RAMBOLL ENVIRON

ENVIRONMENT & HEALTH

Mr. Dan Wojkowski
ICI Development Company
2222 East 17th Street
Santa Ana, CA 92705

REPORT OF SCREENING SOIL VAPOR SURVEY
1001 EAST IMPERIAL HIGHWAY
LA HABRA, CALIFORNIA

January 4, 2016

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Dear Mr. Wojkowski:

Ramboll Environ US Corporation (Ramboll Environ) is pleased to submit this letter report to ICI Development Company ("ICI" or the "Client") to document the findings of the *Screening Soil Vapor Survey* (*Soil Vapor Survey*) at the property located at 1001 East Imperial Highway in La Habra, California ("site," Figure 1). The background, objectives of the investigations, scope of work and findings, development of screening levels, and conclusions are presented below.

BACKGROUND

The city of La Habra currently owns the approximately 0.9-acre site, which consists of a surface parking lot and the foundations of a former building. From its construction in 1972 until it was demolished in 2008, the building was occupied by banks and a nightclub.

As part of the recently completed a Phase I environmental site assessment (Phase I ESA), Ramboll Environ reviewed available data for nearby properties from local agencies, including the Santa Ana Regional Water Quality Control Board (SARWQCB). Records from the SARWQCB indicated that chlorinated solvents, primarily tetrachloroethene (PCE), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE), were identified in groundwater at the CVS Distribution Center (CVS, 777 South Harbor Boulevard) located adjacent to the site to the north, and the Beckman Coulter property (BCI, 3400 North Harbor Boulevard) located approximately 900 feet northeast of the site at its nearest point. Remediation is currently underway at both properties.

As part of the Phase I ESA, Ramboll Environ performed an evaluation of groundwater cleanup levels for the potential vapor intrusion pathway, and concluded that adverse human health impacts from potential volatile organic compounds (VOCs) vapor intrusion are not anticipated to the proposed future on-site building occupants. Nonetheless, ICI requested that Ramboll Environ perform a screening soil vapor survey at the site to assess the potential for VOC vapor intrusion into the future site building. It is Ramboll Environ's understanding that this request was made by ICI based on a potential future tenant at the site.

OBJECTIVE

The objective of the limited soil vapor investigation was to evaluate the potential for vapor intrusion from VOC-impacted groundwater into future on-site structure(s) as presented on Figure 2.

SCOPE OF WORK AND FINDINGS

The scope of work included (1) field mobilization; (2) soil vapor survey and laboratory analyses; and, (3) data evaluation and reporting. Drilling and sampling activities were directed by Ramboll Environ field personnel working under the supervision of a California Registered Geologist. The findings are presented below.

Task 1: Field Mobilization

Prior to initiation of drilling activities, Ramboll Environ contacted Underground Service Alert (USA) to mark the locations of all major utilities in the proposed boring locations. In addition to the services provided by USA, Ramboll Environ contracted Spectrum Geophysics of Burbank, California, to conduct a geophysical survey in the immediate vicinity of the proposed boring locations to identify any subsurface structures or underground obstructions. Ramboll Environ also contracted out with the appropriate subcontractors, such as drillers and an analytical laboratory for the planned fieldwork.

Ramboll Environ prepared a site-specific Health and Safety Plan (HASP). The HASP is designed to minimize exposure of Ramboll Environ's field personnel to potentially hazardous materials. Ramboll Environ field personnel were required to implement the procedures presented in the HASP while conducting the planned field work.

Task 2: Soil Vapor Survey and Laboratory Analysis

On November 18, 2015, under Ramboll Environ's oversight, H&P, Inc. of Carlsbad, California (H&P), advanced six borings to a depth of approximately 5.5 feet below ground surface (bgs) using direct-push drilling technology. Six temporary soil vapor probes were installed at the boring locations (Probes SV-1 through SV-6) at a depth of approximately 5 feet bgs (see Figure 2) to collect soil vapor samples. All six borings were located within the proposed building footprint (see Figure 2).

Soil vapor probes were installed and sampled in general accordance with guidelines established by the California Environmental Protection Agency (Cal/EPA)/Department of Toxic Substances Control (DTSC)/California Regional Water Quality Control Board – Los Angeles and San Francisco Regions (LARWQCB/SFRWQCB) in "*Advisory – Active Soil Gas Investigations*", dated July 2015. Approximately one foot of sand was emplaced around each soil vapor point, followed by dry and hydrated bentonite to match the existing ground surface. Each soil vapor point was allowed to equilibrate for approximately two hours prior to sampling. Three purge volumes were removed from each probe to remove soil vapor from the sampling tubing prior to sample collection. Consistent with the regulatory advisory, 1,1-difluoroethane (1,1-DFA) was used as leak detection compound to test the surface seal at each probe location.

Soil vapor samples from Probes SV-1 through SV-6 were collected in a gas-tight syringe by a mobile laboratory operated by H&P. For quality control purposes, a duplicate sample was collected from Probe SV-3. In addition, one equipment blank sample was collected from the batch of tubing used to build the probes. Soil vapor samples were analyzed for VOCs by H&P Method 8260SV (a method based on United States Environmental Protection Agency [USEPA] Method 8260B, modified to test soil vapor specifically).

Prior to collection of the samples and between successive sampling attempts, sampling equipment was decontaminated to minimize the potential for cross-contamination. After the collection of the soil vapor samples in Probes SV-1 through SV-6, the tubing was removed and the boreholes were patched to match

the surrounding asphalt. Decontamination water generated during these activities was placed in a sealed 5-gallon bucket and transported off-site for disposal by H&P.

Task 3: Data Evaluation and Reporting

Findings

Soil vapor samples were collected from a depth of approximately five feet bgs at all locations. The soil vapor laboratory analytical reports are included in Attachment A and sample locations are shown on Figure 2. Soil vapor concentrations of PCE, TCE, and 1,1-DCE (the primary chemicals of potential concern on-site) and other VOCs reported above laboratory reporting limits (RLs) are presented in Table. In summary:

- PCE was reported in all probes, at concentrations ranging from 0.06 micrograms per liter (µg/L) at Probes SV-5 and SV-6 to 0.62 µg/L at Probe SV-4.
- TCE was reported in all probes, at concentrations ranging from 0.11 µg/L at Probe SV-5 to 1.2 µg/L at Probe SV-1.
- 1,1-DCE was reported in Probe SV-2 at a concentration of 0.89 µg/L.
- Vinyl chloride was reported in Probes SV-2 and SV-6, at concentrations of 0.64 µg/L and 0.04 µg/L, respectively.
- Cis-1,2-dichloroethene (cis-1,2-DCE) was reported in Probes SV-1, SV-2, and SV-6, at concentrations of 0.15 µg/L, 6.6 µg/L, and 0.32 µg/L, respectively.
- Trans-1,2-dichloroethene (trans-1,2-DCE) was reported in Probe SV-2 at a concentration of 0.73 µg/L.
- 1,1,2-Trichlorotrifluoroethane (Freon-113) was reported in Probe SV-3, at concentrations of 0.15 µg/L and 0.11 µg/L (in the primary and duplicate samples, respectively).
- Benzene was reported in all probes, at concentrations ranging from 0.08 in Probe SV-1 to 0.14 in Probe SV-3.
- Toluene was reported in all probes, at concentrations ranging from 0.41 µg/L in Probe SV-3 (duplicate) to 1.1 µg/L in Probe SV-5.
- Ethylbenzene was reported in all probes, at concentrations ranging from 0.10 µg/L in Probe SV-1 to 0.39 µg/L in Probe SV-4.
- m/p-Xylene was reported in all probes, at concentrations ranging from 0.28 µg/L in Probe SV-3 (duplicate) to 1.8 µg/L in Probe SV-4.
- o-Xylene was reported in all probes, at concentrations ranging from 0.12 µg/L in Probe SV-3 to 0.77 µg/L in Probe SV-4.

DEVELOPMENT OF RISK-BASED TARGET CONCENTRATIONS FOR SOIL VAPOR

Ramboll Environ evaluated potential human health impacts to future commercial workers through exposure to VOCs migrating from soil vapor to indoor air into the proposed future building at the site. As a preliminary step, site-specific soil vapor risk-based target concentrations (RBTCs) were developed for VOCs detected in soil vapor at the Site for a commercial/industrial use scenario with or without engineering fill (see Attachment B). RBTCs represent the concentrations of chemicals that can remain in soil vapor and not present an unacceptable risk to human health. These RBTCs were then used to evaluate potential human health impacts.

