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100 Saint Paul Street
Denver, Colorado 80206
303.371.9000
paulscorp.com

Ms. Dilan Roe
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RECEIVED
By Alameda County Environmental Health 3:02 pm, Apr 25, 2017

Re: 1233 Bockman Road – Acknowledgement Statement
San Lorenzo, California
ACEH Case No. 3217

Dear Ms. Roe:

PaulsCorp, LLC, has retained the environmental consultant referenced on the attached report for the project referenced above. The attached report is being submitted on PaulsCorp's, LLC, behalf.

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's GeoTracker website.

Sincerely,

Scott Schoeman
Development Associate

DRAFT INITIAL POST-CONSTRUCTION VMS RISER MONITORING REPORT
The Bungalows Buildings 1-4
1233 Bockman Road
San Lorenzo, California

Prepared For:
PaulsCorp
100 Saint Paul Street
Denver, Colorado 80206

Prepared By:
Langan Engineering and Environmental Services, Inc.
555 Montgomery Street, Suite 1300
San Francisco, California 94111

Hayley Baker
Staff Engineer

Sigrida Reinis, PhD, PE
Associate

17 April 2017
Langan Project No. 770625803

17 April 2017

Ms. Dilan Roe
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Draft Initial Post-Construction VMS Riser Monitoring Report
The Bungalows Buildings 1-4
1233 Bockman Road
San Lorenzo, California
Langan Project No. 770625803

Dear Ms. Roe:

Langan Engineering and Environmental Services, Inc. (Langan), on behalf of PaulsCorp, LLC, is pleased to submit the attached *Draft Initial Post-Construction VMS Riser Monitoring Report* for The Bungalows Buildings 1-4 to the Alameda County Department of Environmental Health. We look forward to receiving your comments on this report. If you have any questions, please call.

Sincerely yours,
Langan Engineering & Environmental Services, Inc.

Hayley Baker
Staff Engineer

Sigrida Reinis, PhD, PE
Associate

Attachments

cc: Scott Schoeman, PaulsCorp, LLC

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INITIAL POST-CONSTRUCTION
VMS MONITORING REPORT
The Bungalows Buildings 1-4
1233 Bockman Road
San Lorenzo, California

1.0 INTRODUCTION

The initial round of post-construction vapor mitigation system (VMS) riser air sampling was conducted at the Site on 27 March 2017 in general accordance with the *Revised VIMS Basis of Design Report* (Pangea, 18 January 2017). This *Initial Post-Construction VMS Riser Monitoring Report* has been prepared by Langan on behalf of PaulsCorp, LLC for Buildings 1 through 4 of the new residential development at the property located at 1233 Bockman Road ("Site") in Palo Alto, California (Figure 1).

The lead regulatory agency for this Site is the Alameda County Department of Environmental Health (ACDEH), and the site has been assigned Case No. RO0003217. This Site is listed in the California State Water Resources Control Board (SWRCB), "Geotracker," as case number T1000009292 and is what is known as an "active cleanup program" site.

2.0 BACKGROUND

The Site is bounded by Bockman Road to the south and residences to the south, east, and west (see Figure 1). A complex of two-story residential townhomes is currently under construction at the Site. A partial vapor mitigation system (VMS) was installed at Buildings 1 through 4 as part of the new development to mitigate the potential risk to human health of intrusion into indoor air of volatile organic compounds (VOCs) from beneath the floor slab of the structure, and to collect potential VOCs that would otherwise accumulate beneath the floor slab and vent them to the atmosphere outside the structure. Previous site investigations indicated several VOCs, including benzene, ethylbenzene, and tetrachloroethene (PCE) in soil gas at concentrations that may pose a potential risk to indoor air quality for future residential users at Buildings 1 through 4. In general, the VOC presence at the western portion of the Site beneath Buildings 1 through 4 may be associated with historic releases at the former automotive repair facility at 1415 Bockman Road. The VMS system was designed to address these contaminants of concern (COCs) for Buildings 1 through 4.

The main components of the VMS, a description of the installation, quality assurance/quality control (QA/QC) procedures, and observation activities are described in the *Draft Final Completion Report for the VMS at Buildings 1 through 4*, dated 3 April 2017, prepared by Langan and submitted to the ACDEH (Langan, 2016). VMS designs for Buildings 5 through 10 are pending. Separate Basis of Design, VMS Completion, and Sampling and Monitoring reports will be prepared for these buildings on the eastern portion of the Site at a later date.

3.0 GENERAL VAPOR MITIGATION SYSTEM DESIGN

Available data indicates that VOC concentrations in soil gas beneath Buildings 1 through 4 are generally below conservative environmental screening levels. Absent longer-term data, ACDEH is requiring initial vapor intrusion mitigation measures with contingent measures based on subsequent riser air sampling data at Buildings 1 through 4. To mitigate potential risk to human health of intrusion of VOC vapors from beneath the floor slab into Buildings 1 through 4, which are currently under construction, ACDEH has approved the following vapor mitigation approach:

- Soil vapor collection and venting system to allow any soil vapors that would otherwise collect beneath the slab to migrate and vent to the atmosphere outside the building. This component consists of a network of horizontal perforated pipes within a layer of crushed rock below the building slab, which are connected to vertical risers with passive wind turbines at the building roof level;
- Exterior inlet vents to facilitate convective airflow up the vertical riser pipe of the collection and venting system by allowing fresh air to enter the space beneath the building slab; and
- Contingent installation of an above-slab vapor barrier membrane system (e.g., Retro-Coat™ by Land Science®), applied to the building floor slab across the entire accessible building footprint based on results of post-construction VMS riser air sampling.

