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LOCKHEED MARTIN



DATE: May 2, 2017

TO: Michael Hoppe, U.S. EPA/ERT Work Assignment Manager

THROUGH: [REDACTED] SERAS Program Manager *ah*

FROM: [REDACTED] SERAS Task Leader *SL*

SUBJECT: BONAIR AVENUE VAPOR INTRUSION SITE, HATBORO, PA
WORK ASSIGNMENT #SER00290 – TRIP REPORT

BACKGROUND

The Environmental Protection Agency/Environmental Response Team (EPA/ERT) issued Work Assignment (WA) Number SERAS-290 to Lockheed Martin under the Scientific, Engineering, Response and Analytical Services (SERAS) contract to conduct a sub-slab soil gas, indoor air and ambient air sampling event as part of a vapor intrusion investigation along and around Bonair Avenue, located in Hatboro, Montgomery County, Pennsylvania (PA), (Site).

Several EPA Superfund Cleanup Sites, including Raymark, Inc. (located approximately 500 feet east/southeast of the Site) and Fischer & Porter Company (located approximately 1.25 miles northeast of the Site), are located in the vicinity of the Site. The potential for adverse indoor air impacts associated with groundwater contamination, consisting of trichloroethylene (TCE) and several other volatile organic compounds (VOCs), suspected of being associated with the EPA Superfund Cleanup Sites is the primary driver for the vapor intrusion investigation at the Site. A previous vapor intrusion study was conducted in 2013 that indicated the potential may exist for vapor intrusion to occur in residential properties downgradient from the Superfund sites. The September 2014 Fourth Five-Year Review Report for the Raymark Superfund Site, Montgomery County, PA prepared by EPA recommended an expansion of the vapor intrusion study to other residences in the vicinity of Bonair Avenue, which are located above the shallow groundwater plume. The data generated from this sampling event aligns with the recommendations of the latest Five-Year Review for the Raymark Superfund Site and the data will assist EPA Region 3 personnel in determining if a potential for an adverse indoor air impact exists at the Site.

From April 5 to 7, 2016, SERAS personnel, at the request of EPA/ERT, traveled to the Site to install five sub-slab soil gas probes. A total of 16 air samples using SUMMA[®] canisters were collected from three properties; five sub-slab soil gas, nine indoor air, two ambient air and one trip blank.

This report details the sampling events of early 2017.

OBSERVATIONS AND ACTIVITIES

SERAS personnel mobilized to the Site on February 15, 2017. Upon arrival at the Site, each residence being investigated had a sub-slab soil gas sampling probe installed. Additionally, each residence was assigned a unique (property) identifier. A pre-sampling walkthrough was conducted at each residence to identify and

document potential indoor air background sources. Identified potential indoor air background sources were removed prior to initiation of sample collection at each residence at the time of port installation. Sampling probes were installed in accordance SERAS SOP #2082, “*Construction and Installation of Permanent Sub-Slab Soil Gas Probes*”. Equipment was prepared for the collection of sub-slab soil gas, indoor air and ambient air samples using SUMMA[®] canisters and restrictor orifices that were individually certified clean to 20 part per trillion by volume (pptv).

The February 2017 scope of work included the evaluation of sub-slab soil gas, indoor air and ambient air quality at residential properties on Bonair Avenue and North Penn Street. Activities included the collection of 24-hour time-weighted sub-slab soil gas, indoor air and ambient air samples using SUMMA[®] canisters. All SUMMA[®] canister samples were analyzed for a limited analyte list of nine VOCs. Carbon disulfide, sampled in March 2016, was not on the list analytes.

The VOCs of interest for sub-slab soil gas, indoor air and ambient air samples collected in SUMMA[®] canisters were 1,2-dichloroethane (1,2-DCA), 1,4-dichlorobenzene, benzene, carbon tetrachloride, chloroform, dichlorodifluoromethane (Freon 12), ethylbenzene, tetrachloroethene (PCE), and TCE. All samples collected using SUMMA[®] canisters were shipped to the ALS Environmental laboratory in Simi Valley, California (ALS) for analysis per US EPA Method TO-15, “*Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*”.

SERAS personnel remobilized to the Site on April 5, 2017 to resample Property 20. The scope of work followed the February 2017 scope along with the VOCs of interest. A field change form was submitted to have SERAS Laboratory perform the EPA Method TO-15 analysis. A decision was made by EPA Region 3 and ERT to resample due to elevated TCE concentrations in sub-slab soil gas and the sub-slab soil gas SUMMA[®] canister reported to be leaking by ALS. Analysis of the April 2017 samples was performed in accordance with SERAS SOP #1814, “*Analysis of Volatile Organic Compounds (VOCs) in SUMMA Canister Air Samples by Gas Chromatography/Mass Spectrometry (GC/MS)*”.

Collection and Analysis of Air Samples using SUMMA[®] Canisters

Figure 1 contains a map of the unit locations sampled in 2017. A total of five properties were sampled using SUMMA[®] canisters during this mobilization.

On February 15, 2017, all properties had a sub-slab gas probe installed in the basement. All of these properties were sampled from February 16, 2017 to February 17, 2017.

A collocated indoor air and a collocated ambient air sample was collected in conjunction with sub-slab soil gas and indoor air samples. All samples were collected using SUMMA[®] canisters equipped with restrictive orifices set at an approximate flow rate of 3.5 milliliters per minute (mL/min) to collect between four to five liters of air during each 24-hour sampling period.

After the 24-hour sampling period had elapsed, the sub-slab soil gas, indoor air and ambient air samples collected in SUMMA[®] canisters were retrieved from each property and properly documented in accordance with SERAS Standard Operating Procedure (SOP) #1704, *SUMMA[®] Canister Sampling*.

Nineteen samples were collected using SUMMA[®] canisters and one SUMMA[®] canister designated as a trip blank were delivered under Chain of Custody (COC) to ALS and analyzed in accordance with EPA Method TO-15.

For the resampling event, five samples were collected using SUMMA[®] canisters and one SUMMA[®] canister designated as a trip blank were delivered under COC to SERAS and analyzed in accordance with SERAS SOP #1814.

SERAS Quality Assurance Group personnel validated the final laboratory data for all air samples collected in SUMMA[®] canisters and issued Analytical Reports dated March 2017 and April 2017. The Analytical Report indicates that the data (i.e., SUMMA[®] canister data) is definitive in nature. Usability of definitive data is evaluated by a group independent from the group who is conducting the sampling or the analyses. Data qualifiers and reasons for qualification are outlined in the case narrative of the Analytical Report. The COC records and definitive data for sub-slab soil gas, indoor air, and outdoor ambient air samples collected using SUMMA[®] canisters can be found in the Analytical Reports, SERAS-290-DAR-032917 and SERAS-290-DAR-041117, located in Appendix A.

RESULTS

Tables 1a-1e present the SUMMA[®] canisters results in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for the February 2017 sampling event. Table 2a-2e present the SUMMA[®] canisters results in parts per billion by volume (ppbv) for the February 2017 sampling event. Table 3 present the SUMMA[®] canisters results in $\mu\text{g}/\text{m}^3$ for the resampling event for the April 2017 sampling event. Table 4 present the SUMMA[®] canisters results in ppbv for the resampling event for the April 2017 sampling event. Sub-slab soil and indoor air vapor intrusion screening levels were based on EPA's Regional Screening Levels (RSLs).

Of the five sub-slab soil gas samples collected during the February 2017 sampling event using SUMMA[®] canisters, TCE was detected at a concentration exceeding the soil gas RSL at Properties 20 and 23. Chloroform was detected at a concentration exceeding the soil gas RSL at Property 20 and 23. Carbon tetrachloride was detected at a concentration exceeding the soil gas RSL at Property 23. TCE concentrations above for the soil gas RSLs was detected during the April 2017 sampling event at Property 20. 1,2-DCA, benzene, 1,4-dichlorobenzene, Freon 12, ethylbenzene, and PCE were not detected at concentrations above the soil gas RSLs in either sampling event.

The Property 20 February 2017 sampling event had basement sample results that exceed the indoor air RSLs for 1,2 DCA, benzene, carbon tetrachloride, chloroform, and TCE. First floor had indoor air RSLs exceedances for 1,2 DCA, benzene and chloroform. Results from the April 2017 sampling event exceeded the indoor air RSLs in both basement samples for 1,2 DCA, benzene, chloroform and TCE. 1,2 DCA, benzene and chloroform exceeded the indoor air RSLs on the first floor.

The concentrations of 1,2 DCA, benzene, carbon tetrachloride and chloroform exceeded the indoor air RSLs in the basement and first floor samples collected from Property 21. At Property 22, 1,2-DCA, benzene, carbon tetrachloride and chloroform exceeded the indoor air RSLs in the basement and first floor. 1,2 DCA, benzene, carbon tetrachloride and chloroform were detected at a concentration exceeding the indoor air RSLs in both basement air samples collected at Property 23. Additionally; benzene, chloroform and ethylbenzene were detected at a concentration above the indoor air RSL in the first floor sample collected from Property 23. Concentrations of benzene, carbon tetrachloride and chloroform exceeded the indoor air RSLs in the basement and first floor samples collected from Property 24. In addition, 1,2 DCA was detected above the indoor air RSLs in the first floor air sample from Property 24.

Benzene, carbon tetrachloride and chloroform were detected at a concentration exceeding the indoor air RSLs in all ambient air samples except for sample number 290-028, which carbon tetrachloride did not exceed the indoor air RSLs for the February 2017 sampling event. No indoor air exceedances detected in the ambient air sample for the April 2017 sampling event.

The SUMMA[®] canister sampling worksheets used during the February 2017 and April 2017 sampling events can be found in Appendix B, Air Sampling Worksheets.

