW-O-21	40	4/7/2021	14:42	20.9	0	0	0.2	21.1
SVM-02S	160	4/8/2021	13:35	19.6	0.7	0	0.1	20.9
SVM-03D	10	4/8/2021	13:10	20.2	0.7	0	1.4	20.9
SVM-03S	10	4/8/2021	13:12	20.4	0.3	0	0.8	20.9
SVM-05D	130	4/8/2021	14:02	21.4	0	0	1.1	20.9
SVM-05S	130	4/8/2021	14:06	21.2	0	0	0.8	20.9
SVM-06D	180	4/8/2021	13:29	21.1	0.1	0	0.1	20.9
SVM-06S	180	4/8/2021	13:29	20.3	0.1	0	0.1	20.9
SVM-07D	80	4/8/2021	13:05	20.1	0.3	0	0.2	20.9
SVM-07S	80	4/8/2021	13:05	19.1	0.9	0	0	20.9
SVM-08D	40	4/8/2021	13:51	20.9	0.2	0	1.2	20.9
SVM-08S	40	4/8/2021	13:54	21	0	0	0.1	20.9
SVM-10D	-20	4/8/2021	12:55	16.1	2.7	1.1	0.4	20.9
SVM-15D	250	4/8/2021	14:00	19.9	0.3	0	0.1	20.9
SVM-15M	250	4/8/2021	14:05	19.7	0.5	0	0.1	20.9
SVM-15S	250	4/8/2021	14:13	19.8	0	0	0.1	20.9
SVM-16D	-20	4/8/2021	13:38	20.4	1.1	0	5.4	20.9
SVM-16M	-20	4/8/2021	13:42	20.4	0.7	0	2.1	20.9
SVM-16S	-20	4/8/2021	13:45	20.8	0.5	0	1.5	20.9
GMW-O-11	200	4/8/2021	14:20	20.9	0	0	0.5	20.9
GMW-O-12	25	4/8/2021	14:38	20.9	0.1	0	7.4	20.9
GMW-O-2	160	4/8/2021	13:28	20.4	0	0	5.8	20.9
GMW-O-3	-90	4/8/2021	14:12	21.5	0	0	0.9	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-5	-150	4/8/2021	12:48	20.4	0	0	4.9	20.9
MW-SF-9	130	4/8/2021	14:58	20.9	0	0	2.8	20.9
SVM-1D	230	4/15/2021	10:10	20.3	0.8	0	0	21.2
SVM-1S	230	4/15/2021	10:12	19.8	1.5	0	0	21.2
SVM-02S	160	4/15/2021	10:20	20.1	0.7	0	0	21.2
SVM-03S	10	4/15/2021	12:15	21.4	0.4	0	0	21.2
SVM-05D	130	4/15/2021	12:00	21.2	0	0	0	21.2
SVM-05S	130	4/15/2021	12:05	21.1	0.1	0	0	21.2
SVM-06D	180	4/15/2021	10:55	20.1	0.2	0	0.1	21.2
SVM-06S	180	4/15/2021	10:52	20.3	0.2	0	0.1	21.2
SVM-07D	80	4/15/2021	10:40	20.5	0.7	0	0	21.2
SVM-07S	80	4/15/2021	10:45	20.2	1.1	0	0	21.2
SVM-08D	40	4/15/2021	11:50	21.1	0	0	0	21.2
SVM-08S	40	4/15/2021	11:55	20.9	0.2	0	0	21.2
SVM-10D	-20	4/15/2021	10:30	20.2	1.7	0	0.2	21.2
SVM-15D	250	4/15/2021	10:59	19.6	0.6	0	0	21.2
SVM-15M	250	4/15/2021	11:08	19.7	0.6	0	0	21.2
SVM-15S	250	4/15/2021	11:10	19.7	0.6	0	0	21.2
SVM-16D	-20	4/15/2021	11:40	20.5	0.2	0	0	21.2
SVM-16M	-20	4/15/2021	11:45	20.5	0.6	0	0	21.2
SVM-16S	-20	4/15/2021	11:48	20.5	0.5	0	0	21.2
GMW-O-11	200	4/15/2021	11:10	20.7	0.1	0	0	21.2
GMW-O-12	25	4/15/2021	11:30	20.6	0.1	0	0.8	21.2
GMW-O-20	120	4/15/2021	11:20	20.6	0	0	0	21.2
GMW-O-21	40	4/15/2021	12:05	21.2	0	0	0	21.2
GMW-O-3	-90	4/15/2021	9:45	19.1	0.1	0	0	21.2
GMW-O-5	-150	4/15/2021	9:20	21	0.1	0	0	21.2
SVM-1D	230	4/21/2021	13:00	20	1	0	0.1	21.4
SVM-1S	230	4/21/2021	13:01	21.2	0.7	0	0	21.4
SVM-02S	160	4/21/2021	12:48	18.7	2	0	0	21.4
SVM-03D	10	4/21/2021	10:31	20.8	0.3	0	0.3	21.4
SVM-03S	10	4/21/2021	10:28	20.8	0.1	0	0.2	21.4
SVM-05D	130	4/21/2021	11:09	21.6	0.1	0	0	21.4
SVM-05S	130	4/21/2021	11:11	21.5	0.1	0	0.1	21.4
SVM-06D	180	4/21/2021	11:48	21.1	0.2	0	0.1	21.4
SVM-06S	180	4/21/2021	11:45	21.2	0.2	0	0.1	21.4
SVM-07D	80	4/21/2021	11:35	21.1	1.1	0	0	21.4
SVM-07S	80	4/21/2021	11:38	21.4	0.6	0	0.1	21.4
SVM-08D	40	4/21/2021	10:50	21.2	0.2	0	0.1	21.4

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-08S	40	4/21/2021	11:00	21	0.2	0	0.1	21.4
SVM-10D	-20	4/21/2021	11:28	21.1	2	0	0.1	21.4
SVM-15D	250	4/21/2021	11:55	20.5	0.7	0	0.1	21.4
SVM-15M	250	4/21/2021	11:58	20.8	0.6	0	0	21.4
SVM-15S	250	4/21/2021	12:01	20.8	0.7	0	0.1	21.4
SVM-16D	-20	4/21/2021	10:45	20.5	0.6	0	1.2	21.4
SVM-16M	-20	4/21/2021	10:51	20.9	0.3	0	0.2	21.4
SVM-16S	-20	4/21/2021	10:52	21	0.1	0	0.1	21.4
GMW-O-11	200	4/21/2021	13:07	21.9	0.1	0	0.1	21.4
GMW-O-12	25	4/21/2021	12:33	21.9	0.1	0	0.1	21.4
GMW-O-2	160	4/21/2021	12:25	21.9	0.1	0	0	21.4
GMW-O-20	120	4/21/2021	12:15	22	0	0	0	21.4
GMW-O-3	-90	4/21/2021	9:58	20.7	0.1	0	0.3	21.4
GMW-O-5	-150	4/21/2021	9:40	20.8	0.1	0	0	21.4
SVM-1D	230	4/28/2021	11:35	18.5	1.3	0	33	20.9
SVM-1S	230	4/28/2021	11:30	20.2	0.7	0	2.3	20.9
SVM-02	160	4/28/2021	11:40	18.6	1.6	0	1.1	20.9
SVM-03D	10	4/28/2021	14:35	20.6	0.1	0	0.2	20.9
SVM-03S	10	4/28/2021	14:38	20.6	0.1	0	0.1	20.9
SVM-06D	180	4/28/2021	13:00	21.1	0.1	0	0.4	20.9
SVM-06S	180	4/28/2021	12:55	21.1	0.2	0	0.6	20.9
SVM-07D	80	4/28/2021	13:17	21.1	0.9	0	0.4	20.9
SVM-07S	80	4/28/2021	13:20	20.9	0.8	0	0.4	20.9
SVM-08D	40	4/28/2021	14:00	20.6	0.1	0	0.2	20.9
SVM-08S	40	4/28/2021	14:05	20.9	0.1	0	0.2	20.9
SVM-10D	-20	4/28/2021	13:44	20.9	0.2	0	0.4	20.9
SVM-15D	250	4/28/2021	12:06	21.2	0.1	0	1.2	20.9
SVM-15M	250	4/28/2021	12:05	20.9	0.5	0	0.6	20.9
SVM-15S	250	4/28/2021	12:07	20.9	0.5	0	0.6	20.9
SVM-16D	-20	4/28/2021	14:19	20.9	0.1	0	0.2	20.9
SVM-16M	-20	4/28/2021	14:24	20.9	0.1	0	0.1	20.9
SVM-16S	-20	4/28/2021	14:26	20.9	0.1	0	0.1	20.9
GMW-O-20	120	4/28/2021	13:08	21.3	0.1	0	0.8	20.9
GMW-O-12	25	4/28/2021	13:30	20.9	0.1	0	2.5	20.9
GMW-O-2	160	4/28/2021	11:54	20	0.5	0	0.9	20.9
GMW-O-11	200	4/28/2021	12:28	21.4	0.1	0	1.2	20.9
GMW-O-21	40	4/28/2021	14:10	20.9	0.1	0	0.2	20.9
GMW-O-3	-90	4/28/2021	13:50	20.9	0.1	0	0.4	20.9
GMW-O-5	-150	4/28/2021	14:45	20.9	0	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-1D	230	5/5/2021	12:42	18.1	1.3	0	0	20.9
SVM-1S	230	5/5/2021	12:44	19.9	0.8	0	0	20.9
SVM-02D	160	5/5/2021	12:50	17.8	1.8	0	0	20.9
SVM-03D	10	5/5/2021	14:50	21.3	0.1	0	0.8	20.9
SVM-03S	10	5/5/2021	14:54	21.3	0	0	0.6	20.9
SVM-05D	130	5/5/2021	14:35	21.7	0	0	0.9	20.9
SVM-05S	130	5/5/2021	14:37	21.5	0	0	0.9	20.9
SVM-06D	180	5/5/2021	13:22	20.5	0.1	0	0.1	20.9
SVM-06S	180	5/5/2021	13:24	20.2	0.1	0	0	20.9
SVM-07D	80	5/5/2021	13:15	19.9	0.9	0	0	20.9
SVM-07S	80	5/5/2021	13:19	20.1	0.6	0	0	20.9
SVM-08D	40	5/5/2021	14:28	21.5	0	0	0.9	20.9
SVM-08S	40	5/5/2021	14:32	21.4	0.1	0	0.5	20.9
SVM-10D	-20	5/5/2021	n/a	20.3	0.2	0	0	20.9
SVM-15D	250	5/5/2021	13:30	19.7	0.4	0	4.7	20.9
SVM-15M	250	5/5/2021	13:33	20	0.5	0	0	20.9
SVM-15S	250	5/5/2021	13:37	20.3	0.5	0	0.3	20.9
SVM-16D	-20	5/5/2021	14:15	21.3	0.1	0	1.5	20.9
SVM-16M	-20	5/5/2021	14:18	21.3	0.2	0	1	20.9
SVM-16S	-20	5/5/2021	14:22	21.4	0.1	0	0.9	20.9
GMW-O-11	200	5/5/2021	13:40	21.2	0	0	3.8	20.9
GMW-O-12	25	5/5/2021	13:50	21.3	0	0	3.9	20.9
GMW-O-2	160	5/5/2021	13:05	20	0.1	0	0	20.9
GMW-O-20	120	5/5/2021	13:45	21.5	0	0	0.9	20.9
GMW-O-21	40	5/5/2021	14:43	21.7	0	0	0.9	20.9
GMW-O-3	-90	5/5/2021	14:06	21.5	0	0	1.5	20.9
GMW-O-5	-150	5/5/2021	15:00	21.6	0	0	0.5	20.9
SVM-1D	230	5/11/2021	14:50	18.6	1.2	0	0.1	21.7
SVM-1S	230	5/11/2021	14:50	20.3	0.7	0	0.5	21.7
SVM-02S	160	5/11/2021	14:55	18.4	1.7	0	0.1	21.7
SVM-03D	10	5/11/2021	16:16	21.6	0	0	0.3	21.7
SVM-03S	10	5/11/2021	16:17	21.5	0	0	0.3	21.7
SVM-05D	130	5/11/2021	16:05	22	0	0	0	21.7
SVM-05S	130	5/11/2021	16:06	21.6	0	0	0	21.7
SVM-06D	180	5/11/2021	15:22	20.5	0.1	0	0	21.7
SVM-06S	180	5/11/2021	15:23	20.6	0.1	0	0.1	21.7
SVM-07D	80	5/11/2021	15:13	20.3	0.8	0	0.1	21.7
SVM-07S	80	5/11/2021	15:14	20.4	0.6	0	0	21.7
SVM-08D	40	5/11/2021	15:37	21.5	0	0	0.1	21.7