Although Buildings 1 through 4 are still under construction, all required components of the VMS system were completed prior to this sampling event; the contingent vapor barrier membrane has not been installed, pending the results of three planned rounds of VMS monitoring. To meet geotechnical specifications, a moisture barrier (10-mil Viper II, Class C) was installed beneath Buildings 1 through 4 to prevent the intrusion of water vapor. The moisture barrier does not comply with the October 2011 Vapor Intrusion Mitigation Advisory issued by the

California Department of Substances Control, which specifies a 60-mil thickness sub-slab barrier (DTSC, 2011). Therefore the barrier is relied upon solely as a moisture barrier and not for mitigating the intrusion of VOCs. If VOC concentrations in the riser air samples are found, during VMS monitoring, to exceed 75% of the applicable environmental screening levels established by the San Francisco Regional Water Quality Control Board (RWQCB), the contingent above-slab vapor barrier membrane (Retro-coat) will be installed for the building(s) of concern. To minimize potential damage, the contingent Retro-coat would be installed after most construction is complete and just before final floor finishes.

4.0 AIR SAMPLING AND PERFORMANCE MONITORING

To evaluate the effectiveness of the VMS and to assess the risk of vapor intrusion from the sub-slab soil gas into indoor air, post-construction riser air sampling was conducted at the Site on 27 March 2017 in general accordance with the *Revised VIMS Basis of Design Report* (Pangea, 18 January 2017).

4.1 Sample Collection Locations and Procedures

Samples were collected from each of the two risers at Buildings 1 through 4 (8 riser samples total). One duplicate sample was collected as part of QA/QC protocol for the sampling event. All samples were collected into 1-liter stainless steel Summa canisters with flow controllers and sent under chain-of-custody control to K-Prime Technologies Inc., a California-certified analytical laboratory based in Santa Rosa, California, for chemical analysis.

Sample locations are depicted on Figure 2. Laboratory analytical results for the samples collected are summarized in Table 1. Table 2 presents air flow measurements taken from the riser sample ports at ground level. Field observation reports and site photographs can be found in Appendix A and B, respectively. The laboratory analytical report is included as Appendix C.

4.2 Summary and Evaluation of Results

Table 1 presents VOC analytical sampling results for the COCs. VOC analytical results were compared to commercial or residential ESLs for soil gas, as established by the RWQCB in February 2016[1].

All detected concentrations of COCs (benzene, ethylbenzene, and PCE) were at least two orders of magnitude lower than their respective ESLs and benzene, ethylbenzene, and PCE were detected at concentrations well below 75% of their respective ESLs in any samples for Buildings 1 through 4 (the criteria established to determine if the contingent above-slab vapor barrier membrane is needed).

The duplicate sample at B1-R1 had fewer detections of the compounds that were detected in the B1-R1 sample. This may be attributed to an equipment malfunction with the tee splitter, such as a leak or clog in the sampling train, which was used to collect the B1-R1 sample and duplicate. The compounds and concentrations detected in the B1-R1 were similar to all other samples, so it appears that only the duplicate was affected by the equipment malfunction or operational error.

4.3 Post-Construction Performance Monitoring

Table 2 presents air flow measurements taken at the riser sample ports located at the ground level (B1-R1 through B4-R2). Using the average flow rate for the risers, the number of sub-slab air exchanges per day was calculated as follows:

$$Daily\ Air\ Exchanges\left(\frac{Exchanges}{Day}\right) =$$

$$\left[Flowrate\left(\frac{cubic\ feet}{minute}\right) \times \frac{60\ minutes}{hour} \times \frac{24\ hours}{day}\right] \div [Gravel\ Layer\ Volume\ (cubic\ feet)]$$

Separate air exchange rates were calculated for each of the buildings depending on the building layout (4-plex, 5-plex, or 6-plex). The calculated average flow rate for Building 1 (4-plex) was

[1] San Francisco Regional Water Quality Control Board Environmental Screening Levels; February 2016 Revision 3.

6 exchanges per day. The calculated average flow rate for Building 2 (5-plex) was 3 exchanges per day. The calculated average flow rate for Buildings 3 and 4 (6-plex) was 5 exchanges per day.

The average calculated air exchange rates and flow rates indicate that the VMS is operating properly in general accordance with the intent of the design by inducing air flow within the layer of crushed rock beneath the building slab and venting the VOCs to the rooftop risers. In our experience, exchange rates may range between 0.03 and 3.7 exchanges per day (Reinis, 2010). Thus, the number of sub-slab air exchanges per day observed at the site fall within or slightly above the anticipated range. The effective porosity (n) of the permeable material, which is approximately 20% to 30% (n = 0.2 to 0.3), is ignored in these calculations; therefore, the calculated value for the air exchange rate is likely lower (i.e. more conservative) than the actual values, which may be 3 to 5 times greater.

5.0 CONCLUSIONS

Based on the results of this initial round of post-construction riser air sampling, it is our opinion that the VMS is successfully mitigating the intrusion of the COCs through the floor slab and successfully venting them to the atmosphere.

Monitoring should therefore continue according to the schedule requested by the ACDEH in an email dated 4 January 2017:

- One month after the initial post-construction riser air monitoring, i.e., end of April 2017;
- Two months after the initial post-construction riser air monitoring, i.e., end of May 2017.

After the third (i.e., the May 2017) riser air monitoring event, a comprehensive evaluation of all results will be performed to assess whether the contingent above-slab vapor barrier membrane is needed. Future rounds of air sampling will be conducted in accordance with the *Revised VIMS Basis of Design Report* (Pangea, 18 January 2017) approved by the ACDEH. The monitoring results will be reported in separate Sampling and Monitoring Reports. All reports will be submitted to the ACDEH within 15 days of obtaining laboratory analytical results.

REFERENCES

Department of Toxic Substances Control, 2011. *Vapor Intrusion Mitigation Advisory (VIMA), Revision 1, Final.* October. https://dtsc.ca.gov/SiteCleanup/upload/VIMA_Final_Oct_20111.pdf

Pangea Environmental, Inc. 2017. *Revised Vapor Intrusion System Basis of Design Report, Construction Quality Assurance Plan, and Operations and Maintenance Plan – Buildings 1 through 4, 1233 Bockman Road, San Lorenzo, California.* 18 January.

Reinis, Sigrida, Jeffrey F. Ludlow and Jeffrey F. Rubin. 2010. *"Evaluating Performance Monitoring Data of A Vapor Intrusion Management System At A Multi-Building Brownfields Project."* In: *Proceedings of the Battelle Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California.* Battelle Press.