As a conservative measure, the thresholds of concern used to develop the RBTCs are an excess lifetime cancer risk of one-in-a-million (10^{-6}) and a hazard quotient (HQ) of 1.0 for noncancer health effects. The National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] § 300) is commonly cited as the basis for target risk and hazard levels. According to the NCP, lifetime incremental cancer risks posed by a site should not exceed one in a million (1×10^{-6}) to one hundred in a million (1×10^{-4}), and noncarcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., HQ greater than one). As a conservative measure, the site specific RBTCs are calculated to correspond to an estimated cancer risk of 1×10^{-6} (the low or conservative end of the target risk range) or a noncancer HQ of 1.0.

DATA EVALUATION

Ramboll Environ evaluated the recently obtained soil vapor data to assess soil vapor conditions in the area of the proposed building footprint to assess the potential for VOC vapor intrusion at the site. As part of its data evaluation, Ramboll Environ compared the soil vapor data generated from the site to the site-specific RBTCs discussed above under commercial/industrial land use scenarios with and without engineered fill.

Vinyl chloride was the only chemical reported in the soil vapor samples above its respective RBTC under a commercial/industrial land use scenario, which is the existing zoning for the site.

Engineered Fill under Commercial / Industrial Land Use Scenario

- Probes SV-1 through SV-6 were located in the asphalt parking lot within the proposed building footprint (see Figure 2). A comparison of the results from these soil vapor probes to the site-specific RBTCs for a commercial/industrial land use with engineered fill shows that vinyl chloride, a breakdown product of PCE and TCE, was detected at 0.64 µg/L in one sample, Probe SV-2, above its RBTC of 0.43 µg/L. The reported vinyl chloride concentration at Probe SV-2 corresponds to an excess lifetime cancer risk of 1×10^{-6} and, accordingly, falls within the lower end of the target risk range (1×10^{-6} to 1×10^{-4}) established by the USEPA.
- The other analytes reported in soil vapor (i.e., Freon 113, 1,1-DCE, benzene, cis-1,2-DCE, ethylbenzene, m/p-xylene, o-xylene, PCE, toluene, TCE, and trans-1,2-DCE) were all below their respective RBTCs for commercial/industrial land use with engineered fill.
- The concentrations of all VOCs reported in soil vapor correspond to a cumulative excess lifetime cancer risk of 2×10^{-6} and, accordingly, fall within the lower end of the target risk range (1×10^{-6} to 1×10^{-4}) established by the USEPA.

No Engineered Fill under Commercial / Industrial Land Use Scenario

- Probes SV-1 through SV-6 were located in the asphalt parking lot within the proposed building footprint (see Figure 2). A comparison of the results from these soil vapor probes to the site-specific RBTCs for a current commercial/industrial building use with no engineered fill shows that vinyl chloride was detected at 0.64 µg/L in one sample, Probe SV-2, above its RBTC of 0.28 µg/L. The reported vinyl chloride concentration at Probe SV-2 corresponds to an excess lifetime cancer risk of 2×10^{-6} and, accordingly, falls within the lower end of the target risk range (1×10^{-6} to 1×10^{-4}) established by the USEPA.
- The other analytes reported in soil vapor (i.e., Freon 113, 1,1-DCE, benzene, cis-1,2-DCE, ethylbenzene, m/p-xylene, o-xylene, PCE, toluene, TCE, and trans-1,2-DCE) were all below their respective RBTCs for commercial/industrial land use with no engineered fill.
- The concentrations of all VOCs reported in soil vapor correspond to a cumulative excess lifetime cancer risk of 3×10^{-6} and, accordingly, falls within the lower end of the target risk range (1×10^{-6} to 1×10^{-4}) established by the USEPA.

Conclusions/Recommendations

Based on Ramboll Environ's evaluation of the soil vapor survey findings, Ramboll Environ presents the following conclusions and recommendations:

- VOCs reported in soil vapor, with the exception of vinyl chloride detected at Probe SV-2, are below their site-specific RBTCs for commercial/industrial land use. Although vinyl chloride was reported at Probe SV-2 at a concentration above its site-specific RBTCs, the risk associated at that location falls within the lower end of the USEPA risk management range.
- The overall risks associated with VOCs detected during the screening soil vapor survey beneath the proposed future building footprint are on the low end of the USEPA risk management range and, accordingly, no mitigation measures (i.e., the installation of a vapor barrier beneath the proposed building footprint) are warranted for the protection of future workers under a commercial/industrial land use scenario.

CLOSURE

We appreciate the opportunity to be of service to you and look forward to working with you on this project.

Very truly yours,

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Enclosures

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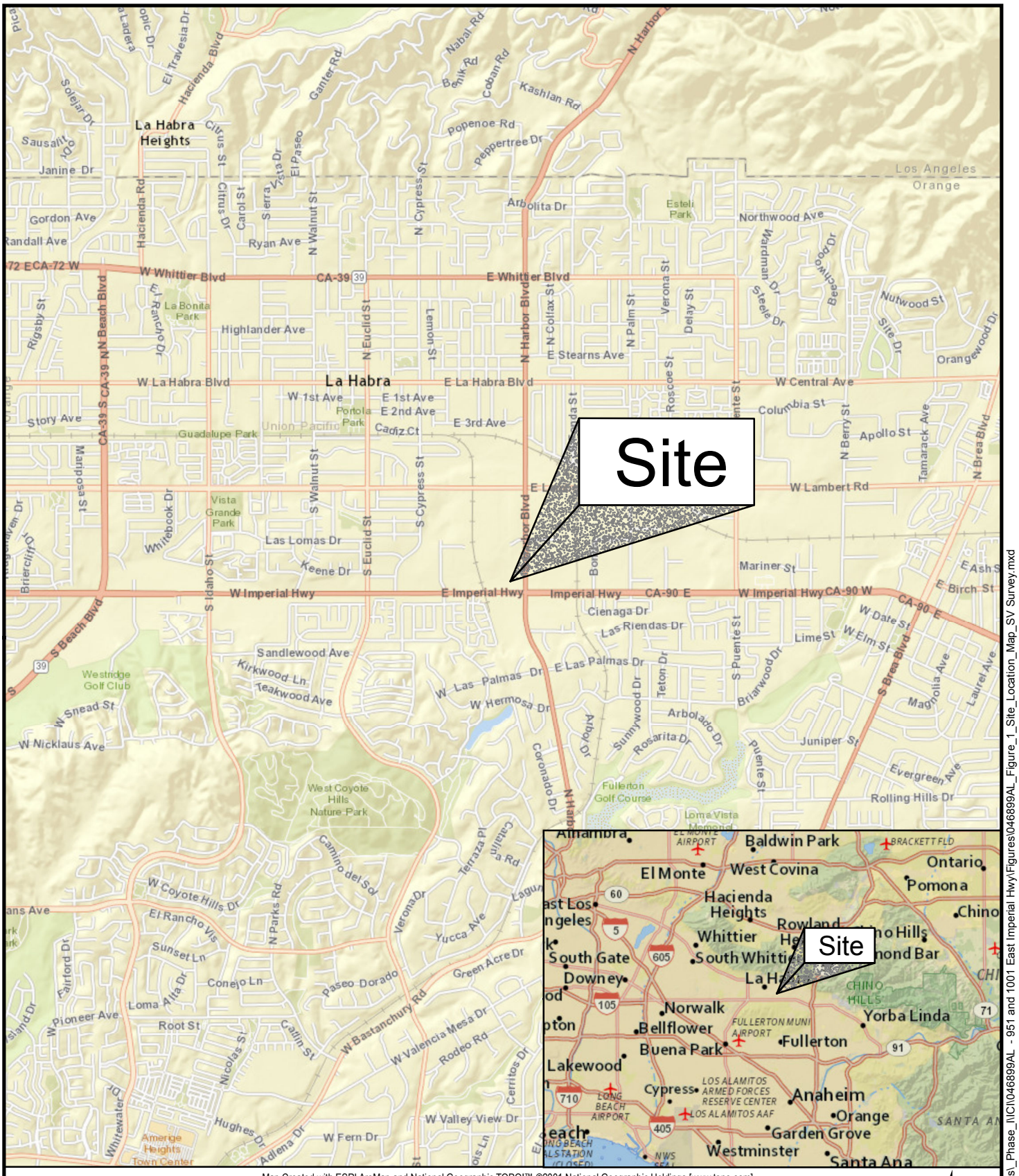
TABLE

Table 1. Summary of VOCs in Soil Gas Samples
1001 East Imperial Highway
La Habra, California

