EPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

SUPERFUND ANALYTICAL METHODS

Multi-Media, Multi-Concentration

SFAM01.0

May 2019

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 this analytical service is to provide analytical data for use by the U.S. Environmental Protection Agency (EPA), in support of the 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 EPA Program Offices, as well as customers outside the Agency, that have similar analytical data needs also use this service.

2.0 DESCRIPTION OF SERVICE

This Statement of Work (SOW) provides a contractual framework for laboratories to perform analytical services. This framework applies EPA Contract Laboratory Program (CLP) analytical methods for the isolation, detection, and quantitative measurement of target analytes in aqueous/water, soil/sediment, waste, and wipe samples (see Exhibit C – Target Analyte List and Contract Required Quantitation Limits for a complete list of target analytes and Exhibits D for the analytical methods). The SOW also includes Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) leachate extraction procedures. The analytical service contract provides the methods to be used and the specific contractual requirements by which the EPA will evaluate the data.

3.0 DATA USES

This analytical service provides data used 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 clean-up actions, and determining when remedial actions are complete. The data may be used in all stages in the investigation of hazardous waste sites, including site inspections, Hazard Ranking System (HRS) scoring, remedial investigation/feasibility studies, remedial design, treatability studies, and removal actions.

In addition, the Contractor must be aware of the importance of maintaining the integrity of 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.

4.0 SUMMARY OF REQUIREMENTS

The SOW comprises eight exhibits and four appendices:

- Exhibit A – Summary of Requirements
- Exhibit B – Reporting and Deliverables Requirements
- Exhibit C – Target Analyte List and Contract Required Quantitation Limits
- Exhibit D – Analytical Methods
- Exhibit E – Quality Systems
- Exhibit F - Programmatic Quality Assurance/Quality Control Elements
- Exhibit G – List of Abbreviations & Acronyms, Glossary of Terms, and Equations
- Exhibit H – Format for Electronic Data Deliverables
- Appendix A – Format Characteristics for Preliminary Results Data
- Appendix B – Codes for Labeling Data
- Appendix C – Format Characteristics for Method Detection Limit Study Data
- Appendix D - Format Characteristics for Sample Delivery Group Traffic Report/Chain of Custody Records Data

4.1 Major Task Areas

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

4.1.1 Sample Receiving, Storage, and Disposal

The Contractor will receive samples from potential hazardous waste sites and shall store and maintain these samples under proper chain of custody (COC) procedures. The Contractor shall follow the procedures outlined in Section 5.0 of this Exhibit for proper sample receipt and handling as well as in each Exhibit D – Analytical Methods for proper storage and disposal of unused portion of samples. All anomalies and identified issues shall be communicated to the EPA via the CLP Sample Management Office (SMO) Contractor.

4.1.2 Sample Preparation and Analysis

The Contractor is advised that the samples received under this contract are usually from known or suspected hazardous waste sites. The samples may contain high levels of organic and inorganic materials of a potentially hazardous nature and of unknown structure and concentration, and should be handled throughout the analysis with appropriate caution. It is the Contractor’s responsibility to take all necessary measures to ensure laboratory safety and to prepare samples as described in the respective Exhibit D – Analytical Methods for the requested analysis type. Sample preparation methods shall be consistent for all samples of the same matrix analyzed by the same analytical method.

4.1.3 Sample Reporting and Resubmission of Data

4.1.3.1 Required data reporting specifications and recipients are found in Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables. The Contractor shall be responsible for completing and submitting analysis data sheets and electronic data as requested, in a format specified in this SOW, and within the time specified in Exhibit B – Reporting and Deliverables Requirements, Section 1.1.

4.1.3.2 Use of formats other than those approved will be deemed as noncompliant. Such data are unacceptable. Resubmission in the specified format will be required at no additional cost to the Government.

4.1.4 Quality Assurance/Quality Control

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

4.1.4.1 The Contractor shall strictly adhere to all specific QA/QC procedures prescribed in Exhibits D – Analytical Methods and F – Programmatic Quality Assurance/Quality Control Elements. Records documenting the use of the protocol shall be maintained in accordance with the document control procedures prescribed in Exhibit E – Quality Systems and shall be reported in accordance with Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables.

4.1.4.2 Additional QC shall be conducted in the form of the analysis of Performance Evaluation (PE) samples submitted to the Contractor by the EPA. Unacceptable results of all QC or PE samples may be used as the basis for an equitable adjustment to reflect the reduced value of the data to the EPA or rejection of the data for specific analyte(s) within a Sample Delivery Group (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 the EPA, as well as meeting the contract requirements for analysis (Exhibit D – Analytical Methods); QA/QC (Exhibit F – Programmatic Quality Assurance/Quality Control Elements); data reporting and other deliverables (Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables); and sample custody, sample documentation, and Standard Operating Procedure (SOP) documentation (Exhibit E – Quality Systems). As an alternative to data rejection, the EPA may require reanalysis of noncompliant samples. Reanalysis will be performed by the Contractor at no additional cost to the EPA.

4.1.5 Modified Analysis

The Contractor may be requested by the EPA to perform a Modified Analysis (MA). The modifications may include, but are not limited to: modified preparation or analysis procedures; additional analytes; sample matrices other than those present in the SOW; and/or lower quantitation limits. The requests will be made in writing, prior to sample scheduling. All contract requirements specified in the SOW/Specifications will remain in effect unless specifically modified.

5.0 SAMPLE RECEIPT AND HANDLING

5.1 Chain of Custody

The Contractor shall receive and maintain samples under proper COC procedures. All associated document control and inventory procedures shall be developed and followed. Documentation described herein shall be required to show that all procedures are strictly followed. This documentation shall be reported as the Complete SDG File (CSF) (see Exhibit B – Reporting and Deliverables Requirements). The Contractor shall establish and use appropriate procedures to handle confidential information received from the EPA.

5.2 Sample Scheduling

5.2.1 Sample shipments to the Contractor’s facility will be scheduled and coordinated by the CLP SMO. The EPA may request analyses that include all or a subset of the Target Analytes listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits. The EPA may also request modified analyses due to the nature of the samples or project requirements. The Contractor shall communicate with SMO personnel as necessary, throughout the process of sample scheduling, shipment, analysis, and data reporting, to ensure that samples are properly processed.

5.2.2 The Contractor shall accept all samples scheduled by SMO, provided that the total number of samples received in any calendar month does not exceed the monthly limitation defined 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.

5.3 Sample Shipments

5.3.1 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 of the receipt of sample shipments. This includes the pick-up of samples at the nearest servicing airport, bus station, or other carrier within the Contractor’s geographical area. The Contractor shall be available to receive sample shipments at any time the delivery service is operating, including weekends.

5.3.1.1 If aqueous/water, soil/sediment, or waste samples are received at the Contractor facility more than one day after the scheduled delivery date, but the sample temperatures are still ≤10°C, the Contractor shall note the issue in the SDG Narrative, including the reason for the delay if known, and proceed with the analysis of the samples. The Contractor shall make every effort to prepare, preserve, and/or freeze the volatile soil/sediment samples immediately upon sample receipt.

5.3.2 Unless otherwise instructed by the EPA Region or originating sampler, the Contractor shall be required to routinely return sample shipping containers to the appropriate sampling office within 14 calendar days following shipment receipt. This shipment must be done via ground transportation only, pending receipt of a valid return authorization, unless specifically instructed to do otherwise. The Contractor will be provided a shipping mechanism by the EPA Region or originating sampler (e.g., field sampler). The Contractor shall ensure that the account numbers provided are used only for the return of Government-owned shipping containers.

5.3.2.1 The Contractor shall remove packing and other materials from the shipping containers before each pick-up and shall ensure that the shipping containers are clean. The Contractor can determine from visual inspection whether a shipping container is clean.

5.4 Sample Receipt

5.4.1 If insufficient sample amount (less than 90% but more than 50% of the required amount) is received to perform analyses other than trace volatile and volatile, the Contractor shall notify SMO and proceed with the analyses at reduced volume. The Contractor shall document this issue in the SDG Narrative. If the Contractor receives sufficient sample volume to perform sample analysis at full volume, but insufficient volume to perform scheduled laboratory QC at full volume, the Contractor shall perform sample analysis at full volume and laboratory QC analysis at reduced volume and note the issue in the SDG Narrative.

5.4.1.1 If the Contractor receives aqueous/water samples for volatiles analysis, and some of the vials contain headspace, but there are sufficient vials without headspace to analyze the sample, the Contractor shall note the issue in the SDG Narrative and proceed with the analysis of the vials without headspace. If reanalysis is necessary, the Contractor shall contact SMO and wait for a resolution. The Contractor shall document the provided resolution in the SDG Narrative.

5.4.2 If the Contractor receives broken sample containers or incompletely filled sample containers, with enough (remaining) sample to perform sample analysis and scheduled laboratory QC analysis, but potentially not enough volume to analyze any possible re-extractions/reanalyses, the Contractor shall note the issue in the SDG Narrative, proceed with analysis of the samples, and notify SMO. If re-extraction/reanalyses are necessary, the Contractor shall contact SMO and wait for a resolution. The Contractor shall document the provided resolution in the SDG Narrative.

5.4.3 If the Contractor encounters other problems with samples or related documentation [e.g., mixed media, waste samples that cannot be processed using the methods in this SOW, sample pH, sample documentation and paperwork such as Traffic Report/Chain of Custody (TR/COC) Records not with shipment, sample and TR/COC Record do not correspond], the Contractor shall immediately contact SMO for resolution. The Contractor shall document the provided resolution in the SDG Narrative.

5.4.3.1 If legible handwritten information is present on the TR/COC Record or sample labels, the Contractor shall note the issue in the SDG Narrative and proceed using the handwritten information.

5.4.3.2 Sample tags may or may not be used with samples. Sample tag numbers may or may not be on the TR/COC Record. The Contractor shall note the presence of tags in the SDG Narrative and proceed with the analysis of the samples.

5.4.4 Shipping Container Temperature Monitoring

5.4.4.1 To monitor the temperature of the sample shipping container more effectively, a sample shipping container temperature indicator bottle may be included with each shipping container shipped. The applicable temperature blank will be clearly labeled.

5.4.4.2 When a shipping container temperature indicator bottle is included in the sample shipping container, the Contractor shall use the supplied shipping container temperature indicator bottle to determine the shipping container temperature. The temperature of the sample shipping container shall be measured and recorded immediately upon opening the shipping container, and prior to unpacking the samples or removing the packing material. For PE, Proficiency Testing (PT), or wipe matrix samples received in cardboard boxes at ambient temperature without ice, the Contractor is not required to note the temperature upon receipt, but shall proceed with the analysis of the samples and note this issue in the SDG narrative.

5.4.4.3 To determine the temperature of the shipping container, the Contractor shall locate the shipping container temperature indicator bottle in the sample shipping container, invert it several times, remove the cap, and insert a calibrated [National Institute of Standards and Technology (NIST)-traceable] thermometer into the shipping container temperature indicator bottle. Prior to recording the temperature, the Contractor shall allow a minimum of 3 minutes, but not greater than 5 minutes, for the thermometer to equilibrate with the liquid in the bottle. At a minimum, the thermometer used shall be capable of measuring and registering the temperature of the shipping container with an accuracy of ±1°C.

5.4.4.4 If a temperature indicator bottle is not present in the shipping container, an alternative means of determining shipping container temperature shall be used. Under no circumstances shall a thermometer or any other device be inserted into a sample bottle for the purpose of determining shipping container temperature. Other devices [e.g., infrared (IR) thermometer] which can measure temperature may be used if they can be calibrated to ±1°C.

5.4.4.4.1 Liquid bearing thermometers such as mercury or alcohol thermometers shall be traceable to NIST calibration and verified at least annually, and whenever the thermometer has been exposed to temperature extremes. The correction factor shall be indicated on the thermometer, and the date the thermometer was calibrated and the calibration factor shall be kept as prescribed in the Contractor’s QA documents and be available for inspection. The correction factor shall not exceed ±1°C. The NIST thermometer shall be recalibrated at least every five years or whenever the thermometer has been exposed to temperature extremes.

5.4.4.4.2 Digital thermometers, thermocouples, and other similar electronic temperature measuring devices shall be calibrated at least quarterly. The date the thermometer was calibrated and the calibration factor shall be kept as prescribed in the Contractor’s QA documents and be available for inspection.

5.4.4.4.3 When an IR detection device is used to measure the temperature of samples, the device shall be verified at least every six months using an NIST-certified thermometer over the full temperature range that the IR thermometer will be used. This would include ambient (20-30°C), iced (4°C), and frozen (0 to -5°C). Each day of use, a single check of the IR detection device shall be made by measuring the temperature of a bottle of water, that contains a calibrated thermometer, at the temperature of interest. Agreement between the two readings should be within 0.5°C, or the device shall be recalibrated. The daily checks of the IR detection device shall be documented and the records maintained on file.

5.4.4.5 If the temperature of the shipping container is >6°C but ≤10°C, the Contractor shall note the issue, and the method used to determine the temperature, in the SDG Narrative and proceed with analysis of the samples. If the temperature exceeds 10°C and the samples are soil/sediment samples for any analytical method or aqueous/water samples for volatile (trace and low/medium), semivolatile, and cyanide analysis, the Contractor shall contact SMO and inform them of the temperature deviation. SMO will contact the EPA for instructions on how to proceed. SMO will in turn notify the Contractor of the EPA's decision. The Contractor shall document the EPA's decision and the EPA Sample Numbers of all the samples affected by the decision in the SDG Narrative. For aqueous/water samples for metals or mercury analysis received without ice and/or above 10°C, the Contractor shall note the issue in the SDG Narrative and proceed with the analysis of the samples.