FUTURE ACTIVITIES

There are no additional activities scheduled at this time.

cc: Central File - WA # SERAS-290 (w/attachment)
Electronic File - I:/Archive/SERAS/290/D/TR/050217
[REDACTED], SERAS Program Manager (cover page only)

TABLES
Bonair Avenue Vapor Intrusion Site
Hatboro, Pennsylvania
May 2017

Table 1a
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 20

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0018	290-0019	290-0020
Sub-Location			SS	BS	FF
Sample Type			Sub-Slab	Indoor Air	Indoor Air
Result Units			$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.044 U	0.19	0.91
1,4-Dichlorobenzene	8.5	0.26	0.044 U	0.070	0.078
Benzene	12	0.36	1.2	0.67 J	1.3 J
Carbon tetrachloride	16	0.47	7.0	0.64 J	0.46 J
Chloroform	4.1	0.12	15	0.21	0.24
Freon 12	3500	100	3.7	2.8	2.4
Ethylbenzene	37	1.1	0.17 U	0.24	0.44
PCE	360	11	30	0.15	0.097
TCE	16	0.48	1900	2.3	0.22

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 1b
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 21

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0021 SS Sub-Slab	290-0022 BS Indoor Air	290-0023 FF Indoor Air	290-0024 AMB Ambient Air
Result Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.059 U	0.15	1.4	0.062
1,4-Dichlorobenzene	8.5	0.26	0.098	0.045	0.044	0.053
Benzene	12	0.36	1.1 J	0.78 J	0.64 J	0.53 J
Carbon tetrachloride	16	0.47	0.41 J	0.49 J	0.47 J	0.49 J
Chloroform	4.1	0.12	0.48	0.32	0.43	0.14 U
Freon 12	3500	100	2.6	2.7	2.3	2.8
Ethylbenzene	37	1.1	0.39	0.15	0.21	0.17
PCE	360	11	1.5	0.20	0.20	0.057
TCE	16	0.48	3.4	0.10	0.039	0.036 U

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 1c
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 22

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0025	290-0026	290-0027	290-0028	290-0029
Sub-Location			SS	BS	FF	AMB1	AMB2-CO
Sample Type			Sub-Slab	Indoor Air	Indoor Air	Ambient Air	Ambient Air
Result Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.037 U	0.13	0.36	0.062	0.062
1,4-Dichlorobenzene	8.5	0.26	0.037 U	0.085	0.038 U	0.031 U	0.038 U
Benzene	12	0.36	0.35 J	0.41 J	0.45 J	0.54 J	0.55 J
Carbon tetrachloride	16	0.47	0.60 J	0.50 J	0.53 J	0.46 J	0.49 J
Chloroform	4.1	0.12	0.51	1.1	3.0	0.13 U	0.15 U
Freon 12	3500	100	7.2	2.7	2.5	2.7	2.7
Ethylbenzene	37	1.1	0.28	0.31	0.53	0.13 U	0.15 U
PCE	360	11	7	0.75	1.4	0.044	0.045
TCE	16	0.48	1.3	0.046	0.038 U	0.031 U	0.038 U

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 1d
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 23

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0030 SS Sub-Slab $\mu\text{g}/\text{m}^3$	290-0031 BS1 Indoor Air $\mu\text{g}/\text{m}^3$	290-0032 BS2-CO Indoor Air $\mu\text{g}/\text{m}^3$	290-0033 FF Indoor Air $\mu\text{g}/\text{m}^3$
Sub-Location						
Sample Type						
Result Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.037 U	0.11	0.11	0.095
1,4-Dichlorobenzene	8.5	0.26	0.037 U	0.037 U	0.036 U	0.075 U
Benzene	12	0.36	0.92 J	0.76 J	0.81 J	6.4
Carbon tetrachloride	16	0.47	45 J	0.50 J	0.50 J	0.46
Chloroform	4.1	0.12	7.5	0.15 U	0.14 U	0.30 U
Freon 12	3500	100	44	2.6	2.7	2.2
Ethylbenzene	37	1.1	0.15 U	0.68	0.74	4.6
PCE	360	11	11	0.065	0.097	0.075 U
TCE	16	0.48	520	0.24	0.23	0.12

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 1e
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 24

Sample Number	Sub-Slab Soil Vapor	Indoor Air Vapor	290-0034	290-0035	290-0036
Sub-Location	Intrusion Screening	Intrusion Screening	SS	BS	FF
Sample Type	Level	Level	Sub-Slab	Indoor Air	Indoor Air
Result Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.046 U	0.10	0.27
1,4-Dichlorobenzene	8.5	0.26	0.15	0.031 U	0.039 U
Benzene	12	0.36	0.62 J	0.49 J	0.58
Carbon tetrachloride	16	0.47	0.61 J	0.50 J	0.56
Chloroform	4.1	0.12	0.63	0.12 U	0.21
Freon 12	3500	100	2.6	2.6	2.4
Ethylbenzene	37	1.1	0.27	0.40	0.43
PCE	360	11	1.4	0.10	0.16
TCE	16	0.48	4.7	0.031 U	0.093

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 2a
SUMMA Canister Sample Results in ppbv - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 20

Sample Number	Sub-Slab Soil Vapor	Indoor Air Vapor	290-0018	290-0019	290-0020
Sub-Location	Intrusion Screening	Intrusion Screening	SS	BS	FF
Sample Type	Level	Level	Sub-Slab	Indoor Air	Indoor Air
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.011 U	0.047	0.22
1,4-Dichlorobenzene	1.4	0.043	0.0072 U	0.012	0.013
Benzene	3.8	0.11	0.38	0.21 J	0.42 J
Carbon tetrachloride	2.5	0.075	1.1	0.10 J	0.073 J
Chloroform	0.84	0.024	3.0	0.043	0.049
Freon 12	710	20	0.75	0.56	0.48
Ethylbenzene	8.5	0.25	0.040 U	0.055	0.10
PCE	53	1.6	4.4	0.023	0.014
TCE	2.98	0.089	360	0.42	0.041

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 2b
SUMMA Canister Sample Results in ppbv - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 21

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0021 SS Sub-Slab	290-0022 BS Indoor Air	290-0023 FF Indoor Air	290-0024 AMB Ambient Air
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.015 U	0.038	0.34	0.015
1,4-Dichlorobenzene	1.4	0.043	0.016	0.0076	0.0072	0.0088
Benzene	3.8	0.11	0.34 J	0.25 J	0.20 J	0.16 J
Carbon tetrachloride	2.5	0.075	0.066 J	0.078 J	0.075 J	0.078 J
Chloroform	0.84	0.024	0.098	0.066	0.088	0.029 U
Freon 12	710	20	0.53	0.55	0.47	0.56
Ethylbenzene	8.5	0.25	0.089	0.034	0.048	0.039
PCE	53	1.6	0.22	0.029	0.030	0.0084
TCE	2.98	0.089	0.63	0.019	0.0072	0.0066 U

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 2c
SUMMA Canister Sample Results in ppbv - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 22

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0025	290-0026	290-0027	290-0028	290-0029
Sub-Location			SS	BS	FF	AMB1	AMB2-CO
Sample Type			Sub-Slab	Indoor Air	Indoor Air	Ambient Air	Ambient Air
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.0091 U	0.032	0.089	0.015	0.015
1,4-Dichlorobenzene	1.4	0.043	0.0062 U	0.014	0.0063 U	0.0052 U	0.0063 U
Benzene	3.8	0.11	0.11 J	0.13 J	0.14 J	0.17 J	0.17 J
Carbon tetrachloride	2.5	0.075	0.095 J	0.079 J	0.084 J	0.074 J	0.078 J
Chloroform	0.84	0.024	0.11	0.23	0.62	0.026 U	0.031 U
Freon 12	710	20	1.4	0.54	0.51	0.55	0.55
Ethylbenzene	8.5	0.25	0.065	0.071	0.12	0.029 U	0.035 U
PCE	53	1.6	1.0	0.11	0.21	0.0065	0.0066
TCE	2.98	0.089	0.25	0.0085	0.0071 U	0.0058 U	0.0070 U

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 2d
SUMMA Canister Sample Results in ppbv - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 23

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0030	290-0031	290-0032	290-0033
Sub-Location			SS	BS1	BS2-CO	FF
Sample Type			Sub-Slab	Indoor Air	Indoor Air	Indoor Air
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.0090 U	0.026	0.027	0.023
1,4-Dichlorobenzene	1.4	0.043	0.0061 U	0.0061 U	0.0059 U	0.012 U
Benzene	3.8	0.11	0.29 J	0.24 J	0.25 J	2.0
Carbon tetrachloride	2.5	0.075	7.1 J	0.079 J	0.079 J	0.072
Chloroform	0.84	0.024	1.5	0.030 U	0.029 U	0.061 U
Freon 12	710	20	8.9	0.53	0.55	0.45
Ethylbenzene	8.5	0.25	0.034 U	0.16	0.17	1.1
PCE	53	1.6	1.6	0.0096	0.014	0.011 U
TCE	2.98	0.089	97	0.045	0.044	0.023

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 2e
SUMMA Canister Sample Results in ppbv - February 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 24

Sample Number	Sub-Slab Soil Vapor	Indoor Air Vapor	290-0034	290-0035	290-0036
Sub-Location	Intrusion Screening	Intrusion Screening	SS	BS	FF
Sample Type	Level	Level	Sub-Slab	Indoor Air	Indoor Air
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.011 U	0.025	0.068
1,4-Dichlorobenzene	1.4	0.043	0.025	0.0051 U	0.0064 U
Benzene	3.8	0.11	0.19 J	0.15 J	0.18
Carbon tetrachloride	2.5	0.075	0.097 J	0.080 J	0.089
Chloroform	0.84	0.024	0.13	0.025 U	0.044
Freon 12	710	20	0.53	0.52	0.49
Ethylbenzene	8.5	0.25	0.062	0.092	0.10
PCE	53	1.6	0.21	0.015	0.024
TCE	2.98	0.089	0.88	0.0057 U	0.017

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

J- Value is estimated

Table 3
SUMMA Canister Sample Results in $\mu\text{g}/\text{m}^3$ - April 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 20

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0038	290-0039	290-0040	290-0041	290-0042
Sub-Location			SS	BS1	BS2	FF	AMB
Sample Type			Sub-Slab	Indoor Air	Indoor Air	Indoor Air	Ambient
Result Units	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
1,2 DCA	3.6	0.11	0.283	0.616	0.570	1.19	0.0809 U
1,4-Dichlorobenzene	8.5	0.26	0.120 U	0.133	0.121	0.120 U	0.120 U
Benzene	12	0.36	0.403	0.518	0.503	0.692	0.296
Carbon tetrachloride	16	0.47	2.16	0.431	0.415	0.421	0.397
Chloroform	4.1	0.12	3.36	0.223	0.225	0.206	0.0977 U
Freon 12	3500	100	2.01	1.89	1.84	1.74	1.78
Ethylbenzene	37	1.1	0.216	0.348	0.313	0.213	0.0868 U
PCE	360	11	10.5	0.199	0.212	0.148	0.136 U
TCE	16	0.48	504	0.857	1.81	0.187	0.113

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

BS - Basement

FF - First Floor

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

Table 4
SUMMA Canister Sample Results in ppbv - April 2017
Bonair Avenue Vapor Intrusion Site
Hatboro, PA
May 2017

Property 20

Sample Number	Sub-Slab Soil Vapor Intrusion Screening Level	Indoor Air Vapor Intrusion Screening Level	290-0038	290-0039	290-0040	290-0041	290-0042
Sub-Location			SS	BS1	BS2	FF	AMB
Sample Type			Sub-Slab	Indoor Air	Indoor Air	Indoor Air	Ambient
Result Units	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
1,2 DCA	0.89	0.027	0.0698	0.152	0.141	0.294	0.0200 U
1,4-Dichlorobenzene	1.4	0.043	0.0200 U	0.0222	0.0202	0.0200 U	0.0200 U
Benzene	3.8	0.11	0.126	0.162	0.158	0.217	0.0926
Carbon tetrachloride	2.5	0.075	0.344	0.0686	0.0660	0.0670	0.0631
Chloroform	0.84	0.024	0.688	0.0457	0.0461	0.0423	0.0200 U
Freon 12	710	20	0.406	0.382	0.373	0.352	0.361
Ethylbenzene	8.5	0.25	0.0498	0.0801	0.0722	0.0491	0.0200 U
PCE	53	1.6	1.55	0.0293	0.0312	0.0219	0.0200 U
TCE	2.98	0.089	93.7	0.159	0.337	0.0349	0.0209

Notes and Acronyms:

Analyte concentrations exceeding the Regional Screening Level (RSL) are presented in bold and shaded gray.