Sampling Location	Date	Depth (feet bgs)	1,1,2 Trichlorotrifluorethane (F113)	1,1-Dichlorethene	Benzene	cis-1,2-Dichloroethene	Ethylbenzene	m,p-Xylene	o-Xylene	Tetrachloroethene	Toluene	Trichloroethene	trans-1,2-Dichlorethene	Vinyl Chloride
Soil Vapor RBTC - No Engineered Fill			**266,677**	**581**	**0.81**	**73**	**10**	**895**	**895**	**4.4**	**2,529**	**6.0**	**748**	**0.28**
Soil Vapor RBTC - Engineered Fill			**437,653**	**927**	**1.3**	**121**	**17**	**1,473**	**1,473**	**7.3**	**4,061**	**10**	**1,250**	**0.43**
SV-1	11/18/15	5	<0.10	<0.10	0.08	0.15	0.10	0.46	0.16	0.22	0.43	1.2	<0.10	<0.01
SV-2	11/18/15	5	<0.10	0.89	0.10	6.6	0.18	0.82	0.29	0.16	0.71	0.56	0.73	0.64
SV-3	11/18/15	5	0.15	<0.10	0.14	<0.10	0.11	0.40	0.12	0.33	0.59	0.62	<0.10	<0.01
SV-3-REP	*11/18/15*	*5*	*0.11*	*<0.10*	*0.10*	*<0.10*	*<0.10*	*0.28*	*<0.02*	*0.26*	*0.41*	*0.50*	*<0.10*	*<0.01*
SV-4	11/18/15	5	<0.10	<0.10	0.07	<0.10	0.39	1.8	0.77	0.62	1.1	0.67	<0.10	<0.01
SV-5	11/18/15	5	<0.10	<0.10	0.11	<0.10	0.13	0.60	0.21	0.06	0.54	0.11	<0.10	<0.01
SV-6	11/18/15	5	<0.10	<0.10	0.10	0.32	0.13	0.58	0.18	0.06	0.62	0.29	<0.10	0.04
Material Blank	11/18/15	5	<0.10	<0.10	<0.02	<0.10	<0.10	<0.10	<0.10	<0.02	<0.20	<0.02	<0.10	<0.01

Notes:
RL - Reporting Limit
REP - Replicate sample
SV - Soil Vapor
bgs - below ground surface
Summarized data reflects detected volatile organic compounds (VOCs), all other compounds were < laboratory RL.
All concentrations are reported in micrograms per liter (µg/L).
RBTC - risk based target concentration.
The RBTCs presented in Table 1 include the more conservative of the cancer vs. non-cancer risks. See Attachment B for full analysis and development.

FIGURES



SOURCE:
National Geographic World Map
ESRI ArcGIS Online
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Reference Data: National Geographic, Esri, DeLorme, HERE, iPC, NRCAN, METI

Map Created with ESRI ArcMap and National Geographic TOPO!™ ©2001 National Geographic Holdings [www.topo.com]

0 0.5 1 MILES

2,500 0 2,500 5,000 7,500 10,000 FEET

CONTOUR INTERVAL 40 FEET
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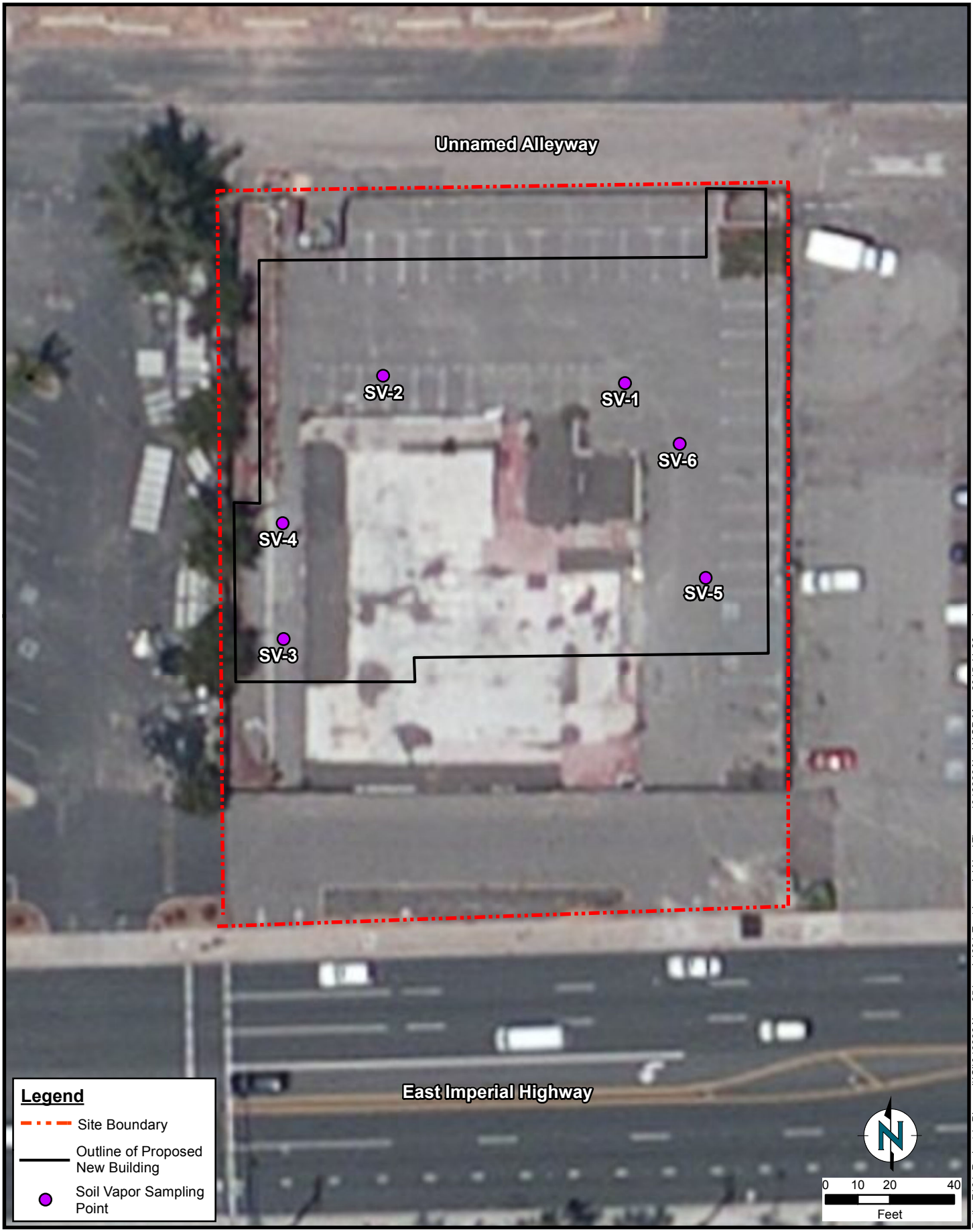
Site Location Map

1001 East Imperial Highway
La Habra, California

Figure
1

DRAFTED BY: MHL | Date: 11/24/2015 | PROJECT: 04-6899AL



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Soil Vapor Sampling Points

1001 East Imperial Highway
La Habra, California

Figure
2

DRAFTED BY: KMY | Date: 12/4/2015 | PROJECT: 04-6899AL

ATTACHMENT A
LABORATORY ANALYTICAL REPORTS

Mobile Geochemistry Inc.

24 November 2015

Ms. Seema Sutarwala Turner
Ramboll Environ - Los Angeles
707 Wilshire Blvd, Suite 4950
Los Angeles, CA 90017

H&P Project: RAM111815-SB1
Client Project: 04-6899AL / 1001 E Imperial Hwy

Dear Ms. Seema Sutarwala Turner:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 18-Nov-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis Villarreal

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Material Blank	E511084-01	Vapor	18-Nov-15	18-Nov-15
SV-1-5'	E511084-02	Vapor	18-Nov-15	18-Nov-15
SV-4-5'	E511084-03	Vapor	18-Nov-15	18-Nov-15
SV-3-5'	E511084-04	Vapor	18-Nov-15	18-Nov-15
SV-3-5' Rep	E511084-05	Vapor	18-Nov-15	18-Nov-15
SV-5-5'	E511084-06	Vapor	18-Nov-15	18-Nov-15
SV-6-5'	E511084-07	Vapor	18-Nov-15	18-Nov-15
SV-2-5'	E511084-08	Vapor	18-Nov-15	18-Nov-15

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

DETECTIONS SUMMARY

Sample ID: **Material Blank** Laboratory ID: **E511084-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-1-5'** Laboratory ID: **E511084-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
cis-1,2-Dichloroethene	**0.15**	0.10	ug/l	H&P 8260SV	
Benzene	**0.08**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**1.2**	0.02	ug/l	H&P 8260SV	
Toluene	**0.43**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.22**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.10**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**0.46**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.16**	0.10	ug/l	H&P 8260SV	

Sample ID: **SV-4-5'** Laboratory ID: **E511084-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Benzene	**0.07**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**0.67**	0.02	ug/l	H&P 8260SV	
Toluene	**1.1**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.62**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.39**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**1.8**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.77**	0.10	ug/l	H&P 8260SV	

Sample ID: **SV-3-5'** Laboratory ID: **E511084-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
1,1,2 Trichlorotrifluoroethane (F113)	**0.15**	0.10	ug/l	H&P 8260SV	
Benzene	**0.14**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**0.62**	0.02	ug/l	H&P 8260SV	
Toluene	**0.59**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.33**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.11**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**0.40**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.12**	0.10	ug/l	H&P 8260SV	

H&P Mobile
Geochemistry Inc.