5.4.5 Recording Sample pH

5.4.5.1 The pH for all aqueous/water samples received by the Contractor shall be measured, using a method capable of demonstrating that proper preservation was performed (e.g., pH test strips, calibrated electronic hand-held pen capable of measuring to 0.1 pH units, or calibrated pH meter), and recorded. The pH shall be determined using a small aliquot of the sample to prevent contamination. Under no circumstances shall a strip or any device be inserted into a sample bottle for the purpose of determining pH.

5.4.5.2 All pens and pH meter electrodes shall be rinsed with reagent water between sample readings.

5.5 Sample Case

Sample analyses will be scheduled by groups of samples, each defined as a Case and identified by a unique EPA Case Number assigned by SMO. 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.

5.5.1 A Case consists of one or more SDGs.

5.5.2 An SDG is defined by the following, whichever is most frequent:

- Each Case of field samples received; or
- Each 20 samples (excluding 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 scheduled under the same contractual turnaround time. Preliminary Results have no impact on defining an SDG.

5.5.3 Samples may be assigned to SDGs by matrix (e.g., all soil/sediment in one SDG, all aqueous/water in another), at the discretion of the Contractor. If analysis by the Selected Ion Monitoring (SIM) technique is requested for a given sample, the Contractor shall submit the full scan and required SIM analyses for the sample in the same SDG. If PE samples are received within a Case, they 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. The SDG may exceed the 20 samples limit since the limitation excludes PE samples.

5.5.4 Each sample received by the Contractor will be labeled with an EPA Sample Number and accompanied by a TR/COC Record bearing the Sample Number and descriptive information regarding the sample. The EPA Sample Numbers are continuous, without spaces or hyphens. If the sample numbers do not conform to this requirement, contact SMO. The Contractor shall complete and sign the TR/COC Record, recording the date of sample receipt and sample condition on receipt for each sample container.

5.5.4.1 The Contractor shall follow the instructions given on the TR/COC Record in selecting the QC samples, when such information is provided. If no QC sample is designated on the TR/COC Record, the Contractor shall select an appropriate sample (e.g., not a PE sample, or field blank, or rinsate sample, etc.), notify SMO of the selection, and proceed with analysis of the samples. If the instructions on the TR/COC Record designated a sample with insufficient volume to analyze the original sample at full volume and perform laboratory QC, the Contractor shall select another appropriate sample for QC, provided that sample does have sufficient volume to perform the analysis of the original sample at full volume and the laboratory QC at full or reduced volume. The Contractor shall notify SMO of the selection, note the issue in the SDG Narrative, and proceed with the analysis of the samples.

5.5.4.2 If the sampler designated two (or more) samples as QC for the same matrix, and the QC samples are not specifically labeled with the analysis for which they are to be used (e.g., total vs. dissolved metals), then the Contractor shall contact SMO to report the issue. SMO shall then contact the EPA Region and notify the Contractor of the EPA Regional decision. The Contractor shall note the resolution in the SDG Narrative. If a sample was designated for QC on the TR/COC Record but the scheduling information indicates that no QC is required, the Contractor shall note the issue in the SDG Narrative and proceed with the analysis of the samples based on the scheduling instructions (i.e., QC is not required).

5.5.5 The date of delivery of the SDG, or any samples within the SDG, is the date that the last sample in the SDG is received. Validated Time of Sample Receipt (VTSR) is the date of sample receipt at the Contractor's facility, as recorded on the shipper's delivery receipt and sample TR/COC Record.

5.5.6 The Contractor shall provide SDG grouping information in the comma-separated values (CSV) file format specified in Appendix D – Format Characteristics for Sample Delivery Group Traffic Report/Chain of Custody Records Data or use the "Create/Edit Sample Delivery Group" app via the Superfund Analytical Services SMO Contract Laboratory Program Support System (CLPSS) Portal at https://www.smoclpss.com within 3 working days following the receipt of the last sample in the SDG (email delivery is not acceptable). TR/COC Records shall be submitted with their SDG information as specified in Exhibit B – Reporting and Deliverables Requirements.

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

5.5.8 The Contractor shall immediately notify SMO regarding any problems and laboratory conditions that affect the timeliness of analyses and data reporting. In particular, the Contractor shall immediately notify SMO personnel in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

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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 identifies the contract reporting and deliverables requirements, and specifies the distribution that is required for each deliverable.

TABLE 1. DELIVERABLE SCHEDULE

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
A.[2]	Sample Delivery Grouping Information	1	• In format specified in Appendix D 3 working days after receipt of last sample in the Sample Delivery Group (SDG); or • Create the SDG using the Superfund Analytical Services Sample Management Office (SMO) Contract Laboratory Program Support System (CLPSS) Portal 3 working days after receipt of last sample in SDG.	X		
B.[4,5]	Preliminary Results (PR)	1	Semivolatile, Pesticide, and Aroclor analyses – Within 72 hours after receipt of each sample at laboratory, if requested. All other analyses – Within 48 hours after receipt of each sample at laboratory, if requested.	X	X	
C.[3,6,7]	Complete SDG File (CSF)	1	XX[8] days after Validated Time of Sample Receipt (VTSR) of last sample in SDG, if hardcopy requested.		X	
D.[9]	SDG Cover Page, Traffic Report/Chain of Custody (TR/COC) Records, Sample Tags, Airbills, Form DC-1, and Form DC-2	1	XX[8] days after VTSR of last sample in SDG.		X	

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
E.[3,4,10]	Copy of CSF in Portable Document Format (PDF)	1	XX[8] days after VTSR of last sample in SDG.	X		
F.[3,10]	Electronic Data Deliverable (EDD)	1	XX[8] days after VTSR of last sample in SDG.	X		
G.[10]	Method Detection Limit (MDL) Values	1	MDL values in format specified in Appendix C prior to analysis of field samples, annually thereafter, and after major instrument adjustments. (See Exhibit D for each method, Section 12.0)	X		X
H.	Standard Operating Procedures (SOPs)	1	Submit within 60 days after contract award. Submit the latest version within 7 days of receipt of written request to recipients as directed. (See Exhibit E, Section 4.0) Submit amended documents within 14 days of amended SOP(s) as directed in Exhibit E, Section 4.4.			X
I.	Quality Assurance Project Plan (QAPP)	1	Submit within XX[8] days after contract award. Submit the latest version within 7 days of receipt of written request to recipients as directed. (See Exhibit E, Section 3.0) Submit amended documents within 14 days of amended QAPP as directed in Exhibit E, Section 3.3.			X
J.	Instrument Electronic Data	Lot	Retain for 3 years after data submission of the reconciled CSF. Submit within 7 days of receipt of written request to recipients as directed. (See Exhibit F, Section 8.3)	As Directed		

TABLE 1. DELIVERABLE SCHEDULE (CON'T)

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
K.	Digestates	Lot	Retain total metals (excluding mercury) for 180 days after data submission. Submit within 7 days after receipt of written request to recipients as directed.	As Directed		
L.	Extracts	Lot	Retain for 1 year after data submission (excluding anions soil extracts). Submit within 7 days after receipt of written request to recipients as directed.	As Directed		
M.	Samples	Lot	Retain for 60 days after data submission. Submit within 7 days after receipt of written request to recipients as directed.	As Directed		

Footnotes:

[1] The number of copies specified is the number of copies required to be delivered to each recipient.

[2] The Contractor **shall** provide SDG grouping information in the comma-separated values (CSV) file format specified in Appendix D – Format Characteristics for Sample Delivery Group Traffic Report/Chain Of Custody Records Data or use the "Create/Edit Sample Delivery Group" app via the Superfund Analytical Services SMO CLPSS Portal at https://www.smoclpss.com within 3 working days following the receipt of the last sample in the SDG (email delivery is not acceptable).

[3] **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. This includes resubmission of the hardcopy CSF if requested, PDF of the CSF, and EDD. The date of delivery of the SDG, or any sample within the SDG, is the date that all samples and required deliverables for the SDG have been delivered. **The delivery and timeliness of routine deliverables [hardcopy of CSF (if requested), PDF file of the CSF, and EDD] will be determined by the Data Receipt Date (DRD) of the SDG. The DRD is the date upon which the last of the routine deliverables was received by the designated recipient. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables received after this time will be considered late.**

[4] Retain for 365 days after data submission, and submit as directed within 7 days after receipt of written request by the U.S. Environmental Protection Agency's Regional Contract Laboratory Program Contracting Officer's Representative (EPA Regional CLP COR) or Analytical Services Branch CLP COR (ASB CLP COR). Supplemental data (i.e., logbooks) may be requested in writing from the EPA Regional staff or the ASB CLP COR. All written communication sent by the EPA must include the EPA Regional CLP COR in the distribution list. If the EPA Regional CLP COR has not been included in the distribution list, contact the ASB CLP COR.

[5] If requested at the time of sample scheduling, the Contractor shall provide Preliminary Results, consisting of a CSV file for field samples and field Quality Control (QC) analyses (see Appendix A – Format Characteristics for Preliminary Results Data for the format of this deliverable). The Contractor shall provide SMO a copy via the EPA Electronic Data Exchange and Evaluation System (EXES) at https://www.smoclpss.com as Preliminary Results. The sample TR/COC Records and SDG Cover Page (per Section 2.7.1) shall be submitted in a PDF file with the Preliminary Results. The designated Regional recipient shall receive the Preliminary Results as a CSV file, and the TR/COC Records and SDG Cover Page in a PDF file, via email. The Contractor will be notified of the email address at the time of sample scheduling.

NOTE: Preliminary Results Delivery Schedule:

If a sample requiring Preliminary Results arrives at the laboratory before 5 p.m., the Preliminary Results are due within the required turnaround time. If a sample requiring Preliminary Results is received at the laboratory after 5 p.m., the Preliminary Results are due within the required turnaround time beginning at 8 a.m. the following day. If the Contractor receives a Saturday shipment that requires Preliminary Results and the TR/COC Record information differs from the Scheduling Notification, the Contractor shall use the scheduling information from SMO, note the issue in the SDG Narrative, and proceed with the analysis of the samples. **If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables received after this time will be considered late.**

[6] The hardcopy data shall only be delivered to the EPA Region if specifically requested by the EPA Region at the time of sample scheduling.

[7] The CSF must contain the original data and documents described in Section 2.4.

[8] 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 sample scheduling by the SMO Contractor.

[9] This deliverable shall be provided if the EPA Region does not request a hardcopy of the CSF for the SDG. In this instance, the Contractor shall mail the original sample documentation [signed SDG Cover Page, TR/COC Records, sample tags (if present), airbills, Form DC-1, and Form DC-2] that would have otherwise been included in the hardcopy of the CSF to the EPA Region.

[10] The Contractor shall provide SMO the electronic files via EXES at https://www.smoclpss.com.

1.2 Distribution

The following addresses correspond to the "Distribution" column in Exhibit B – Reporting and Deliverables Requirements, Section 1.1, Table 1.

Sample Management Office (SMO)[1]:

Delivery instructions will be provided upon contract award.

EPA Region:

EPA Regional addresses/names for data delivery are available via the Superfund Analytical Services and Contract Laboratory Program website at https://www.epa.gov/clp/forms/contact-us-about-superfund-analytical-services-or-contract-laboratory-program.

EPA Regional CLP Contracting Officer's Representative:

EPA Regional CLP CORs addresses are available via the Superfund Analytical Services and Contract Laboratory Program website at https://www.epa.gov/clp/forms/contact-us-about-superfund-analytical-services-or-contract-laboratory-program.

Quality Assurance Technical Support (QATS)[2]:

Delivery instructions will be provided upon contract award.

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified Section 1.1. The required content and form of each deliverable are described in this Exhibit. All reports and documentation provided **shall be**:

- Legible;
- Clearly labeled and completed in accordance with instructions in this Exhibit;
- Arranged in the order specified in this Exhibit; and
- Paginated sequentially according to instructions in this Exhibit.

2.1.1 Information reported on the forms listed in this Exhibit [excluding the Sample Log-In Sheet (Form DC-1) and the Complete SDG File (CSF) Inventory Sheet (Form DC-2)] must be computer-generated.

2.1.2 The Contractor shall use EPA Case Numbers, SDG Numbers, and EPA Sample Numbers to identify samples received under this contract, verbally, electronically, and in reports and correspondence. The Contract Number and the Statement of Work (SOW) Number shall be specified in all correspondence. The Modification Analysis Number (MA No.) shall also be included for all Modified Analyses.

[1] SMO is a Contractor-operated facility operating under the SMO contract awarded and administered by the EPA.
[2] QATS is a Contractor-operated facility operating under the QATS contract awarded and administered by the EPA.

2.1.3 The Contractor shall submit Staged Electronic Data Deliverable (SEDD) Level 2a, Level 2b, or Level 3 deliverables as specified at the time of sample scheduling. An SDG may contain data with different SEDD levels if multiple analyses with different SEDD levels are requested. A compliant SEDD deliverable at a higher SEDD level will satisfy requirements for a deliverable at a lower SEDD level (i.e., a compliant SEDD Stage 3 deliverable will meet SEDD Stage 2a or 2b requirements, and a compliant Stage 2b deliverable will meet Stage 2a requirements).