1,2 DCA - 1,2-Dichloroethane

Freon 12 - Dichlorodifluoromethane

PCE - Tetrachloroethene

TCE - Trichloroethene

SS - Sub-slab soil gas

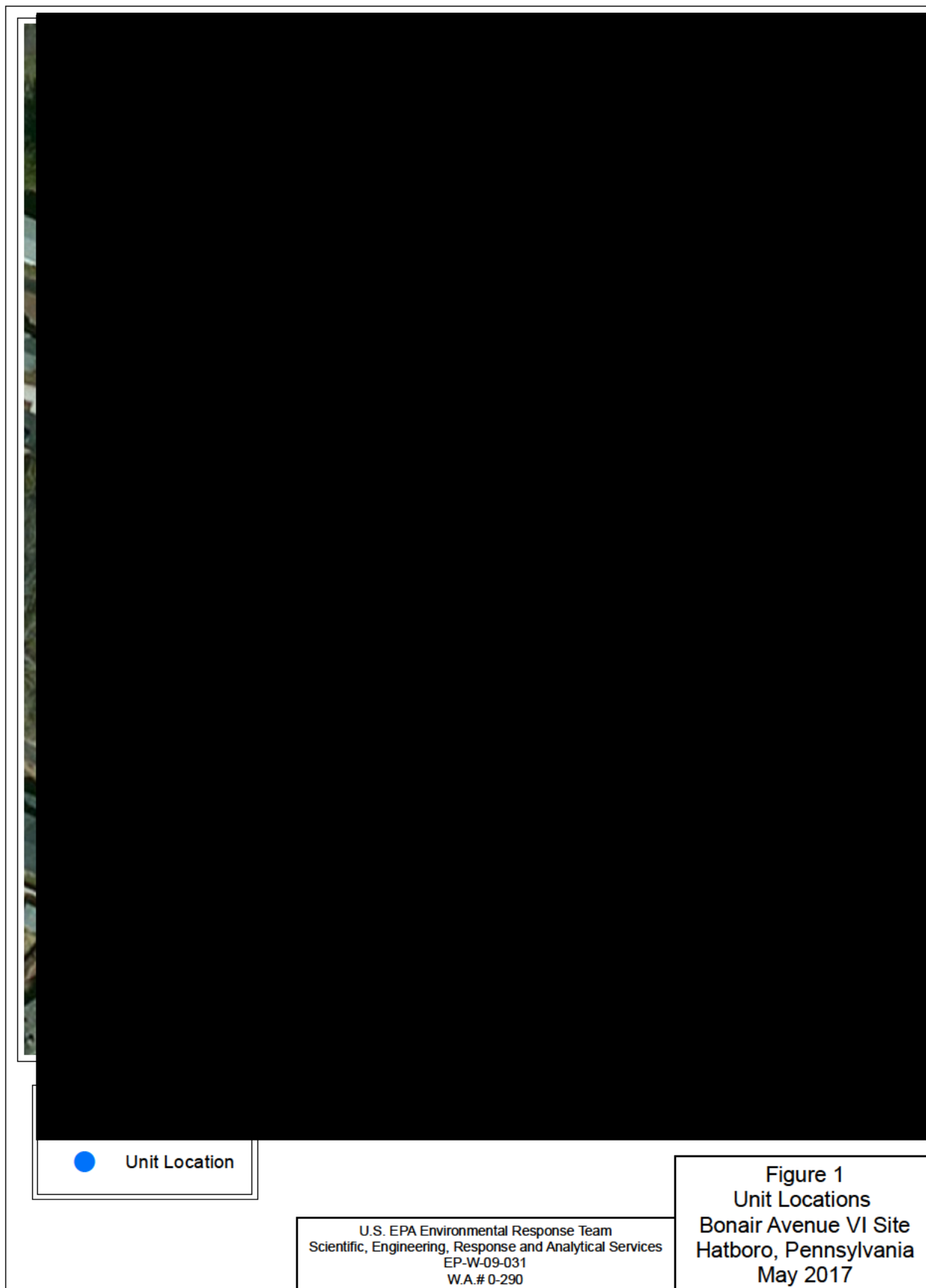
BS - Basement

FF - First Floor

ug/m³ - Micrograms per cubic meter

U - Analyte was not detected at a concentration above the laboratory reporting limit.

FIGURE
Bonair Avenue Vapor Intrusion Site
Hatboro, Pennsylvania
May 2017



MXD: C:\SERAS\GIS\ArcInfoProjects\SERAS01\SER00290_Bonair\290_Unit_Locs_f01.mxd

APPENDIX A
SUMMA[®] Sampling Work Sheets
Bonair Avenue Vapor Intrusion Site
Hatboro, Pennsylvania
May 2017



EPA/Environmental Response Team
Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031



Air Sampling Work Sheet - SUMMA

Site: BONAFER VI
 Sampler: [REDACTED]
 Date: 2/16/17 - 2/17/17

WA# 290

U.S. EPA/ERT WAM: HOPPE

SERAS Task Leader: [REDACTED]

Sample #	290-0018	290-0019	290-0020		
Location	ZO	ZO	ZO		
Sub-Location	SS	BS	FF		
Summa #	AS00111	AS00270	AC02135		
Orifice ID	FLR00207	FLR00208	FLR00186		
Start Pressure	-29.5	-29.5	-29.5		
NIST Gauge S/N	T304-32	→			
Flow Rate (Start)	-3.7	-3.7	-3.7		
Flow meter	0144115	→			
Analysis/Method	TG-15 PES, TLE	→			
Time/Counter (Start)	0901	0901	0903		
Time/Counter (Stop)	0854	0854	0856		
Total Time (min)	1433	1433	1433		
End Pressure	-4.0	-6.5	-5.0		
NIST Gauge S/N	T304-29	T304-32	T304-32		

MET Station on Site?: Y / N



EPA/Environmental Response Team
Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031



Air Sampling Work Sheet - SUMMA

Site: BONAIR VI

WA# 290

Sampler: [REDACTED]

U.S. EPA/ERT WAM: HOPPE

Date: 2/16/17 - 2/17/17

SERAS Task Leader: [REDACTED]

Sample #	290-0021	290-0022	290-0023	290-0024	
Location	21	21	21	21	
Sub-Location	SS	BS	FF	AMB	
Summa #	AS00210	AS00776	AL02250	AL01918	
Orifice ID	FER00107	FER00105	FER00189	FER00047	
Start Pressure	-29.5	-29.5	-29.5	-29.5	
NIST Gauge S/N	T304-32	→			
Flow Rate (Start)	-3.7	-3.7	-3.7	-3.5	
Flow meter	014415	→			
Analysis/Method	TG-15 PCE, TCE	→			
Time/Counter (Start)	0920	0920	0923	0926	
Time/Counter (Stop)	0904	0904	0904	0913	
Total Time	1424	1424	1421	1427	
End Pressure	-14.5	-5.0	-4.0	-5.0	
NIST Gauge S/N	T304-29	T304-32	T304-32	T304-32	

MET Station on Site?: Y / N



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Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031

Page 1 of 1



Air Sampling Work Sheet - SUMMA

Site: BONAIR VI

WA# 290

Sampler: [REDACTED]

U.S. EPA/ERT WAM: HOPPE

Date: 2/16/17 - 2/17/17

SERAS Task Leader: [REDACTED]

Sample #	290-0025	290-0026	290-0027	290-0028	290-0029
Location	22	22	22	22	22
Sub-Location	SS	BS	FF	AMB1	AMB2
Summa #	AC02129	AS00563	AC02139	AS01152	AS00830
Orifice ID	FER00006	FER00287	FER00251	FER00219	FER00088
Start Pressure	-29.5	-29.5	-29.5	-29.5	-29.5
NIST Gauge S/N	T3041-32				
Flow Rate (Start)	-3.8	-3.6	-3.7	-4.2	-4.3
Flow meter	014115				
Analysis/Method	TG-15 PCE, TCE				
Time/Counter (Start)	0956	0956	0959	1001	1001
Time/Counter (Stop)	0934	0934	0936	0940	0940
Total Time	1418	1418	1417	1419	1419
End Pressure	-8.0	-5.0	-5.5	-2.0	-7.5
NIST Gauge S/N	T3041-29	T3041-32	T3041-32	T3041-32	T3041-32
MET Station on Site?: Y/N					



EPA/Environmental Response Team
Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031



Air Sampling Work Sheet - SUMMA

Site: BONAIR VI

WA# 290

Sampler: [REDACTED]

U.S. EPA/ERT WAM: HOPPE

Date: 2/16/17 - 2/17/17

SERAS Task Leader: [REDACTED]

Sample #	290-0030	290-0031	290-0032	290-0033	
Location	23	23	23	23	
Sub-Location	SS	BS1	BS2	FF	
Summa #	AL01784	AS00508	AS00330	SC01640	
Orifice ID	FCR000079	FCR000004	FCR000005	FCR00299	
Start Pressure	-29.5	-29.5	-29.5	-29.5	
NIST Gauge S/N	T304-32	→			
Flow Rate (Start)	-3.7	-3.5	-3.6	-3.6	
Flow meter	014415	014415	014415	014415	
Analysis/Method	TE-15 PLC, TCC	→			
Time/Counter (Start)	1031	1031	1031	1032	
Time/Counter (Stop)	0959	0959	0959	1004	
Total Time	1408	1408	1408	1412	
End Pressure	-5.5	-6.0	-5.5	-6.5	
NIST Gauge S/N	T304-29	T304-32	T304-32	T304-32	

MET Station on Site?: Y / N

NOTE: SEVERAL HOUSEHOLDS PRODUCTS THAT POSSIBLY COULD
 CONTAIN TARGET ANALYTES LEFT DUE TO CONDITIONS



EPA/Environmental Response Team
Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031



Air Sampling Work Sheet - SUMMA

Site: BONAFER VI

WA# 290

Sampler: [REDACTED]

U.S. EPA/ERT WAM: HOPPE

Date: 2/16/17 - 2/17/17

SERAS Task Leader: [REDACTED]