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Sample ID: **SV-3-5' Rep** Laboratory ID: **E511084-05**

Analyte	Result	Reporting Limit	Units	Method	Notes
1,1,2 Trichlorotrifluoroethane (F113)	**0.11**	0.10	ug/l	H&P 8260SV	
Benzene	**0.10**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**0.50**	0.02	ug/l	H&P 8260SV	
Toluene	**0.41**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.26**	0.02	ug/l	H&P 8260SV	
m,p-Xylene	**0.28**	0.10	ug/l	H&P 8260SV	

Sample ID: **SV-5-5'** Laboratory ID: **E511084-06**

Analyte	Result	Reporting Limit	Units	Method	Notes
Benzene	**0.11**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**0.11**	0.02	ug/l	H&P 8260SV	
Toluene	**0.54**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.06**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.13**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**0.60**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.21**	0.10	ug/l	H&P 8260SV	

Sample ID: **SV-6-5'** Laboratory ID: **E511084-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**0.04**	0.01	ug/l	H&P 8260SV	
cis-1,2-Dichloroethene	**0.32**	0.10	ug/l	H&P 8260SV	
Benzene	**0.10**	0.02	ug/l	H&P 8260SV	
Trichloroethene	**0.29**	0.02	ug/l	H&P 8260SV	
Toluene	**0.62**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.06**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.13**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**0.58**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.18**	0.10	ug/l	H&P 8260SV	

Sample ID: **SV-2-5'** Laboratory ID: **E511084-08**

Analyte	Result	Reporting Limit	Units	Method	Notes
Vinyl chloride	**0.64**	0.01	ug/l	H&P 8260SV	
1,1-Dichloroethene	**0.89**	0.10	ug/l	H&P 8260SV	
trans-1,2-Dichloroethene	**0.73**	0.10	ug/l	H&P 8260SV	
cis-1,2-Dichloroethene	**6.6**	0.10	ug/l	H&P 8260SV	
Benzene	**0.10**	0.02	ug/l	H&P 8260SV	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Sample ID: **SV-2-5'** Laboratory ID: **E511084-08**

Analyte	Result	Reporting Limit	Units	Method	Notes
Trichloroethene	**0.56**	0.02	ug/l	H&P 8260SV	
Toluene	**0.71**	0.20	ug/l	H&P 8260SV	
Tetrachloroethene	**0.16**	0.02	ug/l	H&P 8260SV	
Ethylbenzene	**0.18**	0.10	ug/l	H&P 8260SV	
m,p-Xylene	**0.82**	0.10	ug/l	H&P 8260SV	
o-Xylene	**0.29**	0.10	ug/l	H&P 8260SV	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
Material Blank (E511084-01) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	ND	0.02	"	"	"	"	"	"	
Trichloroethene	ND	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	ND	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	ND	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	ND	0.10	"	"	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
Material Blank (E511084-01) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*113 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*117 %*		*75-125*	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1-5' (E511084-02) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.15**	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.08**	0.02	"	"	"	"	"	"	
Trichloroethene	**1.2**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.43**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.22**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.10**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.46**	0.10	"	"	"	"	"	"	

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Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1-5' (E511084-02) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.16**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*119 %*		*75-125*	"	"	"	"	

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Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4-5' (E511084-03) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.07**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.67**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**1.1**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.62**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.39**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**1.8**	0.10	"	"	"	"	"	"	

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Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4-5' (E511084-03) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.77**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*114 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*102 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*108 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*124 %*		*75-125*	"	"	"	"	

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Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3-5' (E511084-04) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	**0.15**	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.14**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.62**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.59**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.33**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.11**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.40**	0.10	"	"	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3-5' (E511084-04) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.12**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*115 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*117 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*113 %*		*75-125*	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3-5' Rep (E511084-05) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	**0.11**	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.10**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.50**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.41**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.26**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	ND	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.28**	0.10	"	"	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3-5' Rep (E511084-05) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*120 %*		*75-125*	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5-5' (E511084-06) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	ND	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.11**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.11**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.54**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.06**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.13**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.60**	0.10	"	"	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5-5' (E511084-06) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.21**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*109 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*114 %*		*75-125*	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6-5' (E511084-07) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	**0.04**	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.32**	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.10**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.29**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.62**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.06**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.13**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.58**	0.10	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6-5' (E511084-07) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.18**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*106 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*106 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*		*75-125*	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2-5' (E511084-08) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
1,1-Difluoroethane (LCC)	ND	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.10	"	"	"	"	"	"	
Chloromethane	ND	0.10	"	"	"	"	"	"	
Vinyl chloride	**0.64**	0.01	"	"	"	"	"	"	
Bromomethane	ND	0.10	"	"	"	"	"	"	
Chloroethane	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	**0.89**	0.10	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.10	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"	"	"	"	"	"	
trans-1,2-Dichloroethene	**0.73**	0.10	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.10	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**6.6**	0.10	"	"	"	"	"	"	
Chloroform	ND	0.02	"	"	"	"	"	"	
Bromochloromethane	ND	0.10	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.02	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.02	"	"	"	"	"	"	
Benzene	**0.10**	0.02	"	"	"	"	"	"	
Trichloroethene	**0.56**	0.02	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Bromodichloromethane	ND	0.10	"	"	"	"	"	"	
Dibromomethane	ND	0.10	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
Toluene	**0.71**	0.20	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.10	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.10	"	"	"	"	"	"	
Tetrachloroethene	**0.16**	0.02	"	"	"	"	"	"	
Dibromochloromethane	ND	0.10	"	"	"	"	"	"	
Chlorobenzene	ND	0.02	"	"	"	"	"	"	
Ethylbenzene	**0.18**	0.10	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
m,p-Xylene	**0.82**	0.10	"	"	"	"	"	"	

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2-5' (E511084-08) Vapor Sampled: 18-Nov-15 Received: 18-Nov-15									
o-Xylene	**0.29**	0.10	ug/l	0.01	EK51806	18-Nov-15	18-Nov-15	H&P 8260SV	
Styrene	ND	0.10	"	"	"	"	"	"	
Bromoform	ND	0.10	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.10	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.10	"	"	"	"	"	"	
n-Propylbenzene	ND	0.10	"	"	"	"	"	"	
Bromobenzene	ND	0.10	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.10	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.10	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.10	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.10	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.10	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.02	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.10	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*101 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*		*75-125*	"	"	"	"	

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707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK51806 - EPA 5030										
Blank (EK51806-BLK1)				Prepared & Analyzed: 18-Nov-15						
1,1-Difluoroethane (LCC)	ND	0.10	ug/l							
Dichlorodifluoromethane (F12)	ND	0.10	"							
Chloromethane	ND	0.10	"							
Vinyl chloride	ND	0.01	"							
Bromomethane	ND	0.10	"							
Chloroethane	ND	0.10	"							
Trichlorofluoromethane (F11)	ND	0.10	"							
1,1-Dichloroethene	ND	0.10	"							
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.10	"							
Methylene chloride (Dichloromethane)	ND	0.10	"							
Methyl tertiary-butyl ether (MTBE)	ND	0.10	"							
trans-1,2-Dichloroethene	ND	0.10	"							
1,1-Dichloroethane	ND	0.10	"							
2,2-Dichloropropane	ND	0.10	"							
cis-1,2-Dichloroethene	ND	0.10	"							
Chloroform	ND	0.02	"							
Bromochloromethane	ND	0.10	"							
1,1,1-Trichloroethane	ND	0.10	"							
1,1-Dichloropropene	ND	0.10	"							
Carbon tetrachloride	ND	0.02	"							
1,2-Dichloroethane (EDC)	ND	0.02	"							
Benzene	ND	0.02	"							
Trichloroethene	ND	0.02	"							
1,2-Dichloropropane	ND	0.10	"							
Bromodichloromethane	ND	0.10	"							
Dibromomethane	ND	0.10	"							
cis-1,3-Dichloropropene	ND	0.10	"							
Toluene	ND	0.20	"							
trans-1,3-Dichloropropene	ND	0.10	"							
1,1,2-Trichloroethane	ND	0.10	"							
1,2-Dibromoethane (EDB)	ND	0.10	"							
1,3-Dichloropropane	ND	0.10	"							
Tetrachloroethene	ND	0.02	"							
Dibromochloromethane	ND	0.10	"							