2.1.4 Data elements and instructions for electronically reporting data are contained in Exhibit H – Format for Electronic Data Deliverables.

2.2 Resubmission of Data

If the submitted data or EDD does not meet the EPA data assessment standards as defined in the laboratory contract, the Contractor is required to resubmit all required data with the deficiency(ies) corrected.

2.2.1 Whenever the Contractor is required to submit or resubmit data as a result of an on-site laboratory evaluation, through an ASB CLP COR or EPA Regional CLP COR action, or through an EPA Regional data reviewer’s request, the data shall be clearly marked and submitted as "Additional Data". The data shall be sent to both contractual data recipients (EPA Region and SMO) and to the EPA’s designated recipient. The additional data shall be provided as a PDF file to SMO only. This data shall be delivered as a hardcopy to the EPA Region and the EPA’s designated recipient(s) only if a hardcopy of the CSF was requested at the time of sample scheduling. The Contractor shall deliver the additional data within 3 business days of receipt of the request. A cover letter, which describes the data being delivered and identifies the EPA Case Number(s), SDG Number(s), and the requester, shall be included. Corrected data submitted as "Additional Data" shall only include the affected pages and be accompanied by a revised SDG Narrative (described in Section 2.4.9) documenting the reason(s) for the resubmittal. If the issues affect the values reported in the EDD, then the Contractor shall submit a revised complete EDD to SMO.

2.2.2 Whenever the Contractor is required to submit or resubmit data as a result of a Contract Compliance Screening (CCS) review by SMO, the data shall be sent to the appropriate recipient(s) (EPA Region and SMO) within 6 business days of receipt of the request. Electronic deliverables (EDD and PDF file) shall be submitted or resubmitted to SMO only. The revised hardcopy shall be delivered to the EPA Region only, if a hardcopy of the CSF was requested at the time of sample scheduling.

2.3 Sample Traffic Report/Chain of Custody Records

2.3.1 Each sample received by the Contractor will be labeled with an EPA Sample Number and will be accompanied by a TR/COC Record bearing the EPA Sample Number and descriptive information regarding the sample. The Contractor shall complete the TR/COC Record by recording the date of sample receipt, verifying the number of samples, and signing it.

2.3.1.1 Upon receipt, the Contractor shall sign for the receipt of samples in the COC Record section. The laboratory Sample Custodian or designated recipient opening and verifying the contents of the shipping container shall verify receipt of all samples identified within the CLP Traffic Report section, and sign and date the signature box located in the CLP Traffic Report section. If a non-CLP TR/COC Record is submitted with the samples (e.g., a Regional TR/COC Record), then the Contractor shall record the receipt date of the samples and sign the TR/COC Record to maintain the chain of custody, and the Sample Custodian or designated recipient shall sign and date the TR/COC Record to verify sample information.

NOTE: If the Contractor is requested to transfer samples to another facility, the Contractor shall date and enter the name of the facility where the samples will be transferred to on the CLP TR/COC Record and document the transfer in the SDG Narrative. A signed copy of the TR/COC Record shall be included with the transferred samples and relinquished to the courier. If the samples are not listed on the TR/COC Record, the Contractor shall record them manually on the copy of the TR/COC Record.

2.3.1.2 The Contractor shall also enter the SDG Number, Case Number, and the Laboratory Contract Number on the CLP TR/COC Record. 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. If the shipment only includes one sample, then that sample number becomes the SDG number. Under no circumstances shall any SDG Number be replicated within a Case. If necessary, select an alternative sample number for the SDG Number.

2.3.2 The Contractor shall submit TR/COC Records in SDG sets (i.e., TR/COC Records for all samples in an SDG), with an SDG Cover Page attached. The SDG Cover Page shall contain the following items:

- Laboratory Name;
- Laboratory Code;
- Contract Number;
- Modified Analysis Number (if applicable);
- Case Number;
- SDG Number;
- SOW Number;
- List of the method/analysis for each sample; and
- List of EPA Sample Numbers for all samples in the SDG, cross-referenced with Laboratory Sample ID numbers, identifying the first and last samples received, and their 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 sample with the lowest sample number (considering both alpha and numeric designations); the "last" sample received would be the sample with the highest sample number (considering both alpha and numeric designations).

2.3.3 EPA Sample Numbers are continuous, without spaces or hyphens. The original Sample TR/COC Record page, with laboratory receipt information and signed with an original Contractor signature, shall be submitted for each sample in the SDG.

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

2.4 Complete Sample Delivery Group File

Each method section in the CSF shall include data for analysis of all samples in that SDG, including field samples, calibrations, QC samples, and supporting documentation. The CSF shall be complete before submission. The CSF shall be consecutively paginated (starting with page number one and ending with the number of all the pages in the package).

2.4.1 The CSF shall contain all original documents where possible. No copies of original documents shall 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 the EPA with another Case/SDG. The CSF shall be organized according to Form DC-2.

NOTE 1: All Case-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other Case-specific documents generated after the CSF is sent to the EPA, as well as copies that are altered in any fashion, are also deliverables to the EPA. Send the updated or additional documents to SMO in a PDF file. Deliver the originals to the EPA Region only if a hardcopy of the CSF was requested at the time of sample scheduling. Send to the EPA’s designated recipient only upon written request.

NOTE 2: The Contractor shall retain a legible electronic PDF file of the CSF for 365 days after submission of the reconciled data package to the Government. After this time, the Contractor may dispose of the package.

2.4.2 The CSF shall consist of the following original documents in this order:

1. Completed SDG Cover Page with signature and date
2. EPA Sample TR/COC Record
3. Completed and signed Sample Log-In Sheet [Form DC-1]
4. Completed and signed Complete SDG File (CSF) Inventory Sheet [Form DC-2]
5. SDG Narrative
6. Communication logs
7. Percent solids log
8. All other original SDG-specific documents in the possession of the laboratory, including, but not limited to the following shall also be included in the CSF:
   - Copies of personal logbook pages;
   - All handwritten SDG-specific notes; and

- Any other SDG-specific documents not covered by the above.

If the Contractor does submit SDG-specific documents to the EPA after the submission of the CSF, the documents shall be identified with submission codes. For example, if a page or pages were submitted with errors, the corrected pages would be identified with the Case and SDG Number, and the code R#, where the "#" is incremented for any subsequent resubmissions (see Exhibit B – Reporting and Deliverables Requirements, Table 2). If a page has been left out of a CSF, it must be submitted with the code A#. If the entire CSF is to be resubmitted, it must be designated with the code RS#. A revised Form DC-2 shall also be submitted, and the submission codes and locations of the documents in the CSF shall be recorded in the "Other Records and related Communication Logs" section on the revised Form DC-2.

2.4.3 For each analytical method, the CSF shall contain the applicable Analysis Data Sheets (Form 1A-OR, Form 1B-OR, and Form 1-IN) for each sample, in ascending alphanumeric EPA Sample Number order. For the organic methods [Trace Volatile including Selected Ion Monitoring (SIM), Low/Medium Volatile, Semivolatile including SIM, Pesticides, and Aroclors], a separate Analysis Data Sheet shall be included for each dilution, reinjection, or reanalysis of the sample. Additionally, for the organic methods, the applicable Analysis Data Sheets (Form 1A-OR and Form 1B-OR) shall be included for the laboratory QC samples in the following order: blanks, matrix spikes/matrix spike duplicates (MS/MSDs), and laboratory control samples (LCSs) in analytical sequence.

2.4.4 The CSF shall also contain all original laboratory records of sample transfer, preparation, and analysis, including, but not limited to, the following documents:

- Instrumental raw data in analytical order (date and time) by initial calibration, including all instrument output. The instrument output may include strip charts, Gel Permeation Chromatography (GPC), High Performance Liquid Chromatography (HPLC), and cleanup activities;
- Original preparation, cleanup, and analysis forms, or copies of preparation, cleanup, and analysis logbook pages;
- Internal sample, and sample digestate/extract and distillate transfer Chain of Custody Records;
- Screening records; and
- Performance Evaluation (PE)/Proficiency Testing (PT) sample instructions.

2.4.5 SDG Cover Page

This form is used to list all samples analyzed within an SDG and provide certain analytical information and general comments. It is also the document that is signed by the Laboratory Manager or designee to authorize and release all data and deliverables associated with the SDG. More than one SDG Cover Page may be necessary.

2.4.6 TR/COC Record

Copies of the signed TR/COC Records for every field sample, field QC sample, and PE/PT sample in the SDG shall be included.

2.4.7 Sample Log-in Sheet [Form DC-1]

The Sample Log-in Sheet is used to document the receipt and inspection of samples and containers. At least one original Form DC-1 is required for each sample shipping container (e.g., cooler). If the samples in a single sample shipping container must be assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the SDG that has the lowest alpha-numeric number and a copy of Form DC-1 shall be placed with the deliverables for the other SDG(s). The copies shall be identified as "copy(ies)", and the location of the original shall be noted on the copies.

2.4.8 Complete SDG File (CSF) Inventory Sheet [Form DC-2]

The CSF Inventory Sheet is used to record both the inventory and number of documents in the CSF.

2.4.9 SDG Narrative

This document shall be clearly labeled "SDG Narrative" and shall contain the following:

- Laboratory Name;
- SOW Number;
- Contract Number;
- Case Number;
- SDG Number;
- Modified Analysis Number (if applicable); and
- Detailed documentation of any QC, sample, shipment, and/or analytical problems encountered in processing the samples reported in the CSF.

2.4.9.1 If a subset of the complete Target Analyte List (Exhibit C – Target Analyte List and Contract Required Quantitation Limits) for a method has been scheduled, the Contractor shall list the target analytes for the method in the SDG Narrative. If target analytes in addition to those listed in Exhibit C for the method were scheduled based on a Modified Analysis, list the additional analytes.

2.4.9.2 The Contractor shall include any technical and administrative problems encountered, and the resolution or corrective actions taken. These problems may include, but are not limited to: interference problems encountered during analysis, dilutions, reanalyses and/or re-extractions, listing results from raw results less than the negative Contract Required Quantitation Limit (CRQL), and any problems with the analysis of samples.

2.4.9.3 Document the alternative temperature technique used, if applicable, to determine shipping container temperature if a temperature indicator bottle is not present in the shipping container.

2.4.9.4 The Contractor shall provide at least one example of each type of calculation per method [e.g., relative response factors (RRFs), calibration factors (CFs), equations for calibration curves with their fit expression], to allow for the recalculation of sample results from raw instrument output.

2.4.9.5 The Contractor shall include a discussion of any SOW Modified Analyses and attach a copy of the approved modification form to the SDG Narrative.

2.4.9.6 The Contractor shall identify and explain any differences that may exist between the results and supporting documentation provided in the data package and those previously submitted as Preliminary Results.

2.4.9.7 When submitting corrected data as "Additional Data", the Contractor shall include a revised SDG Narrative documenting the reason(s) for the resubmittal.

2.4.9.8 The Contractor shall indicate if interelement correction (IEC) Factors were applied during the Inductively Coupled Plasma – Atomic Emission Spectroscopy (ICP-AES) analysis, and if background corrections were applied during the ICP-AES and Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) analyses. If background corrections were applied, the Contractor shall indicate if the raw data was generated prior to the application of the background corrections.

2.4.9.9 The Contractor shall document the use of collision or reaction cells for reducing ICP-MS interferences. The Contractor shall document: the type of cell and cell mode; the gas(es) used; any additional manufacturer-recommended setup or QC applied to establish analytical conditions (e.g., oxide ratios); list the analysis conditions applied to each analyte and internal standard (e.g., mass), along with any changes in the course of the analytical sequence; and any deliberate use of molecular species to avoid isobaric interferences (e.g., $^{75}As^{16}O$ at mass 91 to avoid $^{40}Ar^{35}Cl$ at mass 75).

2.4.9.10 The Contractor shall include SDG Narrative-associated attachments, including, but not limited to:

- Gas Chromatography (GC) column information; and
- Unequivocal cross reference of laboratory to EPA Sample Numbers.

2.4.10 Communication Logs

All communications logs, copies of emails, and Records of Communication (ROCs) shall be submitted.

2.4.11 Percent Solids Log (if applicable)

The Percent Solids log shall include: tare weights, initial weights, final weights, and calculated percent solids for all soil/sediment samples and any waste samples for which percent solids is required.

2.4.12 Sample Analysis Data Sheets and Raw Data

2.4.12.1 Sample data shall be submitted with the analysis data reporting form(s), Organic Analysis Data Sheet Form 1A-OR or Inorganic Analysis Data Sheet Form 1-IN, as applicable, for all samples, including field blanks and PT/PE samples, in an SDG. Tabulated analytical results (identification and quantitation) of the requested analytes shall be included. The validation and release of these results shall be authorized by a specific signed statement on the Cover Page. 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(s) in the SDG Narrative. For organic methods, the Contractor shall submit an Analysis Data

Sheet for each analysis, dilution, reinjection, or reanalysis of each sample.

2.4.12.1.1 For Trace Volatile, Low/Medium Volatile, and Semivolatile analyses, Tentatively Identified Compounds (TICs) shall be reported on an Organic Analysis Data Sheet Form 1B-OR.

2.4.12.1.2 The Analysis Data Sheets shall be completed following the instructions in Section 3.0.

2.4.12.2 Raw data shall be submitted for all samples, field QC samples, laboratory QC samples, and standards in the SDG.

2.4.12.2.1 The raw data shall be labeled with: EPA Sample Numbers (See Appendix B – Codes for Labeling Data); date and time of analysis; instrument ID; and analyst ID.