TABLES

Langan Project: 770625803
April 2017

Table 1
Riser Air Monitoring Analytical Results
Volatile Organic Compounds (VOCs)
The Bungalows Buildings 1-4
1233 Bockman Road
San Lorenzo, California

Sample ID	Sample Date	Sample Results (µg/m3)		
		Benzene	**Ethylbenzene**	**PCE**
B1-R1-032717 (DUP)	3/27/2017	<0.319/<0.319	1.30/<0.136	0.666/<0.0868
B1-R2-032717	3/27/2017	<0.319	1.10	0.814
B2-R1-032717	3/27/2017	<0.639	0.728	0.406
B2-R2-032717	3/27/2017	0.482	2.00	0.220
B3-R1-032717	3/27/2017	<1.60	0.689	1.22
B3-R2-032717	3/27/2017	<0.319	1.08	0.233
B4-R1-032717	3/27/2017	<0.319	1.15	1.54
B4-R2-032717	3/27/2017	0.332	1.73	0.476
Environmental Screening Levels (ESLs)				
Residential		48	560	240

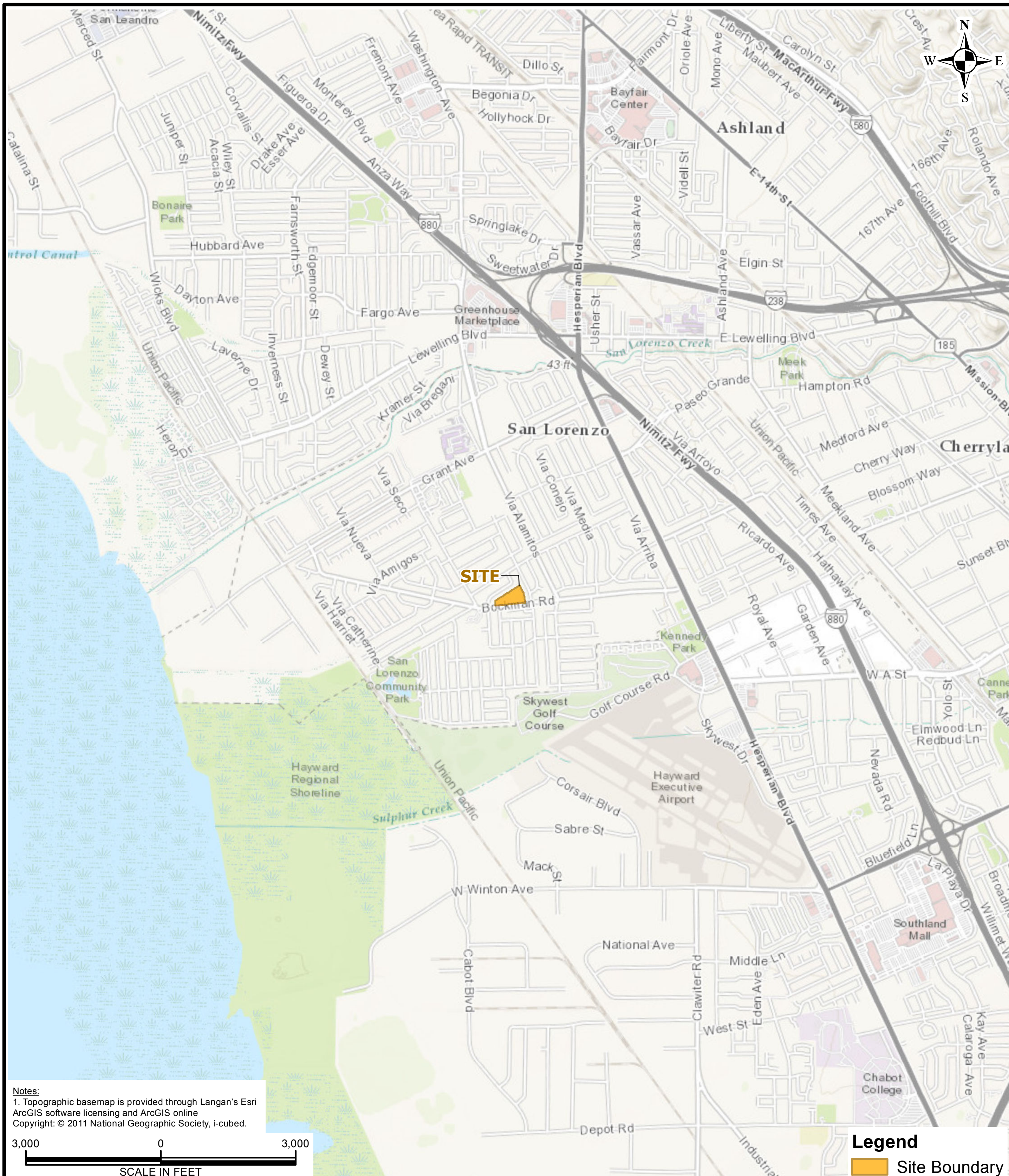
Notes:
BOLD values exceed corresponding ESL
$\mu g/m^3$ - micrograms per cubic meter
PCE - Tetrachloroethene
DUP - Duplicate sample for quality assurance/quality control, duplicate value shown in
<0.319 - Analyte was not detected at or above the laboratory reporting limit (0.319 $\mu g/m^3$)
Residential ESLs represent values shown in Table SG-1: Subslab/Soil Gas Vapor Intrusion Human Health Risk Screening Levels (Volatile Chemicals Only) of the San Francisco Regional Water Quality Control Board's Environmental Screening Levels dated February 2016

Table 2
VMS Riser Flow Measurements
The Bungalows Buildings 1-4
1233 Bockman Road
San Lorenzo, California

Building	Sample ID	Sample Location	Flow Measurement		Building Type	Building Footprint* (ft^2)	Gravel Layer Thickness (ft)	Gravel Layer Volume (ft^3)	Exchange Rate (exchanges/day)	Average Exchange Rate Per Building (exchanges/day)
			ft/min	cfm						
1	B1-R1	Riser Sample Port at Ground Level	62	3	4-plex	3,980	0.33	1,327	3	6
	B1-R2		161	8		3,980	0.33	1,327	9	
2	B2-R1		145	7	5-plex	4,909	0.33	1,636	6	3
	B2-R2		3	0.1		4,909	0.33	1,636	0.1	
3	B3-R1		142	7	6-plex	5,838	0.33	1,946	5	5
	B3-R2		160	8		5,838	0.33	1,946	6	
4	B4-R1		138	7		5,838	0.33	1,946	5	5
	B4-R2		144	7		5,838	0.33	1,946	5	

Notes:
cfm - cubic feet per minute
Flow measured with Veloci Calc Meter
VMS - Vapor mitigation system
ft^2 - square feet
ft^3 - cubic feet
*Building footprint excludes porch/deck area that is not underlain by the VMS

FIGURES



Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online
Copyright: © 2011 National Geographic Society, i-cubed.

