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Memorandum

Date:	29 July 2011
To:	Joseph Lemay, United States Environmental Protection Agency
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From:	Todd Creamer, Geosyntec Consultants, Inc.
Subject:	Validated Results of June 2011 Sampling Event Wells G&H Superfund Site, Woburn, Massachusetts Alpha Analytical Laboratory Report: L1108139

This memorandum is a transmittal for validated data and associated information for the subject sampling event. Specifically, the attached information includes the Tier IV data validation report for 22 samples, four field duplicate samples, and one trip blank collected from 06 through 07 June 2011, an update to the winter building surveys and field forms generated during the sampling event. Unvalidated data for this sampling event were transmitted to the USEPA via email on 28 June 2011.

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SDMS Doc ID 547793

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Memorandum

Date: 25 July 2011

To: Todd Creamer

From: Mary Tyler

Copies to: Julia Caprio

Subject: Tier IV Data Validation Alpha Analytical Lab Number L1108139
Wells G&H Superfund Site, Woburn, Massachusetts

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1. INTRODUCTION AND SUMMARY

This report summarizes the findings of a Tier IV data validation for twenty two air samples, four field duplicate samples, and one trip blank collected from 06 June 2011 through 08 June 2011. These samples were collected as part of the Wells G&H Superfund Site Vapor Intrusion Assessment. Air samples were analyzed by Alpha Analytical (Mansfield, Massachusetts) using the following methods:

- EPA Modified Method TO-15 using Selected Ion Monitoring (SIM) - Volatile Organic Compounds (VOCs)
- EPA Modified Method TO-15 – Acetone and Ethyl Acetate Only
- Massachusetts DEP Method APH – Air-Phase Petroleum Hydrocarbons (APH)

All samples collected from 06 June 2011 through 08 June 2011, once received by the lab, were handled, prepared, and measured in the same manner under similar prescribed conditions.

Data for the organic compounds were reviewed based on guidance specified in the project-specific Quality Assurance Project Plan (QAPP) in Form F which lists the USEPA Region 2 Guidance document entitled USEPA Hazardous Water Support Branch: Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15 (SOP#HW-31, Revision #4, October 2006). Data for the organic compounds were also reviewed based on the pertinent methods referenced by the data package and professional judgment.

The following samples were analyzed and validated at a Tier IV level in the data set:

Lab ID	Client ID
L1108139-01	260902-IA1-20110607
L1108139-02	260902-IA2-20110607
L1108139-03	260902-OA-20110607
L1108139-04	260902-SS1-20110607
L1108139-05	260902-SS2-20110607
L1108139-06	260903-IA1-20110607
L1108139-07	260903-IA2-20110607
L1108139-08	260903-OA-20110607
L1108139-09	260903-SS1-20110607
L1108139-10	260903-SS2-20110607
L1108139-11	260407-17-IA1-20110607
L1108139-12	260407-17-SS1-20110607
L1108139-13	260407-19-SS1-20110608
L1108139-14	260407-20-IA1-20110607
L1108139-15	260407-20-SS1-20110608
L1108139-16	260407-22-IA1-20110607
L1108139-17	260407-22-IA2-20110607
L1108139-18	260407-22-SS1-20110608
L1108139-19	260407-22-SS2-20110608
L1108139-20	260407-OA1-20110607
L1108139-21	260407-OA2-20110607
L1108139-22	BD01-20110607
L1108139-23	BD02-20110607
L1108139-24	BD03-20110607
L1108139-25	BD04-20110608
L1108139-26	TB-20110608
L1108139-27	260407-19-IA1-20110607

The laboratory report was revised twice. The first revision, issued on 23 June 2011, corrected the sample type for several APH samples. The APH result forms in the hardcopy laboratory report for samples 260407-17-IA1-20110607, 260407-20-IA1-20110607, 260407-22-IA1-20110607, 260407-22-IA2-20110607, 260407-OA1-20110607, and 260407-OA2-20110607 listed the sample types incorrectly as 24 hour composite samples; the information for these samples was corrected on the APH result forms to indicate 8 hour composite samples.

The second revision, issued on 19 July 2011, was requested because the electronic data deliverable (EDD) for APH did not match the hardcopy laboratory report. The laboratory data flag M, which indicates that the reporting limit exceeds the MCP CAM reporting limit, was not listed on the hardcopy report for any of the APH results, yet some of the results in the EDD had the M flag. In addition, the MADEP MCP Response Action Analytical Report Certification form did not indicate that the CAM reporting limits were not met for C5-C8 aliphatics. The second revision corrected the MADEP MCP Response Action Analytical Report Certification form, revised the laboratory narrative for petroleum hydrocarbons in air (APH) and revised the EDD

for APH. The form was changed to indicate that the reporting limits were not at or below the CAM reporting limits specified in the selected CAM protocol for APH analysis. The narrative was amended to indicate that one or more of the APH target analytes did not achieve the requested CAM reporting limits. In addition, the laboratory data flag M was removed from the EDD for APH analyses, as the laboratory is not currently flagging any data with the M qualifier.

Review of the canister cleaning certification documentation, included in the data package, indicated the following:

- Acetone was detected at estimated concentrations greater than the method detection limit (MDL) and less than the reporting limit (RL) in the canisters used to collect samples 260407-17-IA1-20110607, 260407-17-SS1-20110607, 260407-22-IA1-20110607, 260407-22-IA2-20110607, 260407-22-SS1-20110608, 260407-OA1-20110607, BD03-20110607 and 260407-19-IA1-20110607. Since acetone was detected in these samples at concentrations above the RL, no qualifications were applied to the data based on professional judgment.
- Acetone was also detected at an estimated concentration greater than the MDL and less than the reporting limit in the canister used to collect the trip blank, TB-20110608. Therefore, the acetone concentration in the trip blank was qualified as not detected at the reporting limit; see section 2.9 below.
- The flow controller used to collect sample 260407-22-IA2-20110607 did not have certification documentation for acetone and ethyl acetate. No qualifications were applied to the data based on professional judgment since the concentration of acetone detected in the sample was greater than the RL and ethyl acetate was not detected in the sample.

The conclusion from the Tier IV data validation presented herein and covering the QC parameters listed below, is that the data, as qualified, are usable for meeting the project objectives documented in Form D of the QAPP.

It was noted that the samples were analyzed for 1,3-butadiene, methyl tert-butyl ether (MTBE), benzene, toluene, ethylbenzene and naphthalene by both EPA Method TO-15 SIM and Massachusetts DEP Method APH. Comparable results were reported by both methods.

2. VOLATILE ORGANIC COMPOUND ANALYSIS (VOCs)

Twenty two air samples, four field duplicate samples and one trip blank sample were analyzed for VOCs per EPA modified Method TO-15, using SIM and for acetone and ethyl acetate, using EPA modified Method TO-15.

Components of the laboratory data package that were reviewed during this Tier IV data validation are listed below. A check mark (✓) indicates components of the data package that are acceptable. A crossed circle (⊗) signifies components of the data package where issues were raised during the course of the validation review and these issues should be considered to determine whether they have an impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ⊗ Continuing Calibration Verification
- ✓ Method Blanks
- ✓ Laboratory Control Sample
- ⊗ Laboratory Duplicate
- ⊗ Trip Blank
- ⊗ Field Duplicate
- ✓ Internal Standards
- ✓ Target Compound Identifications
- ⊗ Target Compound Quantitations
- ⊗ Electronic Data Deliverables Review

2.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting the project objectives documented in Form D of the QAPP. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the project is 100%.

Review of the RLs for TO-15 SIM and MDLs for TO-15 (acetone and ethyl acetate only) found that the proposed screening levels listed in the QAPP were met for all compounds except 1,2-dibromoethane, naphthalene and bromodichloromethane. Based on the QAPP requirements, the laboratory reported these three compounds to ½ the RL by TO-15 SIM. However, the value for ½ the RL is listed as the MDL in the hardcopy report. Additionally, these three compounds were reported as non-detect to the RL in the electronic data deliverable (EDD) rather than to ½ the RL. Based on information from Alpha Analytical, the misreported values are due to a limitation of the laboratory information system (LIMS). For the purposes of this report, the term "respective reporting limit" will be used to indicate the compound RLs for Method TO-15 SIM. Data users are advised to note that the concentrations listed for TO-15 SIM analyses in the hardcopy report as the MDLs are not in fact the MDLs.

2.2 Holding Times

The holding time for an air sample collected in a Summa™ canister for TO-15 analysis is 30 days from sample collection. The holding times were met for the sample analyses.

2.3 Instrument Performance Check

Instrument performance check samples (tune standards) were analyzed by Alpha Analytical. All calibration standards, the air samples and QC samples were analyzed within 24-hours after analyzing the tune standards. All ion abundance criteria were met for the tune standard, bromofluorobenzene (BFB).

2.4 Initial Calibration

Appropriate initial calibrations were performed and documented for each analyte. The laboratory calculated percent relative standard deviations (%RSDs) of the relative response factors (RRFs). The %RSDs met the method criteria of less than or equal to 30%, and the minimum average RRFs were above the method criteria of 0.050.

Initial calibration verification (ICV) standards were analyzed after the initial calibrations. The ICVs RRFs met the method minimum RRF criteria of 0.050. The percent differences (%Ds) between the RRFs in the initial calibration and the ICV were within the method acceptance criteria of less than or equal to 30%.

2.5 Continuing Calibration Verification (CCV)

CCVs were performed after the initial calibration on a daily basis after the BFB tune and prior to the analyses of samples. The CCVs RRFs met the method minimum RRF criteria of 0.050. The %Ds between the RRFs in the initial calibration and CCVs were within the method acceptance criteria of less than or equal to 30%, with the following exceptions. The %D for naphthalene on instrument Airlab8, analyzed on 21 June 2011, was 34.3%. Therefore, the detected concentrations of naphthalene were J qualified as estimated. In addition, the %Ds for MTBE and toluene on instrument Airpiano2, analyzed on 20 June 2011, were 35.2% and 30.5%, respectively. Therefore, the non-detected results of MTBE and toluene in the associated samples were UJ qualified as estimated less than the reporting limits and the detected concentrations were J qualified as estimated. These qualifications are summarized below:

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)*	EDD Reason Code**
260903-IA1-20110607	Naphthalene	0.367	0.367 J	9
260903-IA2-20110607	Naphthalene	0.288	0.288 J	9
260407-17-IA1-20110607	Naphthalene	0.273	0.273 J	9
260407-20-IA1-20110607	Naphthalene	0.351	0.351 J	9
260407-22-IA1-20110607	Naphthalene	0.257 J	0.257 J	9
260407-22-IA2-20110607	Naphthalene	0.168 J	0.168 J	9
BD01-20110607	Naphthalene	0.246 J	0.246 J	9
BD03-20110607	Naphthalene	0.744	0.744 J	9
260407-19-IA1-20110607	Naphthalene	0.493	0.493 J	9
260902-IA1-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9
260902-IA1-20110607	Toluene	3.24	3.24 J	9
260902-IA2-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9
260902-IA2-20110607	Toluene	3.29	3.29 J	9
260902-OA-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)*	EDD Reason Code**
260902-OA-20110607	Toluene	1.37	1.37 J	9
260903-OA-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9
260903-OA-20110607	Toluene	1.47	1.47 J	9
260407-OA1-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9
260407-OA1-20110607	Toluene	1.22	1.22 J	9
260407-OA2-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	9
260407-OA2-20110607	Toluene	1.29	1.29 J	9
TB-20110608	Methyl tert butyl ether	0.072 U	0.072 UJ	9
TB-20110608	Toluene	0.188 U	0.188 UJ	9

U-not detected
J-estimated concentration
µg/m^3 – micrograms per cubic meter
*Validation qualifiers are defined in Attachment 1 at the end of this report
**EDD reason codes are defined in Attachment 2 at the end of this report

2.6 Method Blanks

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (i.e., one per batch of 20 samples). Six method blanks were analyzed and reported for the 27 samples. VOCs were not detected in the method blanks above their respective reporting limits (TO-15 SIM) or the MDLs (TO-15), with the following exceptions. Acetone was detected in the method blanks in batches WG474469, WG474612 and WG474612 at concentrations greater than the MDL and less than the reporting limit. Since the concentrations of acetone in the associated samples were either greater than the reporting limit or in the case of the trip blank, qualified due to the concentration in the empty canister, no qualifications were applied to the data due to the method blanks' acetone concentrations.

2.7 Laboratory Duplicate

Laboratory duplicates were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five laboratory duplicates were analyzed, using samples 260407-19-SS1-20110608 (both TO-15 SIM and TO-15 analyses), 260902-IA2-20110607, 260903-IA1-20110607 and 260407-20-IA1-20110607. The results for the laboratory duplicates were within the method-specified acceptance criteria for VOCs of 25% D.

2.8 Laboratory Control Sample

Six laboratory control samples (LCSs) were analyzed for the 27 samples submitted, which satisfies the minimum frequency for the number and types of samples analyzed (one per batch of 20 samples). The results for the LCSs were within the method-specified acceptance criteria for recovery of 70-130%, with the following exceptions. The recovery of naphthalene in batch WG474558 was low (66%) and outside the method-specified acceptance criteria for recovery.

Therefore, the detected concentrations of naphthalene in the associated samples were J qualified as estimated. In addition, the recovery of MTBE in batch WG474617 was low (65%) and outside the method-specified acceptance criteria for recovery. MTBE was not detected in the associated samples and therefore, the MTBE results are UJ qualified as estimated less than the reporting limit. These qualifications are summarized below.

	Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
6	260903-IA1-20110607	Naphthalene	0.367	0.367 J	5
7	260903-IA2-20110607	Naphthalene	0.288	0.288 J	5
11	260407-17-IA1-20110607	Naphthalene	0.273	0.273 J	5
14	260407-20-IA1-20110607	Naphthalene	0.351	0.351 J	5
16	260407-22-IA1-20110607	Naphthalene	0.257 J	0.257 J	5
17	260407-22-IA2-20110607	Naphthalene	0.168 J	0.168 J	5
22	BD01-20110607	Naphthalene	0.246 J	0.246 J	5
24	BD03-20110607	Naphthalene	0.744	0.744 J	5
27	260407-19-IA1-20110607	Naphthalene	0.493	0.493 J	5
1	260902-IA1-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
2	260902-IA2-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
3	260902-OA-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
8	260903-OA-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
20	260407-OA1-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
21	260407-OA2-20110607	Methyl tert butyl ether	0.072 U	0.072 UJ	5
26	TB-20110608	Methyl tert butyl ether	0.072 U	0.072 UJ	5

U-not detected
J-estimated concentration

2.9 Trip Blank

A trip blank, TB-20110608, accompanied the sample shipment. VOCs were not detected in the trip blank above their respective reporting limits (TO-15 SIM) or the MDLs (TO-15), with the following exception. Acetone was detected in the trip blank at an estimated concentration greater than the MDL and less than the reporting limit, at a concentration of 0.354 µg/m^3. According to the canister cleaning documentation, acetone was detected in the canister used as the trip blank at an estimated concentration greater than the MDL and less than the reporting limit, at a concentration of 0.290 µg/m^3. Therefore, the concentration of acetone in the trip blank was U qualified as not detected at the reporting limit. This qualification is summarized below:

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
TB-20110608	Acetone	0.354 J	2.38 U	13

J-estimated concentration

2.10 Field Duplicate

Four field duplicate samples, BD01-20110607, BD02-20110607, BD03-20110607 and BD04-20110608, were collected with the samples. Acceptable precision (RPD ≤25%) was demonstrated between each field duplicate and the associated original samples, 260902-IA2-20110607, 260903-SS1-20110607, 260407-19-IA1-20110607 and 260407-22-SS1-20110608, respectively, with the following exceptions.

- 1,2,4-Trimethylbenzene, 1,2-dichloroethane, benzene, chloroform, ethylbenzene and total xylenes were detected above the reporting limits in one sample and not detected above their respective reporting limits in the other sample for the duplicate pair 260407-22-SS1-20110608/BD04-20110608, resulting in non-calculable and unacceptable RPDs between the results. Therefore, the detected concentrations of these compounds were J qualified as estimated and the non-detected results were UJ qualified as estimated less than their respective reporting limits in the duplicate pair.
- Ethyl acetate was detected above the reporting limit in the field duplicate and not detected above MDL in the parent sample for the duplicate pair 260407-22-SS1-20110608/BD04-20110608, resulting in a non-calculable and unacceptable RPD between the results. Therefore, the detected concentrations of ethyl acetate was J qualified as estimated and the non-detected result was UJ qualified as estimated less than the MDL in the duplicate pair.
- The RPDs were greater than 25% for 1,1,1-trichloroethane, acetone, carbon tetrachloride, tetrachloroethene, toluene and trichloroethene in the duplicate pair 260407-22-SS1-20110608/BD04-20110608; therefore, the detected concentrations of these compounds were J qualified as estimated in the duplicate pair.

These qualifications are summarized below:

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
260407-22-SS1-20110608	1,1,1-Trichloroethane	5.89	29	5.89 J	7
BD04-20110608	1,1,1-Trichloroethane	4.40		4.40 J	7
260407-22-SS1-20110608	1,2,4-Trimethylbenzene	0.098 U	NC	0.098 UJ	7
BD04-20110608	1,2,4-Trimethylbenzene	0.202		0.202 J	7
260407-22-SS1-20110608	1,2-Dichloroethane	0.081 U	NC	0.081 UJ	7
BD04-20110608	1,2-Dichloroethane	0.304		0.304 J	7
260407-22-SS1-20110608	Acetone	17.6	137	17.6 J	7
BD04-20110608	Acetone	94.5		94.5 J	7
260407-22-SS1-20110608	Benzene	0.224 U	NC	0.224 UJ	7
BD04-20110608	Benzene	0.268		0.268 J	7
260407-22-SS1-20110608	Carbon tetrachloride	0.176	36	0.176 J	7

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
BD04-20110608	Carbon tetrachloride	0.252		0.252 J	7
260407-22-SS1-20110608	Chloroform	0.098 U	NC	0.098 UJ	7
BD04-20110608	Chloroform	0.317		0.317 J	7
260407-22-SS1-20110608	Ethyl Acetate	0.544 U	NC	0.544 UJ	7
BD04-20110608	Ethyl Acetate	4.25		4.25 J	7
260407-22-SS1-20110608	Ethylbenzene	0.087 U	NC	0.087 UJ	7
BD04-20110608	Ethylbenzene	0.282		0.282 J	7
260407-22-SS1-20110608	Tetrachloroethene	102	28	102 J	7
BD04-20110608	Tetrachloroethene	77.3		77.3 J	7
260407-22-SS1-20110608	Toluene	0.320	161	0.320 J	7
BD04-20110608	Toluene	3.01		3.01 J	7
260407-22-SS1-20110608	Trichloroethene	0.193	44	0.193 J	7
BD04-20110608	Trichloroethene	0.301		0.301 J	7
260407-22-SS1-20110608	Total Xylenes	0.261 U	NC	0.261 UJ	7
BD04-20110608	Total Xylenes	1.16		1.16 J	7
260407-22-SS1-20110608	All other VOCs	ND	0	NA	NA
BD04-20110608	All other VOCs	ND		NA	NA

U - not detected
ND - not detected
NC - not calculable
NA - not applicable

- Chloroform was detected above the reporting limit in the field duplicate sample and not detected above the reporting limit in the parent sample for the duplicate pair 260903-SS1-20110607/BD02-20110607, resulting in a non-calculable and unacceptable RPD between the results. Therefore, the detected concentration of chloroform was J qualified as estimated in the field duplicate sample and the non-detected result was UJ qualified as estimated less than the reporting limit in the parent sample. These qualifications are summarized below:

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
260903-SS1-20110607	Chloroform	0.098 U	NC	0.098 UJ	7
BD02-20110607	Chloroform	0.190		0.190 J	7
260903-SS1-20110607	Methylene chloride	24.1	3	NA	NA
BD02-20110607	Methylene chloride	23.3		NA	NA
260903-SS1-20110607	Tetrachloroethene	0.271	24	NA	NA
BD02-20110607	Tetrachloroethene	0.346		NA	NA
260903-SS1-20110607	Toluene	0.241	19	NA	NA

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
BD02-20110607	Toluene	0.200		NA	NA
260903-SS1-20110607	All other VOCs	ND	0	NA	NA
BD02-20110607	All other VOCs	ND		NA	NA

U - not detected
ND - not detected
NC - not calculable
NA - not applicable

- Tetrachloroethene was detected above the reporting limit in the field duplicate sample and not detected above the reporting limit in the parent sample for the duplicate pair 260902-IA2-20110607/BD01-20110607, resulting in non-calculable and unacceptable RPD between the results. Therefore, the detected concentration of tetrachloroethene was J qualified as estimated in the field duplicate and the non-detected result was UJ qualified as estimated less than the reporting limit in the parent sample.
- The RPDs were greater than 25% for 1,3-butadiene, chloroform, ethyl benzene, methylene chloride and total xylenes in the duplicate pair 260902-IA2-20110607/BD01-20110607; therefore, the detected concentrations of these compounds were J qualified as estimated in the duplicate pair.

These qualifications are summarized below:

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
260902-IA2-20110607	1,2,4-Trimethylbenzene	0.836	21	NA	NA
BD01-20110607	1,2,4-Trimethylbenzene	1.03		NA	NA
260902-IA2-20110607	1,2-Dichloroethane	2.74	25	NA	NA
BD01-20110607	1,2-Dichloroethane	2.13		NA	NA
260902-IA2-20110607	1,3-Butadiene	0.106	59	0.106 J	7
BD01-20110607	1,3-Butadiene	0.058		0.058 J	7
260902-IA2-20110607	Benzene	0.837	21	NA	NA
BD01-20110607	Benzene	0.680		NA	NA
260902-IA2-20110607	Bromodichloromethane	0.120 J	NC	NA	NA
BD01-20110607	Bromodichloromethane	0.094 J		NA	NA
260902-IA2-20110607	Carbon tetrachloride	0.484	19	NA	NA
BD01-20110607	Carbon tetrachloride	0.402		NA	NA
260902-IA2-20110607	Chloroform	0.293	26	0.293 J	7
BD01-20110607	Chloroform	0.381		0.381 J	7
260902-IA2-20110607	Ethylbenzene	0.586	26	0.586 J	7
BD01-20110607	Ethylbenzene	0.760		0.760 J	7

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
260902-IA2-20110607	Methylene chloride	11.1	109	11.1 J	7
BD01-20110607	Methylene chloride	3.27		3.27 J	7
260902-IA2-20110607	Naphthalene	0.435	NC	0.435 J	7
BD01-20110607	Naphthalene	0.246 J		0.246 J	7
260902-IA2-20110607	Tetrachloroethene	0.136 U	NC	0.136 UJ	7
BD01-20110607	Tetrachloroethene	0.156		0.156 J	7
260902-IA2-20110607	Toluene	3.29	25	NA	NA
BD01-20110607	Toluene	4.22		NA	NA
260902-IA2-20110607	Total Xylenes	2.44	30	2.44 J	7
BD01-20110607	Total Xylenes	3.31		3.31 J	7
260902-IA2-20110607	All other VOCs	ND	0	NA	NA
BD01-20110607	All other VOCs	ND		NA	NA

U-not detected
J-estimated concentration
ND - not detected
NC - not calculable
NA - not applicable

- 1,3-Butadiene was detected above the reporting limit in the parent sample and not detected above the reporting limit in the field duplicate sample for the duplicate pair 260407-19-IA1-20110607/BD03-20110607, resulting in a non-calculable and unacceptable RPD between the results. Therefore, the detected concentration of 1,3-butadiene was J qualified as estimated in the parent sample and the non-detected result was UJ qualified as estimated less than the reporting limit in the field duplicate sample.
- The RPDs were greater than 25% for chloroform, methylene chloride and naphthalene in the duplicate pair 260407-19-IA1-20110607/BD03-20110607; therefore, the detected concentrations of these compounds were J qualified as estimated in the duplicate pair.

These qualifications are summarized below:

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
BD03-20110607	1,1,1-Trichloroethane	1.30	11	NA	NA
260407-19-IA1-20110607	1,1,1-Trichloroethane	1.17		NA	NA
BD03-20110607	1,2,4-Trimethylbenzene	2.47	5	NA	NA
260407-19-IA1-20110607	1,2,4-Trimethylbenzene	2.34		NA	NA
BD03-20110607	1,2-Dichloroethane	0.470	10	NA	NA
260407-19-IA1-20110607	1,2-Dichloroethane	0.425		NA	NA
BD03-20110607	1,3-Butadiene	0.055	NC	0.055 J	7
260407-19-IA1-20110607	1,3-Butadiene	0.044 U		0.044 UJ	7

Sample ID	Compound	Laboratory Result (µg/m^3)	RPD (%)	Validation Result (µg/m^3)	Reason Code
BD03-20110607	1,4-Dichlorobenzene	3.35	8	NA	NA
260407-19-IA1-20110607	1,4-Dichlorobenzene	3.08		NA	NA
BD03-20110607	Acetone	261	22	NA	NA
260407-19-IA1-20110607	Acetone	209		NA	NA
BD03-20110607	Benzene	0.655	7	NA	NA
260407-19-IA1-20110607	Benzene	0.613		NA	NA
BD03-20110607	Carbon tetrachloride	0.390	2	NA	NA
260407-19-IA1-20110607	Carbon tetrachloride	0.384		NA	NA
BD03-20110607	Chloroform	0.327	96	0.327 J	7
260407-19-IA1-20110607	Chloroform	0.928		0.928 J	7
BD03-20110607	Ethyl Acetate	12.2	13	NA	NA
260407-19-IA1-20110607	Ethyl Acetate	10.7		NA	NA
BD03-20110607	Ethylbenzene	1.28	5	NA	NA
260407-19-IA1-20110607	Ethylbenzene	1.22		NA	NA
BD03-20110607	Methylene chloride	1.94	89	1.94 J	7
260407-19-IA1-20110607	Methylene chloride	5.07		5.07 J	7
BD03-20110607	Naphthalene	0.744	41	0.744 J	7
260407-19-IA1-20110607	Naphthalene	0.493		0.493 J	7
BD03-20110607	Tetrachloroethene	0.312	7	NA	NA
260407-19-IA1-20110607	Tetrachloroethene	0.292		NA	NA
BD03-20110607	Toluene	16.0	4	NA	NA
260407-19-IA1-20110607	Toluene	15.3		NA	NA
BD03-20110607	Total Xylenes	4.78	5	NA	NA
260407-19-IA1-20110607	Total Xylenes	4.56		NA	NA
BD03-20110607	All other VOCs	ND	0	NA	NA
260407-19-IA1-20110607	All other VOCs	ND		NA	NA

U - not detected
ND - not detected
NC - not calculable
NA - not applicable

2.11 Internal Standards

The internal standard areas and retention times were within method limits of ±40% of the internal standard areas from the most recent calibration and within 0.33 minutes of the retention times for the internal standards from the most recent calibration.

2.12 Target Compound Identifications

The target compound identifications were within the validation criteria.

2.13 Target Compound Quantitations

The compound quantitations were within the validation criteria with the exceptions noted below.

Acetone was detected above the calibration range in the original analyses of samples 260407-17-IA1-20110607, 260407-22-IA2-20110607, BD03-20110607, 260407-19-IA1-20110607. The samples were analyzed at dilution, bringing the concentrations of acetone within the calibration range; both sets of data were reported. Only the acetone results within the calibration range should be used; the E flagged results should not be used.

Tetrachloroethene was detected above the calibration range in the original analysis of sample 260407-22-SS2-20110608. The sample was analyzed at dilution, bringing the concentrations of tetrachlorethene within the calibration range; both sets of data were reported. Only the tetrachlorethene result within the calibration range should be used; the E flagged result should not be used.

2.14 Electronic Data Deliverables Review

A minimum of 20% of the results and all sample IDs provided in the electronic data deliverable (EDD) were reviewed against information provided in the Level IV report. It was noted that sample results for 1,2-dibromoethane, naphthalene and bromodichloromethane were not reported to ½ the RL in the EDD.

3. AIR PHASE PETROLEUM HYDROCARBONS (APH)

Twenty two air samples, four field duplicate samples and one trip blank sample were analyzed for petroleum hydrocarbons per EPA Massachusetts DEP Method APH.

Components of the laboratory data package that were reviewed during this Tier IV data validation are listed below. A check mark (✓) indicates components of the data package that are acceptable. A crossed circle (⊗) signifies components of the data package where issues were raised during the course of the validation review, and these issues should be considered to determine whether they have an impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ⊗ Continuing Calibration Verification
- ✓ Method Blanks
- ✓ Laboratory Control Sample
- ⊗ Laboratory Duplicate
- ⊗ Trip Blank
- ⊗ Field Duplicate
- ✓ Internal Standards
- ✓ Target Compound Identifications
- ✓ Target Compound Quantitations

- ⊗ Electronic Data Deliverables Review

3.1 Overall Assessment

The APH data reported in this package are considered to be usable for meeting the project objectives documented in Form D of the QAPP. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the project is 100%.

Review of the reporting limits found that the proposed screening levels listed in the QAPP were met for all compounds except C9-C12 aliphatic hydrocarbons. During this assessment, it was noted that the laboratory hardcopy report lists the same value for the reporting limit and the MDL for each analyte. Based on information from Alpha Analytical, this is due to a limitation of the LIMS and none of the data have been reported to the MDLs, but to the RLs.

3.2 Holding Times

The holding time for an air sample collected in a Summa™ canister for APH analysis is 30 days from sample collection. The holding times were met for the sample analyses.

3.3 Instrument Performance Check

Instrument performance check samples (tune standards) were analyzed by Alpha Analytical. All calibration standards, the air samples and QC samples were analyzed within 24-hours after analyzing the tune standards. All ion abundance criteria were met for BFB.

3.4 Initial Calibration

Appropriate initial calibrations were performed and documented for each analyte. The laboratory calculated %RSDs of the RRFs. The %RSDs met the method criteria of less than or equal to 30% for all compounds except naphthalene. The %RSD for naphthalene was 38% in the initial calibration performed on instrument AirLab8. Therefore, based on professional judgment, the non-detected results of naphthalene in the associated samples were UJ qualified as estimated less than the reporting limit; naphthalene was not detected in the associated samples. These qualifications are summarized below:

Sample ID	Compound	Laboratory Concentration ($\mu g/m^3$)	Validation Concentration ($\mu g/ m^3$)	EDD Reason Code
260902-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260902-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260902-OA-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-OA-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-17-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
260407-20-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-22-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-22-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-OA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-OA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
BD01-20110607	Naphthalene	2.0 U	2.0 UJ	9
BD03-20110607	Naphthalene	2.0 U	2.0 UJ	9
TB-20110608	Naphthalene	2.0 U	2.0 UJ	9
260407-19-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9

U - not detected at the reporting limit

ICV standards were analyzed after the initial calibrations. The %Ds between the RRFs in the initial calibrations and the ICVs were within the method acceptance criteria of less than or equal to 30%, with the following exception. The %D for naphthalene was 47% for the ICV analyzed on instrument AirLab8 on 6/10/11. Based on professional judgment, no qualifications were applied to the data due to the ICV %D result for naphthalene since the CCV standard %D and the LCS recovery for naphthalene, analyzed on the same day as the samples, were within the method acceptance limits.

3.5 Continuing Calibration Verification

CCVs were performed after the initial calibration on a daily basis after the BFB tune and prior to the analysis of samples. The CCVs RRFs met the method minimum RRF criteria of 0.050. The %Ds between the RRFs in the initial and CCVs were within the method acceptance criteria of less than or equal to 30%, with the following exception. The CCV analyzed on instrument Air2 on 18 June 2011 had 35%D for naphthalene; naphthalene was not detected in the associated samples and therefore, the non-detected results of naphthalene in the associated samples were UJ qualified as estimated less than the reporting limit. These qualifications are summarized below:

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
260902-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260902-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260902-OA-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260903-OA-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-17-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-20-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-22-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
260407-22-IA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-OA1-20110607	Naphthalene	2.0 U	2.0 UJ	9
260407-OA2-20110607	Naphthalene	2.0 U	2.0 UJ	9
BD01-20110607	Naphthalene	2.0 U	2.0 UJ	9
BD03-20110607	Naphthalene	2.0 U	2.0 UJ	9
TB-20110608	Naphthalene	2.0 U	2.0 UJ	9
260407-19-IA1-20110607	Naphthalene	2.0 U	2.0 UJ	9

U - not detected at the reporting limit

3.6 Method Blanks

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (i.e., one per batch of 20 samples). Two method blanks were analyzed and reported for the 27 samples. APH were not detected in the method blanks above the reporting limits.

3.7 Laboratory Duplicate

Laboratory duplicates were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two laboratory duplicates were analyzed, using samples 260407-19-SS1-20110608 and 260407-20-IA1-20110607. The results for the laboratory duplicate were within the method-specified acceptance criteria for APH analytes of 25%D, with the following exception. o-Xylene was detected in sample 260407-20-IA1-20110607 above the reporting limit and not detected in the laboratory duplicate, resulting in a non-calculable and unacceptable RPD between the results. Therefore, the detected concentration of o-xylene in sample 260407-20-IA1-20110607 was J qualified as estimated. This qualification is summarized below:

Sample ID	Compound	Laboratory Concentration (µg/m^3)	Validation Concentration (µg/ m^3)	EDD Reason Code
260407-20-IA1-20110607	o-Xylene	2.0	2.0 J	12

3.8 Laboratory Control Sample

Two LCSs were analyzed for the 27 samples submitted to the laboratory, which is the proper frequency for the number and types of samples analyzed (i.e., one per batch of 20 samples). The results for the LCSs were within the method-specified acceptance criteria for recovery of 70-130%.

3.9 Trip Blank

A trip blank, TB01-03182011, accompanied the sample shipment. No APH were detected in the trip blank above the reporting limits, with the exception of C5-C8 Aliphatics, which was detected

at a concentration of 13.0 µg/m^3. Since the samples were analyzed from Summa™ canisters, no qualifications were applied to the data, based on professional judgment.

3.10 Field Duplicate

Four field duplicate samples, BD01-20110607, BD02-20110607, BD03-20110607 and BD04-20110608, were collected with the samples. Acceptable precision (RPD ≤25%) was demonstrated between each field duplicate and the associated original samples, 260902-IA2-20110607, 260903-SS1-20110607, 260407-19-IA1-20110607 and 260407-22-SS1-20110608, respectively, with the following exceptions. C9-C12 aliphatics and toluene were detected in the field duplicate and not detected in the parent sample for the duplicate pair 260407-22-SS1-20110608/BD04-20110608. Therefore, the detected concentrations of C9-C12 aliphatics and toluene in field duplicate BD04-20110608 were J qualified as estimated and the non-detected results in sample 260407-22-SS1-20110608 were UJ qualified as estimated less than the MDLs.

The calculated RPDs for the duplicate pairs and applicable qualifications are summarized below:

Sample ID	Compound	Laboratory Concentration (µg/m^3)	RPD	Validation Concentration (µg/ m^3)	EDD Reason Code
260902-IA2-20110607	C5-C8 Aliphatics	85	2	NA	NA
BD01-20110607	C5-C8 Aliphatics	83		NA	NA
260902-IA2-20110607	C9-C12 Aliphatics	52	0	NA	NA
BD01-20110607	C9-C12 Aliphatics	52		NA	NA
260902-IA2-20110607	Toluene	4.3	10	NA	NA
BD01-20110607	Toluene	3.9		NA	NA
260902-IA2-20110607	All other APH	ND	0	NA	NA
BD01-20110607	All other APH	ND		NA	NA

ND - not detected at the reporting limit
NA - not applicable

Sample ID	Compound	Laboratory Concentration (µg/m^3)	RPD	Validation Concentration (µg/ m^3)	EDD Reason Code
260903-SS1-20110607	C5-C8 Aliphatics	20	11	NA	NA
BD02-20110607	C5-C8 Aliphatics	18		NA	NA
260903-SS1-20110607	All other APH	ND	0	NA	NA
BD02-20110607	All other APH	ND		NA	NA

ND - not detected at the reporting limit
NA - not applicable

Sample ID	Compound	Laboratory Concentration (µg/m^3)	RPD	Validation Concentration (µg/ m^3)	EDD Reason Code
BD03-20110607	C5-C8 Aliphatics	360	9	NA	NA

260407-19-IA1-20110607	C5-C8 Aliphatics	330		NA	NA
BD03-20110607	C9-C10 Aromatics Total	12	15	NA	NA
260407-19-IA1-20110607	C9-C10 Aromatics Total	14		NA	NA
BD03-20110607	C9-C12 Aliphatics	180	0	NA	NA
260407-19-IA1-20110607	C9-C12 Aliphatics	180		NA	NA
BD03-20110607	Toluene	16	0	NA	NA
260407-19-IA1-20110607	Toluene	16		NA	NA
BD03-20110607	All other APH	ND	0	NA	NA
260407-19-IA1-20110607	All other APH	ND		NA	NA

ND - not detected at the reporting limit
NA - not applicable

Sample ID	**Compound**	**Laboratory Concentration (µg/m^3)**	**RPD**	**Validation Concentration (µg/ m^3)**	**EDD Reason Code**
260407-22-SS1-20110608	C5-C8 Aliphatics	33	8	NA	NA
BD04-20110608	C5-C8 Aliphatics	39		NA	NA
260407-22-SS1-20110608	C9-C12 Aliphatics	14 U	NC	14 UJ	7
BD04-20110608	C9-C12 Aliphatics	14		14 J	7
260407-22-SS1-20110608	Toluene	2.0 U	NC	2.0 UJ	7
BD04-20110608	Toluene	3.3		3.3 J	7
260407-22-SS1-20110608	All other APH	ND	0	NA	NA
BD04-20110608	All other APH	ND		NA	NA

U - not detected at the indicated reporting limit
NC - not calculable
NA - not applicable
ND - not detected at the reporting limit

3.11 Internal Standards

The internal standard areas and retention times were within method limits of ±40% of the internal standard areas from the most recent calibration and within 0.33 minutes of the retention times for the internal standards from the most recent calibration.

3.12 Target Compound Identifications

The target compound identifications were within the validation criteria.

3.13 Target Compound Quantitations

The compound quantitations were within the validation.

3.14 Electronic Data Deliverables Review

A minimum of 20% of the results and all sample IDs provided in the EDD were reviewed against the information provided in the Level IV report. Discrepancies were identified between the EDD

and the Level IV report; there were M flagged results in EDD that were not M flagged in hardcopy. The laboratory was contacted and the EDD was revised to remove the M flags from the sample results.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS
AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: WR Grace VI Assessment
Date: 1 June 2011

Project Number: BR0200
Primary Activities: site walk
Field Personnel: Todd Creamer
260902, 260903, 260407
Recorded By: SWB
Weather: low 80's, wind from S to SSW 13-16 mph, cloudy
rain earlier

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
1200	TC arrived @ 260902 for building walkthrough
	2 potential indoor air sources identified
	and moved to outdoor shed:
	- Thompson's Water Seal, 1 gallon
	- charcoal lighter, 1 gallon
	Owner stated: snow blower was removed
	from the residence 1-2 weeks ago.
	• using spray-lysol in the house.
	• dehumidifier running 24/7 in basement
1230	TC spoke with owner of 260903 in the kitchen
	• home operates on central air conditioning
	• no new consumer products in home
	• no new dry cleaning
1310	260407
	-17 • 4 bottles acetone in use, stored
	in fire cabinet
	• 3 cases unopened bottles stacked
	- 1 case isopropyl alcohol
	- 2 cases likely to be acetone
	-19 • no changes, 2 photos
	-20 • no new cleaning products, etc
	• does not book patients between
	12-2 pm
	-22 • no changes
	• asked Stephanie for no acetone
	use on day of IA samples (Tues)
	-17 requested subslab sampling ~7pm
1340	offsite

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: WELLS G & H
Date: 6/6/2011
Page 1 of 2
Project Number: BR0200
Primary Activities: 24 INDOOR AIR Sampling @ RESIDENCES.
Field Personnel: C. Sullivan & S. Baushke
Recorded By: C. Sullivan
Weather: Sunny 70°

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
0715	ON Site Getting SUMA CANISTERS READY For
	24 h Sampling For RESIDENCE's
0720	UNPACKING CAR.
0730	Conducted Tail GATE SAFETY MEETING. (See Attached
	Sheet)
0740	CALIBRATING PPB RAE FROM PINE ENVIORNMENTAL
	See ATTAched Sheet
0748	CALIBRATION Complete.
	NOTE DURING This Time S. Baushke measuring initial
	pressures on SUMA CANS
	CANISTER ID — Flow Controller # — Initial Vacuum
	1618 — 0428 — -28.88
	1612 — 0375 — -28.88
	1687 — 0420 — -29.11
	0594 — 0471 — -29.08
	6651 — 0193 — -28.95
	1583 — 497 — -28.95
	0961 — 0185 — -29.07
805	Finished Checking Canister Pressures. Packing
	up Truck Heading out to Residences.
810	Arrive At First Residence REDACTED 26/09/02
	Meet w/ Jamie From TRC ACTING AS USEPA OverSight.
815	Setting outdoor Ambient CAN @ 26/09/02
	Canister ID 1612, intake 37" off ground
	PPB Reading = 0.0
820	Canister open Reading -29.14 on Flow Controller
824	Canisters 1583 & 961 Placed (one w/ Dup) IN Location
	2. Both on Chairs @ 38" Above Floor

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Wells G & H
Project Number: BR0200
Field Personnel: C. Sullivan & S. Raeke
Recorded By: C. Sullivan
Weather: Sunny 70°

Date: 6/6/2011
Page 2 of 2
Primary Activities: Residence Air Sampling.

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
825	opened Both Location 2 CANS
	NOTE opend. 1687 IN Location 1 IN Basement
	intake @ 40 inches. NO Detection on PPB
	Rae @ Either Location.
830	Getting Ready to Go to 26/09/03.
845	Heading over to 26/09/03
	Setting up ~~BS~~ Canister 651 for outdoor Ambient
	Sample. intake @ 37" PPB Rae = 0.0
849	Can open -29.16
850	Down To Basement. Setting up canister 594
	@ Location 1 Canister open @ 852.
	intake ontop of 5 Gal. Home Depot Bucket
	@ 37" Above Ground Surface.
855	Opened Canister 1618 @ Location 2
	intake @ 46"
900	Packing up & Heading off Site.
	NOTE WIND WAS out of West @ 41 Ft/min
	As Measured prior to Deployment of Ambient
	Cans @ Both Residences

Daily Field Report/Jan. 99

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Mills G & H
Project Number: BR0200
Field Personnel: C. Sullivan & S. Baushke
Recorded By: C. Sullivan
Weather: Sunny 75°

Date: 6/7/2011 Page 1 of 3
Primary Activities: Residential Indoor Air Pickup. Commercial Drop of Residential Sub Slab Sampling

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
0710	C. Sullivan & S. Baushke Arrive on Site.
0715	Going through & Recording Initial pressures on Summa canisters.
0720	Tailgate Health & Safety Meeting See Additional Sheets.
0730	G Barr on Site & Going over Task Hazard Analysis.
0735	Calibrating PPb RAE from Pine Environmental See Attached Sheets
740	G Barr over to Residences to pick up Lock & Chains from outside Ambient Cans for use today.
	T. Creamer on Site
0755	Jamie & Jack on Site for USEPA oversight.
0815	opened 1589, intake @ 38", east of cummings, OA do not disturb sign up, FC 0137, -29.58
0818	can 1538 & 1653, time connection intake FC 206 FC 174, -29.69 & -29.72, 42", 40"
0820	opened cans ppb RAE reads 141
0821	opened OA2, west of BLDG, 48" intake FC0495 can 1594, -29.61
825	unable to Get into REDACTED w/ Cummings Keys will have to wait till 9:00
827	Can 635 Flow Controller 227 Vacuum -29.71. Set @ 20 opened @ 830 @ 44" Above Ground ppb Reading = 30+
830	over To 22

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Wells G&H
Project Number: BR0200
Field Personnel: C. Sullivan & S. Barske

Date: 6/7/2011
Page 2 of 3
Primary Activities: indoor & Sub Slab Air Sampling

Recorded By: C. Sullivan
Weather: weather 75 Sunny

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
831	Can Flow Controller Vaccum
	967 349 -29.42
	Height 49" Above Ground
	ppb = 18.3
	8:33 opend Can in 22. in Reception
835	Can Flow Controller vaccum
	985 0026 -29.74
	Height 41" Above GROUND
	PPB = 28.5
	8:36 CAN open
6913	Nail Gallery Open can #937 controller 0231
	PID: 3050 40" intake height in back room w/sample
	PID: 1200 in front lobby area
	outdoor = 0ppb

Daily Field Report/Jan. 99

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Wells G & H
Project Number: BR0200
Field Personnel: C. Sullivan, T. Creamer, S. Barsotti, G. Barr
Recorded By: C. Sullivan
Weather: Sunny 75°

Date: 6/7/2011
Page 3 of 3
Primary Activities: Indoor Air & Soil Gas Sampling

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
	Attached fitting
	mixed a small amount of Rockite (cement) with water
	and put around the base of the fitting
940	Performing Shut IN TEST on sample train in
	Laundry Room. 260902-SS2-20110607
	Vaccum Held @ 58" of H_2O for >MIN.
	Field Check Good.
1220	SS1 open @ 260903 plug
1221	valve shut and probe in place
1223	SS2 open plug
1224	valve shut and probe in place
1330	Connecting sample train @ SS-1 260903
1341	Begin sample @ SS-1 with duplicate
1430	connecting sample train @ SS-2 260903
1500	Begin sampling @ SS-2
1600	TCreamer @ 260407 shutting IA/OA canisters
	and collecting them
1542	SS-2 complete, abandoned probes with probe +
	plug in place and cement on top
1650	mob to 260407 waiting for 260407-17 to
	clear out
1730	setting up @ 260407-17-SS1
1800	shut in
1812	purge
1827	opened sample
1855	closed canister
1930	off-site

Daily Field Report/Jan. 99

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Wells G&H
Project Number: BR0200
Field Personnel: C. Sullivan, S. Baumhke, G. Bass and T. Creamer
Recorded By: GB
Weather: 70s Sunny

Date: 6/7/2011
Page 1 of 1
Primary Activities: Indoor Air Pickup

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
0819	Pressure = 2.85" @ 260902 - IA1 - 20110607
	Can ID: 1687 Reg ID: 420
0823	Pressure = 4.90" @ 260902 - IA2 - 20110607
	Can ID: 961, Reg ID: 0185
0823	Pressure 4.72" @ BD01 - 20110607
	Can ID: 1583, Reg ID: 497
0830	Gauge Vac. 5.11" OA can, Can ID: 260902-OA-20110607
	Can ID 1612 Controller 0375
0834	Gauge Vac. 3.39 IA1 260903
	Can 594 controller 471
0836	Gauge Vac 1.88 260903-IA2-20110607
	Can ID 1618 controller 0428
0840	Gauge Vac 5.77 OA 260903
	Can C651 controller 193

Daily Field Report/Jan. 99

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: Wells G & H
Project Number: BR0200
Field Personnel: C. SULLIVAN, S. BAUSHKE, T. CREAMER
Recorded By: C. SULLIVAN
Weather: HOT / SUNNY 90°

Date: 6/8/2011
Page 1 of 2
Primary Activities: SUB SLAB SOIL GAS SAMPLING

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
0730	C. Sullivan & T Creamer on site
0745	S. Baushke on site.
750	unloading equipment & bringing into 22.
810	Tailgate H&S Meeting. See attached sheet.
820	Setting up Duplicate Sample in Reception
850	Performed Shut in Test. See Attached Sheet for Purge & Sampling Records. then purge test
0910	opened canister @ 260407-22-SS1
0915	setting up for sampling at second location
0930	shut in test @ 260407-22-SS-2
0945	purge test
0954	open canisters @ 260407-22-SS2
1000	started moving to Tire Communications
1040	differential pressure @ 260407-19-SS1 0.00
1045	shut-in test hold @ 32" H_2O for 60s
1059	failed purge test @ 260407-19-SS1, checked fittings added cement to probe, changed fittings on tubing from sampling tee to gauge board, after another failing test, we had a passing test @ direct from tube
1130	opened canister @ 260407-19-SS1
1145	CAS abandoning probes @ 260407-22
1207	shut can, took lunch
1230	abonded probe, entire probe removed, moved to 260407-20-SS1
1250	installed well head, hole hopen < 1mm
1310	initial vacuum test, -0.01
1322	purge test

DAILY FIELD REPORT

Geosyntec consultants
289 Great Road
Acton, Massachusetts, 01720
(978) 263-9588 Fax (978) 263-9594

Project Name: wells G4H VI
Date: 6/8/2011

Project Number: BR0200
Primary Activities: Sub slab soil gas sampling
Field Personnel: CAS, SWB
Recorded By: SWB
Weather: hot/sunny

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
1329	opened can
1355	closed can -4.66 on Alpha gauge
1407	filling ~~out~~ in probe/abandoning 260407-20-SS1
1430	offsite

TAILGATE SAFETY MEETING REPORT

Geosyntec consultants
289 Great Road, Acton, MA 01720
Phone: 978-263-9588, Fax: 978-263-9594

Project Name:	Wells G & H	Date:	6/6/2011 Page 1 of 1
Project Number:	BR0200	Subcontractor:	N/A
Field Personnel:	C. Sullivan & S Bausike	City	Woburn
(Geosyntec)		State	MA
Conducted By:	C. Sullivan	Weather:	Sunny 70°
Signature:	Chris Sullivan		Sam Bausike

Work Summary
INDOOR AIR SAMPLING.
Work Hazards
Active Roads UNKOWN RESIDENCES HAND TOOL SAFETY.

Meeting started at:	730 (time)	Meeting ended at:	740 (time)

Name	Company	Signature
Sam Bausike	Geosyntec	Sam Bausike

TAILGATE SAFETY MEETING REPORT

Geosyntec consultants
289 Great Road, Acton, MA 01720
Phone: 978-263-9588, Fax: 978-263-9594

Project Name:	Wells G & H	Date:	6/7/2011 Page 1 of 1
Project Number:	BR0200	Subcontractor:	N/A
Field Personnel: (Geosyntec)	C. Sullivan & S. Baushka	City	WOBURN
		State	MA
Conducted By:	C. Sullivan	Weather:	SUNNY 75°
Signature:	Chris Sul		

Work Summary

INDOOR AIR & SUB SLAB SOIL GAS SAMPLING.

Work Hazards

Pinch Points
Hand tools
potential Heat stress

Meeting started at:	720 (time)	Meeting ended at:	(time)

Name	Company	Signature
Sam Baushka	Geosyntec	[illegible]
TODD CREAMER	Geosyntec	[illegible]

TAILGATE SAFETY MEETING REPORT

Geosyntec consultants
289 Great Road, Acton, MA 01720
Phone: 978-263-9588, Fax: 978-263-9594

Project Name:	WELLS G & H	Date:	6/8/2011 Page 1 of 1
Project Number:	BRD200	Subcontractor:	N/A
Field Personnel:	C. SULLIVAN, S. BAUSHKA	City	WOBURN
(Geosyntec)	T. CREAMER	State	MA
Conducted By:	C. SULLIVAN	Weather:	SUNNY HOT 90°
Signature:	[signature]		

Work Summary

INDOOR AIR / SUB SLAB SOIL GAS SAMPLING.

Work Hazards

PRESSURIZED CYLINDERS
SLIPS / TRIPS / FALLS
UNKNOWN WORK AREAS

Meeting started at: 810 (time)	Meeting ended at: (time)

Name	Company	Signature
TODD CREAMER	Geosyntec	[signature]
SAM BAUSHKA	GEOSYNTEC	[signature]

METER CALIBRATION

Geosyntec consultants
www.geosyntec.com

Project Name: Wells G & H
Project Number: BR02000
Date: 6/6/2011
Weather: SUNNY 70°
Recorded By: C. SULLIVAN
PrimaryActivities: INDOOR AIR SAMPLING.
Page 1 of 1

PIDs

Serial Number		Ambient Air ~~(ppm)~~ (PPB)	100ppm Isobutylene ~~(ppm)~~ PPB
92590	Initial Time: 743	0	10.1
	Final Time:		
	Initial Time:		
	Final Time:		
	Initial Time:		
	Final Time:		
	Initial Time:		
	Final Time:		

GEMs

Serial Number		Ambient Air			Calibration Gas			Ambient Air		
		CH_4(%)	CO_2(%)	CH_4(%)	CO_2(%)	O_2(%)	O_2(%)	CH_4:(15%)	CO_2:(15%)	O_2:(0%)
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									

NOTES: PINE Environmental Rental PPBRAE.

Personnel Signature: —
Date: —

Meter Calibration.xls

METER CALIBRATION

Geosyntec consultants
www.geosyntec.com

Project Name: Wells G & H
Date: 6/1/2011
Recorded By: C Sullivan
Page 1 of 1
Project Number: BR0200
Weather: Sunny 75°
PrimaryActivities: Indoor Air Sampling

PIDs

Serial Number		Ambient Air (ppb)	100ppm Isobutylene (ppm)
92590	Initial Time: 735	0.0	10.1
	Final Time:		
	Initial Time:		
	Final Time:		
	Initial Time:		
	Final Time:		
	Initial Time:		
	Final Time:		

GEMs

Serial Number		Ambient Air			Calibration Gas			Ambient Air		
		CH_4(%)	CO_2(%)	CH_4(%)	CO_2(%)	O_2(%)	O_2(%)	CH_4:(15%)	CO_2:(15%)	O_2:(0%)
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									
	Initial Time:									
	Final Time:									

NOTES:

Personnel Signature: —
Date: —

Meter Calibration.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G&H
Date: 07 June 2011 Project Number: BR0200
Site Location: commercial 260407-17-SS1
Weather: warm ~85F calm sunny
Field Personnel: T Creamer, C. Sullivan
Recorded By: T Creamer

Probe No.: SS-1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: — Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: —
MDG 2002 Helium detector Serial No.: 10624 PINE
Tracer Gas: ☒ Helium ☐ Other CHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other_____
Surface Thickness * see winter forms inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

④ Initial Vacuum (prior to pumping) 0.00 in. H_2O

⑤ Shut in test prior to pneumatic test completed, 60 in. H_2O held for – seconds.

⑥ Start of Pneumatic Test: —

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading — ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐ 60" H_2O @1800

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
2011 June 07	1812	1816	4	1L	158	0.630	–	–	–	32	52	1800 (bag) 1600 (tube)	–

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
20110607	1827 ~~1855~~ 1855	INC. 260407-17-SS1-20110607	972	332	–	-29.05	-4.68

Comments: He background 6580 ppm 1810 helium going into shroud.
door to NW corner room has been open all day 1821 28% in shroud after helium check in tube

SGP measurements - pneumatic testing.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: WellsGHYHV1
Date: 8 June 2011 Project Number: BR0200
Site Location: 260407-19
Weather: see DFR2
Field Personnel: SB, TC/CS
Recorded By: SB

Probe No.: SS1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: – Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: –
MDG 2002 Helium detector Serial No.: 10624 pump
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other_____
Surface Thickness * see water form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

⑤ Shut in test prior to pneumatic test completed, 32 in. H_2O held for 20 seconds.

⑥ Start of Pneumatic Test: –

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

④ Initial Vacuum (prior to pumping) 0.00 in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading – ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/8/11	1054	1057	3	1	0.160	1	–	–	–	45.1	53.3	4800	–
6/8/11	1117	1121	4	1	0.160	1	–	–	–	38.8	59.2	6500	–

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note: 1% helium = 10,000 ppm_v**

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/8/2011	1130	260407-19-SS1-20110608	787	0216	–	29.57	4.87
	1207						

Comments: ① ~~400~~ 5000 17445 ppm direct from tube 20.5% in shroud after sample
3100 ppm direct from tube 28% 2050 in tube @ 34% in shroud

SGP measurements - pneumatic testing.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G&H
Date: June 8, 2011 Project Number:
Site Location: 260407-20
Weather: see DFR
Field Personnel: SWB, CAS
Recorded By: SWB

Probe No.: SS-1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: – Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: –
MDG 2002 Helium detector Serial No.: 10624 pine
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness see winter form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

④ Initial Vacuum (prior to pumping) 0.01 in. H_2O negative cold air return off

⑤ Shut in test prior to pneumatic test completed, 80 in. H_2O held for 0+ seconds.

⑥ Start of Pneumatic Test: –

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading – ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/8/2011	1322	1325	3	1	0.160	0.5	–	–	–	36.3	53.1	0	–

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/8/2011	1329	260407-20-SS1-20110608	943	0081	–	-29.32	<4.35
	1355						

Comments: * shut-in test failed suspect gauge board, Alpha gauge -5.41 stuck after shutting sample valve, direct from tube 3000 → 1900 on Fellis 1711 – [illegible]

SGP measurements - pneumatic testing.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: ~~WP Grace~~ TNC Wells G&H VI
Date: 260407-22 SWB Project Number: BR200
Site Location: 6/8/2011
Weather: See DF2
Field Personnel: SWB, CAS, TC
Recorded By: SWB

Probe No.: SS-1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: – Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: –
MDG 2002 Helium detector Serial No.: 10624 Pine
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other____
Surface Thickness See water form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

⑤ Shut in test prior to pneumatic test completed, 62* in. H_2O held for 0 seconds.

⑥ Start of Pneumatic Test: –

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

1034am

④ Initial Vacuum (prior to pumping) <0.005 in. H_2O needle twitched left (negative) following sample collection

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading – ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/8/2011	0903:25	0906	3	1	0.160	0.5	–	–	–	39.8	56	1525	–

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☐ No ☐

⑫ Sample Collection -4.27 gauge final vacuum (flow controller

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/8/2011	0910 -	260407-~~SS1~~ 22-SS-1-20110608	1520 7535	0052	–	-29.37	-4.26
6/8/2011	0910 -	BD04-20110608	1713 8075	0052	–	-29.56	-4.24

1031 closed both cans

Comments: * slow leak isolated to gauge board, self on purge test for tightness
direct reading from tube dropped from 1525 to 850

SGP measurements - pneumatic testing.ai

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G&H VI
Date: 08 June 2011 Project Number: BR0200
Site Location: 260407-22
Weather: warm, sunny, calm, 75°F
Field Personnel: SB, TC, CS
Recorded By: TZ

Probe No.: SS-2 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: — Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: —
MDG 2002 Helium detector Serial No.: 10624 pine
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other ____
Surface Thickness ____ inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

④ Initial Vacuum (prior to pumping) 0.03 in. H_2O negative 0925 *

⑤ Shut in test prior to pneumatic test completed, 70+ in. H_2O held for 0 seconds.

⑥ Start of Pneumatic Test: —

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
NA	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading — ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/8/11	0945	0949	4	1	0.60	0.640	—	—	—	37.6	52.3	425	—

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/8/11	0954	260407-22-SS2-20110608	1630	0398	—	-29.15	-1.40
closed	1026						

Comments: *4 fume hoods operating. They run on "low" at night + slow leak on shut-in test
Lab runs metals, asbestos "no organic preparation" rely on He test for shut in
direct reading from tube 425 ppm 18.6% in shroud

SGP measurements - pneumatic testing.ai

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G & H
Date: 6/7/2011 Project Number: BR0200
Site Location: 260902 - SS1 - 20110607
Weather: Sunny 75
Field Personnel: I. Creamer, S. Bauschke, G. Barr, C. Sullivan
Recorded By: GB

Probe No.: SS1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: — Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: NA
MDG 2002 Helium detector Serial No.: 10624 Pine Env.
Tracer Gas: ☒ Helium ☐ Other CHD

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other____
Surface Thickness see winter form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

④ Initial Vacuum (prior to pumping) 0.00 in. H_2O

⑤ Shut in test prior to pneumatic test completed, 52 in. H_2O held for ___ seconds.
2nd test = 50 in H_2O. very slight leak

⑥ Start of Pneumatic Test: —

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading — ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
~~6/7/2011~~	~~1108~~										~~44.7%~~		GB
6/7/2011	1111	1114	3	1 L	.160	.480	—	—	—	36.9%	48.2%	0.0	—
6/7/2011	1129	1132	3	1 L	.160	.480	—	—	—	27.0%	50.2%	0.0	—

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/7/2011	1135 (start)	260902 - SS1 - 20110607	1569	0031	—	-29.26	-4.85
	1205 (end)						

Comments: Sample chem = 1200 ppm, repeating purge test 2nd time, 1st test the valve was not positioned to isolate summa canister, final controller reading = 4.72 in Hg

SOP measurements - pneumatic testing.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G & H
Date: 6/7/2011 Project Number: BR0200
Site Location: 260902 - SS2 - 20110607
Weather: Sunny 75
Field Personnel: T. Creamer, S. Bauschke, G. Batt, C. Sullivan
Recorded By: C. Sullivan

Probe No.: SS2 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: NA
MDG 2002 Helium detector Serial No.: GB ~~17740~~ - Pine Env. 10624
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other_____
Surface Thickness _____ inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab 0.5 <0.1 L
Soil gas probe GB ~~720 mL~~ (L)

⑤ Shut in test prior to pneumatic test completed 58 in. H_2O held for 120 seconds.

⑥ Start of Pneumatic Test: NA

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

④ Initial Vacuum (prior to pumping) — in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading _____ ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/7/2011	1030	1034.5	4.5	1 L	.160	.720	—	—	—	36.2%	43.4%	0.0	—

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☐ No ☒

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/7/2011	1035 (start)	260902-SS2-20110607	GB ~~7315~~ 1572	0295	-	-29.22	-1.88
	1107 (end)						

Comments: ambient helium reading = 250 ppm

SGP measurements - pneumatic testing.xls

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G&H
Date: 6/7/2011 Project Number: B0200
Site Location: 260903
Weather: See DPR
Field Personnel: T. Creamer, S. Boughby, C. Sullivan
Recorded By: SWB

Probe No.: SS-1 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: — Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: —
MDG 2002 Helium detector Serial No.: 10624 Pine Env
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other_____
Surface Thickness see winter form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

⑤ Shut in test prior to pneumatic test completed, 80* in. H_2O held for 0 seconds.

⑥ Start of Pneumatic Test: _____

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

④ Initial Vacuum (prior to pumping) 0.00" in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading — ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
6/7/2011	1334	1337	3	1	160	0.5	—	—	—	39.2	53.0	300	—

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/7/2011	1334	260903-SS1-20110607	724	293	—	-28.98	-4.28
6/7/2011	1450	BD-02-20110607	1610	293	—	-29.00	-4.05

Comments: Sample tubing 1200 → 825 in tubing
* slow leak on shut-in but no helium in purge

SGP measurements - pneumatic testing.xl

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants

① Project Name: Wells G&H
Date: 07 JUNE 2011 Project Number: BR0200
Site Location: 260903
Weather: Sunny 85°F calm
Field Personnel: S Bashlee, T Creamer
Recorded By: T Creamer, SB

Probe No.: SS-2 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: — Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: —
MDG 2002 Helium detector Serial No.: 10624 Pine
Tracer Gas: ☒ Helium ☐ Other UHP

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other_____
Surface Thickness see winter form inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe 0.5 (L)

⑤ Shut in test prior to pneumatic test completed, N/A in. H_2O held for ___ seconds.

⑥ Start of Pneumatic Test: N/A

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

④ Initial Vacuum (prior to pumping) 0.00 in. H_2O @ 1435

⑦ Field tubing blank reading (ppm_v) completed? ☐ Yes ☒ No PID Reading _____ ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
07 June 2011	~~1439~~	1C.	—							40.0	50.4	2300	—
7 June 2011	1455	1500	5	1L	160	1L	-	-	-	↓	↓	↓	-

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
6/7/2011	1503-1512	260903-SS2-20110607	1676	0353	-	~~-28.98~~	~~-4.28~~
~~6/7/2011~~	~~1504~~	~~SS02-20110607~~ SWB				-28.93	-5.00 SWB

Comments: shroud 36.8% after reading in tubing (direct) 0 ppm helium

SGP measurements - pneumatic testing.xl

AIR ANALYSIS

PAGE 1 OF 3

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #:

Client Information

Client: Geosyntec Consultants
Address: 289 Great Rd, Ste 105
Acton, MA 01720
Phone: (978) 263-9588
Fax: (978) 263-9594
Email: tcreamer@geosyntec.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: WR Grace VI Assessment
Project Location: Woburn, MA
Project #: BR0200
Project Manager: Todd Creamer
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)
Mark Packard
Todd Creamer

Billing Information

☒ Same as Client info PO #: BR0200

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria
	See QAPP	

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Start Time	Collection End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
	260902-IA1-20110607	6/6/11-6/7/11	6/6/11 0825	6/7/11 0819	-29.11	-2.42	AA	GB	6L	1687	420			X	X				
	260902-IA2-20110607	6/6/11-6/7/11	6/6/11 0825	6/7/11 0823	-29.07	-4.44	AA	GB	6L	961	0185			X	X				
	260902-OA-20110607	6/6/11-6/7/11	6/6/11 0820	6/7/11 0830	-28.88	-4.48	AA	GB	6L	1612	0375			X	X				
	260902-SS1-20110607	6/7/11	1135	1205	-29.26	-4.85	SV	SB	6L	1569	0031			X	X				
	260902-SS2-20110607	6/7/11	1035	1107	-29.22	-1.88	SV	TC/SB	6L	1572	0295			X	X				
	260903-IA1-20110607	6/6/11-6/7/11	6/6/11 0852	6/7/11 0834	-29.08	-2.66	AA	TC/GB	6L	594	0471			X	X				
	260903-IA2-20110607	6/6/11-6/7/11	6/6/11 0855	6/7/11 0836	-28.88	-1.31	AA	TC/GB	6L	1618	0428			X	X				
	260903-OA-20110607	6/6/11-6/7/11	6/6/11 0849	6/7/11 0840	-28.95	-5.19	AA	GB	6L	651	0193			X	X				
	260903-SS1-20110607	6/7/11	1341	1503	-28.98	-4.28	SV	SB	6L	724	293			X	X				
	260903-SS2-20110607	6/7/11	1503	1542	-28.93	-5.10	SV	SB	6L	1676	0353			X	X				

No supplemental Acetone or Ethyl Acetate analysis

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature]	6/9/11 1001	[signature]	6/9/11 1001

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 (19-Jun-09)

AIR ANALYSIS

PAGE 2 OF 3

ALPHA ANALYTICAL — *CHAIN OF CUSTODY*

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #:

Client Information

Client: Geosyntec Consultants
Address: 289 Great Rd, Ste 105
Acton, MA, 01720
Phone: (978) 263-9588
Fax: (978) 263-9594
Email: tcreamer@geosyntec.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: WR Grace VI Assessment
Project Location: Woburn, MA
Project #: BR0200
Project Manager: Todd Creamer
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: **Time:**

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)
Mark Packard
Todd Creamer

Billing Information

☒ Same as Client info PO #: BR0200

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria
	See QAPP	

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
	260407-17-IA1-20110607	6/7/11	09:3	1713	-29.62	-5.53	AA	TC	6L	937	0231			X	X				
	260407-17-SS1-20110607	6/7/11	1827	1855	-29.05	-4.48	SV	TC	6L	972	0332			X	X				
	~~260407-19-IA1-20110607~~	~~6/7/11~~	~~0820~~	~~1629~~	~~-29.71~~	~~-3.88~~	~~AA~~	~~TC~~	~~6L~~	~~635~~	~~0227~~								SWB 6/8/11
	260407-19-SS1-20110608	6/8/11	1130	1207	-29.57	-4.87	SV	SB	6L	757	0216			X	X				
	260407-20-IA1-20110607	6/7/11	0830	1629	-29.71	-3.88	AA	TC	6L	635	0277			X	X				
	260407-20-SS1-20110608	6/8/11	1329	1355	-29.32	-4.32	SV	SB	6L	943	0081			X	X				
	260407-22-IA1-20110607	6/7/11	0533	1635	-29.42	-4.08	AA	SB	6L	0349	967 (SWB)			X	X				
	260407-22-IA2-20110607	6/7/11	0836	1636	-29.74	-3.82	AA	TC	6L	985	0026			X	X				
	260407-22-SS1-20110608	6/8/11	0910	1031	-29.37	-4.26	SV	TG	6L	1520	0052			X	X				
	260407-22-SS2-20110608	6/8/11	0954	1026	-29.15	-1.40	SV	TC	6L	1630	0398			X	X				

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
SWB	6/9/2011	[illegible]	6/9/11 1000

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Form No: 101-02 (19-Jun-09)

AIR ANALYSIS

PAGE 3 OF 3

ALPHA ANALYTICAL — *CHAIN OF CUSTODY*

320 Forbes Blvd, Mansfield, MA 02048
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Project Information

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Project Location: Woburn, MA
Project #: BR0200
Project Manager: Todd Creamer
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH *(only confirmed if pre-approved!)*

Date Due: **Time:**

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker: _____
(Default based on Regulatory Criteria Indicated)
Other Formats: _____
☒ EMAIL (standard pdf report)
☐ Additional Deliverables: _____

Report to: (if different than Project Manager)
Mark Packard
Todd Creamer

Billing Information

☒ Same as Client info PO #: BR0200

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria
	See QAPP	

Other Project Specific Requirements/Comments: Do not analyze the following 5 canisters 1578, 707, 765, 1598, 970

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4/TO-10	Sample Comments (i.e. PID)
	260407-OA1-20110607	6/7/11	0815	1621	-29.58	-4.29	AA	TC	6L	1589	0137			X	X				
	260407-OA2-20110607	6/7/11	0821	1618	-29.61	-4.52	AA	TC	6L	1594	0495			X	X				
	BD01-20110607	6/7/11	–	–	-28.95	-4.30	–	GB	6L	1583	–			X	X				X
	BD02-20110607	6/7/11	–	–	-29.00	-4.05	–	SB	6L	1610	–			X	X				X
	BD03-20110607	6/7/11	–	–	-29.72	-4.62	–	TC	6L	1653	–			X	X				
	BD04-20110608	6/8/11	–	–	-29.56	-4.24	–	SB	6L	1713	–			X	X				
	TB-20110608	6/8/11	–	–	-29.4	–	–	TC	6L	653	–			X	X				
	260407-19-IA1-20110607	6/7/11	0820	1626	-29.69	-4.06	AA	SWB	6L	1538	0206			X	X				

ANALYSIS: No supplemental acetone or ethyl acetate analysis (+)

SWB 6/9/11

***SAMPLE MATRIX CODES**
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
SWB	6/9/11 1000	[illegible]	6/9/11 1000

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 (19-Jun-09)

Table 1
Data Summary for Residential Structure #1
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Residential Air	MADEP IA Threshold	260902-IA1		260902-IA2				260902-IA3
						260902-IA1-3/18/2011 3/18/2011	260902-IA1-6/7/2011 6/7/2011	260902-IA2-3/18/2011 3/18/2011	BD01-3/18/2011 3/18/2011	260902-IA2-6/7/2011 6/7/2011	BD01-6/7/2011 6/7/2011	260902-IA3-3/18/2011 3/18/2011
APH												
	Adjusted C5-C8 Aliphatics	µg/m3				590	89	500	510	85	83	190
	Adjusted C9-C12 Aliphatics	µg/m3				89	54	72	75	52	52	170
	Aromatics C9-C10	µg/m3	0		10	67	<10	52	47	<10	<10	14
	Benzene	µg/m3	2.3	0.31	2.3	11	<2	9.5	9.8	<2	<2	3.2
	Butadiene	µg/m3		0.081		<2	<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	0.97	7.4	15	<2	12	12	<2	<2	3.4
	m&p-Xylene	µg/m3				49	<4	38	38	<4	<4	11
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<2	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.072	0.61	<2	<2	<2	<2	<2	<2	<2
	o-Xylene	µg/m3		730		18	<2	14	14	<2	<2	3.9
	Toluene	µg/m3	11	5200	54	66	4.4	55	58	4.3	3.9	16
Volatile Organic Compounds												
	1,1,1-Trichloroethane	µg/m3	0.5	5200	3	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1,2-Trichloroethane	µg/m3	0	0.15	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	1.5	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	210	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		7.3		13.3	0.732	12.6	12.7	0.836	1.03	3.31
	1,2-Dichloroethane	µg/m3	0	0.094	0.09	1.3	2.33	1.44	1.4	2.74	2.13	4.74
	1,2-Dichloropropane	µg/m3	0	0.24	0.13	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	0.22	0.5	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	Benzene	µg/m3	2.3	0.31	2.3	9.35	0.735	8.78	8.54	0.837	0.68	2.79
	Bromodichloromethane	µg/m3	0	0.066	0.14	<0.134	0.107J	<0.134	<0.134	0.120J	0.0940J	<0.134
	Bromoform	µg/m3	0	2.2	2.2	<0.206	<0.207	<0.206	<0.206	<0.207	<0.207	<0.206
	Butadiene	µg/m3		0.081		0.102	0.086	0.102	0.093	0.106J	0.058J	0.124
	Carbon tetrachloride	µg/m3	0.54	0.41	0.54	0.534	0.402	0.603	0.566	0.484	0.402	0.578
	Chlorobenzene	µg/m3	0	52	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.11	1.9	0.185	0.249	0.254	0.244	0.293J	0.381J	0.229
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	5.2	5	<1.74	<1.74	<1.74	<1.74	11.1J	3.27J	<1.74
	Ethyl benzene	µg/m3	1.5	0.97	7.4	12.3	0.53	11.7	11.8	0.586J	0.76J	3.33
	Ethylene dibromide	µg/m3	0	0.0041	0.011	<0.154	<0.0770	<0.154	<0.154	<0.0770	<0.0770	<0.154
	Isopropylbenzene	µg/m3		420		<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072
	Naphthalene	µg/m3	0	0.072	0.61	<0.723	<0.131	<0.608	<0.571	0.435J	0.246J	<0.267
	Tetrachloroethene	µg/m3	1.4	0.41	1.4	0.176	<0.136	0.183	0.183	<0.136	0.156J	0.264
	Toluene	µg/m3	11	5200	54	52.5	3.24J	50.7	51.9	3.29J	4.22	14.3
	trans-1,2-Dichloroethene	µg/m3	0	63	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	1.2	0.8	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107
	Vinyl Chloride	µg/m3	0	0.16	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	100	20	54.8	2.22	51.6	51.9	2.44J	3.31J	14.5

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 1
Data Summary for Residential Structure #1
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Residential Air	MADEP IA Threshold	260902-OA		260902-SS1		260902-SS2	
						260902-OA-3/18/2011 3/18/2011	260902-OA-6/7/2011 6/7/2011	260902-SS1-3/18/2011 3/18/2011	260902-SS1-6/7/2011 6/7/2011	260902-SS2-3/18/2011 3/18/2011	260902-SS2-6/7/2011 6/7/2011
APH											
	Adjusted C5-C8 Aliphatics	µg/m3				<12	22	67J	37	46	30
	Adjusted C9-C12 Aliphatics	µg/m3				26	<14	130J	<14	31	72
	Aromatics C9-C10	µg/m3	0		10	<10	<10	<10	<10	<10	<10
	Benzene	µg/m3	2.3	0.31	2.3	<2	<2	<2	<2	<2	<2
	Butadiene	µg/m3		0.081		<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	0.97	7.4	<2	<2	<2	<2	<2	<2
	m&p-Xylene	µg/m3				<4	<4	7J	<4	5.7	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.072	0.61	<2	<2	2.3J	<2	<2	<2
	o-Xylene	µg/m3		730		<2	<2	3J	<2	3.5	<2
	Toluene	µg/m3	11	5200	54	<2	<2	5.5J	<2	2.4	<2
Volatile Organic Compounds											
	1,1,1-Trichloroethane	µg/m3	0.5	5200	3	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1,2-Trichloroethane	µg/m3	0	0.15	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	1.5	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	210	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		7.3		0.147	0.216	1.6J	<0.098	1.37	0.103
	1,2-Dichloroethane	µg/m3	0	0.094	0.09	<0.081	<0.081	0.101J	<0.081	<0.081	<0.081
	1,2-Dichloropropane	µg/m3	0	0.24	0.13	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	0.18J	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	0.22	0.5	<0.12	<0.12	0.198J	<0.12	<0.12	<0.12
	Benzene	µg/m3	2.3	0.31	2.3	0.501	0.463	0.744J	<0.224	0.574	<0.224
	Bromodichloromethane	µg/m3	0	0.066	0.14	<0.134	<0.0670	<0.0670	<0.0670	<0.134	<0.0670
	Bromoform	µg/m3	0	2.2	2.2	<0.206	<0.207	<0.206	<0.207	<0.206	<0.207
	Butadiene	µg/m3		0.081		<0.044	0.044	<0.044	<0.044	0.044	<0.044
	Carbon tetrachloride	µg/m3	0.54	0.41	0.54	0.509	0.396	0.17J	0.17	<0.126	<0.126
	Chlorobenzene	µg/m3	0	52	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.11	1.9	0.102	0.107	0.298J	0.303	1.58	1.66
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	5.2	5	<1.74	<1.74	<1.74	20.1	<1.74	<1.74
	Ethyl benzene	µg/m3	1.5	0.97	7.4	0.152	0.213	1.42J	<0.087	1.06	<0.087
	Ethylene dibromide	µg/m3	0	0.0041	0.011	<0.154	<0.0770	<0.154	<0.0770	<0.154	<0.0770
	Isopropylbenzene	µg/m3		420		<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<0.072	<0.072	<0.072	<0.072	0.4	<0.072
	Naphthalene	µg/m3	0	0.072	0.61	<0.262	0.215J	2.38J	<0.131	<0.241	<0.131
	Tetrachloroethene	µg/m3	1.4	0.41	1.4	0.149	<0.136	0.258J	0.325	0.23	0.305
	Toluene	µg/m3	11	5200	54	0.885	1.37J	4.48J	0.305	2.06	<0.188
	trans-1,2-Dichloroethene	µg/m3	0	63	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	1.2	0.8	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107
	Vinyl Chloride	µg/m3	0	0.16	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	100	20	0.512	0.808	8.38J	<0.261	8.4	<0.261

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 2
Data Summary for Residential Structure #2
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Residential Air	MADEP IA Threshold	260903-IA1		260903-IA2		260903-OA	
						260903-IA1-3/18/2011	260903-IA1-6/7/2011	260903-IA2-3/18/2011	260903-IA2-6/7/2011	260903-OA-3/18/2011	260903-OA-6/7/2011
						3/18/2011	6/7/2011	3/18/2011	6/7/2011	3/18/2011	6/7/2011
APH											
	Adjusted C5-C8 Aliphatics	µg/m3				110	140	110	150	<12	31
	Adjusted C9-C12 Aliphatics	µg/m3				83	56	80	60	<14	<14
	Aromatics C9-C10	µg/m3	0		10	<10	<10	<10	<10	<10	<10
	Benzene	µg/m3	2.3	0.31	2.3	<2	<2	<2	<2	<2	<2
	Butadiene	µg/m3		0.081		<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	0.97	7.4	<2	<2	<2	<2	<2	<2
	m&p-Xylene	µg/m3				<4	<4	<4	<4	<4	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.072	0.61	<2	<2	<2	<2	<2	<2
	o-Xylene	µg/m3		730		<2	<2	<2	<2	<2	<2
	Toluene	µg/m3	11	5200	54	5.2	4.4	5.1	4.1	<2	2.1
Volatile Organic Compounds											
	1,1,1-Trichloroethane	µg/m3	0.5	5200	3	0.114	0.158	0.12	0.158	<0.109	<0.109
	1,1,2-Trichloroethane	µg/m3	0	0.15	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	1.5	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	210	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		7.3		0.624	0.885	0.673	0.89	0.157	0.246
	1,2-Dichloroethane	µg/m3	0	0.094	0.09	8.03	1.26	7.61	1.18	<0.081	0.121
	1,2-Dichloropropane	µg/m3	0	0.24	0.13	0.508	<0.092	0.489	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	0.22	0.5	0.985	3.22	1.15	3.2	<0.12	<0.12
	Benzene	µg/m3	2.3	0.31	2.3	0.658	0.498	0.677	0.524	0.485	0.53
	Bromodichloromethane	µg/m3	0	0.066	0.14	<0.134	0.141	<0.134	0.141	<0.134	<0.0670
	Bromoform	µg/m3	0	2.2	2.2	<0.206	<0.207	<0.206	<0.207	<0.206	<0.207
	Butadiene	µg/m3		0.081		0.044	0.053	0.046	0.053	<0.044	0.082
	Carbon tetrachloride	µg/m3	0.54	0.41	0.54	0.673	0.616	0.723	0.642	0.515	0.428
	Chlorobenzene	µg/m3	0	52	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.11	1.9	0.634	1.24	0.59	1.35	0.107	0.117
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	5.2	5	<1.74	<1.74	<1.74	<1.74	<1.74	1.85
	Ethyl benzene	µg/m3	1.5	0.97	7.4	0.577	0.825	0.564	0.877	0.134	0.239
	Ethylene dibromide	µg/m3	0	0.0041	0.011	<0.154	<0.0770	<0.154	<0.0770	<0.154	<0.0770
	Isopropylbenzene	µg/m3		420		<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072
	Naphthalene	µg/m3	0	0.072	0.61	<0.173	0.367J	<0.194	0.288J	<0.131	0.173J
	Tetrachloroethene	µg/m3	1.4	0.41	1.4	0.549	1.03	0.562	1.12	0.156	<0.136
	Toluene	µg/m3	11	5200	54	4.49	4.26	4.34	4.37	0.919	1.47J
	trans-1,2-Dichloroethene	µg/m3	0	63	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	1.2	0.8	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107
	Vinyl Chloride	µg/m3	0	0.16	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	100	20	1.93	2.8	1.89	2.95	0.482	0.903

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 2
Data Summary for Residential Structure #2
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Residential Air	MADEP IA Threshold	260903-SS1				260903-SS-2	
						260903-SS1-3/18/2011	BD02-3/18/2011	260903-SS1-6/7/2011	BD02-6/7/2011	260903-SS2-3/18/2011	260903-SS2-6/7/2011
						3/18/2011	3/18/2011	6/7/2011	6/7/2011	3/18/2011	6/7/2011
APH											
	Adjusted C5-C8 Aliphatics	µg/m3				25	29	20	18	68	<12
	Adjusted C9-C12 Aliphatics	µg/m3				14J	<14	<14	<14	190	<14
	Aromatics C9-C10	µg/m3	0		10	<10	<10	<10	<10	<10	<10
	Benzene	µg/m3	2.3	0.31	2.3	<2	<2	<2	<2	<2	<2
	Butadiene	µg/m3		0.081		<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	0.97	7.4	<2	<2	<2	<2	<2	<2
	m&p-Xylene	µg/m3				<4	<4	<4	<4	<4	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.072	0.61	<2	<2	<2	<2	<2	<2
	o-Xylene	µg/m3		730		<2	<2	<2	<2	<2	<2
	Toluene	µg/m3	11	5200	54	<2	<2	<2	<2	<2	<2
Volatile Organic Compounds											
	1,1,1-Trichloroethane	µg/m3	0.5	5200	3	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1,2-Trichloroethane	µg/m3	0	0.15	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	1.5	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	210	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		7.3		0.113	0.098	<0.098	<0.098	0.182	<0.098
	1,2-Dichloroethane	µg/m3	0	0.094	0.09	0.093J	<0.081	<0.081	<0.081	0.348	<0.081
	1,2-Dichloropropane	µg/m3	0	0.24	0.13	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	0.22	0.5	0.132	0.12	<0.12	<0.12	0.312	<0.12
	Benzene	µg/m3	2.3	0.31	2.3	<0.223	<0.223	<0.224	<0.224	<0.223	<0.224
	Bromodichloromethane	µg/m3	0	0.066	0.14	<0.134	<0.134	<0.0670	<0.0670	<0.134	<0.0670
	Bromoform	µg/m3	0	2.2	2.2	<0.206	<0.206	<0.207	<0.207	<0.206	<0.207
	Butadiene	µg/m3		0.081		<0.044	<0.044	<0.044	<0.044	<0.044	<0.044
	Carbon tetrachloride	µg/m3	0.54	0.41	0.54	<0.126	<0.126	<0.126	<0.126	0.157	<0.126
	Chlorobenzene	µg/m3	0	52	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.11	1.9	0.102J	<0.098	<0.098	0.19	7.17	3.88
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	5.2	5	<1.74	<1.74	24.1	23.3	<1.74	27.3
	Ethyl benzene	µg/m3	1.5	0.97	7.4	<0.087	<0.087	<0.087	<0.087	0.121	<0.087
	Ethylene dibromide	µg/m3	0	0.0041	0.011	<0.154	<0.154	<0.0770	<0.0770	<0.154	<0.0770
	Isopropylbenzene	µg/m3		420		<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	9.4	39	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072
	Naphthalene	µg/m3	0	0.072	0.61	<0.246	<0.361	<0.131	<0.131	<0.828	<0.131
	Tetrachloroethene	µg/m3	1.4	0.41	1.4	0.38	0.393	0.271	0.346	0.373	0.441
	Toluene	µg/m3	11	5200	54	0.644	0.621	0.241	0.2	0.802	0.275
	trans-1,2-Dichloroethene	µg/m3	0	63	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	1.2	0.8	<0.107	<0.107	<0.107	<0.107	0.145	0.124
	Vinyl Chloride	µg/m3	0	0.16	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	100	20	0.295	0.265	<0.261	<0.261	0.49	<0.261

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 3
Data Summary for Commercial Structure
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Industrial Air	MADEP IA Threshold	260407-17-IA1		260407-17-SS1			260407-19-IA1		260407-19-SS1		
						260407-17-IA1-3/31/2011 3/31/2011	260407-17-IA1-6/7/2011 6/7/2011	260407-17-SS1-3/31/2011 3/31/2011	BD03-3/31/2011 3/31/2011	260407-17-SS1-6/7/2011 6/7/2011	260407-19-IA1-3/31/2011 3/31/2011	260407-19-IA1-6/7/2011 6/7/2011	260407-19-SS1-4/1/2011 4/1/2011	BD04-4/1/2011 4/1/2011	260407-19-SS1-6/8/2011 6/8/2011
APH															
	Adjusted C5-C8 Aliphatics	µg/m3				2,200	1,900	200	190	16	130	330	230J	300J	53
	Adjusted C9-C12 Aliphatics	µg/m3				460	28	18	20	<14	120	180	310J	420J	73
	Aromatics C9-C10	µg/m3	0		10	14	<10	<10	<10	<10	14	14	13J	18J	<10
	Benzene	µg/m3	2.3	1.6	2.3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Butadiene	µg/m3		0.41		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	4.9	7.4	<2	<2	<2	<2	<2	<2	<2	2.6	3	<2
	m&p-Xylene	µg/m3				<4	<4	<4	<4	<4	<4	<4	13	15	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.36	0.61	<2	<2	<2	<2	<2	<2	<2	2.5J	3.3J	<2
	o-Xylene	µg/m3		3100		<2	<2	<2	<2	<2	<2	<2	4.6	5.8	<2
	Toluene	µg/m3	11	22000	54	71	21	3.1	3.4	<2	11	16	<2	<2	<2
Volatile Organic Compounds															
	1,1,1-Trichloroethane	µg/m3	0.5	22000	3	0.153	0.202	0.365	0.365	0.524	<0.109	1.17	3.97	5.08	4
	1,1,2-Trichloroethane	µg/m3	0	0.77	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	7.7	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	880	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		31		0.668	0.418	0.246	0.255	<0.098	1.94	2.34	1.53J	1.98J	0.334
	1,2-Dichloroethane	µg/m3	0	0.47	0.09	0.408	0.158	<0.081	<0.081	<0.081	0.214	0.425	<0.081	<0.081	<0.081
	1,2-Dichloropropane	µg/m3	0	1.2	0.13	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	1.1	0.5	<0.12	<0.12	<0.12	<0.12	<0.12	1.15	3.08	0.45	0.559	<0.12
	Acetone	µg/m3	26	140000	91	3,480	8,690	1,070	1,380	230	55.6J	209	76	90.4	22.2
	Benzene	µg/m3	2.3	1.6	2.3	0.769	0.629	<0.223	<0.223	<0.224	0.935	0.613	0.421	0.453	<0.224
	Bromodichloromethane	µg/m3	0	0.33	0.14	<0.134	<0.0670	<0.134	<0.134	<0.0670	<0.134	<0.0670	<0.134	<0.134	<0.0670
	Bromoform	µg/m3	0	11	2.2	<0.206	<0.207	<0.206	0.32J	<0.207	<0.206	<0.207	<0.206	<0.206	<0.207
	Butadiene	µg/m3		0.41		0.115	0.133	<0.044	<0.044	<0.044	0.21	<0.044	0.046	0.049	<0.044
	Carbon tetrachloride	µg/m3	0.54	2	0.54	0.647	0.598	0.408	0.415	0.503	0.478	0.384	0.176J	<0.126	0.126
	Chlorobenzene	µg/m3	0	220	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	0.202	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.53	1.9	0.337	0.454	0.22	0.22	0.278	0.185	0.928J	1.46	1.86	1.68
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	26	5	<1.74	3.86	<1.74	<1.74	23.1	<1.74	5.07J	14.4J	<1.74	20.6
	Ethyl acetate	µg/m3				367	347	<1.8	2.31J	0.721J	4.84	10.7	<1.8	<1.8	<0.54
	Ethyl benzene	µg/m3	1.5	4.9	7.4	0.928	0.426	0.104	0.126	<0.087	1.23	1.22	2.38	2.98	0.43
	Ethylene dibromide	µg/m3	0	0.02	0.011	<0.154	<0.0770	<0.154	<0.154	<0.0770	<0.154	<0.0770	<0.154	<0.154	<0.0770
	Isopropylbenzene	µg/m3		1800		<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	0.094
	Naphthalene	µg/m3	0	0.36	0.61	<0.32	0.273J	<0.498	<0.592	<0.131	<0.581	0.493J	2.03J	2.7J	<0.131
	Tetrachloroethene	µg/m3	1.4	2.1	1.4	0.352	0.183	4.45	5.54	8.07	0.149	0.292	12.9J	16.7J	17.4
	Toluene	µg/m3	11	22000	54	64.5	22	2.59	2.75	0.618	10	15.3	1.16	1.46	0.716
	trans-1,2-Dichloroethene	µg/m3	0	260	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	6.1	0.8	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107	<0.107	0.15	0.177	0.14
	Vinyl Chloride	µg/m3	0	2.8	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	440	20	4.24	1.54	0.547	0.564	<0.261	4.95	4.56	17	21.2	2.72

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 3
Data Summary for Commercial Structure
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Industrial Air	MADEP IA Threshold	260407-20-IA1		260407-20-SS1		260407-22-IA1			260407-22-IA2	
						260407-20-IA1-3/31/2011 3/31/2011	260407-20-IA1-6/7/2011 6/7/2011	260407-20-SS1-3/31/2011 3/31/2011	260407-20-SS1-6/8/2011 6/8/2011	260407-22-IA1-3/31/2011 3/31/2011	260407-22-IA1-6/7/2011 6/7/2011	BD03-6/7/2011 6/7/2011	260407-22-IA2-3/31/2011 3/31/2011	260407-22-IA2-6/7/2011 6/7/2011
APH														
	Adjusted C5-C8 Aliphatics	µg/m3				1,000	860	90	24	160	160	360	180	180
	Adjusted C9-C12 Aliphatics	µg/m3				99	100	120	<14	140	60	180	200	46
	Aromatics C9-C10	µg/m3	0		10	15	<10	19	<10	10J	<10	12	<10	<10
	Benzene	µg/m3	2.3	1.6	2.3	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Butadiene	µg/m3		0.41		<2	<2	<2	<2	<2	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	4.9	7.4	<2	<2	36	<2	<2	<2	<2	<2	<2
	m&p-Xylene	µg/m3				5.2	<4	180	<4	5.1	<4	<4	4.6	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.36	0.61	<2	<2	<2	<2	<2	<2	<2	<2	<2
	o-Xylene	µg/m3		3100		<2	2J	140	<2	<2	<2	<2	<2	<2
	Toluene	µg/m3	11	22000	54	58	9	3	<2	23	8.9	16	23	7.6
Volatile Organic Compounds														
	1,1,1-Trichloroethane	µg/m3	0.5	22000	3	0.174	3.1	4.18	5.1	<0.109	0.655	1.3	<0.109	0.507
	1,1,2-Trichloroethane	µg/m3	0	0.77	0.15	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	7.7	0.8	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	880	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		31		1	0.757	3.46	<0.098	1.16	0.752	2.47	1.1	0.59
	1,2-Dichloroethane	µg/m3	0	0.47	0.09	9.52	20.2	0.271	0.146	0.489	0.894	0.47	0.437	0.85
	1,2-Dichloropropane	µg/m3	0	1.2	0.13	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	1.1	0.5	<0.12	<0.12	0.222	<0.12	<0.12	<0.12	3.35	<0.12	<0.12
	Acetone	µg/m3	26	140000	91	89.8	214	167	11.4	128	234	261	1,050	294
	Benzene	µg/m3	2.3	1.6	2.3	0.938	0.764	0.677	<0.224	0.718	0.846	0.655	0.766	0.898
	Bromodichloromethane	µg/m3	0	0.33	0.14	<0.134	0.0800J	<0.134	<0.0670	<0.134	<0.0670	<0.0670	<0.134	<0.0670
	Bromoform	µg/m3	0	11	2.2	<0.206	<0.207	<0.206	<0.207	<0.206	<0.207	<0.207	<0.206	<0.207
	Butadiene	µg/m3		0.41		0.128	0.1	0.214	<0.044	<0.044	0.104	0.055J	<0.044	0.124
	Carbon tetrachloride	µg/m3	0.54	2	0.54	0.515	0.402	0.163	0.132	0.484	0.44	0.39	0.471	0.39
	Chlorobenzene	µg/m3	0	220	2.3	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	<0.092	0.097	<0.092
	Chloroform	µg/m3	1.9	0.53	1.9	0.629	0.825	1.91	1.58	1.1	1.24	0.327J	63.2	7.42
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	26	5	<1.74	5	4.46	17	<1.74	4.17	1.94J	<1.74	3.22
	Ethyl acetate	µg/m3				22.2	19.9	<1.8	<0.54	10.5	14.2	12.2	9.24	13.7
	Ethyl benzene	µg/m3	1.5	4.9	7.4	1.46	1.31	35	0.365	1.34	0.838	1.28	1.24	0.93
	Ethylene dibromide	µg/m3	0	0.02	0.011	<0.154	<0.0770	<0.154	<0.0770	<0.154	<0.0770	<0.0770	<0.154	<0.0770
	Isopropylbenzene	µg/m3		1800		<2.46	<2.46	4.33	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072
	Naphthalene	µg/m3	0	0.36	0.61	<0.445	0.351J	1.2J	<0.131	<0.382	0.257J	0.744J	<0.393	0.168J
	Tetrachloroethene	µg/m3	1.4	2.1	1.4	0.488	0.373	19.2	23.2	0.454	0.339	0.312	0.63	0.353
	Toluene	µg/m3	11	22000	54	53.6	8.86	2.68	0.407	21.5	9.12	16	21.7	8.55
	trans-1,2-Dichloroethene	µg/m3	0	260	0.8	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	6.1	0.8	<0.107	0.107	0.113	<0.107	<0.107	0.113	<0.107	<0.107	0.107
	Vinyl Chloride	µg/m3	0	2.8	0.27	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	440	20	6.94	6.17	321	2.87	6.76	3.3	4.78	6.17	3.82

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 3
Data Summary for Commercial Structure
Wells G and H Superfund Site
Woburn, Massachusetts

Method Group	Parameter	Units	MADEP TIAC 50%	EPA RSL Industrial Air	MADEP IA Threshold	260407-22-SS1			260407-22-SS2		260407-OA1		260407-OA2	
						260407-22-SS1-4/1/2011 4/1/2011	260407-22-SS1-6/8/2011 6/8/2011	BD04-6/8/2011 6/8/2011	260407-22-SS2-4/1/2011 4/1/2011	260407-22-SS2-6/8/2011 6/8/2011	260407-OA1-3/31/2011 3/31/2011	260407-OA1-6/7/2011 6/7/2011	260407-OA2-3/31/2011 3/31/2011	260407-OA2-6/7/2011 6/7/2011
APH														
	Adjusted C5-C8 Aliphatics	µg/m3				140	33	39	<58	29	<12	20	<12	<12
	Adjusted C9-C12 Aliphatics	µg/m3				1,300	<14	14J	<14	<28	<14	<14	<14	<14
	Aromatics C9-C10	µg/m3	0		10	14	<10	<10	<10	<20	<10	<10	<10	<10
	Benzene	µg/m3	2.3	1.6	2.3	<2	<2	<2	<2	<4	<2	<2	<2	<2
	Butadiene	µg/m3		0.41		<2	<2	<2	<2	<4	<2	<2	<2	<2
	Ethyl benzene	µg/m3	1.5	4.9	7.4	<2	<2	<2	2.8	<4	<2	<2	<2	<2
	m&p-Xylene	µg/m3				<4	<4	<4	14	<8	<4	<4	<4	<4
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<2	<2	<2	<2	<4	<2	<2	<2	<2
	Naphthalene	µg/m3	0	0.36	0.61	<2	<2	<2	<2	<4	<2	<2	<2	<2
	o-Xylene	µg/m3		3100		<2	<2	<2	14	<4	<2	<2	<2	<2
	Toluene	µg/m3	11	22000	54	<2	<2	3.3J	<2	<4	<2	<2	<2	<2
Volatile Organic Compounds														
	1,1,1-Trichloroethane	µg/m3	0.5	22000	3	0.469	5.89J	4.4J	1.48	0.513	<0.109	<0.109	<0.109	<0.109
	1,1,2-Trichloroethane	µg/m3	0	0.77	0.15	<0.109	<0.109	<0.109	<0.109	<0.218	<0.109	<0.109	<0.109	<0.109
	1,1-Dichloroethane	µg/m3	0	7.7	0.8	<0.081	<0.081	<0.081	<0.081	<0.162	<0.081	<0.081	<0.081	<0.081
	1,1-Dichloroethene	µg/m3	0	880	0.8	<0.079	<0.079	<0.079	<0.079	<0.158	<0.079	<0.079	<0.079	<0.079
	1,2,4-Trimethylbenzene	µg/m3		31		0.55	<0.098	0.202J	0.265	<0.197	0.138	0.172	0.113	0.118
	1,2-Dichloroethane	µg/m3	0	0.47	0.09	<0.081	<0.081	0.304J	<0.081	<0.162	<0.081	<0.081	<0.081	<0.081
	1,2-Dichloropropane	µg/m3	0	1.2	0.13	<0.092	<0.092	<0.092	<0.092	<0.185	<0.092	<0.092	<0.092	<0.092
	1,3-Dichlorobenzene	µg/m3	0		0.6	<0.12	<0.12	<0.12	<0.12	<0.24	<0.12	<0.12	<0.12	<0.12
	1,4-Dichlorobenzene	µg/m3	0.5	1.1	0.5	0.12	<0.12	<0.12	<0.12	<0.24	<0.12	<0.12	<0.12	<0.12
	Acetone	µg/m3	26	140000	91	95.6	17.6J	94.5J	140	25.2	6	11.8	4.95	13.8
	Benzene	µg/m3	2.3	1.6	2.3	0.348	<0.224	0.268J	<0.223	<0.447	0.562	0.45	0.46	0.508
	Bromodichloromethane	µg/m3	0	0.33	0.14	<0.134	<0.0670	<0.0670	<0.134	<0.134	<0.134	<0.0670	<0.134	<0.0670
	Bromoform	µg/m3	0	11	2.2	<0.206	<0.207	<0.207	<0.206	<0.414	<0.206	<0.207	<0.206	<0.207
	Butadiene	µg/m3		0.41		<0.044	<0.044	<0.044	<0.044	<0.089	0.077	<0.044	0.044	0.049
	Carbon tetrachloride	µg/m3	0.54	2	0.54	0.295	0.176J	0.252J	0.308	0.352	0.497	0.428	0.471	0.409
	Chlorobenzene	µg/m3	0	220	2.3	<0.092	<0.092	<0.092	<0.092	<0.184	<0.092	<0.092	<0.092	<0.092
	Chloroform	µg/m3	1.9	0.53	1.9	<0.098	<0.098	0.317J	0.161	0.244	<0.098	<0.098	<0.098	<0.098
	cis-1,2-Dichloroethene	µg/m3	0		0.8	<0.079	<0.079	<0.079	<0.079	<0.158	<0.079	<0.079	<0.079	<0.079
	Dichloromethane (Methylene chloride)	µg/m3	1.4	26	5	17	<1.74	<1.74	10.3	<3.47	1.96	<1.74	<1.74	3.13
	Ethyl acetate	µg/m3				<1.8	<0.54	4.25J	<1.8	<0.54	<1.8	<0.54	<1.8	<0.54
	Ethyl benzene	µg/m3	1.5	4.9	7.4	0.178	<0.087	0.282J	2.7	0.295	0.13	0.148	0.1	0.174
	Ethylene dibromide	µg/m3	0	0.02	0.011	<0.154	<0.0770	<0.0770	<0.154	<0.154	<0.154	<0.0770	<0.154	<0.0770
	Isopropylbenzene	µg/m3		1800		<2.46	<2.46	<2.46	<2.46	<4.92	<2.46	<2.46	<2.46	<2.46
	Methyl tert-butyl ether (MTBE)	µg/m3	3.5	47	39	<0.072	<0.072	<0.072	<0.072	<0.144	<0.072	<0.072	<0.072	<0.072
	Naphthalene	µg/m3	0	0.36	0.61	<0.733	<0.131	<0.131	<0.215	<0.262	<0.131	<0.131	<0.131	<0.131
	Tetrachloroethene	µg/m3	1.4	2.1	1.4	80	102J	77.3J	2,310	1,070	<0.136	<0.136	<0.136	<0.136
	Toluene	µg/m3	11	22000	54	0.493	0.32J	3.01J	0.554	0.399	0.757	1.22J	0.621	1.29J
	trans-1,2-Dichloroethene	µg/m3	0	260	0.8	<0.079	<0.079	<0.079	<0.079	<0.158	<0.079	<0.079	<0.079	<0.079
	trans-1,3-Dichloropropene	µg/m3	0		0.6	<0.091	<0.091	<0.091	<0.091	<0.182	<0.091	<0.091	<0.091	<0.091
	Trichloroethene	µg/m3	0.29	6.1	0.8	0.177	0.193J	0.301J	3.83	1.32	<0.107	<0.107	<0.107	<0.107
	Vinyl Chloride	µg/m3	0	2.8	0.27	<0.051	<0.051	<0.051	<0.051	<0.102	<0.051	<0.051	<0.051	<0.051
	Xylenes (unspecified)	µg/m3	5.9	440	20	1.08	<0.261	1.16J	27.8	2.12	0.499	0.452	0.369	0.543

Notes: < = less than laboratory reporting limit.
J = Compound detected below method quantitation limit, estimated value provided.
B = Compound detected in Laboratory blank analysis.

Table 4
Hourly Climatological Observations During Sampling Events
Laurence G Hanscom Field Airport (14702)
Bedford, MA

Date	Time (EDT)	Weather	Dry Bulb Temperature (F)	Wind Speed (MPH)	Wind Direction*	Wind Gusts (MPH)	Pressure (in. hg)
17 March 2011	0756	Patches Fog	31	0	-		30.10
	0856	Patches Fog	41	7	W		30.12
	0956	Partly Cloudy	45	0	-		30.13
	1056	Fair	48	6	WSW		30.13
	1156	Fair	51	5	-		30.11
	1256	Fair	54	0	-		30.10
	1356	Fair	57	7	SSW		30.07
	1456	Fair	60	8	W		30.04
	1556	Fair	62	9	WNW		30.03
	1656	Fair	62	9	W		30.03
	1756	Fair	59	9	WSW		30.03
	1856	Fair	55	6	S		30.01
	1956	Fair	52	3	SSW		30.01
	2056	Fair	49	8	SW		30.01
	2156	Fair	50	10	SSW		29.99
	2256	Fair	49	7	WSW		29.98
	2356	Fair	48	6	SSW		29.95
18 March 2011	0056	Fair	48	6	S		29.92
	0156	Fair	49	13	SSW	20	29.90
	0256	Fair	47	9	SSW		29.88
	0356	Fair	47	8	SSW		29.83
	0456	Fair	48	10	SSW		29.79
	0556	Fair	48	8	SSW		29.77
	0656	Mostly Cloudy	51	11	SW	21	29.73
	0756	Overcast	52	14	SW	23	29.72
	0856	Mostly Cloudy	52	20	SW	28	29.70
	0956	Fair	58	17	SW	24	29.68
	1056	Fair	61	11	SW	21	29.67
	1156	Overcast and Breezy	66	21	W	29	29.66
	1256	Fair	68	20	W	34	29.65
	1356	Fair and Breezy	69	23	W	41	29.64
	1456	Fair and Breezy	68	21	W	39	29.65
	1556	Fair and Breezy	67	23	W	40	29.68
31 March 2011	0756	Overcast	39	0	-		29.92
	0856	Overcast	40	0	-		29.92
	0956	Overcast	44	5	ENE		29.92
	1056	Clear	45	9	ESE		29.91
	1156	Overcast	46	11	ESE	20	29.91
	1256	Partly Cloudy	46	17	E		29.90
	1356	Partly Cloudy	44	14	E		29.88
	1456	Overcast	45	11	E		29.86
	1556	Clear	44	13	E		29.86
	1656	Overcast	42	16	ESE		29.85
	1727	Rain	37	18	E		29.85
	1754	Rain	37	9	E		29.86
	1756	Rain	37	9	E		29.86
	1829	Snow Mist	36	10	E		29.86
1 April 2011	0846	Snow Mist	34	11	N		29.36
	0856	Snow Mist	33	10	N		29.36
	0909	Snow Mist	34	10	N		29.36
	0918	Snow Mist	34	10	N		29.35
	0938	Snow Mist	34	9	N		29.33
	0956	Snow Mist	33	10	N		29.32
	1017	Snow Mist	34	11	N		29.30
	1032	Rain Mist	34	13	N	20	29.29
	1054	Rain Mist	34	14	N	21	29.27
	1056	Rain Mist	34	11	N	21	29.27
	1108	Rain Mist	34	14	N		29.26
	1156	Rain Mist	34	10	N		29.24
	1243	Rain Mist	36	10	WNW		29.23
	1256	Rain Mist	35	11	WNW		29.22
	1310	Rain Mist	36	11	NW		29.22
	1321	Rain Mist	36	11	NW	20	29.22
	1328	Rain Mist	36	11	NW		29.21
	1356	Rain Mist	35	14	NW		29.20
	1358	Rain Mist	36	13	NW		29.20
	1456	Rain	36	11	NW	20	29.19

Table 4
Hourly Climatological Observations During Sampling Events
Laurence G Hanscom Field Airport (14702)
Bedford, MA

Date	Time (EDT)	Weather	Dry Bulb Temperature (F)	Wind Speed (MPH)	Wind Direction*	Wind Gusts (MPH)	Pressure (in. hg)
06 June 2011	0656	Fair	54	Calm			30.00
	0756	Fair	62	3	NW		30.00
	0856	Fair	68	7	N		30.00
	0956	Fair	72	3	N		30.00
	1056	Fair	74	5	N		30.00
	1156	Fair	77	7	NE		29.99
	1256	Partly Cloudy	76	Calm			29.97
	1356	Mostly Cloudy	75	9	SE		29.96
	1456	A Few Clouds	76	10	SE		29.96
	1556	Fair	76	9	SE		29.95
	1656	Fair	75	6	Variable		29.94
	1756	Fair	74	9	SE		29.93
	1856	Fair	72	9	SE		29.94
	1956	Fair	69	7	SE		29.93
	2056	Fair	67	5	SE		29.94
	2156	Fair	63	Calm			29.95
	2256	Fair	61	Calm			29.95
	2356	Fair	62	3	S		29.94
07 June 2011	0056	Fair	61	3	S		29.93
	0156	Fair	58	Calm			29.93
	0256	Fair	55	Calm			29.92
	0356	Fair	54	Calm			29.92
	0456	Fair	53	Calm			29.92
	0556	Fair	53	Calm			29.93
	0656	Fair	59	Calm			29.93
	0756	Fair	66	3	W		29.93
	0856	Fair	71	5	W		29.93
	0956	Fair	76	Calm			29.92
	1056	Fair	79	Calm			29.90
	1156	NA	NA	3	Variable		NA
	1256	Fair	85	7	NW		29.87
	1356	Fair	84	3	Variable		29.85
	1556	Fair	86	15	E	18	29.81
	1656	Fair	80	13	SE		29.82
	1756	Fair	79	13	E		29.82
	1856	Fair	77	8	E		29.82
	1956	Fair	75	5	E		29.82
08 June 2011	0756	Partly Cloudy	70	Calm			29.88
	0856	Partly Cloudy	75	Calm			29.87
	0956	Fair	80	Calm			29.85
	1056	Partly Cloudy	83	NA			29.85
	1156	Fair	86	3	Variable		29.84
	1256	Fair	87	3	NW		29.84
	1356	Fair	88	5	S		29.82
	1456	Fair	88	5	S		29.80

Weather Data are selected from Quality Controlled Local Climatological (final) Hourly Obervations Table from the Laurance G Hanscom Field Airport (14702) in Bedford, Ma provided by the National Oceanic & Atmospheric Administra
*wind direction converted from direction in degrees, each of 16 wind directions spans 22.5 degrees