Sample #	290-0034	290-0035	290-0036		290-0037
Location	24	24	24		TRIP
Sub-Location	SS	BS	FF		-
Summa #	AS00315	AC02053	AS00464		SSC00163
Orifice ID	FER00033	FER00011	FER00020		-
Start Pressure	-29.5	-29.5	-29.5		-29.5
NIST Gauge S/N	T304-32	→			T304-32
Flow Rate (Start)	-3.8	-3.6	-3.8		-
Flow meter	014415	→			-
Analysis/Method	TG-15 PCE, TCE	→			TG-15 PCE, TCE
Time/Counter (Start)	1047	1047	1048		-
Time/Counter (Stop)	1011	1011	1011		1013
Total Time	1404	1404	1403		-
End Pressure	-13.0	0	-6.5		-29.5
NIST Gauge S/N	T304-29	T304-32	T304-32		T304-32
MET Station on Site?: Y / N					



EPA/Environmental Response Team
Scientific, Engineering, Response and Analytical Services
Lockheed Martin Corp., Edison, NJ
U.S. EPA Contract No. EP-W-09-031



SUMMA Sampling Work Sheet

Site: BONAZER VI

WA# 290

Sampler: [REDACTED]

U.S. EPA/ERT WAM: HOPPE

Date Start: 4/5/17 Date Stop: 4/6/17

SERAS Task Leader: [REDACTED]

Sample #	Location	Sub-Location	Matrix	Summa #	Orifice ID	Analysis/ Method	Start Pressure	Flow Rate (Start)	Time/(Start)	Time/(Stop)	End Pressure
290-0038	PROPERTY 20	SS	SS	01-11100	13789	TG-15 PCE, TCE+	-29.5	-3.6	915	902	-1
290-0039	↓	BS1	AIR	11226	13917	↓	-29.5	-3.5	915	902	-.5
290-0040		BS2	AIR	11103	13911		-29.5	-3.5	915	902	-.5
290-0041		TF	AIR	2033	11029		-29.5	-3.5	917	906	-.5
290-0042		AMBIENT	AMB	2034	13928		-29.5	-3.6	918	900	-.5
290-0043		TRIP BLANK	TRIP	10582	NA						
MET Station on Site?: Y/ <input checked="" type="radio"/>				Flow meter: 11B47136		NIST Gauge#: T3041-38		NIST Gauge#: T3041-33			
57°F Sunny 43°F RPT/OVERCAST						SS				AIR	

APPENDIX B
Final Analytical Reports
Bonair Avenue Vapor Intrusion Site
Hatboro, Pennsylvania
May 2017



Table of Contents

Topic

Testing Laboratories Information
Detailed Sample Information
Introduction
Case Narrative
Summary of Abbreviations

Section I

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Results of the Analysis for VOC ($\mu\text{g}/\text{m}^3$) in Air	Table 1.1b

Section II

Results of the LCS Analysis for VOC in Air	Table 2.1
Results of the Duplicate Analysis for VOC in Air	Table 2.2

Section III

Communication
Chains of Custody

Appendices

Appendix A Data for Volatile Organic Compounds in Air	AC 022
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Appendix A will be furnished on request.





TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air by EPA Method TO15, *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second edition, January 1999.

ALS Laboratory
2655 Park Center Dr., Suite A
Simi Valley, CA 93065

All analyses were performed according to NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ALS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009 for VOCs by EPA TO-15 in air.





Detailed Sample Information

<u>ALS Sample #</u>	<u>Field Sample #</u>
P1700812-1	290-0018
P1700812-2	290-0019
P1700812-3	290-0020
P1700812-4	290-0021
P1700812-5	290-0022
P1700812-6	290-0023
P1700812-7	290-0024
P1700812-8	290-0025
P1700812-9	290-0026
P1700812-10	290-0027
P1700812-11	290-0028
P1700812-12	290-0029
P1700812-13	290-0030
P1700812-14	290-0031
P1700812-15	290-0032
P1700812-16	290-0033
P1700812-17	290-0034
P1700812-18	290-0035
P1700812-19	290-0036
P1700812-20	290-0037

REPORT OF LABORATORY ANALYSIS

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Introduction

SERAS personnel, in response to WA# SERAS-290, provided analytical support for environmental samples collected from the Bonair Avenue VI Site in Hatboro, PA as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
3-021717-112404-0006	2	02/17/17	02/20/17	2/24/2017 through 2/28/2017	Sub-Slab Soil Gas	VOC/ EPA Method TO-15	ALS Global	AC 022
	2				Air			
3-021717-113535-0007	1				Sub-Slab Soil Gas			
	2				Air			
	1				Ambient			
3-021717-114055-0008	2				Ambient			
	2				Air			
3-021717-114223-0009	1				Sub-Slab Soil Gas			
	3				Air			
3-021717-114408-0010	1				Sub-Slab Soil Gas			
	2				Air			
	1				Other			

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods as stated in the QAPP. The laboratory reported the data to two significant figures. Any other representation of the data is the responsibility of the user. Data were validated using a Stage 4 validation done manually (S4VM) in accordance with the "Guidance for Labeling Externally Validated Data for Superfund Use." All data validation flags have been inserted into the results tables.

Volatile Organic Compounds in Air Package AC 022

Benzene and carbon tetrachloride were above the percent recovery (%R) criteria for the LCS of 2/27/2017. Benzene and carbon tetrachloride results for samples 290-0019 through 290-0032, 290-0034, and 290-0035 are qualified estimated (J).

The reporting limit (RL) for chloroform for sample numbers: 290-0024, 290-0028, 290-0029, 290-0031, 290-0032, 290-0033, and 290-0035 was above the project screening level (PSL).

The laboratory stated that sample 290-0018 was found to be leaking before analysis. Results for this sample should be used with caution.





Summary of Abbreviations

BFB	Bromofluorobenzene
BS	Blank Spike
BSD	Blank Spike Duplicate
°C	Degree Centigrade
COC	Chain of Custody
conc	concentration
cont	continued
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatography/ Mass Spectrometry
Hg-CVAA	Mercury-Cold Vapor Atomic Absorption
ICP-AES	Inductively Coupled Plasma- Atomic Emission Spectroscopy
ID	Identification
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
% D	Percent Difference
% R	Percent Recovery
SOP	Standard Operating Procedure
PCB	Polychlorinated Biphenyl
PDS	Post Digestion Spike
Percent RSD	Percent Relative Standard Deviation
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RL	Reporting Limit
RPD	Relative Percent Difference
S4VM	Stage 4 validation done manually
SIM	Selected Ion Monitoring
SERAS	Scientific Engineering Response and Analytical Services
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
SVOC	Semi Volatile Organic Compound
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m ³	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	σ	sigma

Data Validation Flags

J	Value is estimated	R	Rejected or Value is unusable
J+	Value is estimated high	U	Not detected
J-	Value is estimated low	UJ	Not detected and RL is estimated

Rev. 01/01/15, YRM





Table 1.1a Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 1 of 5

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P170224-MB	P1700812-001
Sample Number	Method Blank 2/24/2017	290-0018
Sample Location		Property 20
SubLocation		SS
Date Analyzed	2/24/2017	2/24/2017
Matrix	Ambient Air	Sub-Slab Soil Gas
Test Type	INITIAL	INITIAL
Total or Dissolved	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	U	0.010	0.0034	0.75	0.018	0.0060
67-66-3	CHLOROFORM	U	0.020	0.0037	3.0	0.036	0.0064
107-06-2	1,2-DICHLOROETHANE	U	0.0062	0.0021	U	0.011	0.0036
71-43-2	BENZENE	U	0.023	0.0063	0.38	0.041	0.011
56-23-5	CARBON TETRACHLORIDE	U	0.0040	0.0019	1.1	0.0069	0.0033
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.0047	0.0016			
127-18-4	Tetrachloroethylene (PCE)	U	0.0037	0.0012	4.4	0.0064	0.0021
100-41-4	ETHYLBENZENE	U	0.023	0.0022	U	0.040	0.0039
106-46-7	1,4-DICHLOROBENZENE	U	0.0042	0.0013	U	0.0072	0.0023

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P170227-MB	P1700812-001	P1700812-002
Sample Number	Method Blank 2/27/2017	290-0018	290-0019
Sample Location		Property 20	Property 20
SubLocation		SS	BS
Date Analyzed	2/27/2017	2/27/2017	2/27/2017
Matrix	Ambient Air	Sub-Slab Soil Gas	Air
Test Type	INITIAL	DILUTION1	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	U	0.010	0.0034				0.56	0.015	0.0052
67-66-3	CHLOROFORM	U	0.020	0.0037				0.043	0.031	0.0056
107-06-2	1,2-DICHLOROETHANE	U	0.0062	0.0021				0.047	0.0093	0.0031
71-43-2	BENZENE	U	0.023	0.0063				0.21 J	0.035	0.0095
56-23-5	CARBON TETRACHLORIDE	U	0.0040	0.0019				0.10 J	0.0060	0.0029
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.0047	0.0016	360	0.59	0.20	0.42	0.0070	0.0024
127-18-4	Tetrachloroethylene (PCE)	U	0.0037	0.0012				0.023	0.0056	0.0018
100-41-4	ETHYLBENZENE	U	0.023	0.0022				0.055	0.035	0.0034
106-46-7	1,4-DICHLOROBENZENE	U	0.0042	0.0013				0.012	0.0063	0.0020

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SERAS-290-DAR-032917



03
AR100416



Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 2 of 5

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P1700812-003	P1700812-004	P1700812-005
Sample Number	290-0020	290-0021	290-0022
Sample Location	Property 20	Property 21	Property 21
SubLocation	FF	SS	BS
Date Analyzed	2/27/2017	2/27/2017	2/27/2017
Matrix	Air	Sub-Slab Soil Gas	Air
Test Type	INITIAL	INITIAL	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.48	0.015	0.0050	0.53	0.024	0.0081	0.55	0.015	0.0051
67-66-3	CHLOROFORM	0.049	0.029	0.0053	0.098	0.048	0.0087	0.066	0.030	0.0055
107-06-2	1,2-DICHLOROETHANE	0.22	0.0089	0.0030	U	0.015	0.0049	0.038	0.0091	0.0031
71-43-2	BENZENE	0.42 J	0.034	0.0090	0.34 J	0.055	0.015	0.25 J	0.035	0.0093
56-23-5	CARBON TETRACHLORIDE	0.073 J	0.0057	0.0027	0.066 J	0.0094	0.0045	0.078 J	0.0059	0.0028
79-01-6	TRICHLOROETHYLENE (TCE)	0.041	0.0067	0.0023	0.63	0.011	0.0037	0.019	0.0069	0.0023
127-18-4	Tetrachloroethylene (PCE)	0.014	0.0053	0.0017	0.22	0.0087	0.0029	0.029	0.0055	0.0018
100-41-4	ETHYLBENZENE	0.10	0.033	0.0032	0.089	0.054	0.0053	0.034	0.034	0.0033
106-46-7	1,4-DICHLOROBENZENE	0.013	0.0060	0.0019	0.016	0.0098	0.0032	0.0076	0.0062	0.0020