3,000 0 3,000
SCALE IN FEET

Legend
Site Boundary

LANGAN

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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC

Collectively known as Langan

Project	Drawing Title	Project No.	Figure
1233 BOCKMAN ROAD SAN LORENZO ALAMEDA COUNTY CALIFORNIA	SITE LOCATION MAP	770625803	1
		Date 3/28/2017	
		Scale 1 " = 3,000 '	
		Drawn By BJS	

Path: \\langan.com\data\SJO\data8\770625803\ArcGIS\ArcMap_Documents\Environmental_Figures\Site_Location_Map.mxd

Legend

- Building with Vapor Mitigation Stytem Installed
- Building with Pending Vapor Mitigation System
- Site Boundary
- Approximate Riser Location

60 0 60

SCALE IN FEET

Notes:
1. Aerial imagery provided by Near Map, 3/9/2017.
2. Site boundary provided by the Alameda County Parcel GIS dataset.

LANGAN

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Project	Drawing Title	Project No.	Figure
1233 BOCKMAN ROAD SAN LORENZO ALAMEDA COUNTY CALIFORNIA	SITE PLAN	770625803	2
		Date: 3/29/2017	
		Scale: 1 " = 60 '	
		Drawn By: BJS	

Path: \\langan.com\data\SJO\data8\770625803\ArcGIS\ArcMap_Documents\Environmental_Figures\Site_Plan.mxd

APPENDIX A

FIELD INVESTIGATION DAILY REPORT
DATED 27 MARCH 2017

LANGAN

LANGAN

FIELD REPORT NO. 5

Project: The Bungalows – 1233 Bockman Drive
Project No: 770625803
Subject: **FIELD OBSERVATION DAILY REPORT**
Date: 3/27/2017
Field Engineer: Jessica Schaettle
To: Sigrida Reinis
Time: 10:35 AM to 3:30 PM (plus travel and reporting)
Weather: sunny, 70°F, breezy
Reviewed by: S. Reinis
Date: 4/14/17

1035 Arrive at 1233 Bockman Drive

1040 Check in with DCI and meet Caleb. Walk to Buildings 1, 2, 3, and 4 to locate risers. All risers, sampling ports, and wind turbines are in place.

1100 Begin attaching flow controllers to 1-Liter SUMMA canisters and checking equipment.

1145 Move to Building 1 to begin velocity measurements and sampling. Samples are labeled BX-RY-Date where X is the building number and Y designates the riser number at each building (i.e. 1 for the riser on the south side of the building and 2 for the riser on the north side of the building). Before velocity is measured, the sampling port must be removed in order to insert the TSI Velocicalc "wand". The sampling port is then re-positioned for sampling. 1/4"Teflon tubing cannot fit over sampling port so a short piece of silicone tubing is used. The sampling port attachment is fairly short and Teflon tubing is held in place to ensure it does not become detached. Measured velocity at each 3-inch diameter riser is given in Table 1, below.

1245 Move to Building 2 and repeat flow measurements and sampling.

1325 Move to Building 3 and repeat flow measurements and sampling. Note that when B3-R2-032717 is opened at the canister but not at the flow controller, the vacuum appears to drop. Suspect faulty flow controller as sample was collected in only 3 minutes.

1400 Move to Building 4 and repeat flow measurements and sampling.

1445 Remove flow controllers from SUMMA canisters and pack up all equipment. Make record of canister and gage IDs for each sample.

1530 Leave site.

Table 1 – Airflow Velocity in Risers

Sample	Velocity (ft/min)
B1-R1-032717	62
B1-R2-032717	161
B2-R1-032717	145
B2-R2-032717	3
B3-R1-032717	142
B3-R2-032717	160
B4-R1-032717	138
B4-R2-032717	144

Attachments: none

Initials JS

APPENDIX B

SITE PHOTOGRAPHS
TAKEN 27 MARCH 2017

Photograph 1 – View of The Bungalows Buildings 1 through 4 with Wind Turbines installed at Roof Level.

Photograph 2 – Riser Sampling Port at Exterior Wall at Ground Level (typical).

Photograph 3 – Riser Sampling Port at Exterior Wall at Ground Level (typical).

Photograph 4 –Riser Air Sample Being Collected into 1-Liter Summa Canister (typical).

APPENDIX C

LABORATORY ANALYTICAL REPORT

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 4/5/2017

TO: MS. SIGRIDA REINIS
LANGAN TREADWELL ROLLO
501 14TH STREET, 3RD FLOOR
OAKLAND, CA 94612

ACCT: 4841
PROJ: 770625803

Phone: 415-955-5200
Email: sreinis@langan.com

CC: MS. HAYLEY FARR
Email: hfarr@langan.com

FROM: Richard A. Kagel, Ph.D. RAK 4/5/2017
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 770625803

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
B1-R1-032717	AIR	03/27/17	12:05	153375
B1-R2-032717	AIR	03/27/17	12:35	153376
B2-R1-032717	AIR	03/27/17	13:00	153377
B2-R2-032717	AIR	03/27/17	13:20	153378
B3-R1-032717	AIR	03/27/17	13:35	153379
B3-R2-032717	AIR	03/27/17	13:58	153380
B4-R1-032717	AIR	03/27/17	14:10	153381
B4-R2-032717	AIR	03/27/17	14:24	153382
DUP-032717	AIR	03/27/17	NA	153383