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-08S	40	5/11/2021	15:39	21.5	0	0	0.1	21.7
SVM-10D	-20	5/11/2021	15:11	20.5	0.7	0	0.1	21.7
SVM-15D	250	5/11/2021	15:25	20.6	0.1	0	0	21.7
SVM-15M	250	5/11/2021	15:27	20.1	0.5	0	0.1	21.7
SVM-15S	250	5/11/2021	15:29	20.1	0.5	0	0	21.7
SVM-16D	-20	5/11/2021	15:51	21	0.1	0	0.1	21.7
SVM-16M	-20	5/11/2021	15:52	21.7	0.1	0	0.4	21.7
SVM-16S	-20	5/11/2021	15:53	21.3	0	0	0	21.7
GMW-O-11	200	5/11/2021	15:30	21	0.1	0	0	21.7
GMW-O-12	25	5/11/2021	15:43	21	0	0	0.1	21.7
GMW-O-2	160	5/11/2021	15:03	19.9	0.8	0	0.1	21.7
GMW-O-20	120	5/11/2021	15:37	21.7	0	0	0.1	21.7
GMW-O-21	40	5/11/2021	16:09	21.8	0	0	0	21.7
GMW-O-3	-90	5/11/2021	15:08	20.6	0.5	0	0.2	21.7
GMW-O-5	-150	5/11/2021	16:27	21.3	0.2	0	0	21.7
GMW-O-14	n/a	5/11/2021	16:21	21.9	0	0	0	21.7
SVM-1D	230	5/11/2021	11:23	18.5	1.5	0	0	21.3
SVM-1S	230	5/11/2021	11:21	20.5	9	0	0.2	21.3
SVM-02S	160	5/11/2021	11:28	18.9	1.3	0	0	21.3
SVM-03D	10	5/11/2021	13:36	20.9	0.1	0	0	21.3
SVM-03S	10	5/11/2021	13:35	20.4	0	0	0.2	21.3
SVM-05D	130	5/11/2021	13:25	21	0	0	0.2	21.3
SVM-05S	130	5/11/2021	13:27	20.1	0.1	0	0.4	21.3
SVM-06D	180	5/11/2021	12:20	19.6	0.2	0	0	21.3
SVM-06S	180	5/11/2021	12:30	20.5	0.4	0	0.3	21.3
SVM-07D	80	5/11/2021	12:10	19.5	0.9	0	0.2	21.3
SVM-07S	80	5/11/2021	12:12	19.5	0.7	0	0.2	21.3
SVM-08D	40	5/11/2021	13:20	21	0	0	0.7	21.3
SVM-08S	40	5/11/2021	13:21	20.2	0.1	0	0	21.3
SVM-10D	-20	5/11/2021	12:05	20.2	0.9	0	0.1	21.3
SVM-15D	250	5/11/2021	12:36	19.5	0.7	0	0	21.3
SVM-15M	250	5/11/2021	12:37	19.6	0.6	0	0.2	21.3
SVM-15S	250	5/11/2021	12:38	19.9	0.6	0	0	21.3
SVM-16D	-20	5/11/2021	13:05	20.6	0.1	0	1.1	21.3
SVM-16M	-20	5/11/2021	13:10	20.2	0.2	0	0	21.3
SVM-16S	-20	5/11/2021	13:15	20.8	0.1	0	0.1	21.3
GMW-O-11	200	5/11/2021	12:40	20.5	0.1	0	0.3	21.3
GMW-O-12	25	5/11/2021	12:55	20.2	0	0	0.1	21.3
GMW-O-2	160	5/11/2021	11:35	20.3	0.4	0	0.1	21.3

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-20	120	5/11/2021	12:40	20.5	0	0	0.3	21.3
GMW-O-21	40	5/11/2021	13:28	21	0	0	0	21.3
GMW-O-3	-90	5/11/2021	12:00	20.7	0.1	0	0.2	21.3
GMW-O-5	-150	5/11/2021	13:40	20.7	0	0	0	21.3
SVM-1D	230	5/12/2021	13:19	18.2	1	0	0.2	20.9
SVM-1S	230	5/12/2021	13:20	19.6	1	0	0	20.9
SVM-02S	160	5/12/2021	13:23	17.1	1.9	0	0.6	20.9
SVM-03D	10	5/12/2021	13:55	20.2	0.1	0	1	20.9
SVM-03S	10	5/12/2021	13:58	20.3	0.1	0	0.6	20.9
SVM-06D	180	5/12/2021	14:18	20.9	0.2	0	0	20.9
SVM-06S	180	5/12/2021	14:30	21	0.2	0	0	20.9
SVM-07D	80	5/12/2021	14:23	20.9	0.9	0	0.1	20.9
SVM-07S	80	5/12/2021	14:25	20.9	0.7	0	0	20.9
SVM-08D	40	5/12/2021	14:11	21.2	0.1	0	0.1	20.9
SVM-08S	40	5/12/2021	14:13	21.1	0.1	0	0	20.9
SVM-10D	-20	5/12/2021	14:21	20.9	1.1	0	0	20.9
SVM-15D	250	5/12/2021	14:34	20.2	0.6	0	0	20.9
SVM-15M	250	5/12/2021	14:36	20.6	0.5	0	0	20.9
SVM-15S	250	5/12/2021	14:38	20.6	0.6	0	0	20.9
SVM-16D	-20	5/12/2021	14:05	20.7	0.2	0	0.1	20.9
SVM-16M	-20	5/12/2021	14:07	20.9	0.1	0	0.1	20.9
SVM-16S	-20	5/12/2021	14:10	20.9	0	0	0	20.9
GMW-O-11	200	5/12/2021	14:40	21.6	0	0	0	20.9
GMW-O-12	25	5/12/2021	14:50	21.7	0	0	0.2	20.9
GMW-O-2	160	5/12/2021	13:32	19.5	0.1	0	0.2	20.9
GMW-O-20	120	5/12/2021	14:45	21.8	0	0	0.1	20.9
GMW-O-21	40	5/12/2021	14:16	21.4	0	0	0	20.9
GMW-O-3	-90	5/12/2021	13:38	19.7	0.1	0	1	20.9
GMW-O-5	-150	5/12/2021	13:45	18.9	0.9	0	0.1	20.9
GMW-O-14	n/a	5/12/2021	14:00	20.6	0	0	0.1	20.9
SVM-1D	230	5/12/2021	8:33	18.7	1.4	0	0.5	n/a
SVM-1S	230	5/12/2021	8:34	20.4	0.9	0	0.3	n/a
SVM-02S	160	5/12/2021	8:50	18.4	2	0	0.4	n/a
SVM-03D	10	5/12/2021	11:04	20.6	0	0	0.3	n/a
SVM-03S	10	5/12/2021	11:05	20.6	0	0	0.2	n/a
SVM-05D	130	5/12/2021	10:38	21.4	0	0	0	n/a
SVM-05S	130	5/12/2021	10:39	21.4	0	0	0	n/a
SVM-06D	180	5/12/2021	9:15	20.6	0.2	0	0.3	n/a
SVM-06S	180	5/12/2021	9:16	20.7	0.2	0	0.2	n/a