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707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK51806 - EPA 5030										
Blank (EK51806-BLK1)				Prepared & Analyzed: 18-Nov-15						
Chlorobenzene	ND	0.02	ug/l							
Ethylbenzene	ND	0.10	"							
1,1,1,2-Tetrachloroethane	ND	0.10	"							
m,p-Xylene	ND	0.10	"							
o-Xylene	ND	0.10	"							
Styrene	ND	0.10	"							
Bromoform	ND	0.10	"							
Isopropylbenzene (Cumene)	ND	0.10	"							
1,1,2,2-Tetrachloroethane	ND	0.10	"							
1,2,3-Trichloropropane	ND	0.10	"							
n-Propylbenzene	ND	0.10	"							
Bromobenzene	ND	0.10	"							
1,3,5-Trimethylbenzene	ND	0.10	"							
2-Chlorotoluene	ND	0.10	"							
4-Chlorotoluene	ND	0.10	"							
tert-Butylbenzene	ND	0.10	"							
1,2,4-Trimethylbenzene	ND	0.10	"							
sec-Butylbenzene	ND	0.10	"							
p-Isopropyltoluene	ND	0.10	"							
1,3-Dichlorobenzene	ND	0.10	"							
1,4-Dichlorobenzene	ND	0.10	"							
n-Butylbenzene	ND	0.10	"							
1,2-Dichlorobenzene	ND	0.10	"							
1,2-Dibromo-3-chloropropane	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	0.10	"							
Hexachlorobutadiene	ND	0.10	"							
Naphthalene	ND	0.02	"							
1,2,3-Trichlorobenzene	ND	0.10	"							
Surrogate: Dibromofluoromethane	*0.561*		*"*	*0.500*		*112*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*0.543*		*"*	*0.500*		*109*	*75-125*			
Surrogate: Toluene-d8	*0.515*		*"*	*0.500*		*103*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.557*		*"*	*0.500*		*111*	*75-125*			

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Ramboll Environ - Los Angeles	Project: RAM111815-SB1	
707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK51806 - EPA 5030										
LCS (EK51806-BS1)				Prepared & Analyzed: 18-Nov-15						
Dichlorodifluoromethane (F12)	5.2	0.50	ug/l	5.00		105	70-130			
Vinyl chloride	4.9	0.05	"	5.00		97.4	70-130			
Chloroethane	5.0	0.50	"	5.00		101	70-130			
Trichlorofluoromethane (F11)	5.1	0.50	"	5.00		102	70-130			
1,1-Dichloroethene	5.8	0.50	"	5.00		117	70-130			
1,1,2 Trichlorotrifluoroethane (F113)	6.4	0.50	"	5.00		127	70-130			
Methylene chloride (Dichloromethane)	5.2	0.50	"	5.00		103	70-130			
trans-1,2-Dichloroethene	5.8	0.50	"	5.00		116	70-130			
1,1-Dichloroethane	5.4	0.50	"	5.00		109	70-130			
cis-1,2-Dichloroethene	5.5	0.50	"	5.00		111	70-130			
Chloroform	5.6	0.10	"	5.00		113	70-130			
1,1,1-Trichloroethane	5.6	0.50	"	5.00		111	70-130			
Carbon tetrachloride	5.5	0.10	"	5.00		109	70-130			
1,2-Dichloroethane (EDC)	5.4	0.10	"	5.00		109	70-130			
Benzene	5.1	0.10	"	5.00		102	70-130			
Trichloroethene	5.1	0.10	"	5.00		103	70-130			
Toluene	5.1	1.0	"	5.00		102	70-130			
1,1,2-Trichloroethane	5.9	0.50	"	5.00		118	70-130			
Tetrachloroethene	5.8	0.10	"	5.00		116	70-130			
Ethylbenzene	5.5	0.50	"	5.00		110	70-130			
1,1,1,2-Tetrachloroethane	5.8	0.50	"	5.00		116	70-130			
m,p-Xylene	11	0.50	"	10.0		108	70-130			
o-Xylene	5.2	0.50	"	5.00		103	70-130			
1,1,2,2-Tetrachloroethane	5.5	0.50	"	5.00		109	70-130			
Surrogate: Dibromofluoromethane	*2.87*		*"*	*2.50*		*115*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2.63*		*"*	*2.50*		*105*	*75-125*			
Surrogate: Toluene-d8	*2.72*		*"*	*2.50*		*109*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2.68*		*"*	*2.50*		*107*	*75-125*			

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707 Wilshire Blvd, Suite 4950	Project Number: 04-6899AL / 1001 E Imperial Hwy	Reported:
Los Angeles, CA 90017	Project Manager: Ms. Seema Sutarwala Turner	24-Nov-15 14:08

Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

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VAPOR / AIR Chain of Custody

DATE: 11-18-15
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant: Ramboll Environ	Project Name / #: 04-6899 AL
Lab Client Project Manager: Seema Sutaiwala Turner	Project Location: 1001 East Imperial Hwy, La Habra
Lab Client Address: 707 Wilshire Blvd., Ste. 4950	Report E-Mail(s): STurner@ramboll.com MHenry@ EArslanian@
Lab Client City, State, Zip: Los Angeles, CA. 90017	
Phone Number: 213-943-6332	

Reporting Requirements

- [x] Standard Report [ ] Level III [ ] Level IV
- [x] Excel EDD [ ] Other EDD:
- [ ] CA Geotracker Global ID:

Turnaround Time

- [ ] 5-7 day Stnd [ ] 24-Hr Rush
- [ ] 3-day Rush [x] Mobile Lab
- [ ] 48-Hr Rush [ ] Other:

Sampler Information

Sampler(s): J. Taylor / C. Smith
Signature:
Date: 11-18-15

Sample Receipt (Lab Use Only)

Date Rec'd: 11-18-15 Control #: 151023.00/.01
H&P Project #: RAM111815-SB1
Lab Work Order #: R511084 / RK51806
Sample Intact: [ ] Yes [ ] No [ ] See Notes Below
Receipt Gauge ID: Temp:
Outside Lab:
Receipt Notes/Tracking #:
Lab PM Initials:

Additional Instructions to Laboratory:

- [x] Check if Project Analyte List is Attached
- ** Preferred VOC units (please choose one):*
- [x] µg/L [ ] µg/m³ [ ] ppbv [ ] ppmv

	SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [x] 8260SV [ ] TO-15	VOCs Short List / Project List [ ] 8260SV [ ] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15 [ ] TO-17m	TPHv as Gas [ ] 8260SVm [ ] TO-15m	TPHv as Diesel (sorbent tube) [ ] TO-17m	Aromatic/Aliphatic Fractions [ ] 8260SVm [ ] TO-15m	Leak Check Compound [x] DFA [ ] IPA [ ] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2			
1	Material Blank		11/18/15	0938	SV	Glass Syringe			X							X					
2	SV-1-5'			1009					X							X					
3	SV-4-5'			1118					X							X					
4	SV-3-5'			1148					X							X					
5	SV-3-5' Rep			1209					X							X					
6	SV-5-5'			1252					X							X					
7	SV-6-5'			1324					X							X					
8	SV-2-5'			1420					X							X					

Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
	Ramboll Environ	11/18/2015	15:26		H&P Mobile	11-18-15	1533
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Rev 08/18/2014

H&P Mobile Geochemistry, Inc.
2470 Impala Drive, Carlsbad, CA 92010
Field Office in Signal Hill, CA (Los Angeles)
Ph: 800-834-9888 www.handpmg.com