2.4.12.2.2 Data shall be submitted based on analytical method and organized within each analytical method as described in Sections 2.4.12.2.3 – 2.4.12.2.5. The data within an SDG shall be reported in the following order:

- Trace Volatile Organics, including SIM;
- Low/Medium Volatile Organics;
- Semivolatile Organics, including SIM;
- Pesticides;
- Aroclors;
- ICP-AES;
- ICP-MS;
- Mercury;
- Cyanide;
- Anions;
- Hexavalent Chromium; and
- Total Organic Carbon (TOC).

2.4.12.2.3 Data for Gas Chromatography/Mass Spectrometry (GC/MS) methods shall contain the following:

2.4.12.2.3.1 Analysis Data Sheet(s) Organic Analysis Data Sheet Form 1A-OR and Form 1B-OR for each sample analysis in ascending alphanumeric EPA Sample Number order. Additionally, the applicable Analysis Data Sheets (Form 1A-OR and Form 1B-OR) shall be included for the laboratory QC samples in the following order: blanks, MS/MSD, and LCS in analytical sequence.

2.4.12.2.3.2 The reporting forms shall be followed by the raw data, including data for the TICs.

2.4.12.2.3.3 The raw data shall be reported by instrument in analysis order and shall include the data specified in Sections 2.4.12.2.3.4 – 2.4.12.2.3.10.

2.4.12.2.3.4 Reconstructed Ion Chromatograms. These shall be normalized to the largest non-solvent component. Internal standards and Deuterated Monitoring Compounds (DMCs) shall be labeled with the name of the compound either on the peak or on a printout of Retention Times (RTs). Report the laboratory file identifier, instrument identifier, and column identifier for the analysis.

2.4.12.2.3.5 Data System Reports/Quantitation Reports. These shall contain: the RT or scan number of each identified target analyte; the ion used for quantitation with measured area; the on-column concentration/amount including units; and the instrument and column identifiers. Report, as applicable, the injection or purge volume, sample aliquot amount (volume or mass), soil/sediment aliquot volume for medium volatile organics, final extract volume, amount analyzed, percent solids, dilution factor, and cleanup factor.

2.4.12.2.3.6 Copies of Extracted Ion Current Profiles (EICPs) for each target analyte and all reported DMCs.

2.4.12.2.3.7 Copies of the raw spectra and copies of the background-subtracted mass spectra of the target analytes that are identified in the sample and of all reported DMCs and associated internal standards. Copies of the raw spectra and copies of the background-subtracted mass spectra shall also be included for all target analytes, DMCs, and internal standards.

2.4.12.2.3.8 Copies of the mass spectra of organic compounds not listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits (TICs) with associated best-match spectra (maximum of three best matches) based on GC/MS library search spectra. Analyte names shall be clearly labeled on all spectra.

2.4.12.2.3.9 If automated data system procedures are used for preliminary identification and/or quantitation of the target analytes, the complete data system report shall be included, in addition to the reconstructed ion chromatogram. The complete data system report shall include the following information:

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

2.4.12.2.3.10 In all instances where the data system report has been edited or where manual integration or quantitation has been performed, the GC/MS instrument 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. All edits and manual integrations shall be verified by a second person, who shall also initial the change(s). The EICPs of the quantitation ion displaying the original integration(s) shall be included in the raw data, in addition to the EICPs of the quantitation ion displaying the manual integration(s). Chromatographic baselines shall be clearly visible in the original and edited EICPs. This applies to all trace volatile, low/medium volatile, and semivolatile target analytes listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits.

2.4.12.2.3.11 Standard and Reagent Preparation Logs

Logbooks in hardcopy or electronic format shall be maintained for the preparation of all standards and reagents. Standards shall be clearly labeled to identify: the analyte or analytes; the standard ID (clearly matching the standard ID noted in the analysis log/instrument run log); concentration; date prepared; expiration date of the solution; special storage requirements if any; and the preparer’s signature. Standards and reagents must be traceable. Dilutions from the primary standard and the calculations for determining their concentrations shall be recorded and verified by a second person.

2.4.12.2.3.12 Extraction and Cleanup Logs

The extraction logs and cleanup logs shall be submitted for each extraction or cleanup procedure performed. These logs shall include: date; sample weights and volumes with initial sample weight/volume and final volume clearly indicated; sufficient information to identify which QC samples (i.e., Method Blanks, LCSs, Cleanup Blanks) correspond to each batch prepared; identification of the spiking solutions used for the preparation and clean-up processes, as applicable; comments describing any significant changes or reactions which occurred during preparation shall be entered into the log and noted in the SDG Narrative; PE/PT sample preparation information (e.g., as-received PEs to final extract); identification of the sample preparer(s) [i.e., signatures(s) or initials]; and sufficient information to identify the concentrations and volumes of reagents added to the samples.

2.4.12.2.3.13 Analysis Logs

Logbooks in hardcopy or electronic form shall be maintained for all analytical sequences to enable their reconstruction in time. The analysis logs shall record at a minimum: the date and time of analysis of each analysis within the sequence; identification that includes electronic data file IDs, Laboratory Sample IDs or EPA Sample IDs; analyst identification; notation of QC failures and reasons; and sample dilutions.

2.4.12.2.3.14 PE/PT Sample Instructions

If PE or PT audit samples are provided to the Contractor and analyzed as part of the SDG, the Contractor shall submit a copy of the instructions that accompanied the sample(s) in the CSF.

2.4.12.2.3.15 Extraction Logs for the Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP)

Logbooks shall be submitted for any extraction performed by the Contractor. These shall include: the amount of aqueous and solid phases; percent solids determination; sample weight extracted; extraction fluid used; and start and end time of extraction. For TCLP, include the log for the determination of extraction fluid, including sample weights and the initial and final pH determination.

2.4.12.2.4 Data for dual-column GC methods shall contain the following:

2.4.12.2.4.1 Analysis Data Sheet Organic Analysis Data Sheet Form 1A-OR for each sample analysis in ascending alphanumeric EPA Sample Number order. The lower concentration of the requested analytes tabulated (identification and quantitation) using both analytical GC columns must be reported when results are reported for a sample. Additionally, the applicable Analysis Data Sheets (Form 1A-OR) shall be included for the laboratory QC samples in the following order: blanks, MS/MSD, and LCS in analytical sequence. Form 1A-OR for the instrument blank, MS/MSD, and LCS analyses shall be included for each GC column as well.

2.4.12.2.4.2 The reporting forms shall be followed by the raw data for both columns.

2.4.12.2.4.3 The raw data shall be reported for analyses on both columns by instrument in analysis order and shall include the data specified in Sections 2.4.12.2.4.4 – 2.4.12.2.4.8.

2.4.12.2.4.4 Chromatograms (for each sample including dilutions and reanalyses). These shall be normalized to the largest non-solvent component and shall contain the following header information:

- EPA Sample Number;
- Date and time of analysis;
- Gas Chromatograph/Electron Capture Detector (GC/ECD) instrument and column identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.12.2.4.5 Surrogates shall be labeled with the names of the analytes either directly out from the peak or on a printout of RTs if RTs are printed over the peak. Labeling of other analytes is not required and should not detract from the legibility of the required labels.

2.4.12.2.4.6 If automated data system procedures are used for preliminary identification and/or quantitation of the target analytes, the complete data system report shall be included in the CSF, in addition to the chromatogram. The complete data system report shall include the following information:

- EPA Sample Number;
- Date and time of analysis;
- RT of identified target analytes;
- Peak area responses used for quantitation;
- On-column concentration/amount, including units;
- GC/ECD instrument and column identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.12.2.4.7 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC instrument operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the properly scaled raw chromatogram that clearly shows the manual integration. Manually integrated peaks shall also be marked with the letter "m" on the quantitation report. The graphical displays of the chromatograms displaying the original integration(s) shall be included in the raw data, in addition to the graphical displays of the chromatograms displaying the manual integration(s). This procedure applies to all pesticide target analytes listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits and surrogates.

2.4.12.2.4.8 Copies of raw chromatograms from both GC columns used to analyze the target analytes.

2.4.12.2.4.9 Standard and Reagent Preparation Logs

Logbooks in hardcopy or electronic format shall be maintained for the preparation of all standards and reagents. Standards shall be clearly labeled to identify: the analyte or analytes; the standard ID (clearly matching the standard ID noted in the analysis log/instrument run log); concentration; date prepared; expiration date of the solution; special storage requirements if any; and the preparer’s signature.

2.4.12.2.4.10 Extraction and Cleanup Logs

The extraction logs and cleanup logs shall be submitted for each extraction or cleanup procedure performed. These logs shall include: date; sample weights and volumes with initial sample weight/volume and final volume clearly indicated; sufficient information to identify which QC samples (i.e., Method Blanks, LCSs, Cleanup Blanks) correspond to each batch prepared; identification of the spiking solutions used for the preparation and clean-up processes, as applicable; comments describing any significant changes or reactions which occurred during

preparation shall be entered into the log and noted in the SDG Narrative; PE/PT sample preparation information (e.g., as-received PEs to final extract); identification of the sample preparer(s) [i.e., signatures(s) or initials]; and sufficient information to identify the concentrations and volumes of reagents added to the samples.

2.4.12.2.4.11 Analysis Logs

Logbooks in hardcopy or electronic form shall be maintained for all analytical sequences to enable their reconstruction in time. The analysis logs shall record at a minimum: the date and time of analysis of each analysis within the sequence; identification that includes electronic data file IDs, Laboratory Sample IDs or EPA Sample IDs; analyst identification; notation of QC failures and reasons; and sample dilutions.

2.4.12.2.4.12 PE/PT Sample Instructions

If PE or PT audit samples are provided to the Contractor and analyzed as part of the SDG, the Contractor shall submit a copy of the instructions that accompanied the sample(s) in the CSF.

2.4.12.2.4.13 Extraction Logs for TCLP and SPLP

Logbooks shall be submitted for any extraction performed by the Contractor. These shall include: the amount of aqueous and solid phases; percent solids determination; sample weight extracted; extraction fluid used; and start and end time of extraction. For TCLP, include the log for the determination of extraction fluid, including sample weights and the initial and final pH determination.

2.4.12.2.4.14 Copies of chromatograms and Quantitation Reports for the Florisil Cartridge Check (for pesticide analysis) and the GPC Calibration Verification including blanks.

2.4.12.2.5 Data for ICP-AES, ICP-MS, Mercury, Cyanide, Anions, Hexavalent Chromium, and TOC methods shall contain the following:

2.4.12.2.5.1 Analysis Data Sheet Inorganic Analysis Data Sheet Form 1-IN for each sample in ascending alphanumeric EPA Sample Number order. The reporting forms shall be followed by the raw data, including calibration, sample, and QC data.

2.4.12.2.5.2 The raw data shall be reported by instrument in analytical order. The raw data shall include the data specified in Sections 2.4.12.2.5.3 and 2.4.12.2.5.4.

2.4.12.2.5.3 All instrument readouts and data pertinent to the reconstruction of the analysis and results (e.g., bench sheets) used for the sample results. For each reported value, the Contractor shall include all raw data used to obtain that value. For instruments applying (interelement) corrections, the raw data shall include not only the results for the target analytes, but also those for all of the interferents. Raw data for all required screening analyses shall be included. Each instrument reading (exposure) shall be provided, including those readouts that may fall below the MDL. Raw data shall not be corrected for dilutions or volume adjustments. All instruments must provide a direct real-time readout or printout of the unedited instrument data output file. Data for ICP-MS

analyses shall also include counts data as well as concentration data. Data for Anions and Hexavalent Chromium analyses by Ion Chromatography shall include the chromatograms. As applicable, a copy of the instrument's direct sequential readout shall be included. All raw data shall include concentration units.

2.4.12.2.5.4 Corrections to the laboratory raw data shall be made by drawing a single line through the errors and entering the correct information. Information shall not be obliterated or rendered unreadable. Corrections and additions to information shall be signed (or initialed) and dated.

2.4.12.2.5.5 Standard and Reagent Preparation Logs

Logbooks in hardcopy or electronic format shall be maintained for the preparation of all standards and reagents. Standards shall be clearly labeled to identify: the analyte or analytes; the standard ID (clearly matching the standard ID noted in the analysis log/instrument run log); concentration; date prepared; expiration date of the solution; special storage requirements if any; and the preparer's signature. Standards and reagents must be traceable. Dilutions from the primary standard and the calculations for determining their concentrations shall be recorded and verified by a second person.

2.4.12.2.5.6 Preparation Logs

The preparation logs shall be submitted for each digestion, distillation, or extraction procedure performed. These logs shall include: date; sample weights and volumes with initial sample weight/volume and final volume clearly indicated; sufficient information to identify which QC samples (i.e., Method or Preparation Blanks, LCSs) correspond to each batch prepared; identification of the spiking solutions used for the preparation, as applicable; comments describing any significant changes or reactions which occurred during preparation shall be entered into the log and noted in the SDG Narrative; indicate which samples were received at an unacceptable pH; PE/PT sample preparation information (e.g., as-received PEs to final digestate/distillate/extract); identification of the sample preparer(s) [i.e., signatures(s) or initials]; and sufficient information to identify the concentrations and volumes of reagents added to the samples.

