USEPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

VOLATILE ORGANICS ANALYSIS

IN AIR

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Draft

June 2008

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STATEMENT OF WORK

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EXHIBIT A

SUMMARY OF REQUIREMENTS

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Exhibit A - Summary of Requirements

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1.0 PURPOSE

The purpose of the volatile organics in air analytical service is to provide analytical data for use by the U.S. Environmental Protection Agency (USEPA) in support of its investigation and clean-up activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Other USEPA Program Offices that have similar analytical data needs also use this service.

2.0 DESCRIPTION OF SERVICE

The organic analytical service provides a contractual framework for laboratories to apply USEPA Contract Laboratory Program (CLP) analytical methods for the isolation, detection, and quantitative measurement of 65 volatile target compounds in air samples. The analytical service provides the methods to be used, and the specific contractual requirements by which USEPA will evaluate the data. This service uses Gas Chromatograph/Mass Spectrometer (GC/MS) methods to analyze the target compounds.

3.0 DATA USES

This analytical service provides data that USEPA uses for a variety of purposes, such as determining the nature and extent of contamination at a hazardous waste site, assessing priorities for response based on risks to human health and the environment, determining appropriate cleanup actions, and determining when remedial actions are complete. The data may be used in all stages in the investigation of a hazardous waste site, including, but not limited to, site inspections; Hazard Ranking System (HRS) scoring; remedial investigation/feasibility studies; remedial design; treatability studies; and removal actions.

The data may also be used in litigation against Potentially Responsible Parties (PRPs) in the enforcement of Superfund legislation. As a result, the Contractor must be aware of the importance of maintaining the integrity of the data generated under the contract, since it is used to make major decisions regarding public health and environmental welfare. The Contractor may be required to appear and testify to the accuracy and/or validity of the data generated.

4.0 SUMMARY OF REQUIREMENTS

4.1 Introduction to the Statement of Work

This Statement of Work (SOW) is designed as part of the documentation for a contract between USEPA and a commercial laboratory performing analyses in support of USEPA Superfund programs. The SOW is comprised of eight exhibits and one appendix. Exhibit A provides an overview of the SOW and its general requirements. Exhibit B contains a description of the reporting and deliverables requirements, in addition to the data reporting forms and the form instructions. Exhibit C specifies the Target Compound List (TCL) for this SOW with the Contract Required Quantitation Limits (CRQLs) for the sample matrix. Exhibit D details the specific analytical procedures to be used with this SOW and resulting contracts. Exhibit E provides descriptions of required Quality Assurance/Quality Control (QA/QC), Standard Operating Procedures (SOPs), and procedures used for evaluating analytical methodologies, QA/QC performance, and the reporting of data. Exhibit F contains chain-of-custody and sample documentation requirements which the Contractor shall follow. To ensure proper understanding of the terms utilized in this SOW, a glossary can be found in Exhibit G (when a term is used in the text without explanation, the glossary meaning shall be applicable). Specifications for reporting electronic data appear in Exhibit H. Appendix A contains a listing of USEPA Registry Names, Synonyms, and Chemical Abstracts Service (CAS) Registry Numbers.

4.2 Overview of Major Task Areas

For each sample, the Contractor shall perform the tasks described in this section. Specific requirements for each task are detailed in the exhibits as referenced.

4.2.1 Task I: Sample Receiving, Storage, and Disposal

4.2.1.1 Chain-of-Custody

The Contractor shall receive and maintain samples under proper chain-of-custody procedures. All associated document control and inventory procedures shall be developed and followed. Documentation, as described herein, shall be required to show that all procedures are being strictly followed. This documentation shall be reported as the Complete Sample Delivery Group (SDG) File (CSF) (Exhibit B). The Contractor shall establish and use appropriate procedures to safeguard confidential information received from USEPA. See Exhibit F for specific requirements.

4.2.1.2 Sample Scheduling/Shipments

Sample shipments to the Contractor's facility will be scheduled and coordinated by the Task Order Project Officer (TOPO). The Contractor shall communicate with the TOPO by telephone, fax, and/or email, as necessary throughout the process of sample ordering, shipment of canisters from and to the Contractor, analysis, and data reporting, to ensure that samples are properly processed.

4.2.1.2.1

Samples will be shipped routinely to the Contractor through an overnight delivery service. However, as necessary, the Contractor shall be responsible for any handling or processing required for the receipt of sample shipments. This includes the pick-up of samples at the nearest servicing airport, bus station, or other carrier service within the Contractor's geographical area. The

Contractor shall be available to receive and process sample shipments at any time the delivery service is operating, including Saturdays.

4.2.1.2.2 If there are problems with the samples (e.g., containers leaking) or sample documentation/paperwork [e.g., Traffic Report/Chain of Custody Records (TR/COCs) not with shipment, sample and TR/COC numbers do not correspond], the Contractor shall immediately contact the TOPO for resolution. The Contractor shall immediately notify the TOPO regarding any problems and laboratory conditions that affect the timeliness of analyses and data reporting. In particular, the Contractor shall notify the TOPO in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

4.2.1.2.3 The Contractor shall accept all samples ordered, provided that the total number of samples received in any calendar month does not exceed the monthly limitation expressed in the contract. Should the Contractor elect to accept additional samples, the Contractor shall remain bound by all contract requirements for analysis of those samples accepted.

4.2.1.2.4 The Contractor is required to retain unused sample volume, and partially used sample volume in original sample container for a period of 60 days after data submission.

4.2.2 Task II: Sample Preparation and Analysis

4.2.2.1 Overview

The Contractor is advised that the samples received under the contract are usually from known or suspected hazardous waste sites and may contain high levels of organic and inorganic materials of a potentially hazardous nature. It is the Contractor’s responsibility to take all necessary measures to ensure laboratory safety.

4.2.2.2 If analysis by the Selected Ion Monitoring (SIM) technique is requested, analysis by the appropriate full scan method must be performed prior to the SIM analysis. If the full scan analysis detects all the SIM target compounds at or above the CRQLs, then the SIM analysis is not to be performed.

4.2.2.3 Sample analyses will be ordered by groups of samples. Each order will identify a Case number(s). A Case signifies a group of samples collected at one site or geographical area over a finite time period, and will include one or more field samples with associated blanks. Samples may be shipped to the Contractor in a single shipment or multiple shipments over a period of time, depending on the size of the Case.

4.2.2.3.1 A Case consists of one or more SDG(s). An SDG may be defined in individual task orders. An SDG may also be defined as the following, whichever is most frequent:

- Each Case of field samples received; or
- Each 20 field samples [excluding Performance Evaluation (PE) samples] within a Case; or
- Each 7 calendar day period (3 calendar day period for 7 day turnaround) during which field samples in a Case are received (said period beginning with receipt of the first sample in the SDG).

In addition, all samples assigned to an SDG must have been ordered under the same contractual turnaround time. Preliminary Results have **no impact** on defining the SDG.

4.2.2.3.2 PE samples received within a Case shall be assigned to an SDG containing field samples for that Case. Such assignment shall be made at the time the samples are received, and shall not be made retroactively.

4.2.2.3.3 Each sample received by the Contractor will be labeled with an EPA assigned Sample Number, and accompanied by a Traffic Report/Chain of Custody (TR/COC) bearing the Sample Number and descriptive information regarding the sample. The Contractor shall complete and sign the TR/COC recording the date of sample receipt and sample condition on receipt for each sample container.

4.2.2.3.4 The Contractor shall submit signed copies of TR/COCs for all samples in an SDG to the TOPO within **three working days** following receipt of the last sample in the SDG. TR/COCs shall be submitted in SDG sets (i.e., all TR/COCs for an SDG shall be clipped together) with an SDG Cover Sheet containing information regarding the SDG, as specified in Exhibit B.

4.2.2.3.5 USEPA Case Numbers, SDG Numbers, and EPA Sample Numbers shall be used by the Contractor in identifying samples received under the contract, both verbally and in reports/correspondence.

4.2.2.4 Preparation Techniques

The Contractor will prepare samples as described in Exhibit D.

4.2.2.5 Analytical Techniques

The target compounds listed in Exhibit C shall be identified as described in the methodologies given in Exhibit D. Automated computer programs may be used to facilitate the identification of compounds.

4.2.2.6 Qualitative Verification of Compounds

The volatile compounds identified by GC/MS techniques shall be verified by an analyst competent in the interpretation of mass spectra by comparison of the suspect mass spectrum to the mass spectrum of a standard of the suspected compound. This procedure requires the use of multiple internal standards.

4.2.2.6.1 If a compound initially identified by GC/MS techniques cannot be verified, but in the technical judgment of the mass spectral interpretation specialist the identification is correct, then the Contractor shall report that identification and proceed with quantitation.

4.2.2.7 Quantitation of Verified Compounds

The Contractor shall quantitate components identified by GC/MS techniques by the internal standard method stipulated in Exhibit D. Where multiple internal standards are required by USEPA, the Contractor shall perform quantitation utilizing the internal standards specified in Exhibit D.

4.2.2.8 Tentative Identification of Non-Target Sample Components

For each analysis of a sample, the Contractor may be required to conduct mass spectral library searches to determine tentative compound identifications. The Contractor shall conduct a search to determine the possible identity of up to 30 organic compounds of greatest

concentration which are not internal standard compounds, or alkanes, and are not target compounds listed in Exhibit C. In performing searches, the NIST/EPA/NIH (2002 release or later) and/or Wiley (1991 release or later), or equivalent, mass spectral library shall be used.

NOTE: Specific recipient names and addresses are subject to change during the term of the contract. The Contracting Officer (CO) will notify the Contractor, in writing, of such changes when they occur.

4.2.2.9 Quality Assurance/Quality Control (QA/QC) Procedures

The Contractor shall strictly adhere to all specific QA/QC procedures prescribed in Exhibits D and E. Records documenting the use of the protocol shall be maintained in accordance with the document control procedures prescribed in Exhibit F, and shall be reported in accordance with Exhibit B and Exhibit H.

4.2.2.9.1 The Contractor shall maintain a Quality Assurance Plan (QAP) with the objective of providing sound analytical chemical measurements. This program shall incorporate the QC procedures, any necessary corrective action, and all documentation required during data collection, as well as the quality assessment measures performed by management to ensure acceptable data production.

4.2.2.9.2 Additional QC shall be conducted in the form of the analysis of PE samples submitted to the laboratory by USEPA. Unacceptable results of all such QC or PE samples may be used as the basis for an equitable adjustment to reflect the reduced value of the data to USEPA or rejection of data for specific compound(s) within an SDG or the entire SDG. Also, unacceptable results may be used as the basis for contract action. "Compliant performance" is defined as that which yields correct analyte identification and concentration values, as determined by USEPA, as well as meeting the contract requirements for analysis (Exhibit D), QA/QC (Exhibit E), data reporting and other deliverables (Exhibits B and H), and sample custody, sample documentation, and SOP documentation (Exhibit F). As an alternative to data rejection, USEPA may require reanalysis of non-compliant samples. Reanalysis will be performed by the Contractor at no additional cost to USEPA, unless it is determined that the PE sample(s) was defective.

4.2.2.10 Modified Analysis

The Contractor may be requested by USEPA to perform modified analyses. These modifications may include, but are not limited to: additional compounds and lower quantitation limits. These requests will be made by the TOPO in writing, prior to sample ordering. All contract requirements specified in the SOW/specifications will remain in effect.

4.2.3 Task III: Sample Reporting Requirements and Resubmission of Data

4.2.3.1 Required formats for the reporting of data are found in Exhibits B and H. The Contractor shall be responsible for completing and submitting analysis data sheets and electronic data in the format specified in this SOW and within the time specified in Exhibit B, Section 1.1 or as specified in individual task orders.

4.2.3.2 Use of formats other than those approved will be deemed as non-compliant. Such data are unacceptable. Resubmission in the specified format at no additional cost to USEPA shall be required.

4.2.3.3 Computer-generated forms may be submitted in the hardcopy Sample Data Package(s) provided that the forms provide equivalent information as the **USEPA format**. This means that the order of data elements is the same as on each USEPA-required form, including form numbers and titles, page numbers, and header information.