H&P Method 8260SV (Modified EPA 8260B)
Soil Vapor VOC List

Compound	*CAS #*	*Ultra Low RL** Vapor (µg/L)*
Dichlorodifluoromethane (F12)	75-71-8	0.1
Chloromethane	74-87-3	0.1
Vinyl chloride	75-01-4	0.01
Bromomethane	74-83-9	0.1
Chloroethane	75-00-3	0.1
Trichlorofluoromethane (F11)	75-69-4	0.1
1,1-Dichloroethene	75-35-4	0.1
1,1,2-Trichlorotrifluoroethane (F113)	76-13-1	0.1
Methylene chloride (Dichloromethane)	75-09-2	0.1
Methyl tertiary-butyl ether (MTBE)	1634-04-4	0.1
trans-1,2-Dichloroethene	156-60-5	0.1
1,1-Dichloroethane	75-34-3	0.1
2,2-Dichloropropane	594-20-7	0.1
cis-1,2-Dichloroethene	156-59-2	0.1
Bromochloromethane	74-97-5	0.1
Chloroform	67-66-3	0.02
1,1,1-Trichloroethane	71-55-6	0.1
1,1-Dichloropropene	563-58-6	0.1
Carbon tetrachloride	56-23-5	0.02
1,2-Dichloroethane (EDC)	107-06-2	0.02
Benzene	71-43-2	0.02
Trichloroethene	79-01-6	0.02
1,2-Dichloropropane	78-87-5	0.1
Dibromomethane	74-95-3	0.1
Bromodichloromethane	75-27-4	0.1
cis-1,3-Dichloropropene	10061-01-5	0.1
Toluene	108-88-3	0.2
trans-1,3-Dichloropropene	10061-02-6	0.1
1,1,2-Trichloroethane	79-00-5	0.1
1,3-Dichloropropane	142-28-9	0.1
Tetrachloroethene	127-18-4	0.02
Dibromochloromethane	124-48-1	0.1
1,2-Dibromoethane (EDB)	106-93-4	0.1
Chlorobenzene	108-90-7	0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.1
Ethylbenzene	100-41-4	0.1
m,p-Xylene	179601-23-1	0.1
o-Xylene	95-47-6	0.1
Styrene	100-42-5	0.1
Bromoform	75-25-2	0.1
Isopropylbenzene (Cumene)	98-82-8	0.1
1,1,2,2-Tetrachloroethane	79-34-5	0.1
n-Propylbenzene	103-65-1	0.1

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Soil Vapor VOC List

Compound	*CAS #*	*Ultra Low RL** Vapor (µg/L)*
1,2,3-Trichloropropane	96-18-4	0.1
Bromobenzene	108-86-1	0.1
2-Chlorotoluene	95-49-8	0.1
1,3,5-Trimethylbenzene	108-67-8	0.1
4-Chlorotoluene	106-43-4	0.1
tert-Butylbenzene	98-06-6	0.1
1,2,4-Trimethylbenzene	95-63-6	0.1
sec-Butylbenzene	135-98-8	0.1
p-Isopropyltoluene	99-87-6	0.1
1,3-Dichlorobenzene	541-73-1	0.1
1,4-Dichlorobenzene	106-46-7	0.1
n-Butylbenzene	104-51-8	0.1
1,2-Dichlorobenzene	95-50-1	0.1
1,2-Dibromo-3-chloropropane	96-12-8	1.0
1,2,4-Trichlorobenzene	120-82-1	0.1
Hexachlorobutadiene	87-68-3	0.1
Naphthalene	91-20-3	0.02
1,2,3-Trichlorobenzene	87-61-6	0.1
Leak Check Compound		
1,1-Difluoroethane (LCC)	75-37-6	0.1

***NOTE: Ultra-Low RLs can be achieved using a 100cc large volume injection - applicable for relatively low level samples only (Residential CHHSLs)*

H&P Mobile Geochemistry Inc.

Log Sheet: Soil Vapor Sampling with Syringe

FMS004
Revision: 2
Revised: 12/4/14
Effective: 1/1/15
Page 1 of 1

H&P Project #: RAM111815-SB1
Date: 11-18-15
Site Address: 1001 East Imperial Hwy, La Habra
Page: 1 of 1
Consultant: Ramboll Environ
H&P Rep(s): C.Smith, T. Taylor
Reviewed: DB
Consultant Rep(s): Melissa
Scanned: DB

Purge Volume Calculation			
PVT Probe ID, if applicable:			
Tubing:	Length:	Diameter:	1 Volume:
Sand Pack:	Height:	Diameter:	1 Volume:
Dry Bentonite:	Height:	Diameter:	1 Volume:
PVT Increments:	___PV =	___PV=	___PV =
PV Amount Selected:	3 PV	Selected by:	Jobsheet

Sample Volume
☐ 50cc Glass Syringe ☒ 100cc Glass Syringe ☐ Other_____

Leak Check Compound
☒ 1,1-DFA ☐ 1,1,1,2-TFA ☐ IPA ☐ Other_____

A cloth saturated with LCC is placed around tubing connections and at the probe seal. This is done prior to every soil vapor sample collected unless otherwise noted in the field notes below.

	Sample Information				Probe Specs							Collection Information				
	Point ID	Syringe ID	Date	Sample Time	Probe Depth (ft)	Tubing Length (ft)	Tubing Dia (in.)	Sand Pack Ht (in.)	Sand Pack Dia (in.)	Dry Bent. Ht (in.)	Dry Bent. Dia (in.)	Purge Vol (mL)	Shut-in Test (✓=Pass)	Flow Rate (mL/min)	Probe Vacuum ("Hg)	Field Notes
1	Material Blank	160	11/18/15	0938	–	7	1/8	–	–	–	–	–	–	–	–	
2	SV-1-5'	205,207	″	1009	5	7	1/8	12	1.5	12	1.5	958	✓	<200	0	4mins, 47sec
3	SV-4-5'	219/206	″	1118	″	″	″	″	″	″	″	958	✓	″	0	4mins, 47sec
4	SV-3-5'	185/216	″	1148	″	″	″	″	″	″	″	958	✓	″	0	″ ″
5	SV-3-5' Rep	164	″	1209	″	″	″	″	″	″	″	1058	✓	″	0	″ ″
6	SV-5-5'	207/202	″	1252	″	″	″	″	″	″	″	958	✓	″	0	″ ″
7	SV-6-5'	205/206	″	1324	″	″	″	″	″	″	″	958	✓	″	50	″ ″
8	SV-2-5'	164	↓	1420	↓	↓	↓	↓	↓	↓	↓	958	✓	↓	45	″ ″
9																
10																
11																
12																

Site Notes (e.g. weather, visitors, scope deviations, health & safety issues, etc.):
SV-2-5' had high vacuum. I could not pull back the syringe. Troy had to reset it a few feet away. (few feet away).

ATTACHMENT B
DEVELOPMENT OF SITE-SPECIFIC RISK BASED TARGET CONCENTRATIONS

1. VAPOR INTRUSION EVALUATION

Ramboll Environ US Corporation (Ramboll Environ) has prepared this analysis to evaluate potential human health impacts to future commercial workers through exposure to volatile organic compounds (VOCs) migrating from soil vapor to indoor air at the property located at 1001 East Imperial Highway, La Habra, California (the site). As a preliminary step, site-specific soil vapor risk-based target concentrations (RBTCs) were developed. RBTCs represent the concentrations of chemicals that can remain in soil vapor and not present an unacceptable risk to human health. These RBTCs were then used to evaluate potential human health impacts.

RBTCs were developed for the VOCs detected in the soil vapor samples collected on November 18, 2015. The VOCs detected in the soil vapor samples consisted of tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride (VC), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethene (1,1-DCE), trichlorotrifluoroethane (F-113), benzene, toluene, ethylbenzene, and xylenes. Soil vapor RBTCs were developed in general accordance with the following California Environmental Protection Agency (Cal/EPA) and USEPA risk assessment guidance:

- Cal/EPA 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air.
- Cal/EPA 2014. Human Health Risk Assessment (HHRA) Note Number 1, Issue: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. September.
- USEPA 2009. Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment).

As a conservative measure, the RBTCs were calculated to correspond to a target cancer risk of one in a million (1×10^{-6}) and a target non-cancer hazard quotient (HQ) of one. National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] § 300) is commonly cited as the basis for target risk and hazard levels. According to the NCP, lifetime incremental cancer risks posed by a site should not exceed 1×10^{-6} to one hundred in a million (1×10^{-4}), and noncarcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., HQ greater than one). As a risk management policy, the Cal/EPA generally considers 1×10^{-6} to be a point of departure for purposes of making risk management decisions, with most approved remediation achieving incremental risk levels of ten in a million (1×10^{-5}) or lower.