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P1700812-006	P1700812-007	P1700812-008
Sample Number	290-0023	290-0024	290-0025
Sample Location	Property 21	Property 21	Property 22
SubLocation	FF	AMB	SS
Date Analyzed	2/27/2017	2/27/2017	2/27/2017
Matrix	Air	Ambient	Sub-Slab Soil Gas
Test Type	INITIAL	INITIAL	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.47	0.015	0.0050	0.56	0.014	0.0049	1.4	0.015	0.0051
67-66-3	CHLOROFORM	0.088	0.030	0.0053	U	0.029	0.0052	0.11	0.030	0.0055
107-06-2	1,2-DICHLOROETHANE	0.34	0.0090	0.0030	0.015	0.0088	0.0029	U	0.0091	0.0031
71-43-2	BENZENE	0.20 J	0.034	0.0091	0.16 J	0.033	0.0089	0.11 J	0.035	0.0093
56-23-5	CARBON TETRACHLORIDE	0.075 J	0.0058	0.0028	0.078 J	0.0056	0.0027	0.095 J	0.0059	0.0028
79-01-6	TRICHLOROETHYLENE (TCE)	0.0072	0.0067	0.0023	U	0.0066	0.0022	0.25	0.0069	0.0023
127-18-4	Tetrachloroethylene (PCE)	0.030	0.0053	0.0018	0.0084	0.0052	0.0017	1.0	0.0055	0.0018
100-41-4	ETHYLBENZENE	0.048	0.033	0.0032	0.039	0.033	0.0032	0.065	0.034	0.0033
106-46-7	1,4-DICHLOROBENZENE	0.0072	0.0060	0.0020	0.0088	0.0059	0.0019	U	0.0062	0.0020





Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-009			P1700812-010			P1700812-011		
Sample Number		290-0026			290-0027			290-0028		
Sample Location		Property 22			Property 22			Property 22		
SubLocation		BS			FF			AMB1		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Air			Air			Ambient		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.54	0.015	0.0051	0.51	0.015	0.0052	0.55	0.013	0.0043
67-66-3	CHLOROFORM	0.23	0.030	0.0055	0.62	0.031	0.0056	U	0.026	0.0046
107-06-2	1,2-DICHLOROETHANE	0.032	0.0091	0.0031	0.089	0.0094	0.0032	0.015	0.0077	0.0026
71-43-2	BENZENE	0.13 J	0.035	0.0093	0.14 J	0.036	0.0095	0.17 J	0.029	0.0078
56-23-5	CARBON TETRACHLORIDE	0.079 J	0.0059	0.0028	0.084 J	0.0060	0.0029	0.074 J	0.0050	0.0024
79-01-6	TRICHLOROETHYLENE (TCE)	0.0085	0.0069	0.0023	U	0.0071	0.0024	U	0.0058	0.0020
127-18-4	Tetrachloroethylene (PCE)	0.11	0.0055	0.0018	0.21	0.0056	0.0018	0.0065	0.0046	0.0015
100-41-4	ETHYLBENZENE	0.071	0.034	0.0033	0.12	0.035	0.0034	U	0.029	0.0028
106-46-7	1,4-DICHLOROBENZENE	0.014	0.0062	0.0020	U	0.0063	0.0020	U	0.0052	0.0017

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-012			P1700812-013			P1700812-014		
Sample Number		290-0029			290-0030			290-0031		
Sample Location		Property 22			Property 23			Property 23		
SubLocation		AMB2			SS			BS1		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Ambient			Sub-Slab Soil Gas			Air		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.55	0.015	0.0052	8.9	0.015	0.0050	0.53	0.015	0.0051
67-66-3	CHLOROFORM	U	0.031	0.0056	1.5	0.030	0.0054	U	0.030	0.0054
107-06-2	1,2-DICHLOROETHANE	0.015	0.0093	0.0031	U	0.0090	0.0030	0.026	0.0091	0.0031
71-43-2	BENZENE	0.17 J	0.035	0.0095	0.29 J	0.034	0.0091	0.24 J	0.035	0.0092
56-23-5	CARBON TETRACHLORIDE	0.078 J	0.0060	0.0029	7.1 J	0.0058	0.0028	0.079 J	0.0058	0.0028
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.0070	0.0024				0.045	0.0068	0.0023
127-18-4	Tetrachloroethylene (PCE)	0.0066	0.0056	0.0018	1.6	0.0054	0.0018	0.0096	0.0054	0.0018
100-41-4	ETHYLBENZENE	U	0.035	0.0034	U	0.034	0.0033	0.16	0.034	0.0033
106-46-7	1,4-DICHLOROBENZENE	U	0.0063	0.0020	U	0.0061	0.0020	U	0.0061	0.0020

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Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P1700812-015	P1700812-017	P1700812-018
Sample Number	290-0032	290-0034	290-0035
Sample Location	Property 23	Property 24	Property 24
SubLocation	BS2	SS	BS
Date Analyzed	2/27/2017	2/27/2017	2/27/2017
Matrix	Air	Sub-Slab Soil Gas	Air
Test Type	INITIAL	INITIAL	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.55	0.014	0.0049	0.53	0.019	0.0063	0.52	0.012	0.0042
67-66-3	CHLOROFORM	U	0.029	0.0052	0.13	0.038	0.0068	U	0.025	0.0045
107-06-2	1,2-DICHLOROETHANE	0.027	0.0088	0.0029	U	0.011	0.0038	0.025	0.0075	0.0025
71-43-2	BENZENE	0.25 J	0.033	0.0089	0.19 J	0.043	0.012	0.15 J	0.029	0.0076
56-23-5	CARBON TETRACHLORIDE	0.079 J	0.0056	0.0027	0.097 J	0.0073	0.0035	0.080 J	0.0049	0.0023
79-01-6	TRICHLOROETHYLENE (TCE)	0.044	0.0066	0.0022	0.88	0.0086	0.0029	U	0.0057	0.0019
127-18-4	Tetrachloroethylene (PCE)	0.014	0.0052	0.0017	0.21	0.0068	0.0022	0.015	0.0045	0.0015
100-41-4	ETHYLBENZENE	0.17	0.033	0.0032	0.062	0.042	0.0041	0.092	0.028	0.0027
106-46-7	1,4-DICHLOROBENZENE	U	0.0059	0.0019	0.025	0.0077	0.0025	U	0.0051	0.0016

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P170228-MB	P1700812-013	P1700812-016
Sample Number	Method Blank 2/28/17	290-0030	290-0033
Sample Location		Property 23	Property 23
SubLocation		SS	FF
Date Analyzed	2/28/2017	2/28/2017	2/28/2017
Matrix	Ambient Air	Sub-Slab Soil Gas	Air
Test Type	INITIAL	DILUTION1	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	U	0.010	0.0034				0.45	0.030	0.010
67-66-3	CHLOROFORM	U	0.020	0.0037				U	0.061	0.011
107-06-2	1,2-DICHLOROETHANE	U	0.0062	0.0021				0.023	0.019	0.0062
71-43-2	BENZENE	U	0.023	0.0063				2.0	0.070	0.019
56-23-5	CARBON TETRACHLORIDE	U	0.0040	0.0019				0.072	0.012	0.0057
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.0047	0.0016	97	0.16	0.054	0.023	0.014	0.0047
127-18-4	Tetrachloroethylene (PCE)	U	0.0037	0.0012				U	0.011	0.0036
100-41-4	ETHYLBENZENE	U	0.023	0.0022				1.1	0.069	0.0067
106-46-7	1,4-DICHLOROBENZENE	U	0.0042	0.0013				U	0.012	0.0040





Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P1700812-019	P1700812-020
Sample Number	290-0036	290-0037
Sample Location	Property 24	Trip Blank
SubLocation	FF	
Date Analyzed	2/28/2017	2/28/2017
Matrix	Air	Other
Test Type	INITIAL	INITIAL
Total or Dissolved	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	DICHLORODIFLUOROMETHANE	0.49	0.016	0.0053	U	0.010	0.0034
67-66-3	CHLOROFORM	0.044	0.032	0.0057	U	0.020	0.0037
107-06-2	1,2-DICHLOROETHANE	0.068	0.0095	0.0032	U	0.0062	0.0021
71-43-2	BENZENE	0.18	0.036	0.0096	U	0.023	0.0063
56-23-5	CARBON TETRACHLORIDE	0.089	0.0061	0.0029	U	0.0040	0.0019
79-01-6	TRICHLOROETHYLENE (TCE)	0.017	0.0072	0.0024	U	0.0047	0.0016
127-18-4	Tetrachloroethylene (PCE)	0.024	0.0057	0.0019	U	0.0037	0.0012
100-41-4	ETHYLBENZENE	0.10	0.035	0.0034	U	0.023	0.0022
106-46-7	1,4-DICHLOROBENZENE	U	0.0064	0.0021	U	0.0042	0.0013

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Table 1.1b Results of the Analysis for VOC (ug/m³) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P170224-MB	P1700812-001
Sample Number	Method Blank 2/24/2017	290-0018
Sample Location		Property 20
SubLocation		SS
Date Analyzed	2/24/2017	2/24/2017
Matrix	Ambient Air	Sub-Slab Soil Gas
Test Type	INITIAL	INITIAL
Total or Dissolved	N	N

CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	U	0.050	0.017	3.7	0.087	0.030
67-66-3	CHLOROFORM	U	0.10	0.018	15	0.17	0.031
107-06-2	1,2-DICHLOROETHANE	U	0.025	0.0084	U	0.044	0.015
71-43-2	BENZENE	U	0.075	0.020	1.2	0.13	0.035
56-23-5	CARBON TETRACHLORIDE	U	0.025	0.012	7.0	0.044	0.021
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.025	0.0085			
127-18-4	Tetrachloroethylene (PCE)	U	0.025	0.0082	30	0.044	0.014
100-41-4	ETHYLBENZENE	U	0.10	0.0097	U	0.17	0.017
106-46-7	1,4-DICHLOROBENZENE	U	0.025	0.0081	U	0.044	0.014

Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P170227-MB	P1700812-001	P1700812-002
Sample Number	Method Blank 2/27/2017	290-0018	290-0019
Sample Location		Property 20	Property 20
SubLocation		SS	BS
Date Analyzed	2/27/2017	2/27/2017	2/27/2017
Matrix	Ambient Air	Sub-Slab Soil Gas	Air
Test Type	INITIAL	DILUTION1	INITIAL
Total or Dissolved	N	N	N

CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	U	0.050	0.017				2.8	0.076	0.026
67-66-3	CHLOROFORM	U	0.10	0.018				0.21	0.15	0.027
107-06-2	1,2-DICHLOROETHANE	U	0.025	0.0084				0.19	0.038	0.013
71-43-2	BENZENE	U	0.075	0.020				0.67 J	0.11	0.030
56-23-5	CARBON TETRACHLORIDE	U	0.025	0.012				0.64 J	0.038	0.018
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.025	0.0085	1900	3.2	1.1	2.3	0.038	0.013
127-18-4	Tetrachloroethylene (PCE)	U	0.025	0.0082				0.15	0.038	0.012
100-41-4	ETHYLBENZENE	U	0.10	0.0097				0.24	0.15	0.015
106-46-7	1,4-DICHLOROBENZENE	U	0.025	0.0081				0.070	0.038	0.012