2.4.12.2.5.7 Analysis Logs

Logbooks in hardcopy or electronic form shall be maintained for all analytical sequences to enable their reconstruction in time. The analysis logs shall record at a minimum: the date and time of analysis of each analysis within the sequence; identification that includes electronic data file IDs, Laboratory Sample IDs or EPA Sample IDs; analyst identification; notation of QC failures and reasons; and sample dilutions.

2.4.12.2.5.8 PE/PT Sample Instructions

If PE or PT audit samples are provided to the Contractor and analyzed as part of the SDG, the Contractor shall submit a copy of the instructions that accompanied the sample(s) in the CSF.

2.4.12.2.5.9 Extraction Logs for TCLP and SPLP

Logbooks shall be submitted for any extraction performed by the Contractor. These shall include: the amount of aqueous and solid phases; percent solids determination; sample weight extracted; extraction fluid used; and start and end time of extraction. For TCLP, include the log for the determination of extraction fluid, including sample weights and the initial and final pH determination.

2.4.13 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);
- Sample Tags (if present) sealed in plastic bags; and
- All original receiving documents, including, but not limited to, other receiving forms or copies of receiving logbooks.

2.5 Copy of Complete Sample Delivery Group File

The Contractor shall provide a copy of the CSF in a PDF file to SMO, as specified in Exhibit B – Reporting and Deliverables Requirements, Table 1. Sample tags shall not be copied or included in the PDF file unless requested at the time of sample scheduling.

2.6 Electronic Deliverables

The Contractor shall provide the required electronic deliverables as specified in Exhibit B – Reporting and Deliverables Requirements, Table 1.

2.6.1 Electronic Data Deliverable in Staged Electronic Data Deliverable Format

The Contractor shall provide an EDD in SEDD format for Levels 2a, 2b, or 3 as scheduled. The EDD shall include analytical data for all samples in the SDG, as specified in Exhibit H – Format for Electronic Data Deliverables.

2.6.2 Portable Document Format of Complete Sample Delivery Group File

The Contractor shall provide a complete copy of the CSF in a searchable PDF file via EXES at https://www.smoclpss.com, and follow the naming convention **HCD_Case Number_SDG Number_Contract Number_Submission Type** for the PDF file.

2.6.2.1 The following identifiers are to be used based on submission type:

TABLE 2. PDF FILE SUBMISSION IDENTIFIERS

Submission Type	**Identifier**
First Submission	FS
Replacement Submission (if a complete replacement of the first submission PDF file is required)	RS#
Reconciliation Submission	R# (The # character represents the number of the reconciliation. For example, the first reconciliation submission would be identified as R1.)
Additional Data Submission	A# (The # character represents the number of the additional data submissions. For example, the first additional data submission would be identified as A1.)

2.6.2.1.1 The PDF file shall be organized in accordance with the directions provided in Section 2.0.

2.6.2.1.2 The data shall be bookmarked using a hierarchical bookmark structure (i.e., an overview or "parent" bookmark, and a subordinate or "child" bookmark nested underneath the "parent" bookmark). The required hierarchical structure is shown in Exhibit B – Reporting and Deliverables Requirements, Table 3.

TABLE 3. HIERARCHICAL BOOKMARK STRUCTURE

Group Bookmark[1]	Parent Bookmark	Child Bookmark
SDG Documentation	SDG Cover Page, Sample TR/COC Records, Form DC-1, Form DC-2, SDG Narrative, Communication Logs, Percent Solids	
Trace Volatile Organics, including SIM Low/Medium Volatile Organics Semivolatile Organics, including SIM Pesticides Aroclors ICP-AES ICP-MS Mercury Cyanide Anions Hexavalent Chromium Total Organic Carbon	Analytical Data[1]	• Analysis Data Sheet Form 1A-OR (and Form 1B-OR as applicable) or Form 1-IN For each sample analysis or for each sample, in ascending alphanumeric EPA Sample Number order followed by Analysis Data Sheets for laboratory QC samples (organic methods only) in the order of blanks, MS/MSDs, and LCSs, as applicable. • Raw Data For each sample analysis, including raw data for the TICs, if applicable to the method, initial calibration and calibration verifications, tunes and resolution checks, and laboratory QC, by instrument in analysis order. • Screening Data
	Other Data	Standard and Reagent Preparation Logs
		Preparation, Extraction, Cleanup, Digestion, or Distillation Logs, as applicable
		Analysis Logs
		PE/PT Sample Instructions
		TCLP/SPLP Logbooks, if applicable
		Raw GPC and Florisil Data
Receiving Documents, Transfer Records, and Miscellaneous	Additional Documents	Receiving Logbooks
		Internal Sample, Digestate, Distillate, Extract, and Transfer Chain-of-Custody Records

[1]The data within an SDG shall be reported in the analytical order specified in Exhibit B – Reporting and Deliverables Requirements, Table 3.

2.7 Preliminary Results

A CSV deliverable (including all appropriate qualifiers and flags) shall be submitted for all samples in each SDG of a Case (see Appendix A – Format Characteristics for Preliminary Results Data for the format of this deliverable). Sample analysis shall follow all requirements stipulated in Exhibit D – Analytical Methods. Sample TR/COC Records and an SDG Cover Page (per Section 2.7.1) shall be submitted, in a PDF file, with the Preliminary Results.

2.7.1 The Contractor shall submit the SDG Cover Page containing all of the items specified in Section 2.3.2. The SDG Cover Page shall be clearly labeled to indicate that the data being reported are Preliminary Results. The SDG Cover Page shall contain the following statement, verbatim: "I certify that these Preliminary Results are in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. Release of the data contained in this 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 the signature of the Laboratory Manager or designee with typed lines containing the signer’s name and title, and the date of signature.

2.8 Method Detection Limits

The Contractor shall perform and report the determination of the MDLs by the method specified in Exhibit D - Analytical Methods for each instrument, and type and dimensions of GC column used under this contract.

The Contractor shall deliver all determined MDL values to SMO and QATS electronically in the format described in Appendix C – Format Characteristics for Method Detection Limit Study Data, according to the delivery schedule specified in Exhibit B – Reporting and Deliverables Requirements, Table 1.

3.0 DATA REPORTING INSTRUCTIONS

3.1 Introduction

This section contains specific instructions for the completion of the required reporting forms.

3.2 General Information

Values shall be reported on the hardcopy forms according to the respective form instruction in this section.

3.2.1 The reporting forms discussed in Section 3.4, and presented in Section 4.0, have been designed in conjunction with the electronic data format specified in Exhibit H – Format for Electronic Data Deliverables. 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 Information in the electronic deliverable must correspond to information submitted in the raw data package. If information in the raw data is updated, the information in the electronic deliverable shall be updated accordingly. An electronic deliverable containing the changed information for the SDG shall be resubmitted along with the PDF and hardcopy.

3.2.3 All characters which appear on the data reporting forms presented in Section 4.0 shall be reproduced by the Contractor when submitting data, and the format of the forms submitted shall provide exactly the same information as that shown in the contract. No information shall be added, deleted, or moved from its specified position. The names of various fields and analytes (i.e., "Lab Code", "Extract Volume") shall appear as they are listed in Exhibit B – Reporting and Deliverables Requirements and Exhibit C – Target Analyte List and Contract Required Quantitation Limits.

3.2.4 The instrument raw data files contain the raw data values. The hardcopy raw data may be a rounded or truncated representation of the instrument raw data.

3.2.5 For rounding off numbers to the appropriate level of precision, observe the following common rules. If the figure following those to be retained is greater than or equal to 5, the result is to be rounded up; otherwise the result is rounded down. For example, 0.4365 rounds to 0.44 and 102.4443 rounds to 100.

3.3 Header and General Form Information

Seven pieces of information are common to the header section of each reporting form. These are Lab Name, SOW Number, Contract, Lab Code, Case Number (Case No.), Modified Analysis Number (MA No.), and SDG Number (SDG No.). Except as noted below for MA No., this information shall be entered on every form and shall match on all forms.

3.3.1 "Lab Name" shall be the name chosen by the Contractor to identify the laboratory.

3.3.2 "SOW Number" shall be the Statement of Work number, updated for any contact modifications.

3.3.3 "Contract" is the number of the EPA contract under which the analyses were performed.

3.3.4 "Lab Code" is an alphanumeric abbreviation, assigned by the EPA, to identify the laboratory and aid in data processing. This Lab Code will be assigned by the EPA at the time a contract is awarded and shall not be modified by the Contractor, except at the direction of the EPA Contracting Officer (CO). If a change of name or ownership occurs at the laboratory, the Lab Code will remain the same unless and until the Contractor is directed by the EPA CO to use another EPA-assigned Lab Code.

3.3.5 "Case No." is the SMO-assigned Case Number associated with the sample, and reported on the TR/COC Record or sample shipping paperwork.

3.3.6 "MA No." is the EPA-assigned number for analyses performed for an analytical method under the Modified Analysis clause in Exhibit A – Summary of Requirements. If samples are to be analyzed under the Modified Analysis clause, the Contractor shall list the modification reference number on all forms. If the analyses have no modified requirements, leave the "MA No." field blank.

3.3.7 "SDG No." is the SDG Number.

3.3.8 "EPA SAMPLE NO." appears either in the header section, upper right-hand corner of the form, or as the left column of a table summarizing data from a number of samples.

3.3.8.1 All samples, dilutions, reinjections, reanalyses, leachates, blanks, matrix spikes, matrix spike duplicates, post-digestion/distillation spikes, duplicates, LCSs, serial dilutions, and standards shall be identified with an EPA Sample Number. For samples, an EPA Sample Number is the unique identifying number given on the TR/COC Record or sample shipping records that accompanied that sample. In order to facilitate sample identification and data assessment, the sample suffixes listed in Appendix B - Codes for Labeling Data must be used for the appropriate methods.

3.3.8.2 These sample numbers shall be listed on the form in ascending alphanumeric EPA Sample Number order. Thus, if A1111 is the lowest (considering both alpha and numeric characters) EPA Sample Number within the SDG, it would be entered in the first EPA Sample Number field. Samples would be listed below it, in ascending sequence – A1111, A1111MS, A1111MSD, AB125, AC111, etc.

3.3.9 "Matrix" is the matrix of the sample. Enter "Soil" for soil samples, "Sediment" for sediment samples, "Waste" for waste samples, "Wipe" for wipe samples, "Filter" for filter samples, "Tissue" for biological tissue samples, and "Water" for aqueous/water and leachate samples, as appropriate.

3.3.10 "Analytical Method" is the method used to analyze the sample. Enter "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA SIM", "PEST", "ARO", "ICP_AES", "ICP_MS", "Hg", "CN", "IC_Anions", "IC_Cr(VI)", or "TOC" as appropriate.

3.3.11 "Level" is applicable to the soil/sediment samples and blanks analyzed by volatile and semivolatile methods. Enter "Trace" for the trace level analysis, "Low" for the low level analysis, and "Med" for the medium level analysis.

3.3.12 "Lab Sample ID" is an optional laboratory-generated internal identifier. If the Contractor does not have a Lab Sample ID, this field may be left blank. However, if this identifier is used on any of the forms or accompanying hardcopy data deliverables, it must be reported on all the appropriate forms.

3.3.13 "Sample wt/vol:" is the aliquot amount of the sample used for sample analysis or extraction. Enter the number of grams as measured for soil/sediment, waste, and tissue samples. Enter the volumes as measured for water samples. Report weights and volumes to three significant figures (e.g., 10.0 g, 955 mL).

3.3.14 "Lab File ID" is the laboratory-generated name of the instrument data system file containing information pertaining to a particular analysis.

3.3.15 "% Solids" is the percent solids of the soil/sediment sample as determined by the procedure in Exhibit D – General. Report the calculated % Solids to three significant figures.

3.3.16 "Date Extracted" is applicable to samples that have undergone an extraction procedure by the analytical method. The format of MM/DD/YYYY shall be used for the date. When continuous liquid-liquid extraction procedures are used for water samples, enter the date that the procedure was started in the "Date Extracted" field. If separatory funnel, sonication, Soxhlet, or pressurized fluid extraction procedures are used, enter the date that the procedure was completed in the "Date Extracted" field.

3.3.17 "Date Analyzed" is common to all samples, blanks, and standards. The format of MM/DD/YYYY shall be used for the date.

3.3.18 "Injection Volume" is volume of the sample extract injected into the GC/MS or GC/ECD instrument for analysis. Report this volume in µL to one decimal place (e.g., 1.0 µL).

3.3.19 "Instrument ID" is the instrument identifier used by the laboratory, particularly on forms containing calibration data. The identifier must include some indication of the manufacturer and/or model of the instrument, and contain additional characters or numbers that differentiate between all instruments of the same type in the laboratory. The instrument identifier must be consistent on all forms within the SDG.

3.3.20 "GC Column" and "ID: (mm)" are two (2) fields used to identify the stationary phase of the GC column and the internal diameter of the GC column in millimeters (mm).

3.3.21 "Extract Volume" is the volume of the final concentrated extract at the completion of the sample extraction process. It is also applicable to medium level sample analysis by the purge-and-trap analytical method where the sample is extracted in methanol. It is entered as the volume measured in the unit of "µL".

3.3.22 "Heated Purge" is applicable to volatiles by purge-and-trap analytical methods. Enter "Y" for heated purge or "N" for ambient temperature purge.