The following subsections discuss the various components required for developing the site-specific commercial RBTCs for soil vapor.

1.1 Toxicity Assessment

The hierarchy of sources used for the toxicity factors is consistent with those recommended by the Cal/EPA (Cal/EPA, 2015) for risk assessments. This hierarchy is as follows:

- Cal/EPA, 2015. Human Health Risk Assessment (HHRA) Note Number 3. October.
- USEPA Integrated Risk Information Service (IRIS).

The toxicity values used in this evaluation are summarized in Table 1.

1.2 Exposure Assumptions and Intake Estimation

Ramboll Environ conservatively evaluated the potential exposure to VOCs migrating into the building from the subsurface based on default assumptions for an industrial/commercial scenario. Standard exposure assumptions recommended by Cal/EPA (2014) were used for commercial workers. The exposure parameters are presented in Table 2.

In order to quantify exposures, upper-bound estimates of the theoretical intakes were developed for the potentially exposed human populations. The intake factors for inhalation of

VOCs migrating from soil vapor to indoor air were calculated using the following equation (USEPA, 2009) and are presented in Table 2:

$$IF = \frac{ET \times EF \times ED}{AT \times CF}$$

Where:

IF =	Intake Factor for air inhalation (unitless)
ET =	Exposure Time (hour/day)
EF =	Exposure Frequency (day/year)
ED =	Exposure Duration (year)
AT =	Averaging Time (day)
CF =	Conversion Factor (hour/day)

1.3 Fate and Transport Modeling

VOCs present in soil vapor can potentially migrate through the unsaturated zone to indoor air. This migration is quantified for purposes of this assessment through an intermedia transfer factor (TF). When the transfer factor is multiplied by the source concentration of a chemical in soil vapor (in micrograms per liter [µg/L]), the product is the resulting steady-state concentration that is predicted in indoor air (in micrograms per cubic meter [µg/m^3]).

Ramboll Environ developed TFs for soil vapor to indoor air for the transport from soil vapor at a reported depth of 5 feet below ground surface (bgs) into a commercial slab-on-grade building. Two scenarios were considered: with and without engineered fill. Soil vapor TFs were estimated using the screening-level model described by Johnson and Ettinger (J&E, 1991). Specifically, Version 3.2 of the spreadsheet implementation developed by the USEPA was used (USEPA, 2004).

The J&E model was developed to predict vapor migration into buildings. The model is conservative because it assumes that the chemical source has infinite mass and it does not include other attenuation processes that typically would reduce the amount of vapor migration, such as biodegradation, leaching from infiltration, and lateral diffusion.

The calculation of TFs was based on parameters describing the properties of the chemicals evaluated as well as the characteristics of the vadose zone and the overlying building. J&E model default chemical property values were used. Based on available information, vadose zone soil near the site has been characterized as silty sand. Therefore, soil parameters in the J&E Model were specified to be default values for J&E model soil type “loamy sand” as shown in Table 3. Engineered fill soil parameters in the J&E Model were specified to be default values per Cal/EPA guidance (2005). The building parameters were based on industrial/commercial default values and are also shown in Table 3.

The TFs for VOCs migrating from soil vapor in indoor air are presented in Table 4.

1.4 Calculation of RBTCs

Using the exposure scenarios and the pathway-specific parameters discussed above, Ramboll Environ developed site-specific RBTCs for detected VOCs. As a conservative measure, the RBTCs were calculated to correspond to a target cancer risk of $1x10^{-6}$ and a target non-cancer HQ of one. Since the RBTCs correspond to the low end of the target risk range considered by USEPA and Cal/EPA to be protective of human health, the presence of a chemical at a concentration in excess of the RBTC does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation may be warranted.

The VOCs studied have both carcinogenic and noncarcinogenic effects, the RBTCs were calculated separately for both health-effect endpoints.

The equation used to calculate soil vapor RBTCs for vapor migration into indoor air for the carcinogenic endpoint is as follows:

$$RBTC_{SG.c} = \frac{TR}{IF * TF * IUR}$$

Where:

$RBTC_{GW.c}$	=	Risk-Based Target Concentration, soil vapor, carcinogenic endpoint (µg/L)
TR	=	Target Risk (unitless)
IF	=	Intake Factor for vapor inhalation (unitless)
IUR	=	Inhalation Unit Risk $(\mu g/m^3)^{-1}$
TF	=	Transfer Factor for vaopr migrating from soil vapor to indoor air ($\mu g/m^3$ per µg/L)

The equation used to calculate soil vapor RBTCs for vapor migration into indoor air for the noncarcinogenic endpoint is as follows:

$$RBTC_{SG.nc} = \frac{THQ * RfC_{inh}}{IF * TF}$$

Where:

$RBTC_{GW.nc}$	=	Risk-Based Target Concentration, soil vapor, noncarcinogenic endpoint (µg/L)
THQ	=	Target Hazard Quotient (unitless)
IF	=	Intake Factor for vapor inhalation (unitless)
RfC_{inh}	=	Inhalation Reference Concentration ($\mu g/m^3$)
TF	=	Transfer Factor for vapor migrating from soil vapor to indoor air ($\mu g/m^3$ per µg/L)

The RBTCs for VOCs migrating from soil vapor to indoor air for the commercial/industrial scenario with or without engineering fill are presented in Table 4.

1.5 Cumulative Risk Estimates

Cumulative cancer risks and non-cancer HQs for workers potentially exposed through the soil vapor intrusion pathway are calculated as the ratio of concentrations at the point of potential exposure (EPCs) and RBTCs:

$$\text{Risk} = \frac{\text{EPC}}{\text{RBTC}_{\text{SG,c}}} \text{ x } 10^{-6}$$

$$\text{HQ} = \frac{\text{EPC}}{\text{RBTC}_{\text{SG,nc}}}$$

The maximum concentrations at 5 feet bgs for each VOCs were conservatively applied as EPCs.

The cancer risk and HQs are summarized in Table 4. As shown in Table 4, the estimated cumulative cancer risks for soil vapor with and without engineered fill are 3×10^{-6}, and 2×10^{-6}, respectively, which are within the lower end of the NCP target risk range (i.e., 1×10^{-6}) and below the higher end of the NCP target risk range (i.e., 1×10^{-4}). The cumulative HQs for soil vapor with and without engineered fill are 0.2, and 0.1, respectively, which are below the non-cancer hazard threshold of one. VC is the primary contributor to both risk and HQ.

2. REFERENCES

California Environmental Protection Agency (CalEPA). 2005. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.

Cal/EPA 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air.

Cal/EPA 2014. Human Health Risk Assessment (HHRA) Note Number 1, Issue: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. September.

Cal/EPA, 2015. Human Health Risk Assessment (HHRA) Note Number 3, Issue: DTSC-modified Screening Levels (DTSC-SLs). October.

Johnson PC, Ettinger RA. 1991. Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings. *Environmental Science and Technology*, 25, 1445-1452.

USEPA. 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. Prepared by Environmental Quality Management, Inc. Prepared for Industrial Economics Incorporated. EPA Contract No. 68-W-01-058. Office of Emergency and Remedial Response. February.

USEPA 2009. Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment).

Table 1. Toxicity Values
1001 East Imperial Highway
La Habra,California

CAS Number	Chemical	Carcinogenic		Noncarcinogenic	
		Unit Risk $(mg/m^3)^{-1}$	Source	RfC $(\mu g/m^3)$	Source
127-18-4	Tetrachloroethene	5.90E-06	Cal/EPA 2015	35	Cal/EPA 2015
79-01-6	Trichloroethene	4.10E-06	IRIS	2	IRIS
75-01-4	Vinyl Chloride	7.80E-05	Cal/EPA 2015	100	IRIS
156-59-2	cis-1,2-Dichloroethene	--	--	8	Cal/EPA 2015, r-r
156-60-5	trans-1,2-Dichloroethene	--	--	80	Cal/EPA 2015, r-r
75-35-4	1,1-Dichloroethene	--	--	70	Cal/EPA 2015
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethan	--	--	30000	IRIS
71-43-2	Benzene	2.90E-05	Cal/EPA 2015	30	Cal/EPA 2015
108-88-3	Toluene	--	--	300	Cal/EPA 2015
100-41-4	Ethyl Benzene	2.50E-06	IRIS	1000	IRIS
1330-20-7	Xylenes	--	--	100	IRIS

Notes:
-- = values or information not available
$\mu g/m^3$ = microgram per cubic meter
r-r = value obtained by route-to-route extrapolation per the indicated reference
Cal/EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System (USEPA 2015)
RfC = Reference Concentration
USEPA = United States Environmental Protection Agency

Sources:
Cal/EPA, 2015. Human Health Risk Assessment (HHRA) Note Number 3, Issue: DTSC-modified Screening Levels (DTSC-SLs).
United States Environmental Protection Agency (USEPA). 2015. Regional Screening Levels (RSLs) Summary Table. July.