The above listed sample group was received on 03/28/17 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B1-R1-032717
LAB NO:	153375
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	12:05
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.502	0.0989	2.48
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.155	0.0826	0.321
VINYL CHLORIDE	75-01-4	0.0200	0.0246	0.0511	0.0629
BROMOMETHANE	74-83-9	0.0200	ND	0.0777	ND
CHLOROETHANE	75-00-3	0.0200	0.0258	0.0528	0.0680
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.254	0.112	1.43
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	ND	1.39	ND
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	0.0619	0.0977	0.302
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	ND	0.109	ND
1,2-DICHLOROETHANE	107-06-2	0.0200	ND	0.0809	ND
BENZENE	71-43-2	0.100	ND	0.319	ND
CARBON TETRACHLORIDE	56-23-5	0.0200	0.125	0.126	0.784
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	ND	0.107	ND
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	0.267	0.377	1.01
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	0.0982	0.136	0.666
CHLOROBENZENE	108-90-7	0.0200	0.0901	0.0921	0.415
ETHYLBENZENE	100-41-4	0.0200	0.300	0.0868	1.30
XYLENE (M+P)	1330-20-7	0.0400	1.34	0.174	5.81
STYRENE	100-42-5	0.0200	0.0725	0.0852	0.309
XYLENE (O)	95-47-6	0.0200	0.461	0.0868	2.00
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	0.0966	0.0983	0.475
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	0.336	0.0983	1.65
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: BAK
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B1-R2-032717
LAB NO:	153376
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	12:35
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.674	0.0989	3.33
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.287	0.0826	0.592
VINYL CHLORIDE	75-01-4	0.0200	ND	0.0511	ND
BROMOMETHANE	74-83-9	0.0200	ND	0.0777	ND
CHLOROETHANE	75-00-3	0.0200	ND	0.0528	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.344	0.112	1.93
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	0.877	1.39	3.05
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	0.0709	0.0977	0.346
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	ND	0.109	ND
1,2-DICHLOROETHANE	107-06-2	0.0200	0.0254	0.0809	0.103
BENZENE	71-43-2	0.100	ND	0.319	ND
CARBON TETRACHLORIDE	56-23-5	0.0200	0.162	0.126	1.02
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	ND	0.107	ND
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	0.304	0.377	1.14
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	0.120	0.136	0.814
CHLOROBENZENE	108-90-7	0.0200	ND	0.0921	ND
ETHYLBENZENE	100-41-4	0.0200	0.253	0.0868	1.10
XYLENE (M+P)	1330-20-7	0.0400	1.14	0.174	4.93
STYRENE	100-42-5	0.0200	0.0679	0.0852	0.289
XYLENE (O)	95-47-6	0.0200	0.412	0.0868	1.79
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	0.0911	0.0983	0.448
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	0.271	0.0983	1.33
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: rMC
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B2-R1-032717
LAB NO:	153377
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	13:00
BATCH ID:	032817A1
DATE ANALYZED:	03/30/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0400	0.650	0.198	3.21
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0400	ND	0.280	ND
CHLOROMETHANE	74-87-3	0.0800	0.416	0.165	0.859
VINYL CHLORIDE	75-01-4	0.0400	ND	0.102	ND
BROMOMETHANE	74-83-9	0.0400	0.158	0.155	0.615
CHLOROETHANE	75-00-3	0.0400	0.0461	0.106	0.122
TRICHLOROFLUOROMETHANE	75-69-4	0.0400	0.357	0.225	2.00
1,1-DICHLOROETHENE	75-35-4	0.0400	ND	0.159	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.200	ND	1.53	ND
METHYLENE CHLORIDE	75-09-2	0.800	1.18	2.78	4.10
1,1-DICHLOROETHANE	75-34-3	0.0400	ND	0.162	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0400	ND	0.159	ND
CHLOROFORM	67-66-3	0.0400	2.84	0.195	13.8
1,1,1-TRICHLOROETHANE	71-55-6	0.0400	ND	0.218	ND
1,2-DICHLOROETHANE	107-06-2	0.0400	0.0535	0.162	0.217
BENZENE	71-43-2	0.200	ND	0.639	ND
CARBON TETRACHLORIDE	56-23-5	0.0400	0.260	0.252	1.64
1,2-DICHLOROPROPANE	78-87-5	0.0400	ND	0.185	ND
TRICHLOROETHENE	79-01-6	0.0400	0.365	0.215	1.96
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0400	ND	0.182	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0400	ND	0.182	ND
TOLUENE	108-88-3	0.200	0.427	0.754	1.61
1,1,2-TRICHLOROETHANE	79-00-5	0.0400	ND	0.218	ND
1,2-DIBROMOETHANE	106-93-4	0.0400	ND	0.307	ND
TETRACHLOROETHENE	127-18-4	0.0400	0.0598	0.271	0.406
CHLOROBENZENE	108-90-7	0.0400	ND	0.184	ND
ETHYLBENZENE	100-41-4	0.0400	0.168	0.174	0.728
XYLENE (M+P)	1330-20-7	0.0800	0.629	0.347	2.73
STYRENE	100-42-5	0.0400	0.0995	0.170	0.424
XYLENE (O)	95-47-6	0.0400	0.264	0.174	1.14
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0400	ND	0.275	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0400	0.0944	0.197	0.464
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0400	0.321	0.197	1.58
1,3-DICHLOROBENZENE	541-73-1	0.0400	ND	0.241	ND
1,4-DICHLOROBENZENE	106-46-7	0.0400	ND	0.241	ND
1,2-DICHLOROBENZENE	95-50-1	0.0400	ND	0.241	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0400	ND	0.297	ND
HEXACHLOROBUTADIENE	87-68-3	0.0400	ND	0.427	ND