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-07D	80	5/12/2021	9:10	20.6	1.1	0	0.1	n/a
SVM-07S	80	5/12/2021	9:11	20.7	0.8	0	0.2	n/a
SVM-08D	40	5/12/2021	10:28	21.3	0.1	0	0	n/a
SVM-08S	40	5/12/2021	10:30	21.3	0	0	0	n/a
SVM-10D	-20	5/12/2021	9:00	20.7	1.6	0	0.3	n/a
SVM-15D	250	5/12/2021	9:27	19.8	0.7	0	0.2	n/a
SVM-15M	250	5/12/2021	9:28	20.5	0.4	0	0.1	n/a
SVM-15S	250	5/12/2021	9:30	20.2	0.6	0	0.2	n/a
SVM-16D	-20	5/12/2021	10:15	20.9	0.2	0	0.1	n/a
SVM-16M	-20	5/12/2021	10:17	21	0.2	0	0	n/a
SVM-16S	-20	5/12/2021	10:20	21.3	0	0	0	n/a
GMW-O-11	200	5/12/2021	9:37	20.8	0.2	0	0.3	n/a
GMW-O-12	25	5/12/2021	10:06	20.9	0	0	8.1	n/a
GMW-O-2	160	5/12/2021	8:45	21.2	0.1	0	0.2	n/a
GMW-O-20	120	5/12/2021	9:53	20.8	0.1	0	0.5	n/a
GMW-O-21	40	5/12/2021	10:51	21.4	0	0	0.7	n/a
GMW-O-3	-90	5/12/2021	8:55	20.9	0.2	0	1.2	n/a
GMW-O-5	-150	5/12/2021	11:15	20.1	0.2	0	0.2	n/a
SVM-1D	230	5/13/2021	9:31	19.1	1.2	0	0.6	20.9
SVM-1S	230	5/13/2021	9:37	20.5	0.7	0	0.1	20.9
SVM-02S	160	5/13/2021	12:05	18.9	1.8	0.1	0.2	20.9
SVM-03D	10	5/13/2021	10:18	20.9	0.1	0	6.1	20.9
SVM-03S	10	5/13/2021	10:16	21.4	0.1	0	0.1	20.9
SVM-05D	130	5/13/2021	10:47	21.6	0	0	2.7	20.9
SVM-05S	130	5/13/2021	10:50	21.6	0.1	0	0.1	20.9
SVM-06D	180	5/13/2021	11:16	21.2	0.2	0	0	20.9
SVM-06S	180	5/13/2021	11:18	21.3	0.2	0	0.4	20.9
SVM-07D	80	5/13/2021	11:09	21.3	0.8	0	0.1	20.9
SVM-07S	80	5/13/2021	11:11	21.3	0.7	0	0.5	20.9
SVM-08D	40	5/13/2021	10:54	21.6	0.1	0	0.1	20.9
SVM-08S	40	5/13/2021	10:55	21.5	0.1	0	1.6	20.9
SVM-10D	-20	5/13/2021	11:05	21.4	0.9	0	0.6	20.9
SVM-15D	250	5/13/2021	11:21	20.6	0.5	0	0.1	20.9
SVM-15M	250	5/13/2021	11:22	21.3	0.6	0	0.1	20.9
SVM-15S	250	5/13/2021	11:23	20.8	0.6	0	0.1	20.9
SVM-16D	-20	5/13/2021	10:34	21.4	0	0	0	20.9
SVM-16M	-20	5/13/2021	10:37	21.5	0.1	0	0.4	20.9
SVM-16S	-20	5/13/2021	10:30	21.5	0.1	0	0.3	20.9
GMW-O-11	200	5/13/2021	11:30	21.5	0.1	0	0.6	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-12	25	5/13/2021	11:45	15.5	1.6	58.9	5000	20.9
GMW-O-2	160	5/13/2021	9:41	21	0.2	0	0.4	20.9
GMW-O-20	120	5/13/2021	11:37	21.6	0	0	0.3	20.9
GMW-O-21	40	5/13/2021	10:59	21.6	0	0	0.9	20.9
GMW-O-3	-90	5/13/2021	9:59	21.3	0.1	0	1.1	20.9
GMW-O-5	-150	5/13/2021	10:10	19.1	1.8	0	0.7	20.9
HSVE-01	0	5/13/2021	9:00	19.8	1.3	1.1	431.8	20.9
GMW-014	10	5/13/2021	10:25	21.3	0.2	0	3.2	20.9
SVM-03D	10	5/13/2021	13:51	20.9	0.1	0	1.6	n/a
SVM-03S	10	5/13/2021	13:52	20.9	0.1	0	2.9	n/a
SVM-05D	130	5/13/2021	14:15	21.1	0	0	7.3	n/a
SVM-05S	130	5/13/2021	14:16	21	0	0	0.2	n/a
SVM-06D	180	5/13/2021	13:18	20.8	0.2	0	0.3	n/a
SVM-06S	180	5/13/2021	13:19	20.8	0.2	0	5.8	n/a
SVM-07D	80	5/13/2021	13:15	20.7	0.9	0	0.3	n/a
SVM-07S	80	5/13/2021	13:16	20.8	0.7	0	0	n/a
SVM-08D	40	5/13/2021	14:10	21.1	0	0	0.4	n/a
SVM-08S	40	5/13/2021	14:11	21.1	0	0	1.7	n/a
SVM-10D	-20	5/13/2021	13:10	20.9	1.2	0	0.5	n/a
SVM-16D	-20	5/13/2021	13:59	20.9	0.1	0	0.5	n/a
SVM-16M	-20	5/13/2021	14:01	21.0	0.1	0	0.4	n/a
SVM-16S	-20	5/13/2021	14:02	21.0	0	0	1.4	n/a
GMW-O-12	25	5/13/2021	14:36	14.8	1.6	82	5000	n/a
GMW-O-20	120	5/13/2021	13:30	21.2	0.1	0	4.4	n/a
GMW-O-21	40	5/13/2021	14:21	21.1	0	0	2.4	n/a
GMW-O-3	-90	5/13/2021	13:38	21.2	0	0	5.2	n/a
GMW-O-5	-150	5/13/2021	13:45	17.3	2.8	0	4.4	n/a
GMW-014	n/a	5/13/2021	13:55	21.1	0.1	0	4.9	n/a
SVM-1D	230	5/14/2021	11:37	18.4	1.3	0	0	21.3
SVM-1S	230	5/14/2021	11:39	20.2	0.7	0	0	21.3
SVM-02S	160	5/14/2021	11:43	17.9	1.8	0	0	21.3
SVM-03D	10	5/14/2021	13:15	21	0.1	0	0.3	21.3
SVM-03S	10	5/14/2021	13:16	21.1	0.1	0	0.2	21.3
SVM-05D	130	5/14/2021	13:06	21.1	0.1	0	1	21.3
SVM-05S	130	5/14/2021	13:08	21	0	0	0.3	21.3
SVM-06D	180	5/14/2021	12:17	19.6	0.1	0	0	21.3
SVM-06S	180	5/14/2021	12:19	19.6	0.1	0	0	21.3
SVM-07D	80	5/14/2021	12:08	19.5	0.8	0	0	21.3
SVM-07S	80	5/14/2021	12:09	19.7	0.6	0	0	21.3

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-08D	40	5/14/2021	13:00	21	0.1	0	0.1	21.3
SVM-08S	40	5/14/2021	13:01	21.1	0.1	0	0.4	21.3
SVM-10D	-20	5/14/2021	12:05	20	0.4	0	0.1	21.3
SVM-15D	250	5/14/2021	12:23	19	0.4	0	0	21.3
SVM-15M	250	5/14/2021	12:25	19	0.5	0	0	21.3
SVM-15S	250	5/14/2021	12:27	19.1	0.6	0	0	21.3
SVM-16D	-20	5/14/2021	12:55	20.9	0.1	0	0	21.3
SVM-16M	-20	5/14/2021	12:57	21	0.1	0	0.4	21.3
SVM-16S	-20	5/14/2021	12:59	21	0	0	0.2	21.3
GMW-O-11	200	5/14/2021	12:34	19.9	0.1	0	0.1	21.3
GMW-O-12	25	5/14/2021	12:50	13.9	1.3	9.9	5000	21.3
GMW-O-2	160	5/14/2021	11:48	20	0.3	0	0	21.3
GMW-O-20	120	5/14/2021	12:42	20.4	0	0	0	21.3
GMW-O-21	40	5/14/2021	13:11	21	0.3	0	2.3	21.3
GMW-O-3	-90	5/14/2021	11:57	20.1	0	0	0.1	21.3
GMW-O-5	-150	5/14/2021	13:28	18.1	2.2	0	0.9	21.3
SVM-1D	230	5/18/2021	15:20	18.9	0.8	0	0	20.9
SVM-1S	230	5/18/2021	15:22	20.1	0.4	0	0	20.9
SVM-03D	10	5/18/2021	13:47	21	0.1	0	0.2	20.9
SVM-03S	10	5/18/2021	13:49	21	0.1	0	0.1	20.9
SVM-05D	130	5/18/2021	14:12	21.1	0	0	0	20.9
SVM-05S	130	5/18/2021	14:15	20.9	0	0	0	20.9
SVM-06D	180	5/18/2021	14:28	19.8	0.1	0	0	20.9
SVM-06S	180	5/18/2021	14:30	19.9	0.1	0	0	20.9
SVM-07D	80	5/18/2021	14:23	20.7	0.1	0	0.1	20.9
SVM-07S	80	5/18/2021	14:25	20.7	0.1	0	0	20.9
SVM-08D	40	5/18/2021	14:05	21.1	0.1	0	0.2	20.9
SVM-08S	40	5/18/2021	14:07	20.9	0.1	0	0.1	20.9
SVM-10D	-20	5/18/2021	14:20	20.9	0.4	0	0.1	20.9
SVM-15D	250	5/18/2021	14:35	20.1	0.4	0	0.1	20.9
SVM-15M	250	5/18/2021	14:37	20.1	0.5	0	0.1	20.9
SVM-15S	250	5/18/2021	14:39	20.3	0.6	0	0	20.9
SVM-16D	-20	5/18/2021	13:55	21	0.1	0	0.4	20.9
SVM-16M	-20	5/18/2021	13:58	21.1	0	0	0.1	20.9
SVM-16S	-20	5/18/2021	14:00	21	0	0	0.1	20.9
GMW-O-11	200	5/18/2021	14:50	20.9	0	0	0.5	20.9
GMW-O-12	25	5/18/2021	15:05	20.9	0	0	3.6	20.9
GMW-O-2	160	5/18/2021	15:19	20.8	0	0	0	20.9
GMW-O-20	120	5/18/2021	14:55	20.9	0.1	0	0.2	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-21	40	5/18/2021	14:20	21.2	0.1	0	0.2	20.9
GMW-O-3	-90	5/18/2021	15:12	20.2	0.1	0	0	20.9
GMW-O-5	-150	5/18/2021	13:30	18.7	0.2	0	0.7	20.9
GMW-O-14	n/a	5/18/2021	13:43	21	0.3	0	1	20.9
SVM-1D	230	5/18/2021	12:23	18.8	1	0	0	20.9
SVM-1S	230	5/18/2021	12:26	20.1	0.6	0	0	20.9
SVM-02S	160	5/18/2021	12:28	19.8	0.5	0	0	20.9
SVM-03D	10	5/18/2021	10:25	20.7	0.2	0	0.3	20.9
SVM-03S	10	5/18/2021	10:27	20.8	0.1	0	0.1	20.9
SVM-05D	130	5/18/2021	10:52	20.7	0	0	0.1	20.9
SVM-05S	130	5/18/2021	10:54	20.7	0.1	0	0	20.9
SVM-06D	180	5/18/2021	11:41	19.6	0.2	0	0.1	20.9
SVM-06S	180	5/18/2021	11:43	19.7	0.2	0	0	20.9
SVM-07D	80	5/18/2021	11:35	20.3	0.8	0	0.1	20.9
SVM-07S	80	5/18/2021	11:37	20.1	0.8	0	0	20.9
SVM-08D	40	5/18/2021	10:47	20.7	0.1	0	0.2	20.9
SVM-08S	40	5/18/2021	10:49	20.7	0.1	0	0	20.9
SVM-10D	-20	5/18/2021	11:31	20.8	0.8	0	0.1	20.9
SVM-15D	250	5/18/2021	11:50	19.1	0.6	0	0.1	20.9
SVM-15M	250	5/18/2021	11:52	19.4	0.7	0	0	20.9
SVM-15S	250	5/18/2021	11:54	19.7	0.7	0	0	20.9
SVM-16D	-20	5/18/2021	10:39	20.4	0.3	0	0.4	20.9
SVM-16M	-20	5/18/2021	10:40	20.7	0.1	0	0.1	20.9
SVM-16S	-20	5/18/2021	10:41	20.7	0.1	0	0	20.9
GMW-O-11	200	5/18/2021	12:02	20.7	0.2	0	0.7	20.9
GMW-O-12	25	5/18/2021	12:20	20.8	0.1	0	3.5	20.9
GMW-O-2	160	5/18/2021	12:30	20.1	0	0	0	20.9
GMW-O-20	120	5/18/2021	12:10	20.9	0.1	0	0.6	20.9
GMW-O-21	40	5/18/2021	11:04	20.9	0	0	0.3	20.9
GMW-O-3	-90	5/18/2021	12:20	20.1	0	0	0	20.9
GMW-O-5	-150	5/18/2021	10:11	20.6	0.5	0	0.8	20.9
GMW-O-14	n/a	5/18/2021	10:31	21	0	0	1.8	20.9
SVM-03D	10	5/19/2021	14:05	20.8	0	0	0.1	21.5
SVM-03S	10	5/19/2021	14:07	21	0	0	0.1	21.5
SVM-05D	130	5/19/2021	14:39	21.8	0	0	0.1	21.5
SVM-05S	130	5/19/2021	14:42	21.7	0	0	0	21.5
SVM-06D	180	5/19/2021	15:40	21.4	0	0	0.2	21.5
SVM-06S	180	5/19/2021	15:45	21.2	0.1	0	0.1	21.5
SVM-07D	80	5/19/2021	14:12	21.3	0.6	0	0	21.5