4.2.3.4 If the submitted data package does not conform to the specified contractual or technical criteria, the Contractor will be required to resubmit the data package and electronic data deliverable with all deficiencies corrected at its own expense. The Contractor will respond within 7 days to requests for additional information or explanations that result from the Government's inspection activities. If the Contractor is required to submit or resubmit data as a result of a Regional request, the data shall be clearly marked as ADDITIONAL DATA. The Contractor shall include a cover letter that describes which data are being delivered, to which EPA Case Number the data pertain, and who requested the data. Any and all resubmissions must be in accordance with the documentation requirements of this SOW.

4.2.3.5 The data reported by the Contractor on the hardcopy data forms and the associated electronic data submitted by the Contractor shall contain identical information. If discrepancies are found during Government inspection, the Contractor shall be required to resubmit either the corrected hardcopy forms or the corrected electronic data, or both sets of corrected data, at no additional cost to USEPA.

4.2.3.6 In addition, the Contractor must be aware of the importance of maintaining the integrity of the data generated under the contract, since it is used to make major decisions regarding public health and environmental welfare. The data may also be used in litigation against Potentially Responsible Parties (PRPs) in the enforcement of Superfund legislation.

EXHIBIT B

REPORTING AND DELIVERABLES REQUIREMENTS

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Exhibit B - Reporting and Deliverables Requirements

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1.0 CONTRACT REPORTS/DELIVERABLES DISTRIBUTION

1.1 Report Deliverable Schedule

The following table reiterates the contract reporting and deliverables requirements specified in the Contract Schedule (Performance/Delivery Schedule) and specifies the distribution that is required for each deliverable. The turnaround times for Items B through D listed below are 7, 14, and 21 days.

NOTE: Specific recipient names and addresses are subject to change during the term of the contract. The Contracting Officer (CO) will notify the Contractor, in writing, of such changes when they occur.

TABLE 1
Report Deliverable Schedule

Item		No. of Copies[A]	Delivery Schedule	Distribution	
				SMO	Region
A.[2]	Sample Traffic Reports/Chain of Custody Records	1	3 working days after receipt of last sample in an Sample Delivery Group (SDG).[1]	X	
B.[2]	Sample Data Package[B]	1	XX[C] days after receipt of last sample in an SDG.	X	
C.[2]	Electronic Data Deliverable	1	XX[C] days after receipt of last sample in an SDG.	X	
D.[2, 3]	Complete SDG File	1	XX[C] days after receipt of last sample in an SDG.		X
E.[2]	Hardcopy Data in PDF Format	1	XX[c] days after receipt of last sample in an SDG.		X
F.[4]	Preliminary Results	1	Within 48 hours after receipt of each sample in an SDG at laboratory, if requested.	X	X
G.[5]	Standard Operating Procedures--Technical and Evidentiary	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request to recipients as directed.	As directed	

TABLE 1
Report Deliverable Schedule (Cont.)

Item		No. of Copies[A]	Delivery Schedule	Distribution	
				SMO	Region
H.[5]	Quality Assurance Plan	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request to recipients as directed.	As directed	
I.	GC/MS Electronic Data	Lot	Retain for 3 years after data submission. Submit within 7 days after receipt of written request by CLP PO.	As directed	
K.	Method Detection Limit Study[6]		Submit to USEPA within 7 days after receipt of written request by CLP PO or SMO, at USEPA's direction.	As directed	

Laboratories:

[A] The number of copies specified are the number of copies required to be delivered to each recipient.

[B] Contractor-concurrent delivery to USEPA-designated recipient may be required upon request by the Project Officer (PO). Retain for 365 days after data submission, and submit as directed within 7 days after receipt of written request by the CO or PO.

[C] The number of days associated with these elements will be provided in the associated laboratory contract document, and will also be provided at the time of the sample ordering in the task order.

[1] The Sample Delivery Group (SDG) will be defined in the individual task orders.

[2] **DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Delivery shall be made such that all designated recipients receive the item on the same calendar day. The Data Receipt Data (DRD) of the SDG and any samples within the SDG is the date that the Electronic Data Deliverable (EDD) and the Hardcopy of the Deliverable have both been received. If one of these items is delivered at a later date, the date that the last item is delivered is the SDG DRD. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.**

[3] Complete Sample Delivery Group File (CSF) will contain the original Sample Data Package plus all of the original documents described under Section 2.6.

[4] If requested at the time of sample scheduling, the Contractor shall provide Preliminary Results, consisting of Form I and Form I TIC analytical results if requested, by fraction, for field and Quality Control (QC) sample analyses via facsimile or email. The Contractor may submit Preliminary Results in electronic format after obtaining permission from USEPA. The Contractor will be notified of the fax number or email address at the time of sample ordering. Sample Traffic Report/Chain of Custody Records (TR/COCs) and SDG Cover Sheets shall be submitted with the Preliminary Results. The Contractor shall document all communication in a telephone contact log.

[5] See Exhibit E and Exhibit F for a more detailed description.

[6] Method Detection Limit (MDL) Study is to be performed annually, or for each new instrument, whichever is more frequent. The information should be available on file and provided to USEPA within 7 days after the receipt of a written request.

Preliminary Results Delivery Schedule:

If the sample arrives before 5 p.m., the Preliminary Results for that sample are due within the required turnaround time. If the sample is received after 5 p.m., the Preliminary Results for that sample are due within the required turnaround time beginning at 8 a.m. the following day. **DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Concurrent delivery is required. Delivery shall be made such that all designated recipients receive the item on the same calendar day. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.**

1.2 Distribution

The following addresses correspond to the "Distribution" column in Table 1 of Section 1.1:

SMO:

USEPA Contract Laboratory Program
Sample Management Office (SMO)[1]
15000 Conference Center Drive
Chantilly, VA 20151-3808

Task Order Project Officer (TOPO):

As identified in individual task orders.

USEPA REGIONS:

SMO will provide the Contractor with the list of addresses for the 10 USEPA Regions. SMO will provide the Contractor with updated Regional address/name lists as necessary throughout the period of the contract and identify other client recipients on a case-by-case basis.

Program Manager/Project Officer Mailing Address:

USEPA OSRTI Analytical Services Branch
Ariel Rios Building (5203P)
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
Attn: Air Volatiles Program Manager/Project Officer

[1] SMO is a Contractor-operated facility operating under the SMO contract, awarded and administered by USEPA.

Fed-Ex/Overnight Delivery:

USEPA OSRTI Analytical Services Branch
One Potomac Yard (South Building)
2777 South Crystal Drive
4th Floor, S-4838
Arlington, VA 22202
Attn: Air Volatiles Program Manager/Project Officer

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified in the Contract Schedule (Performance/Delivery Schedule). The required content and form of each deliverable is described in this Exhibit. All reports and documentation **must be**:

- Legible;
- Clearly labeled and completed in accordance with instructions in this exhibit;
- Arranged in the order specified in this section;
- Paginated consecutively in ascending order starting from the Sample Delivery Group (SDG) Narrative;
- Copies must be legible and double-sided; and
- Information reported on the forms listed in this Exhibit [excluding the Sample Log-In Sheet (DC-1), the Complete SDG File (CSF) Inventory Sheet (DC-2), and the Canister Sampling Field Test Data Sheet (DC-3)] must be either typewritten or computer-generated. Handwritten corrections of the information must be legible, signed, and dated.

NOTE: CSFs need not be double-sided. (The CSF is composed of original documents.) However, Sample Data Packages delivered to the Sample Management Office (SMO), and USEPA-designated recipients [e.g., Quality Assurance Technical Support (QATS)] upon written request, must be double-sided.

2.1.1 Requirements for each deliverable item cited in the Contract Schedule (Performance/Delivery Schedule) are specified in Sections 2.3 through 2.10. Prior to submission, the Contractor shall arrange items and the components of each item in the order listed in these sections.

2.1.2 The Contractor shall use EPA/assigned Case Numbers, SDG numbers, designated Sample Numbers, and task order numbers (if applicable) to identify samples received under the contract, both verbally and in reports/correspondence. The Contract Number and task order number, if applicable, shall be specified in all correspondence.

2.1.3 If Selected Ion Monitoring (SIM) analysis is performed, then all SIM data (Forms and raw data) must be arranged at the end of the subsection [i.e., Trace VOA-SIM must be at the end of the Trace-VOA section].

2.2 Resubmission of Data

If submitted documentation does not conform to the above criteria, the Contractor is required to resubmit such documentation with deficiency(ies) corrected within 6 business days, at no additional cost to USEPA. Only the

nonconforming documentation is required to be resubmitted (i.e., if only the hardcopy in Portable Document Format (PDF) is nonconforming, then a resubmittal of only the corrected hardcopy is required).

2.2.1 Whenever the Contractor is required to submit or resubmit data as a result of an on-site laboratory evaluation, or through a Project Officer (TOPO) action or request, the data shall be clearly marked as ADDITIONAL DATA and shall be sent to all contractual data recipients as well as designated recipients. The Contractor shall include a cover letter that describes which data are being delivered, to which project the data pertain, and **who requested the data**. A copy of the cover letter shall be submitted to the Contracting Officer (CO).

2.3 Quality Assurance Plan (QAP) and Standard Operating Procedures (SOPs)

The Contractor shall adhere to the requirements in Exhibits E and F.

2.4 Traffic Report/Chain of Custody Records (TR/COCs)

Each sample received by the Contractor will be labeled with an designated Sample Number. Designated Numbers are continuous (without spaces or hyphens). Each sample will be accompanied by a Sample TR/COC bearing the Sample Number and descriptive information regarding the sample. The Contractor shall complete the TR/COC, recording the date of sample receipt and shall sign the TR/COC. Information shall be recorded for each sample in the SDG.

2.4.1 The Contractor shall submit TR/COCs in SDG sets (i.e., TR/COCs for all samples in an SDG shall be clipped together), with an SDG Cover Sheet attached. The SDG Cover Sheet shall contain the following items:

- Laboratory name;
- Contract number;
- Task Order number;
- Modification number;
- Sample analysis price (full sample price from the contract);
- Case Number; and
- List of designated Sample Numbers of all samples in the SDG, identifying the **first** and **last** samples received, and the Laboratory Receipt Dates (LRDs).

NOTE: When more than one sample is received in the first or last SDG shipment, the "first" sample received would be the lowest Sample Number (considering both alpha and numeric designations); the "last" sample received would be the highest Sample Number (considering both alpha and numeric designations).

2.4.2 Designated Sample Numbers are continuous (without spaces or hyphens).

2.4.3 Each TR/COC shall be clearly marked with the SDG Number, entered below the LRD on the TR/COC. The TR/COC for the **last** sample received in the SDG shall be clearly marked "SDG–FINAL SAMPLE". The SDG Number is the designated Sample Number of the first sample received in the SDG. When several samples are received together in the first SDG shipment, the SDG Number shall be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

2.4.4 If samples are received at the laboratory with multi-sample TR/COCs, all the samples on one multi-sample TR/COC may not necessarily be in the same SDG. In this instance, the Contractor shall make the appropriate number of photocopies of the TR/COC, and submit one copy with each SDG Cover Sheet.

2.5 Sample Data Package

The Sample Data Package is divided into the three major units described in this section. If analysis by SIM is required, report all data for SIM analysis as a subsection at the end of the fraction. The Sample Data Package shall include data for the analyses of all samples in one SDG, including: field samples; dilutions; reanalyses; blanks; and Laboratory Control Samples (LCSs). The Contractor shall retain a copy of the Sample Data Package for 365 days after final acceptance of data. After this time, the Contractor may dispose of the package.

2.5.1 SDG Narrative

This document shall be clearly labeled "SDG Narrative" and shall contain: Laboratory Name; Case Number; designated Sample Numbers in the SDG, differentiating between initial analyses and reanalyses; SDG Number; Contract Number; Task Order number; and detailed documentation of any Quality Control (QC), sample, shipment, and/or analytical problems encountered in processing the samples reported in the data package.

The Contractor shall also provide, in the SDG Narrative, sufficient information, including equations or curves (at least one equation or curve per method), to allow the recalculation of sample results from raw instrument output. The Contractor shall also include a discussion of any flexibility Statement of Work (SOW) modifications. This includes attaching a copy of the USEPA-approved modification form to the SDG Narrative. Additionally, the Contractor shall also identify and explain any differences that exist between the Form Is and supporting documentation provided in the data package and those previously provided as Preliminary Results.