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Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-003			P1700812-004			P1700812-005		
Sample Number		290-0020			290-0021			290-0022		
Sample Location		Property 20			Property 21			Property 21		
SubLocation		FF			SS			BS		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Air			Sub-Slab Soil Gas			Air		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.4	0.072	0.024	2.6	0.12	0.040	2.7	0.074	0.025
67-66-3	CHLOROFORM	0.24	0.14	0.026	0.48	0.24	0.042	0.32	0.15	0.027
107-06-2	1,2-DICHLOROETHANE	0.91	0.036	0.012	U	0.059	0.020	0.15	0.037	0.012
71-43-2	BENZENE	1.3 J	0.11	0.029	1.1 J	0.18	0.047	0.78 J	0.11	0.030
56-23-5	CARBON TETRACHLORIDE	0.46 J	0.036	0.017	0.41 J	0.059	0.028	0.49 J	0.037	0.018
79-01-6	TRICHLOROETHYLENE (TCE)	0.22	0.036	0.012	3.4	0.059	0.020	0.10	0.037	0.013
127-18-4	Tetrachloroethylene (PCE)	0.097	0.036	0.012	1.5	0.059	0.019	0.20	0.037	0.012
100-41-4	ETHYLBENZENE	0.44	0.14	0.014	0.39	0.24	0.023	0.15	0.15	0.014
106-46-7	1,4-DICHLOROBENZENE	0.078	0.036	0.012	0.098	0.059	0.019	0.045	0.037	0.012

Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-006			P1700812-007			P1700812-008		
Sample Number		290-0023			290-0024			290-0025		
Sample Location		Property 21			Property 21			Property 22		
SubLocation		FF			AMB			SS		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Air			Ambient			Sub-Slab Soil Gas		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.3	0.073	0.025	2.8	0.071	0.024	7.2	0.074	0.025
67-66-3	CHLOROFORM	0.43	0.15	0.026	U	0.14	0.026	0.51	0.15	0.027
107-06-2	1,2-DICHLOROETHANE	1.4	0.036	0.012	0.062	0.036	0.012	U	0.037	0.012
71-43-2	BENZENE	0.64 J	0.11	0.029	0.53 J	0.11	0.028	0.35 J	0.11	0.030
56-23-5	CARBON TETRACHLORIDE	0.47 J	0.036	0.017	0.49 J	0.036	0.017	0.60 J	0.037	0.018
79-01-6	TRICHLOROETHYLENE (TCE)	0.039	0.036	0.012	U	0.036	0.012	1.3	0.037	0.013
127-18-4	Tetrachloroethylene (PCE)	0.20	0.036	0.012	0.057	0.036	0.012	7.0	0.037	0.012
100-41-4	ETHYLBENZENE	0.21	0.15	0.014	0.17	0.14	0.014	0.28	0.15	0.014
106-46-7	1,4-DICHLOROBENZENE	0.044	0.036	0.012	0.053	0.036	0.012	U	0.037	0.012





Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-009			P1700812-010			P1700812-011		
Sample Number		290-0026			290-0027			290-0028		
Sample Location		Property 22			Property 22			Property 22		
SubLocation		BS			FF			AMB1		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Air			Air			Ambient		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.7	0.074	0.025	2.5	0.076	0.026	2.7	0.063	0.021
67-66-3	CHLOROFORM	1.1	0.15	0.027	3.0	0.15	0.027	U	0.13	0.023
107-06-2	1,2-DICHLOROETHANE	0.13	0.037	0.012	0.36	0.038	0.013	0.062	0.031	0.011
71-43-2	BENZENE	0.41 J	0.11	0.030	0.45 J	0.11	0.030	0.54 J	0.094	0.025
56-23-5	CARBON TETRACHLORIDE	0.50 J	0.037	0.018	0.53 J	0.038	0.018	0.46 J	0.031	0.015
79-01-6	TRICHLOROETHYLENE (TCE)	0.046	0.037	0.013	U	0.038	0.013	U	0.031	0.011
127-18-4	Tetrachloroethylene (PCE)	0.75	0.037	0.012	1.4	0.038	0.012	0.044	0.031	0.010
100-41-4	ETHYLBENZENE	0.31	0.15	0.014	0.53	0.15	0.015	U	0.13	0.012
106-46-7	1,4-DICHLOROBENZENE	0.085	0.037	0.012	U	0.038	0.012	U	0.031	0.010

Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-012			P1700812-013			P1700812-014		
Sample Number		290-0029			290-0030			290-0031		
Sample Location		Property 22			Property 23			Property 23		
SubLocation		AMB2			SS			BS1		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Ambient			Sub-Slab Soil Gas			Air		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.7	0.076	0.026	44	0.073	0.025	2.6	0.074	0.025
67-66-3	CHLOROFORM	U	0.15	0.027	7.5	0.15	0.026	U	0.15	0.026
107-06-2	1,2-DICHLOROETHANE	0.062	0.038	0.013	U	0.037	0.012	0.11	0.037	0.012
71-43-2	BENZENE	0.55 J	0.11	0.030	0.92 J	0.11	0.029	0.76 J	0.11	0.029
56-23-5	CARBON TETRACHLORIDE	0.49 J	0.038	0.018	45 J	0.037	0.018	0.50 J	0.037	0.018
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.038	0.013				0.24	0.037	0.012
127-18-4	Tetrachloroethylene (PCE)	0.045	0.038	0.012	11	0.037	0.012	0.065	0.037	0.012
100-41-4	ETHYLBENZENE	U	0.15	0.015	U	0.15	0.014	0.68	0.15	0.014
106-46-7	1,4-DICHLOROBENZENE	U	0.038	0.012	U	0.037	0.012	U	0.037	0.012





Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 4 of 5

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P1700812-015			P1700812-017			P1700812-018		
Sample Number		290-0032			290-0034			290-0035		
Sample Location		Property 23			Property 24			Property 24		
SubLocation		BS2			SS			BS		
Date Analyzed		2/27/2017			2/27/2017			2/27/2017		
Matrix		Air			Sub-Slab Soil Gas			Air		
Test Type		INITIAL			INITIAL			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.7	0.071	0.024	2.6	0.092	0.031	2.6	0.061	0.021
67-66-3	CHLOROFORM	U	0.14	0.026	0.63	0.18	0.033	U	0.12	0.022
107-06-2	1,2-DICHLOROETHANE	0.11	0.036	0.012	U	0.046	0.015	0.10	0.031	0.010
71-43-2	BENZENE	0.81 J	0.11	0.028	0.62 J	0.14	0.037	0.49 J	0.092	0.024
56-23-5	CARBON TETRACHLORIDE	0.50 J	0.036	0.017	0.61 J	0.046	0.022	0.50 J	0.031	0.015
79-01-6	TRICHLOROETHYLENE (TCE)	0.23	0.036	0.012	4.7	0.046	0.016	U	0.031	0.010
127-18-4	Tetrachloroethylene (PCE)	0.097	0.036	0.012	1.4	0.046	0.015	0.10	0.031	0.010
100-41-4	ETHYLBENZENE	0.74	0.14	0.014	0.27	0.18	0.018	0.40	0.12	0.012
106-46-7	1,4-DICHLOROBENZENE	U	0.036	0.012	0.15	0.046	0.015	U	0.031	0.0099

Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number		P170228-MB			P1700812-013			P1700812-016		
Sample Number		Method Blank 2/28/17			290-0030			290-0033		
Sample Location					Property 23			Property 23		
SubLocation					SS			FF		
Date Analyzed		2/28/2017			2/28/2017			2/28/2017		
Matrix		Ambient Air			Sub-Slab Soil Gas			Air		
Test Type		INITIAL			DILUTION1			INITIAL		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	U	0.050	0.017				2.2	0.15	0.051
67-66-3	CHLOROFORM	U	0.10	0.018				U	0.30	0.054
107-06-2	1,2-DICHLOROETHANE	U	0.025	0.0084				0.095	0.075	0.025
71-43-2	BENZENE	U	0.075	0.020				6.4	0.23	0.060
56-23-5	CARBON TETRACHLORIDE	U	0.025	0.012				0.46	0.075	0.036
79-01-6	TRICHLOROETHYLENE (TCE)	U	0.025	0.0085	520	0.86	0.29	0.12	0.075	0.026
127-18-4	Tetrachloroethylene (PCE)	U	0.025	0.0082				U	0.075	0.025
100-41-4	ETHYLBENZENE	U	0.10	0.0097				4.6	0.30	0.029
106-46-7	1,4-DICHLOROBENZENE	U	0.025	0.0081				U	0.075	0.024

REPORT OF LABORATORY ANALYSIS

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Table 1.1b (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 5 of 5

Method: TO-15 SIM
Lab Name: ALS

Lab Sample Number	P1700812-019	P1700812-020
Sample Number	290-0036	290-0037
Sample Location	Property 24	Trip Blank
SubLocation	FF	
Date Analyzed	2/28/2017	2/28/2017
Matrix	Air	Other
Test Type	INITIAL	INITIAL
Total or Dissolved	N	N

CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	DICHLORODIFLUOROMETHAN	2.4	0.077	0.026	U	0.050	0.017
67-66-3	CHLOROFORM	0.21	0.15	0.028	U	0.10	0.018
107-06-2	1,2-DICHLOROETHANE	0.27	0.039	0.013	U	0.025	0.0084
71-43-2	BENZENE	0.58	0.12	0.031	U	0.075	0.020
56-23-5	CARBON TETRACHLORIDE	0.56	0.039	0.018	U	0.025	0.012
79-01-6	TRICHLOROETHYLENE (TCE)	0.093	0.039	0.013	U	0.025	0.0085
127-18-4	Tetrachloroethylene (PCE)	0.16	0.039	0.013	U	0.025	0.0082
100-41-4	ETHYLBENZENE	0.43	0.15	0.015	U	0.10	0.0097
106-46-7	1,4-DICHLOROBENZENE	U	0.039	0.012	U	0.025	0.0081





Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-290 Bonair Avenue VI

Page 1 of 1

Sample ID: P170224-LCS 02/24/2017

Analyte	LCS Spike $\mu\text{g}/\text{m}^3$	LCS Recovered $\mu\text{g}/\text{m}^3$	LCS % Recovery	QC Limits % Recovery
Dichlorodifluoromethane (CFC 12)	4.20	4.43	105	68-108
Chloroform	4.24	4.26	100	68-105
1,2-Dichloroethane	4.24	4.33	102	67-111
Benzene	4.24	4.19	99	70-112
Carbon Tetrachloride	4.26	4.17	98	65-99
Trichloroethene (TCE)	4.25	4.13	97	66-101
Tetrachloroethene	4.25	4.06	96	66-105
Ethylbenzene	4.23	4.01	95	62-117
1,4-Dichlorobenzene	4.26	3.70	87	54-126