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-07S	80	5/19/2021	14:15	21.2	0.6	0	0.5	21.5
SVM-08D	40	5/19/2021	14:30	21.6	0	0	0	21.5
SVM-08S	40	5/19/2021	14:35	21.7	0	0	0.1	21.5
SVM-10D	-20	5/19/2021	15:05	21.5	0.8	0	0.1	21.5
SVM-16D	-20	5/19/2021	14:17	21.4	0	0	0.1	21.5
SVM-16M	-20	5/19/2021	14:20	21.5	0	0	0.1	21.5
SVM-16S	-20	5/19/2021	14:23	21.4	0	0	0	21.5
GMW-O-12	25	5/19/2021	16:05	21.2	0	0	17.4	21.5
GMW-O-20	120	5/19/2021	15:50	21.5	0	0	0.4	21.5
GMW-O-21	40	5/19/2021	14:47	22	0	0	0.1	21.5
GMW-O-3	-90	5/19/2021	13:40	21.3	0	0	1.3	21.5
GMW-O-5	-150	5/19/2021	13:48	17.7	2.3	0	0.3	21.5
GMW-O-14	10	5/19/2021	14:00	20.9	0	0	0.2	21.5
SVM-03D	10	5/20/2021	10:23	20.9	0.1	0	0	21.5
SVM-03S	10	5/20/2021	10:25	20.8	0.1	0	0	21.5
SVM-05D	130	5/20/2021	11:03	20.3	0	0	0.1	21.5
SVM-05S	130	5/20/2021	11:05	20.2	0.1	0	0	21.5
SVM-06D	180	5/20/2021	11:17	20.2	0.1	0	0.2	21.5
SVM-06S	180	5/20/2021	11:19	20	0.2	0	0.3	21.5
SVM-07D	80	5/20/2021	11:13	20.2	0	0	0.2	21.5
SVM-07S	80	5/20/2021	11:15	20.1	0.6	0	0.3	21.5
SVM-08D	40	5/20/2021	11:00	20.2	0.1	0	0.4	21.5
SVM-08S	40	5/20/2021	11:02	20.1	0.1	0	0.1	21.5
SVM-10D	-20	5/20/2021	11:12	20.2	0	0	0.4	21.5
SVM-15D	250	5/20/2021	11:20	19.4	0	0	0.1	21.5
SVM-15M	250	5/20/2021	11:22	19.8	0.5	0	0.3	21.5
SVM-15S	250	5/20/2021	11:25	19.5	0.6	0	0.1	21.5
SVM-16D	-20	5/20/2021	10:53	20.1	0.2	0	0	21.5
SVM-16M	-20	5/20/2021	10:56	20.3	0	0	0.4	21.5
SVM-16S	-20	5/20/2021	10:59	20.1	0.1	0	0.1	21.5
GMW-O-11	200	5/20/2021	11:25	20.5	0	0	0.3	21.5
GMW-O-12	25	5/20/2021	11:35	15.5	1.9	49	681	21.5
GMW-O-20	120	5/20/2021	11:29	20.7	0	0	0.3	21.5
GMW-O-21	40	5/20/2021	11:06	20.5	0	0	0.3	21.5
GMW-O-3	-90	5/20/2021	10:47	20.2	0.2	0	0.3	21.5
GMW-O-5	-150	5/20/2021	10:39	17.9	2.5	0	0.1	21.5
GMW-O-14	10	5/20/2021	10:20	21.3	0.1	0	0	21.5
GMW-O-12(header)	25	5/20/2021	11:35	21.2	0.2	0	9.3	21.5
SVM-03D	10	5/26/2021	8:10	20.7	0.1	0	1.5	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-03S	10	5/26/2021	8:12	20.9	0	0	1.7	20.9
SVM-06D	180	5/26/2021	13:28	20.5	0.1	0	0.2	20.9
SVM-06S	180	5/26/2021	13:32	20.4	0.1	0	0.1	20.9
SVM-07D	80	5/26/2021	13:16	20.8	0.5	0	0.1	20.9
SVM-07S	80	5/26/2021	13:20	20.6	0	0	0.2	20.9
SVM-08D	40	5/26/2021	12:50	21.3	0	0	0	20.9
SVM-08S	40	5/26/2021	12:55	21.1	0	0	0	20.9
SVM-10D	-20	5/26/2021	13:24	20.7	0.7	0	0.2	20.9
SVM-16D	-20	5/26/2021	12:40	20.9	0	0	0	20.9
SVM-16M	-20	5/26/2021	12:42	20.7	0	0	0.5	20.9
SVM-16S	-20	5/26/2021	12:45	20.5	0	0	1.1	20.9
GMW-O-12	25	5/26/2021	13:40	18.4	0.9	8.9	550	20.9
GMW-O-3	-90	5/26/2021	13:05	21.5	0	0	0	20.9
SVM-03D	10	5/27/2021	10:05	20.8	0	0	0	21.5
SVM-03S	10	5/27/2021	10:06	20.6	0	0	0	21.5
SVM-05D	130	5/27/2021	10:25	21.1	0.1	0	0	21.5
SVM-05S	130	5/27/2021	10:28	21.3	0	0	0	21.5
SVM-06D	180	5/27/2021	10:46	21.2	0.1	0	0	21.5
SVM-06S	180	5/27/2021	10:49	21.2	0.1	0	0	21.5
SVM-07D	80	5/27/2021	10:38	21	0.7	0	0	21.5
SVM-07S	80	5/27/2021	10:40	21.1	0.5	0	0	21.5
SVM-08D	40	5/27/2021	10:19	21.1	0	0	0.6	21.5
SVM-08S	40	5/27/2021	10:24	21.1	0	0	0	21.5
SVM-10D	-20	5/27/2021	10:36	20.9	0	0	0	21.5
SVM-15D	250	5/27/2021	10:50	20.3	0.6	0.1	0	21.5
SVM-15M	250	5/27/2021	10:52	20.7	0.6	0.1	0	21.5
SVM-15S	250	5/27/2021	10:53	20.9	0.6	0.1	0	21.5
SVM-16D	-20	5/27/2021	10:13	20.7	0	0	0.8	21.5
SVM-16M	-20	5/27/2021	10:17	20.8	0.1	0	0	21.5
SVM-16S	-20	5/27/2021	10:20	20.8	0.1	0	1019	21.5
GMW-O-2	160	5/27/2021	9:45	20.9	0	0	0	21.5
GMW-O-3	-90	5/27/2021	9:48	20.8	0	0	0	21.5
GMW-O-5	-150	5/27/2021	9:55	17.4	4	0	0	21.5
GMW-O-11	200	5/27/2021	10:59	21.8	0	0.1	0	21.5
GMW-O-12	25	5/27/2021	11:10	18.5	1.3	10.6	535	21.5
GMW-O-14	10	5/27/2021	10:01	20.5	0.5	0	0	21.5
GMW-O-20	120	5/27/2021	11:04	3.5	8.2	9.1	405	21.5
GMW-O-21	40	5/27/2021	10:30	20.8	0	0	0	21.5
SVM-02D	160			n/a			0.2	