All Gas Chromatography (GC) columns used for analysis shall be documented here, by fraction. List the GC column identification--brand name, the internal diameter, in millimeters (mm), and the length, in meters (m), packing/coating material, and film thickness. The trap used for volatile analysis shall be described here. List trap name, when denoted by the manufacturer, its composition (packing material/brand name, amount of packing material, in length). The Contractor shall include any technical and administrative problems encountered, the corrective actions taken, the resolution, and an explanation for all flagged edits (e.g., manual edits) on quantitation lists. The Contractor shall document in the SDG Narrative all instances of manual integration.

The SDG Narrative shall contain the following statement, verbatim: "**I certify that this Sample Data Package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy Sample Data Package and in the electronic data deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.**" This statement shall be directly followed by an original signature of the Laboratory Manager or designee with typed lines below it containing the signer's name and title, and the date of signature.

2.5.1.1 Whenever data from sample reanalyses are submitted, the Contractor shall state in the SDG Narrative for **each** reanalysis whether the reanalysis is billable, and if so, why.

2.5.1.2 The Contractor shall submit in writing all email correspondences or telephone conversations with SMO or the Region.

2.5.2 Traffic Report/Chain of Custody Records (TR/COC)

The Contractor shall include a copy of the TR/COCs submitted in Section 2.4 for all of the samples in the SDG. The TR/COCs shall be arranged in increasing designated Sample Number order, considering both letters and numbers. Copies of the SDG Cover Sheet are to be included with the copies of the TR/COCs. (See Section 2.4 for more detail on reporting requirements for TR/COCs.) In the case of multi-sample TR/COCs, the Contractor shall make the appropriate number of photocopies of the TR/COC so that a copy is submitted with each applicable data package. In addition, in any instance where samples from more than one multi-sample TR/COC are in the same data package, the Contractor shall submit a copy of the SDG Cover Sheet with copies of the TR/COCs.

2.5.3 Volatile Organics Analysis Data

2.5.3.1 Volatiles Quality Control (QC) Summary

2.5.3.1.1 Air Volatile Organics Laboratory Control Sample Recovery and Precision (Form II VOA-1, VOA-2, VOA-SIM):

2.5.3.1.2 Method Blank Summary (Form III VOA): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank, by instrument.

2.5.3.1.3 Form III contains a field labeled “Page ____ of ____” in the bottom left-hand corner. If the number of entries required on any of these forms exceeds the available space, continue entries on another copy of the same fraction-specific form, duplicating all header information. If a second page is required, number the pages consecutively (i.e., "Page 1 of 2" and "Page 2 of 2"). If a second page is **not** required, number the page "Page 1 of 1".

2.5.3.1.4 Internal Standard Area and Retention Time Study (Form VII VOA-1, VOA-SIM): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.3.2 Volatile Organics Analysis Sample Data

Sample data shall be arranged with the Volatile Organics Analysis Data Sheet (Form I VOA-1, VOA-2), followed by the raw data for volatile samples. The sample data shall be placed in order of increasing designated Sample Number, considering both letters and numbers. Volatile sample data for SIM analysis must be arranged together with the rest of the SIM Volatiles data at the end of the subsection.

2.5.3.2.1 Target Compound Results, Volatile Organics Analysis Data Sheet (Form I VOA-1, VOA-2). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - Volatiles) shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (see Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.3.2.2 Tentatively Identified Compounds (TICs) (Form I VOA-TIC). Form I VOA-TIC is the tabulated list of the highest probable match for up

to 30 organic compounds that are not target compounds, internal standard compounds, or alkanes (excluding target compound n-octane). An alkane is defined as any hydrocarbon with the generic formula C_nH_{2n+2} (straight-chain or branched) or C_nH_{2n} (cyclic) that contains only C-H and C-C single bonds. The tabulated list includes the Chemical Abstracts Service (CAS) Number (if applicable), tentative identification, and estimated concentration. This form shall be included only if requested.

NOTE: This form is not required when submitting data for the optional analysis using the SIM technique.

2.5.3.2.3 Reconstructed Total Ion Chromatograms (for each sample including dilutions and reanalyses). Reconstructed ion chromatograms shall be normalized to the largest nonsolvent component and shall contain the following header information:

- Designated Sample Number;
- Date and time of analysis;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

NOTE: Each Selected Ion Current Profile (SICP) for samples taken through the optional analysis using the SIM technique shall be labeled as in this section.

2.5.3.2.3.1 Internal standards shall be labeled with the names of compounds, either directly out from the peak or on a printout of Retention Times (RTs) if RTs are printed over the peak. Labeling of other compounds is not required and should not detract from the legibility of the required labels.

2.5.3.2.3.2 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report shall be included in all Sample Data Packages, in addition to the reconstructed ion chromatogram. The complete data system report shall include all of the information listed below.

- Designated Sample Number;
- Date and time of analysis;
- RT or scan number of identified target compounds;
- Ion used for quantitation with measured area;
- Copy of area table from data system;
- On column concentration/amount, including units;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.5.3.2.3.3 In all instances where the data system report has been edited, or where manual integration or manual quantitation has been performed, the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to

the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report. In addition, a hardcopy printout of the Extracted Ion Current Profile (EICP) of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C, and internal standards.

2.5.3.2.4 Other Required Information. For each sample, by each compound identified, the following items shall be included in the data package:

- Copies of raw spectra and copies of background-subtracted mass spectra of target compounds listed in Exhibit C that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. This includes target compounds that are identified during the optional analysis using the SIM technique. Spectra shall be labeled with designated Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra; and
- If TICs are requested, copies of mass spectra of organic compounds not listed in Exhibit C with associated best-match spectra (maximum of three best matches). Spectra shall be labeled with designated Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.

2.5.3.3 Volatiles Standards Data

2.5.3.3.1 Initial Calibration Data (Form V VOA-1, VOA-2, VOA-SIM): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for the initial (five-point) calibration, labeled as in Section 2.5.3.2.3. Spectra are not required.
- All initial calibration data that pertain to samples in the data package shall be included, regardless of when it was performed and for which Case. When more than one initial calibration is performed, the data shall be in chronological order, by instrument.
- Labels for standards shall reflect the concentrations of the analytes in ppbv.
- EICPs displaying each manual integration.

NOTE: Form V VOA-SIM is not required for the optional analysis when submitting data using the SIM technique.

2.5.3.3.2 Continuing Calibration Verification Data (Form VI VOA-1, VOA-2, VOA-SIM) shall be included in order by instrument, if more than one instrument is used.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for all continuing (24-hour) calibration verifications, labeled as in Section 2.5.3.2.3. Spectra are not required.

- When more than one Continuing Calibration Verification (CCV) is performed, forms shall be in chronological order, by instrument.
- EICPs displaying each manual integration.

2.5.3.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C – Volatiles and internal standards.

2.5.3.4 Volatiles Raw QC Data

2.5.3.4.1 Instrument Performance Check Bromofluorobenzene (BFB) (Form IV VOA) shall be arranged in chronological order by instrument for each 24-hour period, for each GC/MS system utilized.

- Bar graph spectrum, labeled as in Section 2.5.3.2.3.
- Mass listing, labeled as in Section 2.5.3.2.3.
- Reconstructed total ion chromatogram, labeled as in Section 2.5.3.2.3.

2.5.3.4.2 Blank data shall be arranged in chronological order, by instrument.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I VOA-1, VOA-2, VOA-SIM).
- Tentatively Identified Compounds (Form I VOA-TIC) required only if TICs have been requested.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3.
- Target compound spectra with laboratory-generated standard, labeled as in Section 2.5.3.2.4. Data systems that are incapable of dual display shall provide spectra in the following order:

  -- Raw target compound spectra.

  -- Enhanced or background-subtracted spectra.

  -- Laboratory-generated standard spectra.

- GC/MS library search spectra for TICs if requested, labeled as in Section 2.5.3.2.4.
- Quantitation/calculation of TIC concentrations if requested.

2.5.3.4.3 Volatiles LCS Data

- Tabulated results (Form I VOA-1, VOA-2, VOA-SIM) of target compounds. Form I VOA-TIC is not required.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3. Spectra are not required.

2.6 Complete SDG File (CSF)

As specified in Section 1, the Contractor shall deliver one CSF (including the original Sample Data Package) to the TOPO concurrently with delivery of the Sample Data Package to SMO. Delivery to USEPA's designated recipients is only required upon written request.

2.6.1 The CSF will contain all original documents specified in Sections 3 and 4 and on Form DC-2 (Section 3.13). No photocopies of original documents will be placed in the CSF unless the original data was initially written in a bound notebook, maintained by the Contractor, or the originals were previously submitted to USEPA with another Case/SDG in accordance with the requirements described in Exhibit F. The contents of the CSF shall be numbered according to the specifications described in Section 3.13.

2.6.2 The CSF will consist of the following original documents in addition to the documents in the Sample Data Package.

NOTE: All SDG-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other SDG-specific documents generated after the CSF is sent to the TOPO, as well as copies that are altered in any fashion are also deliverables. Deliver the original to the TOPO and a copy to SMO. Delivery to USEPA's designated recipients is only upon written request.

2.6.2.1 Original Sample Data Package

2.6.2.2 A completed and signed Organics CSF Inventory Sheet (Form DC-2).

2.6.2.3 All original shipping documents including, but not limited to, the following documents:

- Airbills (if an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company's electronic tracking information);
- USEPA Sample TR/COCs; and
- Sample tags (if present) sealed in plastic bags.

2.6.2.4 All original receiving documents including, but not limited to, the following documents:

- Form DC-1;
- Other receiving forms or copies of receiving logbooks; and
- SDG Cover Sheet.

2.6.2.5 All original laboratory records, not already submitted in the Sample Data Package, of sample transfer, preparation, and analysis including, but not limited to, the following documents:

- Log book preparation entries documenting the steps and calculations of diluted and working standards and/or receipt of stock standards showing the lot number and date of receipt or date of preparation for all standards and spiking solutions;
- Original preparation and analysis forms or copies of preparation and analysis logbook pages;
- Internal sample transfer chain-of-custody records;
- Screening records; and
- All instrument output, including strip charts from screening activities.

2.6.2.6 All other original SDG-specific documents in the possession of the Contractor including, but not limited to, the following documents:

- Telephone contact logs;
- Copies of personal logbook pages;
- All handwritten SDG-specific notes; and
- Any other SDG-specific documents not covered by the above.

2.6.3 If the Contractor does submit SDG-specific documents to the TOPO after submission of the CSF, the documents should be identified with unique accountable numbers, a revised Form DC-2 should be submitted, and the unique accountable numbers and locations of the documents in the CSF should be recorded in the "Other Records" section on the revised Form DC-2. Alternatively, the Contractor may number the newly submitted SDG-specific documents to the TOPO as a new CSF and submit a new Form DC-2. The revised Form DC-2 or new Form DC-2 should be submitted to the TOPO only.

2.7 Electronic Data Deliverable

The Contractor shall provide an electronic data deliverable on analytical data for all samples in the SDG, as specified in Exhibit H, and delivered as specified in the Contract Schedule (Performance/Delivery Schedule).

2.8 Delivery of Hardcopy Data in PDF Format

In addition to all required deliverables identified in the laboratory’s contract and the SAVM01.0 SOW, the laboratory shall provide a complete copy of the hardcopy deliverable in PDF on a Compact Disc (CD) if requested by the Region.

2.8.1 The PDF file should be organized in accordance to directions provided in Exhibit B, "Reporting Requirements and Order of Data Deliverables" of the SAV01.0 SOW. The PDF file shall be bookmarked as described below for ease of data retrieval and navigation.

2.8.2 Organic data shall be bookmarked using a hierarchal bookmark structure (i.e., an overview or "parent" bookmark, and a subordinate or "child" bookmark nested underneath the "parent" bookmark). The required hierarchal bookmark structure is shown in Table 2.