Sample ID: P170227-LCS 2/27/2017

Analyte	LCS Spike $\mu\text{g}/\text{m}^3$	LCS Recovered $\mu\text{g}/\text{m}^3$	LCS % Recovery	QC Limits % Recovery
Dichlorodifluoromethane (CFC 12)	4.20	4.47	106	68-108
Chloroform	4.24	4.45	105	68-105
1,2-Dichloroethane	4.24	4.27	101	67-111
Benzene	4.24	4.87	115	70-112
Carbon Tetrachloride	4.26	4.27	100	65-99
Trichloroethene (TCE)	4.25	4.27	100	66-101
Tetrachloroethene	4.25	4.17	98	66-105
Ethylbenzene	4.23	4.34	103	62-117
1,4-Dichlorobenzene	4.26	4.05	95	54-126

* - LCS recovery outside QC limits

Sample ID: P170228-LCS 2/28/2017

Analyte	LCS Spike $\mu\text{g}/\text{m}^3$	LCS Recovered $\mu\text{g}/\text{m}^3$	LCS % Recovery	QC Limits % Recovery
Dichlorodifluoromethane (CFC 12)	4.20	4.39	105	68-108
Chloroform	4.24	4.23	100	68-105
1,2-Dichloroethane	4.24	4.31	102	67-111
Benzene	4.24	4.28	101	70-112
Carbon Tetrachloride	4.26	4.23	99	65-99
Trichloroethene (TCE)	4.25	4.19	99	66-101
Tetrachloroethene	4.25	4.16	98	66-105
Ethylbenzene	4.23	4.19	99	62-117
1,4-Dichlorobenzene	4.26	3.99	94	54-126





Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-290 Bonair Avenue VI

Sample ID: 290-0023

Page 1 of 1

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limits RPD
Dichlorodifluoromethane (CFC 12)	0.474	0.481	2	25
Chloroform	0.0881	0.0858	3	25
1,2-Dichloroethane	0.339	0.331	2	25
Benzene	0.200	0.198	1	25
Carbon Tetrachloride	0.0746	0.0730	2	25
Trichloroethene (TCE)	0.00721	0.00695	4	25
Tetrachloroethene	0.0297	0.0292	2	25
Ethylbenzene	0.0479	0.0485	1	25
1,4-Dichlorobenzene	0.00724	0.00719	1	25

REPORT OF LABORATORY ANALYSIS

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SERAS-290-DAR-032917



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AR100427

LOCKHEED MARTIN

Lockheed Martin Information Systems & Global Solutions (IS&GS - Civil)
Environmental Services SERAS
2890 Woodbridge Avenue, Building 209 Annex
Edison, NJ 08837-3679
Telephone: 732-321-4200, Facsimile: 732-494-4021

ALS USA, Inc. .
2655 Park Center Drive Suite A
Simi Valley, CA 93065

CBI

Attn: [REDACTED]

January 6, 2017

As per Lockheed Martin / SERAS BPA# 4102450582 for Project 0-290, please analyze the following:

Analysis/Method	Matrix	# of samples
Analysis VOA/TO-15 See attached compound list at 0.020 ppbv RL	Summa	25
Rental of summas/flow controllers with flow controller adjusted to collect samples over a 24-hour period. Individually Certified.	N/A	25
Data package: Level four full documentation with csv file. See checklist for EDD requirements		

The samples are expected to arrive at your laboratory on or about February 17, 2017. Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be sent to SERAS 10 business days after receipt of samples. The complete data package is due 15 business days after receipt of the samples. The complete data package must include all items on the deliverables checklist. **The laboratory must provide documentation for individual summa canister and flow controller certification.**

All sample and QC results must be summarized in a csv file. Units must be in ppbv and ug/m3 in the electronic deliverable. **The summa canisters and preset orifices must arrive @ SERAS at or before February 10, 2017. The flow controllers must have 1/4 inch fittings.** Please contact [REDACTED] and [REDACTED] for all technical questions.

Sincerely,

[REDACTED]
Analytical Support Chemist
SERAS Project

cc. [REDACTED]

D
K
S
S
M

Site #: 290

CBI

SJS

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

ALL SAMPLES
FOR ANALYSES

SERAS-290-DAR-032917

Page 1 of 1

USEPA

DateShipped: 2/17/2017

CarrierName: FedEx

AirbillNo:

CHAIN OF CUSTODY RECORD

Site #: 290

No: 3-021717-114055-0008

Cooler #:

Lab: ALS Laboratory Group - California

Lab Phone: CBI

Lab #	Sample #	Location	Sub Location	Analyses	Matrix	Numb Cont	Pump #	OrificeID	Stop Pressure	Lab QC	Stop_Date	Stop_Time
9	290-0026	Property 22	BS	TO-15, PCE, TCE+	Air	1	AS00563	FCR00287	-5	N	2/17/2017	9:34:00 AM
10	290-0027	Property 22	FF	TO-15, PCE, TCE+	Air	1	AC02139	FCR00251	-5.5	N	2/17/2017	9:36:00 AM
11	290-0028	Property 22	AMB1	TO-15, PCE, TCE+	Ambient	1	AS01152	FCR00219	-2	N	2/17/2017	9:40:00 AM
12	290-0029	Property 22	AMB2	TO-15, PCE, TCE+	Ambient	1	AS00830	FCR00088	-7.5	N	2/17/2017	9:40:00 AM
SSS												

019

USEPA

CarrierName: FedEx

AirbillNo:

Site #: 290

No: 3-021717-114223-0009

Cooler #:

Lab: ALS Laboratory Group - California

Lab Phone: 805-526-7161 x2089

SSS

[illegible]

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
ALL SAMPLES FOR ANALYSES	[REDACTED] ZEDOS/ SERAS	2/17/17 1504	[REDACTED]	2/20/17 0910	

USEPA

DateShipped: 2/17/2017

CarrierName: FedEx

AirbillNo:

CHAIN OF CUSTODY RECORD

Site #: 290

No: 3-021717-114408-0010

Cooler #:

Lab: ALS Laboratory Group - California

Lab Phone: 805-526-7161 x2089

[illegible]

Special Instructions: OTHER - BLANK	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
ALL SAMPLES FOR ANALYSIS	[REDACTED] LEO DOS/ SERAS	2/17/17 1501	[REDACTED]	2/20/17 0910	

ANALYTICAL REPORT

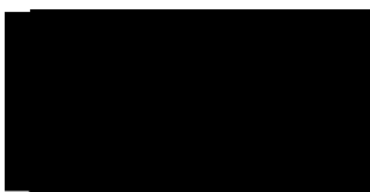
Prepared by
Lockheed Martin Information Systems and Global Services/Environmental Services
Scientific, Engineering, Response and Analytical Services

Bonair Avenue VI
Hatboro, PA

April 2017

EPA Work Assignment No. SERAS-290
LOCKHEED MARTIN Work Order SER00290
EPA Contract No. EP-W-09-031

Submitted to
M. Hoppe
EPA-ERT
2890 Woodbridge Avenue
Edison, NJ 08837



QA/QC Officer

4/21/17

Date

Analysis by:
ERT/SERAS



Program Manager

4/21/17

Date

Prepared by:/Validated by:

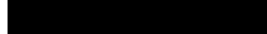




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Appendix A Data for Volatile Organic Compounds in Air	AC 029
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Appendix A will be furnished on request.



TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air by SERAS Method #1814 "*Analysis of Volatile Organic Compounds (VOCs) in SUMMA Canister Air Samples by Gas Chromatography/Mass Spectrometry (GC/MS)*"

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.

REPORT OF LABORATORY ANALYSIS

SERAS-290-DAR-042117

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AR100436



Detailed Sample Information

<u>SERAS Sample #</u>	<u>Field Sample #</u>
R704001-01	290-0038
R704001-02	290-0039
R704001-03	290-0040
R704001-04	290-0041
R704001-05	290-0042
R704001-06	290-0043



Introduction

SERAS personnel, in response to WA# SERAS-290, provided analytical support for environmental samples collected from the Bonair Avenue VI Site in Hatboro, PA as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage*.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
3-040617-092311-0011	1	04/06/17	04/06/17	04/07/17	Sub-Slab Soil Gas	VOC/SERAS SOP #1814	ERT/SERAS	AC 029
	3				Air			
	1				Ambient Air			
	1				Other			

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods as stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated using a Stage 4 validation done manually (S4VM) in accordance with the "Guidance for Labeling Externally Validated Data for Superfund Use." All data validation flags have been inserted into the results tables.

Volatile Organic Compounds in Air Package AC 029

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.





Summary of Abbreviations

BFB	Bromofluorobenzene
BS	Blank Spike
BSD	Blank Spike Duplicate
°C	Degree Centigrade
COC	Chain of Custody
conc	concentration
cont	continued
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatography/ Mass Spectrometry
Hg-CVAA	Mercury-Cold Vapor Atomic Absorption
ICP-AES	Inductively Coupled Plasma- Atomic Emission Spectroscopy
ID	Identification
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
% D	Percent Difference
% R	Percent Recovery
SOP	Standard Operating Procedure
PCB	Polychlorinated Biphenyl
PDS	Post Digestion Spike
Percent RSD	Percent Relative Standard Deviation
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RL	Reporting Limit
RPD	Relative Percent Difference
S4VM	Stage 4 validation done manually
SIM	Selected Ion Monitoring
SERAS	Scientific Engineering Response and Analytical Services
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
SVOC	Semi Volatile Organic Compound
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m ³	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	σ	sigma

Data Validation Flags

J	Value is estimated	R	Rejected or Value is unusable
J+	Value is estimated high	U	Not detected
J-	Value is estimated low	UJ	Not detected and RL is estimated

Rev. 01/01/15, YRM





Table 1.1a Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 1 of 2

Method: SERAS SOP#1814
Lab Name: ERT/SERAS

Lab Sample Number		NA			R704001-06			R704001-05		
Sample Number		PS-Methodblank 040717-01			290-0043			290-0042		
Sample Location					Trip Blank			Property 20		
SubLocation								AMB		
Date Analyzed		4/7/2017			4/7/2017			4/7/2017		
Matrix		Air			Other			Ambient		
Test Type		Initial			Initial			Initial		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	Dichlorodifluoromethane	U	0.0200	0.00276	U	0.0200	0.00276	0.361	0.0200	0.00276
67-66-3	Chloroform	U	0.0200	0.00229	U	0.0200	0.00229	U	0.0200	0.00229
107-06-2	1,2-Dichloroethane	U	0.0200	0.00276	U	0.0200	0.00276	U	0.0200	0.00276
71-43-2	Benzene	U	0.0200	0.00269	U	0.0200	0.00269	0.0926	0.0200	0.00269
56-23-5	Carbon Tetrachloride	U	0.0200	0.00226	U	0.0200	0.00226	0.0631	0.0200	0.00226
79-01-6	Trichloroethene	U	0.0200	0.00298	U	0.0200	0.00298	0.0209	0.0200	0.00298
127-18-4	Tetrachloroethene	U	0.0200	0.00226	U	0.0200	0.00226	U	0.0200	0.00226
100-41-4	Ethylbenzene	U	0.0200	0.00252	U	0.0200	0.00252	U	0.0200	0.00252
106-46-7	1,4-Dichlorobenzene	U	0.0200	0.00517	U	0.0200	0.00517	U	0.0200	0.00517