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-12 Manifold	25	5/28/2021	10:15	17.9	1.2	2	410	20.8
GMW-O-12	25	5/28/2021	11:15	17.6	1.2	1.8	454	20.8
GMW-O-12	25	5/28/2021	11:25	15.5	2.1	4.7	565	20.8
GMW-O-12 Manifold	25	5/28/2021	11:35	16.8	1.6	2.7	495	20.8
SVM-03D	10	6/1/2021	12:58	19.8	0	0	0	20.9
SVM-03S	10	6/1/2021	12:59	19.9	0	0	0	20.9
SVM-05D	130	6/1/2021	13:24	20.6	0.1	0	0	20.9
SVM-05S	130	6/1/2021	13:29	20.3	0	0	0	20.9
SVM-06D	180	6/1/2021	13:52	20.2	0.1	0	0.2	20.9
SVM-06S	180	6/1/2021	13:54	20.2	0	0	0.1	20.9
SVM-07D	80	6/1/2021	13:46	20.2	0.2	0	0.2	20.9
SVM-07S	80	6/1/2021	13:47	20.1	0	0	0.1	20.9
SVM-08D	40	6/1/2021	13:16	21.1	0	0	0	20.9
SVM-08S	40	6/1/2021	13:20	21	0	0	0	20.9
SVM-10D	-20	6/1/2021	13:42	20.1	0.9	0	0	20.9
SVM-15D	250	6/1/2021	14:00	20.3	0.4	0	0.2	20.9
SVM-15M	250	6/1/2021	14:04	20.2	0.2	0	0.1	20.9
SVM-15S	250	6/1/2021	14:06	20.1	0	0	0.1	20.9
SVM-16D	-20	6/1/2021	13:04	20.2	0.1	0	0	20.9
SVM-16M	-20	6/1/2021	13:08	20	0	0	0	20.9
SVM-16S	-20	6/1/2021	13:12	20	0	0	0	20.9
GMW-O-11	200	6/1/2021	14:15	15.7	2.4	0	30.25	20.9
GMW-O-12	25	6/1/2021	13:38	15.3	2.6	2.7	549.2	20.9
GMW-O-20	120	6/1/2021	14:22	21.1	0	0	0.9	20.9
GMW-O-21	40	6/1/2021	13:33	21.1	0.1	0	4.2	20.9
GMW-O-3	-90	6/1/2021	13:39	20.4	0.1	0	0.2	20.9
GMW-O-5	-150	6/1/2021	12:43	18.4	2.6	0	0.3	20.9
GMW-O-14	n/a	6/1/2021	12:52	20	0.3	0	0.8	20.9
SVM-03D	10	6/10/2021	12:48	19.9	0.2	0	0.3	21.1
SVM-03S	10	6/10/2021	12:52	19.7	0.1	0	0.2	21.1
SVM-05D	130	6/10/2021	12:42	20.1	0.2	0	0.2	21.1
SVM-05S	130	6/10/2021	12:42	19.9	0.1	0	0.1	21.1
SVM-06D	180	6/10/2021	10:58	18.8	0.1	0	0.1	21.1
SVM-06S	180	6/10/2021	11:00	19.2	0.1	0	0	21.1
SVM-07D	80	6/10/2021	10:52	18.9	0.6	0	0	21.1
SVM-07S	80	6/10/2021	10:54	19.1	0.5	0	0	21.1
SVM-08D	40	6/10/2021	12:25	20.1	0	0	0	21.1
SVM-08S	40	6/10/2021	12:30	20	0.1	0	0.1	21.1
SVM-10D	-20	6/10/2021	10:48	18.9	0.9	0	0.1	21.1

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-15D	250	6/10/2021	11:04	18.5	0.6	0	0.2	21.1
SVM-15M	250	6/10/2021	11:06	18.8	0.6	0	0.1	21.1
SVM-15S	250	6/10/2021	11:08	19.4	0.5	0	0	21.1
SVM-16D	-20	6/10/2021	12:15	20.7	0.2	0.1	13.5	21.1
SVM-16M	-20	6/10/2021	12:18	21	0	0	0	21.1
SVM-16S	-20	6/10/2021	12:20	21	0	0	0	21.1
GMW-O-11	200	6/10/2021	11:15	20.2	0	0	2.4	21.1
GMW-O-12	25	6/10/2021	11:25	20.1	0	0	0	21.1
SVM-03D	10	6/10/2021	15:16	20.1	0.1	0	0.2	20.5
SVM-03S	10	6/10/2021	15:18	19.9	0.1	0	0.1	20.5
SVM-05D	130	6/10/2021	14:52	20.2	0.3	0	0.2	20.5
SVM-05S	130	6/10/2021	14:54	20	0.2	0	0.2	20.5
SVM-06D	180	6/10/2021	14:10	19	0	0	0	20.5
SVM-06S	180	6/10/2021	14:11	19.3	0.1	0	0	20.5
SVM-07D	80	6/10/2021	14:04	19.1	0.5	0	0	20.5
SVM-07S	80	6/10/2021	14:06	19	0.5	0	0	20.5
SVM-08D	40	6/10/2021	14:52	20.1	0	0	0.1	20.5
SVM-08S	40	6/10/2021	14:54	20	0.1	0	0.1	20.5
SVM-10D	-20	6/10/2021	14:00	18.8	1	0	0.1	20.5
SVM-15D	250	6/10/2021	14:14	18.9	0.5	0	0.2	20.5
SVM-15M	250	6/10/2021	14:18	19	0.6	0	0.1	20.5
SVM-15S	250	6/10/2021	14:21	19.4	0.5	0	0	20.5
SVM-16D	-20	6/10/2021	14:44	20.6	0.3	0.1	14.2	20.5
SVM-16M	-20	6/10/2021	14:46	20.8	0.1	0	0	20.5
SVM-16S	-20	6/10/2021	14:48	21	0	0	0	20.5
GMW-O-11	200	6/10/2021	14:27	20.4	0	0	3.1	20.5
GMW-O-12	25	6/10/2021	14:37	20.1	0	0	0	20.5
GMW-O-14	n/a	6/10/2021	15:20	20.1	0.1	0	0.9	20.5
SVM-03D	10	6/11/2021	9:57	20.8	0.1	0	0.4	21
SVM-05D	130	6/11/2021	9:23	21.1	0.1	0	0	21
SVM-05S	130	6/11/2021	9:25	21.3	0.1	0	0	21
SVM-06D	180	6/11/2021	8:52	20.4	0.1	0	0	21
SVM-06S	180	6/11/2021	8:53	20.3	0.2	0	0.1	21
SVM-07D	80	6/11/2021	8:48	20	0.8	0	0	21
SVM-07S	80	6/11/2021	8:49	20.2	0.6	0	0	21
SVM-08D	40	6/11/2021	9:45	21.2	0.1	0	0	21
SVM-08S	40	6/11/2021	9:49	21.2	0.1	0	0.6	21
SVM-10D	-20	6/11/2021	8:35	20.6	1.1	0	0	21
SVM-15D	250	6/11/2021	8:54	20.4	0.2	0	0	21

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-15M	250	6/11/2021	8:56	19.6	0.7	0	0	21
SVM-15S	250	6/11/2021	8:58	19.9	0.6	0	0.3	21
GMW-O-11	200	6/11/2021	9:04	20.6	0	0	0	21
GMW-O-20	120	6/11/2021	9:10	0	12.8	5.6	5.6	21
GMW-O-3	-90	6/11/2021	10:18	20.6	0	0	0	21
GMW-O-5	-150	6/11/2021	10:10	19.2	2	0	0	21
GMW-O-14	n/a	6/11/2021	10:05	20.8	0	0	0	21
SVM-03D	10	6/22/2021	10:00	20.5	0	0	0.3	21.4
SVM-03S	10	6/22/2021	10:03	20.4	0	0	0.1	21.4
SVM-05D	130	6/22/2021	9:39	20.8	0.2	0	0.3	21.4
SVM-05S	130	6/22/2021	9:41	21	0.1	0	0	21.4
SVM-06D	180	6/22/2021	8:40	19.8	0.3	0	0	21.4
SVM-06S	180	6/22/2021	8:42	20.1	0.3	0	0	21.4
SVM-07D	80	6/22/2021	9:15	19.6	0.9	0	7.5	21.4
SVM-07S	80	6/22/2021	9:17	20.2	0.7	0	0.6	21.4
SVM-08D	40	6/22/2021	9:30	20.8	0	0	0.6	21.4
SVM-08S	40	6/22/2021	9:32	20.9	0.1	0	0.2	21.4
SVM-10D	-20	6/22/2021	8:30	20.3	0.7	0	0.1	21.4
SVM-15D	250	6/22/2021	8:46	19.3	0.8	0	0	21.4
SVM-15M	250	6/22/2021	8:49	19.7	0.9	0	0	21.4
SVM-15S	250	6/22/2021	8:51	20	0.9	0	0	21.4
SVM-16D	-20	6/22/2021	9:22	20.4	0	0	8.7	21.4
SVM-16M	-20	6/22/2021	9:24	20.5	0.1	0	0.5	21.4
SVM-16S	-20	6/22/2021	9:26	20.6	0.1	0	0.2	21.4
GMW-O-3	-90	6/22/2021	10:20	20.4	0.4	0	0.5	21.4
GMW-O-5	-150	6/22/2021	10:08	19.2	0.9	0	30	21.4
GMW-O-11	200	6/22/2021	9:00	20.9	0.1	0	0.1	21.4
GMW-O-14	n/a	6/22/2021	9:55	20.6	0	0	0.3	21.4
GMW-O-21	40	6/22/2021	9:45	21.1	0	0	1.2	21.4
SVM-03D	10	6/25/2021	9:25	20	0.1	0	0.6	20.9
SVM-03S	10	6/25/2021	9:28	20	0.1	0	0.4	20.9
SVM-05D	130	6/25/2021	9:53	21	0.1	0	0	20.9
SVM-05S	130	6/25/2021	9:56	21.2	0.1	0	0	20.9
SVM-06D	180	6/25/2021	10:18	21.1	0	0	0	20.9
SVM-06S	180	6/25/2021	10:21	21	0.1	0	0	20.9
SVM-07D	80	6/25/2021	10:10	20.4	0.6	0	0.2	20.9
SVM-07S	80	6/25/2021	10:13	20.8	0.8	0	0.3	20.9
SVM-08D	40	6/25/2021	9:46	20.9	0	0	0.2	20.9
SVM-08S	40	6/25/2021	9:50	21	0	0	0.2	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-10D	-20	6/25/2021	10:03	21.2	0	0	0	20.9
SVM-15D	250	6/25/2021	10:28	20.2	0.5	0	0.2	20.9
SVM-15M	250	6/25/2021	10:31	20.3	0.7	0	0.1	20.9
SVM-15S	250	6/25/2021	10:34	20.5	0.7	0	0.1	20.9
SVM-16D	-20	6/25/2021	9:35	20.5	0	0	0.9	20.9
SVM-16M	-20	6/25/2021	9:38	20.6	0	0	0.5	20.9
SVM-16S	-20	6/25/2021	9:41	20.7	0	0	0.3	20.9
GMW-O-11	200	6/25/2021	10:40	21.7	0.1	0	0	20.9
GMW-O-3	-90	6/25/2021	10:50	21.4	0	0	0.2	20.9
GMW-O-5	-150	6/25/2021	9:15	17.9	0	0	2.9	20.9
GMW-O-14	n/a	6/25/2021	9:22	20	0	0	1.1	20.9
SVM-03D	10	6/28/2021	13:15	20.1	0	0.1	0.4	21.1
SVM-03S	10	6/28/2021	13:18	20.1	0.1	0	0.1	21.1
SVM-05D	130	6/28/2021	12:56	20	0.1	0	0.7	21.1
SVM-05S	130	6/28/2021	12:58	20.1	0	0	0.4	21.1
SVM-06D	180	6/28/2021	12:15	18.8	0.1	0	0.3	21.1
SVM-06S	180	6/28/2021	12:17	18.8	0.1	0	0.2	21.1
SVM-07D	80	6/28/2021	12:04	18.7	0.8	0	1.4	21.1
SVM-07S	80	6/28/2021	12:08	19.8	0.6	0	0.6	21.1
SVM-08D	40	6/28/2021	12:51	20.1	0.1	0	0.2	21.1
SVM-08S	40	6/28/2021	12:53	20	0.1	0	0.1	21.1
SVM-10D	-20	6/28/2021	11:58	20.3	0.7	0.1	0.8	21.1
SVM-15D	250	6/28/2021	12:21	18.4	0.6	0	0.4	21.1
SVM-15M	250	6/28/2021	12:23	18.8	0.6	0	0.1	21.1
SVM-15S	250	6/28/2021	12:25	18.9	0.7	0	0.2	21.1
SVM-16D	-20	6/28/2021	12:40	19.8	0.1	0	4.9	21.1
SVM-16M	-20	6/28/2021	12:42	20.1	0	0	0.1	21.1
SVM-16S	-20	6/28/2021	12:46	20.2	0.1	0	0.1	21.1
GMW-O-3	-90	6/28/2021	13:08	21.1	0.1	0	0.3	21.1
GMW-O-5	-150	6/28/2021	13:30	18.4	1.1	0	1.2	21.1
GMW-O-11	200	6/28/2021	12:30	21.1	0.1	0.1	0.4	21.1
GMW-O-14	n/a	6/28/2021	13:20	20	0	0	1	21.1
GMW-O-21	40	6/28/2021	12:59	20.4	0.1	0	1.3	21.1