Table 2. Exposure Parameters for the Indoor Inhalation Pathway
1001 East Imperial Highway
La Habra,California

Exposure Parameter	Units	Commercial Worker	Source
Target Risk	unitless	1E-06	--
Target Hazard Quotient	unitless	1	--
Exposure Time	hours/day	8	Cal/EPA 2014
Exposure Frequency	days/year	250	Cal/EPA 2014
Exposure Duration	years	25	Cal/EPA 2014
Averaging Time - Carcinogens	days	25,550	Cal/EPA 2014
Averaging Time - Noncarcinogens	days	9,125	Cal/EPA 2014
Conversion Factor	hours/day	24	--
Intake Factor for Vapor Inhalation, cancer	unitless	8.2E-02	USEPA 2009
Intake Factor for Vapor Inhalation, noncancer	unitless	2.3E-01	USEPA 2009

Notes:
-- = Not applicable
Cal/EPA = California Environmental Protection Agency
USEPA = United States Environmental Protection Agency

Sources:
United States Environmental Protection Agency (USEPA) 2009. Risk Assessment Guidance for Superfund. Vol. 1: Part F, Supplemental Guidance for Inhalation Risk Assessment. Final. January.

California Environmental Protection Agency (Cal/EPA). 2014. Human Health Risk Assessment (HHRA) Note Number 1, Issue: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites. September.

Table 3. Model Parameters
1001 East Imperial Highway
La Habra, California

J&E Model Parameter	Units	Value	Source
Vadose Zone Parameters			
Ave. soil/groundwater temperature	deg C	20	CalEPA (2011)
Depth below grade to bottom of enclosed floor spac	cm	15	USEPA (2004) / CalEPA (2011) Default
Depth to soil gas measurement (source)	cm	152	Soil gas probe depth (5 ft bgs)
Thickness of soil stratum	cm	152	Soil gas probe depth (5 ft bgs)
Soil Parameters			
No Engineered Fill			
Stratum A thickness	cm	152	Site-specific value (no engineered fill)
Stratum A soil type	-	Loamy Sand	Site specific value
Stratum A bulk density	g/cm^3	1.62	Default Value for Loamy Sand
Stratum A total porosity	-	0.39	Default Value for Loamy Sand
Stratum A water-filled porosity	-	0.076	Default Value for Loamy Sand
With Engineered Fill			
Stratum A thickness	cm	19	9 cm thick concrete layer slab and 10 cm sand layer (Cal/EPA 200
Stratum A soil type	-	Sand	Default for upper layer of engineered Fill (Cal/EPA 2005).
Stratum A bulk density	g/cm^3	1.66	Default Value for upper layer of engineered Fill (Cal/EPA 2005).
Stratum A total porosity	-	0.375	Default Value for upper layer of engineered Fill (Cal/EPA 2005).
Stratum A water-filled porosity	-	0.054	Default Value for upper layer of engineered Fill (Cal/EPA 2005).
Stratum B thickness	cm	30	30 cm Engineered fill layer (Cal/EPA 2005).
Stratum B soil type	-	Compacted silty clay	Default for lower layer of engineered Fill (Cal/EPA 2005).
Stratum B bulk density	g/cm^3	1.8	Default Value for lower layer of engineered Fill (Cal/EPA 2005).
Stratum B total porosity	-	0.300	Default Value for lower layer of engineered Fill (Cal/EPA 2005).
Stratum B water-filled porosity	-	0.150	Default Value for lower layer of engineered Fill (Cal/EPA 2005).
Stratum C thickness	cm	103	Site-specific value (with engineered fill)
Stratum C soil type	-	Loamy Sand	Site specific value
Stratum C bulk density	g/cm^3	1.62	Default Value for Loamy Sand
Stratum C total porosity	-	0.39	Default Value for Loamy Sand
Stratum C water-filled porosity	-	0.076	Default Value for Loamy Sand
Building Parameters			
Enclosed space floor thickness	cm	10	USEPA (2004) Default
Building enclosed space area	m^2	100	USEPA (2004) Default
Building enclosed space height	cm	305	CalEPA (2011) Commercial/Industrial Default
Vapor flow rate into Building	L/min	5.0	CalEPA (2011) Default
Crack-to-total-area ratio	-	0.005	CalEPA (2011) Default
Indoor air exchange rate, commercial/industrial	/hour	1	CalEPA (2011) Commercial/Industrial Default

Notes:
cm = centimeter
g/cm^3 = grams per cubic centimeter
m^2 = square meter
L/min = Liter per minute

Sources:
California Environmental Protection Agency (CalEPA). 2005. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.
California Environmental Protection Agency (CalEPA). 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. Department of Toxic Substances Control. October.
US Environmental Protection Agency (USEPA). 2004. User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings. Office of Emergency and Remedial Response. February.
USEPA. 2004b. Region 9 Preliminary Remediation Goal User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings. Office of Emergency and Remedial Response. February.

Table 4. Soil Vapor Risk-based Target Concentrations
1001 East Imperial Highway
La Habra, California

Chemical	Indoor Air RBTCs (µg/m³)		Soil Gas Transfer Factor (µg/m³ per µg/m³)	Soil Gas RBTCs (µg/L)		Soil Gas Concentration (µg/L)	Cancer Risk	HQ
	Cancer	Noncancer		Cancer	Noncancer			
No Engineered Fill								
Tetrachloroethene	2.1	153	4.73E-04	4.4	324	0.62	1.E-07	2.E-03
Trichloroethene	3.0	8.8	4.96E-04	6.0	18	1.2	2.E-07	7.E-02
Vinyl Chloride	0.2	438	5.68E-04	0.28	772	0.64	2.E-06	8.E-04
cis-1,2-Dichloroethene	NC	35	4.78E-04	NC	73	6.6	NC	9.E-02
trans-1,2-Dichloroethene	NC	350	4.69E-04	NC	748	0.73	NC	1.E-03
1,1-Dichloroethene	NC	307	5.28E-04	NC	581	0.89	NC	2.E-03
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	131,400	4.93E-04	NC	266,677	0.15	NC	6.E-07
Benzene	0.4	131	5.22E-04	0.81	252	0.14	2.E-07	6.E-04
Toluene	NC	1,314	5.20E-04	NC	2,529	1.1	NC	4.E-04
Ethyl Benzene	4.9	4,380	4.83E-04	10	9,067	0.39	4.E-08	4.E-05
Xylenes	NC	438	4.89E-04	NC	895	2.57	NC	3.E-03
Sum							3.E-06	0.2
With Engineered Fill								
Tetrachloroethene	2.1	153	2.84E-04	7.3	540	0.62	8.E-08	1.E-03
Trichloroethene	3.0	8.8	3.03E-04	10	29	1.2	1.E-07	4.E-02
Vinyl Chloride	0.2	438	3.68E-04	0.43	1,191	0.64	1.E-06	5.E-04
cis-1,2-Dichloroethene	NC	35	2.88E-04	NC	121	6.6	NC	5.E-02
trans-1,2-Dichloroethene	NC	350	2.80E-04	NC	1,250	0.73	NC	6.E-04
1,1-Dichloroethene	NC	307	3.31E-04	NC	927	0.89	NC	1.E-03
1,1,2-Trichloro-1,2,2-trifluoroethane	NC	131,400	3.00E-04	NC	437,653	0.15	NC	3.E-07
Benzene	0.4	131	3.26E-04	1.3	403	0.14	1.E-07	3.E-04
Toluene	NC	1,314	3.24E-04	NC	4,061	1.1	NC	3.E-04
Ethyl Benzene	4.9	4,380	2.92E-04	17	14,991	0.39	2.E-08	3.E-05
Xylenes	NC	438	2.97E-04	NC	1,473	2.57	NC	2.E-03
Sum							2.E-06	0.1

Note:
µg/m³ = micrograms per cubic meter
µg/L = micrograms per liter
HQ = Hazard Quotient
RBTC = Risk-based target concentration
NC = Not calculated because chemical is not evaluated as a carcinogen or was not detected.
Use the sum of m,p-Xylene and o-Xylene maximum concentrations to calculate potential cancer risk as Xylenes .