3.3.23 "Extraction Type" is applicable to samples that have undergone extractions per the analytical methods. Enter "SEPF" for separatory funnel, "CLLE" for continuous liquid-liquid extraction without hydrophobic membrane, "CONH" for continuous liquid-liquid extraction with hydrophobic membrane, "SONC" for Sonication Extraction, "SOXH" for Soxhlet Extraction, "SPE" for solid-phase extraction, "MW" for soil/sediment/waste microwave extraction, or "PFEX" for Pressurized Fluid Extraction, as appropriate. For waste dilution, enter "WD". For the trace, trace SIM, and low/medium volatile analytical methods, enter "PT" for purge-and-trap.

3.3.24 "Cleanup Types" is applicable to samples that have undergone certain cleanup processes by the analytical method. Enter "GPC", "Florisil", "Sulfuric_Acid", or "Sulfur" separated by commas, as appropriate.

3.3.25 "Concentration Units" are the units in which the analytical result is reported. Enter "µg/L", "mg/L", "µg/kg", "mg/kg", "µg", or "µg/cm^2" as appropriate.

3.3.26 "Analyte" is identified in Exhibit C – Target Analyte List and Contract Required Quantitation Limits, and shall be reported in the order given in Exhibit C.

3.4 Reporting Documents and Forms

3.4.1 SDG Cover Page

3.4.1.1 Instructions

3.4.1.1.1 The SDG Cover Page shall include all of the items specified in Section 2.3.2.

3.4.1.1.2 The SDG Cover Page for the CSF shall contain the following statement, verbatim: "I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and manual integrations have been peer-reviewed. Release of the data contained in the Complete SDG File and in the electronic data submitted 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 the signature of the Laboratory Manager or designee with typed lines containing the signer's name and title, and the date of signature.

3.4.1.1.3 The SDG Cover Page that is submitted with the Preliminary Results shall include the statement specified Section 2.7.1.

3.4.1.1.4 Each original SDG Cover Page for the CSF and the Preliminary Results shall be signed and dated by the Laboratory Manager or the Manager's designee to authorize the release and verify the contents of all data and deliverables associated with an SDG.

3.4.2 Organic Analysis Data Sheet [Form 1A-OR and Form 1B-OR]

3.4.2.1 Purpose

Form 1A-OR is used to tabulate and report sample analysis results for organic target analyte(s) per analytical method (see Exhibit C – Organic Target Analyte List and Contract Required Quantitation Limits). Form 1A-OR shall be submitted for each field sample, field blank, PE/PT sample, blank, MS/MSD, and LCS for each analysis as applicable.

Form 1B-OR is used to report sample analysis results for TICs from GC/MS analysis for non-target analytes (e.g., analytes not listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits). Form 1B-OR shall be submitted for every trace volatile, low/medium volatile, and semivolatile analysis, including required dilutions, reanalyses, and blanks, even if no TICs are found. Forms 1B-OR are not required for LCS, requested MS/MSD, or SIM analyses. See instructions in Exhibit D – Analytical Methods for the applicable methods on TIC identification and quantitation.

3.4.2.2 Instructions

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

3.4.2.2.1 "Date Received" is the date (formatted MM/DD/YYYY) of sample receipt at the laboratory, as recorded on the TR/COC Record (i.e., the VTSR).

3.4.2.2.2 "Extract Concentrated" is applicable to samples that have undergone sample cleanup procedures. Enter "Y" for sample extracts concentrated after cleanup; otherwise enter "N".

3.4.2.2.3 "Soil Aliquot (VOA)" is applicable to medium level sample analysis by purge-and-trap analytical method where sample is extracted in methanol. Enter the methanol extract volume added to the reagent water in the purge tube for analysis in the unit of "µL".

3.4.2.2.4 "Purge Volume" is applicable to volatiles. Enter the volume purged in the unit of "mL".

3.4.2.2.5 "pH" is required for aqueous/water samples. Enter the pH determined. Report the pH value for soil/sediment samples, if the measurement is requested.

3.4.2.2.6 "Dilution Factor" is indicative of sample whether it is analyzed undiluted or at dilution. The dilution factor (DF) value shall be reported to one decimal place. Enter 1.0 for an undiluted sample with a dilution factor of 1.

3.4.2.2.7 "Cleanup Factor" is applicable to the sequential cleanup types reported in "Cleanup Types" field. Cleanup factor for each applicable cleanup procedure is determined per Exhibit D – Analytical Methods and reported in the order of the corresponding cleanup type separated as appropriate by a comma.

3.4.2.2.8 Under column "CAS No.", enter the Chemical Abstracts Service (CAS) Number for each analyte as listed in Exhibit C – Organic Target Analyte List and Contract Required Quantitation Limits.

3.4.2.2.9 Under column "Concentration", enter for each analyte, the value of the result if the concentration or mass is greater than or equal to the MDL adjusted if necessary and corrected for any dilutions. If the concentration is less than the MDL, enter the CRQL for the analyte, adjusted if necessary and corrected for any dilutions. The concentration or mass result shall be reported to two significant figures.

NOTE: For analytes in a sample that require more than one dilution, the compliant result from the least diluted analysis shall be considered as the best analytical result for the sample. For analytes in a sample that requires dilution, reanalysis, or re-extraction, the compliant result from one of these analyses shall be considered as the best analytical result for the sample. For non-detected analytes that do not require any further dilution, reanalysis, or re-extraction, the CRQLs from the initial analysis shall be considered as the best analytical result.

3.4.2.2.10 Under column "Q", enter result qualifiers as identified below. If additional qualifiers are used, their explicit definitions shall be included in the SDG Narrative.

3.4.2.2.10.1 The MDL obtained for a given preparation method, analysis method, and instrument and column type and dimensions shall be used for the qualification of the results for samples associated with that preparation method, analysis method, instrument, and detector.

All values for result, CRQL, and MDL shall be in the same units prior to determining the appropriate qualifier.

3.4.2.2.10.2 Specified entries and their meanings are as follows:

U: The result was less than the MDL.

J: The reported value is less than the CRQL, but greater than or equal to the MDL. This flag is also used for all TICs.

B: The same analyte is found in the associated method blank as well.

E: The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).

D: The reported value is from a dilution that is not part of the normal preparation procedure. For TCLP, any dilution greater than the base 10-fold dilution.

C: The identification of the analyte is confirmed by GC/MS when the primary analytical method employed is GC/ECD as appropriate.

A: The reported TIC is a suspected Aldol-condensation product.

N: The reported TIC is a ≥ 85% match on the mass spectral library search.

P: The reported value is greater than 25% difference between the concentrations determined on two GC columns where applicable.

S: The reported value is determined using a single-point ICAL by GC/ECD analytical method, as appropriate.

H: The reported value is quantitated using peak heights rather than peak areas.

X: The reported value is with laboratory-defined flag. These flags are limited to the letters "X", "Y", and "Z".

3.4.3 Inorganic Analysis Data Sheet [Form 1-IN]

3.4.3.1 Purpose

Form 1-IN is used to tabulate and report sample analysis results for inorganic and classical chemistry (Anions, Hexavalent Chromium [Cr(VI)], and TOC) target analytes per analytical method (see Exhibit C – Target Analyte List and Contract Required Quantitation Limits). Form 1-IN shall be submitted for each field sample, field blank, and PE/PT sample as applicable on a per sample basis.

3.4.3.2 Instructions

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

3.4.3.2.1 "Date Received" is the date (formatted MM/DD/YYYY) of sample receipt at the laboratory, as recorded on the TR/COC Record (i.e., the VTSR).

3.4.3.2.2 Under column "CAS No.", enter the CAS Number for each analyte as listed in Exhibit C – Target Analyte List and Contract Required Quantitation Limits.

3.4.3.2.3 Under column "Concentration", enter for each analyte, the value of the result if the concentration or mass is greater than or equal to the MDL adjusted if necessary and corrected for any dilutions. If the concentration is less than the adjusted MDL enter the CRQL for the analyte, adjusted if necessary and corrected for any dilutions. The concentration or mass result shall be reported to two significant figures.

3.4.3.2.4 Under column "Q", enter result qualifiers as identified below. If additional qualifiers are used, their explicit definitions shall be included in the SDG Narrative.

3.4.3.2.4.1 The MDL obtained for a given preparation method, analysis method, and instrument shall be used for the qualification of the results for samples associated with that preparation method, analysis method, and instrument. Serial dilution and post-digestion/distillation spike results shall be qualified using the MDL and CRQL values utilized for the corresponding field sample.

All three values (i.e., the instrument reading, CRQL, and MDL) shall be converted to the same units prior to determining the appropriate qualifier.

3.4.3.2.4.2 Specified entries and their meanings are as follows:

X: The reported value is estimated due to interferences.

*: QC analyses are outside control limits.

D: The reported value is from a dilution.

J: The reported value was less than the CRQL, but greater than or equal to the MDL.

U: The result was less than the MDL. For Hardness, if the results for both Ca and Mg were less than their respective MDLs.

3.4.3.2.5 Under column "Date Analyzed", for each analyte reported, enter the date of the analysis the result is being reported from as MM/DD/YYYY.

3.4.3.2.6 Under column "Time Analyzed", for each analyte reported, enter the time of the analysis the result is being reported from in military time (HHMM).

3.4.3.2.7 In the "Comments" field, note any significant changes that occur during sample preparation (e.g., emulsion formation), any sample-specific comments concerning the analyte results, and any raw instrument results that are less than the negative CRQL (-CRQL). These notes shall also be included the SDG Narrative.

3.4.4 Sample Log-In Sheet [Form DC-1]

3.4.4.1 Instructions

3.4.4.1.1 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.

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

3.4.4.1.3 Record the custody seal numbers in Item 2.

3.4.4.1.4 Open the container, remove the enclosed sample documentation, and record the presence/absence of EPA forms (i.e., TR/COC Records) 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 and the shipping container ID number in Item 5.

3.4.4.1.5 Record the presence or absence of a shipping container temperature indicator bottle in Item 6.

3.4.4.1.6 Record the shipping container temperature in Item 7. If ice is present, it shall be noted in the "Remarks" column.

3.4.4.1.7 Remove the samples from the shipping container(s), examine the samples, and record the condition of the sample bottles (i.e., intact, broken, leaking) and presence or absence of sample tags in Items 8 and 9.

3.4.4.1.8 Review the sample shipping documents, compare the information recorded on all the documents and samples, and mark the appropriate answer in Item 10 only if requested by an MA.

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

3.4.4.1.10 If there are no problems observed during receipt, sign and date (include the time) Form DC-1 and the TR/COC Record, and write the sample numbers in the "EPA Sample #" column.

3.4.4.1.11 Record the pH for all aqueous/water metals (ICP-AES, ICP-MS, Hg), cyanide, hexavalent chromium, and TOC samples received.

3.4.4.1.12 If applicable, record the assigned laboratory numbers. Record the sample tag numbers only if requested.

3.4.4.1.13 Any comments shall be made in the "Remarks" column.

3.4.4.1.14 For Items 1, 3, 4, 6, 8, 9, and 10, circle the appropriate response. Responses can be underlined if this form is completed by automated equipment. Unused columns and spaces shall be crossed out, initialed, and dated.

3.4.4.1.15 If there are problems observed during receipt (including samples that have not been preserved to the proper pH) or an answer marked with an asterisk (e.g., "absent*") was circled, contact SMO and document the contact as well as resolution of the problem on a CLP Communication Log and in the SDG Narrative. Following resolution, sign and date the form and note, where appropriate, the resolution of the problem.

3.4.5 Complete SDG File (CSF) Inventory Sheet [Form DC-2]

3.4.5.1 Instructions

3.4.5.1.1 Organize all EPA-CSF documents as described in Exhibit B – Reporting and Deliverables Requirements. Assemble the documents and raw data in the order specified in Section 2.4, and stamp each page with the consecutive number. Inventory the CSF by reviewing the document numbers and recording page number ranges on the CSF Inventory Sheet. The Contractor shall verify and record in a "Comments" section on the CSF Inventory Sheet all intentional gaps in the page numbering sequence (e.g., "page numbers not used, XXXX-XXXX, XXXX-XXXX"). If there are no documents for a specific document type, enter an "NA" on the CSF Inventory Sheet. If analysis by a given analytical method is not required, then the section for that method is not required as a deliverable.

3.4.5.1.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly defined category. The laboratory shall describe or list these under "Other Records and related Communication Logs".

3.4.5.1.3 If it is necessary to insert new or inadvertently omitted documents or raw data, the Contractor shall follow these steps:

- Number all pages to be inserted with the next sequential numbers and file the inserts in their logical positions within the CSF (e.g., document to be inserted between pages 6 and 7 shall be numbered as 6a, 6b, 6c, etc.). Identify where the inserts are filed in the CSF by recording the locations on the CSF Inventory Sheet.

4.0 FORMS

The reporting forms are shown on the following pages.

SDG COVER PAGE

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

SOW No.: _____

EPA Sample No.	Lab Sample ID	Analysis Method					

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and manual integrations have been peer-reviewed. Release of the data contained in this hardcopy Complete SDG File and in the electronic data submitted has been authorized by the Laboratory Manager or the Manager’s designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

EPA SAMPLE NO.