Appendix D.3. ROI Data

SFPP Norwalk Pump Station, Norwalk, California

						Higher Priority Vacuum Monitoring Locations (Vacuum [in of H2O])																	Lower Priority Vacuum Monitoring Locations (Vacuum [in of H2O])												
					Approximate Distance to HSVE-01 (ft) (negative upgradient)	20	20	20	20	20	10	10	25	40	40	40	80	80	90	120	130	130	130	150	160	160	160	180	180	200	230	230	250	250	250	10	
					Monitoring ID	SVM-10D	SVM-10S	SVM-16D	SVM-16M	SVM-16S	SVM-03D	SVM-03S	GMW-O-12	SVM-08D	SVM-08S	GMW-O-21	SVM-07D	SVM-07S	GMW-O-3	GMW-O-20	SVM-05D	SVM-05S	MW-SF-9	GMW-O-5	SVM-02D	SVM-02S	GMW-O-2	SVM-06D	SVM-06S	GMW-O-11	SVM-1D	SVM-1S	SVM-15D	SVM-15M	SVM-15S	GMW-0-14	
Date	Start Time	End Time	HSVE-1 Date and Flow (SCFM)	HSVE-1 Vacuum (in of H2O)	Comment																														HSVE-1 Flow (SCFM)
4/6/2021	11:40	13:40	4/6/21 323	28.30	Left Running Overnight	0	1.3	10.4	6	0	NM	NM	0	2.4	0	NM	0	0	NM	NM	1.4	0	NM	NM	NM	NM	NM	0	0	0	NM	NM	0	0	0	NM	323
4/7/2021	11:40	13:40	4/7/21 323	24.30	50% Flow of Day 2	0.4	NM	10.1	5.8	0	2.5	0	0	2.1	0	1.9	0	0	0	NM	1.3	0	0	0	NM	0	NM	0	0	0	NM	NM	0	0	0	NM	323
4/7/2021	11:40	13:40	4/7/21 512	47.10	75% Flow day 1 left running overnight	1.4	NM	16.1	9.3	0	4.5	0.6	0	2.9	0	4.9	0	0	NM	NM	1.9	0	NM	NM	NM	0	NM	0	0	NM	NM	NM	0	0	0	NM	512
4/8/2021	11:15	13:15	4/8/21 512	48.20	75% flow day 2	1.6	NM	14.5	8.1	0	3.6	0	0	3.5	0	4.5	0	0	0	NM	1.9	0	0	0	NM	0	NM	0	0	0	NM	NM	0	0	0	NM	512
4/8/2021	11:45	13:45	4/8/21 560	55.00	100% flow	1.5	NM	16.6	9.4	0	4.1	0	0	4.2	0.6	4.1	0	0	0.4	0	1.9	0	0	0	NM	0	0.7	0	0	0	NM	NM	0	0	0	NM	560
4/15/2021	11:45	13:45	4/15/21 560	55.00	100%flow	1.3	NM	16.7	9.7	0	4.8	0.7	0	4.6	0.8	4.4	0	0	0.5	0	1.9	0	NM	0.7	NM	0	NM	0.5	0	0	0	0	0	0	0	NM	560
4/21/2021	11:15	13:15	4/21/21 560	55.00	100%flow	0.9	NM	11.8	6.7	0	4	0.4	0.1	3.1	0.4	NM	0.3	0.1	0.4	0.3	1.9	0	NM	0	NM	0	0	0.8	0	-0.3	0	0	0.2	0	0	15.1	560
4/28/2021	11:15	13:15	4/28/21 560	55.00	100% flow	1.2	NM	13.1	7.6	0.32	4.2	0.41	0.01	3.41	0.46	0.32	0.14	0.02	0.39	0.25	1.9	NM	NM	-0.3	NM	0	0	0.22	0	0.2	0	0.02	0.18	0	-0.04	NM	560
5/5/2021	11:40	13:40	5/5/21 560	55.00	100% flow	1.57	NM	18	11.2	0.4	6.8	0.65	0	5	0.5	5.2	0.1	0.5	0.59	0.27	1.9	0	NM	0	NM	0	0	0.3	0	0.23	0	0.06	0.25	0	0	NM	560
5/11/2021	11:20	13:40	5/11/21 560	56.00	BS-03 50cfm	1.53	NM	18.9	16.1	0.44	6.01	0.58	0	4.9	0.68	5.43	0.25	0.26	0.62	0.55	1.9	0.22	NM	0	NM	0	0	0.2	0	0.14	0	0	0.45	0	0	NM	560
5/11/2021	14:50	16:30	5/11/21 560	56.00	BS-03 50cfm	1.53	NM	19.1	10.7	0.45	4.18	0.52	0.14	4.8	0.7	5.37	0.42	0.06	0.61	0.44	1.9	0.27	NM	0	NM	0	0	0.14	0	0.14	0	0	0.24	0	0	NM	560
5/12/2021	8:20	22:23	5/12/21 500	56.00	BS-03 50cfm	1.54	NM	18.7	11	0.41	6.05	0.64	0.46	4.34	0.71	6.66	0.24	0.05	0.65	0.77	1.9	0.21	NM	0	NM	0	0	0.31	0	0.14	0	0	0.25	0	0	NM	500
5/12/2021	13:15	15:00	5/12/21 500	56.00	BS-03 100cfm	1.51	NM	18.4	10.6	0.4	5.99	0.61	0.02	4.69	0.67	6.94	0.21	0.05	0.62	0.22	1.9	NM	NM	-0.21	NM	0	0	0.25	0.01	0.11	0	0	0.25	0.01	0	23	500
5/13/2021	9:00	12:13	5/13/21 457	54.00	BS-03 100cfm	1.4	NM	16.7	9.83	0.37	3.78	0.46	-12.2	4.4	0.62	4.75	0.14	0	0.6	1.17	1.9	0.19	NM	-0.28	NM	NM	0	0.25	0.33	0.4	0	0	0.28	0	0	19.2	457
5/13/2021	13:09	14:50	5/13/21 457	55.00	BS-03 100cfm	1.41	NM	16.7	9.74	0.35	5.53	0.51	-6.24	4.31	0.6	4.58	0.13	0	0.46	NM	1.9	1.7	NM	-0.34	NM	NM	NM	0	0.18	NM	NM	NM	NM	NM	NM	14.1	457
5/14/2021	11:20	13:30	5/14/21 500	56.00	BS-03 50cfm	1.34	NM	16.6	9.91	0.34	4.55	0.49	NM	4.4	0.59	5.31	0.18	0	8.58	0.58	1.9	0.14	NM	-0.26	NM	0	0	0.17	0	1.26	0	0	0.21	0	0	18.2	500
5/18/2021	9:00	12:50	5/18/21 500	56.00	BS-03 50cfm	1.59	NM	18.8	10.9	0.48	6.32	0.63	0.1	4.97	0.73	7.27	0.25	0.07	0.61	0.57	1.9	0.23	NM	-0.02	NM	0	0	0.27	0	0.1	0	0	0.2	0	0	23.5	500
5/18/2021	13:30	15:30	5/18/21 500	56.00	BS-03 50cfm	1.6	NM	18.9	11.1	0.42	6.53	0.7	0.1	4.99	0.7	6.28	0.24	0.05	0.6	0.58	1.9	0.17	NM	-0.12	NM	0	0	0.26	0	0.11	0	0	0.21	0	0	23.9	500
5/19/2021	9:35	11:55	5/19/21 457	49.00	BS-03 50cfm	1.58	NM	17.8	10.5	0.4	6.12	0.57	0.15	4.75	0.67	5.38	0.3	0.1	0.6	0.8	1.9	0.22	NM	-0.19	NM	NM	NM	0.31	0.06	NM	NM	NM	NM	NM	NM	21.7	457
5/19/2021	13:40	16:05	5/19/21 470	49.00	BS-03 100cfm	1.5	NM	17.6	10.4	0.5	6.3	0.66	-0.66-0	4.78	0.75	5.98	0.27	0.12	0.76	0.7	1.9	0.3	NM	0	NM	NM	NM	0.34	0.08	NM	NM	NM	NM	NM	NM	22	470
5/20/2021	10:20	11:35	5/20/21 500	56.00	BS-03 100cfm	1.43	NM	17	9.9	0.41	5.7	0.5	-10.7	4.37	0.65	5.29	0.17	0.06	0.52	0.28	1.9	0.21	NM	-0.15	NM	NM	NM	0.26	0	0.11	NM	NM	0.28	0	0	21.8	500
5/26/2021	11:02	14:01	5/26/21 460	54.00	BS-03 150cfm	1.48	NM	18.2	10.4	0.37	0.1	0.03	-13	4.46	0.66	NM	0.07	0	0.61	NM	1.9	NM	NM	NM	NM	NM	NM	0.18	0	NM	NM	NM	NM	NM	NM	NM	460
5/27/2021	7:48	11:20	5/27/21 600	54.00	BS-03 200cfm	1.32	NM	16.3	9.28	0.33	5.66	0.51	-19.4	3.78	0.4	3.42	-0.03	0	0.49	-0.97	1.9	0.19	NM	-0.21	NM	NM	0	0	0	0.03	NM	NM	0.17	0	0	20.5	600
5/28/2021	10:15	11:35	5/28/21 510	53.50	BS-03 100cfm turned down because of elevated VOCs in GMW-O-12, field sheets contained additional vacuum readings from well head and manifold	NM	NM	NM	NM	NM	NM	NM	27.2	NM	NM	NM	NM	NM	NM	NM	1.9	NM	NM	54.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	510
6/1/2021	12:40	14:45	6/1/21 600	56.00	BS-03 restarted at 100cfm at 12:00pm after compressor service.	1.41	NM	12.6	7.04	0.27	4.2	0.44	53.4	3.14	0.42	4.48	0.12	0.03	0.51	NM	1.9	0.13	NM	-0.18	NM	NM	NM	0	0.14	0.21	NM	NM	0.24	0.04	0.04	14.2	600
6/10/2021	10:35	12:58	6/10/21 600	56.00	Variable vacuum for GMW-O-11, and vacuum was -0.1 to -0.25. Packer in well GMW-O-20, well vault VOC 9.0 ppm.	1.13	NM	10.9	6.04	0.1	4.11	0.41	54.5	4.1	0.38	NM	0.01	0	NM	NM	1.9	0.12	NM	NM	NM	NM	NM	-0.02	0	0.1	NM	NM	0.15	0	0	NM	600
6/10/2021	15:09	17:09	6/10/21 600	55.00	No end time for HSVE-1 on this field form. Vacuum continues to fluctuate on GMW-O-11. Packer installed, well vault VOC: 9.1ppmv for GMW-O-20 temporarily with well cap off. Vacuum was 0.05 to 0.51 for GMW-O-11	0.95	NM	11.1	6.21	0.14	4.21	0.42	54	4.12	0.4	NM	0.02	0	0	NM	1.9	0.12	NM	0	NM	NM	NM	0.02	0	0.51	NM	NM	0.33	0.03	0	18.1	600
6/11/2021	7:55	10:28	6/11/21 600	56.00	No Access Vehicle parked on SVM-16D,M,S. Packered well for GMW-O-12. Additional vacuum readings for GMW-O-14 and GMW-O-11.	0.85	NM	NM	NM	NM	2.75	0.34	NM	2.27	0.33	1.14	-0.1	-0.02	0.29	-1.35	1.9	0.29	NM	-0.65	NM	NM	NM	-0.04	0	0.2	NM	NM	0.15	0	0	2.3	600
6/22/2021	7:55	9:55	6/22/21 600	56.00	No end time for HSVE-1. Bumped BS-03 to 250 @ 10:58. Positive pressure no VOCs in vault for GMW-o-5. Checked packer sitting in good condition for GMW-0-12. Preumatic packer damamge for GMW-o-20, replaced with mechanical packer.	1.4	NM	12.7	7.04	0.27	4.04	0.43	NM	3.15	0.44	4.41	0.1	0.02	0.43	NM	1.9	0.11	NM	-0.6	NM	NM	NM	0.2	0.02	0.11	NM	NM	0.23	0.32	0.08	11.9	600
6/25/2021	8:45	11:02	6/25/21 550	55.10	Inside vaults = 0ppm VOC.	-0.94	NM	11.5	6.44	0.25	3.17	0.31	NM	2.67	0.38	NM	-0.01	0	0.34	NM	1.9	0.11	NM	-0.73	NM	NM	NM	-0.01	-0.01	0.12	NM	NM	0.19	0.01	0.15	7.03	550
6/28/2021	11:00	13:50	6/28/21 600	56.00	Vault VOCs = 0.0 for GMW-O-12 and GMW-O-20, Packers installed Vacuum for GMW-O-11 was between 0.3 and 0.21.	0.88	NM	11.5	6.51	0.24	3.11	0.21	NM	2.71	0.41	4.21	0.02	0.02	0.41	NM	1.9	0.1	NM	-0.64	NM	NM	NM	0.06	0.01	0.3	NM	NM	0.18	0.01	0.06	NM	600
Average						1.2	1.3	15.4	9.1	0.26	4.6	0.44	5.1	3.9	0.49	4.7	0.12	0.0	0.76	0.29	1.9	0.19	0.00	1.8	NM	0.00	0.05	0.17	0.03	0.17	0.00	0.01	0.18	0.02	0.01	17.3	