NOTES:
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APPROVED BY: MMC
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B2-R2-032717
LAB NO:	153378
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	13:20
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	0.0300	0.461	0.148	2.28
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0300	ND	0.210	ND
CHLOROMETHANE	74-87-3	0.0600	0.532	0.124	1.10
VINYL CHLORIDE	75-01-4	0.0300	ND	0.0767	ND
BROMOMETHANE	74-83-9	0.0300	ND	0.117	ND
CHLOROETHANE	75-00-3	0.0300	0.0480	0.0792	0.127
TRICHLOROFLUOROMETHANE	75-69-4	0.0300	0.236	0.169	1.33
1,1-DICHLOROETHENE	75-35-4	0.0300	ND	0.119	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.150	ND	1.15	ND
METHYLENE CHLORIDE	75-09-2	0.600	ND	2.08	ND
1,1-DICHLOROETHANE	75-34-3	0.0300	ND	0.121	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0300	ND	0.119	ND
CHLOROFORM	67-66-3	0.0300	0.0377	0.146	0.184
1,1,1-TRICHLOROETHANE	71-55-6	0.0300	ND	0.164	ND
1,2-DICHLOROETHANE	107-06-2	0.0300	ND	0.121	ND
BENZENE	71-43-2	0.150	0.151	0.479	0.482
CARBON TETRACHLORIDE	56-23-5	0.0300	0.122	0.189	0.766
1,2-DICHLOROPROPANE	78-87-5	0.0300	ND	0.139	ND
TRICHLOROETHENE	79-01-6	0.0300	ND	0.161	ND
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0300	ND	0.136	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0300	ND	0.136	ND
TOLUENE	108-88-3	0.150	2.52	0.565	9.50
1,1,2-TRICHLOROETHANE	79-00-5	0.0300	ND	0.164	ND
1,2-DIBROMOETHANE	106-93-4	0.0300	ND	0.231	ND
TETRACHLOROETHENE	127-18-4	0.0300	0.0324	0.203	0.220
CHLOROBENZENE	108-90-7	0.0300	ND	0.138	ND
ETHYLBENZENE	100-41-4	0.0300	0.461	0.130	2.00
XYLENE (M+P)	1330-20-7	0.0600	1.96	0.261	8.50
STYRENE	100-42-5	0.0300	1.06	0.128	4.50
XYLENE (O)	95-47-6	0.0300	0.707	0.130	3.07
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0300	ND	0.206	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0300	ND	0.147	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0300	0.401	0.147	1.97
1,3-DICHLOROBENZENE	541-73-1	0.0300	ND	0.180	ND
1,4-DICHLOROBENZENE	106-46-7	0.0300	ND	0.180	ND
1,2-DICHLOROBENZENE	95-50-1	0.0300	ND	0.180	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0300	ND	0.223	ND
HEXACHLOROBUTADIENE	87-68-3	0.0300	ND	0.320	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B3-R1-032717
LAB NO:	153379
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	13:35
BATCH ID:	032817A1
DATE ANALYZED:	03/30/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.100	0.656	0.495	3.24
DICHLOROTETRAFLUOROETHANE	76-14-2	0.100	ND	0.699	ND
CHLOROMETHANE	74-87-3	0.200	0.459	0.413	0.948
VINYL CHLORIDE	75-01-4	0.100	ND	0.256	ND
BROMOMETHANE	74-83-9	0.100	ND	0.388	ND
CHLOROETHANE	75-00-3	0.100	ND	0.264	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.100	0.370	0.562	2.08
1,1-DICHLOROETHENE	75-35-4	0.100	ND	0.397	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.500	ND	3.83	ND
METHYLENE CHLORIDE	75-09-2	2.00	2.14	6.95	7.44
1,1-DICHLOROETHANE	75-34-3	0.100	ND	0.405	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.100	ND	0.397	ND
CHLOROFORM	67-66-3	0.100	8.05	0.488	39.3
1,1,1-TRICHLOROETHANE	71-55-6	0.100	ND	0.546	ND
1,2-DICHLOROETHANE	107-06-2	0.100	ND	0.405	ND
BENZENE	71-43-2	0.500	ND	1.60	ND
CARBON TETRACHLORIDE	56-23-5	0.100	0.259	0.629	1.63
1,2-DICHLOROPROPANE	78-87-5	0.100	ND	0.462	ND
TRICHLOROETHENE	79-01-6	0.100	2.29	0.537	12.3
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.100	ND	0.454	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.100	ND	0.454	ND
TOLUENE	108-88-3	0.500	ND	1.88	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.100	ND	0.546	ND
1,2-DIBROMOETHANE	106-93-4	0.100	ND	0.768	ND
TETRACHLOROETHENE	127-18-4	0.100	0.179	0.678	1.22
CHLOROBENZENE	108-90-7	0.100	ND	0.460	ND
ETHYLBENZENE	100-41-4	0.100	0.159	0.434	0.689
XYLENE (M+P)	1330-20-7	0.200	0.509	0.868	2.21
STYRENE	100-42-5	0.100	ND	0.426	ND
XYLENE (O)	95-47-6	0.100	0.217	0.434	0.941
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.100	ND	0.687	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.100	ND	0.492	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.100	0.235	0.492	1.16
1,3-DICHLOROBENZENE	541-73-1	0.100	ND	0.601	ND
1,4-DICHLOROBENZENE	106-46-7	0.100	ND	0.601	ND
1,2-DICHLOROBENZENE	95-50-1	0.100	ND	0.601	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.100	ND	0.742	ND
HEXACHLOROBUTADIENE	87-68-3	0.100	ND	1.07	ND