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Analytical Method: _____ Level: _____

Matrix: _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL) _____ Lab File ID: _____

% Solids: _____ Date Received: _____

GC Column: _____ ID: _____(mm) Date Extracted: _____

GC Column: _____ ID: _____(mm) Date Analyzed: _____

Extract Concentrated:(Y/N) _____ Extract Volume: _____(µL)

Soil Aliquot (VOA): _____(µL) Extraction Type: _____

Heated Purge: (Y/N) _____ Injection Volume: _____(µL)

Purge Volume: _____(mL) pH: _____ Dilution Factor: _____

Cleanup Types: _____ Cleanup Factor: _____

Concentration Units (µg/L, µg/kg, µg, or µg/cm^2): _____

CAS NO.	ANALYTE	CONCENTRATION	Q

EPA SAMPLE NO.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Analytical Method: _____ Level: _____

Matrix: _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL) _____ Lab File ID: _____

% Solids: _____ Date Received: _____

GC Column: _____ ID: _____(mm) Date Extracted: _____

Extract Concentrated:(Y/N) _____ Date Analyzed: _____

Soil Aliquot (VOA): _____(µL) Extract Volume: _____(µL)

Heated Purge: (Y/N) _____ Extraction Type: _____

Purge Volume: _____(mL) Injection Volume: _____(µL)

Cleanup Types: _____ pH: _____ Dilution Factor: _____

Concentration Units (µg/L, µg/kg): _____ Cleanup Factor: _____

	CAS No.	ANALYTE	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

EPA SAMPLE NO.

FORM 1-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Lab Sample ID: _____

% Solids: _____ Date Received: _____

Analytical Method: _____

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm^2): _____

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed

NOTE: Hardness (total) is reported in mg/L

Comments:

FORM DC-1
SAMPLE LOG-IN SHEET

Lab Name		Page of
Received By (Print Name)		Log-in Date
Received By (Signature)		
Case Number	SDG No.	MA No.

Remarks:	
1. Custody Seal(s)	Present/Absent* Intact/Broken
2. Custody Seal Nos.	_____ _____
3. Traffic Report/Chain of Custody Records	Present/Absent*
4. Airbill	Airbill/Sticker Present/Absent*
5. Airbill No. and Shipping Container ID No.	_____ _____
6. Shipping Container Temperature Indicator Bottle	Present/Absent*
7 Shipping Container Temperature	_____
8. Sample Condition	Intact/Broken*/ Leaking
9. Sample Tags Sample Tag Numbers	Present/Absent Listed/Not Listed on Traffic Report/Chain of Custody Record
10. Does information on Traffic Report/Chain of Custody Records and Sample Tags agree?	Yes/No*
11. Date Received at Lab	_____
12. Time Received	_____

	EPA Sample #	Aqueous/ Water Sample pH	Corresponding		Remarks: Condition of Sample Shipment, etc.
			Sample Tag #	Assigned Lab #	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

* Contact SMO and attach record of resolution

Reviewed By	Logbook No.
Date	Logbook Page No.

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

LAB NAME _____

LAB CODE _____

CONTRACT NO. _____

CASE NO. _____ SDG NO. _____

MA NO. _____ SOW NO. _____

All documents delivered in the Complete SDG File must be original documents where possible. (Reference - Exhibit B, Section 2.4)

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
1. SDG Cover Page				
2. Traffic Report/Chain of Custody Record(s)				
3. Sample Log-In Sheet (DC-1)				
4. CSF Inventory Sheet (DC-2)				
5. SDG Narrative				
6. Communication Logs				
7. Percent Solids Log				
Analysis Forms and Data (by Analytical Method)				
Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC, as applicable				
Instrument raw data by instrument in analysis order				
Other Data				
Standard and Reagent Preparation Logs				
Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks				
Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks				
Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions				
Extraction Logs for TCLP and SPLP				
Raw GPC Data (if performed)				
Raw Florisil Data (if performed)				

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
Additional				
EPA Shipping/Receiving Documents				
Airbill (No. of Shipments_____)				
Sample Tags				
Sample Log-In Sheet (Lab)				
Misc. Shipping/Receiving Records (list all individual records)				
Internal Lab Sample Transfer Records and Tracking Sheets (describe or list)				
Other Records and related Communication Logs (describe or list)				

Comments:

Completed by:
(CLP Lab) _____ (Signature) _____ (Print Name & Title) _____ (Date)

Audited by:
(EPA) _____ (Signature) _____ (Print Name & Title) _____ (Date)

EXHIBIT C

TARGET ANALYTE LIST AND
CONTRACT REQUIRED QUANTITATION LIMITS

NOTE: The Contract Required Quantitation Limit (CRQL) values listed on the following pages are based on the analysis of samples according to the specifications given in Exhibit D.

Changes to the CRQL may be requested under the Modified Analysis (MA) clause in the contract.

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Exhibit C – Target Analyte List and Contract Required Quantitation Limits

Table of Contents

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1.0 TRACE VOLATILES AND LOW/MEDIUM VOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 1. TRACE VOLATILES AND LOW/MEDIUM VOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A]

Analyte Name	CAS Number	CRQLs					
		Trace Water (µg/L)	Trace Water By SIM[C] (µg/L)	Low Aqueous/ Water and SPLP Leachate (µg/L)	Low Soil/ Sediment/ Waste[B] (µg/kg)	Medium Soil/ Sediment/ Waste[B] (µg/kg)	TCLP Leachate[L] (µg/L)
Dichlorodifluoromethane	75-71-8	0.50	--	5.0	5.0	250	--
Chloromethane	74-87-3	0.50	--	5.0	5.0	250	--
Vinyl chloride	75-01-4	0.50	0.050	5.0	5.0	250	50
Bromomethane	74-83-9	0.50	--	5.0	5.0	250	--
Chloroethane	75-00-3	0.50	--	5.0	5.0	250	--
Trichlorofluoromethane	75-69-4	0.50	--	5.0	5.0	250	--
1,1-Dichloroethene	75-35-4	0.50	--	5.0	5.0	250	50
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.50	--	5.0	5.0	250	--
Acetone	67-64-1	5.0	--	10	10	500	--
Carbon disulfide	75-15-0	0.50	--	5.0	5.0	250	--
Methyl acetate	79-20-9	0.50	--	5.0	5.0	250	--
Methylene chloride	75-09-2	0.50	--	5.0	5.0	250	--
trans-1,2-Dichloroethene	156-60-5	0.50	--	5.0	5.0	250	--
Methyl tert-butyl ether	1634-04-4	0.50	--	5.0	5.0	250	--
1,1-Dichloroethane	75-34-3	0.50	--	5.0	5.0	250	--
cis-1,2-Dichloroethene	156-59-2	0.50	--	5.0	5.0	250	--
2-Butanone	78-93-3	5.0	--	10	10	500	100
Bromochloromethane	74-97-5	0.50	--	5.0	5.0	250	--
Chloroform	67-66-3	0.50	--	5.0	5.0	250	50
1,1,1-Trichloroethane	71-55-6	0.50	--	5.0	5.0	250	--
Cyclohexane	110-82-7	0.50	--	5.0	5.0	250	--
Carbon tetrachloride	56-23-5	0.50	--	5.0	5.0	250	50
Benzene	71-43-2	0.50	--	5.0	5.0	250	50
1,2-Dichloroethane	107-06-2	0.50	--	5.0	5.0	250	50
Trichloroethene	79-01-6	0.50	0.050	5.0	5.0	250	50
Methylcyclohexane	108-87-2	0.50	--	5.0	5.0	250	--
1,2-Dichloropropane	78-87-5	0.50	--	5.0	5.0	250	--

TABLE 1. TRACE VOLATILES AND LOW/MEDIUM VOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A] (CON'T)

Analyte Name	CAS Number	CRQLs					
		Trace Water (µg/L)	Trace Water By SIM[C] (µg/L)	Low Aqueous/ Water and SPLP Leachate (µg/L)	Low Soil/ Sediment/ Waste[B] (µg/kg)	Medium Soil/ Sediment/ Waste[B] (µg/kg)	TCLP Leachate[L] (µg/L)
Bromodichloromethane	75-27-4	0.50	--	5.0	5.0	250	--
cis-1,3-Dichloropropene	10061-01-5	0.50	--	5.0	5.0	250	--
4-Methyl-2-pentanone	108-10-1	5.0	--	10	10	500	--
Toluene	108-88-3	0.50	--	5.0	5.0	250	--
trans-1,3-Dichloropropene	10061-02-6	0.50	--	5.0	5.0	250	--
1,1,2-Trichloroethane	79-00-5	0.50	--	5.0	5.0	250	--
Tetrachloroethene	127-18-4	0.50	--	5.0	5.0	250	50
2-Hexanone	591-78-6	5.0	--	10	10	500	--
Dibromochloromethane	124-48-1	0.50	--	5.0	5.0	250	--
1,2-Dibromoethane	106-93-4	0.50	0.050	5.0	5.0	250	--
Chlorobenzene	108-90-7	0.50	--	5.0	5.0	250	50
Ethylbenzene	100-41-4	0.50	--	5.0	5.0	250	--
o-Xylene	95-47-6	0.50	--	5.0	5.0	250	--
m,p-Xylene	179601-23-1	0.50	--	5.0	5.0	250	--
Styrene	100-42-5	0.50	--	5.0	5.0	250	--
Bromoform	75-25-2	0.50	--	5.0	5.0	250	--
Isopropylbenzene	98-82-8	0.50	--	5.0	5.0	250	--
1,2,3-Trichloropropane	96-18-4	0.50	0.050	5.0	5.0	250	--
1,1,2,2-Tetrachloroethane	79-34-5	0.50	--	5.0	5.0	250	--
1,3-Dichlorobenzene	541-73-1	0.50	--	5.0	5.0	250	--
1,4-Dichlorobenzene	106-46-7	0.50	--	5.0	5.0	250	50
1,2-Dichlorobenzene	95-50-1	0.50	--	5.0	5.0	250	--
1,2-Dibromo-3-chloropropane	96-12-8	0.50	0.050	5.0	5.0	250	--
1,2,4-Trimethylbenzene	95-63-6	0.50	--	5.0	5.0	250	--
1,3,5-Trimethylbenzene	108-67-8	0.50	--	5.0	5.0	250	--
1,2,4-Trichlorobenzene	120-82-1	0.50	--	5.0	5.0	250	--
1,2,3-Trichlorobenzene	87-61-6	0.50	--	5.0	5.0	250	--

2.0 SEMIVOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 2. SEMIVOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A]

Analyte Name	CAS Number	CRQLs					
		Low Water By SIM[C] (µg/L)	Aqueous/ Water and SPLP Leachate (µg/L)	Low Soil/ Sediment/ Waste By SIM[B,C] (µg/kg)	Low Soil/ Sediment/ Waste[B] (µg/kg)	Medium Soil/ Sediment/ Waste[B,K] (µg/kg)	TCLP Leachate[L] (µg/L)
1,4-Dioxane	123-91-1	0.20	2.0	6.7[F]	67	2000	--
Pyridine[J]	110-86-1	--	--	--	--	--	100
Benzaldehyde	100-52-7	--	10	--	330	10000	--
Phenol	108-95-2	--	10	--	330	10000	--
Bis(2-chloroethyl) ether	111-44-4	--	10	--	330	10000	--
2-Chlorophenol	95-57-8	--	5.0	--	170	5000	--
2-Methylphenol	95-48-7	--	10	--	330	10000	100
3-Methylphenol[J]	108-39-4	--	--	--	--	--	100
2,2'-Oxybis(1-chloropropane)[D]	108-60-1	--	10	--	330	10000	--
Acetophenone	98-86-2	--	10	--	330	10000	--
4-Methylphenol[A]	106-44-5	--	10	--	330	10000	100
N-Nitroso-di-n propylamine	621-64-7	--	5.0	--	170	5000	--
Hexachloroethane	67-72-1	--	5.0	--	170	5000	50
Nitrobenzene	98-95-3	--	5.0	--	170	5000	50
Isophorone	78-59-1	--	5.0	--	170	5000	--
2-Nitrophenol	88-75-5	--	5.0	--	170	5000	--
2,4-Dimethylphenol	105-67-9	--	5.0	--	170	5000	--
Bis(2-chloroethoxy)methane	111-91-1	--	5.0	--	170	5000	--
2,4-Dichlorophenol	120-83-2	--	5.0	--	170	5000	--
Naphthalene[E]	91-20-3	0.10	5.0	3.3	170	5000	--
4-Chloroaniline	106-47-8	--	10	--	330	10000	--
Hexachlorobutadiene	87-68-3	--	5.0	--	170	5000	50
Caprolactam	105-60-2	--	10	--	330	10000	--
4-Chloro-3-methylphenol	59-50-7	--	5.0	--	170	5000	--
1-Methylnaphthalene[E]	90-12-0	0.10	5.0	3.3	170	5000	--
2-Methylnaphthalene[E]	91-57-6	0.10	5.0	3.3	170	5000	--
Hexachlorocyclo-pentadiene	77-47-4	--	10	--	330	10000	--

TABLE 2. SEMIVOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A] (CON'T)