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

				Manual Measurements		Sheen/Odor	Field Calculations	PID
Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-11	200	4/6/2021	14:00	32	31.9	y	0.1	0.5
GMW-O-12	25	4/6/2021	14:15	31.19	32.02	y	1	36.4
GMW-O-20	120	4/6/2021	14:10	31.78	n/a	n	0	n/a
GMW-O-11	200	4/7/2021	9:34	32.1	32	y	0.1	1.1
GMW-O-12	25	4/7/2021	9:40	32.25	31.87	y	<1.0	6.3
GMW-O-20	120	4/7/2021	9:43	31.78	n/a	n	0	n/a
GMW-O-3	-90	4/7/2021	10:45	31.35	n/a	n	0	9.3
GMW-O-5	-150	4/7/2021	10:56	31.42	n/a	n	0	0.3
MW-SF-9	130	4/7/2021	11:05	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/7/2021	14:36	32.05	n/a	y	0.1	n/a
GMW-O-12	25	4/7/2021	14:20	31.28	31.97	y	<1.0	n/a
GMW-O-20	120	4/7/2021	14:32	31.85	n/a	n	0	n/a
GMW-O-3	-90	4/7/2021	14:47	31.37	n/a	n	0	n/a
GMW-O-5	-150	4/7/2021	14:55	31.38	n/a	n	0	n/a
MW-SF-9	130	4/7/2021	15:05	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/8/2021	14:00	32.05	n/a	n	n/a	0.5
GMW-O-12	25	4/8/2021	14:38	31.28	31.95	y	0.71	7.4
GMW-O-20	120	4/8/2021	14:20	31.85	n/a	n	0	n/a
GMW-O-3	-90	4/8/2021	14:12	31.37	n/a	n	0	0.9
GMW-O-5	-150	4/8/2021	12:50	31.38	n/a	n	0	4.9
GMW-O-11	200	4/15/2021	11:15	32.1	n/a	n	n/a	0
GMW-O-12	25	4/15/2021	11:30	32.04	n/a	n	n/a	0.8
GMW-O-2	160	4/15/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	4/15/2021	11:25	31.95	n/a	n	0	0
GMW-O-21	40	4/15/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-3	-90	4/15/2021	9:40	31.9	n/a	y	0	0
GMW-O-5	-150	4/15/2021	9:20	31.56	n/a	n	n/a	0
MW-SF-9	130	4/15/2021	12:05	32.53	n/a	n	0	n/a
GMW-O-11	200	4/21/2021	12:10	31.95	n/a	n	n/a	0.1
GMW-O-12	25	4/21/2021	12:33	31.63	n/a	n	n/a	0.1
GMW-O-2	160	4/21/2021	12:26	31.07	n/a	n	n/a	0.9
GMW-O-20	120	4/21/2021	12:18	31.65	n/a	n	n/a	0

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SFPP Norwalk Pump Station, Norwalk, California

				Manual Measurements		Sheen/Odor	Field Calculations	PID
Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-21	40	4/21/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-3	-90	4/21/2021	10:00	31.5	n/a	n	0	0.3
GMW-O-5	-150	4/21/2021	9:45	31.5	n/a	n	0	0
MW-SF-9	130	4/21/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/28/2021	12:40	n/a	NA	N	NA	1.2
GMW-O-12	25	4/28/2021	n/a	n/a	n/a	n/a	n/a	2.5
GMW-O-2	160	4/28/2021	11:59	31.66	n/a	n	NA	0.9
GMW-O-20	120	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.8
GMW-O-21	40	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.2
GMW-O-3	-90	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.4
GMW-O-5	-150	4/28/2021	n/a	n/a	n/a	n/a	n/a	0
GMW-O-11	200	5/5/2021	13:40	31.9	n/a	n/a	n/a	3.8
GMW-O-12	25	5/5/2021	13:50	31.06	n/a	n/a	n/a	3.9
GMW-O-2	160	5/5/2021	13:01	31.69	n/a	n/a	n/a	0
GMW-O-20	120	5/5/2021	13:45	31.37	n/a	n/a	n/a	0.9
GMW-O-21	40	5/5/2021	14:43	31.13	n/a	n/a	n/a	0.9
GMW-O-3	-90	5/5/2021	14:06	31.3	n/a	n/a	n/a	1.5
GMW-O-5	-150	5/5/2021	15:00	31.22	n/a	n/a	n/a	0.5
MW-SF-9	130	5/5/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-14	n/a	5/5/2021	n/a	23.9	n/a	n/a	n/a	n/a
GMW-O-11	200	5/11/2021	12:40	30.85	n/a	n/a	0	0.3
GMW-O-12	25	5/11/2021	12:55	28.47	n/a	n/a	0	0.1
GMW-O-2	160	5/11/2021	11:35	31.35	n/a	n/a	0	0.1
GMW-O-20	120	5/11/2021	12:48	29.52	n/a	n/a	0	0.3
GMW-O-21	40	5/11/2021	13:28	29.05	n/a	n/a	0	0
GMW-O-3	-90	5/11/2021	11:50	29.45	n/a	n/a	0	0.2
GMW-O-5	-150	5/11/2021	13:40	29.09	n/a	n/a	0	n/a
GMW-O-11	200	5/11/2021	15:30	30.79	n/a	n/a	0	0
GMW-O-12	25	5/11/2021	15:43	29.74	n/a	n/a	0	0.1
GMW-O-2	160	5/11/2021	15:03	31.03	n/a	n/a	0	0.1
GMW-O-20	120	5/11/2021	15:37	30.03	n/a	n/a	0	0.1