TABLE 2
Hierarchal Bookmark Structure

Group Bookmark	Parent Bookmark	Child Bookmarks
Sample TR/COCs, TR/COC Cover Sheet, and SDG Narrative		
		Laboratory Control Sample (LCS) Summary
		Method Blank
		GC/MS Instrument Performance Check
		Internal Standard Area and RT Summary
	Sample Data	Samples in increasing alphanumeric designated Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration Data
		CCV Data, including closing CCV
	Raw QC Data	BFB Data
		Blank Data
		LCS Data

2.9 Preliminary Results

The Form Is data results shall be submitted for all samples in one SDG of a Case. The Contractor shall clearly identify the Preliminary Results by labeling each Form I and Form I TIC as "Preliminary Results" under each form title.

2.10 GC/MS Electronic Deliverables

The Contractor shall adhere to the requirements in Exhibit H.

3.0 FORMS INSTRUCTIONS

3.1 Introduction

This section includes specific instructions for completing the data reporting forms required under the contract. Each of the forms are specific to a given fraction The Contractor shall submit only those forms pertaining to the fractions analyzed for a given sample(s).

3.2 General Information

The Contractor shall report values on the hardcopy forms according to the individual form instructions in this section. For example, results for concentrations of volatile target compounds shall be reported to two significant figures if the value is greater than or equal to 0.5. Values that exceed the maximum length allowed shall be reported to the maximum possible, maintaining the specified decimal place. Unless otherwise specified, all values must be reported to at least two significant figures.

3.2.1 The data reporting forms presented in Section 4 have been designed in conjunction with the computer-readable data format specified in Exhibit H. Information entered on these forms shall **not** exceed the size of the field given on the form, including such laboratory-generated items as "Lab Name" and "Lab Sample ID".

3.2.2 When submitting data, the Contractor shall reproduce **all** characters that appear on the data reporting forms in Section 4. The format of the forms submitted shall provide exactly the same information as that shown in the contract. No information may be added, deleted, or moved from its specified position without prior written approval from the Task Order Project Officer (TOPO). The names of the various fields and compounds (i.e., "Lab Code", "Chloromethane") shall appear as they do on the forms in the contract, including the options specified in the form.

3.2.3 If an entry does not fill the entire blank space provided on the form, null characters shall be used to remove the remaining underscores that comprise the blank line. However, the Contractor shall not remove the underscores or vertical bars that delineate "boxes" on the forms. The only exception would be those underscores at the bottom of a "box" that are intended as a data entry line.

3.3 Header Information

Seven pieces of information are common to the header section of each data reporting form: Laboratory Name (Lab Name); Contract; Laboratory Code (Lab Code); Case Number; Modification Reference Number (Mod. Ref. No.); Task Order Number (TO No.); and Sample Delivery Group (SDG) Number (SDG No.). Except as noted for Mod. Ref. No. and TO No., this information shall be entered on every form and shall match on every form.

3.3.1 Laboratory Name

The "Lab Name" shall be the name chosen by the Contractor to identify the laboratory. It shall not exceed 25 characters.

3.3.2 Contract

The "Contract" refers to the number of the USEPA contract under which the analyses were performed.

3.3.3 Laboratory Code

The "Lab Code" is an alphabetical abbreviation of up to six letters, as assigned by USEPA, to identify the laboratory and aid in data processing. This Laboratory Code will be assigned by USEPA at the time a contract is awarded, and shall not be modified by the Contractor, except at the direction of USEPA. If a change of name or ownership occurs at the laboratory, the Laboratory Code will remain the same until the Contractor is directed by USEPA to use another Laboratory Code.

3.3.4 Case Number

The "Case No." is the Sample Management Office (SMO)-assigned Case Number (to five characters) associated with the sample. This number is reported on the Traffic Report/Chain of Custody Record (TR/COC).

3.3.5 Modification Reference Number

The "Mod. Ref. No." is the USEPA-assigned number for analyses performed under the modified analysis clause in Exhibit A, Section 4.2.2.11. If sample analyses are performed under the modified analysis clause, the Contractor shall list both the Case Number and the Modification Reference Number on all forms. If there are no modified analysis requirements, leave the "Mod. Ref. No." field blank.

3.3.6 SDG Number

The "SDG No." field is for the SDG Number. It is the designated Sample Number of a field sample assigned to the SDG and shall be unique for each SDG within a Case. When several samples are received together in the first SDG shipment, the SDG Number shall be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

3.3.7 Task Order Number

The "TO No." field is for the Task Order Number. It is the number assigned to the Task Order under which the samples were ordered.

3.3.8 Sample Number

The "Designated Sample No." appears either in the header information of the form, or as the left column of a table summarizing data from a number of samples. When the Designated Sample Number is entered in the box in the upper right-hand corner of Form I, Form III, Form IV, or Form V, it should be centered.

3.3.8.1 The Contractor shall identify **all** samples, including: dilutions; re-analyses; Laboratory Control Samples (LCSs); blanks; instrument performance check; and standards with an EPA Sample Number. For field samples, the designated Sample Number is the unique identifying number given on the TR/COC that accompanied that sample. In order to facilitate data assessment, the Contractor shall use the following sample suffixes:

XXXXX = Designated Sample Number

XXXXXRE = Reanalyzed (re-injected) sample.

XXXXXDL = The suffix DL is appended to the designated Sample Number to indicate that the analytical results are a result of a dilution of the original analysis (reported as EPA Sample XXXXX). See Exhibit D for dilution requirements.

XXXXXDL2 = Samples analyzed at a secondary dilution.

XXXXXDL3 = Samples analyzed at a third dilution.

3.3.8.2 For blanks, the Contractor shall use the following identification scheme for the designated Sample Number:

- Volatile method blanks shall be identified as VBLK##. The designated Sample Number shall be unique for each blank within an SDG. Within a fraction, the Contractor shall achieve this by replacing the two-character suffix (##) of the identifier with one or two characters or numbers, or a combination of both. For example, possible identifiers for blanks would be VBLK1, VBLK2, VBLKA1, VBLKB2, VBLK10, VBLKAB, etc.

3.3.8.3 The designated Sample Number shall be unique for each LCS within the SDG. The LCSs shall be identified as: Volatiles LCS - VLCS##

3.3.8.4 Volatile instrument performance checks shall be identified as BFB##

BFB = Bromofluorobenzene (instrument performance check compound for Volatiles analysis).

= One or two characters, numbers, or combinations of both to create a unique EPA Sample Number within an SDG.

3.3.8.5 Volatile standards shall be identified as VSTD***##, where:

STD = Standard.

*** = Concentration of volatile standards in ppbv.

= One or two characters, numbers, or combinations of both to create a unique EPA Sample Number within an SDG.

3.3.9 Other Common Fields

Several other pieces of information are common to many of the data reporting forms. These include sample volume, Laboratory Sample Identifier, and Laboratory File Identifier.

3.3.9.1 The "Sample Volume" field is used for volatile samples and associated calibration standards to describe the total volume of sample or calibration standard that is pulled through the trap. Enter the volume in mL or L to three significant figures.

3.3.9.2 The Laboratory Sample Identifier is a unique laboratory-generated internal identifier pertaining to a particular analysis. The Contractor must enter the Laboratory Sample Identifier using alpha-numeric characters in the "Lab Sample ID" field. The Contractor may use the designated Sample Number as the Laboratory Sample Identifier.

3.3.9.3 The Laboratory File Identifier is the unique laboratory-generated name of the GC/MS data system file containing information pertaining to a particular analysis. The Contractor must enter the Laboratory File Identifier using alpha-numeric characters in the "Lab File ID" field.

3.3.9.4 The "Instrument ID" field is common to the forms containing calibration data. The identifier used by the Contractor shall include some indication of the manufacturer and/or model of the instrument, and shall contain additional characters that differentiate between all instruments of the same type in the laboratory.

3.3.9.5 Forms IV, V, and VIII contain a field labeled “Page ___ of __” in the bottom left-hand corner. If the number of entries required on any of these forms exceeds the available space, continue entries on another copy of the same fraction-specific form, duplicating all header information. If a second page is required, number the pages consecutively (i.e., "Page 1 of 2" and "Page 2 of 2"). If a second page is **not** required, number the page "Page 1 of 1".

3.3.10 Rounding Rule

For rounding off numbers to the appropriate level of precision, the Contractor shall follow these rules. If the figure following those to be retained is less than 5, drop it (round down). If the figure is greater than or equal to 5, drop it and increase the last digit to be retained by 1 (round up).

3.4 Volatile Organics Analysis Data Sheet (Form I)

3.4.1 Purpose

This form is used for tabulating and reporting sample analysis, including dilutions, reanalysis, blanks, and LCS results for target compounds and TICs. If all analyses are not required for analysis, only the pages for the fractions required shall be submitted. For example if only volatiles SCAN analysis is requested with no TICs, only Forms VOA-1 and VOA-2 would be needed for sample results. Additional Form I's would be needed for reporting the LCS, method blanks, etc. in the appropriate section of the data package.

3.4.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.4.2.1 Enter the GC Column Identifier in the "GC Column" field on Forms I VOA-1, VOA-2, VOA-SIM, VOA-TIC, VOA-Canister-1, VOA-Canister-2, VOA-Canister-SIM, and VOA-Canister-TIC and the internal diameter in mm, to two decimal places, in the "ID" field.

3.4.2.2 Enter the date of sample receipt at the laboratory, as noted on the TR/Chain of Custody Record [i.e., the Validated Time of Sample Receipt (VTSR)], in the "Date Received" field. The date shall be entered as MM/DD/YYYY.

3.4.2.3 Complete the "Date Analyzed" fields in the same format (MM/DD/YYYY). The date of sample receipt will be compared with the extraction and analysis dates of each fraction to ensure that contract holding times were not exceeded.

3.4.2.4 If a sample has been diluted for analysis, enter the DF value to one decimal place in the "Dilution Factor" field (i.e., a DF of 1 will be reported as 1.0; DF of 10 will be reported as 10.0).

3.4.2.5 For positively identified target compounds, the Contractor shall report the concentrations as **uncorrected** for blank contaminants.

3.4.2.6 Report all analytical results to two significant figures (i.e., if the value is 9.7, report 9.7; if the value is 10.3, report 10).

3.4.2.7 Enter the concentration in the "ppbv" and "ug/m^3" fields.

3.4.2.8 Under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. When reporting results to USEPA, the Contractor shall use these contract-specific qualifiers. The Contractor shall not modify the qualifiers. Up to five qualifiers may be reported on Form I for each compound. The Contractor is encouraged to use additional flags or footnotes (see the X qualifier).

The USEPA-defined qualifiers to be used are:

U: This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL) shall be adjusted according to the equation listed in Exhibit D. CRQLs are listed in Exhibit C.

J: This flag indicates an estimated value. This flag is used when: (1) estimating a concentration for Tentatively Identified Compounds (TICs) where a 1:1 response is assumed; and (2) the mass spectral and Retention Time (RT) data indicate the presence of a compound that meets the GC/MS identification criteria, and the result is less than the adjusted CRQL but greater than zero; and For example, if the sample's adjusted CRQL is 5.0 µg/L, but a concentration of 3.0 µg/L is calculated, report it as 3.0J.

N: This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search and must be used in combination with the J flag. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, or for an "unknown" (no matches ≥ 85%), the "N" flag is not used.

B: This flag is used when the analyte is found in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a TIC as well as for a positively identified target compound.

The combination of flags "BU" or "UB" is expressly prohibited. Blank contaminants are flagged "B" only when they are detected in the sample.

E: This flag identifies compounds whose response exceeds the response of the highest standard in the initial calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the response of the highest standard in the initial calibration, the sample or extract shall be diluted and reanalyzed according to the specifications in Exhibit D. Exceptions are also noted in Exhibit D. All such compounds with responses greater than the response of the highest standard in the initial calibration shall have the result flagged with an "E" on Form I for the original analysis. The results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have "DL" suffix appended to the Sample Number.

D: If a sample or extract is reanalyzed at a DF greater than 1 (e.g., when the response of an analyte exceeds the response of the highest standard in the initial calibration), the DL suffix is appended to the Sample Number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The "D" flag is not applied to compounds which are not detected in the sample analysis (i.e., compounds reported with the adjusted CRQL and the "U" flag).

NOTE 2: Separate Form Is are required for reporting the original analysis (designated Sample No. XXXXX) and the more diluted sample analysis (designated Sample No. XXXXXDL). The results from both analyses cannot be combined on a single Form I.