Analyte Name	CAS Number	CRQLs					
		Low Water By SIM[C] (µg/L)	Aqueous/ Water and SPLP Leachate (µg/L)	Low Soil/ Sediment/ Waste By SIM[B,C] (µg/kg)	Low Soil/ Sediment/ Waste[B] (µg/kg)	Medium Soil/ Sediment/ Waste[B,K] (µg/kg)	TCLP Leachate[L] (µg/L)
2,4,6-Trichlorophenol	88-06-2	--	5.0	--	170	5000	50
2,4,5-Trichlorophenol	95-95-4	--	5.0	--	170	5000	50
1,1'-Biphenyl	92-52-4	--	5.0	--	170	5000	--
2-Chloronaphthalene	91-58-7	--	5.0	--	170	5000	--
2-Nitroaniline	88-74-4	--	5.0	--	170	5000	--
Dimethylphthalate	131-11-3	--	5.0	--	170	5000	--
2,6-Dinitrotoluene	606-20-2	--	5.0	--	170	5000	--
Acenaphthylene[E]	208-96-8	0.10	5.0	3.3	170	5000	--
3-Nitroaniline	99-09-2	--	10	--	330	10000	--
Acenaphthene[E]	83-32-9	0.10	5.0	3.3	170	5000	--
2,4-Dinitrophenol	51-28-5	--	10	--	330	10000	--
4-Nitrophenol	100-02-7	--	10	--	330	10000	--
Dibenzofuran	132-64-9	--	5.0	--	170	5000	--
2,4-Dinitrotoluene	121-14-2	--	5.0	--	170	5000	50
Diethylphthalate	84-66-2	--	5.0	--	170	5000	--
Fluorene[E]	86-73-7	0.10	5.0	3.3	170	5000	--
4-Chlorophenyl-phenyl ether	7005-72-3	--	5.0	--	170	5000	--
4-Nitroaniline	100-01-6	--	10	--	330	10000	--
4,6-Dinitro-2-methylphenol	534-52-1	--	10	--	330	10000	--
N-Nitrosodiphenylamine	86-30-6	--	5.0	--	170	5000	--
1,2,4,5-Tetrachlorobenzene	95-94-3	--	5.0	--	170	5000	--
4-Bromophenyl-phenylether	101-55-3	--	5.0	--	170	5000	--
Hexachlorobenzene	118-74-1	--	5.0	--	170	5000	50
Atrazine	1912-24-9	--	10	--	330	10000	--
Pentachlorophenol[E]	87-86-5	0.20	10	6.7	330	10000	100
Phenanthrene[E]	85-01-8	0.10	5.0	3.3	170	5000	--
Anthracene[E]	120-12-7	0.10	5.0	3.3	170	5000	--
Carbazole	86-74-8	--	10	--	330	10000	--
Di-n-butylphthalate	84-74-2	--	5.0	--	170	5000	--
Fluoranthene[E]	206-44-0	0.10	5.0	3.3	170	5000	--
Pyrene[E]	129-00-0	0.10	5.0	3.3	170	5000	--

TABLE 2. SEMIVOLATILES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A] (CON'T)

Analyte Name	CAS Number	CRQLs					
		Low Water By SIM[C] (µg/L)	Aqueous/ Water and SPLP Leachate (µg/L)	Low Soil/ Sediment/ Waste By SIM[B,C] (µg/kg)	Low Soil/ Sediment/ Waste[B] (µg/kg)	Medium Soil/ Sediment/ Waste[B,K] (µg/kg)	TCLP Leachate[L] (µg/L)
Butylbenzylphthalate	85-68-7	--	5.0	--	170	5000	--
3,3'-Dichlorobenzidine	91-94-1	--	10	--	330	10000	--
Benzo(a)anthracene[E]	56-55-3	0.10	5.0	3.3	170	5000	--
Chrysene[E]	218-01-9	0.10	5.0	3.3	170	5000	--
Bis(2-ethylhexyl)phthalate	117-81-7	--	5.0	--	170	5000	--
Di-n-octylphthalate	117-84-0	--	10	--	330	10000	--
Benzo(b)fluoranthene[E]	205-99-2	0.10	5.0	3.3	170	5000	--
Benzo(k)fluoranthene[E]	207-08-9	0.10	5.0	3.3	170	5000	--
Benzo(a)pyrene[E]	50-32-8	0.10	5.0	3.3	170	5000	--
Indeno(1,2,3-cd)pyrene[E]	193-39-5	0.10	5.0	3.3	170	5000	--
Dibenzo(a,h)anthracene[E]	53-70-3	0.10	5.0	3.3	170	5000	--
Benzo(g,h,i)perylene[E]	191-24-2	0.10	5.0	3.3	170	5000	--
2,3,4,6-Tetrachlorophenol	58-90-2	--	5.0	--	170	5000	--

3.0 PESTICIDES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 3. PESTICIDES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A,G]

Analyte Name	CAS Number	CRQLs				
		Aqueous/ Water and SPLP Leachate (µg/L)	Soil/ Sediment/ Waste[B,K] (µg/kg)	Wipe (µg)	Wipe (µg/cm²)	TCLP Leachate[L] (µg/L)
alpha-BHC	319-84-6	0.050	1.7	0.050	0.00050	--
beta-BHC	319-85-7	0.050	1.7	0.050	0.00050	--
delta-BHC	319-86-8	0.050	1.7	0.050	0.00050	--
gamma-BHC (Lindane)	58-89-9	0.050	1.7	0.050	0.00050	0.50
Heptachlor	76-44-8	0.050	1.7	0.050	0.00050	0.50
Aldrin	309-00-2	0.050	1.7	0.050	0.00050	--
Heptachlor epoxide[H]	1024-57-3	0.050	1.7	0.050	0.00050	0.50
Endosu1fan I	959-98-8	0.050	1.7	0.050	0.00050	--
Dieldrin	60-57-1	0.10	3.3	0.10	0.0010	--
4,4'-DDE	72-55-9	0.10	3.3	0.10	0.0010	--
Endrin	72-20-8	0.10	3.3	0.10	0.0010	1.0
Endosulfan II	33213-65-9	0.10	3.3	0.10	0.0010	--
4,4'-DDD	72-54-8	0.10	3.3	0.10	0.0010	--
Endosulfan sulfate	1031-07-8	0.10	3.3	0.10	0.0010	--
4,4'-DDT	50-29-3	0.10	3.3	0.10	0.0010	--
Methoxychlor	72-43-5	0.50	17	0.50	0.0050	5.0
Endrin ketone	53494-70-5	0.10	3.3	0.10	0.0010	--
Endrin aldehyde	7421-93-4	0.10	3.3	0.10	0.0010	--
cis-Chlordane[I]	5103-71-9	0.050	1.7	0.050	0.00050	0.50
trans-Chlordane[I]	5103-74-2	0.050	1.7	0.050	0.00050	0.50
Toxaphene	8001-35-2	5.0	170	5.0	0.050	50

4.0 AROCLORS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 4. AROCLORS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[G]

Analyte Name	CAS Number	CRQLs			
		Aqueous/ Water (µg/L)	Soil/ Sediment/ Waste[B,K] (µg/kg)	Wipe (µg)	Wipe (µg/cm²)
Aroclor 1016	12674-11-2	1.0	33	1.0	0.010
Aroclor 1221	11104-28-2	1.0	33	1.0	0.010
Aroclor 1232	11141-16-5	1.0	33	1.0	0.010
Aroclor 1242	53469-21-9	1.0	33	1.0	0.010
Aroclor 1248	12672-29-6	1.0	33	1.0	0.010
Aroclor 1254	11097-69-1	1.0	33	1.0	0.010
Aroclor 1260	11096-82-5	1.0	33	1.0	0.010
Aroclor 1262	37324-23-5	1.0	33	1.0	0.010
Aroclor 1268	11100-14-4	1.0	33	1.0	0.010

5.0 ICP-AES AND ICP-MS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 5. ICP-AES AND ICP-MS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A]

Analyte Name	CAS Number	CRQLs					
		ICP-AES Aqueous/ Water and SPLP Leachate (µg/L)	ICP-AES Soil/ Sediment/ Waste[B] (mg/kg)	ICP-AES Wipe (µg)	ICP-AES TCLP (µg/L)	ICP-MS Aqueous/ Water (µg/L)	ICP-MS Soil/ Sediment/ Waste[B] (mg/kg)
Aluminum	7429-90-5	200	20	20	--	20	--
Antimony	7440-36-0	60	6.0	6.0	--	2.0	1.0
Arsenic	7440-38-2	10	1.0	1.0	10	1.0	0.50
Barium	7440-39-3	200	20.0	20	200	10	5.0
Beryllium	7440-41-7	5.0	0.50	0.50	--	1.0	0.50
Cadmium	7440-43-9	5.0	0.50	0.50	5.0	1.0	0.50
Calcium	7440-70-2	5000	500	500	--	500	--
Chromium	7440-47-3	10	1.0	1.0	10	2.0	1.0
Cobalt	7440-48-4	50	5.0	5.0	--	1.0	0.50
Copper	7440-50-8	25	2.5	2.5	--	2.0	1.0
Iron	7439-89-6	100	10	10	--	200	--
Lead	7439-92-1	10	1.0	1.0	10	1.0	0.50
Magnesium	7439-95-4	5000	500	500	--	500	--
Manganese	7439-96-5	15	1.5	1.5	--	1.0	0.50
Nickel	7440-02-0	40	4.0	4.0	--	1.0	0.50
Potassium	7440-09-7	5000	500	500	--	500	--
Selenium	7782-49-2	35	3.5	3.5	35	5.0	2.5
Silver	7440-22-4	10	1.0	1.0	10	1.0	0.50
Sodium	7440-23-5	5000	500	500	--	500	--
Thallium	7440-28-0	25	2.5	2.5	--	1.0	0.50
Vanadium	7440-62-2	50	5.0	5.0	--	5.0	2.5
Zinc	7440-66-6	60	6.0	6.0	--	5.0	2.5
Hardness (total)	Hardness	33[M]	--	--	--	--	--

6.0 MERCURY BY COLD VAPOR ATOMIC ABSORPTION TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 6. MERCURY BY COLD VAPOR ATOMIC ABSORPTION TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CAS Number	CRQLs	
		Aqueous/Water and TCLP/SPLP Leachate (µg/L)	Soil/ Sediment/ Waste[B] (mg/kg)
Mercury	7439-97-6	0.20	0.10

7.0 CYANIDE BY SPECTROPHOTOMETRY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 7. CYANIDE BY SPECTROPHOTOMETRY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CAS Number	CRQLs	
		Aqueous/Water and SPLP Leachate (µg/L)	Soil/ Sediment/ Waste[B] (mg/kg)
Cyanide	57-12-5	10	0.50

8.0 ANIONS BY ION CHROMATOGRAPHY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 8. ANIONS BY ION CHROMATOGRAPHY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CAS Number	CRQLs	
		Aqueous/Water (mg/L)	Soil/Sediment (mg/kg)
Bromide	24959-67-9	0.50	5.0
Chloride	16887-00-6	0.50	5.0
Fluoride	16984-48-8	0.20	2.0
Nitrate	14797-55-8	0.20	2.0
Nitrite	14797-65-0	0.20	2.0
Orthophosphate	14265-44-2	0.20	2.0
Sulfate	14808-79-8	0.50	5.0

9.0 HEXAVALENT CHROMIUM BY ION CHROMATOGRAPHY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 9. HEXAVALENT CHROMIUM BY ION CHROMATOGRAPHY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte	CAS Number	CRQL Aqueous/Water (µg/L)
Hexavalent Chromium	18540-29-9	1.0

10.0 TOTAL ORGANIC CARBON (TOC) ANALYSIS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 10. TOTAL ORGANIC CARBON (TOC) ANALYSIS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte	CAS Number	CRQLs	
		Aqueous/Water (mg/L)	Soil/Sediment (mg/kg)
Total Organic Carbon	7440-44-0	0.50	100

Endnotes:

A. Changes to the Target Analyte List (TAL) (e.g., adding an additional analyte) may be requested under the Modified Analysis clause in the contract.

B. The CRQLs for soil/sediment/waste are based on 100% solids and on the minimum weights and volumes specified in Exhibit D. The moisture content of the samples must be used to adjust the CRQL values appropriately.

C. The CRQLs for the analysis of Trace Volatile water samples, and Semivolatile water and soil samples using the Selected Ion Monitoring (SIM) technique.

D. Previously known as Bis(2-chloroisopropyl) ether.

E. Target Analyte List for Polynuclear Aromatic Hydrocarbons (PAHs) and Pentachlorophenol analyses request.

F. For 1,4-Dioxane, CRQL only applicable to low soil/sediment by SIM and not to waste by SIM.

G. There is no differentiation between the preparation of low and medium soil samples in this method for analysis.

H. Only the exo_epoxy isomer.

I. Formerly known as alpha-Chlordane and gamma-Chlordane respectively.

J. Semivolatile target analytes Pyridine and 3-methylphenol are included in this table ONLY for inclusion in the list of Toxicity Characteristic Leaching Procedure (TCLP) analytes. Compounds 3-Methylphenol and 4-Methylphenol cannot be separated by the extraction techniques or GC columns used in this method. Therefore, both are represented in this SOW by the 4-methylphenol isomer only. Those data users who wish to analyze 3- and 4-methylphenol separately are encouraged to utilize the CLP-MA process to obtain data for these compounds from the derivatization/GC method (8041A or equivalent).

K. The CRQLs for oily waste samples are 50 times greater than the medium waste CRQLs listed for the Semivolatiles method, and 150 times greater than the waste CRQLs listed for the Pesticides and Aroclors methods, respectively.

L. The TCLP leachate CRQLs are 10 times greater than the aqueous/water CRQLs for Low/Medium Volatiles, Semivolatiles, and Pesticides due to the 10 times dilution of the TCLP leachates with reagent water prior to the Purge-and-Trap and extraction preparations.

M. Hardness (total) is reported as a calculation in mg/L.

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