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

				Manual Measurements		Sheen/Odor	Field Calculations	PID
Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-21	40	5/11/2021	16:09	30.04	n/a	n/a	0	0
GMW-O-3	-90	5/11/2021	15:08	29.53	n/a	n/a	0	0.2
GMW-O-5	-150	5/11/2021	16:27	29.5	n/a	n/a	0	0
GMW-O-11	200	5/12/2021	14:40	30.35	n/a	n/a	0	0
GMW-O-12	25	5/12/2021	14:50	27.65	n/a	n/a	0	0.2
GMW-O-2	160	5/12/2021	13:32	31.25	n/a	n/a	0	0.2
GMW-O-20	120	5/12/2021	14:45	28.74	n/a	n/a	0	0.1
GMW-O-21	40	5/12/2021	14:16	27.54	n/a	n/a	0	0
GMW-O-3	-90	5/12/2021	13:38	28.65	n/a	n/a	0	1
GMW-O-5	-150	5/12/2021	13:46	28.82	n/a	n/a	0	n/a
GMW-O-11	200	5/12/2021	9:43	30.69	n/a	n/a	0	0.3
GMW-O-12	25	5/12/2021	10:00	32.09	n/a	n/a	0	8.1
GMW-O-2	160	5/12/2021	8:45	31.55	n/a	n/a	0	0.2
GMW-O-20	120	5/12/2021	9:48	31.5	n/a	n/a	0	0.5
GMW-O-21	40	5/12/2021	10:48	31.75	n/a	n/a	0	0.7
GMW-O-3	-90	5/12/2021	9:00	30.82	n/a	n/a	0	1.2
GMW-O-5	-150	5/12/2021	11:15	29.55	n/a	n/a	0	0.1
GMW-O-11	200	5/13/2021	11:30	30.38	n/a	n/a	n/a	0.6
GMW-O-12	25	5/13/2021	11:45	29.75	n/a	n/a	n/a	5000
GMW-O-2	160	5/13/2021	9:41	30.87	n/a	n/a	n/a	0.4
GMW-O-20	120	5/13/2021	11:37	29.73	n/a	n/a	n/a	0.3
GMW-O-21	40	5/13/2021	10:59	29.66	n/a	n/a	n/a	0..9
GMW-O-3	-90	5/13/2021	9:56	29.05	n/a	n/a	n/a	1.1
GMW-O-5	-150	5/13/2021	10:05	29.33	n/a	n/a	n/a	0.7
GMW-O-14	n/a	5/13/2021	10:18	28.7	n/a	n/a	n/a	3.2
GMW-O-11	200	5/13/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-12	25	5/13/2021	14:37	n/a	n/a	n/a	n/a	5000
GMW-O-2	160	5/13/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/13/2021	13:31	29.87	n/a	n/a	n/a	n/a
GMW-O-21	40	5/13/2021	14:22	29.83	n/a	n/a	n/a	2.4
GMW-O-3	-90	5/13/2021	13:38	29.28	n/a	n/a	n/a	5.2

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

				Manual Measurements		Sheen/Odor	Field Calculations	PID
Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-5	-150	5/13/2021	13:45	29.5	n/a	n/a	n/a	n/a
GMW-O-14	n/a	5/13/2021	13:57	28.75	n/a	n/a	n/a	4.9
GMW-O-11	200	5/18/2021	12:02	31.55	n/a	n	n/a	0.7
GMW-O-12	25	5/18/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-2	160	5/18/2021	12:30	31.4	n/a	n	n/a	0
GMW-O-20	120	5/18/2021	12:10	31.11	n/a	n	n/a	0.6
GMW-O-21	40	5/18/2021	11:04	30.4	n/a	n	n/a	0.3
GMW-O-3	-90	5/18/2021	12:20	31.71	n/a	n	n/a	0
GMW-O-5	-150	5/18/2021	10:11	31.3	n/a	n	n/a	0.8
GMW-O-11	200	5/18/2021	14:50	31.52	n/a	n	n/a	0.1
GMW-O-12	25	5/18/2021	15:05	31.52	n/a	n	n/a	3.6
GMW-O-2	160	5/18/2021	15:19	31.41	n/a	n	n/a	0
GMW-O-20	120	5/18/2021	14:55	30.46	n/a	n	n/a	0.2
GMW-O-21	40	5/18/2021	14:20	30.85	n/a	n	n/a	0.2
GMW-O-3	-90	5/18/2021	15:12	31.88	n/a	n	n/a	0
GMW-O-5	-150	5/18/2021	13:30	31.31	n/a	n	n/a	0.7
GMW-O-11	200	5/14/2021	12:34	31.97	n/a	n	n/a	0.1
GMW-O-12	25	5/14/2021	12:50	n/a	n/a	n	n/a	0
GMW-O-2	160	5/14/2021	11:48	31.69	n/a	n	n/a	5000
GMW-O-20	120	5/14/2021	12:42	31.95	n/a	n	n/a	0
GMW-O-21	40	5/14/2021	13:11	30.15	n/a	n	n/a	2.3
GMW-O-3	-90	5/14/2021	11:57	31.36	n/a	n	n/a	0
GMW-O-5	-150	5/14/2021	13:28	30.11	n/a	n	n/a	0
GMW-O-11	200	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-12	25	5/19/2021	11:55	31.91	n/a	n/a	n/a	11
GMW-O-2	160	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/19/2021	11:45	31.36	n/a	n/a	n/a	0.4
GMW-O-21	40	5/19/2021	11:09	31.71	n/a	n/a	n/a	0.7
GMW-O-3	-90	5/19/2021	9:50	30.83	n/a	n/a	n/a	5.4
GMW-O-5	-150	5/19/2021	10:02	31.18	n/a	n/a	n/a	0.2
GMW-O-11	200	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a

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SFPP Norwalk Pump Station, Norwalk, California

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Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-12	25	5/19/2021	16:05	29.58	n/a	n/a	n/a	n/a
GMW-O-2	160	5/19/2021	n/a	n/a	n/a	n/a	n/a	17.4
GMW-O-20	120	5/19/2021	15:50	29.49	n/a	n/a	n/a	0.4
GMW-O-21	40	5/19/2021	14:47	29.05	n/a	n/a	n/a	0.1
GMW-O-3	-90	5/19/2021	13:40	29.71	n/a	n/a	n/a	1.3
GMW-O-5	-150	5/19/2021	13:48	30.59	n/a	n/a	n/a	0.3
GMW-O-11	200	5/20/2021	11:25	30.49	n/a	n/a	n/a	0.3
GMW-O-12	25	5/20/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-2	160	5/20/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/20/2021	11:38	29.92	n/a	n/a	n/a	0.3
GMW-O-21	40	5/20/2021	11:06	29.93	n/a	n/a	n/a	0.3
GMW-O-3	-90	5/20/2021	10:47	29.98	n/a	n/a	n/a	0.3
GMW-O-5	-150	5/20/2021	10:38	30.65	n/a	n/a	n/a	0.1
GMW-O-2	160	5/25/2021	9:48	31.05	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/25/2021	9:45	29.36	n/a	n/a	n/a	n/a
GMW-O-11	200	5/25/2021	9:28	30.95	n/a	n/a	n/a	n/a
GMW-O-12	25	5/25/2021	9:40	31.34	n/a	n/a	n/a	n/a
GMW-O-20	120	5/25/2021	9:32	29.89	n/a	n/a	n/a	n/a
GMW-O-21	40	5/25/2021	10:12	29.11	n/a	n/a	n/a	n/a
GMW-O-2	160	5/25/2021	14:39	31.11	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/25/2021	14:29	29.74	n/a	n/a	n/a	n/a
GMW-O-5	-150	5/25/2021	13:10	32.94	n/a	n/a	n/a	n/a
GMW-O-11	200	5/25/2021	13:56	31.15	n/a	n/a	n/a	n/a
GMW-O-12	25	5/25/2021	14:20	31.44	n/a	n/a	n/a	n/a
GMW-O-20	120	5/25/2021	14:06	30.15	n/a	n/a	n/a	n/a
GMW-O-21	40	5/25/2021	13:31	30.85	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/26/2021	13:05	29.69	n/a	n/a	n/a	0
GMW-O-2	160	5/27/2021	9:45	30.81	n/a	n/a	n/a	0
GMW-O-3	-90	5/27/2021	9:48	28.95	n/a	n/a	n/a	0
GMW-O-5	-150	5/27/2021	9:55	30.05	n/a	n/a	n/a	0
GMW-O-11	200	5/27/2021	10:59	29.98	n/a	n/a	n/a	0

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

				Manual Measurements		Sheen/Odor	Field Calculations	PID
Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-12	25	5/27/2021	11:10	n/a	n/a	n/a	n/a	535
GMW-O-14	10	5/27/2021	10:01	n/a	n/a	n/a	n/a	0
GMW-O-20	120	5/27/2021	11:04	n/a	n/a	n/a	n/a	405
GMW-O-21	40	5/27/2021	10:30	28.74	n/a	n/a	n/a	0
GMW-O-3	-90	6/1/2021	13:39	30.44	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/1/2021	12:43	31.15	n/a	n/a	n/a	n/a
GMW-O-11	200	6/1/2021	14:15	30.25	n/a	n/a	n/a	n/a
GMW-O-12	25	6/1/2021	13:38	37.75	n/a	n/a	n/a	n/a
GMW-O-14	10	6/1/2021	12:52	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	6/1/2021	14:22	30.17	n/a	n/a	n/a	n/a
GMW-O-21	40	6/1/2021	13:33	30.66	n/a	n/a	n/a	n/a
GMW-O-11	200	6/10/2021	11:15	30.72	n/a	n/a	n/a	n/a
GMW-O-12	25	6/10/2021	11:25	28	n/a	n/a	n/a	n/a
GMW-O-11	200	6/10/2021	14:27	30.63	n/a	n/a	n/a	n/a
GMW-O-12	25	6/10/2021	14:37	27.95	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/11/2021	10:18	28.03	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/11/2021	10:10	29.23	n/a	n/a	n/a	n/a
GMW-O-11	200	6/11/2021	9:04	30.25	n/a	n/a	n/a	n/a
GMW-O-20	120	6/11/2021	9:10	28.61	n/a	n/a	n/a	n/a
GMW-O-21	40	6/11/2021	9:50	28.45	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/22/2021	10:20	30.49	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/22/2021	10:08	30.36	n/a	n/a	n/a	n/a
GMW-O-21	40	6/22/2021	9:45	31.34	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/28/2021	13:08	30.55	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/28/2021	13:30	30.45	n/a	n/a	n/a	n/a
GMW-O-11	200	6/28/2021	12:30	30.59	n/a	n/a	n/a	n/a
GMW-O-21	40	6/28/2021	12:59	30.91	n/a	n/a	n/a	n/a