X: Other specific flags may be required to properly define the results. If used, the flags shall be fully described in the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to represent a combination of several flags. The laboratory-defined flags **are limited to** "X", "Y", and "Z".

3.5 Volatile Organics Analysis Data Sheet: Tentatively Identified Compounds (Form I VOA-TIC)

3.5.1 Purpose

This form is used to report analysis results for non-target compounds (e.g., compounds not listed in Exhibit C), excluding internal standards. See Exhibit D for instructions on identification and quantitation. If TICs are requested, the Contractor shall submit Form I VOA-TIC for every analysis, including required dilutions, reanalyses, and blanks, even if no TICs are found.

3.5.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions in addition to the instructions in Section 3.4.

3.5.2.1 Report all TICs including Chemical Abstracts Service (CAS) Number (if applicable), compound name, RT, and the estimated concentration as uncorrected for blank contaminants. TICs shall be reported in chronological order for blank contaminants. TICs shall be reported in chronological order with respect to RTs. Report to two significant figures (criteria for reporting TICs are given in Exhibit D, Section 11) in ppbv units only. RT shall be reported in minutes and decimal minutes, **not** seconds or minutes:seconds.

3.5.2.2 Peaks that are suspected to be straight-chained, branched, or cyclic alkanes, and are alone or part of an alkane series, shall be library searched. Documentation for the tentative identification must be supplied. Alkane concentrations will be summed and reported as "total alkanes" on Form I VOA-TIC. This is not to include the target compound n-octane. Other target alkanes need to be listed - hexane, heptane, cyclohexane, cumene, etc.

3.5.2.3 If the name of a compound exceeds the 28 spaces in the TIC column, truncate the name to 28 characters. If the compound is an unknown, restrict the description to no more than 28 characters (e.g., unknown hydrocarbon).

3.6 Laboratory Control Sample (LCS) Recovery (Form II)

3.6.1 Air Volatile Organics LCS Recovery and Precision (Form II VOA-1, VOA-2, VOA-SIM)

3.6.1.1 Purpose

This form is used to report the results of the analyses of LCSs.

3.6.1.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.6.1.2.1 If the LCS mixture is purchased by the Contractor from a third party, report the identification number used by the third party to identify the LCS lot, if available, in the "LCS Lot No." field. If the LCS mixture was prepared in-house, leave this entry blank.

3.6.1.2.2 Enter the date analyzed, and Instrument ID. All dates should be entered in MM/DD/YYYY format.

3.6.1.2.3 Under the "True LCS conc." column enter the certified LCS concentration in ppbv. Under the "LCS % rec." column, enter the percent recovery of each compound as calculated according to Exhibit D. Under the "True Cont. Calib conc." column enter the true concentration of the compound in the continuing calibration check standard. Under the "Cont Calib % rec." column, enter the percent recovery of each compound as calculated according to Exhibit D. Calculate the relative percent difference (RPD) according to Exhibit D and enter in the "RPD" column. Flag all Percent Recoveries and RPDs outside the QC limits with an asterisk ("*"). The asterisk must be placed in the last space of the Percent Recovery column or RPD column as appropriate.

3.7 Volatile Organics Method Blank Summary (Form III VOA)

3.7.1 Purpose

This form summarizes the samples associated with each method blank analysis. The Contractor shall submit the appropriate Form III for each blank.

3.7.2 Instructions

Complete the header information according to the instructions in Section 3.3. The designated Sample Number entered in the upper right-hand corner shall be the same number entered on Form I for the blank. Complete the remainder of the form using the following instructions.

3.7.2.1 Complete the following fields: "Instrument ID", "Calibration Date(s)", and "Calibration Time(s)". Dates shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.7.2.2 Identify the purge volume, GC column, internal diameter and length in the appropriate fields.

3.7.2.3 Summarize the samples, including LCSs, associated with a given method blank in the table, entering the designated Sample Number and Laboratory Sample Identifier. Enter the Laboratory File Identifier, Canister Number, and the date and time of analysis of each sample.

3.7.2.5 Number all pages as described in Section 3.3.

3.8 Volatile Organics Instrument Performance Check (Form IV VOA)

3.8.1 Purpose

This form is used to report the results of the instrument performance check for the volatile fraction and to summarize the date and time of analyses of samples, including dilutions, re-analyses, standards, blanks, and LCSs associated with each analysis of the Instrument Performance Check solution.

3.8.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.8.2.1 Enter the date and time of injection of the instrument performance check solution [4-Bromofluorobenzene (BFB) for volatiles--CAS Number 460-00-4]. The date shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.8.2.2 Identify the GC column and internal diameter.

3.8.2.3 For each ion listed on the form, enter the percent relative abundance in the right-hand column of the first table. Report relative abundances to the number of significant figures given for each ion in the ion abundance criteria column.

NOTE: One or more of the high mass ions may exceed the abundance of the ion listed on the form as the nominal base peak [mass-to-charge ratio (m/z) 95 for BFB]. Despite this possibility, all ion abundances shall be normalized to the nominal base peak, m/z 95.

3.8.2.4 All relative abundances shall be reported as a number. If the relative abundance is zero, enter "0", not a dash or other non-numeric character. Where parentheses appear, compute the percentage of the ion abundance of the mass given in the appropriate footnote, and enter that value in the parentheses.

3.8.2.5 In the lower table, list all samples, including dilutions and re-analyses, standards, blanks, and LCSs analyzed under that instrument performance check in chronological order, by time of analysis (using military time). Refer to Section 3.3.7 for specific instructions for identifying standards and blanks.

3.8.2.6 Complete the following fields for all standards, samples, including dilutions and reanalyses, blanks, and LCSs: "EPA SAMPLE NO.", "LAB SAMPLE ID", "LAB FILE ID", "DATE ANALYZED", and "TIME ANALYZED".

3.8.2.7 All Form Vs listing samples, including dilutions and reanalyses, standards, blanks, and LCSs must contain an opening and closing Continuing Calibration Verification (CCV) in Form VI VOA. If samples are run after an initial calibration sequence, the initial calibration may be substituted for an opening CCV.

3.8.2.8 Number all pages as described in Section 3.3.

3.9 Volatile Organics Initial Calibration Data (Form V VOA-1, VOA-2, VOA-SIM)

3.9.1 Purpose

After a GC/MS system has undergone an initial five-point calibration at the specific concentration levels described in Exhibit D, and after all initial calibration criteria have been met, the Contractor shall complete and submit these forms for each volatile target compound initial calibration performed that is relevant to the samples, including dilutions and reanalyses, blanks, and LCSs in the SDG, regardless of when that calibration was performed. A calibration containing more than five points may be performed but only five points are to be reported on the Forms. The points that can be excluded are at the extreme concentration levels (below CRQL or above the required high concentration level).

3.9.2 Instructions

Complete the header information according to the instructions in Section 3.3. Enter the Case Number and SDG Number for the current data package, regardless of the original Case for which the initial calibration was performed. Complete the remainder of the form using the following instructions.

3.9.2.1 Enter the date(s) of the calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.9.2.2 Enter the injection times of the first and last of the standards analyzed in the "Calibration Times" field. Times shall be reported using military time.

3.9.2.3 Complete the "Sample volume", "Instrument ID", "GC Column" and "ID" fields.

3.9.2.4 Enter the concentration of each of the five standards after "RRF" in the space provided. Then enter the Laboratory File Identifier for the standards after the "=" in the space provided.

3.9.2.5 Complete the RRF data for the five calibration points, and then calculate and report the Mean Relative Response Factor ($\overline{RRF}$) for all target compounds.

3.9.2.6 The Contractor shall report the Percent Relative Standard Deviation (%RSD) for **all** compounds. See Exhibit D for equations.

3.10 Volatile Organics Continuing Calibration Data (Form VI VOA-1, VOA-2, VOA-SIM)

3.10.1 Purpose

This form is used to report the calibration verification of the GC/MS system by the analysis of specific calibration verification standards. Form VII is required for opening and closing CCVs for each 24-hour time period for target compound analyses. If analysis of volatiles using the SIM technique is requested, then an additional Form VII VOA shall be submitted for opening and closing CCVs for each 24-hour time period that samples are analyzed

3.10.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.10.2.1 Enter the date (Calibration Date:) and time (Time:) of the CCV and the date(s) (Init. Calib. Dates:) and time(s) (Init. Calib. Times:) of the initial calibration (give inclusive dates if the initial calibration is performed over more than one date). Dates shall be entered as MM/DD/YYYY. Times shall be reported using military time.

3.10.2.2 Enter Instrument ID, sample volume, units, GC column identifier, internal diameter, and column length. Also enter the Sample Number for the CCV standard on Form VII.

3.10.2.3. Using the appropriate initial calibration, enter the Mean Relative Response Factor ($\overline{RRF}$) for each target compound.

3.10.2.4 Report the concentration of the CCV standard in the space provided, after "RRF".

3.10.2.5 Report the RRF for each target from the CCV standard analysis.

3.10.2.6 Under "MIN RRF" enter the appropriate value from Exhibit D. For an opening CCV or a closing CCV that is also used as an opening CCV for the next "12-hour period", the appropriate values can be found in Exhibit D. For a closing CCV enter "0.010" for all compounds. For a CCV that is both an opening and closing CCV, enter the values for an opening CCV.

This SOW does not have a closing CCV requirement.

3.10.2.7 Calculate the Percent Difference (%D) for all compounds. See Exhibit D for equations.

3.10.2.8 Under MAX %D enter the appropriate value from Exhibit D. For an opening CCV and a closing CCV that is also an opening CCV for the next 12-hour period, the appropriate values can be found in Exhibit D. For a closing CCV enter "50" for all target compounds.

This SOW does not have a closing CCV requirement.

3.11 Internal Standard Area and Retention Time (RT) Summary (Form VII VOA, VOA-SIM)

3.11.1 Purpose

This form is used to summarize the peak areas and RTs of the internal standards added to all calibration standards and samples, including: dilutions, re-analyses, blanks, and LCSs. The data are used to determine when changes in internal standard responses will adversely affect quantitation of target compounds. This form shall be completed each time a CCV is performed, or when samples are analyzed under the same GC/MS instrument performance check as an initial calibration.

3.11.2 Instructions

Complete the header information according to Section 3.3. Complete the remainder of the form using the following instructions. If samples are analyzed immediately following an initial calibration, before another instrument performance check and a CCV, Form VII shall be completed on the basis of the internal standard areas of the midpoint initial calibration standard. Use the date and time of analysis of this standard and the Laboratory File Identifier and areas in place of those of a CCV standard.

3.11.2.1 Enter the date and time of analysis of the continuing calibration standard. The date shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.11.2.2 Enter the Instrument ID, GC column identifier, internal diameter, and column length.

3.11.2.3 From the results of the analysis of the CCV standard, enter the area measured for each internal standard and its RT (in decimal minutes) under the appropriate column in the "24 HOUR STD" row.

3.11.2.4 For each internal standard, calculate the upper and lower limits of the area of the particular standard. Report these values in the "UPPER LIMIT" and "LOWER LIMIT" rows, respectively. Calculate the upper limit of the RT as the retention of the internal standard, and the lower limit of the RT as the RT in the standard minus 0.50 minutes (30 seconds).

3.11.2.5 For each sample, including dilutions, re-analyses, blanks, and LCSs, analyzed under a given CCV, enter the designated Sample Number and the area measured for each internal standard and its RT. If the internal standard area is outside the upper or lower limits calculated in Section 3.11.2.4, flag that area with an asterisk ("*"). The asterisk shall be placed in the far right-hand space of the box for each internal standard area, directly under the "#" symbol. Similarly, flag the RT of any internal standard that is outside the limits with an asterisk.

3.11.2.6 Number all pages as described in Section 3.3.

TABLE
Volatile Internal Standards

	Volatile Internal Standards	CAS Number
IS1	Bromochloromethane (BCM)	74-97-5
IS2	Chlorobenzene-d_5 (CBZ)	3114-55-4
IS3	1,4-Difluorobenzene (DFB)	540-36-3

3.12 Sample Log-In Sheet (Form DC-1)

3.12.1 Purpose

This form is used to document the receipt and inspection of sample containers and samples. One original Form DC-1 is required for each sample shipping container (only the hardcopy form is required). If the samples in a single sample shipping container are assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the SDG of the lowest alphanumeric number, and a copy of Form DC-1 shall be placed with the deliverables for the other SDGs. The copies shall be identified as "copy(ies)", and the location of the original shall be noted on the copies.