NOTES:
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APPROVED BY: MK
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B3-R2-032717
LAB NO:	153380
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	13:58
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.447	0.0989	2.21
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.361	0.0826	0.745
VINYL CHLORIDE	75-01-4	0.0200	ND	0.0511	ND
BROMOMETHANE	74-83-9	0.0200	ND	0.0777	ND
CHLOROETHANE	75-00-3	0.0200	ND	0.0528	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.213	0.112	1.20
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	ND	1.39	ND
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	0.615	0.0977	3.00
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	ND	0.109	ND
1,2-DICHLOROETHANE	107-06-2	0.0200	0.0221	0.0809	0.0894
BENZENE	71-43-2	0.100	ND	0.319	ND
CARBON TETRACHLORIDE	56-23-5	0.0200	0.142	0.126	0.893
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	0.134	0.107	0.723
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	0.217	0.377	0.816
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	0.0344	0.136	0.233
CHLOROBENZENE	108-90-7	0.0200	ND	0.0921	ND
ETHYLBENZENE	100-41-4	0.0200	0.248	0.0868	1.08
XYLENE (M+P)	1330-20-7	0.0400	1.21	0.174	5.27
STYRENE	100-42-5	0.0200	0.0314	0.0852	0.134
XYLENE (O)	95-47-6	0.0200	0.397	0.0868	1.72
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	0.0530	0.0983	0.261
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	0.0914	0.0983	0.449
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: RMC
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B4-R1-032717
LAB NO:	153381
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	14:10
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.783	0.0989	3.87
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.119	0.0826	0.247
VINYL CHLORIDE	75-01-4	0.0200	ND	0.0511	ND
BROMOMETHANE	74-83-9	0.0200	ND	0.0777	ND
CHLOROETHANE	75-00-3	0.0200	0.0256	0.0528	0.0675
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.316	0.112	1.78
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	ND	1.39	ND
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	2.10	0.0977	10.3
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	0.0412	0.109	0.225
1,2-DICHLOROETHANE	107-06-2	0.0200	ND	0.0809	ND
BENZENE	71-43-2	0.100	ND	0.319	ND
CARBON TETRACHLORIDE	56-23-5	0.0200	0.156	0.126	0.981
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	0.244	0.107	1.31
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	0.532	0.377	2.00
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	0.227	0.136	1.54
CHLOROBENZENE	108-90-7	0.0200	ND	0.0921	ND
ETHYLBENZENE	100-41-4	0.0200	0.266	0.0868	1.15
XYLENE (M+P)	1330-20-7	0.0400	0.982	0.174	4.26
STYRENE	100-42-5	0.0200	0.104	0.0852	0.443
XYLENE (O)	95-47-6	0.0200	0.418	0.0868	1.82
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	0.131	0.0983	0.646
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	0.437	0.0983	2.15
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: AMC
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	B4-R2-032717
LAB NO:	153382
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	14:24
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.615	0.0989	3.04
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.349	0.0826	0.720
VINYL CHLORIDE	75-01-4	0.0200	ND	0.0511	ND
BROMOMETHANE	74-83-9	0.0200	ND	0.0777	ND
CHLOROETHANE	75-00-3	0.0200	ND	0.0528	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.241	0.112	1.36
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	ND	1.39	ND
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	0.649	0.0977	3.17
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	ND	0.109	ND
1,2-DICHLOROETHANE	107-06-2	0.0200	ND	0.0809	ND
BENZENE	71-43-2	0.100	0.104	0.319	0.332
CARBON TETRACHLORIDE	56-23-5	0.0200	0.124	0.126	0.781
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	0.0955	0.107	0.513
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	0.497	0.377	1.87
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	0.0701	0.136	0.476
CHLOROBENZENE	108-90-7	0.0200	ND	0.0921	ND
ETHYLBENZENE	100-41-4	0.0200	0.399	0.0868	1.73
XYLENE (M+P)	1330-20-7	0.0400	1.81	0.174	7.87
STYRENE	100-42-5	0.0200	0.100	0.0852	0.426
XYLENE (O)	95-47-6	0.0200	0.650	0.0868	2.82
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	0.159	0.0983	0.782
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	0.458	0.0983	2.25
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: RML
DATE: 4/5/17

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4841
CLIENT PROJECT: 770625803

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

SAMPLE ID:	DUP-032717
LAB NO:	153383
SAMPLE TYPE:	AIR
DATE SAMPLED:	03/27/2017
TIME SAMPLED:	NA
BATCH ID:	032817A1
DATE ANALYZED:	03/29/2017

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0200	0.491	0.0989	2.43
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0200	ND	0.140	ND
CHLOROMETHANE	74-87-3	0.0400	0.182	0.0826	0.375
VINYL CHLORIDE	75-01-4	0.0200	ND	0.0511	ND
BROMOMETHANE	74-83-9	0.0200	0.0398	0.0777	0.154
CHLOROETHANE	75-00-3	0.0200	ND	0.0528	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.0200	0.0938	0.112	0.527
1,1-DICHLOROETHENE	75-35-4	0.0200	ND	0.0793	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.100	ND	0.766	ND
METHYLENE CHLORIDE	75-09-2	0.400	ND	1.39	ND
1,1-DICHLOROETHANE	75-34-3	0.0200	ND	0.0810	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0200	ND	0.0793	ND
CHLOROFORM	67-66-3	0.0200	ND	0.0977	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.0200	ND	0.109	ND
1,2-DICHLOROETHANE	107-06-2	0.0200	ND	0.0809	ND
BENZENE	71-43-2	0.100	ND	0.319	ND
CARBON TETRACHLORIDE	56-23-5	0.0200	ND	0.126	ND
1,2-DICHLOROPROPANE	78-87-5	0.0200	ND	0.0924	ND
TRICHLOROETHENE	79-01-6	0.0200	ND	0.107	ND
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0200	ND	0.0908	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0200	ND	0.0908	ND
TOLUENE	108-88-3	0.100	ND	0.377	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.0200	ND	0.109	ND
1,2-DIBROMOETHANE	106-93-4	0.0200	ND	0.154	ND
TETRACHLOROETHENE	127-18-4	0.0200	ND	0.136	ND
CHLOROBENZENE	108-90-7	0.0200	ND	0.0921	ND
ETHYLBENZENE	100-41-4	0.0200	ND	0.0868	ND
XYLENE (M+P)	1330-20-7	0.0400	ND	0.174	ND
STYRENE	100-42-5	0.0200	ND	0.0852	ND
XYLENE (O)	95-47-6	0.0200	ND	0.0868	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0200	ND	0.137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0200	ND	0.0983	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0200	ND	0.0983	ND
1,3-DICHLOROBENZENE	541-73-1	0.0200	ND	0.120	ND
1,4-DICHLOROBENZENE	106-46-7	0.0200	ND	0.120	ND
1,2-DICHLOROBENZENE	95-50-1	0.0200	ND	0.120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0200	ND	0.148	ND
HEXACHLOROBUTADIENE	87-68-3	0.0200	ND	0.213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
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APPROVED BY: RMC
DATE: 4/5/17