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Method: SERAS SOP#1814
Lab Name: ERT/SERAS

Lab Sample Number		R704001-04			R704001-02			R704001-03		
Sample Number		290-0041			290-0039			290-0040		
Sample Location		Property 20			Property 20			Property 20		
SubLocation		FF			BS1			BS2		
Date Analyzed		4/7/2017			4/7/2017			4/7/2017		
Matrix		Air			Air			Air		
Test Type		Initial			Initial			Initial		
Total or Dissolved		N			N			N		
CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	Dichlorodifluoromethane	0.352	0.0200	0.00276	0.382	0.0200	0.00276	0.373	0.0200	0.00276
67-66-3	Chloroform	0.0423	0.0200	0.00229	0.0457	0.0200	0.00229	0.0461	0.0200	0.00229
107-06-2	1,2-Dichloroethane	0.294	0.0200	0.00276	0.152	0.0200	0.00276	0.141	0.0200	0.00276
71-43-2	Benzene	0.217	0.0200	0.00269	0.162	0.0200	0.00269	0.158	0.0200	0.00269
56-23-5	Carbon Tetrachloride	0.0670	0.0200	0.00226	0.0686	0.0200	0.00226	0.0660	0.0200	0.00226
79-01-6	Trichloroethene	0.0349	0.0200	0.00298	0.159	0.0200	0.00298	0.337	0.0200	0.00298
127-18-4	Tetrachloroethene	0.0219	0.0200	0.00226	0.0293	0.0200	0.00226	0.0312	0.0200	0.00226
100-41-4	Ethylbenzene	0.0491	0.0200	0.00252	0.0801	0.0200	0.00252	0.0722	0.0200	0.00252
106-46-7	1,4-Dichlorobenzene	U	0.0200	0.00517	0.0222	0.0200	0.00517	0.0202	0.0200	0.00517





Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-290 Bonair Avenue VI

Page 2 of 2

Method: SERAS SOP#1814
Lab Name: ERT/SERAS

Lab Sample Number	R704001-01	R704001-01
Sample Number	290-0038	290-0038
Sample Location	Property 20	Property 20
SubLocation	SS	SS
Date Analyzed	4/7/2017	4/7/2017
Matrix	Sub-Slab Soil Gas	Sub-Slab Soil Gas
Test Type	Initial	Dilution1
Total or Dissolved	N	N

CAS No	Analyte	Result ppbV	RL ppbV	MDL ppbV	Result ppbV	RL ppbV	MDL ppbV
75-71-8	Dichlorodifluoromethane	0.406	0.0200	0.00276			
67-66-3	Chloroform	0.688	0.0200	0.00229			
107-06-2	1,2-Dichloroethane	0.0698	0.0200	0.00276			
71-43-2	Benzene	0.126	0.0200	0.00269			
56-23-5	Carbon Tetrachloride	0.344	0.0200	0.00226			
79-01-6	Trichloroethene				93.7	1.00	0.149
127-18-4	Tetrachloroethene	1.55	0.0200	0.00226			
100-41-4	Ethylbenzene	0.0498	0.0200	0.00252			
106-46-7	1,4-Dichlorobenzene	U	0.0200	0.00517			

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Table 1.1b Results of the Analysis for VOC (ug/m³) in Air
WA# SERAS-290 Bonair Avenue VI

Page 1 of 2

Method: SERAS SOP#1814
Lab Name: ERT/SERAS

		NA			R704001-06			R704001-05		
		PS-Methodblank 040717-01			290-0043			290-0042		
					Trip Blank			Property 20		
		4/7/2017			4/7/2017			AMB		
		Air			Other			4/7/2017		
		Initial			Initial			Ambient		
		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	Dichlorodifluoromethane	U	0.0989	0.0136	U	0.0989	0.0136	1.78	0.0989	0.0136
67-66-3	Chloroform	U	0.0977	0.0111	U	0.0977	0.0111	U	0.0977	0.0111
107-06-2	1,2-Dichloroethane	U	0.0809	0.0111	U	0.0809	0.0111	U	0.0809	0.0111
71-43-2	Benzene	U	0.0639	0.00859	U	0.0639	0.00859	0.296	0.0639	0.00859
56-23-5	Carbon Tetrachloride	U	0.126	0.0142	U	0.126	0.0142	0.397	0.126	0.0142
79-01-6	Trichloroethene	U	0.107	0.0160	U	0.107	0.0160	0.113	0.107	0.0160
127-18-4	Tetrachloroethene	U	0.136	0.0153	U	0.136	0.0153	U	0.136	0.0153
100-41-4	Ethylbenzene	U	0.0868	0.0109	U	0.0868	0.0109	U	0.0868	0.0109
106-46-7	1,4-Dichlorobenzene	U	0.120	0.0311	U	0.120	0.0311	U	0.120	0.0311

Table 1.1b (cont) Results of the Analysis for VOC (ug/m3) in Air
WA# SERAS-290 Bonair Avenue VI

Method: SERAS SOP#1814
Lab Name: ERT/SERAS

		R704001-04			R704001-02			R704001-03		
		290-0041			290-0039			290-0040		
		Property 20			Property 20			Property 20		
		FF			BS1			BS2		
		4/7/2017			4/7/2017			4/7/2017		
		Air			Air			Air		
		Initial			Initial			Initial		
		N			N			N		
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	Dichlorodifluoromethane	1.74	0.0989	0.0136	1.89	0.0989	0.0136	1.84	0.0989	0.0136
67-66-3	Chloroform	0.206	0.0977	0.0111	0.223	0.0977	0.0111	0.225	0.0977	0.0111
107-06-2	1,2-Dichloroethane	1.19	0.0809	0.0111	0.616	0.0809	0.0111	0.570	0.0809	0.0111
71-43-2	Benzene	0.692	0.0639	0.00859	0.518	0.0639	0.00859	0.503	0.0639	0.00859
56-23-5	Carbon Tetrachloride	0.421	0.126	0.0142	0.431	0.126	0.0142	0.415	0.126	0.0142
79-01-6	Trichloroethene	0.187	0.107	0.0160	0.857	0.107	0.0160	1.81	0.107	0.0160
127-18-4	Tetrachloroethene	0.148	0.136	0.0153	0.199	0.136	0.0153	0.212	0.136	0.0153
100-41-4	Ethylbenzene	0.213	0.0868	0.0109	0.348	0.0868	0.0109	0.313	0.0868	0.0109
106-46-7	1,4-Dichlorobenzene	U	0.120	0.0311	0.133	0.120	0.0311	0.121	0.120	0.0311

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Table 1.1b (cont) Results of the Analysis for VOC (ug/m3) in Air
WA# SERAS-290 Bonair Avenue VI

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Method: SERAS SOP#1814
Lab Name: ERT/SERAS

Lab Sample Number	R704001-01			R704001-01			
Sample Number	290-0038			290-0038			
Sample Location	Property 20			Property 20			
SubLocation	SS			SS			
Date Analyzed	4/7/2017			4/7/2017			
Matrix	Sub-Slab Soil Gas			Sub-Slab Soil Gas			
Test Type	Initial			Dilution1			
Total or Dissolved	N			N			
CAS No	Analyte	Result ug/m3	RL ug/m3	MDL ug/m3	Result ug/m3	RL ug/m3	MDL ug/m3
75-71-8	Dichlorodifluoromethane	2.01	0.0989	0.0136			
67-66-3	Chloroform	3.36	0.0977	0.0111			
107-06-2	1,2-Dichloroethane	0.283	0.0809	0.0111			
71-43-2	Benzene	0.403	0.0639	0.00859			
56-23-5	Carbon Tetrachloride	2.16	0.126	0.0142			
79-01-6	Trichloroethene				504	5.37	0.801
127-18-4	Tetrachloroethene	10.5	0.136	0.0153			
100-41-4	Ethylbenzene	0.216	0.0868	0.0109			
106-46-7	1,4-Dichlorobenzene	U	0.120	0.0311			

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Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-290 Bonair Avenue VI

Page 1 of 1

Sample ID: LCS 04/07/17

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Dichlorodifluoromethane	1.00	0.993	99	70 - 130
Chloroform	1.00	0.961	96	70 - 130
1,2-Dichloroethane	1.00	0.927	93	70 - 130
Benzene	1.00	0.964	96	70 - 130
Carbon Tetrachloride	1.00	0.987	99	70 - 130
Trichloroethene	1.00	1.00	100	70 - 130
Tetrachloroethene	1.00	0.978	98	70 - 130
Ethylbenzene	1.00	1.03	103	70 - 130
1,4-Dichlorobenzene	1.00	1.00	100	70 - 130

Sample ID: LCS 04/10/17

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Dichlorodifluoromethane	1.00	1.02	102	70 - 130
Chloroform	1.00	0.998	100	70 - 130
1,2-Dichloroethane	1.00	0.961	96	70 - 130
Benzene	1.00	0.960	96	70 - 130
Carbon Tetrachloride	1.00	1.02	102	70 - 130
Trichloroethene (TCE)	1.00	1.02	102	70 - 130
Tetrachloroethene	1.00	0.989	99	70 - 130
Ethylbenzene	1.00	1.05	105	70 - 130
1,4-Dichlorobenzene	1.00	1.05	105	70 - 130

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Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-290 Bonair Avenue VI

Sample ID: 290-0041

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Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limits RPD
Dichlorodifluoromethane	0.352	0.287	20	≤25
Chloroform	0.0423	0.0449	6	≤25
1,2-Dichloroethane	0.294	0.288	2	≤25
Benzene	0.217	0.214	1	≤25
Carbon Tetrachloride	0.0670	0.0716	7	≤25
Trichloroethene	0.0349	0.0373	7	≤25
Tetrachloroethene	0.0219	0.0250	10	≤25
Ethylbenzene	0.0491	0.0507	3	≤25
1,4-Dichlorobenzene	U	U	NC	≤25

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USEPA

DateShipped: 4/6/2017

CarrierName: Hand Delivered

AirbillNo: NA

WO# K704001

CHAIN OF CUSTODY RECORD

Site #: 290

No: 3-040617-092311-0011

Cooler #:

Lab: ERT/SERAS

Lab Phone: 732-321-4200

[illegible]

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
ALL SAMPLES FOR ANALYSIS	[REDACTED] LGEDCS/ SERAS	4/6/17 1426	[REDACTED] SERAS	4/6/17 14:30	Intact
All/Analysis	[REDACTED] /SERAS	4/7/17 10:00	[REDACTED] SERAS	4/7/17 10:00	