3.12.2 Instructions

3.12.2.1 Sign and date the airbill. If an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company’s electronic tracking information.

3.12.2.2 Complete the header information on the form, including the log-in date.

3.12.2.3 Examine the shipping container and record the presence/absence of custody seals and their condition (e.g., intact, broken) in Item 1.

3.12.2.4 Record the Custody Seal Numbers in Item 2.

3.12.2.5 Open the container, remove the enclosed sample documentation, and record the presence/absence of USEPA forms, SMO forms (i.e., TR/Chain of Custody Records, Packing Lists), and airbills or airbill stickers in Items 3 and 4. Specify if there is an airbill present or an airbill sticker in Item 4. Record the airbill or sticker number in Item 5.

3.12.2.6 Remove the samples from the shipping container(s), examine the samples and the sample tags (if present), and record the condition of the sample canisters (e.g., intact, leaking) and presence or absence of sample tags in Items 6 and 7.

3.12.2.7 Review the sample shipping documents and compare the information recorded on all the documents and samples and circle the appropriate answer in Item 10.

3.12.2.8 The log-in date should be recorded at the top of Form DC-1; record the date and time of container receipt at the laboratory in Items 11 and 12.

3.12.2.9 If there are no problems observed during receipt, sign and date (include the time) Form DC-1 and the TR/COC, and record the Sample Numbers on Form DC-1 in the "EPA Sample #" column.

3.12.2.10 Record the appropriate Sample Tag Numbers and assigned laboratory numbers, if applicable.

3.12.2.11 Any comments should be made in the "Remarks" column.

3.12.2.12 Record the fraction designation (if appropriate) and the specific area designation in the "Sample Transfer" block located in the bottom left corner of Form DC-1. Sign and date the "Sample Transfer" block.

3.12.2.13 Cross out unused columns and spaces.

3.12.2.14 If there are problems observed during receipt or an answer marked with an asterisk (e.g., "absent*") was circled, contact the TOPO and document the contact as well as resolution of the problem on a Communication Log. Following resolution, sign and date the forms and note, where appropriate, the resolution of the problem.

3.13 Complete SDG File (CSF) Inventory Sheet (Form DC-2)

3.13.1 Purpose. Form DC-2 is used to record the inventory of documents in the original Sample Data Package sent to the USEPA Region.

3.13.2 Instructions

3.13.2.1 Organize all USEPA CSF documents as described in Section 2.6. Assemble the documents in the order specified on Form DC-2 and Section 2.6, and stamp each page with a consecutive number; however, do not number Form DC-2. Inventory the CSF by reviewing the document numbers and recording page number ranges in the columns provided on Form DC-2. The Contractor shall verify and record, in the "Comments" section on Form DC-2, all intentional gaps in the page numbering sequence (e.g., "page numbers not used, XXXX - XXXX, YYYY - YYYY"). If there are no documents for a specific document type, enter "NA" in the empty space.

3.13.2.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly-defined category. The Contractor shall review Form DC-2 to determine if it is most appropriate to place them under categories 8, 9, 10, or 11. Category 11 should be used if there is no appropriate previous category. These types of documents should be described or listed in the blanks under each appropriate category on Form DC-2.

3.13.2.3 If it is necessary to insert new or inadvertently omitted documents, the Contractor shall identify the documents with unique accountable numbers and record the unique accountable numbers and the locations of the documents in the CSF (in the "Other Records" section on Form DC-2).

3.14 Canister Sampling Field Test Data Sheet (Form DC-3)

3.14.1 Purpose

Form DC-3 is used to record the inventory of canister sampling from field test data. This form is a routine deliverable and used by both the laboratory and the field samplers to document the conditions during the collection of the sample. These conditions will be used by the lab to calculate the concentration of VOC in the air samples.

3.14.2 Instructions

3.14.2.1 Complete all the header information in the General Information fields.

3.14.2.2 Record the temperature, pressure, sampling time and flow rates at the start and finish. Times shall be reported using military time.

3.14.2.3 Record the sampling system certification and quarterly recertification dates. Dates shall be entered as MM/DD/YYYY.

3.14.2.4 Record the laboratory information.

4.0 DATA REPORTING FORMS

The data reporting forms are shown on the following pages.

EPA SAMPLE NO.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Date Received: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
115-07-1	Propylene			
75-71-8	Dichlorodifluoromethane (Freon 12)			
76-14-2	Dichlorotetrafluoroethane (Freon 114)			
74-87-3	Chloromethane			
75-01-4	Vinyl chloride			
106-99-0	1,3-Butadiene			
74-83-9	Bromomethane			
75-00-3	Chloroethane			
64-17-5	Ethanol			
75-69-4	Trichlorofluoromethane (Freon 11)			
75-35-4	1,1-Dichloroethene			
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)			
67-64-1	Acetone			
67-63-0	2-Propanol (Isopropanol)			
75-15-0	Carbon disulfide			
75-09-2	Methylene chloride			
156-60-5	trans-1,2-Dichloroethene			
110-54-3	n-Hexane			
1634-04-4	Methyl tert-butyl ether			
75-34-3	1,1-Dichloroethane			
156-59-2	cis-1,2-Dichloroethene			
126-99-8	2-Chloro-1,3-butadiene (Chloroprene)			
78-93-3	2-Butanone			
109-99-9	Tetrahydrofuran			
67-66-3	Chloroform			
71-55-6	1,1,1-Trichloroethane			
110-82-7	Cyclohexane			
56-23-5	Carbon tetrachloride			
141-78-6	Ethyl Acetate			
108-05-4	Vinyl Acetate			
71-43-2	Benzene			
107-06-2	1,2-Dichloroethane			
142-82-5	n-Heptane			
123-91-1	1,4-Dioxane			
79-01-6	Trichloroethene			

EPA SAMPLE NO.

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Date Received: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
78-87-5	1,2-Dichloropropane			
75-27-4	Bromodichloromethane			
10061-01-5	cis-1,3-Dichloropropene			
108-10-1	4-Methyl-2-pentanone			
108-88-3	Toluene			
10061-02-6	trans-1,3-Dichloropropene			
79-00-5	1,1,2-Trichloroethane			
127-18-4	Tetrachloroethene			
591-78-6	2-Hexanone			
124-48-1	Dibromochloromethane			
106-93-4	1,2-Dibromoethane			
111-65-9	n-Octane			
108-90-7	Chlorobenzene			
100-41-4	Ethylbenzene			
95-47-6	o-Xylene			
179601-23-1	m,p-Xylene			
100-42-5	Styrene			
75-25-2	Bromoform			
98-82-8	Cumene			
79-34-5	1,1,2,2-Tetrachloroethane			
103-65-1	Propylbenzene			
622-96-8	4-Ethyltoluene			
108-67-8	1,3,5-Trimethylbenzene			
95-63-6	1,2,4-trimethylbenzene			
100-44-7	Benzyl Chloride			
541-73-1	1,3-Dichlorobenzene			
106-46-7	1,4-Dichlorobenzene			
95-50-1	1,2-Dichlorobenzene			
87-68-3	Hexachlorobutadiene			
120-82-1	1,2,4-Trichlorobenzene			

EPA SAMPLE NO.

1C – FORM I VOA-SIM
TRACE VOLATILE ORGANICS SIM ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Date Received: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
75-01-4	Vinyl chloride			
75-35-4	1,1-Dichloroethene			
156-60-5	trans-1,2-Dichloroethene			
1634-04-4	Methyl-tert-butyl ether			
75-34-3	1,1-Dichloroethane			
156-59-2	cis-1,2-Dichloroethene			
71-55-6	1,1,1-Trichloroethane			
71-43-2	Benzene			
107-06-2	1,2-Dichloroethane			
79-01-6	Trichloroethene			
108-88-3	Toluene			
79-00-5	1,1,2-Trichloroethane			
127-18-4	Tetrachloroethene			
100-41-4	Ethylbenzene			
95-47-6	o-Xylene			
179601-23-1	m,p-Xylene			
79-34-5	1,1,2,2-Tetrachloroethane			

EPA SAMPLE NO.

1D – FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Date Received: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

EPA SAMPLE NO.

1E – FORM I VOA-CANISTER1
VOLATILE ORGANICS SUMMA CANISTER
CERTIFICATION DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____Date Canister Cleaned: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
115-07-1	Propylene			
75-71-8	Dichlorodifluoromethane (Freon 12)			
76-14-2	Dichlorotetrafluoroethane (Freon 114)			
74-87-3	Chloromethane			
75-01-4	Vinyl chloride			
106-99-0	1,3-Butadiene			
74-83-9	Bromomethane			
75-00-3	Chloroethane			
64-17-5	Ethanol			
75-69-4	Trichlorofluoromethane (Freon 11)			
75-35-4	1,1-Dichloroethene			
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)			
67-64-1	Acetone			
67-63-0	2-Propanol (Isopropanol)			
75-15-0	Carbon disulfide			
75-09-2	Methylene chloride			
156-60-5	trans-1,2-Dichloroethene			
110-54-3	n-Hexane			
1634-04-4	Methyl tert-butyl ether			
75-34-3	1,1-Dichloroethane			
156-59-2	cis-1,2-Dichloroethene			
126-99-8	2-Chloro-1,3-butadiene (Chloroprene)			
78-93-3	2-Butanone			
109-99-9	Tetrahydrofuran			
67-66-3	Chloroform			
71-55-6	1,1,1-Trichloroethane			
110-82-7	Cyclohexane			
56-23-5	Carbon tetrachloride			
141-78-6	Ethyl Acetate			
108-05-4	Vinyl Acetate			
71-43-2	Benzene			
107-06-2	1,2-Dichloroethane			
142-82-5	n-Heptane			
123-91-1	1,4-Dioxane			
79-01-6	Trichloroethene			

EPA SAMPLE NO.

1F – FORM I VOA-CANISTER2
VOLATILE ORGANICS SUMMA CANISTER
CERTIFICATION DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____Date Canister Cleaned: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
78-87-5	1,2-Dichloropropane			
75-27-4	Bromodichloromethane			
10061-01-5	cis-1,3-Dichloropropene			
108-10-1	4-Methyl-2-pentanone			
108-88-3	Toluene			
10061-02-6	trans-1,3-Dichloropropene			
79-00-5	1,1,2-Trichloroethane			
127-18-4	Tetrachloroethene			
591-78-6	2-Hexanone			
124-48-1	Dibromochloromethane			
106-93-4	1,2-Dibromoethane			
111-65-9	n-Octane			
108-90-7	Chlorobenzene			
100-41-4	Ethylbenzene			
95-47-6	o-Xylene			
179601-23-1	m,p-Xylene			
100-42-5	Styrene			
75-25-2	Bromoform			
98-82-8	Cumene			
79-34-5	1,1,2,2-Tetrachloroethane			
103-65-1	Propylbenzene			
622-96-8	4-Ethyltoluene			
108-67-8	1,3,5-Trimethylbenzene			
95-63-6	1,2,4-trimethylbenzene			
100-44-7	Benzyl Chloride			
541-73-1	1,3-Dichlorobenzene			
106-46-7	1,4-Dichlorobenzene			
95-50-1	1,2-Dichlorobenzene			
87-68-3	Hexachlorobutadiene			
120-82-1	1,2,4-Trichlorobenzene			

EPA SAMPLE NO.

1G – FORM I VOA-CANISTER3
VOLATILE ORGANICS SIM SUMMA CANISTER
CERTIFICATION DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____Date Canister Cleaned: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

CAS NO.	COMPOUND	ppbv	ug/m^3	Q
75-01-4	Vinyl chloride			
75-35-4	1,1-Dichloroethene			
156-60-5	trans-1,2-Dichloroethene			
1634-04-4	Methyl-tert-butyl ether			
75-34-3	1,1-Dichloroethane			
156-59-2	cis-1,2-Dichloroethene			
71-55-6	1,1,1-Trichloroethane			
71-43-2	Benzene			
107-06-2	1,2-Dichloroethane			
79-01-6	Trichloroethene			
108-88-3	Toluene			
79-00-5	1,1,2-Trichloroethane			
127-18-4	Tetrachloroethene			
100-41-4	Ethylbenzene			
95-47-6	o-Xylene			
179601-23-1	m,p-Xylene			
79-34-5	1,1,2,2-Tetrachloroethane			

EPA SAMPLE NO.

1H – FORM I VOA-CANISTER4
VOLATILE ORGANICS TENTATIVELY IDENTIFIED COMPOUNDS
SUMMA CANISTER CERTIFICATION DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____Date Canister Cleaned: _____

Lab File ID: _____ Instr ID:_____Date Analyzed: _____

GC Column: _____ ID: _____(mm) Dilution Factor: _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

2A – FORM II VOA-1
AIR VOLATILE ORGANICS LCS RECOVERY AND PRECISION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Cont Calib Date:_____

Lab File ID: _____ Instr ID:_____ Cont Calib Time:_____

Date Analyzed: _____ LCS Lot No._____

CAS NO.	COMPOUND	True LCS conc. ppbv	LCS % Rec.	True Cont Calib conc. ppbv	Cont Calib % Rec	RPD
115-07-1	Propylene					
75-71-8	Dichlorodifluoromethane (Freon 12)					
76-14-2	Dichlorotetrafluoroethane (Freon 114)					
74-87-3	Chloromethane					
75-01-4	Vinyl chloride					
106-99-0	1,3-Butadiene					
74-83-9	Bromomethane					
75-00-3	Chloroethane					
64-17-5	Ethanol					
75-69-4	Trichlorofluoromethane (Freon 11)					
75-35-4	1,1-Dichloroethene					
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)					
67-64-1	Acetone					
67-63-0	2-Propanol (Isopropanol)					
75-15-0	Carbon disulfide					
75-09-2	Methylene chloride					
156-60-5	trans-1,2-Dichloroethene					
110-54-3	n-Hexane					
1634-04-4	Methyl tert-butyl ether					
75-34-3	1,1-Dichloroethane					
156-59-2	cis-1,2-Dichloroethene					
126-99-8	2-Chloro-1,3-butadiene (Chloroprene)					
78-93-3	2-Butanone					
109-99-9	Tetrahydrofuran					
67-66-3	Chloroform					
71-55-6	1,1,1-Trichloroethane					
110-82-7	Cyclohexane					
56-23-5	Carbon tetrachloride					
141-78-6	Ethyl Acetate					
108-05-4	Vinyl Acetate					
71-43-2	Benzene					
107-06-2	1,2-Dichloroethane					
142-82-5	n-Heptane					
123-91-1	1,4-Dioxane					
79-01-6	Trichloroethene					

2B – FORM II VOA-2
AIR VOLATILE ORGANICS LCS RECOVERY AND PRECISION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Cont Calib Date:_____

Lab File ID: _____ Instr ID:_____ Cont Calib Time:_____

Date Analyzed: _____ LCS Lot No._____

CAS NO.	COMPOUND	True LCS conc. ppbv	LCS % Rec.	True Cont Calib conc. ppbv	Cont Calib % Rec	RPD
78-87-5	1,2-Dichloropropane					
75-27-4	Bromodichloromethane					
10061-01-5	cis-1,3-Dichloropropene					
108-10-1	4-Methyl-2-pentanone					
108-88-3	Toluene					
10061-02-6	trans-1,3-Dichloropropene					
79-00-5	1,1,2-Trichloroethane					
127-18-4	Tetrachloroethene					
591-78-6	2-Hexanone					
124-48-1	Dibromochloromethane					
106-93-4	1,2-Dibromoethane					
111-65-9	n-Octane					
108-90-7	Chlorobenzene					
100-41-4	Ethylbenzene					
95-47-6	o-Xylene					
179601-23-1	m,p-Xylene					
100-42-5	Styrene					
75-25-2	Bromoform					
98-82-8	Cumene					
79-34-5	1,1,2,2-Tetrachloroethane					
103-65-1	Propylbenzene					
622-96-8	4-Ethyltoluene					
108-67-8	1,3,5-Trimethylbenzene					
95-63-6	1,2,4-trimethylbenzene					
100-44-7	Benzyl Chloride					
541-73-1	1,3-Dichlorobenzene					
106-46-7	1,4-Dichlorobenzene					
95-50-1	1,2-Dichlorobenzene					
87-68-3	Hexachlorobutadiene					
120-82-1	1,2,4-Trichlorobenzene					

2C – FORM II VOA-SIM
AIR VOLATILE ORGANICS SIM LCS RECOVERY AND PRECISION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ T.O. No._____Canister No.: _____

Sample vol: _____ (L/mL)_____ Cont Calib Date:_____

Lab File ID: _____ Instr ID:_____ Cont Calib Time:_____

Date Analyzed: _____ LCS Lot No._____

CAS NO.	COMPOUND	True LCS conc. ppbv	LCS % Rec.	True Cont Calib conc. ppbv	Cont Calib % Rec	RPD
75-01-4	Vinyl chloride					
75-35-4	1,1-Dichloroethene					
156-60-5	trans-1,2-Dichloroethene					
1634-04-4	Methyl-tert-butyl ether					
75-34-3	1,1-Dichloroethane					
156-59-2	cis-1,2-Dichloroethene					
71-55-6	1,1,1-Trichloroethane					
71-43-2	Benzene					
107-06-2	1,2-Dichloroethane					
79-01-6	Trichloroethene					
108-88-3	Toluene					
79-00-5	1,1,2-Trichloroethane					
127-18-4	Tetrachloroethene					
100-41-4	Ethylbenzene					
95-47-6	o-Xylene					
179601-23-1	m,p-Xylene					
79-34-5	1,1,2,2-Tetrachloroethane					

EPA SAMPLE NO.

3A – FORM III VOA
VOLATILE ORGANICS METHOD BLANK SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Dates(s): _____

Purge Volume: _____(mL) Calibration Times(s): _____

GC Column: _____ ID: _____(mm) Length: _____(m)

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	CANISTER NUMBER	DATE ANALYZED	TIME ANALYZED
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

COMMENTS: _____

EPA SAMPLE NO.

4A – FORM IV VOA
VOLATILE ORGANICS INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ BFB Injection Date: _____

Instrument ID: _____ BFB Injection Time: _____

GC Column: _____ ID: _____(mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	
75	30.0 - 80.0% of mass 95	
95	Base peak, 100% relative abundance	
96	5.0 - 9.0% of mass 95	
173	Less than 2.0% of mass 174	( )1
174	50.0 - 120% of mass 95	
175	5.0 - 9.0% of mass 174	( )1
176	93.0 - 101% of mass 174	( )1
177	5.0 - 9.0% of mass 176	( )2

1 - Value is %mass 174 2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

EPA SAMPLE NO.

5A – FORM V VOA-1
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Dates(s): _____

Purge Volume: _____(mL) Calibration Times(s): _____

GC Column: _____ ID: _____(mm) Length: _____(m)

LAB FILE ID: _____	RRF ____ =	_____	RRF ____ =	_____
RRF _____ = _____	RRF ____ =	_____	RRF ____ =	_____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	%RSD
Propylene							
Dichlorodifluoromethane (Freon 12)							
Dichlorotetrafluoroethane (Freon 114)							
Chloromethane							
Vinyl chloride							
1,3-Butadiene							
Bromomethane							
Chloroethane							
Ethanol							
Trichlorofluoromethane (Freon 11)							
1,1-Dichloroethene							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)							
Acetone							
2-Propanol (Isopropanol)							
Carbon disulfide							
Methylene chloride							
trans-1,2-Dichloroethene							
n-Hexane							
Methyl tert-butyl ether							
1,1-Dichloroethane							
cis-1,2-Dichloroethene							
2-Chloro-1,3-butadiene (Chloroprene)							
2-Butanone							
Tetrahydrofuran							
Chloroform							
1,1,1-Trichloroethane							
Cyclohexane							
Carbon tetrachloride							
Ethyl Acetate							
Vinyl Acetate							
Benzene							
1,2-Dichloroethane							
n-Heptane							
1,4-Dioxane							
Trichloroethene							

5B – FORM V VOA-2
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Dates(s): _____ _____

Heated Purge: (Y/N) _____ Calibration Times(s): _____ _____

Purge Volume: _____(mL)

GC Column: _____ ID: _____(mm) Length: _____(m)

LAB FILE ID: _____	RRF ____ =	_____	RRF ____ =	_____
RRF _____ = _____	RRF ____ =	_____	RRF ____ =	_____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	%RSD
1,2-Dichloropropane							
Bromodichloromethane							
cis-1,3-Dichloropropene							
4-Methyl-2-pentanone							
Toluene							
trans-1,3-Dichloropropene							
1,1,2-Trichloroethane							
Tetrachloroethene							
2-Hexanone							
Dibromochloromethane							
1,2-Dibromoethane							
n-Octane							
Chlorobenzene							
Ethylbenzene							
o-Xylene							
m,p-Xylene							
Styrene							
Bromoform							
Cumene							
1,1,2,2-Tetrachloroethane							
Propylbenzene							
4-Ethyltoluene							
1,3,5-Trimethylbenzene							
1,2,4-trimethylbenzene							
Benzyl Chloride							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,2-Dichlorobenzene							
Hexachlorobutadiene							
1,2,4-Trichlorobenzene							

5C – FORM V VOA-SIM
VOLATILE ORGANICS SIM INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____

EPA Sample No. (VSTD#####): _____ Init. Calib. Time(s): _____

GC Column: _____ ID: _____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{RRF}$	RRF	MIN RRF	%D	MAX %D
Vinyl chloride					
1,1-Dichloroethene					
trans-1,2-Dichloroethene					
Methyl-tert-butyl ether					
1,1-Dichloroethane					
cis-1,2-Dichloroethene					
1,1,1-Trichloroethane					
Benzene					
1,2-Dichloroethane					
Trichloroethene					
Toluene					
1,1,2-Trichloroethane					
Tetrachloroethene					
Ethylbenzene					
o-Xylene					
m,p-Xylene					
1,1,2,2-Tetrachloroethane					

EPA SAMPLE NO.

6A – FORM VI VOA-1
VOLATILE ORGANICS CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Dates(s): _____

Purge Volume: _____(mL) Calibration Times(s): _____

GC Column: _____ ID: _____(mm) Length: _____(m)

LAB FILE ID: _____	RRF ____ =	_____	RRF ____ =	_____
RRF _____ = _____	RRF ____ =	_____	RRF ____ =	_____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	%RSD
Propylene							
Dichlorodifluoromethane (Freon 12)							
Dichlorotetrafluoroethane (Freon 114)							
Chloromethane							
Vinyl chloride							
1,3-Butadiene							
Bromomethane							
Chloroethane							
Ethanol							
Trichlorofluoromethane (Freon 11)							
1,1-Dichloroethene							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)							
Acetone							
2-Propanol (Isopropanol)							
Carbon disulfide							
Methylene chloride							
trans-1,2-Dichloroethene							
n-Hexane							
Methyl tert-butyl ether							
1,1-Dichloroethane							
cis-1,2-Dichloroethene							
2-Chloro-1,3-butadiene (Chloroprene)							
2-Butanone							
Tetrahydrofuran							
Chloroform							
1,1,1-Trichloroethane							
Cyclohexane							
Carbon tetrachloride							
Ethyl Acetate							
Vinyl Acetate							
Benzene							
1,2-Dichloroethane							
n-Heptane							
1,4-Dioxane							
Trichloroethene							

6B – FORM VI VOA-2
VOLATILE ORGANICS CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

EPA Sample No. (VSTD#####): _____ Init. Calib. Time(s): _____ _____

Heated Purge: (Y/N): _____ GC Column: _____ ID: _____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{RRF}$	RRF	MIN RRF	%D	MAX %D
1,2-Dichloropropane					
Bromodichloromethane					
cis-1,3-Dichloropropene					
4-Methyl-2-pentanone					
Toluene					
trans-1,3-Dichloropropene					
1,1,2-Trichloroethane					
Tetrachloroethene					
2-Hexanone					
Dibromochloromethane					
1,2-Dibromoethane					
n-Octane					
Chlorobenzene					
Ethylbenzene					
o-Xylene					
m,p-Xylene					
Styrene					
Bromoform					
Cumene					
1,1,2,2-Tetrachloroethane					
Propylbenzene					
4-Ethyltoluene					
1,3,5-Trimethylbenzene					
1,2,4-trimethylbenzene					
Benzyl Chloride					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
1,2-Dichlorobenzene					
Hexachlorobutadiene					
1,2,4-Trichlorobenzene					

6C – FORM VI VOA-SIM
TRACE VOLATILE ORGANICS SIM CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date: _____ Time: _____

Lab File ID: _____ Init. Calib. Date(s): _____

EPA Sample No. (VSTD#####): _____ Init. Calib. Time(s): _____

GC Column: _____ ID: _____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{RRF}$	RRF	MIN RRF	%D	MAX %D
Vinyl chloride					
1,1-Dichloroethene					
trans-1,2-Dichloroethene					
Methyl-tert-butyl ether					
1,1-Dichloroethane					
cis-1,2-Dichloroethene					
1,1,1-Trichloroethane					
Benzene					
1,2-Dichloroethane					
Trichloroethene					
Toluene					
1,1,2-Trichloroethane					
Tetrachloroethene					
Ethylbenzene					
o-Xylene					
m,p-Xylene					
1,1,2,2-Tetrachloroethane					

7A – FORM VII VOA-1
VOLATILE ORGANICS ANALYSIS
INTERNAL STANDARD AREA AND RETENTION TIME STUDY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column: _____ ID: _____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (VSTD#####): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____

		IS1 (BCM) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DFB) AREA #	RT #
	24 HOUR STD						
	UPPER LIMIT						
	LOWER LIMIT						
	EPA SAMPLE NO.						
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = 140% of Internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk

7B – FORM VII VOA-SIM
TRACE VOLATILE ORGANICS SIM
INTERNAL STANDARD AREA AND RETENTION TIME STUDY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column: _____ ID: _____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (VSTD0.5##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____

		IS1 (BCM) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DFB) AREA #	RT #
	24 HOUR STD						
	UPPER LIMIT						
	LOWER LIMIT						
	EPA SAMPLE NO.						
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

VOLATILE ORGANICS ANALYSIS
SAMPLE LOG-IN SHEET
FORM DC-1

Lab Name						Page ___ of ___
Received By (Print Name)						Log-in Date
Received By (Signature)						
Contract Number			Task Order No.			
Case Number		Sample Delivery Group No.				Mod. Ref. No.
Remarks:			Corresponding			
		EPA Sample #	Sample Tag Number	Canister Number	Assigned Lab Number	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s)	Present/Absent* Intact/Broken					
2. Custody Seal Nos.	_____ _____					
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present/Absent*					
4. Airbill	Airbill/Sticker Present/Absent*					
5. Airbill No.	_____ _____					
6. Sample Tags	Present/Absent*					
Sample Tag Numbers	Listed/Not Listed on Chain-of-Custody					
7. Sample Condition	Intact/Broken*/ Leaking					
8. Cooler Temperature Indicator Bottle	Present/Absent*					
9. Cooler Temperature	_____					
10. Does information on TR/COCs and sample tags agree?	Yes/No*					
11. Date Received at Laboratory	_____					
12. Time Received	_____					
Sample Transfer						
Area #	Area #					
By	By					
On	On					

* Contact SMO and attach record of resolution

Reviewed By	Logbook No.
Date	Logbook Page No.

VOLATILE ORGANICS ANALYSIS
COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2

LABORATORY NAME _____
CITY/STATE _____
CASE NO. _____ SDG NO. _____
SDG NOs. TO FOLLOW _____ _____ _____
MOD. REF. NO. _____
TASK ORDER NO. _____
CONTRACT NO. _____
SOW NO. _____

All documents delivered in the Complete SDG File (CSF) must be original documents where possible.

	PAGE NOs.		CHECK	
	FROM	TO	LAB	USEPA
1. **Inventory Sheet** (DC-2) (Do not number)				
2. **SDG Case Narrative**				
3. **SDG Cover Sheet/Traffic Report**				
4. **Volatile Organics Analysis Data**				
a. QC Summary				
Method Blank Summary (Form III VOA)				
Instrument Performance Check (Form IV VOA-1)				
Summa Canister Certification Data Sheet (Form I VOA-CANISTER1, VOA-CANISTER2, VOA-CANISTER3)				
Internal Standard Area and RT Summary (Form VII VOA-1)				
LCS Recovery and Precision (Form II VOA-1)				
b. Sample Data				
TCL Results – Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)				
Tentatively Identified Compounds (Form I VOA-TIC)				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				

VOLATILE ORGANICS ANALYSIS
COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CONT.)

CASE NO. _____ SDG NO. _____ SDG NOs. TO FOLLOW _____
_____ _____ MOD. REF. NO. _____

	PAGE NOs.		CHECK	
	FROM	TO	LAB	USEPA
c. Volatile Organics Standards Data (All Instruments)				
Initial Calibration Data (Form V VOA-1, VOA-2, VOA-3)				
SIM Initial Calibration Data (Form V VOA-SIM)				
Continuing Calibration Data (Form VI VOA-1, VOA-2)				
Instrument Performance Check BFB (Form IV VOA)				
d. Raw/Quality Control (QC) Data				
BFB				
Blank Data				
5. **Trace SIM Volatile Organics Analysis Data**				
a. QC Summary				
Trace Volatile Organics SIM Internal Standard Area and RT Summary (Form VII VOA-SIM)				
b. Trace Volatile Organics SIM Analysis Data (Place at the end of the Trace Volatiles Section)				
[Form I VOA-SIM; Form II VOA-SIM; Form VI VOA-SIM; Form VII VOA-SIM; and all raw data for QC, Samples, and Standards.]				
8. **Miscellaneous Data**				
Original preparation and analysis forms or copies of preparation and analysis logbook pages				
Internal sample and sample extract transfer chain-of-custody records				
Screening records				
All instrument output, including strip charts from screening activities (describe or list)				
9. **EPA Shipping/Receiving Documents**				
Airbills (No. of shipments _____)				
Chain of Custody Records				
Sample Tags				
Sample Log-in Sheet (Lab & Form DC-1)				
Canister Sampling Field Test Data Sheet (Form DC-3)				
Miscellaneous Shipping/Receiving Records (describe or list)				
_____				
_____				

VOLATILE ORGANICS ANALYSIS
COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CONT.)

CASE NO. _____ SDG NO. _____ SDG NOs. TO FOLLOW _____
_____ _____ MOD. REF. NO. _____

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
10. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
_____				
_____				
12. **Other Records** (describe or list)				
Telephone Communication Log				
_____				
_____				

13. Comments

_____
_____
_____

Completed by: _____ _____ _____
(CLP Lab) (Signature) (Printed Name/Title) (Date)

Verified by: _____ _____ _____
(CLP Lab) (Signature) (Printed Name/Title) (Date)

Audited by: _____ _____ _____
(USEPA) (Signature) (Printed Name/Title) (Date)

CANISTER SAMPLING FIELD TEST DATA SHEET
FORM DC – 3

A. GENERAL INFORMATION

SITE LOCATION: _____
SITE ADDRESS: _____
_____
SAMPLING DATE: _____

SHIPPING DATE: _____
CANISTER SERIAL NO.: _____
SAMPLER ID: _____
OPERATOR: _____
CANISTER LEAK CHECK DATE: _____

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START				
STOP				

PRESSURE

CANISTER PRESSURE	

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START		
STOP		

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE: _____
QUARTERLY RECERTIFICATION DATE: _____

C. LABORATORY INFORMATION

DATA RECEIVED: _____
RECEIVED BY: _____
INITIAL PRESSURE: _____
FINAL PRESSURE: _____
DILUTION FACTOR: _____
ANALYSIS
GC-MSD-SCAN DATE: _____
GC-MSD-SIM DATE: _____
RESULTS: _____
_____
GC-MSD-SCAN: _____
GC-MSD-SIM: _____

_____
SIGNATURE/TITLE

EXHIBIT C

TARGET COMPOUND LIST (TCL)
AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
FOR VOLATILE ORGANICS ANALYSIS

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1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	COMPOUND	CAS NO.	Quantitation Limits SCAN ppbv	Quantitation Limits SIM ppbv
1	Propylene	115-07-1	0.5	
2	Dichlorodifluoromethane (Freon 12)	75-71-8	0.5	
3	Dichlorotetrafluoroethane (Freon 114)	76-14-2	0.5	
4	Chloromethane	74-87-3	0.5	
5	Vinyl chloride	75-01-4	0.5	0.05
6	1,3-Butadiene	106-99-0	0.5	
7	Bromomethane	74-83-9	0.5	
8	Chloroethane	75-00-3	0.5	
9	Ethanol	64-17-5	0.5	
10	Trichlorofluoromethane (Freon 11)	75-69-4	0.5	
11	1,1-Dichloroethene	75-35-4	0.5	0.05
12	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	0.5	
13	Acetone	67-64-1	0.5	
14	2-Propanol (Isopropanol)	67-63-0	0.5	
15	Carbon disulfide	75-15-0	0.5	
16	Methylene chloride	75-09-2	0.5	
17	trans-1,2-Dichloroethene	156-60-5	0.5	0.05
18	n-Hexane	110-54-3	0.5	
19	Methyl tert-butyl ether	1634-04-4	0.5	0.05
20	1,1-Dichloroethane	75-34-3	0.5	0.05
21	cis-1,2-Dichloroethene	156-59-2	0.5	0.05
22	2-Chloro-1,3-butadiene (Chloroprene)	126-99-8	0.5	
23	2-Butanone	78-93-3	0.5	
24	Tetrahydrofuran	109-99-9	0.5	
25	Chloroform	67-66-3	0.5	
26	1,1,1-Trichloroethane	71-55-6	0.5	0.05
27	Cyclohexane	110-82-7	0.5	
28	Carbon tetrachloride	56-23-5	0.5	
29	Ethyl Acetate	141-78-6	0.5	
30	Vinyl Acetate	108-05-4	0.5	
31	Benzene	71-43-2	0.5	0.05
32	1,2-Dichloroethane	107-06-2	0.5	0.05
33	n-Heptane	142-82-5	0.5	
34	1,4-Dioxane	123-91-1	0.5	
35	Trichloroethene	79-01-6	0.5	0.05

			Quantitation Limits	
	COMPOUND	CAS NO.	SCAN ppbv	SIM ppbv
36	1,2-Dichloropropane	78-87-5	0.5	
37	Bromodichloromethane	75-27-4	0.5	
38	cis-1,3-Dichloropropene	10061-01-5	0.5	
39	4-Methyl-2-pentanone	108-10-1	0.5	
40	Toluene	108-88-3	0.5	0.05
41	trans-1,3-Dichloropropene	10061-02-6	0.5	
42	1,1,2-Trichloroethane	79-00-5	0.5	0.05
43	Tetrachloroethene	127-18-4	0.5	0.05
44	2-Hexanone	591-78-6	0.5	
45	Dibromochloromethane	124-48-1	0.5	
46	1,2-Dibromoethane	106-93-4	0.5	
47	n-Octane	111-65-9	0.5	
48	Chlorobenzene	108-90-7	0.5	
49	Ethylbenzene	100-41-4	0.5	0.05
50	o-Xylene	95-47-6	0.5	0.05
51	m,p-Xylene	179601-23-1	0.5	0.05
52	Styrene	100-42-5	0.5	
53	Bromoform	75-25-2	0.5	
54	Cumene	98-82-8	0.5	
55	1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.05
56	Propylbenzene	103-65-1	0.5	
57	4-Ethyltoluene	622-96-8	0.5	
58	1,3,5-Trimethylbenzene	108-67-8	0.5	
59	1,2,4-Trimethylbenzene	95-63-6	0.5	
60	Benzyl Chloride	100-44-7	0.5	
61	1,3-Dichlorobenzene	541-73-1	0.5	
62	1,4-Dichlorobenzene	106-46-7	0.5	
63	1,2-Dichlorobenzene	95-50-1	0.5	
64	Hexachlorobutadiene	87-68-3	0.5	
65	1,2,4-Trichlorobenzene	120-82-1	0.5	