K PRIME, INC.
LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B032817A1
SAMPLE TYPE: AIR

BATCH ID: 032817A1
DATE ANALYZED: 03/28/2017

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.0100	ND	0.0495	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	0.0100	ND	0.0699	ND
CHLOROMETHANE	74-87-3	0.0200	ND	0.0413	ND
VINYL CHLORIDE	75-01-4	0.0100	ND	0.0256	ND
BROMOMETHANE	74-83-9	0.0100	ND	0.0388	ND
CHLOROETHANE	75-00-3	0.0100	ND	0.0264	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.0100	ND	0.0562	ND
1,1-DICHLOROETHENE	75-35-4	0.0100	ND	0.0397	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.0500	ND	0.383	ND
METHYLENE CHLORIDE	75-09-2	0.200	ND	0.695	ND
1,1-DICHLOROETHANE	75-34-3	0.0100	ND	0.0405	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.0100	ND	0.0397	ND
CHLOROFORM	67-66-3	0.0100	ND	0.0488	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.0100	ND	0.0546	ND
1,2-DICHLOROETHANE	107-06-2	0.0100	ND	0.0405	ND
BENZENE	71-43-2	0.0500	ND	0.160	ND
CARBON TETRACHLORIDE	56-23-5	0.0100	ND	0.0629	ND
1,2-DICHLOROPROPANE	78-87-5	0.0100	ND	0.0462	ND
TRICHLOROETHENE	79-01-6	0.0100	ND	0.0537	ND
CIS-1,3-DICHLOROPROPENE	10061-02-6	0.0100	ND	0.0454	ND
TRANS-1,3-DICHLOROPROPENE	10061-01-5	0.0100	ND	0.0454	ND
TOLUENE	108-88-3	0.0500	ND	0.188	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.0100	ND	0.0546	ND
1,2-DIBROMOETHANE	106-93-4	0.0100	ND	0.0768	ND
TETRACHLOROETHENE	127-18-4	0.0100	ND	0.0678	ND
CHLOROBENZENE	108-90-7	0.0100	ND	0.0460	ND
ETHYLBENZENE	100-41-4	0.0100	ND	0.0434	ND
XYLENE (M+P)	1330-20-7	0.0200	ND	0.0868	ND
STYRENE	100-42-5	0.0100	ND	0.0426	ND
XYLENE (O)	95-47-6	0.0100	ND	0.0434	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.0100	ND	0.0687	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.0100	ND	0.0492	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.0100	ND	0.0492	ND
1,3-DICHLOROBENZENE	541-73-1	0.0100	ND	0.0601	ND
1,4-DICHLOROBENZENE	106-46-7	0.0100	ND	0.0601	ND
1,2-DICHLOROBENZENE	95-50-1	0.0100	ND	0.0601	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.0100	ND	0.0742	ND
HEXACHLOROBUTADIENE	87-68-3	0.0100	ND	0.107	ND

NOTES:

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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L032817A1
LAB CONTROL DUPLICATE ID: D032817A1

SAMPLE TYPE: AIR
BATCH ID: 032817A1
DATE ANALYZED: 03/28/2017

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO-15-SIM (GC-MS-SIM)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	0.500	0.010	ND	0.403	81	60 - 140
TRICHLOROETHENE	0.500	0.010	ND	0.465	93	60 - 140
BENZENE	0.500	0.050	ND	0.403	81	60 - 140
TOLUENE	0.500	0.050	ND	0.432	86	60 - 140
TETRACHLOROETHENE	0.500	0.010	ND	0.474	95	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	0.500	0.428	86	6.2	25	60 - 140
TRICHLOROETHENE	0.500	0.479	96	2.9	25	60 - 140
BENZENE	0.500	0.409	82	1.4	25	60 - 140
TOLUENE	0.500	0.452	90	4.6	25	60 - 140
TETRACHLOROETHENE	0.500	0.486	97	2.6	25	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

please cc hfarr@langan.com

10432

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CHAIN OF CUSTODY RECORD

Page 1 of 1

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- [ ] 555 Montgomery Street. Suite 1300, San Francisco, CA 94111
- [x] 501 14th Street, Third Floor, Oakland CA 94612
- [ ] 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- [ ] 4030 Moorpark Ave. Suite 210, San Jose, CA 95117-1849

Site Name: The Bungalows
Job Number: 770625803
Project Manager\Contact: Sigrida Reinis sreinis@langan.com
Samplers: Jessica Schaettle JS
Recorder (Signature Required): Jessi Schaettle

Turnaround Time: Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix: Soil	Water	Air	Other	No. Containers & Preservative: HCL	H_2SO_4	HNO_3	Ice		Analysis Requested: SIM TO-15												Silica gel clean-up	Hold	Remarks
B1-R1-032717	3/27/17	1205	153375			X							X														
B1-R2-032717	↓	1235	153376			X							X														
B2-R1-032717	↓	1300	153377			X							X														
B2-R2-032717	↓	1320	153378			X							X														
B3-R1-032717	↓	1335	153379			X							X														
B3-R2-032717	↓	1358	153380			X							X														
B4-R1-032717	↓	1410	153381			X							X														
B4-R2-032717	↓	1424	153382			X							X														
DUP-032717	↓	–	153383			X							X														

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Jessi Schaettle	3/28/17	10:30	[signature] (ECS)	3/28/17	10:30

Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Date	Time
[signature] (ECS)	3/28/17	11:55	[signature]	3/28/17	11:55 am

Sent to Laboratory (Name):
Laboratory Comments/Notes:

Method of Shipment: ☐ Lab courier ☐ Fed Ex ☐ Airborne ☐ UPS ☐ Hand Carried ☐ Private Courier (Co. Name)

White Copy - Original   Yellow Copy - Laboratory   Pink Copy - Field   COC Number: