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Ramboll Environ
2200 Powell Street. Suite 700
Emeryville, CA 94608
ATTN: Ms. Kristin Drucquer

October 17, 2017

SUBJECT: **Data Validation Summary Report**
March 2015
Soil Gas Remedial Investigation Sampling
Nevada Environmental Response Trust (NERT)
Henderson, Nevada

Dear Ms. Drucquer,

Enclosed is the Data Validation Summary Report, March 2015, Soil Gas Remedial Investigation Sampling, Nevada Environmental Response Trust (NERT), Henderson, Nevada

We appreciate this opportunity to support Ramboll Environ in the performance of this project.

Please feel free to call me at (760) 827-1100 if you have any questions.

Sincerely,

Stella Cuenco
Project Manager/Senior Chemist

Data Validation Summary Report
March 2015
Soil Gas Remediation Sampling
Nevada Environmental Response Trust (NERT)
Henderson, Nevada

Prepared for

Ramboll ENVIRON
Emeryville, California

Prepared by

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October 17, 2017

Table of Contents

LIST OF TABLES

ATTACHMENT

LIST OF ACRONYMS AND ABBREVIATIONS

AB	Ambient Blank
DL	Detection Limit
DNR	Do Not Report
DQO	Data Quality Objectives
DUP	Laboratory Duplicate
DVR	Data Validation Report
DVSR	Data Validation Summary Report
FD	Field Duplicate
ICV	Initial Calibration Verification
LCS/LCSD	Laboratory Control Sample / Laboratory Control Sample Duplicate
LDC	Laboratory Data Consultants, Inc.
MDL	Method Detection Limit
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NDEP	Nevada Department of Environmental Protection
NERT	Nevada Environmental Response Trust
NFG	National Functional Guidelines
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, Sensitivity
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SQL	Sample Quantitation Limit
TB	Trip Blank
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
ug/m^3	Micrograms per Cubic Meter
%RSD	Percent Relative Standard Deviation
%D	Percent Difference
%R	Percent Recovery

1.0 INTRODUCTION

This data validation summary report (DVSR) has been prepared by Laboratory Data Consultants, Inc. (LDC) to assess the validity and usability of laboratory analytical data from the March 2015 Soil Gas Remediation Sampling conducted at the Nevada Environmental Response Trust (NERT) site in Henderson, Nevada. The assessment was performed by Ramboll ENVIRON as a part of the *Quality Assurance Project Plan, Revision 1, Nevada Environmental Response Trust Site, Henderson, Nevada* dated July 2014 and included the collection and analyses of 12 environmental and quality control (QC) samples. The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW-846 Method TO-15

Laboratory analytical services were provided by McCambell Analytical, Inc. The samples were grouped into sample delivery groups (SDGs). The air samples are associated with quality assurance and quality control (QA/QC) samples designed to document the data quality of the entire SDG or a sub-group of samples within an SDG. Table I is a cross-reference table listing each sample, analysis, SDG, collection date, laboratory sample number, matrix, and validation level. Table II is a reference table that identifies the QC elements reviewed for each validation level per method, as applicable.

The laboratory analytical data were validated in accordance with procedures described in the Nevada Division of Environmental Protection (NDEP) *Data Verification and Validation Requirements - Supplement* established for the BMI Plant Sites and Common Areas Projects, Henderson, Nevada, April 13, 2009. Consistent with the NDEP requirements, approximately ninety percent of the analytical data were validated according to Stage 2B data validation procedures and approximately ten percent of the samples were validated according to Stage 4 data validation procedures. The number of samples and percentage of samples validated to Stage 2B and Stage 4 for each sampling event and for each method is presented in Table III.

The analytical data were evaluated for QA/QC based on the following documents: *Quality Assurance Project Plan, Revision 1, NERT Site, Henderson, Nevada,* July 2014; Nevada Department of Environmental Protection (NDEP) *Revised Guidance on Qualifying Data due to Blank Contamination for the BMI Complex and Common Areas*, January 5, 2012; and a modified outline of the *USEPA National Functional Guidelines* (NFG) *for Organic Superfund Methods Data Review* (January 2017); and the *USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition* (January 1999).

This report summarizes the QA/QC evaluation of the data according to precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) relative to the project data quality objectives (DQOs). This report provides a quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability.

The PARCCS summary report evaluates and summarizes the results of QA/QC data validation for the entire sampling program. Each analytical fraction has a separate section for each of the PARCCS criteria. These sections interpret specific QC deviations and their effects on both individual data points and the analyses as a whole. Section 4.0 presents a summary of the PARCCS criteria by comparing quantitative parameters with acceptability criteria defined in the project DQO's. Qualitative PARCCS criteria are also summarized in this section.

Precision and Accuracy of Environmental Data

Environmental data quality depends on sample collection procedures, analytical methods and instrumentation, documentation, and sample matrix properties. Both sampling procedures and laboratory

analyses contain potential sources of uncertainty, error, and/or bias, which affect the overall quality of a measurement. Errors for sample data may result from incomplete equipment decontamination, inappropriate sampling techniques, sample heterogeneity, improper filtering, and improper preservation. The accuracy of analytical results is dependent on selecting appropriate analytical methods, maintaining equipment properly, and complying with QC requirements. The sample matrix also is an important factor in the ability to obtain precise and accurate results within a given media.

Environmental and laboratory QA/QC samples assess the effects of sampling procedures and evaluate laboratory contamination, laboratory performance, and matrix effects. QA/QC samples include: trip blanks (TBs), ambient blanks (ABs), field duplicates (FDs), laboratory blanks, canister blanks, and laboratory control samples (LCSs).

Before conducting the PARCCS evaluation, the analytical data were validated according to the QAPP (July 2014), NFG (USEPA 2017), and EPA Method TO-15. Samples not meeting the acceptance criteria were qualified with a flag, an abbreviation indicating a deficiency with the data. The following are flags used in data validation.

J- Estimated The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise.

J+ Estimated The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise.

J Estimated The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits but the exceedance was not sufficient to cause rejection of the data.

R Rejected The data is unusable (the analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.

U Nondetected Analyses were performed for the compound or analyte, but it was not detected.

UJ Estimated/Nondetected Analyses were performed for the analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision.

DNR Do Not Report A more appropriate result is reported from another analysis or dilution.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The hierarchy of flags is listed below:

R > J	The R flag will always take precedence over the J qualifier.
J+	The high bias (J+) flag is applied only to detected results.
J > J+ or J-	A non-biased (J) flag will always supersede biased (J+ or J-) flags since it is not possible to assess the direction of the potential bias.

J = J+ plus J-	Adding biased (J+, J-) flags with opposite signs will result in a non-biased flag (J).
UJ = U plus J	The UJ flag is used when a non-detected (U) flag is added to a non-biased flag (J).

Table IV lists the reason codes used. Reason codes explain why flags have been applied and identify possible limitations of data use. Reason codes are cumulative except when one of the flags is R then only the reason code associated to the R flag will be used.

Table V presents the overall qualified results after all the flags or validation qualifiers and associated reason codes have been applied.

Once the data are reviewed and qualified according to the QAPP, NFG, and EPA Method TO-15, the data set is then evaluated using PARCCS criteria. PARCCS criteria provide an evaluation of overall data usability. The following is a discussion of PARCCS criteria as related to the project DQOs.

Precision is a measure of the agreement or reproducibility of analytical results under a given set of conditions. It is a quantity that cannot be measured directly but is calculated from reported concentrations. Precision is expressed as the relative percent difference (RPD):

$$RPD = (D1-D2)/\{1/2(D1+D2)\} \times 100$$

where:
D1 = reported concentration for the sample
D2 = reported concentration for the duplicate

Since EPA Method TO-15 does not require MS/MSD, precision is primarily assessed by calculating an RPD from laboratory duplicates (DUP). In the absence of a DUP, a LCS/LCSD pair can be analyzed as an alternative means of assessing precision. An additional measure of sampling precision was obtained by collecting and analyzing field duplicate samples, which were compared using the RPD result as the evaluation criteria.

LCS is prepared in a certified-clean canister and is spiked with the target analytes prior to analysis. The LCS measures laboratory efficiency in recovering target analytes in the absence of matrix interferences.

DUPs measure laboratory precision. DUPs are replicate samples and are prepared by taking two aliquots from one sample container. The analytical results for DUPs are reported as the RPD between the results of the two aliquots.

Laboratory and field sampling precision are evaluated by calculating RPDs for field sample duplicate pairs. The sampler collects two field samples at the same location and under identically controlled conditions. The laboratory then analyzes the samples under identical conditions.

An RPD outside the numerical QC limit in the DUPs, or field duplicates indicates imprecision. Imprecision is the variance in the consistency with which the laboratory arrives at a particular reported result. Thus, the actual analyte concentration may be higher or lower than the reported result.

Possible causes of poor precision include sample matrix heterogeneity, improper sample collection or handling, inconsistent sample preparation, and poor instrument stability. In some duplicate pairs, results may be reported in either the primary or duplicate samples at levels below the practical quantitation limit (PQL) or non-detected. Since these values are considered to be estimates, RPD exceedances from these duplicate pairs do not suggest a significant impact on the data quality.

Accuracy is a measure of the agreement of an experimental determination and the true value of the parameter being measured. It is used to identify bias in a given measurement system. Recoveries outside acceptable QC limits may be caused by factors such as instrumentation, analyst error, or matrix interference. Accuracy is assessed through the analysis of LCS, and samples containing surrogate spikes. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. Surrogate spikes are either isotopically labeled compounds or compounds that are not typically detected in the samples. Surrogate spikes are added to every blank, environmental sample, LCS, and standard, for all applicable organic analyses. Percent recovery (%R) is calculated using the following equation:

$$\%R = (A-B)/C \times 100$$

where:
A = measured concentration in the spiked sample
B = measured concentration of the spike compound in the unspiked sample
C = concentration of the spike

The percent recovery of each analyte spiked in the LCS/LCSD, and surrogate compounds added to environmental samples is evaluated with the acceptance criteria specified by the previously noted documents. Spike recoveries outside the acceptable QC accuracy limits provide an indication of bias, where the reported data may overestimate or underestimate the actual concentration of compounds detected or quantitation limits reported for environmental samples.

Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population. It is evaluated by reviewing the QC results of blanks, samples and holding times. Positive detects of compounds in the blank samples identify compounds that may have been introduced into the samples during sample collection, transport, preparation, or analysis. The QA/QC blanks collected and analyzed are laboratory blanks, calibration blanks, canister blanks, TBs, and EBs.

A laboratory blank is an unused, certified canister that has not left the laboratory that contains the method reagents and has undergone the same preparation and analysis as the environmental samples. The laboratory blank provides a measure of the combined contamination derived from the laboratory solvents, glassware, instruments, reagents, and sample preparation steps. Laboratory blanks are prepared for each sample of a similar matrix extracted by the same method at a similar concentration level.

Canister blank analysis results are assessed to determine the existence and magnitude of contamination problems. All canisters must be clean and free of any contaminants before sample collection. Each sample must have an associated canister blank.

Trip blanks are used to identify possible volatile organic contamination introduced into the sample during transport. A trip blank canister is individually certified, evacuated and sent to the field with the sample canisters.

Ambient blank is an ambient air sample collected in the field. Analysis of the ambient blank can provide information on the ambient levels of site contaminants.

The blanks and associated samples were evaluated according to the NDEP *BMI Plant Sites and Common Areas Projects, Henderson, Nevada, Revised Guidance on Qualifying Data due to Blank Contamination for the BMI Complex and Common Areas*, January 5, 2012.

Leakage during soil gas sampling may dilute samples with ambient air and produce results that underestimate actual site concentrations or contaminate the sample with external contaminants. Leak tests should be conducted to determine whether leakage is present. Helium was used as the leak check compound for this sampling event.

Holding times are evaluated to assure that the sample integrity is intact for accurate sample preparation and analysis. Holding times will be specific for each method and matrix analyzed. Holding time exceedance can cause loss of sample constituents due to biodegradation, precipitation, volatilization, and chemical degradation.

Comparability is a qualitative expression of the confidence with which one data set may be compared to another. It provides an assessment of the equivalence of the analytical results to data obtained from other analyses. It is important that data sets be comparable if they are used in conjunction with other data sets. The factors affecting comparability include the following: sample collection and handling techniques, matrix type, and analytical method. If these aspects of sampling and analysis are carried out according to standard analytical procedures, the data are considered comparable. Comparability is also dependent upon other PARCCS criteria, because only when precision, accuracy, and representativeness are known can data sets be compared with confidence.

Completeness is defined as the percentage of acceptable sample results compared to the total number of sample results. Completeness is evaluated to determine if an acceptable amount of usable data were obtained so that a valid scientific site assessment can be completed. Completeness equals the total number of sample results for each fraction minus the total number of rejected sample results divided by the total number of sample results multiplied by 100. As specified in the project DQOs, the goal for completeness for target analytes in each analytical fraction is 90 percent.

Percent completeness is calculated using the following equation:

$$\%C = (T - R)/T \times 100$$

where:
%C = percent completeness
T = total number of sample results
R = total number of rejected sample results

Completeness is also determined by comparing the planned number of samples per method and matrix as specified in the QAPP, with the number determined above.

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. This capability is established during the planning phase to meet the DQOs. It is important that calibration requirements, detection limits (DLs), and PQLs presented in the QAPP are achieved and that target analytes can be detected at concentrations necessary to support the DQOs. The method detection limits (MDLs) represent the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Sample quantitation limits (SQLs) are adjusted MDL values that reflect sample specific actions, such as dilutions or varying aliquot sizes. PQLs are the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the analyte. The laboratory is required to report detected analytes down to the SQL for this project. In addition, sample results are compared to laboratory blank and field blank results to identify potential effects of laboratory background and field procedures on sensitivity.

The following sections present a review of QC data for each analytical method.

2.0 VOLATILE ORGANIC COMPOUNDS

A total of 12 air samples were analyzed for VOCs by EPA Method TO-15. All VOC data were assessed to be valid since none of the 828 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the DQOs.

2.1 Precision and Accuracy

2.1.1 Instrument Calibration

Initial and continuing calibration results provide a means of evaluating accuracy within a particular SDG. Relative response factor (RRF), percent relative standard deviation (%RSD), and percent difference (%D) are the major parameters used to measure the effectiveness of instrument calibration. RRF is a measure of the relative spectral response of an analyte compared to its internal standard. %RSD is an expression of the linearity of instrument response. %D is a comparison of a continuing calibration instrumental response with its initial response. %RSD and %D exceedances suggest routine instrumental anomalies, which typically impact all sample results for the affected compounds.

The %RSDs met the acceptance criteria of 30 percent or the coefficient of determination (r^2) was ≥ 0.990 in the initial calibration. The %Ds in the initial and continuing calibration verifications met the acceptance criteria of 30 percent.

2.1.2 Surrogates

All surrogate %Rs met the method acceptance criteria.

2.1.3 DUP Samples

DUPs were not performed for this analysis.

2.1.4 LCS Samples

All LCS %Rs met the laboratory acceptance criteria.

2.1.5 Internal Standards

All internal standard areas and retention times met the method acceptance criteria.

2.1.6 FD Samples

The field duplicate samples were evaluated for acceptable precision with RPDs for the compounds. The ethylbenzene results in field duplicate pair RISG-3-15-20150306 and RISG-3-15-FD were qualified as detected estimated (J) due to RPDs outside of the acceptance criteria as stated in the QAPP. The details regarding the qualification of results are provided in Attachment A.

2.1.7 Compound Quantitation and Target Identification

Raw data were evaluated for samples RISG-1-13-20150306 and RISG-1-5-20150309. All compound quantitation and target identifications were acceptable for these Stage 4 samples.

2.2 Representativeness

2.2.1 Sample Preservation and Holding Times

The evaluation of holding times to verify compliance with the method was conducted. All samples met the 30-day analysis holding time criteria for VOCs in canisters.

The leak check compound, Helium, was not detected in all the samples.

2.2.2 Blanks

Laboratory blanks, canisters blank, TBs, and ABs were collected and analyzed to evaluate representativeness. The concentration for an individual target compound in any of the types of QA/QC blanks with the exception of the ABs was used for data qualification.

If contaminants were detected in a blank, corrective actions were made for the chemical analytical data during data validation. The corrective action consisted of amending the laboratory reported results based on the following criteria.

Results Below or Above the Practical Quantitation Limit (PQL) If a sample result for the blank contaminant was less than or greater than the PQL and less than or equal to 2 times the blank value, the sample result was qualified as detected estimated (J) at the reported concentration.

No Action If a sample result for the blank contaminant was greater than 2 times the blank value, the result was not amended.

2.2.2.1 Laboratory and Canister Blanks

Due to canister blank contamination, 16 results were qualified as detected estimated (J). No data were qualified due to a contaminant in the laboratory blank. The details regarding the qualification of results are presented in Attachment A.

2.2.2.2 TBs

Due to trip blank contamination, 22 results were qualified as detected estimated (J). The details regarding the qualification of results are presented in Attachment A.

2.3 Comparability

The laboratory used standard analytical methods for all of the analyses. In all cases, the SQLs attained were at or below the PQLs. Target compounds detected below the PQLs flagged (J) by the laboratory should be considered estimated. The comparability of the VOC data is regarded as acceptable.

2.4 Completeness

The completeness level attained for VOC field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

2.5 Sensitivity

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory PQLs met the specified requirements described in the QAPP.

3.0 VARIANCES IN ANALYTICAL PERFORMANCE

The laboratory used standard analytical methods for all of the analyses throughout the project. No systematic variances in analytical performance were noted in the laboratory case narratives.

4.0 SUMMARY OF PARCCS CRITERIA

The validation reports present the PARCCS results for all SDGs. Each PARCCS criterion is discussed in detail in the following sections.

4.1 Precision and Accuracy

Precision and accuracy were evaluated using data quality indicators such as calibration, surrogates, DUP, LCS/LCSD, and field duplicates. The precision and accuracy of the data set were considered acceptable after integration of result qualification.

All calibrations were performed as required and met the acceptance criteria. All surrogate and LCS percent recoveries, internal standard areas, and field duplicate RPDs met acceptance criteria with the exceptions noted in Sections 2.1.6.

4.2 Representativeness

All samples for each method and matrix were evaluated for holding time compliance. All holding times were met. All samples were associated with a laboratory blank and in each individual SDG. Additionally, each sample was associated with a canister blank. The representativeness of the project data is considered acceptable.

4.3 Comparability

Sampling frequency requirements were met in obtaining necessary field blanks and field duplicates. The laboratory used standard analytical methods for the analyses. The analytical results were reported in correct standard units. Sample integrity criteria were met. Sample preservation and holding times were within QC criteria. The overall comparability is considered acceptable.

4.4 Completeness

Of the 828 total analytes reported, none of the sample results were rejected. The completeness for the SDGs is as follows:

Parameter	Total Analytes	No. of Rejects	% Completeness
VOCs	828	0	100
Total	**828**	**0**	**100**

The completeness percentage based on rejected data met the 90 percent DQO goal.

4.5 Sensitivity

Sensitivity was achieved by the laboratory to support the DQOs. Calibration concentrations and PQLs met the project requirements and low level contamination in the laboratory blanks, canister blanks and TBs did not affect sensitivity.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The analytical data quality assessment for the soil gas sample laboratory analytical results generated during the March 2015 Soil Gas Remediation Sampling at the NERT site in Henderson, Nevada established that the overall project requirements and completeness levels were met. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Stage 2B and Stage 4 data validation all other results are considered valid and usable for all purposes.

6.0 REFERENCES

Environ 2014. Quality Assurance Project Plan, Revision 1, Nevada Environmental Response Trust Site, Henderson, Nevada. July 18.

NDEP 2012. Revised Guidance on Qualifying Data due to Blank Contamination for the BMI Complex and Common Areas. January 5.

NDEP 2009. NDEP Data Verification and Validation Requirements – Supplement. April

USEPA 1999. USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition. January.

USEPA 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. January.

USEPA 2017. USEPA National Functional Guidelines for Superfund Organic Methods Data Review. January.

TABLES

Table I. Sample Cross-Reference

LDC Number	SDG	Client Sample ID	Lab Sample ID	Matrix	Sample Date	QC Type	Validation Level	VOCs (TO-15)
33988A	1503377	RISG-1-5-20150309-AMB	1503377-001A	Air	3/9/2015	AB	Stage 2B	X
33988A	1503377	RISG-1-5-20150309	1503377-002A	Air	3/9/2015		Stage 4	X
33988A	1503377	RISG-1-13-20150306	1503377-003A	Air	3/6/2015		Stage 4	X
33988A	1503377	RISG-3-5-20150306-AMB	1503377-004A	Air	3/6/2015	AB	Stage 2B	X
33988A	1503377	RISG-3-5-20150306	1503377-005A	Air	3/6/2015		Stage 2B	X
33988A	1503377	RISG-3-15-20150306	1503377-006A	Air	3/6/2015	FD	Stage 2B	X
33988A	1503377	MB-BLANK	1503377-007A	Air	3/6/2015	TB	Stage 2B	X
33988A	1503377	RISG-3-15-FD	1503377-008A	Air	3/6/2015	FD	Stage 2B	X
34027A	1503926	RISG-2-5.0-20150319	1503926-001A	Air	3/19/2015		Stage 2B	X
34027A	1503926	RISG-2-5.0-20150319-AMB	1503926-002A	Air	3/19/2015	AB	Stage 2B	X
34027A	1503926	RISG-2-15.0-20150319	1503926-003A	Air	3/19/2015		Stage 2B	X
34027A	1503926	12PSI NITROGEN BLANK	1503926-004A	Air	3/13/2015	TB	Stage 2B	X

Table II. Stage 2B & Stage 4 Validation Elements

Quality Control Elements	Stage 2B
	VOCs
Sample Receipt & Technical Holding Time	√
Instrument Performance Check	√
Initial Calibration (ICAL)	√
Initial Calibration Verification (ICV)	√
Continuing Calibration Verification (CCV)	√
Laboratory Blanks	√
Field Blanks	√
Surrogate Spikes	√
Laboratory Duplicate (DUP)	√
Internal Standards	√
Field Duplicate	√
Project Quantitation Limits (PQL)	√
Multiple Results for One Sample	√
Target Compound Identification	-
Compound Quantitation	-
System Performance[1]	-
Overall Data Usability Assessment	√

√ = Reviewed for Stage 2B review
- = Not applicable for Stage 2B review
[1]System performance is a thorough review of the data acquisition that can yield indicators of degrading instrument performance affecting quality of data.

Table II. Stage 2B & Stage 4 Validation Elements

Quality Control Elements	Stage 4
	VOCs
Sample Receipt & Technical Holding Time	√
Instrument Performance Check	√
Initial Calibration (ICAL)	√
Initial Calibration Verification (ICV)	√
Continuing Calibration Verification (CCV)	√
Laboratory Blanks	√
Field Blanks	√
Surrogate Spikes	√
Laboratory Duplicate (DUP)	√
Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	√
Internal Standards	√
Field Duplicate	√
Project Quantitation Limits (PQL)	√
Multiple Results for One Sample	√
Target Compound Identification	√
Compound Quantitation	√
System Performance[1]	√
Overall Data Usability Assessment	√

√ = Reviewed for Stage 4 review

[1]System performance is a thorough review of the data acquisition that can yield indicators of degrading instrument performance affecting quality of data.

Table III. Stage 2B & Stage 4 Validation Percentage

Parameter	Stage 2B	Stage 4	Total	Stage 2B (%)	Stage 4 (%)
VOCs	10	2	12	83	17

Table IV. Reason Codes and Definitions

Reason Code	Explanation
a	qualified due to low abundance (radiochemical activity)
be	qualified due to equipment blank contamination
bf	qualified due to field blank contamination
bl	qualified due to lab blank contamination
bt	qualified due to trip blank contamination
bp	qualified due to pump blank contamination (wells w/o dedicated pumps, when contamination is detected in the Pump Blk)
br	qualified due to filter blank contamination (aqueous Hexavalent Chromium and Dissolved sample fractions)
c	qualified due to calibration problems
cp	qualified due to insufficient ingrowth (radiochemical only)
dc	dual column confirmation %D exceeded
e	concentration exceeded the calibration range
fd	qualified due to field duplicate imprecision
h	qualified due to holding time exceedance
i	qualified due to internal standard areas
k	qualified as Estimated Maximum Possible Concentrations (dioxins and PCB congeners)
l	qualified due to LCS recoveries
ld	qualified due to lab duplicate imprecision (matrix duplicate, MSD, LCSD)
m	qualified due to matrix spike recoveries
nb	qualified due to negative lab blank contamination (nondetect results only)
nd	qualified due to non-detected target analyte
o	other
p	qualified as a false positive due to contamination during shipping
pH	sample preservation not within acceptance range
q	qualified due to quantitation problem
s	qualified due to surrogate recoveries
sd	serial dilution did not meet control criteria
sp	detected value reported >SQL <PQL
st	sample receipt temperature exceeded
t	qualified due to elevated helium tracer concentrations
vh	volatile headspace detected in aqueous sample containers submitted for VOC analysis
x	qualified due to low % solids
z	qualified due to ICS results

Table V. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	SQL	PQL	Units	Validator Qualifier	Reason Code
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	127-18-4	Tetrachloroethene	5		0.0077	3.4	ug/m3	J	bt
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	100-41-4	Ethyl Benzene	0.21	J	0.18	2.2	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	106-93-4	1,2-Dibromoethane	0.095	JC	0.0037	3.9	ug/m3	J	bl,bt,sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	108-88-3	Toluene	0.48	J	0.26	1.9	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	142-82-5	n-Heptane	11	J	5.7	21	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	156-59-2	cis-1,2-Dichloroethene	1.1	J	0.56	2	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	56-23-5	Carbon Tetrachloride	0.47	J	0.012	3.2	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	622-96-8	4-Ethyltoluene	0.23	J	0.08	2.5	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	64-17-5	Ethanol	53	J	11	96	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	67-66-3	Chloroform	0.32	JC	0.015	2.4	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	75-09-2	Methylene Chloride	1.1	J	0.44	1.8	ug/m3	J	bt,sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	75-69-4	Trichlorofluoromethane	1.7	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.78	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	79-01-6	Trichloroethene	0.69	J	0.041	2.8	ug/m3	J	sp
1503377	RISG-1-5-20150309-AMB	3/9/2015	TO-15	91-20-3	Naphthalene	0.39	JC	0.028	5.3	ug/m3	J	bt,sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	110-54-3	n-Hexane	1.8	J	0.49	18	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	120-82-1	1,2,4-Trichlorobenzene	0.26	J	0.17	3.8	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	124-48-1	Dibromochloromethane	2.1	JC	0.0048	4.4	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	156-59-2	cis-1,2-Dichloroethene	1.1	J	0.56	2	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	64-17-5	Ethanol	12	J	11	96	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	67-64-1	Acetone	38	J	9	60	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	75-15-0	Carbon Disulfide	1.3	J	0.42	1.6	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	75-69-4	Trichlorofluoromethane	1.9	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.79	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	78-87-5	1,2-Dichloropropane	0.59	JC	0.01	2.4	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	87-68-3	Hexachlorobutadiene	0.61	J	0.15	5.4	ug/m3	J	bt,sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	91-20-3	Naphthalene	3.4	JC	0.028	5.3	ug/m3	J	sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	106-93-4	1,2-Dibromoethane	0.11	JC	0.0037	3.9	ug/m3	J	bl,bt,sp
1503377	RISG-1-5-20150309	3/9/2015	TO-15	107-06-2	1,2-Dichloroethane	0.26	JC	0.0062	2	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	106-46-7	1,4-Dichlorobenzene	0.79	J	0.62	3	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	1.1	J	0.0062	2	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	120-82-1	1,2,4-Trichlorobenzene	0.82	J	0.17	3.8	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.49	J	0.0048	4.4	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	75-27-4	Bromodichloromethane	2.7	J	0.011	3.5	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.1	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	78-87-5	1,2-Dichloropropane	1.2	J	0.01	2.4	ug/m3	J	sp
1503377	RISG-1-13-20150306	3/6/2015	TO-15	78-93-3	2-Butanone	14	J	3.9	75	ug/m3	J	sp

Table V. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	SQL	PQL	Units	Validator Qualifier	Reason Code
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	100-41-4	Ethyl Benzene	0.33	J	0.18	2.2	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	106-93-4	1,2-Dibromoethane	0.094	JC	0.0037	3.9	ug/m3	J	bl,bt,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	0.12	JC	0.0062	2	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	108-88-3	Toluene	1.9	J	0.26	1.9	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	109-99-9	Tetrahydrofuran	1.1	J	0.21	1.5	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	110-54-3	n-Hexane	1.2	J	0.49	18	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.036	JC	0.0048	4.4	ug/m3	J	bl,bt,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	127-18-4	Tetrachloroethene	0.88	JC	0.0077	3.4	ug/m3	J	bt,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	1330-20-7	Xylenes (total)	1.2	J	0.83	6.6	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	56-23-5	Carbon Tetrachloride	0.67	JC	0.012	3.2	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	64-17-5	Ethanol	18	J	11	96	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	67-64-1	Acetone	12	J	9	60	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	71-43-2	Benzene	0.54	J	0.26	1.6	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	74-87-3	Chloromethane	0.95	J	0.12	1	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	75-09-2	Methylene Chloride	1.2	J	0.44	1.8	ug/m3	J	bt,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	75-69-4	Trichlorofluoromethane	1.7	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.69	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	78-87-5	1,2-Dichloropropane	0.042	JC	0.01	2.4	ug/m3	J	bl,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	79-01-6	Trichloroethene	0.098	JC	0.041	2.8	ug/m3	J	bl,bt,sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	91-20-3	Naphthalene	1.6	JC	0.028	5.3	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	95-63-6	1,2,4-Trimethylbenzene	0.57	J	0.25	2.5	ug/m3	J	sp
1503377	RISG-3-5-20150306-AMB	3/6/2015	TO-15	67-66-3	Chloroform	0.59	JC	0.015	2.4	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	106-93-4	1,2-Dibromoethane	0.09	JC	0.0037	3.9	ug/m3	J	bt,sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	0.22	J	0.0062	2	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	108-10-1	4-Methyl-2-pentanone	1.5	J	0.13	2.1	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	110-54-3	n-Hexane	2.6	J	0.49	18	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.88	J	0.0048	4.4	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	156-59-2	cis-1,2-Dichloroethene	1.1	J	0.56	2	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	622-96-8	4-Ethyltoluene	0.58	J	0.08	2.5	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	64-17-5	Ethanol	15	J	11	96	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	67-64-1	Acetone	37	J	9	60	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	75-15-0	Carbon Disulfide	1.3	J	0.42	1.6	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	75-69-4	Trichlorofluoromethane	1.7	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	91-20-3	Naphthalene	1.2	JC	0.028	5.3	ug/m3	J	sp
1503377	RISG-3-5-20150306	3/6/2015	TO-15	95-63-6	1,2,4-Trimethylbenzene	1.6	J	0.25	2.5	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	100-41-4	Ethyl Benzene	9.5		0.18	2.2	ug/m3	J	fd

Table V. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	SQL	PQL	Units	Validator Qualifier	Reason Code
1503377	RISG-3-15-20150306	3/6/2015	TO-15	106-93-4	1,2-Dibromoethane	0.087	JC	0.0037	3.9	ug/m3	J	bt,sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	0.73	J	0.0062	2	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	110-54-3	n-Hexane	2.7	J	0.49	18	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.29	JC	0.0048	4.4	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	156-59-2	cis-1,2-Dichloroethene	1.8	J	0.56	2	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	156-60-5	trans-1,2-Dichloroethene	0.25	J	0.21	2	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	67-64-1	Acetone	35	J	9	60	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	75-15-0	Carbon Disulfide	1.6	J	0.42	1.6	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	75-69-4	Trichlorofluoromethane	2.6	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.1	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	78-87-5	1,2-Dichloropropane	1.1	JC	0.01	2.4	ug/m3	J	sp
1503377	RISG-3-15-20150306	3/6/2015	TO-15	79-00-5	1,1,2-Trichloroethane	0.62	J	0.012	2.8	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	106-93-4	1,2-Dibromoethane	0.11	JC	0.0037	3.9	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	0.028	JC	0.0062	2	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	109-99-9	Tetrahydrofuran	0.53	J	0.21	1.5	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.043	JC	0.0048	4.4	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	127-18-4	Tetrachloroethene	2.5	JC	0.0077	3.4	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	67-66-3	Chloroform	0.039	JC	0.015	2.4	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	75-09-2	Methylene Chloride	0.98	J	0.44	1.8	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	75-27-4	Bromodichloromethane	0.027	JC	0.011	3.5	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	78-87-5	1,2-Dichloropropane	0.019	JC	0.01	2.4	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	79-01-6	Trichloroethene	0.13	JC	0.041	2.8	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	79-34-5	1,1,2,2-Tetrachloroethane	0.064	JC	0.0076	3.5	ug/m3	J	bl,sp
1503377	MB-BLANK	3/6/2015	TO-15	87-68-3	Hexachlorobutadiene	0.32	J	0.15	5.4	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	91-20-3	Naphthalene	0.41	JC	0.028	5.3	ug/m3	J	sp
1503377	MB-BLANK	3/6/2015	TO-15	96-12-8	1,2-Dibromo-3-chloropropane	0.062	JC	0.0056	0.12	ug/m3	J	bl,sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	100-41-4	Ethyl Benzene	3.5		0.18	2.2	ug/m3	J	fd
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	106-93-4	1,2-Dibromoethane	0.088	JC	0.0037	3.9	ug/m3	J	bt,sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	107-06-2	1,2-Dichloroethane	0.74	J	0.0062	2	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	108-67-8	1,3,5-Trimethylbenzene	0.36	J	0.35	2.5	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	110-54-3	n-Hexane	3.2	J	0.49	18	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	124-48-1	Dibromochloromethane	0.28	JC	0.0048	4.4	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	1330-20-7	Xylenes (total)	9.6	J	0.83	10	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	156-59-2	cis-1,2-Dichloroethene	1.8	J	0.56	2	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	156-60-5	trans-1,2-Dichloroethene	0.24	J	0.21	2	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	622-96-8	4-Ethyltoluene	0.59	J	0.08	2.5	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	67-64-1	Acetone	39	J	9	60	ug/m3	J	sp

Table V. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	SQL	PQL	Units	Validator Qualifier	Reason Code
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	75-69-4	Trichlorofluoromethane	2.5	J	0.36	2.8	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.76	J	0.16	3.9	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	78-87-5	1,2-Dichloropropane	1.1	JC	0.01	2.4	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	79-00-5	1,1,2-Trichloroethane	0.58	J	0.012	2.8	ug/m3	J	sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	91-20-3	Naphthalene	0.6	JC	0.028	5.3	ug/m3	J	bt,sp
1503377	RISG-3-15-20150306-FD	3/6/2015	TO-15	95-63-6	1,2,4-Trimethylbenzene	0.41	J	0.25	2.5	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	100-42-5	Styrene	0.91	J	0.21	2.2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	107-06-2	1,2-Dichloroethane	0.089	JC	0.0062	2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	108-90-7	Chlorobenzene	0.5	J	0.16	2.4	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	110-82-7	Cyclohexane	9.8	J	0.38	18	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	120-82-1	1,2,4-Trichlorobenzene	3.6	J	0.17	3.8	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	142-82-5	n-Heptane	7.3	J	5.7	21	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	156-60-5	trans-1,2-Dichloroethene	1.1	J	0.21	2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	630-20-6	1,1,1,2-Tetrachloroethane	0.065	J	0.007	3.5	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	64-17-5	Ethanol	26	J	11	96	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	75-09-2	Methylene Chloride	0.97	J	0.44	1.8	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	75-69-4	Trichlorofluoromethane	1.2	J	0.36	2.8	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.56	J	0.16	3.9	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	78-93-3	2-Butanone	44	J	3.9	75	ug/m3	J	sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	87-68-3	Hexachlorobutadiene	0.63	J	0.15	5.4	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319	3/19/2015	TO-15	91-20-3	Naphthalene	1.4	JC	0.028	5.3	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	106-93-4	1,2-Dibromoethane	0.043	JC	0.0037	3.9	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	107-06-2	1,2-Dichloroethane	0.87	J	0.0062	2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	108-67-8	1,3,5-Trimethylbenzene	0.42	J	0.35	2.5	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	110-54-3	n-Hexane	7.8	J	0.49	18	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	110-82-7	Cyclohexane	2.9	J	0.38	18	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	124-48-1	Dibromochloromethane	0.013	J	0.0048	4.4	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	1330-20-7	Xylenes (total)	6.9	J	0.83	7	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	156-60-5	trans-1,2-Dichloroethene	0.95	J	0.21	2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	56-23-5	Carbon Tetrachloride	0.44	J	0.012	3.2	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	622-96-8	4-Ethyltoluene	0.56	J	0.08	2.5	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	64-17-5	Ethanol	29	J	11	96	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	67-64-1	Acetone	17	J	9	60	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	67-66-3	Chloroform	1.2	J	0.015	2.4	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	75-15-0	Carbon Disulfide	0.69	J	0.42	1.6	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	75-69-4	Trichlorofluoromethane	1.2	J	0.36	2.8	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	75-71-8	Dichlorodifluoromethane	2.4	J	0.56	2.5	ug/m3	J	sp

Table V. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	SQL	PQL	Units	Validator Qualifier	Reason Code
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.53	J	0.16	3.9	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	78-93-3	2-Butanone	7.1	J	3.9	75	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	79-01-6	Trichloroethene	2.8	JC	0.041	2.8	ug/m3	J	sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	87-68-3	Hexachlorobutadiene	0.36	J	0.15	5.4	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	91-20-3	Naphthalene	0.57	J	0.028	5.3	ug/m3	J	bt,sp
1503926	RISG-2-5.0-20150319-AMB	3/19/2015	TO-15	95-63-6	1,2,4-Trimethylbenzene	1.8	J	0.25	2.5	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	106-93-4	1,2-Dibromoethane	0.047	JC	0.0037	3.9	ug/m3	J	bl,bt,sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	107-06-2	1,2-Dichloroethane	0.58	JC	0.0062	2	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	107-13-1	Acrylonitrile	0.86	J	0.61	1.1	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	108-90-7	Chlorobenzene	0.73	J	0.16	2.4	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	110-54-3	n-Hexane	7.8	J	0.49	18	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	120-82-1	1,2,4-Trichlorobenzene	3.7	J	0.17	3.8	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	156-60-5	trans-1,2-Dichloroethene	0.28	J	0.21	2	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	630-20-6	1,1,1,2-Tetrachloroethane	0.084	JC	0.007	3.5	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	64-17-5	Ethanol	50	J	11	96	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	75-09-2	Methylene Chloride	1.6	J	0.44	1.8	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	75-27-4	Bromodichloromethane	0.77	JC	0.011	3.5	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	75-69-4	Trichlorofluoromethane	1.6	J	0.36	2.8	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.57	J	0.16	3.9	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	78-93-3	2-Butanone	51	J	3.9	75	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	79-00-5	1,1,2-Trichloroethane	0.2	JC	0.012	2.8	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	87-68-3	Hexachlorobutadiene	2.5	J	0.15	5.4	ug/m3	J	sp
1503926	RISG-2-15.0-20150319	3/19/2015	TO-15	91-20-3	Naphthalene	3.8	JC	0.028	5.3	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	106-93-4	1,2-Dibromoethane	0.049	JC	0.0037	3.9	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	107-06-2	1,2-Dichloroethane	0.017	J	0.0062	2	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	109-99-9	Tetrahydrofuran	0.67	JC	0.21	1.5	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	124-48-1	Dibromochloromethane	0.015	J	0.0048	4.4	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	127-18-4	Tetrachloroethene	1.2	JBC	0.0077	3.4	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	630-20-6	1,1,1,2-Tetrachloroethane	0.013	J	0.007	3.5	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	67-66-3	Chloroform	0.029	J	0.015	2.4	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	75-09-2	Methylene Chloride	0.76	J	0.44	1.8	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	75-27-4	Bromodichloromethane	0.012	J	0.011	3.5	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	79-01-6	Trichloroethene	0.041	JC	0.041	2.8	ug/m3	J	bl,sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	79-34-5	1,1,2,2-Tetrachloroethane	0.046	JC	0.0076	3.5	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	87-68-3	Hexachlorobutadiene	0.32	J	0.15	5.4	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	91-20-3	Naphthalene	0.29	J	0.028	5.3	ug/m3	J	sp
1503926	12PSI NITROGEN BLANK	3/13/2015	TO-15	96-12-8	1,2-Dibromo-3-chloropropane	0.053	J	0.0056	0.12	ug/m3	J	sp

ATTACHMENT A

VOC Data Validation Report

VOC by EPA Method TO-15

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 24 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed using required standard concentrations.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

SDG	Laboratory Blank ID	Analysis Date	Compound	Concentration	Associated Samples
1503926	MB-3/30/15	03/30/15	Tetrachloroethene	0.174 ug/m³	All samples in SDG 1503926

Canister blank analyses were performed for every sample canister. No contaminants were found in the canister blanks with the following exceptions:

SDG	Canister Blank ID	Analysis Date	Compound	Concentration	Associated Samples
1503377	CAN6309-789	02/05/15	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene 1,1,2-Trichloroethane Vinyl chloride	0.033 ug/m³ 0.040 ug/m³ 0.040 ug/m³ 0.036 ug/m³ 0.051 ug/m³ 0.030 ug/m³ 0.032 ug/m³ 0.059 ug/m³ 0.047 ug/m³ 0.057 ug/m³ 0.036 ug/m³ 0.030 ug/m³	RISG-1-5-20150309-AMB
1503377	CAN1924-1907	02/05/15	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Naphthalene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene 1,1,2-Trichloroethane Trichloroethene Vinyl chloride	0.025 ug/m³ 0.034 ug/m³ 0.023 ug/m³ 0.030 ug/m³ 0.079 ug/m³ 0.038 ug/m³ 0.026 ug/m³ 0.072 ug/m³ 0.025 ug/m³ 0.036 ug/m³ 0.059 ug/m³ 0.041 ug/m³ 0.044 ug/m³ 0.022 ug/m³	RISG-1-5-20150309
1503377	CAN1923-1906	02/05/15	1,2-Dibromoethane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene	0.010 ug/m³ 0.029 ug/m³ 0.010 ug/m³ 0.015 ug/m³	RISG-1-13-20150306**
1503377	CAN1931-1914	02/05/15	Bromodichloromethane Carbon tetrachloride Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Naphthalene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene 1,1,2-Trichloroethane Trichloroethene Vinyl chloride	0.048 ug/m³ 0.018 ug/m³ 0.057 ug/m³ 0.060 ug/m³ 0.054 ug/m³ 0.074 ug/m³ 0.052 ug/m³ 0.052 ug/m³ 0.089 ug/m³ 0.056 ug/m³ 0.068 ug/m³ 0.078 ug/m³ 0.057 ug/m³ 0.057 ug/m³ 0.047 ug/m³	RISG-3-5-20150306-AMB
1503377	CAN1871-1291	02/05/15	1,2-Dibromoethane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene	0.011 ug/m³ 0.033 ug/m³ 0.013 ug/m³ 0.017 ug/m³	RISG-3-5-20150306

SDG	Canister Blank ID	Analysis Date	Compound	Concentration	Associated Samples
1503377	CAN1932-1915	12/03/14	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloropropane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene Tetrahydrofuran	0.023 ug/m³ 0.028 ug/m³ 0.019 ug/m³ 0.012 ug/m³ 0.032 ug/m³ 0.023 ug/m³ 0.092 ug/m³ 0.036 ug/m³ 0.12 ug/m³ 0.47 ug/m³	RISG-3-15-20150306
1503377	CAN6163-749	02/05/15	Bromodichloromethane Carbon tetrachloride Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Naphthalene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene 1,1,2-Trichloroethane Trichloroethene Vinyl chloride	0.040 ug/m³ 0.014 ug/m³ 0.042 ug/m³ 0.045 ug/m³ 0.042 ug/m³ 0.064 ug/m³ 0.032 ug/m³ 0.038 ug/m³ 0.061 ug/m³ 0.046 ug/m³ 0.057 ug/m³ 0.068 ug/m³ 0.054 ug/m³ 0.050 ug/m³ 0.035 ug/m³	MB-BLANK
1503377	CAN1928-1911	12/02/14	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromoethane 1,2-Dichloropropane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene Trichloroethene	0.022 ug/m³ 0.026 ug/m³ 0.016 ug/m³ 0.027 ug/m³ 0.029 ug/m³ 0.038 ug/m³ 0.026 ug/m³ 0.25 ug/m³ 0.041 ug/m³	RISG-3-15-FD
1503926	CAN6413-800	02/06/15	1,2-Dibromoethane 1,2-Dichloroethane Hexane Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene Toluene	0.013 ug/m³ 0.013 ug/m³ 0.51 ug/m³ 0.059 ug/m³ 0.014 ug/m³ 0.053 ug/m³ 0.47 ug/m³	RISG-2-5.0-20150319
1503926	CAN1926-1909	03/11/15	1,2-Dibromoethane 1,1,2,2-Tetrachloroethane Tetrachloroethene Tetrahydrofuran Trichloroethene	0.010 ug/m³ 0.012 ug/m³ 0.50 ug/m³ 0.30 ug/m³ 0.14 ug/m³	RISG-2-5.0-20150319-AMB

SDG	Canister Blank ID	Analysis Date	Compound	Concentration	Associated Samples
1503926	CAN1875-1295	02/05/15	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Naphthalene 1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene 1,1,2-Trichloroethane Vinyl chloride	0.028 ug/m³ 0.034 ug/m³ 0.032 ug/m³ 0.024 ug/m³ 0.043 ug/m³ 0.029 ug/m³ 0.026 ug/m³ 0.046 ug/m³ 0.030 ug/m³ 0.039 ug/m³ 0.053 ug/m³ 0.037 ug/m³ 0.028 ug/m³	RISG-2-15.0-20150319
1503926	CAN1930-1913	03/11/15	1,2-Dibromoethane 1,1,2,2-Tetrachloroethane Tetrachloroethene Tetrahydrofuran Trichloroethene	0.013 ug/m³ 0.011 ug/m³ 0.57 ug/m³ 0.30 ug/m³ 0.14 ug/m³	12PSI Nitrogen Blank

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated laboratory blanks with the following exceptions:

SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
1503377	RISG-1-5-20150309-AMB	1,2-Dibromoethane	0.095 ug/m³	0.095J ug/m³
1503377	RISG-1-5-20150309	1,2-Dibromoethane	0.11 ug/m³	0.11J ug/m³
1503377	RISG-3-5-20150306-AMB	Dibromochloromethane 1,2-Dibromoethane 1,2-Dichloropropane Trichloroethene	0.036 ug/m³ 0.094 ug/m³ 0.042 ug/m³ 0.098 ug/m³	0.036J ug/m³ 0.094J ug/m³ 0.042J ug/m³ 0.098J ug/m³
1503377	MB-BLANK	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane 1,1,2,2-Tetrachloroethane	0.027 ug/m³ 0.039 ug/m³ 0.043 ug/m³ 0.062 ug/m³ 0.11 ug/m³ 0.028 ug/m³ 0.019 ug/m³ 0.064 ug/m³	0.027J ug/m³ 0.039J ug/m³ 0.043J ug/m³ 0.062J ug/m³ 0.11J ug/m³ 0.028J ug/m³ 0.019J ug/m³ 0.064J ug/m³
1503926	RISG-2-15.0-20150319	1,2-Dibromoethane	0.047 ug/m³	0.047J ug/m³
1503926	12PSI Nitrogen Blank	Trichloroethene	0.041 ug/m³	0.041J ug/m³

VI. Field Blanks

Samples MB-BLANK and 12PSI Nitrogen Blank were identified as trip blanks. No contaminants were found with the following exceptions:

SDG	Blank ID	Collection Date	Compound	Concentration	Associated Samples
1503377	MB-BLANK	03/06/15	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane Hexachlorobutadiene Methylene chloride Naphthalene 1,1,2,2-Tetrachloroethane Tetrachloroethene Tetrahydrofuran Trichloroethene	0.027 ug/m³ 0.039 ug/m³ 0.043 ug/m³ 0.062 ug/m³ 0.11 ug/m³ 0.028 ug/m³ 0.019 ug/m³ 0.32 ug/m³ 0.98 ug/m³ 0.41 ug/m³ 0.064 ug/m³ 2.5 ug/m³ 0.53 ug/m³ 0.13 ug/m³	RISG-1-5-20150309-AMB RISG-1-5-20150309 RISG-1-13-20150306** RISG-3-5-20150306-AMB RISG-3-5-20150306 RISG-3-15-20150306 RISG-3-15-FD
1503926	12PSI Nitrogen Blank	03/13/15	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane Hexachlorobutadiene Methylene chloride Naphthalene 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene Tetrahydrofuran Trichloroethene	0.012 ug/m³ 0.029 ug/m³ 0.015 ug/m³ 0.053 ug/m³ 0.049 ug/m³ 0.017 ug/m³ 0.32 ug/m³ 0.76 ug/m³ 0.29 ug/m³ 0.013 ug/m³ 0.046 ug/m³ 1.2 ug/m³ 0.67 ug/m³ 0.041 ug/m³	RISG-2-5.0-20150319 RISG-2-5.0-20150319-AMB RISG-2-15.0-20150319

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater than the concentrations found in the associated field blanks with the following exceptions:

SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
1503377	RISG-1-5-20150309-AMB	1,2-Dibromoethane Methylene chloride Naphthalene Tetrachloroethene	0.095 ug/m³ 1.1 ug/m³ 0.39 ug/m³ 5.0 ug/m³	0.095J ug/m³ 1.1J ug/m³ 0.39J ug/m³ 5.0J ug/m³
1503377	RISG-1-5-20150309	1,2-Dibromoethane Hexachlorobutadiene	0.11 ug/m³ 0.61 ug/m³	0.11J ug/m³ 0.61J ug/m³
1503377	RISG-3-5-20150306-AMB	Dibromochloromethane 1,2-Dibromoethane Methylene chloride Tetrachloroethene Trichloroethene	0.036 ug/m³ 0.094 ug/m³ 1.2 ug/m³ 0.88 ug/m³ 0.098 ug/m³	0.036J ug/m³ 0.094J ug/m³ 1.2J ug/m³ 0.88J ug/m³ 0.098J ug/m³

SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
1503377	RISG-3-5-20150306	1,2-Dibromoethane	0.090 ug/m³	0.090J ug/m³
1503377	RISG-3-15-20150306	1,2-Dibromoethane	0.087 ug/m³	0.087J ug/m³
1503377	RISG-3-15-FD	1,2-Dibromoethane Naphthalene	0.088 ug/m³ 0.60 ug/m³	0.088J ug/m³ 0.60J ug/m³
1503926	RISG-2-5.0-20150319	Hexachlorobutadiene Methylene chloride	0.63 ug/m³ 0.97 ug/m³	0.63J ug/m³ 0.97J ug/m³
1503926	RISG-2-5.0-20150319-AMB	Dibromochloromethane 1,2-Dibromoethane Hexachlorobutadiene Naphthalene	0.013 ug/m³ 0.043 ug/m³ 0.36 ug/m³ 0.57 ug/m³	0.013J ug/m³ 0.043J ug/m³ 0.36J ug/m³ 0.57J ug/m³
1503926	RISG-2-15.0-20150319	1,2-Dibromoethane	0.047 ug/m³	0.047J ug/m³

Samples RISG-1-5-20150309-AMB and RISG-3-5-20150306-AMB (both from SDG 1503377) and RISG-2-5.0-20150319-AMB (from SDG 1503926) were identified as ambient blanks. No contaminants were found with the following exceptions:

SDG	Blank ID	Collection Date	Compound	Concentration	Associated Samples
1503377	RISG-1-5-20150309-AMB	03/09/15	Benzene Carbon tetrachloride Chloroform Chloromethane Cychlohexane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane Dichlorodifluoromethane cis-1,2-Dichloroethene Ethanol Ethylbenzene 4-Ethyltoluene Freon 113 Heptane Hexane Methylene chloride Naphthalene Tetrachloroethene Toluene Trichloroethene Trichlorofluoromethane	2.0 ug/m³ 0.47 ug/m³ 0.32 ug/m³ 1.7 ug/m³ 27 ug/m³ 0.13 ug/m³ 0.095 ug/m³ 3.4 ug/m³ 1.1 ug/m³ 53 ug/m³ 0.21 ug/m³ 0.23 ug/m³ 0.78 ug/m³ 11 ug/m³ 19 ug/m³ 1.1 ug/m³ 0.39 ug/m³ 5.0 ug/m³ 0.48 ug/m³ 0.69 ug/m³ 1.7 ug/m³	None

SDG	Blank ID	Collection Date	Compound	Concentration	Associated Samples
1503377	RISG-3-5-20150306-AMB	03/06/15	Acetone	12 ug/m³	None
			Benzene	0.54 ug/m³	
			Carbon tetrachloride	0.67 ug/m³	
			Chloroform	0.59 ug/m³	
			Chloromethane	0.95 ug/m³	
			Dibromochloromethane	0.036 ug/m³	
			1,2-Dibromo-3-chloropropane	0.14 ug/m³	
			1,2-Dibromoethane	0.094 ug/m³	
			Dichlorodifluoromethane	3.3 ug/m³	
			1,2-Dichloroethane	0.12 ug/m³	
			1,2-Dichloropropane	0.042 ug/m³	
			Ethanol	18 ug/m³	
			Ethylbenzene	0.33 ug/m³	
			Freon 113	0.69 ug/m³	
			Hexane	1.2 ug/m³	
			Methylene chloride	1.2 ug/m³	
			Naphthalene	1.6 ug/m³	
			Tetrachloroethene	0.88 ug/m³	
			Tetrahydrofuran	1.1 ug/m³	
			Toluene	1.9 ug/m³	
			Trichloroethene	0.098 ug/m³	
			Trichlorofluoromethane	1.7 ug/m³	
			1,2,4-Trimethylbenzene	0.57 ug/m³	
			Xylenes, total	1.2 ug/m³	
1503926	RISG-2-5.0-20150319-AMB	03/19/15	Acetone	17 ug/m³	None
			Benzene	2.5 ug/m³	
			2-Butanone	7.1 ug/m³	
			Carbon disulfide	0.69 ug/m³	
			Carbon tetrachloride	0.44 ug/m³	
			Chloroform	1.2 ug/m³	
			Cyclohexane	2.9 ug/m³	
			Dibromochloromethane	0.013 ug/m³	
			1,2-Dibromoethane	0.043 ug/m³	
			Dichlorodifluoromethane	2.4 ug/m³	
			1,2-Dichloroethane	0.87 ug/m³	
			cis-1,2-Dichloroethene	8.7 ug/m³	
			trans-1,2-Dichloroethene	0.95 ug/m³	
			Ethanol	29 ug/m³	
			Ethyl acetate	19 ug/m³	
			Ethylbenzene	2.8 ug/m³	
			4-Ethyltoluene	0.56 ug/m³	
			Freon 113	0.53 ug/m³	
			Hexachlorobutadiene	0.36 ug/m³	
			Hexane	7.8 ug/m³	
			4-Methyl-2-pentanone	3.1 ug/m³	
			Methylene chloride	1.8 ug/m³	
			Naphthalene	0.57 ug/m³	
			Styrene	3.3 ug/m³	
			Tetrachloroethene	8.8 ug/m³	
			Toluene	31 ug/m³	
			Trichloroethene	2.8 ug/m³	
			Trichlorofluoromethane	1.2 ug/m³	
			1,2,4-Trimethylbenzene	1.8 ug/m³	
			1,3,5-Trimethylbenzene	0.42 ug/m³	
			Xylenes, total	6.9 ug/m³	

VII. Surrogates

Although surrogates were not required by the method, surrogate analysis was performed by the laboratory. Surrogate recoveries (%R) were within QC limits.

VIII. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples RISG-3-15-20150306 and RISG-3-15-FD were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

SDG	Compound	Concentration (ug/m³)		RPD (Limits)	Flag	A or P
		RISG-3-15-20150306	RISG-3-15-FD			
1503377	Acetone	35	39	11 (≤50)	-	-
	Benzene	8.3	8.1	2 (≤50)	-	-
	Bromodichloromethane	6.8	6.6	3 (≤50)	-	-
	Carbon disulfide	1.6	2.1	27 (≤50)	-	-
	Carbon tetrachloride	390	380	3 (≤50)	-	-
	Chloroform	7200	7000	3 (≤50)	-	-
	Dibromochloromethane	0.29	0.28	4 (≤50)	-	-
	1,2-Dibromoethane	0.087	0.088	1 (≤50)	-	-
	Dichlorodifluoromethane	5.6	5.7	2 (≤50)	-	-
	1,1-Dichloroethane	6.7	6.6	2 (≤50)	-	-
	1,2-Dichloroethane	0.73	0.74	1 (≤50)	-	-
	1,1-Dichloroethene	67	66	2 (≤50)	-	-
	cis-1,2-Dichloroethene	1.8	1.8	0 (≤50)	-	-
	trans-1,2-Dichloroethene	0.25	0.24	4 (≤50)	-	-

SDG	Compound	Concentration (ug/m³)		RPD (Limits)	Flag	A or P
		RISG-3-15-20150306	RISG-3-15-FD			
1503377	1,2-Dichloropropane	1.1	1.1	0 (≤50)	-	-
	Ethylbenzene	9.5	3.5	92 (≤50)	J (all detects)	A
	4-Ethyltoluene	7.6	0.59	171 (≤50)	NQ	-
	Freon 113	1.1	0.76	37 (≤50)	-	-
	Hexane	2.7	3.2	17 (≤50)	-	-
	4-Methyl-2-pentanone	3.0	2.3	26 (≤50)	-	-
	Methylene chloride	14	14	0 (≤50)	-	-
	Methyl methacrylate	5.2	4.1	24 (≤50)	-	-
	Naphthalene	6.9	0.60	168 (≤50)	NQ	-
	Tetrachloroethene	340	300	13 (≤50)	-	-
	Toluene	19	15	24 (≤50)	-	-
	1,1,1-Trichloroethane	0.62	0.58	7 (≤50)	-	-
	Trichloroethene	32	31	3 (≤50)	-	-
	Trichlorofluoromethane	2.6	2.5	4 (≤50)	-	-
	1,2,4-Trimethylbenzene	25	0.41	194 (≤50)	NQ	-
	1,3,5-Trimethylbenzene	12	0.36	188 (≤50)	NQ	-
	Xylenes, total	55	9.6	141 (≤50)	NQ	-
	1,2-Dibromo-3-chloropropane	0.12U	0.13	200 (≤50)	NQ	-

NQ = No data were qualified when either the primary or duplicate result was not detected or was below the practical quantitation limit.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The leak check compound, Helium, was not detected in all the samples.

Due to field duplicates RPD, data were qualified as estimated in two samples.

Due to canister blank contamination, data were qualified as estimated in six samples.

Due to trip blank contamination, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

NERT RI, March 2015 Soil Gas Remediation Sampling
Volatiles - Data Qualification Summary - SDGs 1503377, 1503926

SDG	Sample	Compound	Flag	A or P	Reason (Code)
1503377	RISG-3-15-20150306 RISG-3-15-FD	Ethylbenzene	J (all detects)	A	Field duplicates (RPD) (fd)

NERT RI, March 2015 Soil Gas Remediation Sampling
Volatiles - Laboratory Blank Data Qualification Summary - SDGs 1503377, 1503926

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
1503377	RISG-1-5-20150309-AMB	1,2-Dibromoethane	0.095J ug/m³	A	bl
1503377	RISG-1-5-20150309	1,2-Dibromoethane	0.11J ug/m³	A	bl
1503377	RISG-3-5-20150306-AMB	Dibromochloromethane 1,2-Dibromoethane 1,2-Dichloropropane Trichloroethene	0.036J ug/m³ 0.094J ug/m³ 0.042J ug/m³ 0.098J ug/m³	A	bl
1503377	MB-BLANK	Bromodichloromethane Chloroform Dibromochloromethane 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 1,2-Dichloroethane 1,2-Dichloropropane 1,1,2,2-Tetrachloroethane	0.027J ug/m³ 0.039J ug/m³ 0.043J ug/m³ 0.062J ug/m³ 0.11J ug/m³ 0.028J ug/m³ 0.019J ug/m³ 0.064J ug/m³	A	bl
1503926	RISG-2-15.0-20150319	1,2-Dibromoethane	0.047J ug/m³	A	bl
1503926	12PSI Nitrogen Blank	Trichloroethene	0.041J ug/m³	A	bl

NERT RI, March 2015 Soil Gas Remediation Sampling
Volatiles - Field Blank Data Qualification Summary - SDGs 1503377, 1503926

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
1503377	RISG-1-5-20150309-AMB	1,2-Dibromoethane Methylene chloride Naphthalene Tetrachloroethene	0.095J ug/m³ 1.1J ug/m³ 0.39J ug/m³ 5.0J ug/m³	A	bt
1503377	RISG-1-5-20150309	1,2-Dibromoethane	0.11J ug/m³	A	bt

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
1503377	RISG-1-5-20150309	Hexachlorobutadiene	0.61J ug/m³	A	bt
1503377	RISG-3-5-20150306-AMB	Dibromochloromethane 1,2-Dibromoethane Methylene chloride Tetrachloroethene Trichloroethene	0.036J ug/m³ 0.094J ug/m³ 1.2J ug/m³ 0.88J ug/m³ 0.098J ug/m³	A	bt
1503377	RISG-3-5-20150306	1,2-Dibromoethane	0.090J ug/m³	A	bt
1503377	RISG-3-15-20150306	1,2-Dibromoethane	0.087J ug/m³	A	bt
1503377	RISG-3-15-FD	1,2-Dibromoethane Naphthalene	0.088J ug/m³ 0.60J ug/m³	A	bt
1503926	RISG-2-5.0-20150319	Hexachlorobutadiene Methylene chloride	0.63J ug/m³ 0.97J ug/m³	A	bt
1503926	RISG-2-5.0-20150319-AMB	Dibromochloromethane 1,2-Dibromoethane Hexachlorobutadiene Naphthalene	0.013J ug/m³ 0.043J ug/m³ 0.36J ug/m³ 0.57J ug/m³	A	bt
1503926	RISG-2-15.0-20150319	1,2-Dibromoethane	0.047J ug/m³	A	bt